

# Technical specification sheet

## PCU40 | Cutter

Specifications		
article number		151.002.425
model		PCU40
short description		Cutter
max. working pressure	bar/Mpa	720 / 72
battery included		no
max. cutting opening	mm	170
theoretical cutting force	kN/t	764 / 77.9
protection rate		IP57
sound emission @ 1m/3.25ft	dB(A)	75
sound emission @ 4m/13ft	dB(A)	66
hydraulic oil type		ISO-L HV VG 36
NCT		yes
cutter jaw		inclined
weight, ready for use	kg	18.7
temperature range	°C	-20 +55
weight excl. battery	kg	17.2
dimensions (AxBxC)	mm	832 x 270 x 300
EN 13204 compliant		yes
EN 13204 classification		BC165I-18.7
EN 13204, cutting capacity		1I 2I 3I 4J 5J
NFPA 1936 compliant		yes
NFPA 1936, cutting capacity		A7 B7 C6 D7 E8 F3
prEN 13204 classification		F-CU2-165-I
round bar (S235 acc. to EN 13204)	mm	36

Safety factors / tests	
hydraulic safety factor	2:1
endurance test tool	1000 cycles of biting in material that cannot be cut
endurance test dead man's handle	6000 cycles

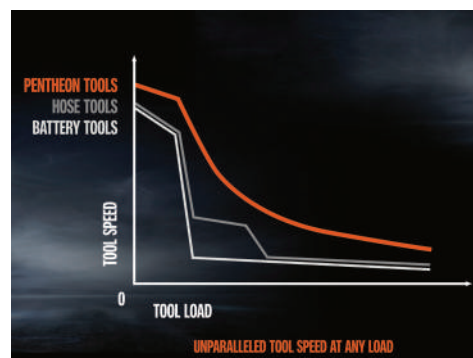
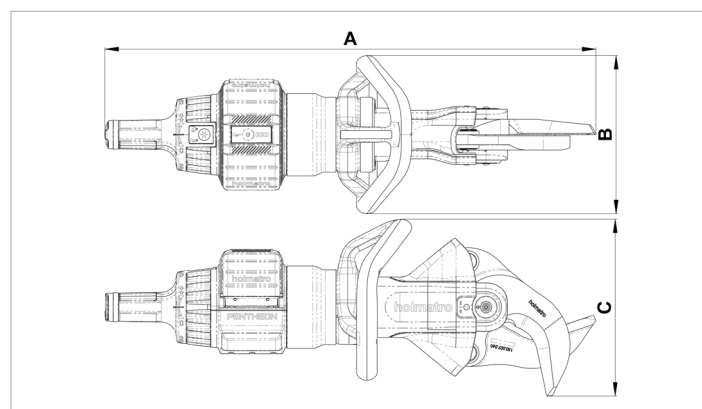
Required Accessories	
Battery PBPA287	151.000.583
Battery Charger PBCH1 (AC-EU)	151.000.629
Battery Charger PBCH4 (AC-JP)	151.000.630
Battery Charger PBCH5 (AC-UK)	151.000.631
Battery Charger PBCH3 (DC)	151.000.632
Battery Charger PBCH2 (AC-US)	151.000.742
Battery Charger PBCH6 (AC-KR)	151.001.209
Battery Charger PBCH7 (AC-CN)	151.001.518
Battery Charger PBCH8 (AC-IN)	151.001.519
Battery PBPA287 (CN)	151.001.854



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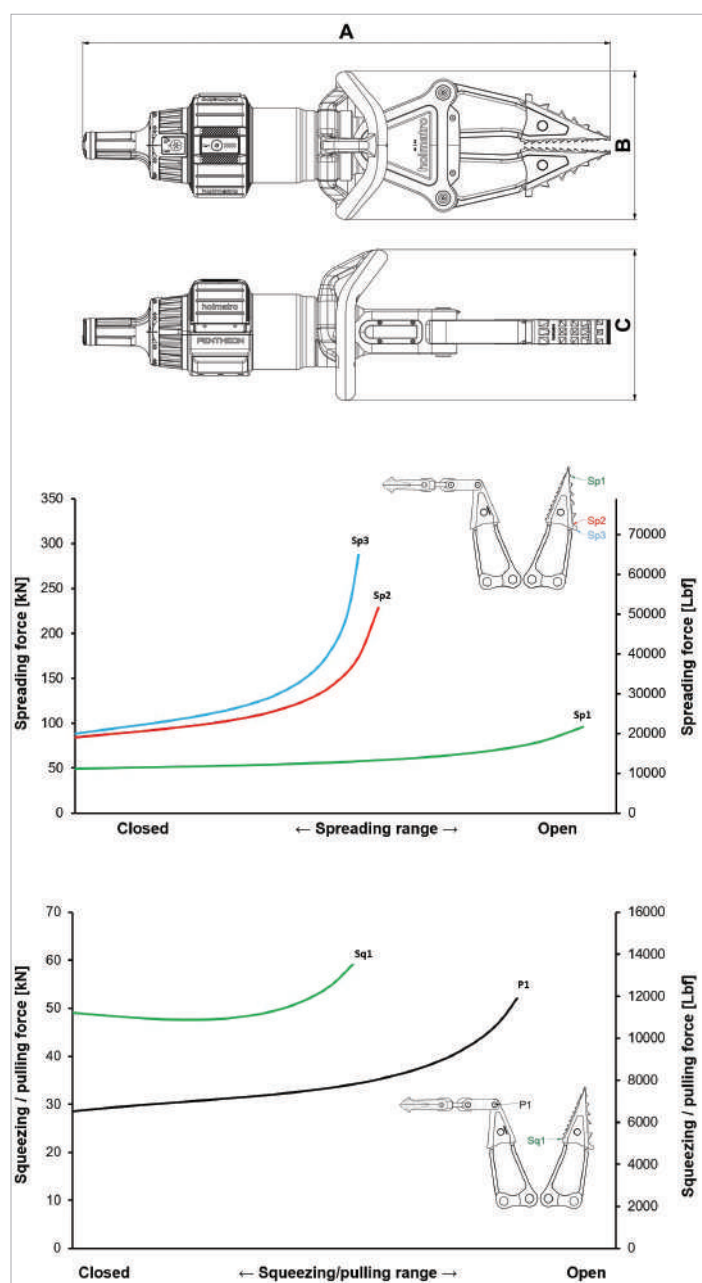
# Technical specification sheet

## PSP40 | Spreader

Specifications		
article number		151.002.432
model		PSP40
short description		Spreader
max. working pressure	bar/Mpa	720 / 72
battery included		no
spreading distance	mm	725
max. pulling force	kN/t	51.7 / 5.3
pulling distance	mm	613
max. spreading force	kN/t	280 / 28.6
theoretical calculated spreading force	kN/t	875 / 89.2
min. spreading force (EN 13204)	kN/t	43 / 4.4
max. spreading force, 25mm/1in from the tip	kN/t	93 / 9.5
max. squeezing force	kN/t	59 / 6
protection rate		IP57
sound emission @ 1m/3.25ft	dB(A)	74
sound emission @ 4m/13ft	dB(A)	65
hydraulic oil type		ISO-L HV VG 36
weight, ready for use	kg	19.4
weight excl. battery	kg	17.9
temperature range	°C	-20 +55
dimensions (AxBxC)	mm	956 x 270 x 276
EN 13204 classification		AS43/725-19.4
EN 13204 compliant		yes
prEN 13204 classification		F-SP3-43/725
NFPA 1936, HPF	kN/t	51.7 / 5.3
NFPA 1936, HSF	kN/t	69.2 / 7.1
NFPA 1936, LPF	kN/t	27 / 2.8
NFPA 1936, LSF	kN/t	39.1 / 4
NFPA 1936 compliant		yes

Safety factors / tests	
hydraulic safety factor	2:1
endurance test tool	1000 cycles of opening and closing while arms are loaded
endurance test dead man's handle	6000 cycles

Required Accessories	
Battery PBPA287	151.000.583
Battery Charger PBCH1 (AC-EU)	151.000.629
Battery Charger PBCH4 (AC-JP)	151.000.630
Battery Charger PBCH5 (AC-UK)	151.000.631
Battery Charger PBCH3 (DC)	151.000.632
Battery Charger PBCH2 (AC-US)	151.000.742
Battery Charger PBCH6 (AC-KR)	151.001.209
Battery Charger PBCH7 (AC-CN)	151.001.518
Battery Charger PBCH8 (AC-IN)	151.001.519
Battery PBPA287 (CN)	151.001.854



## Technical specification sheet

# PTR40 | Telescopic Ram

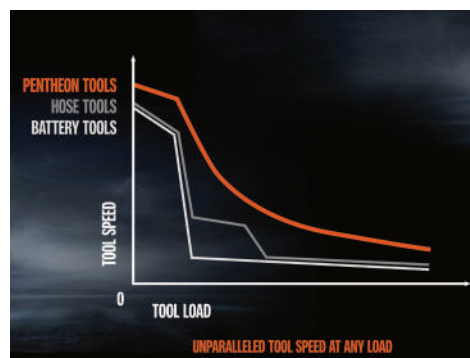
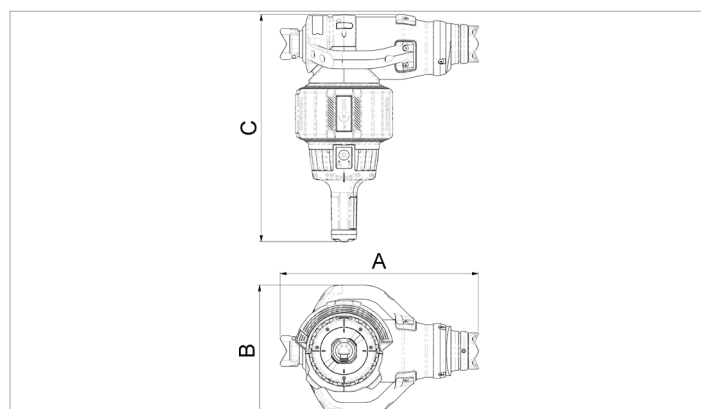
Specifications		
article number		151.002.438
model		PTR40
short description		Telescopic Ram
max. working pressure	bar/Mpa	540 / 54
battery included		no
spreading stroke 1st plunger	mm	215
spreading stroke 2nd plunger	mm	192
total spreading stroke	mm	407
retracted length	mm	385
extended length	mm	792
max. spreading force 1st plunger	kN/t	136 / 13.9
max. spreading force 2nd plunger	kN/t	65 / 6.6
protection rate		IP57
sound emission @ 1m/3.25ft	dB(A)	75
sound emission @ 4m/13ft	dB(A)	66
hydraulic oil type		ISO-L HV VG 36
number of plungers		2
weight, ready for use	kg	15.5
temperature range	°C	-20 +55
weight excl. battery	kg	14.0
dimensions (AxBxC)	mm	385 x 256 x 443
EN 13204 classification		TR136/215-65/192-15.5
EN 13204 compliant		yes
NFPA 1936, HSF	kN/t	136 / 13.9
NFPA 1936, LSF	kN/t	65 / 6.6
NFPA 1936 compliant		yes
prEN 13204 classification		F-TR-136/215-65/192

### Safety factors / tests

hydraulic safety factor	2:1
endurance test tool	1000 cycles of spreading while the tool is loaded
endurance test dead man's handle	6000 cycles

### Required Accessories

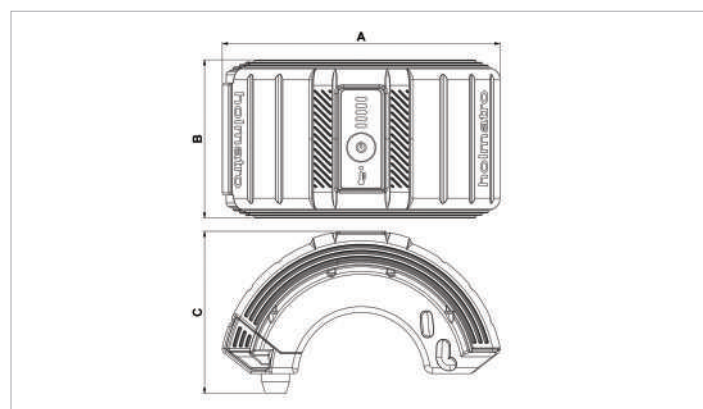
Battery PBPA287	151.000.583
Battery Charger PBCH1 (AC-EU)	151.000.629
Battery Charger PBCH4 (AC-JP)	151.000.630
Battery Charger PBCH5 (AC-UK)	151.000.631
Battery Charger PBCH3 (DC)	151.000.632
Battery Charger PBCH2 (AC-US)	151.000.742
Battery Charger PBCH6 (AC-KR)	151.001.209
Battery Charger PBCH7 (AC-CN)	151.001.518
Battery Charger PBCH8 (AC-IN)	151.001.519
Battery PBPA287 (CN)	151.001.854



# Technical specification sheet

## PBPA287 | Battery

Specifications		
article number		151.000.583
model		PBPA287
short description		Battery
capacity	Ah	7
energy	Wh	176
charging time	min.	60
minimum battery life	cycles	500
protection rate		IP67
battery type		Li-Ion
voltage	VDC	28
weight, ready for use	kg	1.5
temperature range	°C	-20 + 55
dimensions (AxBxC)	mm	188 x 107 x 110



## Technical specification sheet

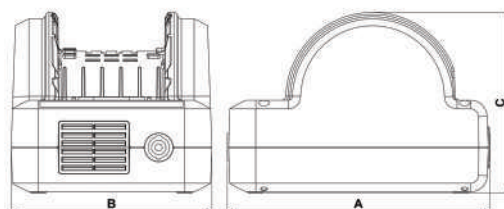
# PBCH1 (AC-EU) | Battery Charger

### Specifications

article number		151.000.629
model		PBCH1 (AC-EU)
short description		Battery Charger
battery voltage	VDC	28
mains voltage	VAC	100-240
mains frequency	Hz	50-60
max. current	A	3.3
power	W	300
cable length	m	1.8
plug type		F
weight, ready for use	kg	1.6
temperature range	°C	-20 + 55
dimensions (AxBxC)	mm	222 x 170 x 153

### Accessories

On-Tool Charging Cord POTC1	151.000.499
Daisy Chain Power Cord DCPC1	151.000.503



## Technical specification sheet

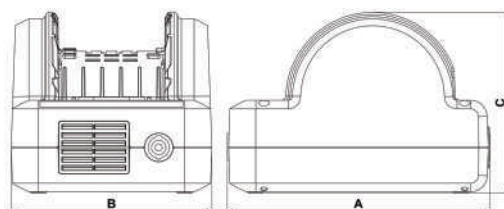
# PBCH3 (DC) | Battery Charger

### Specifications

article number		151.000.632
model		PBCH3 (DC)
short description		Battery Charger
battery voltage	VDC	28
DC supply voltage	VDC	12-24
power	W	73.5
cable length	m	1.8
plug type		carplug ISO 4165
weight, ready for use	kg	1.6
temperature range	°C	-20 + 55
dimensions (AxBxC)	mm	222 x 170 x 153

### Accessories

On-Tool Charging Cord POTC1	151.000.499
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## Technical specification sheet

# DCPC1 | Daisy Chain Power Cord

### Specifications

article number		151.000.503
model		DCPC1
short description		Daisy Chain Power Cord
length	m	0.3
weight, ready for use	kg	0.3
temperature range	°C	-20 + 55





## Technical specification sheet

# T1 | Forcible Entry Tool

### Specifications

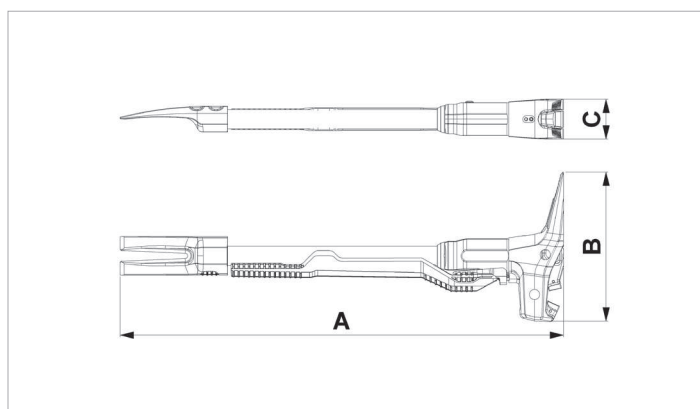
article number		151.001.787
model		T1
short description		Forcible Entry Tool
max. working pressure	bar/Mpa	720 / 72
spreading distance	mm	128
max. cutting opening	mm	29
min. spreading force 25mm from tip	kN/t	26 / 2.7
max. spreading force	kN/t	33 / 3.4
theoretical cutting force	kN/t	139 / 14.2
operator type		hand
weight, ready for use	kg	7.7
temperature range	°C	-20 +55
dimensions (AxBxC)	mm	694 x 232 x 62
round bar (S235)	mm	18

### Safety factors / tests

hydraulic safety factor	2:1
endurance test tool	1000 cycles of spreading while the tool is loaded and 1000 cycles of biting in material that cannot be cut

### Standard supplied with

- Removable cutting blades
- Detachable wedge





## Technical specification sheet

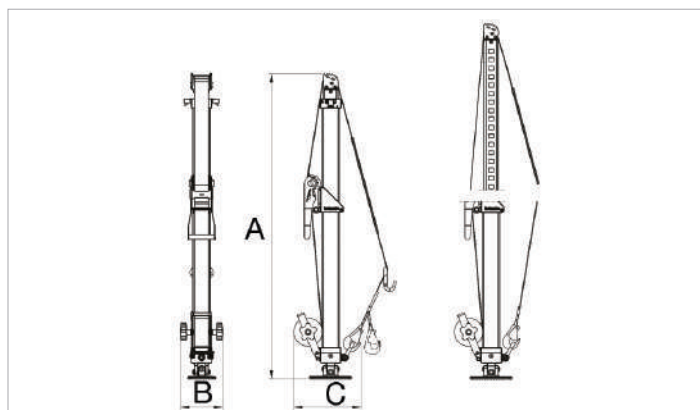
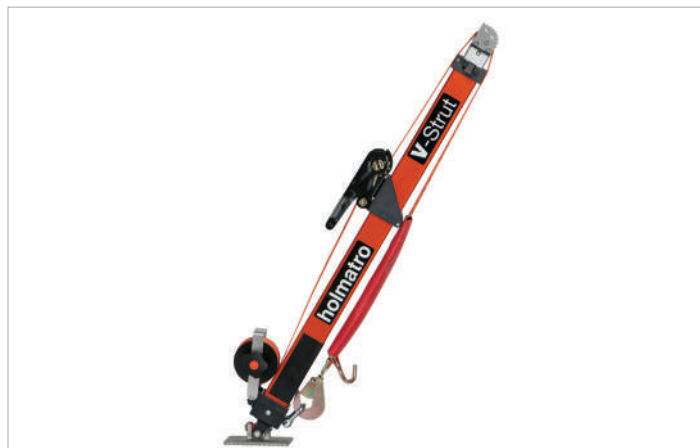
# V-Strut | Vehicle Stabilization Strut

### Specifications

article number		150.062.158
model		V-Strut
short description		Vehicle Stabilization Strut
min. effective length	mm	1080
max. effective length	mm	1800
max. axial load	kN/t	16 / 1.6
weight, ready for use	kg	7.9
dimensions (AxBxC)	mm	1080 x 149 x 210

### Accessories

Carrying/Storage Bag V-Strut	150.182.284
PowerShore Base Support Plate	150.011.519
Sheet Metal Knife	150.062.183
Hook Cluster Powershore	158.011.003



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# CERTIFICATE OF ASSESSMENT

**Report Reference:** SA34094-D4-ENEC-Amendment-2  
**File(s) Covered:** SA34094, SA10873  
**Issue date:** 2021/06/30

**Product:** Cutter

**Issued To:** Holmatro

**Trademark:** Holmatro

<u>Model/Type/Serial Ref.</u>	<u>Designations</u>	<u>Cutting Performance</u>
CU 5040	BC165I-13.1	1I 2I 3I 4J 5J
GCU 5040 EVO	BC165I-19.2	1I 2I 3I 4J 5J
GCU 5040 EVO 3	BC165I-18.8	1I 2I 3I 4J 5J
CU 5040 i	BC165I-13.2	1I 2I 3I 4J 5J
GCU 5040 i EVO	BC165I-19.3	1I 2I 3I 4J 5J
GCU 5040 i EVO 3	BC165I-19.0	1I 2I 3I 4J 5J
PCU40	BC165I-19.0	1I 2I 3I 4J 5J
PCU40S	BC165I-19.0	1I 2I 3I 4J 5J

**Ratings:** 720 bar (10,443 psi)

**Investigated By:** UL LLC  
333 Pfingsten Rd.  
Northbrook, IL 60062  
United States

**Standard(s):** EN 13204:2016

**Conclusion: \*** The submitted cutters, Model CU 5040, GCU 5040 EVO, GCU 5040 EVO 3, CU 5040 i, GCU 5040 i EVO, GCU 5040 i EVO 3, PCU40, and PCU40S did comply with the clauses as evaluated to in accordance with EN 13204. Refer to Report Reference No. SA34094-D4-ENEC-Original, SA34094-D4-ENEC-Amendment-1, and SA34094-D4-ENEC-Amendment-2 for complete evaluation details.

\* - Since EN 13204 does not include battery operated rescue tools in its scope, no agency can certify compliance of any battery operated rescue tool to EN 13204. We can, however, certify that the hydraulic portion of the subject tool(s) has been tested and found compliant with the relevant requirements found in EN 13204 for hydraulic rescue tools.

**Prepared By:**



Mike Simler  
Senior Project Engineer  
Michael.E.Simler@ul.com  
(847) 664-3495

**Reviewed By:**



Chris James  
Principal Engineer  
Christopher.James@ul.com  
(919) 549-1499



# CERTIFICATE OF ASSESSMENT

**Report Reference:** SA34094-D10-ENEC-Amendment-1  
**File(s) Covered:** SA34094, SA10873  
**Issue date:** 2020/07/20

**Product:** Spreader

**Issued To:** Holmatro

**Trademark:** Holmatro

**Model/Type/Serial Ref:** Model PSP40

**Designations:** Model PSP40 = AS43/725-19.4  
Model PSP40CL = No Tool Designation Type \*\*  
Model PSP50 = AS54/725-21.0  
Model PSP51 = AS51/763-21.2  
Model PSP60 = BS62/820-25.0

**Ratings:** 720 bar (10,443 psi)

**Investigated By:** UL LLC  
333 Pfingsten Rd.  
Northbrook, IL 60062  
United States

**Standard(s):** EN 13204:2016

**Conclusion: \*** The submitted spreaders, Model PSP40, PSP40CL, PSP50, PSP51, and PSP60 did comply with the clauses as evaluated to in accordance with EN 13204. Refer to Report Reference No. SA34094-D10-ENEC-Original and SA34094-D10-ENEC-Amendment-1 for complete evaluation details.

\* - Since EN 13204 does not include battery operated rescue tools in its scope, no agency can certify compliance of any battery operated rescue tool to EN 13204. Prior evaluations of the hydraulic portion of the tools by other third party certification organizations are referenced in the applicable test report(s). UL LLC only evaluated the additional applicable clauses of EN 13204 for indicated model(s).

\*\* - Since the spreading distance and/or force falls outside the classification table type requirements, the Model PSP40CL cannot be designated as a spreader according to EN 13204. We can, however, certify that the hydraulic portion of the subject tool has been tested and found compliant with the relevant requirements of EN 13204 for hydraulic rescue tools.

**Prepared By:**



Mike Simler  
Senior Project Engineer  
Michael.E.Simler@ul.com  
(847) 664-3495

**Reviewed By:**



Chris James  
Principal Engineer  
Christopher.James@ul.com  
(919) 549-1499





# CERTIFICATE OF ASSESSMENT

**Report Reference:** SA34094-D9-ENEC-Amendment-1  
**File(s) Covered:** SA34094, SA10873  
**Issue date:** 2021/07/20

**Product:** Rams and Telescopic Rams

**Issued To:** Holmatro

**Trademark:** Holmatro

**Model/Type/Serial Ref:** Model PTR50

**Designation(s):**  
PRA40 = R136/215-14.2  
PRA50 = R136/407-17.9  
PTR40 = TR136/215-65/192-15.5  
PTR50 = TR136/405-65/382-19.9  
PTR51 = TR136/405-65/382-21.0

**Rating(s):** 540 bar (7,832 psi)

**Investigated By:** UL LLC  
333 Pfingsten Rd.  
Northbrook, IL 60062  
United States

**Standard(s):** EN 13204:2016

**Conclusion: \*** The submitted rams, Model PRA40, PRA50, PTR40, PTR50, and PTR51 did comply with the clauses as evaluated to in accordance with EN 13204. Refer to Report Reference No. SA34094-D9-ENEC-Original and SA34094-D9-ENEC-Amendment-1 for complete evaluation details.

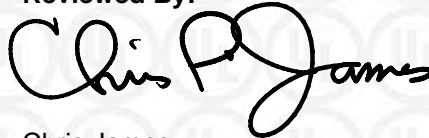
\* - Since EN 13204 does not include battery operated rescue tools in its scope, no agency can certify compliance of any battery operated rescue tool to EN 13204. We can, however, certify that the hydraulic portion of the subject tool(s) has been tested and found compliant with the relevant requirements found in EN 13204 for hydraulic rescue tools.

**Prepared By:**



Mike Simler  
Senior Project Engineer  
Michael.E.Simler@ul.com  
(847) 664-3495

**Reviewed By:**



Chris James  
Principal Engineer  
Christopher.James@ul.com  
(919) 549-1499



**Holmatro Rescue Equipment B.V.**  
Zalmweg 30 - P.O. Box 33  
4940 AA Raamsdonksveer  
Netherlands

T +31 (0)162 589 200  
E [rescue@holmatro.com](mailto:rescue@holmatro.com)  
[holmatro.com](http://holmatro.com)

Bank: Rabobank Amerstreek  
Account no: 31.49.76.523  
IBAN: NL75 RABO 0314 9765 23  
BIC: RABONL2U  
VAT: NL0057.66.667.B01  
Registration no: 18118682

## THE UNDERSIGNED

**HOLMATRO RESCUE EQUIPMENT B.V.**, a private company with limited liability, incorporated and existing under the laws of the Netherlands, having its registered office at (4941 VX) Raamsdonksveer, the Netherlands, at the Zalmweg 30, hereby duly represented by its director Bert Willems (hereafter 'Holmatro');

### HEREBY DECLARES THE FOLLOWING:

At the date of signing of this declaration :

SOLUTIONS FOR LIFE S.R.L.

Address: MD-2023, str. Negresteni nr. 9, ap. 11, Chisinau, Republica Moldova

is an exclusive distributor for the marketing, selling and servicing of Holmatro rescue tools in Moldova

The distributor is authorized to sell these Holmatro products in Moldova.

The dealer may provide its customers with a copy of this declaration.

Signed for true and correct at Raamsdonksveer 22<sup>nd</sup> February 2024

**Holmatro Rescue Equipment B.V.**  
P.O. Box 33, 4940 AA Raamsdonksveer  
The Netherlands  
Tel.: +31(0)162-589200, Fax: +31(0)162-522482  
[www.holmatro.com](http://www.holmatro.com)



Bert Willems  
CCO Rescue  
Holmatro Group

## Rescue equipment

Holmatro Netherlands  
Zalmweg 30 - Postbus 33  
4940 AA Raamsdonksveer  
Nederland

T +31 (0)162 58 92 00  
F +31 (0)162 52 24 82  
E [rescue@holmatro.com](mailto:rescue@holmatro.com)  
I [www.holmatro.com](http://www.holmatro.com)

Bank: Rabobank  
Account no: 31.49.76.523  
IBAN: NL75RABO0314976523  
BIC: RABONL2U  
BTW: NL0057.66.667.B01  
Registratienr.: 18118682

### DECLARATION OF EC-CONFORMITY


According to Directive 2006/42/EC

We, **Holmatro Industrial Equipment B.V.**  
**Holmatro Rescue Equipment B.V.**

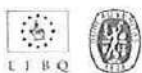
Postbus 33,  
4940 AA Raamsdonksveer, The Netherlands

Declare under our sole responsibility that products (to be) supplied by Holmatro in the European Community, if applicable, confirm with the provisions of the Machine Directive and other relative Directives at the time of supply.

The Netherlands, Raamsdonksveer  
25-04-2022

  
Holmatro, Quality department  
Hans Muste,  
QHSE Manager

**Holmatro Rescue Equipment B.V.**  
P.O. Box 33, 4940 AA Raamsdonksveer  
The Netherlands  
Tel: +31(0)162-589200, Fax: +31(0)162-522482  
[www.holmatro.com](http://www.holmatro.com)



Inspectoratul General pentru Situații de Urgență  
2028, MOLDOVA, mun. Chișinău, mun. Chișinău, str. Gh. Asachi, 69

Subject : warranty certificate/declaration for 3 sets.

Holmatro Rescue Equipment BV (hereafter Holmatro') guarantees good and safe operation of the rescue equipment, support tools, accessories and parts delivered, conforming to the specifications as contained in the agreement(s) to supply the above-mentioned products for a period of 18 months following the date as shown on the invoice.

Warranty certificate/declaration for 3 sets with this configuration:

Equipment	Art. no.	Quantity
PCU 40	151.002.425	1
PSP 40	151.002.432	1
PTR40	151.002.438	1
PBPA287	151.000.583	6
PBCH1	151.000.629	1
PBCH3	151.000.632	3
DCPC1	151.000.503	3
T1	151.001.787	1
V-strut	150.062.158	2

The Buyer must report visible shortcomings in writing to Holmatro or a local Holmatro dealer within 14 days after receipt of the defective product and in the event of non-visible shortcomings within 3 days after discovery in instances where liability towards Holmatro lapses. The Buyer is obliged to cease all operation, working, processing or installation activities involving the defective product as soon as a shortcoming has been identified.

The Buyer must forward the defective product to Holmatro or a local Holmatro dealer upon request and free of carriage charges. Failure to do so shall result in Holmatro's liability lapsing.

If a claim should be submitted during the guarantee period in a timely and correct fashion and in accordance with the stipulations concerning the guarantee and Holmatro should be of the opinion that it has been adequately demonstrated that the product does not function properly Holmatro shall decide whether to replace the defective product by return post or to repair such. The replaced or repaired product shall be sent to the address from which the defective product has been received at the expense of Holmatro.

This guarantee does not apply:



- to parts that are subject to normal wear and tear, such as parts that are subject to wear, consumables and, with regards to hydraulic equipment and pumps, all seal rings, plunger blocks, couplings and blades;
- in the event of damage incurred during transport;
- in the event of damage caused through repairs carried out by a dealer or maintenance organisation not authorised by Holmatro;
- in the event of damage caused by usage of non-original Holmatro parts;
- in the event of damage caused, in the opinion of Holmatro, by incorrect maintenance or failure to have maintenance performed or rust;
- in the event of the product being used for purposes other than it is intended for;
- if the usage and maintenance instructions as provided by Holmatro are not correctly observed;

If Holmatro delivers products to a Buyer that Holmatro has obtained from another supplier or suppliers, Holmatro can under no circumstances be held liable by the Buyer beyond the liability that Holmatro can in turn hold its supplier(s) to. Holmatro shall send the relevant guarantee conditions to the Buyer upon request.

Holmatro cannot be held liable for any direct or indirect damage of any nature whatsoever suffered by the Buyer or a third party resulting from the usage or application of Holmatro products, with the exception of intentional or gross error committed by Holmatro itself.



**Edwin Haarselhorst**

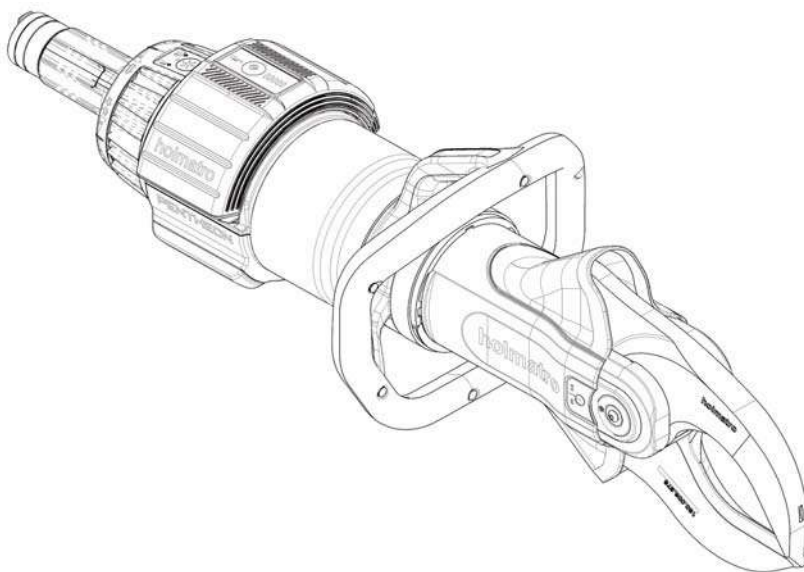
**HOLMATRO RESCUE EQUIPMENT B.V.**  
P.O. Box 33, 4940 AA Raamsdonksveer  
The Netherlands  
Tel.: +31(0)162-589200, Fax: +31(0)162-522482  
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Regional Manager  
Rescue Equipment | Holmatro Netherlands

*Available on: Monday to Thursday*

## PCU

Handleiding	NL
Manual	EN
Mode d'emploi	FR
Betriebsanleitung	DE
Manual	ES
Manual	PT
手册	ZH



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**ISO 9001**  
CERTIFIED

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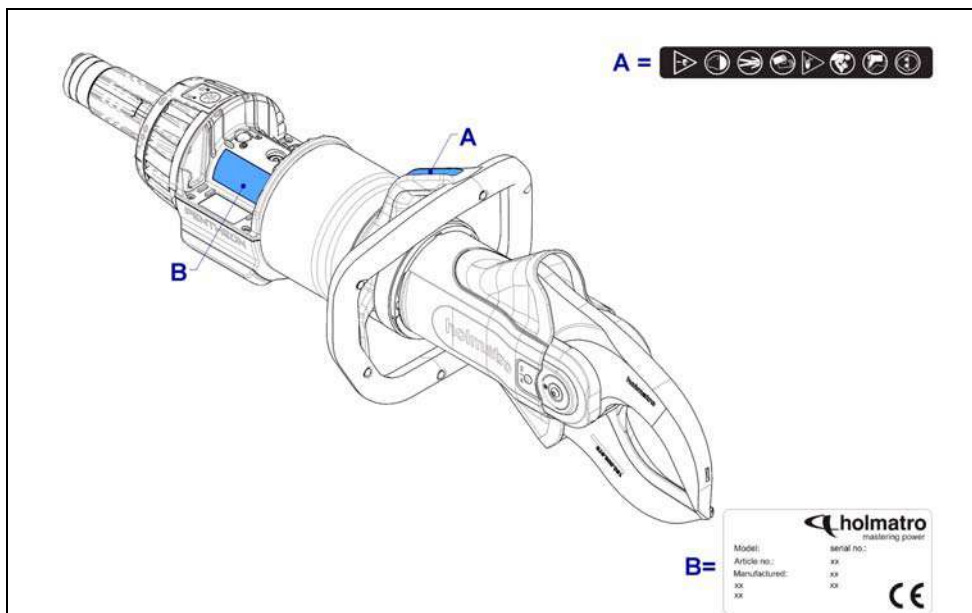


Fig. 1

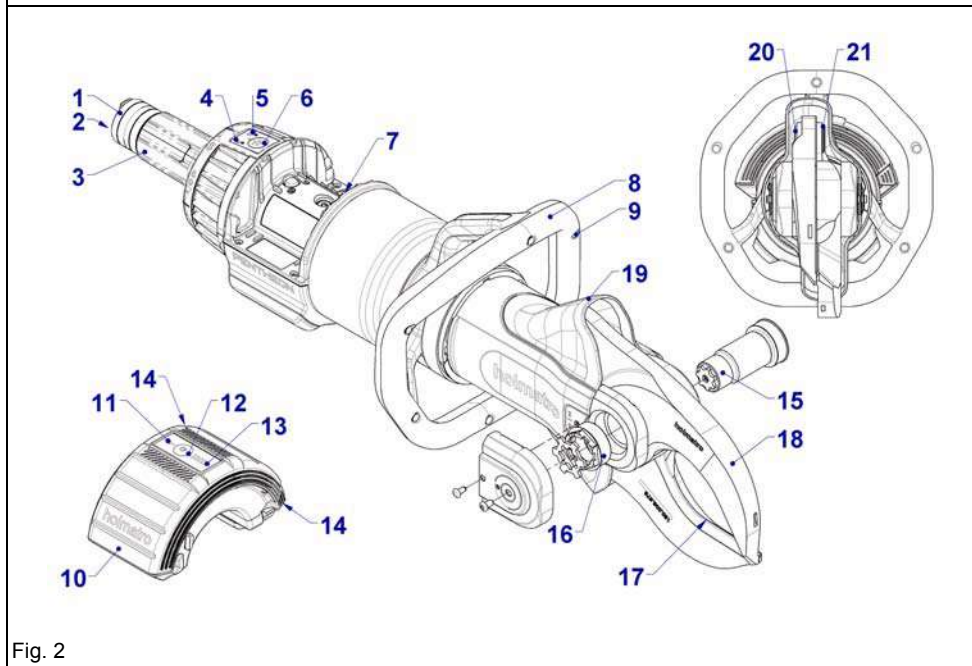


Fig. 2

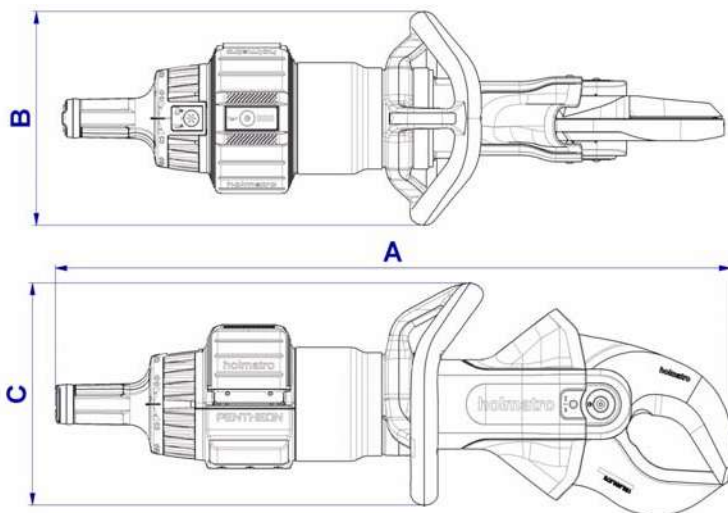


Fig. 3

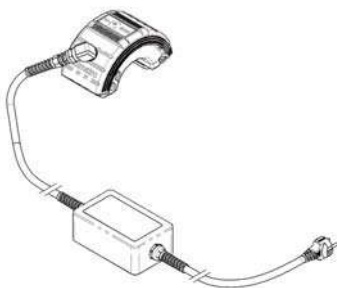


Fig. 4

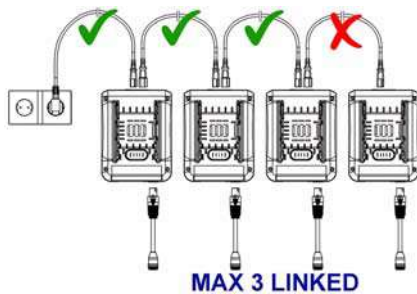


Fig. 5

# 1 Introduction

## 1.1 Disclaimer

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## 1.2 About this manual

The original instructions in this manual are written in English. Other language versions of this manual are a translation of the original instructions.

## 1.3 Definitions

System:	the assembly of power source, optional power cable(s) and tool(s).
Battery pack:	device that supplies electric current and voltage.
Tool:	hydraulic device such as a cutter, spreader, combi tool, ram or cylinder.
Equipment:	tool(s), cable(s), battery pack or accessories.
Mains connector:	device that transforms and supplies electric current and voltage.
Charger / battery charger:	an electronic device for charging a rechargeable battery pack.

## 1.4 General

Congratulations on your purchase of this Holmatro product. This user manual provides instructions on the operation, maintenance, malfunctions and safety of the equipment concerned. Safety regulations for the use of a complete Holmatro system are also described in this user manual. Illustrations in this user manual can differ slightly, depending on the model.

Everyone involved in putting the equipment into operation, using it, maintaining it and solving malfunctions must have read and understood this user manual, particularly the safety regulations.

To prevent errors of operation and ensure that the equipment works trouble-free, the user manuals must always be available to the operator.

## 1.5 Application

This product is part of the equipment intended for use by emergency services, to move or remove structural parts of vehicles or structures.

### 1.5.1 System requirements

Only use this tool with the prescribed type of battery pack, or with the Holmatro mains connector. In case of doubt about the compatibility of the system, always consult the Holmatro dealer.

## 1.6 Qualified personnel

The system may only be operated by people trained in its use. Always obey local legislation, safety and environmental regulations. Repair work may only be performed by a Holmatro Certified Technician.

## 1.7 Guarantee

Refer to the general terms and conditions of sale for the guarantee conditions, available from your Holmatro dealer on request.

Holmatro draws your attention to the fact that every guarantee on your piece of equipment or system will lapse and that you must indemnify Holmatro against any possible product liability and responsibility if:

- service and maintenance are not carried out strictly in accordance with the instructions, repairs are not performed by a Holmatro Certified Technician or are performed without prior written consent;
- self-made changes, structural changes, deactivation of safety devices, injudicious adjustment of hydraulics and faulty repairs have been carried out;
- non-genuine Holmatro parts or lubricants other than the types prescribed are used;
- the piece of equipment or the system is used injudiciously, through errors of operation, improperly, negligently or not in accordance with its nature and/or purpose.

## 1.8 Declaration of Conformity

The equipment is CE certified. It means that the equipment complies with the essential requirements concerning safety. The original Declaration of Conformity is supplied with the equipment.

The standards and directives that have been taken into consideration in the design are listed in the section Technical Specifications in this document.

# 2 Safety regulations

## 2.1 Explanation of the symbols used in this manual

In this manual the symbols below are used to indicate possible dangers.



### **DANGER**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



### **WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



### **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



### **NOTICE**

Is used to address practices not related to physical injury which, if not avoided, may result in property damage.



### **NOTE**

Emphasizes important information for optimal product use. This symbol is displayed in the user manual with all regulations related to product use or maintenance.

Always adhere to these regulations and to the locally prevailing safety regulations, and proceed very carefully.

Inform all people involved in the activities of the operation about these safety regulations.

## **2.2 Model plate and CE marking on the equipment**

Refer to Fig. 1.









All pictograms attached to the equipment pertaining to safety and danger must be complied with and remain clearly legible.



### **WARNING**

Not following these instructions can result in serious personal injury, fatal accident, damage to the system or consequential loss.



Pos.	Type of mark	Description	Part no.
A		<b>WARNING</b> Danger of cutting or pinching parts of the body.	921.000.084.
		<b>NOTE</b> Read the user manual before use.	
		<b>DANGER</b> Danger of crushing parts of the body.	
		<b>WARNING</b> Wear safety shoes with good ankle support and toe protection.	
		<b>WARNING</b> Wear safety gloves.	
		<b>WARNING</b> Wear safety clothing for the entire body with reflective material.	
		<b>WARNING</b> Wear safety goggles (or full face shield).	
		<b>WARNING</b> Wear a helmet.	

Pos.	Type of mark	Description	Part no.
B	Model plate	Model plate with: <ul style="list-style-type: none"> <li>• Model indication</li> <li>• Serial number</li> <li>• Date of construction</li> <li>• CE marking</li> </ul>	Please contact Holmatro.

### 2.3 General safety regulations

- Use this equipment solely for the activities for which it was designed. If you are in doubt or uncertain, always consult your Holmatro dealer.
- Replace illegible safety symbols, pictograms and information labels with identical ones, available from your Holmatro dealer.
- Varnished, plastic and rubber parts are not resistant to corrosive acid or liquid. Except for electrical parts, rinse parts that have come into contact with corrosive acid or liquid with a lot of water. Consult your Holmatro dealer for a resistance list.
- Protect equipment against sparks during welding or grinding activities.
- Avoid an unhealthy posture while working. It can result in physical complaints.
- Follow the inspection and maintenance instructions.
- Conversion of the piece of equipment or the system may only be performed by a Holmatro Certified Technician. In case of a conversion, retain the original manual and the conversion manual.
- Use only genuine Holmatro parts and maintenance products prescribed by Holmatro.

### 2.4 Personal safety

Rescue personnel must wear all personal means of protection as prescribed in the standard work procedure. Negligent use of personal means of protection can result in serious injury. During use wear at least the following personal means of protection:

- Helmet;
- Safety goggles or full face shield;
- Safety gloves;
- Safety clothing for the entire body with reflective material;
- Safety shoes with good ankle support and toe protection;
- Mask with filter for use when cutting glass or certain plastics.

### 2.5 Safety regulations with respect to the equipment

- Never change the setting of any safety device.
- Store the cutter with the blade tips over each other to prevent injury.
- Make sure a protective flexible shield is inserted between the place where the cutting or spreading will be made and the victim(s).
- Make sure the material to be cut is placed as deeply as possible in the blade opening.
- Avoid cutting with the blade tips.
- Avoid contact with the blade tips and cutting edges of the blades so you do not injure yourself.
- Never cut sections that are under hydraulic, pneumatic, electrical or mechanical pressure.
- If the blades are not perpendicular to the material to be cut, the blades may separate. This is a dangerous situation that can result in serious damage to the equipment and serious injury. Stop immediately if the blades separate.

## 2.6 General safety regulations with respect to battery packs



### WARNING

- Avoid explosive gases, open flames and sparks. Explosion risk.
- Do not put the battery pack in water longer than 30 minutes and deeper than 1 meter.
- Avoid short-circuiting the battery pack. Make sure that the connections do not come in contact with metal objects.
- Do not charge a wet battery pack.
- Do not use damaged battery packs. Contact your Holmatro dealer for instructions.
- Do not let the battery pack fall. Do not hit, crush or throw the battery pack.
- Do not make direct solder connections on the battery pack.
- Do not open the battery pack.
- Protect the battery pack against direct solar radiation and other sources of heat.
- Do not put the battery pack into a microwave or a high-pressure container.
- When not in use, store the battery pack in a dry place, locked up securely and out of reach of children.
- When the battery pack is discarded, always observe the local regulations and/or the instructions in this manual.



### NOTICE

- Use the battery pack only with the specified battery charger.
- Use the battery pack only in the original application.
- Store Battery packs in well-ventilated, cool rooms. The maximum storage temperature of 40 °C (104 °F) may not be exceeded.
- Do not put battery packs into direct sunlight during long-term storage.
- Persons who are not able to use the device in a safe way because of their physical, sensory or mental competence, or because of their inexperience, should not use the battery pack without guidance or instruction from a skilled person.
- Make sure children do not play with the battery pack.

## 2.7 Safety regulations with respect to Li-Ion battery packs

Li-Ion battery packs are entirely different from NiCad and NiMH battery packs and must be handled differently. Before and after every use of your Li-Ion battery pack, inspect the battery pack carefully to ensure no physical damage is evident, such as loose plugs and wires. Such signs often indicate that a problem exists with the battery pack that could lead to failure.

## 2.8 Safety regulations with respect to battery chargers

- Read all instructions carefully before you use the battery charger.
- Only use a power supply with the correct voltage and frequency. Refer to the electrical specifications on the model plate.
- Use the battery charger only indoors.
- Use protection for the battery charger against damp or wet conditions.
- Do not use the power cord to move the battery charger. Never pull the power cord to disconnect the battery charger from the power outlet. Keep the power cord away from heat, oil and sharp edges.
- Do not use the battery charger on a highly inflammable surface or in an inflammable environment.
- Do not charge a wet battery pack.

- When not in use, store the battery charger in a dry place, locked up securely and out of reach of children.
- Persons who are not able to use the battery charger in a safe manner, due to their physical, sensory or mental condition, or due to their inexperience, must not use the battery charger without the supervision or instruction from a skilled person.
- Strictly observe the minimum and the maximum charging temperature. See section 5.2.
- Do not use a damaged battery charger.
- Do not disassemble the battery charger.
- Risk of short-circuit: use protection for the battery charger against metal objects.
- Do not connect more than 3 mains chargers by daisy chain cables. Refer to Fig. 5.

## 2.9 Safety regulations with respect to mains connectors



### WARNING

- Read all instructions carefully before you use the mains connector.
- Only plug the mains connector into a power supply with the correct voltage and frequency. Refer to the electrical specifications on the model plate.
- Use protection for the battery charger against damp or wet conditions.
- Do not use the power cord to move the mains connector. Do not pull the cord to disconnect the mains connector from the power outlet. Keep the cord away from heat, oil and sharp edges.
- Do not use the mains connector on a highly flammable surface or in an flammable environment.
- When not in use, store the mains connector in a dry place, locked up securely and out of reach of children.
- Persons who are not able to use the mains connector in a safe manner, due to their physical, sensory or mental condition, or due to their inexperience, must not use the mains connector without the supervision or instruction from a skilled person.
- Do not use a damaged mains connector.
- Do not disassemble the mains connector.
- Risk of short-circuit: use protection for the mains connector against metal objects.
- Only use the mains connector for powering Holmatro Battery tools.

## 2.10 Safety regulations with respect to the operation of the system

- Make a risk assessment of the procedure before you start work (EN-ISO 12100).
- Keep bystanders at a distance and be extra careful in the vicinity of people and animals.
- Make sure the work area is clearly laid out and has good lighting.
- Avoid stress and work in a structured way. This reduces the risk of errors, combinations of dangers and accidents.
- Before use, check the equipment for damage. Do not use the equipment if it is not in good condition and consult your Holmatro dealer.
- Stand on a stable base and use both hands to hold the equipment.
- Hold the equipment only by its carrying handle and the deadman's handle.
- During operation, never get between the object and the equipment.
- Monitor the situation of the equipment and the structure continuously while using the equipment.
- Parts of an object that could fly off must be secured.
- Use only genuine Holmatro accessories and ensure that they have been attached correctly.
- Make sure that parts of the body never come between moving parts. There is a risk that parts of the body may be crushed or cut.

- Make sure that the deadman's handle does not become jammed.
- Stop immediately if the system makes strange noises or displays aberrant behaviour.
- Stop immediately if the equipment leaks oil. Oil escaping under pressure can penetrate the skin and cause serious injury. Go immediately to a hospital with a person who is injected with oil for medical help. Give a specification of the oil to the medical staff.
- Return inactive equipment immediately to the tool station.
- Always adhere to the safety regulations that apply to other equipment that is used in the operation.

### 2.11 Safety regulations with respect to maintenance

- Wear personal means of protection when performing maintenance tasks.
- Never work in a way that could jeopardize safety.
- Make sure that the equipment cannot roll away or tip over. The control and drive must be switched off and safeguarded against unexpected activation.
- Make sure that moving parts do not move unexpectedly.
- Used or leaked fluids, and any other products consumed during the activities, must be collected and disposed of in an environmentally responsible way.

## 3 Description

### 3.1 Equipment

The cutter is one of the pieces of rescue equipment that makes it possible to reach victims. The cutter is used during rescue operations to cut through structural elements without removing certain sections. It can also notch material at particular places in order to weaken the construction. On the front of the tool there are two blades that make a scissor movement. The high hydraulic pressure that is used means that this tool can apply large forces.

The cutter is produced as a hand tool that can be operated by one person. The tool can be used independently because of the battery-driven hydraulic system.

The battery energizes the electric motor. The electric motor operates a multi-stage piston pump that can build up a maximum system pressure of 720 bar. Stage switching is electronically controlled for maximum speed at the required pressure.



#### NOTE

The tool and battery pack can be put fully into fresh or salt water at a maximum depth of 1 meter for 30 minutes.

### 3.2 Type designation

Example: PCU30CL





Digit	Example	Description
1-3	PCU	P = Pentheon CU = Cutter
4-5	30	Type indication
6-7	CL	Compact Light

### 3.3 Product identification

Refer to Fig. 2.

- |  |  |
|--|--|
| 1 Dust cap                               | 12 On/off switch                                       |
| 2 On-tool charge connector               | 13 State Of Charge (SOC) indicator (see section 3.6.2) |
| 3 Deadman's handle                       | 14 Battery pack lock                                   |
| 4 Tool temperature indicator             | 15 Centre bolt   |
| 5 Maximum force indicator                | 16 Centre nut and lock ring                            |
| 6 Light switch for LEDs                  | 17 Blade cutting edge                                  |
| 7 Battery pack fitting / adapter fitting | 18 Blade   |
| 8 Carrying handle                        | 19 Protective sleeve                                   |
| 9 LEDs                                   | 20 Hinge pin   |
| 10 Battery pack                          | 21 Snap ring   |
| 11 Battery temperature indicator         |  |

### 3.4 User interface of the tool

	User interface	Color	Condition	Action / Solution
1. on/off switch for LEDs in carrying handle.  2. Maximum force reached when green.  3. Temperature of the tool.			Color: red, flashing The tool is too hot.	Stop the tool. Cool down the tool.
			Color: red The tool is almost too hot.	Slow down the operation.
			Color: green The temperature is ok.	Normal operation

### 3.5 Technical specifications

Description	Unit	General
max. working pressure	(bar/MPa)	720 / 72
	psi	10443
hydraulic oil type	-	ISO-L HV VG 36
vibration level	m/s <sup>2</sup>	< 2,5
protection rate	-	IP57 <sup>1</sup>
sound emission @ 1m/3.25ft	dB(A)	75
sound emission @ 4m/13ft	dB(A)	66
temperature range	°C	-20 + 55
	°F	-4 + 131
directives	-	2006/42/EC, 2014/30/EU

1. The tool and battery pack can be put fully into in fresh, salty and dirty water at a maximum depth of 1 meter for 30 minutes.


Description	Unit	PCU30CL	PCU40	PCU50	PCU60
max. cutting opening	mm	170	170	182	205
	in	6.7	6.7	7.2	8.1

Description	Unit	PCU30CL	PCU40	PCU50	PCU60
max. cutting force	(kN/t)	549 / 56	764 / 77.9	1389 / 141.6	1765 / 180
	lbf	123420	171754	312260	396788
weight, ready for use	kg	15.3	19	21.5	25
	lb	33.7	41.9	47.4	55.1
dimensions (AxBxC) Refer to Fig. 3	mm	811 x 270 x 288	832 x 270 x 300	892 x 270 x 274	947 x 270 x 331
	in	31.9 x 10.6 x 11.3	32.8 x 10.6 x 11.8	35.1 x 10.6 x 10.8	37.3 x 10.6 x 13
EN 13204 classification	-	BC150F-15.3	BC165I-19	BC165K-21.5	CC205K-25
EN 13204 cutting capacity	-	1H 2G 3G 4F 5G refer to Fig. 12	1I 2I 3I 4J 5J refer to Fig. 13	1K 2K 3K 4K 5K refer to Fig. 14	1K 2K 3K 4K 5K refer to Fig. 14
NFPA 1936 cutting capacity	-	A6 B5 C6 D6 E6 F2 refer to Fig. 15	A7 B7 C6 D7 E8 F3 refer to Fig. 15	A8 B8 C7 D9 E9 F4 refer to Fig. 15	A9 B9 C9 D9 E9 F4 refer to Fig. 15

### 3.6 User interface of the battery

#### 3.6.1 Available information on the battery

The Battery Management System (BMS) protects the battery pack against internal damage.

	LEDs for State Of Charge indication. Refer to 3.6.2
	On/off switch for tool. Refer to 3.6.3
	LED for temperature indication. Refer to 3.6.4



3.6.2 LEDs for State Of Charge indication






















The battery pack has a LED indicator that indicates the approximate state of charge of the battery.



NOTE


The state of health of the battery pack is displayed on the charger.

Each LED accounts for approximately 20% of the full charge.

	Battery discharging			Battery on / connected with charger.			
Tool OFF, All LEDs: off 		color: green	80-100%	Battery not charging color: green		Battery charging color: green	
		color: green	60-80%		100%		100%
		color: green	40-60%		80-100%		80-100%
Error. all LEDs: red, flashing <sup>1</sup> 		color: orange	20-40%		60-80%		60-80%
		color: red	10-20%		40-60%		40-60%
		color: red, flashing	<10%		20-40%		20-40%
			0%		0-20%		0-20%

1. When all LEDs are red and flashing:
1. Push the on/off switch to stop the battery.
  2. Push the on/off switch to start the battery.
  3. Charge the battery 24 hours.
  4. If this condition stays, contact a Holmatro Certified Technician.

3.6.3 On/off switch

	Push this button to start the tool. Push this button again to stop the tool. The motor of the tool is energized when the deadman's handle is operated.
--	---








NOTE

When the tool is started, the LEDs of the carrying handle come on by default.

3.6.4 Temperature of the battery pack

The Battery Management System (BMS) protects the battery pack against internal damage.

Color	Condition	Tool	Action / Solution
	Color: green The temperature is ok	OK	Use the battery pack
	Color: red The battery is almost too hot. Charge > 40°C (104°F), discharge > 60°C (140°F)	OK	Can be charged or used. Be prepared to cool or replace the battery.
	Color: red, flashing The battery is too hot. Charge > 45°C (113°F), discharge > 65°C (149°F)	stopped	Cool or replace the battery.
	Color: blue The battery is almost too cold. Charge < 5°C (41°F), discharge < -15°C (5°F)	OK	Can be charged or used. The battery will warm up itself.
	Color: blue, flashing The battery is too cold. Charge < 0°C (32°F), discharge < -20°C (-4°F)	stopped	Warm up or replace the battery.

### 3.7 Technical specifications battery pack

Description	Unit	PBPA287
voltage	VDC	28
capacity	Ah	7
energy	Wh	176
battery type		Li-Ion
protection rate	-	IP67
weight, ready for use	kg	1.5
	lb	3.3
temperature range	°C	-20 + 55
	°F	-4 + 131

### 3.8 Safety features of the battery pack

The battery pack is protected against:

- Short-circuit
- Deep discharge
- Over- and under-voltage (of the battery pack and the individual cells)
- Over-current during charging and discharging
- Overcharging
- Over temperature (of individual cells and electronics)
- Charging and discharging outside the allowed temperature range

### 3.9 Mains Connector

Refer to Fig. 4.

The mains connector is a special power pack. It can replace the battery of a power tool by the mains supply. The parameters of the mains connector are almost equivalent to the regular battery. It has the on/off switch and the LED indication shows the status of the mains connector.

The mains connector is protected against:

- Short-circuit
- Over temperature

### 3.10 Accessories Pentheon system

Description	model		
Battery pack	PBPA287	standard	151.000.583
	PBPA287	China	151.000.854

Description	model	plug type	
Battery charger	PBCH1	EU	151.000.629
	PBCH2	US	151.000.742
	PBCH3	worldwide	151.000.632
	PBCH4	JP	151.000.630
	PBCH5	UK	151.000.631
	PBCH6	KR	151.001.209
	PBCH7	CN	151.001.518
	PBCH8	IN	151.001.519
Mains connector	PMC1	EU	151.000.633
	PMC2	US	151.000.743
	PMC4	JP	151.000.634
	PMC5	UK	151.000.635
	PMC6	KR	151.001.304
	PMC7	CN	151.001.642
	PMC8	IN	151.001.643
	PMC9	AU	151.001.826
	PMC10	BR	151.001.830
On-tool charge cable	POTC1	worldwide	151.000.499
Daisy chain power cable	DCPC1	worldwide	151.000.503

## 4 Preparation for first use

### 4.1 General

- Examine the equipment for completeness and damage. Do not use the equipment if it is damaged; in that case contact the Holmatro dealer.
- Examine the operation of the deadman's handle. when released, the deadman's handle must return to the neutral position.
- Before first use, charge the battery pack fully. Refer to section 5.2.
- Put the battery pack in the battery pack fitting / adapter fitting until the battery pack locks.
- Examine the battery pack to make sure that the lock mechanism operates correctly.

## 5 Operation

### 5.1 System operation

In a battery tool the hydraulic pump is integrated. An electric motor operates the hydraulic pump. The electric motor is energized by a battery pack or from an external electric power source. This pump displaces hydraulic oil and can build up pressure. The hydraulic pump is connected directly to the hydraulic cylinder.

The hydraulic cylinder contains a plunger that can move axially. If the cylinder is filled with oil from the bottom, the piston moves out. If the cylinder is filled from the top, the piston moves in. The direction in which the piston moves is controlled by the so-called deadman's handle. The deadman's handle can be rotated by the user to control the movement. If the deadman's handle is released, it returns automatically to the neutral position and stops the movement of the tool.

In tools like cutters, spreaders and combi tools the movement of the piston drives a mechanism to make a cutting or spreading movement.

### 5.2 Charging the battery pack

- Read the instructions of the battery charger before you charge the battery pack.
- Only use one of the prescribed Holmatro battery chargers to charge the battery pack.
- Best results and longest life of the battery pack are achieved when the battery pack is charged in a dry environment at a temperature between 18 °C and 24 °C (64 °F and 75 °F).
- The SOC indicator on the battery pack shows the state of charge of the battery pack.
- The maximum capacity of the battery pack is achieved when it has been charged and discharged some times.
- Always charge the battery pack, also if it has been used for a short time.
- The battery pack can stay connected to the battery charger for an indefinite period of time, because it is protected against overcharging.



#### NOTICE

When the battery pack is not in use, it is advised to keep it connected to the battery charger (connected to a power source) at all times. When the battery pack is full, the battery charger automatically switches on and off at regular intervals to keep the battery level at 100%.

After deep discharge of the battery pack, charge the battery pack for 24 hours. If the battery pack is not completely charged after 24 hours, contact your local Holmatro dealer.

### 5.3 Installing the battery pack

Refer to Fig. 7.

- Put the battery pack in the battery pack fitting / adapter fitting until the battery pack locks.



### 5.4 Connecting to an external power source

See Fig. 4.

Apart from using the battery pack, the tool can also be connected to the mains by the special mains connector. Use only the original mains connector for this purpose.

- Slide the adapter of the mains connector in the battery pack fitting / adapter fitting until the battery pack lock snaps tight.
- Insert the plug of the mains connector into the appropriate power outlet.

5.5 Starting the tool

- Push the on/off switch of the battery to start the tool. The LEDs for the temperature, State of Charge and the LEDs of the tool will come on.
- The tool operates if the deadman's handle is turned to position  or .





NOTICE

When the tool is not used for 10 minutes the battery pack will stop. Push the on/off switch to start the tool again.

5.6 Operate the deadman's handle

The deadman's handle is used to determine the movement of the plunger(s). If the deadman's handle is released, it returns automatically to the neutral position and stops the hydraulic pump. The tool stops. In the initial movement of the deadman's handle the motor operates slowly. Movement of the tool will be slow for maximum control. When the deadman's handle is rotated further the motor will operate at maximum speed.

Pressure is built up in the tool. Return oil from the tool flows back to the pump without pressure.

	Hold the deadman's handle in this position to extend / open the tool.
	Hold the deadman's handle in this position to retract / close the tool.



NOTICE

The pump will stop at maximum pressure to save energy. The maximum force indicator comes on and a beeper operates.

- Release the deadman's handle.
- Rotate the deadman's handle shortly in the opposite direction. You can use the tool again.
- Operate the deadman's handle again into the necessary direction to operate the tool.

5.7 Operating the light switch

On the tool is a light switch for the integrated LED lights.

- Push the light switch to stop or start the LED lights.



NOTICE

When the tool starts, the LEDs come on by default.

6 Use

6.1 General

The equipment of a rescue system must always be ready for use. That means the equipment must be checked and inspected directly after use, before it is put away.

Before use, always check the State Of Charge of the battery pack. See section 3.6.2.



### **WARNING**

Make sure you are up to date on all safety regulations and that you have mastered the use of all equipment of the system you are going to work with.

## **6.2 Before use**

- Before use, always check the State Of Charge of the battery pack. See section 3.6.

## **6.3 During use**

### **6.3.1 Changing the battery pack**

The battery pack has a LED indicator that shows the approximate battery level (the State Of Charge).



### **CAUTION**

- Many cycles in a short time may cause the temperature to increase above allowed limits. The tool will work slower to prevent that the battery stops.
- Using the battery pack at temperatures above 45 °C (113 °F) decreases the life time of the battery pack.
- Stop the tool with the on/off switch.
- Remove the battery pack. Refer to Fig. 6.
- Put a new battery pack on the tool. Refer to Fig. 7.
- Start the tool with the on/off switch.



### **NOTICE**

It is highly recommended to have at least one fully charged spare battery pack available at all times.



### **NOTICE**

To protect the battery pack, the tool will stop as soon as the battery pack becomes empty. The tool can be fixated at that moment. To remove the tool it is best to replace the battery pack by a fully charged battery pack.

### **6.3.2 Tool movement**

The cutting blades close relatively quickly until they encounter resistance. Then the pump will build up the required pressure for the cutting action.



### **WARNING**

Take extreme care during tool movement. Because of the enormous power of the tool parts of the body can easily be crushed or pinched.



### **NOTE**

When the tool is put in water it is possible that it operates in safe mode:

- The motor operates at slow speed.
- The motor will not stop when you release the control handle or put into neutral position.

It is allowed to continue.

### 6.3.3 *Cutting*



#### **CAUTION**

Do not cut hardened fastenings, bolts, etc. because this can damage the blades.

1. Open the blades.
2. Place the tool with opened blades perpendicular to the object to be cut. Refer to Fig. 9.
3. Place the object to be cut as deep as possible in the cutting opening. Refer to Fig. 10.
4. Close the blades.



#### **WARNING**

Stop immediately if the blades are out of line. Danger of serious injury and of serious damage to the equipment. Refer to Fig. 9.

### 6.3.4 *Maximum force indicator*

Refer to 3.4, 2.

When the maximum pressure is reached, the tool stops automatically to save energy. The maximum force indicator comes on.

- Release the deadman's handle.
- Rotate the deadman's handle shortly in the opposite direction. You can use the tool again.
- Operate the deadman's handle again into the necessary direction to operate the tool.

### 6.3.5 *Environmental information*

- Under normal use, no leakage will occur. Therefore, there will be no contact with toxic substances inside the battery pack.
- Under normal use, no environmental hazard is present.

## 6.4 *After use*

### 6.4.1 *Inspection*

- Check the battery level. Recharge the battery pack, if necessary. See section 3.6.2.
- Check the tool for completeness, leaks and damage. Do not use the tool if it leaks or is damaged and contact the Holmatro dealer.
- Check the operation of the deadman's handle. The handle must return to the neutral position when you release it.
- Check that the carrying handle is firmly attached.
- Inspect the blades. Replace them if the damage is considerable.

### 6.4.2 *Shut down*

- Close the blades with the blade tips over each other to prevent injury. Do not fully close the blades so that the tool can be stored without pressure.
- Stop the tool.
- Remove the battery pack and put it in the battery charger.
- It is also possible to charge the battery on the tool with the on-tool charge cable.
- A battery pack can be put on the battery charger. It can also be connected via the on-tool charge cable. If these two functions are used, the battery pack on the tool is charged first.

### 6.4.3 Storing the battery pack



#### NOTICE

When the battery pack is not in use, it is advised to keep the battery pack connected to the battery charger (connected to a power source) at all times. When the battery pack is full, the battery charger automatically switches on and off at regular intervals to keep the battery level at 100%.

- Store the battery pack in a dry and well-ventilated area. The maximum storage temperature of 40 °C (104 °F) may not be exceeded.
- Make sure the equipment can not fall over during transport.

### 6.4.4 Cleaning and storage



#### NOTICE

If the tool has been used under water, you must clean the tool to make sure that the tool operates correctly.

#### After normal use

1. Clean the tool and any accessories before storage.
2. Dry the tool if it was used in wet conditions. Lubricate all exposed steel parts with a rust inhibitor and moisture repellant.
3. Store the tool in a dry and well-ventilated area.

#### After immersion

1. Remove the battery pack. Flush the tool, battery pack and accessories 5x with fresh, clean water.
2. If the tool has been used in muddy dirty or salty water, the covers must be removed to remove residual dirt.

Refer to Fig. 16

- i Remove the screws from the control handle ring. (A, 5x)
- ii Remove the control handle ring. (B) Do not disconnect wiring.
- iii Remove the screws from the top cover. (C, 8x)
- iv Remove the top cover. (D) Do not disconnect wiring.
- v Remove the screws from the bottom covers. (E, 6x)
- vi Remove the bottom covers. (F, 2x)
- vii Open the dust cap. (G)
3. Flush the inner parts with fresh clean water and remove dirt.
4. Remove water and dirt with compressed air.
5. Lubricate all exposed steel parts with a rust inhibitor and moisture repellant.
6. Let the tool, battery and accessories dry in the air at room temperature.
7. Install the covers:
  - i Install the bottom covers. (F, 2x)
  - ii Install the screws of the bottom cover. (E, 6x)
  - iii Install the top cover. (D)
  - iv Install the screws of the top cover. (C, 8x)
  - v Install the control handle ring. (B)
  - vi install the screws of the control handle ring. (A, 5x)
  - vii Close the dust cap. (G).
8. Store the tool in a dry and well-ventilated area.



## 7 Troubleshooting

### 7.1 General

Consult the Holmatro dealer if the listed solutions do not give the desired result, or in case of other problems. For malfunctions or repair, always specify the model and serial number of the equipment.



#### NOTICE

If the battery pack has to be returned to the dealer for repairs, make sure that the battery pack is packaged according to the specific instructions applicable for Li-Ion battery packs. See section 8.7.

### 7.2 The tool does not operate when the deadman's handle is operated

Possible cause	Solution
The battery condition is poor.	<ul style="list-style-type: none"> <li>Check the battery pack condition. See section 3.6.2.</li> <li>Replace the battery pack by a fully charged battery pack.</li> </ul>
The tool is not started.	Push the on/off switch. The LEDs should come on.
The battery pack is in the sleep mode. This occurs when the tool is not used for about 10 minutes.	To start the battery pack again: <ul style="list-style-type: none"> <li>Push the on/off switch.</li> </ul>
The electric motor does not operate.	Have it repaired by a Holmatro Certified Technician.
The temperature indicator of the tool flashes.	Refer to 3.4.
The temperature indicator of the battery flashes.	Refer to 3.4.
The internal sensors of the tool are dirty.	Clean the sensors. Refer to 6.4.4

### 7.3 The LEDs of the tool do not come on when the tool is started

Possible cause	Solution
The battery pack is not locked.	Remove the battery pack and put it in the tool again until the battery pack locks.
The battery pack is in the sleep mode. This occurs when tool is not used for about 10 minutes.	To start the battery pack again: <ul style="list-style-type: none"> <li>Push the on/off switch.</li> </ul>
The deadman's handle is not in neutral position.	Put deadman's handle in neutral position.

### 7.4 The useful operating time between the individual charging cycles of the battery pack is very short

Possible cause	Solution
The battery pack is worn out.	Replace the battery pack.

## 7.5 The deadman's handle is jammed or doesn't return automatically to the neutral position

Possible cause	Solution
The deadman's handle is damaged externally.	Have it repaired by a Holmatro Certified Technician.
The deadman's handle is faulty.	Have it repaired by a Holmatro Certified Technician.

## 7.6 The cutting is poor

Possible cause	Solution
The blades are damaged.	Sharpen or file the cutting edge of the blades in the correct shape.
The tightening torque of the centre bolt is incorrect.	Tighten the bolt to 50 Nm.

## 7.7 The motor operates at slow speed during or after the tool has been put into water

Possible cause	Solution
The electrical circuit has a temporary fault. The tool operates in safe mode.	Clean the tool fully. Refer to 6.4.4.

# 8 Maintenance

## 8.1 General

Proper preventive maintenance of the equipment preserves the operational safety and extends the life of the equipment. For malfunctions or repair, always specify the model and serial number of the equipment.



### CAUTION

When performing maintenance activities, always comply with the relevant safety regulations. Wear the prescribed personal protection equipment.

## 8.2 Dangerous substances



### CAUTION

Used or leaked fluids, and any other products consumed during the activities, must be collected and disposed of in an environmentally responsible way.

## 8.3 Maintenance materials

Application	Type of maintenance material	Amount
Steel parts	WD-40 preservative oil	As required
Hinge pins	Teflon lubricating oil	As required
Long-term preservation	Tectyl ML from Valvoline	As required

Contact the Holmatro dealer for information on spare parts.

8.4 Maintenance schedule

Object	Action	Time interval			
		After every use	Every month or after first 10 working hours	Every 3 months or after every 25 working hours	Yearly or after every 100 working hours
Battery pack	Check	x			
	Recharge	x		x	
Light	Check	x			Holmatro dealer maintenance <sup>1</sup> .
Blades	Check, clean, lubricate	x			
Snap ring of hinge pin	Check	x	x		
Centre bolt	Lubricate	x	x		
Hinge pin	Lubricate	x	x		
Carrying handle	Check		x		
Deadman's handle	Check	x			
On-tool charge cable	Check	x			

1. The equipment must be thoroughly inspected, checked, set and tested. We recommend to have this extensive maintenance performed by the Holmatro dealer (see also section 1.7).

8.5 Maintenance activities

8.5.1 General

- After every use:
  1. Check the battery pack for damage and function.
  2. If the battery pack is damaged or does not function correctly, replace the damaged battery pack.
  3. Check the operation of the unit.
  4. Check the unit for damage and leaks. If the unit doesn't work properly and/or leaks, have it repaired by a Holmatro Certified Technician.

8.5.2 Carrying handle

- Check the carrying handle for damage. Replace a damaged carrying handle.

8.5.3 Deadman's handle

- Check whether the deadman's handle returns to the neutral position.
- Check the operation of the deadman's handle. Have the Holmatro dealer repair the deadman's handle if it does not function properly.

8.5.4 Blades

See Fig. 11.

- Check the blades for damage. Have a Holmatro Certified Technician replace the blades when they are damaged or the blade tips are damaged or worn.
- Check whether the blades are straight. Have a Holmatro Certified Technician replace the blades if there is more than 0.6 mm (C) separation.

#### **8.5.5 Centre bolt**

See Fig. 11

- Check that the tightening torque of the centre bolt (B) is 50 Nm.
- Spray Teflon lubricating oil on and between the moving parts of the centre bolt (B) while the tool is opening and closing.



#### **CAUTION**

The centre bolt may not be removed. Contact a Holmatro Certified Technician.

#### **8.5.6 Hinge pins**

See Fig. 11.

- Spray Teflon lubricating oil on and between the moving parts of the hinge pins (A) while the tool is opening and closing.



#### **WARNING**

The hinge pins may not be removed.

#### **8.5.7 Snap rings of hinge pins**

See Fig. 11.

- Check that the snap rings of the hinge pins (A) are present and are not damaged.  
Have a Holmatro Certified Technician mount a new snap ring if it is missing or damaged.

### **8.6 Yearly dealer maintenance**

We recommend having the equipment inspected, checked, set and tested once a year by a Holmatro Certified Technician who has the appropriate knowledge and the necessary tools (see also section 1.7). The Holmatro dealer can organize the yearly maintenance for you on a contract basis.

### **8.7 Packaging**

In many regulations such as IATA (air), ADR (road) and IMO (sea), Li-Ion battery packs are considered as dangerous goods. Please make sure that the goods are packed and transported in accordance with the latest regulations. Consult your Holmatro dealer for detailed instructions.

### **8.8 Storage**

#### **8.8.1 Temporary storage**

- Store the tool and the battery pack in a dry and well-ventilated dust-free area.
- Fasten the tool so it can not fall over to prevent oil leaking.
- Place the blade tips over each other to prevent injury. Do not fully close the spreading arms / blades so that the tool can be stored without pressure.
- Check that the on/off switch is OFF.
- Apply a thin coat of preservative oil to the external steel parts.

### 8.8.2 Long-term storage

For long-term storage, carry out the same actions as for temporary storage, as well as the following additional actions:

- Remove the battery pack from the tool.
- Always store the battery packs in a dry and cool area. Temperatures above 45 °C (113 °F) can have a negative affect on the life cycle of the battery packs.



#### **WARNING**

Avoid short-circuiting the battery pack. Make sure the connections do not come in contact with metal objects or water. Never try to open a battery pack.



#### **CAUTION**

If not removed from the tool, a fully charged battery pack will discharge in 3 months. Connect the battery pack to the charger with the on-tool charge cable to prevent discharge.



#### **CAUTION**

If the battery pack is removed from the tool and is not being recharged, it will slowly loose its energy. Make sure that the battery pack is recharged at least once every year.

## 9 Decommissioning/Recycling

See Fig. 8.

At the end of its service life the equipment can be scrapped and recycled.

- Make sure that the equipment is put out of service to avoid any use.
- Check that the equipment does not contain any pressurized components.
- Recycle the various materials used in the equipment such as steel, aluminium, NBR (Nitrile Butadiene Rubber) and plastic.
- Collect all dangerous substances separately and dispose of them in an environmentally responsible way.
- Consult the Holmatro dealer about recycling.



#### **WARNING**

It is prohibited to dispose the battery pack into the house- and residual waste removal (WEEE-Directive 2012/19/EU).

The battery pack falls under the RoHS-directive 2011/65/EU (Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment).

Return the battery pack to your local Holmatro dealer for disposal.

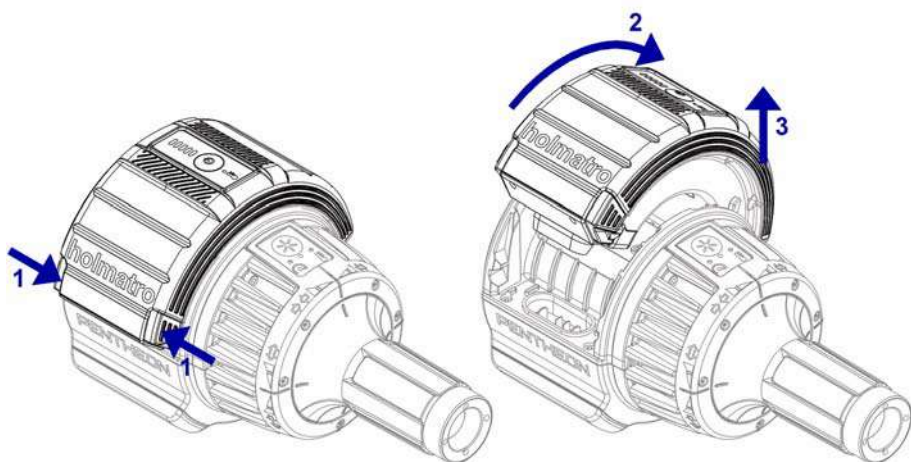


Fig. 6

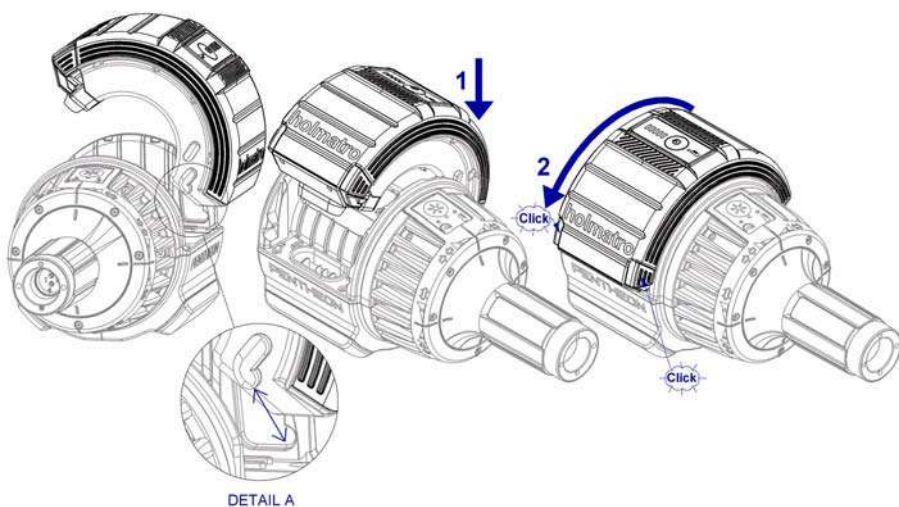


Fig. 7

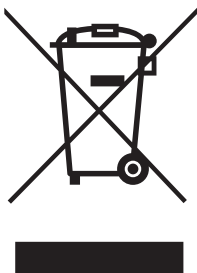


Fig. 8

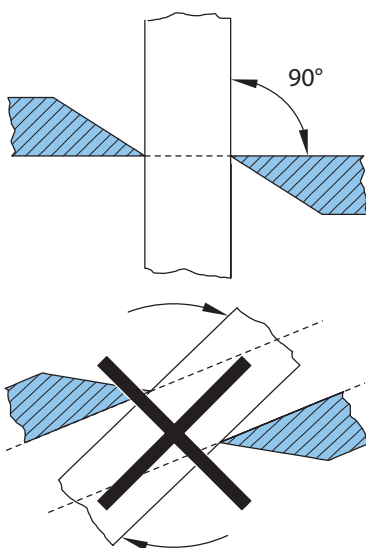


Fig. 9

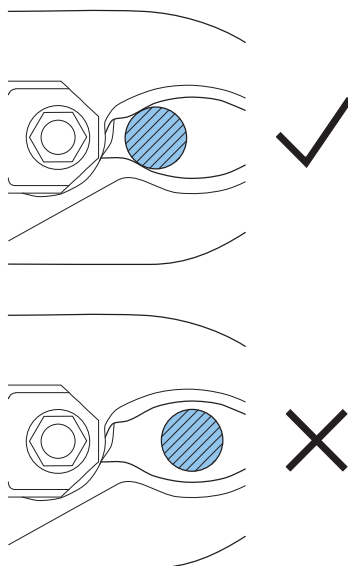


Fig. 10

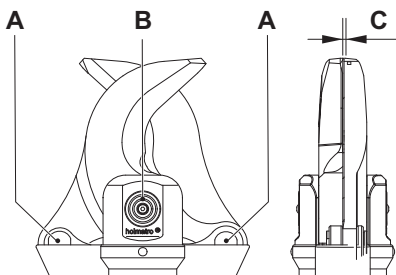


Fig. 11

model type	cutting performance (EN13204 annex C)	tool classification				
			cutter opening		classification minimum cutting performance	weight
PCU30CL	1H 2G 3G 4F 5G	BC150F-15.3				






profil type	1 round bar	2 flat bar	3 round tube	4 square tube	5 rectangular tube
category letter ↓					
A	≥ 14	30 x 5	21.3 x 2.3		
B	≥ 16	40 x 5	26.4 x 2.3		
C	≥ 18	50 x 5	33.7 x 2.6	35 x 3	
D	≥ 20	60 x 5	42.6 x 2.6	40 x 4	50 x 25 x 2.5
E	≥ 22	80 x 8	48.3 x 2.9	45 x 4	50 x 30 x 3.0
F	≥ 24	80 x 10	60.3 x 2.9	50 x 4	60 x 40 x 3.0
G	≥ 26	100 x 10	76.1 x 3.2	55 x 4	80 x 40 x 3.0
H	≥ 28	110 x 10	76.1 x 4.0	60 x 4	80 x 40 x 4.0
I	≥ 32	120 x 10	88.9 x 4.0	60 x 5	80 x 40 x 5.0
J	≥ 36	130 x 10	88.9 x 5.0	70 x 4	100 x 50 x 4.0
K	≥ 40	140 x 10	101.6 x 4.0	70 x 5	100 x 50 x 5.0

Fig. 12

EN 13204 cutting capacity table

model type	cutting performance (EN13204 annex C)	tool classification			
		cutter opening		classification minimum cutting performance	
			weight		
PCU40	1I 2I 3I 4J 5J	BC165I-19			






profil type	1 round bar	2 flat bar	3 round tube	4 square tube	5 rectangular tube
category letter ↓					
A	≥ 14	30 x 5	21.3 x 2.3		
B	≥ 16	40 x 5	26.4 x 2.3		
C	≥ 18	50 x 5	33.7 x 2.6	35 x 3	
D	≥ 20	60 x 5	42.6 x 2.6	40 x 4	50 x 25 x 2.5
E	≥ 22	80 x 8	48.3 x 2.9	45 x 4	50 x 30 x 3.0
F	≥ 24	80 x 10	60.3 x 2.9	50 x 4	60 x 40 x 3.0
G	≥ 26	100 x 10	76.1 x 3.2	55 x 4	80 x 40 x 3.0
H	≥ 28	110 x 10	76.1 x 4.0	60 x 4	80 x 40 x 4.0
I	≥ 32	120 x 10	88.9 x 4.0	60 x 5	80 x 40 x 5.0
J	≥ 36	130 x 10	88.9 x 5.0	70 x 4	100 x 50 x 4.0
K	≥ 40	140 x 10	101.6 x 4.0	70 x 5	100 x 50 x 5.0

Fig. 13

EN 13204 cutting capacity table



model type	cutting performance (EN13204 annex C)	tool classification		
		cutter opening		
		classification minimum cutting performance		
		weight		
PCU50	1K 2K 3K 4K 5K	BC165K-21.5		
PCU60	1K 2K 3K 4K 5K	CC205K-25		






profil type	1 round bar	2 flat bar	3 round tube	4 square tube	5 rectangular tube
category letter ↓					
A	≥ 14	30 x 5	21.3 x 2.3		
B	≥ 16	40 x 5	26.4 x 2.3		
C	≥ 18	50 x 5	33.7 x 2.6	35 x 3	
D	≥ 20	60 x 5	42.6 x 2.6	40 x 4	50 x 25 x 2.5
E	≥ 22	80 x 8	48.3 x 2.9	45 x 4	50 x 30 x 3.0
F	≥ 24	80 x 10	60.3 x 2.9	50 x 4	60 x 40 x 3.0
G	≥ 26	100 x 10	76.1 x 3.2	55 x 4	80 x 40 x 3.0
H	≥ 28	110 x 10	76.1 x 4.0	60 x 4	80 x 40 x 4.0
I	≥ 32	120 x 10	88.9 x 4.0	60 x 5	80 x 40 x 5.0
J	≥ 36	130 x 10	88.9 x 5.0	70 x 4	100 x 50 x 4.0
K	≥ 40	140 x 10	101.6 x 4.0	70 x 5	100 x 50 x 5.0

Fig. 14

EN 13204 cutting capacity table






profile type	A round bar	B flat bar	C round tube		D square tube	E angle iron
	 A-36 hot rolled	 A-36	 Sch. 40 A-53 grade B		 A-500 grade B	 A-36
category level ↓	diameter (in.)	thickness x width (in. x in.)	nominal size (in.)	OD x wall thickness (in. x in.)	dimension x wall thickness (in. x in.)	square dimension x thickness (in. x in.)
1	3/8	1/4 x 1/2	3/8	0.68 x 0.09	1/2 x 0.06	1/2 x 1/8
2	1/2	1/4 x 1	3/4	1.05 x 0.11	1 3/4 x 0.06	1 x 1/8
3	5/8	1/4 x 2	1	1.32 x 0.13	1 x 0.08	1 1/4 x 3/16
4	3/4	1/4 x 3	1 1/4	1.66 x 0.14	1 1/4 x 0.12	1 1/2 x 3/16
5	7/8	1/4 x 4	1 1/2	1.90 x 0.15	1 1/2 x 0.12	1 1/2 x 1/4
6	1	3/8 x 3	2	2.38 x 0.15	1 3/4 x 0.12	1 3/4 x 1/4
7	1 1/4	3/8 x 4	2 1/2	2.88 x 0.20	2 x 0.15	1 1/2 x 3/8
8	1 1/2	3/8 x 5	3	3.50 x 0.22	2 1/2 x 0.19	2 x 3/8
9	1 3/4	3/8 x 6	3 1/2	4.00 x 0.23	3 x 0.19	2 1/2 x 3/8

Fig. 15

NFPA 1936 cutting capacity table

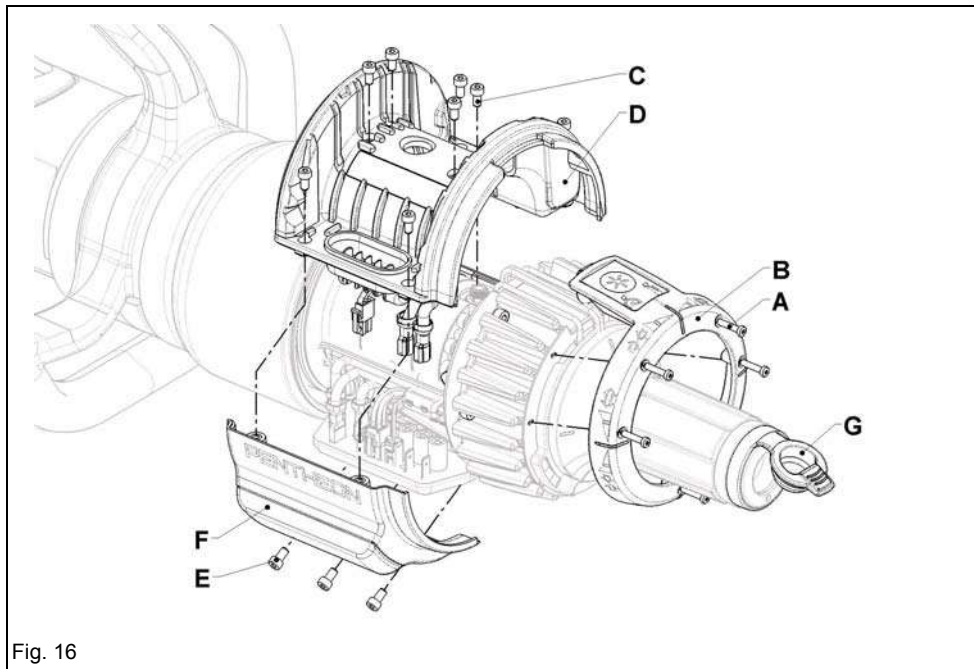


Fig. 16

## **Contact information**

### **Holmatro Netherlands**

Zalmweg 30  
4941 VX, Raamsdonkveer, The Netherlands  
Tel.: +31 (0)162 - 589200  
Fax: +31 (0)162 - 522482  
e-mail: [info@holmatro.com](mailto:info@holmatro.com)  
home page: [www.holmatro.com](http://www.holmatro.com)

### **Holmatro USA**

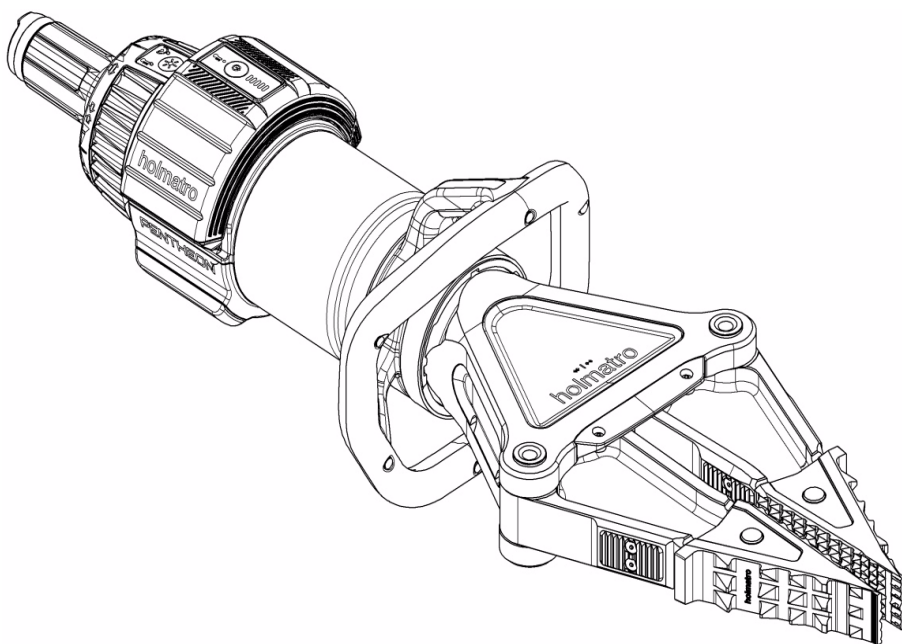
505 McCormick Drive  
Glen Burnie, MD 21061, U.S.A.  
Tel: +1 410 768 9662  
Fax: +1 410 768 4878  
e-mail: [info@holmatro-usa.com](mailto:info@holmatro-usa.com)  
home page: [www.holmatro.com](http://www.holmatro.com)

### **Holmatro China**

庞金路 1801 号  
苏州吴江经济技术开发区  
215200 中国  
电话: +86 512 6380 7060  
传真: +86 512 6380 4020  
电子邮件: [china@holmatro.com](mailto:china@holmatro.com)  
主页: [www.holmatro.com](http://www.holmatro.com)

## PSP (CL)

Handleiding	NL
Manual	EN
Mode d'emploi	FR
Betriebsanleitung	DE
Manual	ES
Manual	PT
手册	ZH

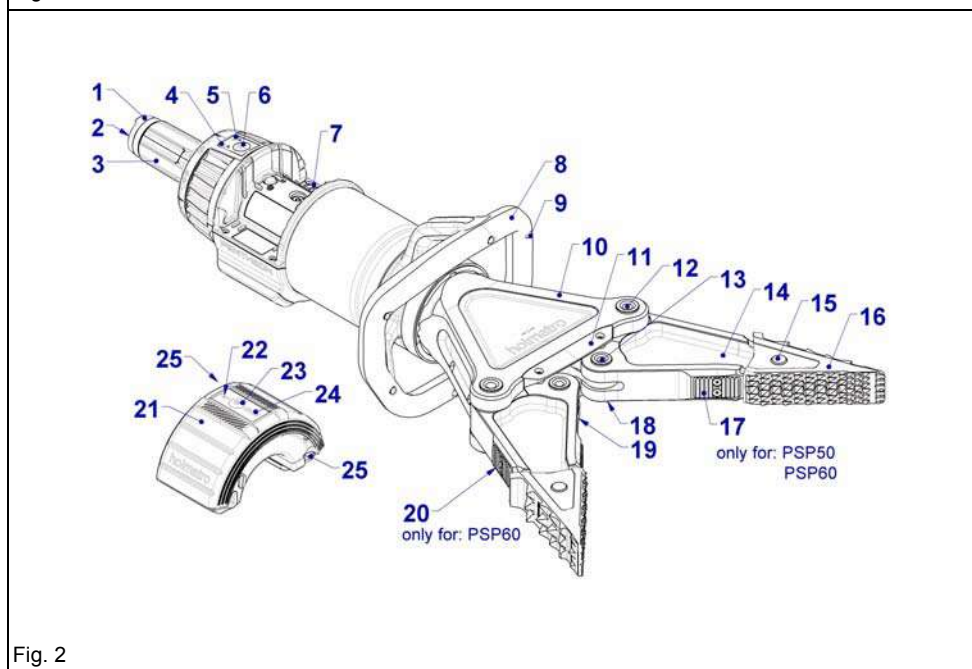
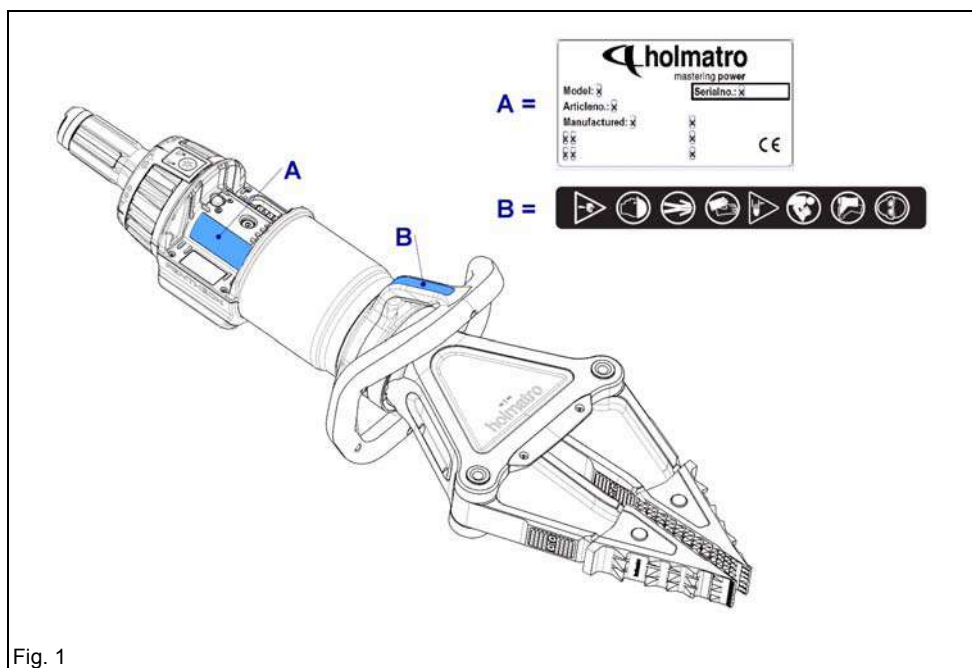


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**ISO 9001**  
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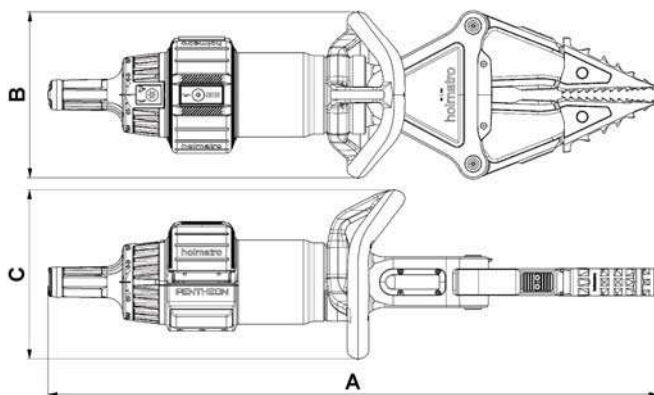


Fig. 3

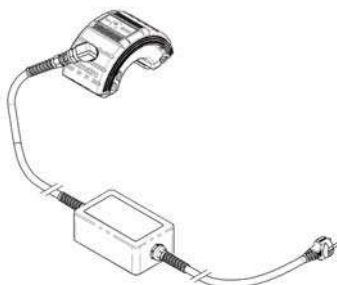


Fig. 4

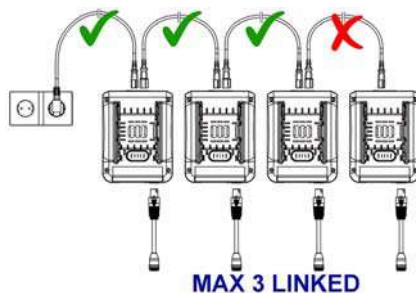


Fig. 5

# 1 Introduction

## 1.1 Disclaimer

All rights reserved. Nothing from this publication may be disclosed, reproduced or modified in any way without prior written consent from Holmatro. Holmatro reserves the right to modify or alter parts of tools without prior notification. The contents of this user manual can likewise be modified at any time. This user manual is based on and is related to the models manufactured at this moment and legislation currently in place. Holmatro accepts no liability whatsoever for possible damage resulting from the use of this user manual with respect to any equipment supplied or possibly to be supplied, subject to intent or gross negligence on the part of Holmatro. For detailed information about the use of the user manual, maintenance and/or repair of Holmatro equipment, Holmatro or the official, appointed distributor must be contacted. All possible attention has been given to the composition and precision of this user manual. However, Holmatro cannot be held liable for errors and omissions or obligations issuing from them. If the correctness or completeness of this user manual is unclear, you must contact Holmatro.

## 1.2 About this manual

The original instructions in this manual are written in English. Other language versions of this manual are a translation of the original instructions.

## 1.3 Definitions

System:	the assembly of power source, optional power cable(s) and tool(s).
Battery pack:	device that supplies electric current and voltage.
Tool:	hydraulic device such as a cutter, spreader, combi tool, ram or cylinder.
Equipment:	tool(s), cable(s), battery pack or accessories.
Mains connector:	device that transforms and supplies electric current and voltage.
Charger / battery charger:	an electronic device for charging a rechargeable battery pack.

## 1.4 General

Congratulations on your purchase of this Holmatro product. This user manual provides instructions on the operation, maintenance, malfunctions and safety of the equipment concerned. Safety regulations for the use of a complete Holmatro system are also described in this user manual. Illustrations in this user manual can differ slightly, depending on the model.

Everyone involved in putting the equipment into operation, using it, maintaining it and solving malfunctions must have read and understood this user manual, particularly the safety regulations.

To prevent errors of operation and ensure that the equipment works trouble-free, the user manuals must always be available to the operator.

## 1.5 Application

This product is part of the equipment intended for use by emergency services, to move or remove structural parts of vehicles or structures.

### 1.5.1 System requirements

Only use this tool with the prescribed type of battery pack, or with the Holmatro mains connector. In case of doubt about the compatibility of the system, always consult the Holmatro dealer.

## 1.6 Qualified personnel

The system may only be operated by people trained in its use. Always obey local legislation, safety and environmental regulations. Repair work may only be performed by a Holmatro Certified Technician.

## 1.7 Guarantee

Refer to the general terms and conditions of sale for the guarantee conditions, available from your Holmatro dealer on request.

Holmatro draws your attention to the fact that every guarantee on your piece of equipment or system will lapse and that you must indemnify Holmatro against any possible product liability and responsibility if:

- service and maintenance are not carried out strictly in accordance with the instructions, repairs are not performed by a Holmatro Certified Technician or are performed without prior written consent;
- self-made changes, structural changes, deactivation of safety devices, injudicious adjustment of hydraulics and faulty repairs have been carried out;
- non-genuine Holmatro parts or lubricants other than the types prescribed are used;
- the piece of equipment or the system is used injudiciously, through errors of operation, improperly, negligently or not in accordance with its nature and/or purpose.

## 1.8 Declaration of Conformity

The equipment is CE certified. It means that the equipment complies with the essential requirements concerning safety. The original Declaration of Conformity is supplied with the equipment.

The standards and directives that have been taken into consideration in the design are listed in the section Technical Specifications in this document.

# 2 Safety regulations

## 2.1 Explanation of the symbols used in this manual

In this manual the symbols below are used to indicate possible dangers.



### DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



### WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



### CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



### NOTICE

Is used to address practices not related to physical injury which, if not avoided, may result in property damage.



### NOTE

Emphasizes important information for optimal product use. This symbol is displayed in the user manual with all regulations related to product use or maintenance.



Always adhere to these regulations and to the locally prevailing safety regulations, and proceed very carefully.

Inform all people involved in the activities of the operation about these safety regulations.

## 2.2 Model plate and CE marking on the equipment

See Fig. 1.








All pictograms attached to the equipment pertaining to safety and danger must be complied with and remain clearly legible.



### WARNING

Not following these instructions can result in serious personal injury, fatal accident, damage to the system or consequential loss.

Pos.	Type of mark	Description	Part no.
A	Model plate	Model plate with: <ul style="list-style-type: none"><li>• Model indication</li><li>• Serial number</li><li>• Date of construction</li><li>• CE marking</li></ul>	Please contact Holmatro.

Pos.	Type of mark	Description	Part no.
B		<b>WARNING</b> Wear safety goggles (or full face shield).	921.000.084.
		<b>WARNING</b> Wear safety shoes with good ankle support and toe protection.	
		<b>NOTE</b> Read the user manual before use.	
		<b>WARNING</b> Wear safety gloves.	
		<b>WARNING</b> Wear safety clothing for the entire body with reflective material.	
		<b>WARNING</b> Wear a helmet.	
		<b>DANGER</b> Danger of jamming parts of the body.	

If the pictograms are illegible, have them replaced by a Holmatro Certified Technician.

## 2.3 General safety regulations

- Use this equipment solely for the activities for which it was designed. If you are in doubt or uncertain, always consult your Holmatro dealer.
- Replace illegible safety symbols, pictograms and information labels with identical ones, available from your Holmatro dealer.
- Varnished, plastic and rubber parts are not resistant to corrosive acid or liquid. Except for electrical parts, rinse parts that have come into contact with corrosive acid or liquid with a lot of water. Consult your Holmatro dealer for a resistance list.
- Protect equipment against sparks during welding or grinding activities.
- Avoid an unhealthy posture while working. It can result in physical complaints.
- Follow the inspection and maintenance instructions.
- Conversion of the piece of equipment or the system may only be performed by a Holmatro Certified Technician. In case of a conversion, retain the original manual and the conversion manual.
- Use only genuine Holmatro parts and maintenance products prescribed by Holmatro.

## 2.4 Personal safety

Rescue personnel must wear all personal means of protection as prescribed in the standard work procedure. Negligent use of personal means of protection can result in serious injury. During use wear at least the following personal means of protection:

- Helmet;
- Safety goggles or full face shield;
- Safety gloves;
- Safety clothing for the entire body with reflective material;
- Safety shoes with good ankle support and toe protection;
- Mask with filter for use when cutting glass or certain plastics.

## 2.5 Safety regulations with respect to the equipment

- Never change the setting of any safety device.
- Store the spreader with the spreading arms slightly opened.
- Make sure a protective flexible shield is inserted between the victim(s) and the place where the cutting or spreading will be made.
- Before use, check that the spreading tips or the accessories are properly attached to the spreading arms.
- Load only the spreading tips during spreading.
- Always try to utilize the entire surface of the spreading tips.
- Stop and find a new push-off point if the spreading tips start to lose their grip.
- Never spread or cut sections that are under hydraulic, pneumatic, electrical or mechanical pressure.

## 2.6 General safety regulations with respect to battery packs



### WARNING

- Avoid explosive gases, open flames and sparks. Explosion risk.
- Do not put the battery pack in water longer than 30 minutes and deeper than 1 meter.
- Avoid short-circuiting the battery pack. Make sure that the connections do not come in contact with metal objects.
- Do not charge a wet battery pack.
- Do not use damaged battery packs. Contact your Holmatro dealer for instructions.
- Do not let the battery pack fall. Do not hit, crush or throw the battery pack.
- Do not make direct solder connections on the battery pack.
- Do not open the battery pack.
- Protect the battery pack against direct solar radiation and other sources of heat.
- Do not put the battery pack into a microwave or a high-pressure container.
- When not in use, store the battery pack in a dry place, locked up securely and out of reach of children.
- When the battery pack is discarded, always observe the local regulations and/or the instructions in this manual.



### NOTICE

- Use the battery pack only with the specified battery charger.
- Use the battery pack only in the original application.
- Store Battery packs in well-ventilated, cool rooms. The maximum storage temperature of 40 °C (104 °F) may not be exceeded.
- Do not put battery packs into direct sunlight during long-term storage.
- Persons who are not able to use the device in a safe way because of their physical, sensory or mental competence, or because of their inexperience, should not use the battery pack without guidance or instruction from a skilled person.
- Make sure children do not play with the battery pack.

## 2.7 Safety regulations with respect to Li-Ion battery packs

Li-Ion battery packs are entirely different from NiCad and NiMH battery packs and must be handled differently. Before and after every use of your Li-Ion battery pack, inspect the battery pack carefully to ensure no physical damage is evident, such as loose plugs and wires. Such signs often indicate that a problem exists with the battery pack that could lead to failure.

## 2.8 Safety regulations with respect to battery chargers

- Read all instructions carefully before you use the battery charger.
- Only use a power supply with the correct voltage and frequency. Refer to the electrical specifications on the model plate.
- Use the battery charger only indoors.
- Use protection for the battery charger against damp or wet conditions.
- Do not use the power cord to move the battery charger. Never pull the power cord to disconnect the battery charger from the power outlet. Keep the power cord away from heat, oil and sharp edges.
- Do not use the battery charger on a highly inflammable surface or in an inflammable environment.
- Do not charge a wet battery pack.

- When not in use, store the battery charger in a dry place, locked up securely and out of reach of children.
- Persons who are not able to use the battery charger in a safe manner, due to their physical, sensory or mental condition, or due to their inexperience, must not use the battery charger without the supervision or instruction from a skilled person.
- Strictly observe the minimum and the maximum charging temperature. See section 5.2.
- Do not use a damaged battery charger.
- Do not disassemble the battery charger.
- Risk of short-circuit: use protection for the battery charger against metal objects.
- Do not connect more than 3 mains chargers by daisy chain cables. Refer to Fig. 5.

## 2.9 Safety regulations with respect to mains connectors



### WARNING

- Read all instructions carefully before you use the mains connector.
- Only plug the mains connector into a power supply with the correct voltage and frequency. Refer to the electrical specifications on the model plate.
- Use protection for the battery charger against damp or wet conditions.
- Do not use the power cord to move the mains connector. Do not pull the cord to disconnect the mains connector from the power outlet. Keep the cord away from heat, oil and sharp edges.
- Do not use the mains connector on a highly flammable surface or in an flammable environment.
- When not in use, store the mains connector in a dry place, locked up securely and out of reach of children.
- Persons who are not able to use the mains connector in a safe manner, due to their physical, sensory or mental condition, or due to their inexperience, must not use the mains connector without the supervision or instruction from a skilled person.
- Do not use a damaged mains connector.
- Do not disassemble the mains connector.
- Risk of short-circuit: use protection for the mains connector against metal objects.
- Only use the mains connector for powering Holmatro Battery tools.

## 2.10 Safety regulations with respect to the operation of the system

- Make a risk assessment of the procedure before you start work (EN-ISO 12100).
- Keep bystanders at a distance and be extra careful in the vicinity of people and animals.
- Make sure the work area is clearly laid out and has good lighting.
- Avoid stress and work in a structured way. This reduces the risk of errors, combinations of dangers and accidents.
- Before use, check the equipment for damage. Do not use the equipment if it is not in good condition and consult your Holmatro dealer.
- Stand on a stable base and use both hands to hold the equipment.
- Hold the equipment only by its carrying handle and the deadman's handle.
- During operation, never get between the object and the equipment.
- Monitor the situation of the equipment and the structure continuously while using the equipment.
- Parts of an object that could fly off must be secured.
- Use only genuine Holmatro accessories and ensure that they have been attached correctly.
- Make sure that parts of the body never come between moving parts. There is a risk that parts of the body may be crushed or cut.

- Make sure that the deadman's handle does not become jammed.
- Stop immediately if the system makes strange noises or displays aberrant behaviour.
- Stop immediately if the equipment leaks oil. Oil escaping under pressure can penetrate the skin and cause serious injury. Go immediately to a hospital with a person who is injected with oil for medical help. Give a specification of the oil to the medical staff.
- Return inactive equipment immediately to the tool station.
- Always adhere to the safety regulations that apply to other equipment that is used in the operation.

**2.11 Safety regulations with respect to maintenance**

- Wear personal means of protection when performing maintenance tasks.
- Never work in a way that could jeopardize safety.
- Make sure that the equipment cannot roll away or tip over. The control and drive must be switched off and safeguarded against unexpected activation.
- Make sure that moving parts do not move unexpectedly.
- Used or leaked fluids, and any other products consumed during the activities, must be collected and disposed of in an environmentally responsible way.

**3 Description**

**3.1 Equipment**

The spreader can be used independently because of the battery-driven hydraulic system. The tool is produced as a hand tool that can be operated by one person. The tool is suitable for spreading, cutting, squeezing or pulling apart structural elements of vehicles during rescue operations. It can squeeze material tightly or squash it and thus create weak pivots or places that are easier to cut. It can also force pieces apart by means of the two spreading tips on the front of the tool. By placing accessories on the points, materials can be pulled together. The battery energizes the electric motor. The electric motor operates a multi-stage piston pump that can build up a maximum system pressure of 720 bar. Stage switching is electronically controlled for maximum speed at the required pressure.



**NOTE**  
The tool and battery pack can be put fully into fresh or salt water at a maximum depth of 1 meter for 30 minutes.

**3.2 Type designation**

Example: PSP40CL





Digit	Example	Description
1-3	PSP	P = Pentheon SP = Spreader
4-5	40	Type indication
6-7	CL	Compact Light

**3.3 Product identification**

Refer to Fig. 2.

- |  |  |
|--|--|
| 1 Dust cap                               | 14 Spreading arm                                       |
| 2 On-tool charge connector               | 15 Lock pin  |
| 3 Deadman's handle                       | 16 Spreading tip                                       |
| 4 Tool temperature indicator             | 17 Squeezing plate                                     |
| 5 Maximum force indicator                | 18 Snap ring   |
| 6 Light switch for LEDs                  | 19 Snap ring   |
| 7 Battery pack fitting / adapter fitting | 20 Spreading plate                                     |
| 8 Carrying handle                        | 21 Battery pack  |
| 9 LEDs                                   | 22 Battery temperature indicator                       |
| 10 Yoke                                  | 23 On/off switch                                       |
| 11 Protection hood                       | 24 State Of Charge (SOC) indicator (see section 3.6.2) |
| 12 Hinge pin                             | 25 Battery pack lock                                   |
| 13 Hinge pin                             |  |

### 3.4 User interface of the tool

	User interface	Color	Condition	Action / Solution
1. on/off switch for LEDs in carrying handle.			Color: red, flashing The tool is too hot.	Stop the tool. Cool down the tool.
2. Maximum force reached when green.			Color: red The tool is almost too hot.	Slow down the operation.
3. Temperature of the tool.			Color: green The temperature is ok.	Normal operation

### 3.5 Technical specifications

Description	Unit	General
max. working pressure	(bar/MPa)	720 / 72
	psi	10443
hydraulic oil type	-	ISO-L HV VG 36
vibration level	m/s <sup>2</sup>	<2,5 m/s <sup>2</sup>
protection rate	-	IP57 <sup>1</sup>
temperature range	°C	-20 + 55
	°F	-4 + 131
directives	-	2006/42/EC, 2014/30/EU

1. The tool and battery pack can be put fully into in fresh, salty and-dirty water at a maximum depth of 1 meter for 30 minutes.


Description	Unit	PSP40CL	PSP40	PSP50	PSP60
spreading distance	mm	510	725	725	820
	in	20.1	28.5	28.5	32.3

Description	Unit	PSP40CL	PSP40	PSP50	PSP60
pulling distance	mm	393	613	610	700
	in	15.5	24.1	24	27.6
max. spreading force	(kN/t)	131 / 13.4	280 / 28.6	366 / 37.3	522 / 53.2
	lbf	29450	62947	82280	117350
min. spreading force (EN 13204)	(kN/t)	43 / 4.4	43 / 4.4	54 / 5.5	62 / 6.3
	lbf	9667	9667	12140	13938
max. squeezing force	(kN/t)	47 / 4.8	59 / 6	135 / 13.8	127 / 13
	lbf	10566	13264	30349	28551
max. pulling force (NFPA 1936, HPF)	(kN/t)	48 / 4.9	51.7 / 5.3	67 / 6.8	79 / 8.1
	lbf	10791	11623	15062	17760
max. spreading force (NFPA 1936, HSF)	(kN/t)	53 / 5.4	69.2 / 7.1	93 / 9.5	112 / 11.4
	lbf	11915	15557	20907	25179
min. pulling force (NFPA 1936, LPF)	(kN/t)	27 / 2.8	27 / 2.8	33 / 3.4	38 / 3.9
	lbf	6070	6070	7419	8543
min. spreading force (NFPA 1936, LSF)	(kN/t)	39 / 4	39.1 / 4	50 / 5.1	60 / 6.1
	lbf	8768	8790	11240	13489
sound emission @ 1m/3.25ft	dB(A)	79	76	79	79
sound emission @ 4m/13ft	dB(A)	70	67	70	70
weight, ready for use	kg	15.2	19.4	21	25
	lb	33.5	42.8	46.3	55.1
dimensions (AxBxC) refer to Fig. 3	mm	811 x 270 x 276	956 x 270 x 276	964 x 272 x 272	1052 x 319 x 274
	in	31.9 x 10.6 x 10.9	37.6 x 10.6 x 10.9	38 x 10.7 x 10.7	41.4 x 12.6 x 10.8
EN 13204 classification	-	-	AS43/725-19.4	AS54/725-21.0	BS62/820-25,0
NFPA 1936	-	yes	yes	yes	yes

### 3.6 User interface of the battery

#### 3.6.1 Available information on the battery

The Battery Management System (BMS) protects the battery pack against internal damage.

	LEDs for State Of Charge indication. Refer to 3.6.2
	On/off switch for tool. Refer to 3.6.3
	LED for temperature indication. Refer to 3.6.4



### 3.6.2 LEDs for State Of Charge indication






















The battery pack has a LED indicator that indicates the approximate state of charge of the battery.



**NOTE**


The state of health of the battery pack is displayed on the charger.

Each LED accounts for approximately 20% of the full charge.

	Battery discharging			Battery on / connected with charger.			
Tool OFF, All LEDs: off 		color: green	80-100%	Battery not charging color: green		Battery charging color: green	
		color: green	60-80%		100%		100%
		color: green	40-60%		80-100%		80-100%
Error. all LEDs: red, flashing <sup>1</sup> 		color: orange	20-40%		60-80%		60-80%
		color: red	10-20%		40-60%		40-60%
		color: red, flashing	<10%		20-40%		20-40%
			0%		0-20%		0-20%

1. When all LEDs are red and flashing:
  1. Push the on/off switch to stop the battery.
  2. Push the on/off switch to start the battery.
  3. Charge the battery 24 hours.
  4. If this condition stays, contact a Holmatro Certified Technician.

### 3.6.3 On/off switch

	Push this button to start the tool. Push this button again to stop the tool. The motor of the tool is energized when the deadman's handle is operated.
--	---








**NOTE**

When the tool is started, the LEDs of the carrying handle come on by default.

### 3.6.4 Temperature of the battery pack

The Battery Management System (BMS) protects the battery pack against internal damage.

Color	Condition	Tool	Action / Solution
	Color: green The temperature is ok	OK	Use the battery pack
	Color: red The battery is almost too hot. Charge > 40°C (104°F), discharge > 60°C (140°F)	OK	Can be charged or used. Be prepared to cool or replace the battery.
	Color: red, flashing The battery is too hot. Charge > 45°C (113°F), discharge > 65°C (149°F)	stopped	Cool or replace the battery.
	Color: blue The battery is almost too cold. Charge < 5°C (41°F), discharge < -15°C (5°F)	OK	Can be charged or used. The battery will warm up itself.
	Color: blue, flashing The battery is too cold. Charge < 0°C (32°F), discharge < -20°C (-4°F)	stopped	Warm up or replace the battery.

3.7 Technical specifications battery pack

Description	Unit	PBPA287
voltage	VDC	28
capacity	Ah	7
energy	Wh	176
battery type		Li-Ion
protection rate	-	IP67
weight, ready for use	kg	1.5
	lb	3.3
temperature range	°C	-20 + 55
	°F	-4 + 131

3.8 Safety features of the battery pack

The battery pack is protected against:

- Short-circuit
- Deep discharge
- Over- and under-voltage (of the battery pack and the individual cells)
- Over-current during charging and discharging
- Overcharging
- Over temperature (of individual cells and electronics)
- Charging and discharging outside the allowed temperature range

3.9 Mains Connector

Refer to Fig. 4.

The mains connector is a special power pack. It can replace the battery of a power tool by the mains supply. The parameters of the mains connector are almost equivalent to the regular battery. It has the on/off switch and the LED indication shows the status of the mains connector.

The mains connector is protected against:

- Short-circuit
- Over temperature

### 3.10 Accessories

#### 3.10.1 Accessories Pentheon system

Description	model		
Battery pack	PBPA287	standard	151.000.583
	PBPA287	China	151.000.854

Description	model	plug type	
Battery charger	PBCH1	EU	151.000.629
	PBCH2	US	151.000.742
	PBCH3	worldwide	151.000.632
	PBCH4	JP	151.000.630
	PBCH5	UK	151.000.631
	PBCH6	KR	151.001.209
	PBCH7	CN	151.001.518
	PBCH8	IN	151.001.519
Mains connector	PMC1	EU	151.000.633
	PMC2	US	151.000.743
	PMC4	JP	151.000.634
	PMC5	UK	151.000.635
	PMC6	KR	151.001.304
	PMC7	CN	151.001.642
	PMC8	IN	151.001.643
	PMC9	AU	151.001.826
	PMC10	BR	151.001.830
On-tool charge cable	POTC1	worldwide	151.000.499
Daisy chain power cable	DCPC1	worldwide	151.000.503

#### 3.10.2 Tool specific accessories

Accessories	PSP40CL	PSP40	PSP50	PSP60
spreading tip, set	150.006.473	150.006.475	150.006.475	151.002.018
cutting tip, set	-	150.006.474	150.006.474	150.006.466
pulling attachment, set	150.182.273	150.182.274	150.182.274	150.182.275
pulling chains, set	150.582.152	150.582.152	150.582.152	150.582.261
pulling chains set, in case	150.582.021	150.582.021	150.582.021	150.582.020
accessories set, in case	150.182.289	150.182.288	150.182.288	151.002.019

#### 3.10.3 Attaching pulling accessories

Refer to Fig. 8.

Pulling accessories (pulling attachments and pulling chains) make it possible to use the tool for pulling. The pulling attachments must be placed on the spreading arms, instead of the spreading tips. The pulling attachments may only be used in combination with the corresponding set of pulling chains. These pulling chains consist of two parts, each with a shortening hook that only grabs the chain. The chains are 1.5 m and 3 m long respectively.



#### **WARNING**

The pulling accessories are intended solely for the horizontal movement of loads. Hoisting is not permitted with these pulling accessories.

- Make sure that the spreading arms are slightly open.
- Press the lock pin (A) at the bottom and the top.
- Remove the spreading tip (B).
- Push the pulling attachment (D) onto the spreading arm (C).
- Make sure the openings of the shortening hooks do not point down.
- Check that the pulling attachment is properly locked by the lock pin.
- Attach the pulling chain to the pulling attachment.
- Repeat the action for the second pulling attachment.

#### **3.10.4 Attaching spreading tips**

See Fig. 9.

Two spreading tips are delivered as a standard with the spreader. Spare spreading tips can be ordered if desired.

To replace the default spreading tips by the spare spreading tips:

- Make sure that the spreading arms are slightly open.
- Press the lock pin (A) at the bottom and the top.
- Remove the spreading tip (B).
- Push the new spreading tip onto the spreading arm (C).
- Check that the spreading tip is properly locked by the lock pin.
- Repeat the action for the second spreading tip.

#### **3.10.5 Attaching cutting tips**

See Fig. 10.

Cutting tips make it possible to use the spreader for cutting steel plate (St37) not thicker than 4 mm.

Cutting tips can be ordered if desired. The cutting tips are placed on the spreading arms instead of the spreading tips.

- Make sure that the spreading arms are slightly open.
- Press the lock pin (A) at the bottom and the top.
- Remove the spreading tip (B).
- Push the cutting tip (D) onto the spreading arm (C).
- Check that the cutting tip is properly locked by the lock pin.
- Repeat the action for the second cutting tip.

## 4 Preparation for first use

### 4.1 General

- Examine the equipment for completeness and damage. Do not use the equipment if it is damaged; in that case contact the Holmatro dealer.
- Examine the operation of the deadman's handle. when released, the deadman's handle must return to the neutral position.
- Before first use, charge the battery pack fully. Refer to section 5.2.
- Put the battery pack in the battery pack fitting / adapter fitting until the battery pack locks.
- Examine the battery pack to make sure that the lock mechanism operates correctly.

## 5 Operation

### 5.1 System operation

In a battery tool the hydraulic pump is integrated. An electric motor operates the hydraulic pump. The electric motor is energized by a battery pack or from an external electric power source. This pump displaces hydraulic oil and can build up pressure. The hydraulic pump is connected directly to the hydraulic cylinder.

The hydraulic cylinder contains a plunger that can move axially. If the cylinder is filled with oil from the bottom, the piston moves out. If the cylinder is filled from the top, the piston moves in. The direction in which the piston moves is controlled by the so-called deadman's handle. The deadman's handle can be rotated by the user to control the movement. If the deadman's handle is released, it returns automatically to the neutral position and stops the movement of the tool.

In tools like cutters, spreaders and combi tools the movement of the piston drives a mechanism to make a cutting or spreading movement.

### 5.2 Charging the battery pack

- Read the instructions of the battery charger before you charge the battery pack.
- Only use one of the prescribed Holmatro battery chargers to charge the battery pack.
- Best results and longest life of the battery pack are achieved when the battery pack is charged in a dry environment at a temperature between 18 °C and 24 °C (64 °F and 75 °F).
- The SOC indicator on the battery pack shows the state of charge of the battery pack.
- The maximum capacity of the battery pack is achieved when it has been charged and discharged some times.
- Always charge the battery pack, also if it has been used for a short time.
- The battery pack can stay connected to the battery charger for an indefinite period of time, because it is protected against overcharging.



#### NOTICE

When the battery pack is not in use, it is advised to keep it connected to the battery charger (connected to a power source) at all times. When the battery pack is full, the battery charger automatically switches on and off at regular intervals to keep the battery level at 100%.

After deep discharge of the battery pack, charge the battery pack for 24 hours. If the battery pack is not completely charged after 24 hours, contact your local Holmatro dealer.

### 5.3 Installing the battery pack

Refer to Fig. 7.



- Put the battery pack in the battery pack fitting / adapter fitting until the battery pack locks.

5.4 Connecting to an external power source

See Fig. 4.  
Apart from using the battery pack, the tool can also be connected to the mains by the special mains connector. Use only the original mains connector for this purpose.

- Slide the adapter of the mains connector in the battery pack fitting / adapter fitting until the battery pack lock snaps tight.
- Insert the plug of the mains connector into the appropriate power outlet.

5.5 Starting the tool



- Push the on/off switch of the battery to start the tool. The LEDs for the temperature, State of Charge and the LEDs of the tool will come on.
- The tool operates if the deadman's handle is turned to position  or .



**NOTICE**  
When the tool is not used for 10 minutes the battery pack will stop. Push the on/off switch to start the tool again.

5.6 Operate the deadman's handle

The deadman's handle is used to determine the movement of the plunger(s). If the deadman's handle is released, it returns automatically to the neutral position and stops the hydraulic pump. The tool stops. In the initial movement of the deadman's handle the motor operates slowly. Movement of the tool will be slow for maximum control. When the deadman's handle is rotated further the motor will operate at maximum speed.  
Pressure is built up in the tool. Return oil from the tool flows back to the pump without pressure.

	Hold the deadman's handle in this position to extend / open the tool.
	Hold the deadman's handle in this position to retract / close the tool.



**NOTICE**  
The pump will stop at maximum pressure to save energy. The maximum force indicator comes on and a beeper operates.

- Release the deadman's handle.
- Rotate the deadman's handle shortly in the opposite direction. You can use the tool again.
- Operate the deadman's handle again into the necessary direction to operate the tool.

5.7 Operating the light switch

On the tool is a light switch for the integrated LED lights.

- Push the light switch to stop or start the LED lights.

**NOTICE**

When the tool starts, the LEDs come on by default.

## 6 Use

### 6.1 General

The equipment of a rescue system must always be ready for use. That means the equipment must be checked and inspected directly after use, before it is put away.

Before use, always check the State Of Charge of the battery pack. See section 3.6.2.

**WARNING**

Make sure you are up to date on all safety regulations and that you have mastered the use of all equipment of the system you are going to work with.

### 6.2 Before use

- Before use, always check the State Of Charge of the battery pack. See section 3.6.2.

### 6.3 During use

#### 6.3.1 *Changing the battery pack*

The battery pack has a LED indicator that shows the approximate battery level (the State Of Charge).

**CAUTION**

- Many cycles in a short time may cause the temperature to increase above allowed limits. The tool will work slower to prevent that the battery stops.
  - Using the battery pack at temperatures above 45 °C (113 °F) decreases the life time of the battery pack.
- Stop the tool with the on/off switch.
  - Remove the battery pack. Refer to Fig. 6.
  - Put a new battery pack on the tool. Refer to Fig. 7.
  - Start the tool with the on/off switch.

**NOTICE**

It is highly recommended to have at least one fully charged spare battery pack available at all times.

**NOTICE**

To protect the battery pack, the tool will stop as soon as the battery pack becomes empty. The tool can be fixated at that moment. To remove the tool it is best to replace the battery pack by a fully charged battery pack.

### 6.3.2 *Tool movement*

The spreading arms open and close relatively quickly until they encounter resistance. Then the pump will build up the required pressure for spreading, cutting, pulling or squeezing.



#### **WARNING**

Take extreme care during tool movement. Because of the enormous power of the tool parts of the body can easily be crushed or pinched.



#### **NOTE**

When the tool is put in water it is possible that it operates in safe mode:

- The motor operates at slow speed.
- The motor will not stop when you release the control handle or put into neutral position.

It is allowed to continue.

### 6.3.3 *Spreading*



#### **CAUTION**

Make sure that the spreading tips have been properly attached to the spreading arms.

#### **Initial opening is sufficient**

- Close the spreading arms completely.
- Place both spreading tips between the parts to be spread.
- Force the parts apart by opening the spreading arms.

#### **Initial opening is insufficient**

- Open the spreading arms.
- Place one spreading tip in the opening.
- Close the spreading arms until the material is clamped.
- Bend the clamped material out of the way.
- Repeat this procedure until there is sufficient space to place both spreading tips.
- Force the parts apart by opening the spreading arms.

#### **No initial opening**

- Use a different tool or accessory to make an opening.
- Continue with the steps above, depending on the opening created.

### 6.3.4 *Cutting*



#### **CAUTION**

Make sure that the cutting tips have been properly attached to the spreading arms. The maximum thickness of the material to be cut is 4 mm.

- Close the spreading arms completely.
- Push the cutting tips into the material to be cut.
- Open the spreading arms so that the cutting tips cut the material.



### 6.3.5 *Pulling*



#### **WARNING**

The pulling accessories are intended solely for the horizontal movement of loads. Hoisting is not permitted with these accessories.



#### **WARNING**

Make sure that the load is always supported from underneath. Continuously check the behaviour of the load. Make sure that the tool can move freely during pulling and always remains in a straight line between both pulling attachments.

- Fully open the spreading arms.
- Correctly place the pulling attachments, so that the shortening hooks point with their openings up.
- Attach the pulling chains to the objects so that they cannot slip off.
- Pull the chains tight and hook them to the pulling attachments.
- Close the spreading arms.

### 6.3.6 *Squeezing*



#### **CAUTION**

Make sure that the spreading tips have been properly attached to the spreading arms.

- Open the spreading arms.
- Place the spreading tips over the object to be squeezed.
- Close the spreading arms.

### 6.3.7 *Maximum force indicator*

Refer to 3.4, 2.

When the maximum pressure is reached, the tool stops automatically to save energy. The maximum force indicator comes on.

- Release the deadman's handle.
- Rotate the deadman's handle shortly in the opposite direction. You can use the tool again.
- Operate the deadman's handle again into the necessary direction to operate the tool.

### 6.3.8 *Environmental information*

- Under normal use, no leakage will occur. Therefore, there will be no contact with toxic substances inside the battery pack.
- Under normal use, no environmental hazard is present.

## 6.4 *After use*

### 6.4.1 *Inspection*

- Check the battery level. Recharge the battery pack, if necessary. See section 5.2.
- Check the tool for completeness, leaks and damage. Do not use the tool if it leaks or is damaged and contact the Holmatro dealer.
- Examine the spreading tips. Replace them if the damage is considerable.
- Check the operation of the deadman's handle. The handle must return to the neutral position when you release it.
- Check that the carrying handle is firmly attached.

- Check the accessories used for completeness and damage. Replace them if the damage is considerable.
- Check the operation of the connection system for the accessories. If it is in poor condition, have it repaired by the Holmatro dealer.

#### **6.4.2 Shut down**

- Close the spreading arms with the tips slightly opened. The tool is stored without pressure.
- Stop the tool.

*To charge the battery pack:*

- Remove the battery pack and put it on the battery charger.
- Use the on-tool charge cable to charge the battery on the tool.



#### **NOTICE**

If two battery packs are connected to one battery charger, the battery pack on the tool is charged first.

#### **6.4.3 Storing the battery pack**



#### **NOTICE**

When the battery pack is not in use, it is advised to keep the battery pack connected to the battery charger (connected to a power source) at all times. When the battery pack is full, the battery charger automatically switches on and off at regular intervals to keep the battery level at 100%.

- Store the battery pack in a dry and well-ventilated area. The maximum storage temperature of 40 °C (104 °F) may not be exceeded.
- Make sure the equipment can not fall over during transport.

#### **6.4.4 Cleaning and storage**



#### **NOTICE**

If the tool has been used under water, you must clean the tool to make sure that the tool operates correctly.

#### **After normal use**

1. Clean the tool and any accessories before storage.
2. Dry the tool if it was used in wet conditions. Lubricate all exposed steel parts with a rust inhibitor and moisture repellant.
3. Store the tool in a dry and well-ventilated area.

#### **After immersion**

1. Remove the battery pack. Flush the tool, battery pack and accessories 5x with fresh, clean water.
2. If the tool has been used in muddy, dirty or salty water, the covers must be removed to remove residual dirt.

Refer to Fig. 12

- i Remove the screws from the control handle ring. (A, 5x)
- ii Remove the control handle ring. (B) Do not disconnect wiring.
- iii Remove the screws from the top cover. (C, 8x)
- iv Remove the top cover. (D) Do not disconnect wiring.
- v Remove the screws from the bottom covers. (E, 6x)
- vi Remove the bottom covers. (F, 2x)

- vii Open the dust cap. (G)
- 3. Flush the inner parts with fresh clean water and remove dirt.
- 4. Remove water and dirt with compressed air.
- 5. Lubricate all exposed steel parts with a rust inhibitor and moisture repellent.
- 6. Let the tool, battery and accessories dry in the air at room temperature.
- 7. Install the covers:
  - i Install the bottom covers. (F, 2x)
  - ii Install the screws of the bottom cover. (E, 6x)
  - iii Install the top cover. (D)
  - iv Install the screws of the top cover. (C, 8x)
  - v Install the control handle ring. (B)
  - vi install the screws of the control handle ring. (A, 5x)
  - vii Close the dust cap. (G).
- 8. Store the tool in a dry and well-ventilated area.

## 7 Troubleshooting

### 7.1 General

Consult the Holmatro dealer if the listed solutions do not give the desired result, or in case of other problems. For malfunctions or repair, always specify the model and serial number of the equipment.



#### NOTICE

If the battery pack has to be returned to the dealer for repairs, make sure that the battery pack is packaged according to the specific instructions applicable for Li-Ion battery packs. See section 8.7.

### 7.2 The tool does not operate when the deadman's handle is operated

Possible cause	Solution
The battery condition is poor.	<ul style="list-style-type: none"> <li>• Check the battery pack condition. See section 3.6.2.</li> <li>• Replace the battery pack by a fully charged battery pack.</li> </ul>
The tool is not started.	Push the on/off switch. The LEDs should come on.
The battery pack is in the sleep mode. This occurs when the tool is not used for about 10 minutes.	To start the battery pack again: <ul style="list-style-type: none"> <li>• Push the on/off switch.</li> </ul>
The electric motor does not operate.	Have it repaired by a Holmatro Certified Technician.
The temperature indicator of the tool flashes.	Refer to 3.4.
The temperature indicator of the battery flashes.	Refer to 3.6.4.
The internal sensors of the tool are dirty.	Clean the sensors. Refer to 6.4.4

### 7.3 The LEDs of the tool do not come on when the tool is started

Possible cause	Solution
The battery pack is not locked.	Remove the battery pack and put it in the tool again until the battery pack locks.
The battery pack is in the sleep mode. This occurs when tool is not used for about 10 minutes.	To start the battery pack again: <ul style="list-style-type: none"> <li>• Push the on/off switch.</li> </ul>
The deadman's handle is not in neutral position.	Put deadman's handle in neutral position.

### 7.4 The useful operating time between the individual charging cycles of the battery pack is very short

Possible cause	Solution
The battery pack is worn out.	Replace the battery pack.

### 7.5 The deadman's handle is jammed or doesn't return automatically to the neutral position

Possible cause	Solution
The deadman's handle is damaged externally.	Have it repaired by a Holmatro Certified Technician.
The deadman's handle is faulty.	Have it repaired by a Holmatro Certified Technician.

### 7.6 The motor operates at slow speed during or after the tool has been put into water

Possible cause	Solution
The electrical circuit has a temporary fault. The tool operates in safe mode.	Clean the tool fully. Refer to 6.4.4.

## 8 Maintenance

### 8.1 General

Proper preventive maintenance of the equipment preserves the operational safety and extends the life of the equipment. For malfunctions or repair, always specify the model and serial number of the equipment.



#### CAUTION

When performing maintenance activities, always comply with the relevant safety regulations. Wear the prescribed personal protection equipment.

## 8.2 Dangerous substances



### CAUTION

Used or leaked fluids, and any other products consumed during the activities, must be collected and disposed of in an environmentally responsible way.

## 8.3 Maintenance materials

Application	Type of maintenance material	Amount
Steel parts	WD-40 preservative oil	As required
Hinge pins	Teflon lubricating oil	As required
Long-term preservation	Tectyl ML from Valvoline	As required

Contact the Holmatro dealer for information on spare parts.

## 8.4 Maintenance schedule

Object	Action	Time interval			
		After every use	Every month or after first 10 working hours	Every 3 months or after every 25 working hours	Yearly or after every 100 working hours
Battery pack	Check	x			
	Recharge	x		x	
Light	Check	x			Holmatro dealer maintenance <sup>1</sup> .
Spreading tips	Check, clean and lubricate	x			
Snap rings (4x) of hinge pins	Check	x	x		
Hinge pins (4x)	Lubricate	x	x		
Accessories	Check	x			
Lock pins for accessories	Check		x		
	Lubricate	x			
Carrying handle	Check		x		
Deadman's handle	Check		x		
On-tool charge cable	Check	x			

- The equipment must be thoroughly inspected, checked, set and tested. We recommend to have this extensive maintenance performed by the Holmatro dealer (see also section 1.7).

## 8.5 Maintenance activities

### 8.5.1 General

- After every use:
  - Check the battery pack for damage and function.

2. If the battery pack is damaged or does not function correctly, replace the damaged battery pack.
3. Check the operation of the unit.
4. Check the unit for damage and leaks. If the unit doesn't work properly and/or leaks, have it repaired by a Holmatro Certified Technician.

#### **8.5.2 Carrying handle**

- Check the carrying handle for damage. Replace a damaged carrying handle.

#### **8.5.3 Deadman's handle**

- Check whether the deadman's handle returns to the neutral position.
- Check the operation of the deadman's handle. Have the Holmatro dealer repair the deadman's handle if it does not function properly.

#### **8.5.4 Accessories**

- Check the accessories for damage, dirt and completeness. Replace damaged accessories and make sure that the accessories are complete.
- Remove dirt with clean running water. Dry the accessories. Apply a thin coat of preservative oil to the external steel parts.

#### **8.5.5 Lock pins for accessories**

- Check the lock pins for the accessories for damage and operation.
- Drip preservative oil through the slits of the lock pins and operate the mechanism by pushing on the lock pins several times.
- Have the Holmatro Certified Technician repair the lock pins if they are damaged and/or do not work properly.

#### **8.5.6 Spreading arms and spreading tips**

- Check the spreading arms and the spreading tips for damage. Have the Holmatro dealer replace damaged parts.

#### **8.5.7 Snap rings of hinge pins**

See Fig. 2.

- Check that the snap rings of the hinge pins (A) are present and are not damaged. Have a Holmatro Certified Technician mount a new snap ring if it is missing or damaged.

#### **8.5.8 Hinge pins**

See Fig. 2.

- Spray Teflon lubricating oil on and between the moving parts of the hinge pins (A) while the tool is opening and closing.



#### **WARNING**

The hinge pins may not be removed.

### **8.6 Yearly dealer maintenance**

We recommend having the equipment inspected, checked, set and tested once a year by a Holmatro Certified Technician who has the appropriate knowledge and the necessary tools (see also section 1.7). The Holmatro dealer can organize the yearly maintenance for you on a contract basis.

## 8.7 Packaging

In many regulations such as IATA (air), ADR (road) and IMO (sea), Li-Ion battery packs are considered as dangerous goods. Please make sure that the goods are packed and transported in accordance with the latest regulations. Consult your Holmatro dealer for detailed instructions.

## 8.8 Storage

### 8.8.1 Temporary storage

- Store the tool and the battery pack in a dry and well-ventilated dust-free area.
- Fasten the tool so it can not fall over to prevent oil leaking.
- Check that the on/off switch is OFF.
- Retract the plunger(s) and then open them  $\pm 5$  mm, so that the tool can be stored without pressure.
- Apply a thin coat of preservative oil to the external steel parts.

### 8.8.2 Long-term storage

For long-term storage, carry out the same actions as for temporary storage, as well as the following additional actions:

- Remove the battery pack from the tool.
- Always store the battery packs in a dry and cool area. Temperatures above 45 °C (113 °F) can have a negative affect on the life cycle of the battery packs.



#### **WARNING**

Avoid short-circuiting the battery pack. Make sure the connections do not come in contact with metal objects or water. Never try to open a battery pack.



#### **CAUTION**

If not removed from the tool, a fully charged battery pack will discharge in 3 months. Connect the battery pack to the charger with the on-tool charge cable to prevent discharge.



#### **CAUTION**

If the battery pack is removed from the tool and is not being recharged, it will slowly loose its energy. Make sure that the battery pack is recharged at least once every year.

## 9 Decommissioning/Recycling

See Fig. 11.

At the end of its service life the equipment can be scrapped and recycled.

- Make sure that the equipment is put out of service to avoid any use.
- Check that the equipment does not contain any pressurized components.
- Recycle the various materials used in the equipment such as steel, aluminium, NBR (Nitrile Butadiene Rubber) and plastic.
- Collect all dangerous substances separately and dispose of them in an environmentally responsible way.

- Consult the Holmatro dealer about recycling.

**WARNING**

It is prohibited to dispose the battery pack into the house- and residual waste removal (WEEE-Directive 2012/19/EU).

The battery pack falls under the RoHS-directive 2011/65/EU (Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment).

Return the battery pack to your local Holmatro dealer for disposal.



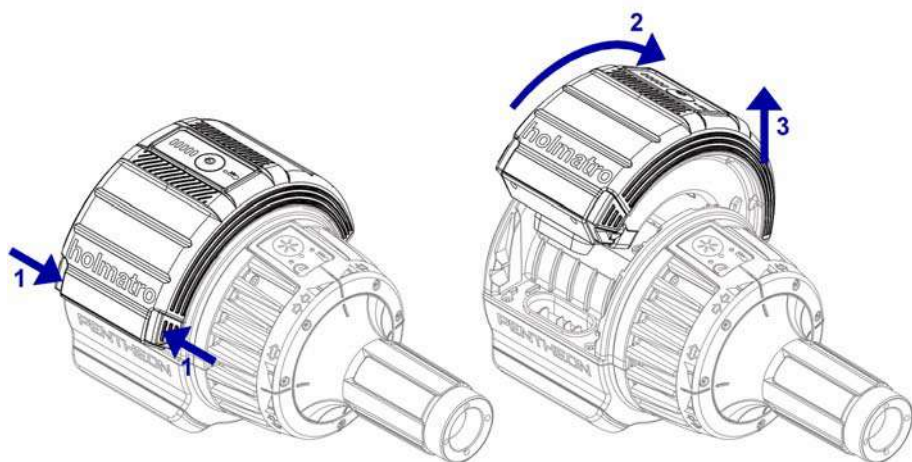


Fig. 6

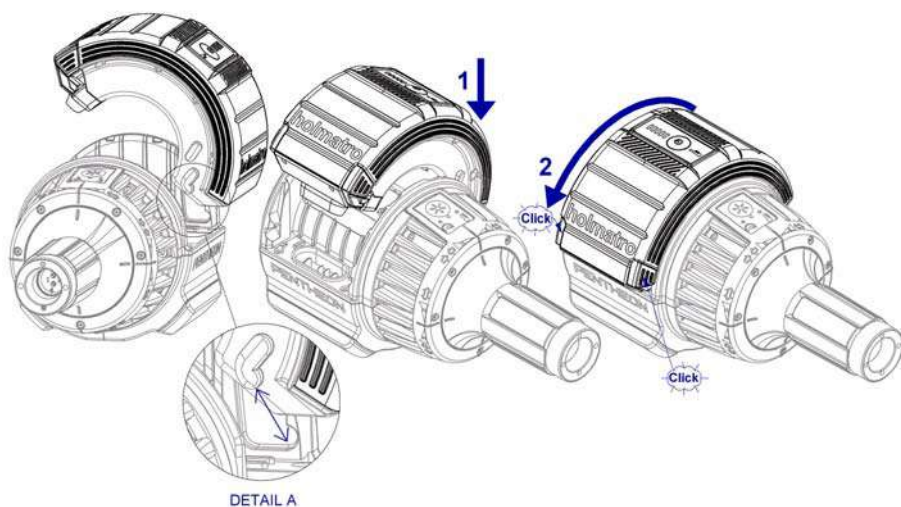


Fig. 7

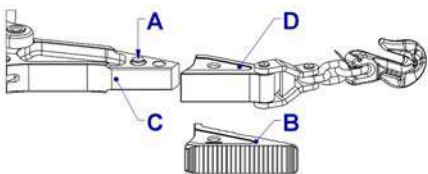


Fig. 8

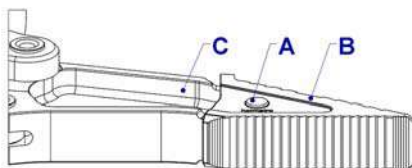


Fig. 9

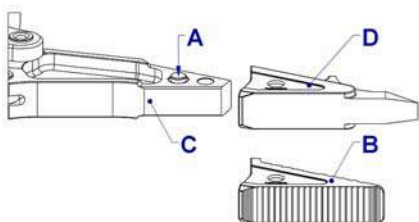


Fig. 10

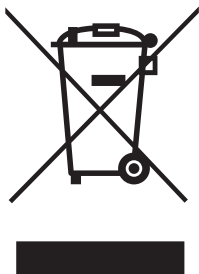


Fig. 11

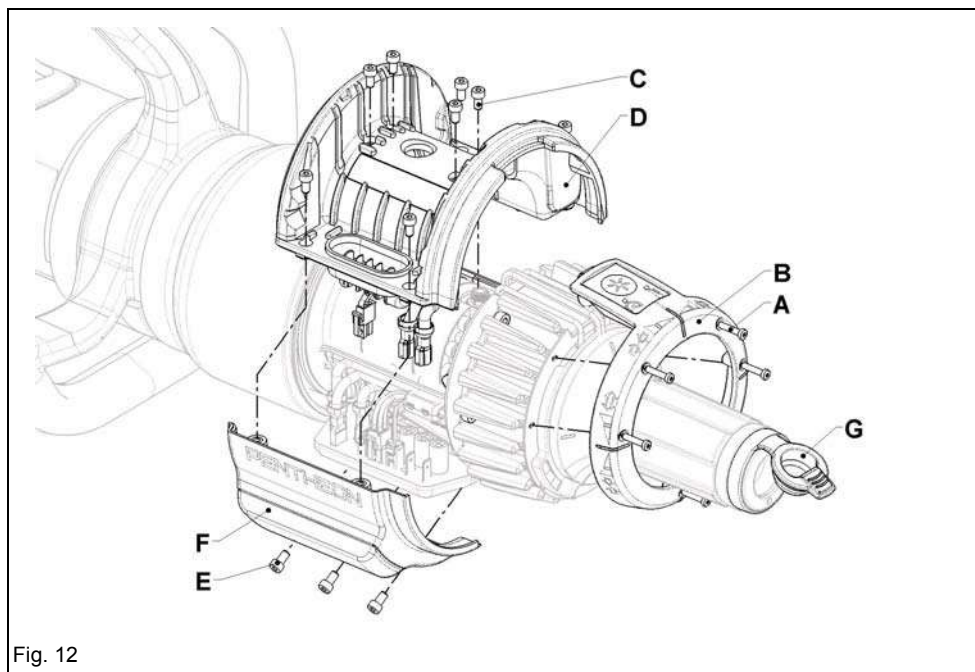


Fig. 12

## **Contact information**

### **Holmatro Netherlands**

Zalmweg 30  
4941 VX, Raamsdonkveer, The Netherlands  
Tel.: +31 (0)162 - 589200  
Fax: +31 (0)162 - 522482  
e-mail: [info@holmatro.com](mailto:info@holmatro.com)  
home page: [www.holmatro.com](http://www.holmatro.com)

### **Holmatro USA**

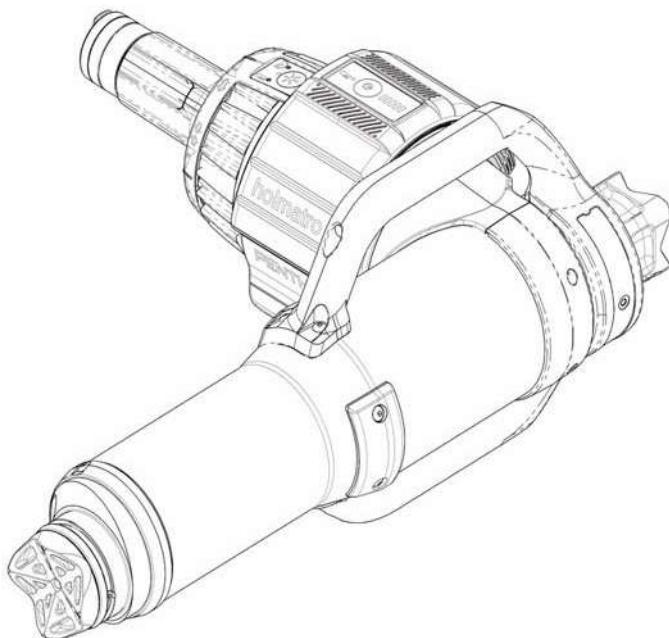
505 McCormick Drive  
Glen Burnie, MD 21061, U.S.A.  
Tel: +1 410 768 9662  
Fax: +1 410 768 4878  
e-mail: [info@holmatro-usa.com](mailto:info@holmatro-usa.com)  
home page: [www.holmatro.com](http://www.holmatro.com)

### **Holmatro China**

庞金路 1801 号  
苏州吴江经济技术开发区  
215200 中国  
电话: +86 512 6380 7060  
传真: +86 512 6380 4020  
电子邮件: [china@holmatro.com](mailto:china@holmatro.com)  
主页: [www.holmatro.com](http://www.holmatro.com)

**PTR**  
**PRA**

Handleiding	<b>NL</b>
Manual	<b>EN</b>
Mode d'emploi	<b>FR</b>
Betriebsanleitung	<b>DE</b>
Manual	<b>ES</b>
Manual	<b>PT</b>
手册	<b>ZH</b>



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**ISO 9001**  
CERTIFIED

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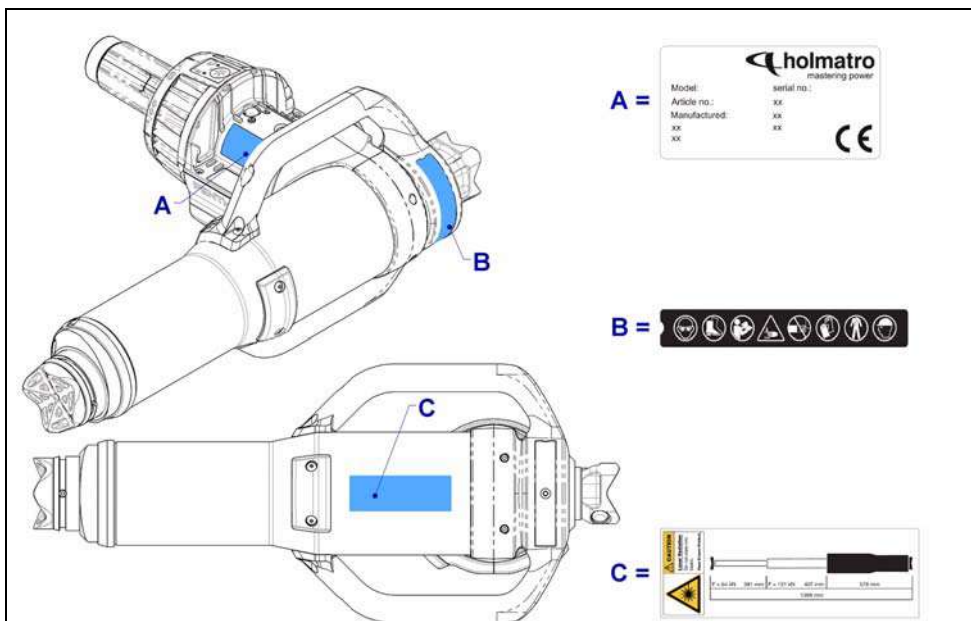


Fig. 1

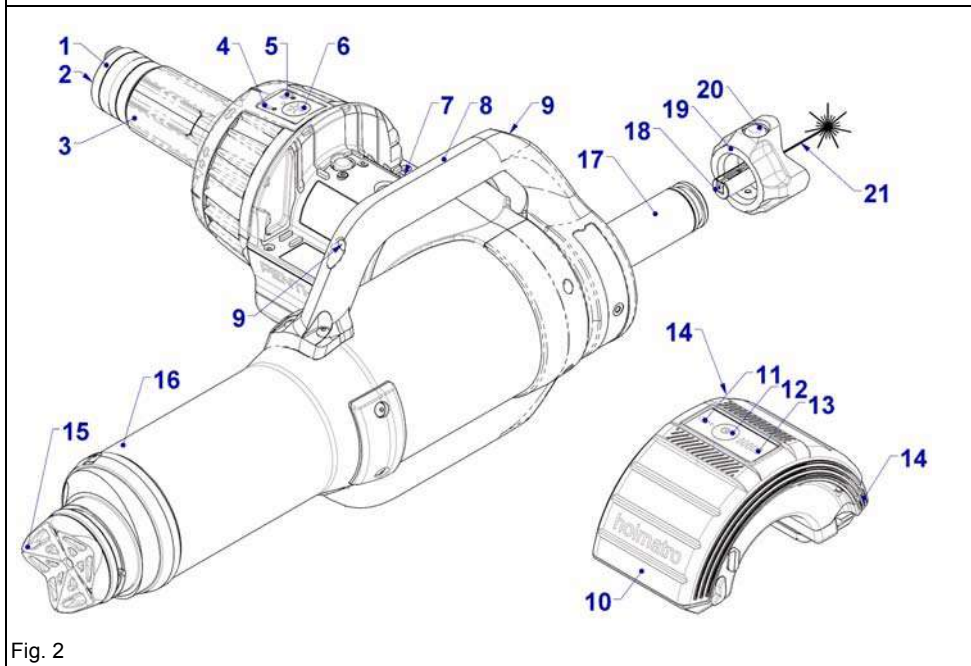


Fig. 2

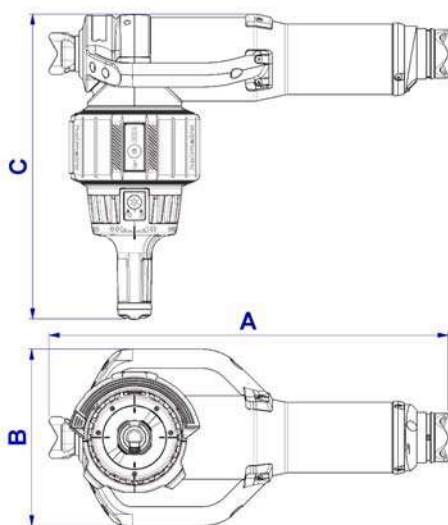


Fig. 3

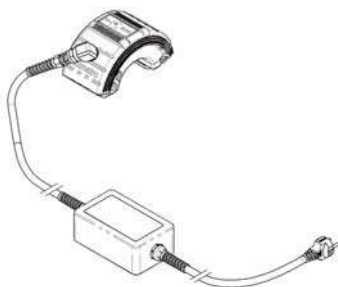


Fig. 4

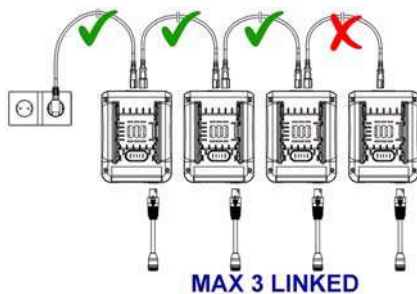


Fig. 5

# 1 Introduction

## 1.1 Disclaimer

All rights reserved. Nothing from this publication may be disclosed, reproduced or modified in any way without prior written consent from Holmatro. Holmatro reserves the right to modify or alter parts of tools without prior notification. The contents of this user manual can likewise be modified at any time. This user manual is based on and is related to the models manufactured at this moment and legislation currently in place. Holmatro accepts no liability whatsoever for possible damage resulting from the use of this user manual with respect to any equipment supplied or possibly to be supplied, subject to intent or gross negligence on the part of Holmatro. For detailed information about the use of the user manual, maintenance and/or repair of Holmatro equipment, Holmatro or the official, appointed distributor must be contacted. All possible attention has been given to the composition and precision of this user manual. However, Holmatro cannot be held liable for errors and omissions or obligations issuing from them. If the correctness or completeness of this user manual is unclear, you must contact Holmatro.

## 1.2 About this manual

The original instructions in this manual are written in English. Other language versions of this manual are a translation of the original instructions.

## 1.3 Definitions

System:	the assembly of power source, optional power cable(s) and tool(s).
Battery pack:	device that supplies electric current and voltage.
Tool:	hydraulic device such as a cutter, spreader, combi tool, ram or cylinder.
Equipment:	tool(s), cable(s), battery pack or accessories.
Mains connector:	device that transforms and supplies electric current and voltage.
Charger / battery charger:	an electronic device for charging a rechargeable battery pack.

## 1.4 General

Congratulations on your purchase of this Holmatro product. This user manual provides instructions on the operation, maintenance, malfunctions and safety of the equipment concerned. Safety regulations for the use of a complete Holmatro system are also described in this user manual. Illustrations in this user manual can differ slightly, depending on the model.

Everyone involved in putting the equipment into operation, using it, maintaining it and solving malfunctions must have read and understood this user manual, particularly the safety regulations.

To prevent errors of operation and ensure that the equipment works trouble-free, the user manuals must always be available to the operator.

## 1.5 Application

This product is part of the equipment intended for use by emergency services, to move or remove structural parts of vehicles or structures.

### 1.5.1 System requirements

Only use this tool with the prescribed type of battery pack, or with the Holmatro mains connector. In case of doubt about the compatibility of the system, always consult the Holmatro dealer.



## 1.6 Qualified personnel

The system may only be operated by people trained in its use. Always obey local legislation, safety and environmental regulations. Repair work may only be performed by a Holmatro Certified Technician.

## 1.7 Guarantee

Refer to the general terms and conditions of sale for the guarantee conditions, available from your Holmatro dealer on request.

Holmatro draws your attention to the fact that every guarantee on your piece of equipment or system will lapse and that you must indemnify Holmatro against any possible product liability and responsibility if:

- service and maintenance are not carried out strictly in accordance with the instructions, repairs are not performed by a Holmatro Certified Technician or are performed without prior written consent;
- self-made changes, structural changes, deactivation of safety devices, injudicious adjustment of hydraulics and faulty repairs have been carried out;
- non-genuine Holmatro parts or lubricants other than the types prescribed are used;
- the piece of equipment or the system is used injudiciously, through errors of operation, improperly, negligently or not in accordance with its nature and/or purpose.

## 1.8 Declaration of Conformity

The equipment is CE certified. It means that the equipment complies with the essential requirements concerning safety. The original Declaration of Conformity is supplied with the equipment.

The standards and directives that have been taken into consideration in the design are listed in the section Technical Specifications in this document.

# 2 Safety regulations

## 2.1 Explanation of the symbols used in this manual

In this manual the symbols below are used to indicate possible dangers.



### DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



### WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



### CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



### NOTICE

Is used to address practices not related to physical injury which, if not avoided, may result in property damage.



### NOTE

Emphasizes important information for optimal product use. This symbol is displayed in the user manual with all regulations related to product use or maintenance.

Always adhere to these regulations and to the locally prevailing safety regulations, and proceed very carefully.  
Inform all people involved in the activities of the operation about these safety regulations.

2.2 Model plate and CE marking on the equipment

2.2.1 General









Refer to Fig. 1.  
All pictograms attached to the equipment pertaining to safety and danger must be complied with and remain clearly legible.




**WARNING**  
Not following these instructions can result in serious personal injury, fatal accident, damage to the system or consequential loss.

2.2.2 Markings

Pos.	Type of mark	Description	Part no.
A	Model plate	Model plate with: <ul style="list-style-type: none"><li>• Model indication</li><li>• Serial number</li><li>• Date of construction</li><li>• CE marking</li></ul>	Please contact Holmatro.

Pos.	Type of mark	Description	Part no.
B		<b>WARNING</b> Wear safety goggles (or full face shield).	921.000.085.
		<b>WARNING</b> Wear safety shoes with good ankle support and toe protection.	
		<b>NOTE</b> Read the user manual before use.	
		<b>WARNING</b> Wear safety gloves.	
		<b>WARNING</b> Wear safety clothing for the entire body with reflective material.	
		<b>WARNING</b> Wear a helmet.	
		<b>DANGER</b> Danger of jamming parts of the body.	
		<b>DANGER</b> Do not load the grip head off centre.	

Pos.	Type of mark	Description	Part no.
C		<b>DANGER</b> Do not look into laser beam.	921.000.086.

### 2.3 General safety regulations

- Use this equipment solely for the activities for which it was designed. If you are in doubt or uncertain, always consult your Holmatro dealer.
- Replace illegible safety symbols, pictograms and information labels with identical ones, available from your Holmatro dealer.
- Varnished, plastic and rubber parts are not resistant to corrosive acid or liquid. Except for electrical parts, rinse parts that have come into contact with corrosive acid or liquid with a lot of water. Consult your Holmatro dealer for a resistance list.
- Protect equipment against sparks during welding or grinding activities.
- Avoid an unhealthy posture while working. It can result in physical complaints.
- Follow the inspection and maintenance instructions.
- Conversion of the piece of equipment or the system may only be performed by a Holmatro Certified Technician. In case of a conversion, retain the original manual and the conversion manual.
- Use only genuine Holmatro parts and maintenance products prescribed by Holmatro.

### 2.4 Personal safety

Rescue personnel must wear all personal means of protection as prescribed in the standard work procedure. Negligent use of personal means of protection can result in serious injury. During use wear at least the following personal means of protection:

- Helmet;
- Safety goggles or full face shield;
- Safety gloves;
- Safety clothing for the entire body with reflective material;
- Safety shoes with good ankle support and toe protection;
- Mask with filter for use when cutting glass or certain plastics.

### 2.5 Safety regulations with respect to the equipment

- Never change the setting of any safety device.
- Store the rams with the plunger(s) opened  $\pm 5$  mm.
- Watch out for the danger of being trapped when the plungers are retracted.
- Make sure that the load always comes in the center of the grip heads. Avoid a crooked load with its risk of sliding off.
- Allow the grip heads to make contact only with the objects to be manipulated.
- Prevent sharp objects from touching the plungers. Damage can cause leaks along the sealing.
- Before use, check whether accessories are properly attached on the ends of the plungers and/or the fixed side.
- In situations where the bodywork is unstable, use the ram support to prevent slipping.
- Never use more than one extension pipe at the same time, and always use a grip head or other accessory on the other end of the extension pipe.

## 2.6 General safety regulations with respect to battery packs



### WARNING

- Avoid explosive gases, open flames and sparks. Explosion risk.
- Do not put the battery pack in water longer than 30 minutes and deeper than 1 meter.
- Avoid short-circuiting the battery pack. Make sure that the connections do not come in contact with metal objects.
- Do not charge a wet battery pack.
- Do not use damaged battery packs. Contact your Holmatro dealer for instructions.
- Do not let the battery pack fall. Do not hit, crush or throw the battery pack.
- Do not make direct solder connections on the battery pack.
- Do not open the battery pack.
- Protect the battery pack against direct solar radiation and other sources of heat.
- Do not put the battery pack into a microwave or a high-pressure container.
- When not in use, store the battery pack in a dry place, locked up securely and out of reach of children.
- When the battery pack is discarded, always observe the local regulations and/or the instructions in this manual.



### NOTICE

- Use the battery pack only with the specified battery charger.
- Use the battery pack only in the original application.
- Store Battery packs in well-ventilated, cool rooms. The maximum storage temperature of 40 °C (104 °F) may not be exceeded.
- Do not put battery packs into direct sunlight during long-term storage.
- Persons who are not able to use the device in a safe way because of their physical, sensory or mental competence, or because of their inexperience, should not use the battery pack without guidance or instruction from a skilled person.
- Make sure children do not play with the battery pack.

## 2.7 Safety regulations with respect to Li-Ion battery packs

Li-Ion battery packs are entirely different from NiCad and NiMH battery packs and must be handled differently. Before and after every use of your Li-Ion battery pack, inspect the battery pack carefully to ensure no physical damage is evident, such as loose plugs and wires. Such signs often indicate that a problem exists with the battery pack that could lead to failure.

## 2.8 Safety regulations with respect to battery chargers

- Read all instructions carefully before you use the battery charger.
- Only use a power supply with the correct voltage and frequency. Refer to the electrical specifications on the model plate.
- Use the battery charger only indoors.
- Use protection for the battery charger against damp or wet conditions.
- Do not use the power cord to move the battery charger. Never pull the power cord to disconnect the battery charger from the power outlet. Keep the power cord away from heat, oil and sharp edges.
- Do not use the battery charger on a highly inflammable surface or in an inflammable environment.
- Do not charge a wet battery pack.

- When not in use, store the battery charger in a dry place, locked up securely and out of reach of children.
- Persons who are not able to use the battery charger in a safe manner, due to their physical, sensory or mental condition, or due to their inexperience, must not use the battery charger without the supervision or instruction from a skilled person.
- Strictly observe the minimum and the maximum charging temperature. See section 5.2.
- Do not use a damaged battery charger.
- Do not disassemble the battery charger.
- Risk of short-circuit: use protection for the battery charger against metal objects.
- Do not connect more than 3 mains chargers by daisy chain cables. Refer to Fig. 5.

## 2.9 Safety regulations with respect to mains connectors



### WARNING

- Read all instructions carefully before you use the mains connector.
- Only plug the mains connector into a power supply with the correct voltage and frequency. Refer to the electrical specifications on the model plate.
- Use protection for the battery charger against damp or wet conditions.
- Do not use the power cord to move the mains connector. Do not pull the cord to disconnect the mains connector from the power outlet. Keep the cord away from heat, oil and sharp edges.
- Do not use the mains connector on a highly flammable surface or in an flammable environment.
- When not in use, store the mains connector in a dry place, locked up securely and out of reach of children.
- Persons who are not able to use the mains connector in a safe manner, due to their physical, sensory or mental condition, or due to their inexperience, must not use the mains connector without the supervision or instruction from a skilled person.
- Do not use a damaged mains connector.
- Do not disassemble the mains connector.
- Risk of short-circuit: use protection for the mains connector against metal objects.
- Only use the mains connector for powering Holmatro Battery tools.

## 2.10 Safety regulations with respect to the operation of the system

- Make a risk assessment of the procedure before you start work (EN-ISO 12100).
- Keep bystanders at a distance and be extra careful in the vicinity of people and animals.
- Make sure the work area is clearly laid out and has good lighting.
- Avoid stress and work in a structured way. This reduces the risk of errors, combinations of dangers and accidents.
- Before use, check the equipment for damage. Do not use the equipment if it is not in good condition and consult your Holmatro dealer.
- Stand on a stable base and use both hands to hold the equipment.
- Hold the equipment only by its carrying handle and the deadman's handle.
- During operation, never get between the object and the equipment.
- Monitor the situation of the equipment and the structure continuously while using the equipment.
- Parts of an object that could fly off must be secured.
- Use only genuine Holmatro accessories and ensure that they have been attached correctly.
- Make sure that parts of the body never come between moving parts. There is a risk that parts of the body may be crushed or cut.

- Make sure that the deadman's handle does not become jammed.
- Stop immediately if the system makes strange noises or displays aberrant behaviour.
- Stop immediately if the equipment leaks oil. Oil escaping under pressure can penetrate the skin and cause serious injury. Go immediately to a hospital with a person who is injected with oil for medical help. Give a specification of the oil to the medical staff.
- Return inactive equipment immediately to the tool station.
- Always adhere to the safety regulations that apply to other equipment that is used in the operation.

**2.11 Safety regulations with respect to maintenance**

- Wear personal means of protection when performing maintenance tasks.
- Never work in a way that could jeopardize safety.
- Make sure that the equipment cannot roll away or tip over. The control and drive must be switched off and safeguarded against unexpected activation.
- Make sure that moving parts do not move unexpectedly.
- Used or leaked fluids, and any other products consumed during the activities, must be collected and disposed of in an environmentally responsible way.

**3 Description**

**3.1 Equipment**

The ram is a rescue tool that makes it possible to reach victims. This tool is used in rescue operations to force structural elements or vehicle components apart. The telescopic model can reach a large spreading length while remaining small enough to fit into confined spaces. The ram is produced as a hand tool that can be operated by one person. On one or both sides there is a plunger with a grip head. A hydraulic cylinder makes the plunger move axially. The high hydraulic pressure that is used means these tools can apply enormous forces. The ram can be used independently because of the battery. The battery energizes the electric motor. The electric motor operates a multi-stage piston pump that can build up a maximum system pressure of 540 bar. Stage switching is electronically controlled for maximum speed at the required pressure.



**NOTE**

The tool and battery pack can be put fully into fresh or salt water at a maximum depth of 1 meter for 30 minutes.

**3.2 Type designation**

Example: PTR50

Digit	Example	Description
1-3	PTR	P = Pentheon TR = telescopic ram
4-5	50	Type indication

**3.3 Product identification**

Refer to Fig. 2.

- |  |  |
|--|--|
| 1 Dust cap                               | 12 On/off switch                                       |
| 2 On-tool charge connector               | 13 State Of Charge (SOC) indicator (see section 3.6.2) |
| 3 Deadman's handle                       | 14 Battery pack lock                                   |
| 4 Tool temperature indicator             | 15 Grip head (base side)                               |
| 5 Maximum force indicator                | 16 Cylinder  |
| 6 Light switch for LEDs                  | 17 Plunger   |
| 7 Battery pack fitting / adapter fitting | 18 Battery for laser pointer                           |
| 8 Carrying handle                        | 19 Grip head with laser pointer (plunger side)         |
| 9 LEDs                                   | 20 Light switch for laser pointer                      |
| 10 Battery pack                          | 21 Laser beam  |
| 11 Battery temperature indicator         |  |

### 3.4 User interface of the tool

	User interface	Color	Condition	Action / Solution
1. on/off switch for LEDs in carrying handle.			Color: red, flashing The tool is too hot.	Stop the tool. Cool down the tool.
2. Maximum force reached when green.			Color: red The tool is almost too hot.	Slow down the operation.
3. Temperature of the tool.			Color: green The temperature is ok.	Normal operation

### 3.5 Technical specifications

Description	Unit	General
max. working pressure	(bar/MPa)	540 / 54
	psi	7832
hydraulic oil type	-	ISO-L HV VG 36
vibration level	m/s <sup>2</sup>	<2,5 m/s <sup>2</sup>
protection rate	-	IP57 <sup>1</sup>
temperature range	°C	-20 + 55
	°F	-4 + 131
directives	-	2006/42/EC, 2014/30/EU

1. The tool and battery pack can be put fully into in fresh, salty or dirty water at a maximum depth of 1 meter for 30 minutes.

Description	Unit	PRA40	PRA50
retracted length	mm	385	578
	in	15.2	22.8
extended length	mm	600	985
	in	23.6	38.8




Description	Unit	PRA40	PRA50
spreading stroke	mm	215	407
	in	8.5	16
max. spreading force (NFPA 1936, HSF)	kN / t	136 / 13.9	136 / 13.9
	lbf	30574	30574
sound emission @ 1m/3.25ft	dB(A)	78	78
sound emission @ 4m/13ft	dB(A)	69	69
weight, ready for use	kg	14.2	17.9
	lb	31.3	39.5
dimensions (AxBxC) refer to Fig. 3	mm	385 x 256 x 443	578 x 256 x 443
	in	15.2 x 10.1 x 17.4	22.8 x 10.1 x 17.4
EN 13204		R136/215-14.2	R136/407-17.9
NFPA 1936 compliant		yes	yes

Description	Unit	PTR40	PTR50	PTR51
retracted length	mm	385	578	713
	in	15.2	22.8	28.1
extended length	mm	792	1365	1500
	in	31.2	53.7	59.1
spreading stroke 1st plunger	mm	215	405	405
	in	8.5	15.9	15.9
spreading stroke 2nd plunger	mm	192	382	382
	in	7.6	15	15
total spreading stroke	mm	407	787	787
	in	16	31	31
max. spreading force 1st plunger. (NFPA 1936, HSF)	kN / t	136 / 13.9	136 / 13.9	136 / 13.9
	lbf	30574	30574	30574
max. spreading force 2nd plunger. (NFPA 1936, LSF)	kN / t	65 / 6.6	65 / 6.6	65 / 6.6
	lbf	14613	14613	14613
sound emission @ 1m/3.25ft	dB(A)	78	73	73
sound emission @ 4m/13ft	dB(A)	69	64	64
weight, ready for use	kg	15.5	19.9	21
	lb	34.2	43.9	46.3
dimensions (AxBxC) refer to Fig. 3	mm	385 x 256 x 443	578 x 256 x 443	713 x 256 x 443
	in	15.2 x 10.1 x 17.4	22.8 x 10.1 x 17.4	28.1 x 10.1 x 17.4
EN 13204		TR136/215-65/192- 15.5	TR136/405-65/382- 19.9	TR136/405-65/382- 21.0
NFPA 1936 compliant		yes	yes	yes

### 3.6 User interface of the battery


#### 3.6.1 Available information on the battery

The Battery Management System (BMS) protects the battery pack against internal damage.

	LEDs for State Of Charge indication. Refer to 3.6.2
	On/off switch for tool. Refer to 3.6.3
	LED for temperature indication. Refer to 3.6.4

### 3.6.2 LEDs for State Of Charge indication



















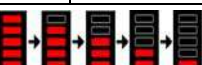


The battery pack has a LED indicator that indicates the approximate state of charge of the battery.



**NOTE**


The state of health of the battery pack is displayed on the charger.

Each LED accounts for approximately 20% of the full charge.

	Battery discharging			Battery on / connected with charger.			
Tool OFF, All LEDs: off  		color: green	80-100%	Battery not charging color: green		Battery charging color: green	
		color: green	60-80%		100%		100%
		color: green	40-60%		80-100%		80-100%
Error. all LEDs: red, flashing <sup>1</sup>  		color: orange	20-40%		60-80%		60-80%
		color: red	10-20%		40-60%		40-60%
		color: red, flashing	<10%		20-40%		20-40%
			0%		0-20%		0-20%

1. When all LEDs are red and flashing:
  1. Push the on/off switch to stop the battery.
  2. Push the on/off switch to start the battery.
  3. Charge the battery 24 hours.
  4. If this condition stays, contact a Holmatro Certified Technician.

### 3.6.3 On/off switch

	Push this button to start the tool. Push this button again to stop the tool. The motor of the tool is energized when the deadman's handle is operated.
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




#### NOTE

When the tool is started, the LEDs of the carrying handle come on by default.

### 3.6.4 Temperature of the battery pack

The Battery Management System (BMS) protects the battery pack against internal damage.

Color	Condition	Tool	Action / Solution
	Color: green The temperature is ok	OK	Use the battery pack
	Color: red The battery is almost too hot. Charge > 40°C (104°F), discharge > 60°C (140°F)	OK	Can be charged or used. Be prepared to cool or replace the battery.
	Color: red, flashing The battery is too hot. Charge > 45°C (113°F), discharge > 65°C (149°F)	stopped	Cool or replace the battery.
	Color: blue The battery is almost too cold. Charge < 5°C (41°F), discharge < -15°C (5°F)	OK	Can be charged or used. The battery will warm up itself.
	Color: blue, flashing The battery is too cold. Charge < 0°C (32°F), discharge < -20°C (-4°F)	stopped	Warm up or replace the battery.

## 3.7 Technical specifications battery pack

Description	Unit	PBPA287
voltage	VDC	28
capacity	Ah	7
energy	Wh	176
battery type		Li-Ion
protection rate	-	IP67
weight, ready for use	kg	1.5
	lb	3.3
temperature range	°C	-20 + 55
	°F	-4 + 131

## 3.8 Safety features of the battery pack

The battery pack is protected against:

- Short-circuit
- Deep discharge
- Over- and under-voltage (of the battery pack and the individual cells)

- Over-current during charging and discharging
- Overcharging
- Over temperature (of individual cells and electronics)
- Charging and discharging outside the allowed temperature range

### 3.9 Mains Connector

Refer to Fig. 4.

The mains connector is a special power pack. It can replace the battery of a power tool by the mains supply. The parameters of the mains connector are almost equivalent to the regular battery. It has the on/off switch and the LED indication shows the status of the mains connector.

The mains connector is protected against:

- Short-circuit
- Over temperature

### 3.10 Accessories

#### 3.10.1 Accessories Pentheon system

Description	model		
Battery pack	PBPA287	standard	151.000.583
	PBPA287	China	151.000.854

Description	model	plug type	
Battery charger	PBCH1	EU	151.000.629
	PBCH2	US	151.000.742
	PBCH3	worldwide	151.000.632
	PBCH4	JP	151.000.630
	PBCH5	UK	151.000.631
	PBCH6	KR	151.001.209
	PBCH7	CN	151.001.518
	PBCH8	IN	151.001.519
Mains connector	PMC1	EU	151.000.633
	PMC2	US	151.000.743
	PMC4	JP	151.000.634
	PMC5	UK	151.000.635
	PMC6	KR	151.001.304
	PMC7	CN	151.001.642
	PMC8	IN	151.001.643
	PMC9	AU	151.001.826
	PMC10	BR	151.001.830
On-tool charge cable	POTC1	worldwide	151.000.499
Daisy chain power cable	DCPC1	worldwide	151.000.503

#### 3.10.2 Tool specific accessories

Refer to Fig. 10.

Description	Pos	Model	additional length	
Ram support	1	HRS 22		150.181.011
		HRS 22 NCT		150.003.105
Extension pipe	2	TRE04	219 mm / 8.6"	151.001.771
	3	TRE05	439 mm / 17.3"	151.001.902
Cross support	4	XRS01S		151.001.161
	5	XRS01L		151.001.007
	4 + 5	XRS01		151.001.164

### 3.10.3 Ram support

The ram support is an accessory used for bodywork in an unstable condition. It provides a safe push-off point to prevent slipping. The ram support has three push-off points and can be used in combination with every ram. The push-off points are recognizable as bars on which the grip head can be placed.

### 3.10.4 Cross support

The cross support is an accessory to apply the force of a ram on a larger area of a weak structure. They cross support has a push-off bar in the centre on which the grip head can be placed.

*It can be used in vehicles:*

- between a dashboard and the rear seat.
- against the roof and floor.

### 3.10.5 Extension pipe

An extension pipe makes it possible to spread along a larger distance. The extension pipe can only be attached to the fixed side of the ram. The maximum spreading force will be reduced automatically by 35% to prevent failure of the ram and/or extension pipe.



#### WARNING

Use no other extension pipes for the tools that are described in this manual.  
Refer to 3.5 and 3.10.2.



#### WARNING

Ram type PTR51 is not suitable for use with an extension pipe.

### 3.10.6 Grip head with laser

A grip head with laser allows to highlight the area where the grip head may contact the vehicle. A grip head with laser can only be placed on the plunger side of the tool.



#### WARNING

Do not look into the laser beam.  
(Class 2 laser product according to DIN EN 60825-1 : 2008-05 I=650 nm P0<0.75 mW)

## 4 Preparation for first use

### 4.1 General

- Examine the equipment for completeness and damage. Do not use the equipment if it is damaged; in that case contact the Holmatro dealer.
- Examine the operation of the deadman's handle. when released, the deadman's handle must return to the neutral position.
- Before first use, charge the battery pack fully. Refer to section 5.2.
- Put the battery pack in the battery pack fitting / adapter fitting until the battery pack locks.
- Examine the battery pack to make sure that the lock mechanism operates correctly.

## 5 Operation

### 5.1 System operation

In a battery tool the hydraulic pump is integrated. An electric motor operates the hydraulic pump. The electric motor is energized by a battery pack or from an external electric power source. This pump displaces hydraulic oil and can build up pressure. The hydraulic pump is connected directly to the hydraulic cylinder.

The hydraulic cylinder contains a plunger that can move axially. If the cylinder is filled with oil from the bottom, the piston moves out. If the cylinder is filled from the top, the piston moves in. The direction in which the piston moves is controlled by the so-called deadman's handle. The deadman's handle can be rotated by the user to control the movement. If the deadman's handle is released, it returns automatically to the neutral position and stops the movement of the tool.

In tools like cutters, spreaders and combi tools the movement of the piston drives a mechanism to make a cutting or spreading movement.

### 5.2 Charging the battery pack

- Read the instructions of the battery charger before you charge the battery pack.
- Only use one of the prescribed Holmatro battery chargers to charge the battery pack.
- Best results and longest life of the battery pack are achieved when the battery pack is charged in a dry environment at a temperature between 18 °C and 24 °C (64 °F and 75 °F).
- The SOC indicator on the battery pack shows the state of charge of the battery pack.
- The maximum capacity of the battery pack is achieved when it has been charged and discharged some times.
- Always charge the battery pack, also if it has been used for a short time.
- The battery pack can stay connected to the battery charger for an indefinite period of time, because it is protected against overcharging.



#### NOTICE

When the battery pack is not in use, it is advised to keep it connected to the battery charger (connected to a power source) at all times. When the battery pack is full, the battery charger automatically switches on and off at regular intervals to keep the battery level at 100%.

After deep discharge of the battery pack, charge the battery pack for 24 hours. If the battery pack is not completely charged after 24 hours, contact your local Holmatro dealer.

### 5.3 Installing the battery pack

Refer to Fig. 7.

- Put the battery pack in the battery pack fitting / adapter fitting until the battery pack locks.



5.4 Connecting to an external power source

See Fig. 4.

Apart from using the battery pack, the tool can also be connected to the mains by the special mains connector. Use only the original mains connector for this purpose.

- Slide the adapter of the mains connector in the battery pack fitting / adapter fitting until the battery pack lock snaps tight.
- Insert the plug of the mains connector into the appropriate power outlet.

5.5 Starting the tool

- Push the on/off switch of the battery to start the tool. The LEDs for the temperature, State of Charge and the LEDs of the tool will come on.
- The tool operates if the deadman's handle is turned to position  or .





NOTICE

When the tool is not used for 10 minutes the battery pack will stop. Push the on/off switch to start the tool again.

5.6 Operate the deadman's handle

The deadman's handle is used to determine the movement of the plunger(s). If the deadman's handle is released, it returns automatically to the neutral position and stops the hydraulic pump. The tool stops. In the initial movement of the deadman's handle the motor operates slowly. Movement of the tool will be slow for maximum control. When the deadman's handle is rotated further the motor will operate at maximum speed.

Pressure is built up in the tool. Return oil from the tool flows back to the pump without pressure.

	Hold the deadman's handle in this position to extend / open the tool.
	Hold the deadman's handle in this position to retract / close the tool.



NOTICE

The pump will stop at maximum pressure to save energy. The maximum force indicator comes on and a beeper operates.

- Release the deadman's handle.
- Rotate the deadman's handle shortly in the opposite direction. You can use the tool again.
- Operate the deadman's handle again into the necessary direction to operate the tool.

5.7 Operating the light switch

On the tool is a light switch for the integrated LED lights.

- Push the light switch to stop or start the LED lights.



**NOTICE**

When the tool starts, the LEDs come on by default.

**5.8 Operating the laser pointer**

**5.8.1 Push the light switch**

On the grip head is a switch for the laser pointer. Refer to Fig. 2, 20.

- Push the light switch to start the laser pointer.
- Push the light switch again to stop the laser pointer.

**5.8.2 Replace the battery for the laser pointer**

When the laser pointer does not operate when the switch is pushed, replace the battery for the laser pointer. Refer to Fig. 9.

- Remove the screw (B).
- Remove the grip head.
- Replace the battery in the battery holder (A)



**NOTICE**

Battery type: CR1/3N 3V 170 mAh lithium battery



**5.9 Connection system for extension pipe**

Refer to Fig. 8.

The locking wire of the extension pipe clicks into the groove. This locks the extension pipe to the ram.

**5.9.1 To attach**

Push the extension pipe firmly on to the ram (C) until the locking wire (B) clicks in the groove.

	If the locking wire clicks into the groove, the extension pipe is locked correctly to the ram. The extension pipe cannot be pulled from the ram.
	The locking wire has not clicked into the groove. The extension pipe is not locked to the ram. Do not use the extension pipe. The extension pipe can be pulled from the ram.



**WARNING**

Make sure the extension pipe is locked correctly before use.

**5.9.2 To remove**

Push the knob (A) to lift the wire (B) to remove the extension pipe from the ram (C).



## 6 Use

### 6.1 General

The equipment of a rescue system must always be ready for use. That means the equipment must be checked and inspected directly after use, before it is put away.

Before use, always check the State Of Charge of the battery pack. See section 3.6.1.



#### **WARNING**

Make sure you are up to date on all safety regulations and that you have mastered the use of all equipment of the system you are going to work with.

### 6.2 Before use

- Before use, always check the State Of Charge of the battery pack. See section 3.6.2.

### 6.3 During use

#### 6.3.1 *Changing the battery pack*

The battery pack has a LED indicator that shows the approximate battery level (the State Of Charge).



#### **CAUTION**

- Many cycles in a short time may cause the temperature to increase above allowed limits. The tool will work slower to prevent that the battery stops.
  - Using the battery pack at temperatures above 45 °C (113 °F) decreases the life time of the battery pack.
- Stop the tool with the on/off switch.
  - Remove the battery pack. Refer to Fig. 6.
  - Put a new battery pack on the tool. Refer to Fig. 7.
  - Start the tool with the on/off switch.



#### **NOTICE**

It is highly recommended to have at least one fully charged spare battery pack available at all times.



#### **NOTICE**

To protect the battery pack, the tool will stop as soon as the battery pack becomes empty. The tool can be fixated at that moment. To remove the tool it is best to replace the battery pack by a fully charged battery pack.

#### 6.3.2 *General*

The plungers open and close quickly until they encounter resistance. Now the pump will build up the required pressure and continue with spreading, pulling or crushing.



#### **DANGER**

Danger of crushing or pinching parts of the body. Note that hydraulic tools have an enormous power, use only genuine Holmatro accessories and no other fasteners or chains

**NOTE**

When the tool is put in water it is possible that it operates in safe mode:

- The motor operates at slow speed.
- The motor will not stop when you release the control handle or put into neutral position.

It is allowed to continue.

**6.3.3 Spreading****WARNING**

Do not let sharp objects touch the plungers.

Do not use too much force. If too much force is used the plunger can extend through the opening and be damaged.

**CAUTION**

Never use more than one extension pipe at the same time.

Do not use an extension pipe without accessory, for example a grip head.

Avoid a crooked load with its risk of sliding off.

Watch out for the danger of being trapped when the plungers are retracted between cylinder and accessory.

- Make sure that a grip head or other accessory is attached correctly at the end of the plunger(s) and fixed side.
- Place the ram between the parts that must be spread.
- Extend the tool to force the parts apart.

**6.3.4 Maximum force indicator**

Refer to 3.4, 2.

When the maximum pressure is reached, the tool stops automatically to save energy. The maximum force indicator comes on.

- Release the deadman's handle.
- Rotate the deadman's handle shortly in the opposite direction. You can use the tool again.
- Operate the deadman's handle again into the necessary direction to operate the tool.

**6.3.5 Environmental information**

- Under normal use, no leakage will occur. Therefore, there will be no contact with toxic substances inside the battery pack.
- Under normal use, no environmental hazard is present.

**6.4 After use****6.4.1 Inspection**

- Check the battery level. Recharge the battery pack, if necessary. See section 3.6.2.
- Check the tool for completeness, leaks and damage. Do not use the tool if it leaks or is damaged and contact the Holmatro dealer.
- Check the plunger(s) for damage.
- Check the operation of the deadman's handle. The handle must return to the neutral position when you release it.
- Check that the carrying handle is firmly attached.

- Make sure the ram heads are attached.
- Check the accessories used for completeness and damage. Replace them if the damage is considerable.
- Check the operation of the connection system for the accessories. If it is in poor condition, have it repaired by the Holmatro dealer.

#### **6.4.2 Shut down**

- Retract the plunger(s) and then open them  $\pm 5$  mm. The tool can be stored without pressure.
- Stop the tool.
- Remove the battery pack and put it on the battery charger.
- It is also possible to charge the battery on the tool with the on-tool charge cable.
- A battery pack can be put on the battery charger. It can also be connected via the on-tool charge cable. If these two functions are used, the battery pack on the tool is charged first.

#### **6.4.3 Storing the battery pack**



##### **NOTICE**

When the battery pack is not in use, it is advised to keep the battery pack connected to the battery charger (connected to a power source) at all times. When the battery pack is full, the battery charger automatically switches on and off at regular intervals to keep the battery level at 100%.

- Store the battery pack in a dry and well-ventilated area. The maximum storage temperature of 40 °C (104 °F) may not be exceeded.
- Make sure the equipment can not fall over during transport.

#### **6.4.4 Cleaning and storage**



##### **NOTICE**

If the tool has been used under water, you must clean the tool to make sure that the tool operates correctly.

##### **After normal use**

1. Clean the tool and any accessories before storage.
2. Dry the tool if it was used in wet conditions. Lubricate all exposed steel parts with a rust inhibitor and moisture repellant.
3. Store the tool in a dry and well-ventilated area.

##### **After immersion**

1. Remove the battery pack. Flush the tool, battery pack and accessories with fresh, clean water 5x.
2. If the tool has been used in muddy, dirty or salty water, the covers must be removed to remove residual dirt.

Refer to Fig. 12

- i Remove the screws from the control handle ring. (A, 5x)
  - ii Remove the control handle ring. (B) Do not disconnect wiring.
  - iii Remove the screws from the top cover. (C, 8x)
  - iv Remove the top cover. (D) Do not disconnect wiring.
  - v Remove the screws from the bottom covers. (E, 6x)
  - vi Remove the bottom covers. (F, 2x)
  - vii Open the dust cap. (G)
3. Flush the inner parts with fresh clean water and remove dirt.

4. Remove water and dirt with compressed air.
5. Lubricate all exposed steel parts with a rust inhibitor and moisture repellant.
6. Let the tool, battery and accessories dry in the air at room temperature.
7. Install the covers:
  - i Install the bottom covers. (F, 2x)
  - ii Install the screws of the bottom cover. (E, 6x)
  - iii Install the top cover. (D)
  - iv Install the screws of the top cover. (C, 8x)
  - v Install the control handle ring. (B)
  - vi install the screws of the control handle ring. (A, 5x)
  - vii Close the dust cap. (G).
8. Store the tool in a dry and well-ventilated area.

## 7 Troubleshooting

### 7.1 General

Consult the Holmatro dealer if the listed solutions do not give the desired result, or in case of other problems. For malfunctions or repair, always specify the model and serial number of the equipment.



#### NOTICE

If the battery pack has to be returned to the dealer for repairs, make sure that the battery pack is packaged according to the specific instructions applicable for Li-Ion battery packs. See section 8.7.

### 7.2 The tool does not operate when the deadman's handle is operated

Possible cause	Solution
The battery condition is poor.	<ul style="list-style-type: none"> <li>Check the battery pack condition. See section 3.6.2.</li> <li>Replace the battery pack by a fully charged battery pack.</li> </ul>
The tool is not started.	Push the on/off switch. The LEDs should come on.
The battery pack is in the sleep mode. This occurs when the tool is not used for about 10 minutes.	To start the battery pack again: <ul style="list-style-type: none"> <li>Push the on/off switch.</li> </ul>
The electric motor does not operate.	Have it repaired by a Holmatro Certified Technician.
The temperature indicator of the tool flashes.	Refer to 3.4.
The temperature indicator of the battery flashes.	Refer to 3.4.
The internal sensors of the tool are dirty.	Clean the sensors. Refer to 6.4.4

### 7.3 The LEDs of the tool do not come on when the tool is started

Possible cause	Solution
The battery pack is not locked.	Remove the battery pack and put it in the tool again until the battery pack locks.

Possible cause	Solution
The battery pack is in the sleep mode. This occurs when tool is not used for about 10 minutes.	To start the battery pack again: <ul style="list-style-type: none"> <li>• Push the on/off switch.</li> </ul>
The deadman's handle is not in neutral position.	Put deadman's handle in neutral position.

#### 7.4 The useful operating time between the individual charging cycles of the battery pack is very short

Possible cause	Solution
The battery pack is worn out.	Replace the battery pack.

#### 7.5 The deadman's handle is jammed or doesn't return automatically to the neutral position

Possible cause	Solution
The deadman's handle is damaged externally.	Have it repaired by a Holmatro Certified Technician.
The deadman's handle is faulty.	Have it repaired by a Holmatro Certified Technician.

#### 7.6 The motor operates at slow speed during or after the tool has been put into water

Possible cause	Solution
The electrical circuit has a temporary fault. The tool operates in safe mode.	Clean the tool fully. Refer to 6.4.4.

## 8 Maintenance

### 8.1 General

Proper preventive maintenance of the equipment preserves the operational safety and extends the life of the equipment. For malfunctions or repair, always specify the model and serial number of the equipment.



#### CAUTION

When performing maintenance activities, always comply with the relevant safety regulations. Wear the prescribed personal protection equipment.

## 8.2 Dangerous substances



### CAUTION

Used or leaked fluids, and any other products consumed during the activities, must be collected and disposed of in an environmentally responsible way.

## 8.3 Maintenance materials

Application	Type of maintenance material	Amount
Steel parts	WD-40 preservative oil	As required
Long-term preservation	Tectyl ML from Valvoline	As required

Contact the Holmatro dealer for information on spare parts.

## 8.4 Maintenance schedule

Object	Action	Time interval			
		After every use	Every month or after first 10 working hours	Every 3 months or after every 25 working hours	Yearly or after every 100 working hours
Battery pack	Check	x			
	Recharge	x		x	
Light	Check	x			Holmatro dealer maintenance <sup>1</sup> .
Ram heads	Check	x			
Plunger(s)	Check		x		
Accessories	Check	x			
Connection system for accessories	Check		x		
Carrying handle	Check	x			
Deadman's handle	Check	x			
On-tool charge cable	Check	x			

1. The equipment must be thoroughly inspected, checked, set and tested. We recommend to have this extensive maintenance performed by the Holmatro dealer (see also section 1.7).

## 8.5 Maintenance activities

### 8.5.1 General

- After every use:
  1. Check the battery pack for damage and function.
  2. If the battery pack is damaged or does not function correctly, replace the damaged battery pack.

3. Check the operation of the unit.
4. Check the unit for damage and leaks. If the unit doesn't work properly and/or leaks, have it repaired by a Holmatro Certified Technician.

### **8.5.2 Carrying handle**

- Check the carrying handle for damage. Replace a damaged carrying handle.
- Check the attachment of the carrying handle. If necessary, fasten it firmly .

### **8.5.3 Deadman's handle**

- Check whether the deadman's handle returns to the neutral position.
- Check the operation of the deadman's handle. Have the Holmatro dealer repair the deadman's handle if it does not function properly.

### **8.5.4 Accessories**

- Check the accessories for damage, dirt and completeness. Replace damaged accessories and make sure that the accessories are complete.
- Remove dirt with clean running water. Dry the accessories. Apply a thin coat of preservative oil to the external steel parts.

### **8.5.5 Grip heads**

Check the grip heads for damage. Replace damaged grip heads.

### **8.5.6 Connection system for accessories**

- Check the connection system on the fixed side and on the plunger side for damage and operation. If the connection system does not work properly and/or leaks, have it repaired by an Holmatro Certified Technician.

### **8.5.7 Plunger(s)**

- Check the plunger(s) for damage. If a plunger is damaged, have it repaired by an Holmatro Certified Technician.

## **8.6 Yearly dealer maintenance**

We recommend having the equipment inspected, checked, set and tested once a year by a Holmatro Certified Technician who has the appropriate knowledge and the necessary tools (see also section 1.7). The Holmatro dealer can organize the yearly maintenance for you on a contract basis.

## **8.7 Packaging**

In many regulations such as IATA (air), ADR (road) and IMO (sea), Li-Ion battery packs are considered as dangerous goods. Please make sure that the goods are packed and transported in accordance with the latest regulations. Consult your Holmatro dealer for detailed instructions.

## **8.8 Storage**

### **8.8.1 Temporary storage**

- Store the tool and the battery pack in a dry and well-ventilated dust-free area.
- Fasten the tool so it can not fall over to prevent oil leaking.
- Check that the on/off switch is OFF.
- Retract the plunger(s) and then open them  $\pm 5$  mm, so that the tool can be stored without pressure.
- Apply a thin coat of preservative oil to the external steel parts.

### 8.8.2 Long-term storage

For long-term storage, carry out the same actions as for temporary storage, as well as the following additional actions:

- Remove the battery pack from the tool.
- Always store the battery packs in a dry and cool area. Temperatures above 45 °C (113 °F) can have a negative affect on the life cycle of the battery packs.



#### **WARNING**

Avoid short-circuiting the battery pack. Make sure the connections do not come in contact with metal objects or water. Never try to open a battery pack.



#### **CAUTION**

If not removed from the tool, a fully charged battery pack will discharge in 3 months. Connect the battery pack to the charger with the on-tool charge cable to prevent discharge.



#### **CAUTION**

If the battery pack is removed from the tool and is not being recharged, it will slowly loose its energy. Make sure that the battery pack is recharged at least once every year.

## 9 Decommissioning/Recycling

See Fig. 11.

At the end of its service life the equipment can be scrapped and recycled.

- Make sure that the equipment is put out of service to avoid any use.
- Check that the equipment does not contain any pressurized components.
- Recycle the various materials used in the equipment such as steel, aluminium, NBR (Nitrile Butadiene Rubber) and plastic.
- Collect all dangerous substances separately and dispose of them in an environmentally responsible way.
- Consult the Holmatro dealer about recycling.



#### **WARNING**

It is prohibited to dispose the battery pack into the house- and residual waste removal (WEEE-Directive 2012/19/EU).

The battery pack falls under the RoHS-directive 2011/65/EU (Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment).

Return the battery pack to your local Holmatro dealer for disposal.



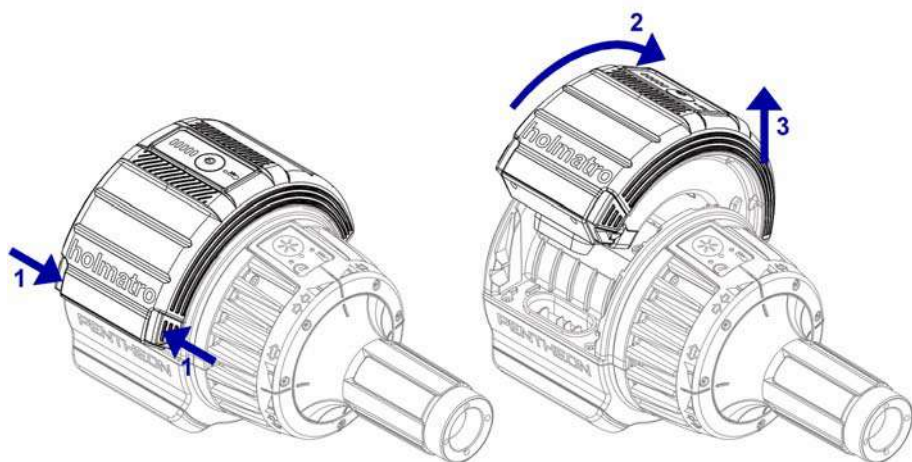


Fig. 6

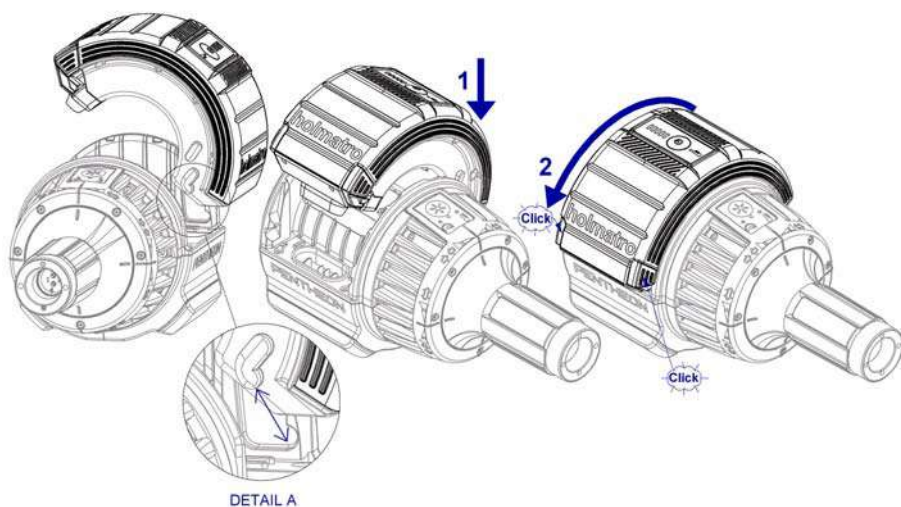


Fig. 7

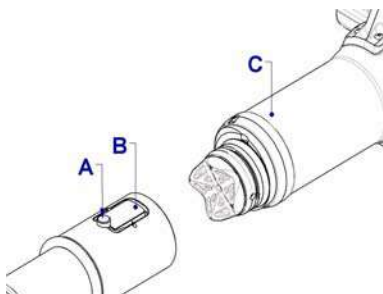


Fig. 8

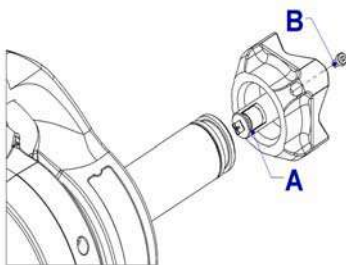


Fig. 9

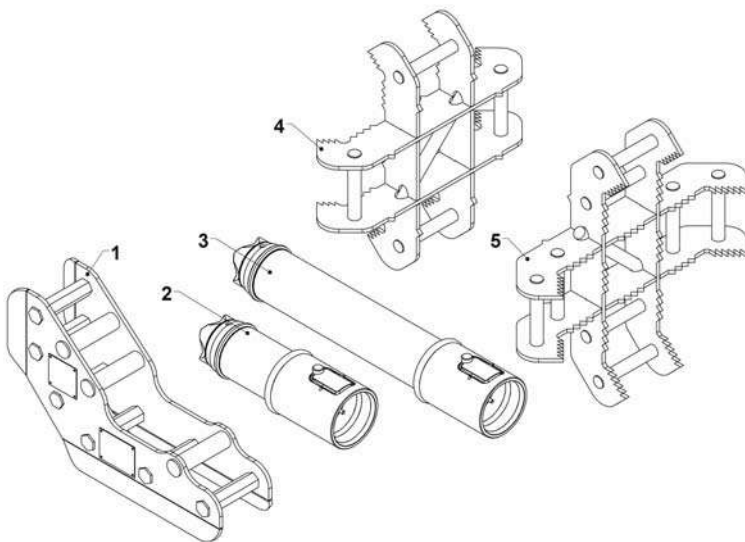


Fig. 10



Fig. 11

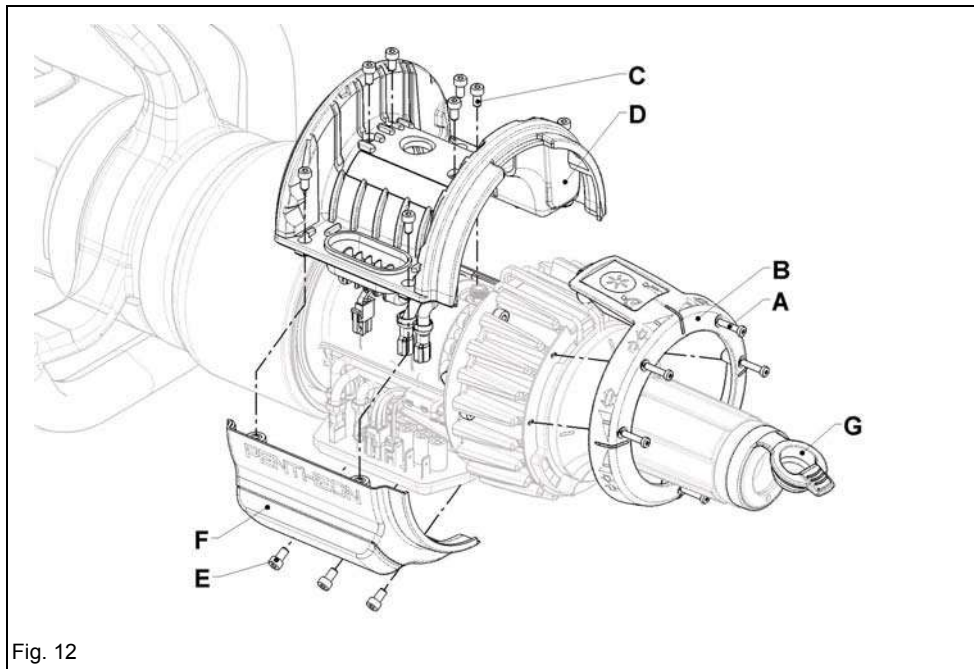


Fig. 12

## **Contact information**

### **Holmatro Netherlands**

Zalmweg 30  
4941 VX, Raamsdonkveer, The Netherlands  
Tel.: +31 (0)162 - 589200  
Fax: +31 (0)162 - 522482  
e-mail: [info@holmatro.com](mailto:info@holmatro.com)  
home page: [www.holmatro.com](http://www.holmatro.com)

### **Holmatro USA**

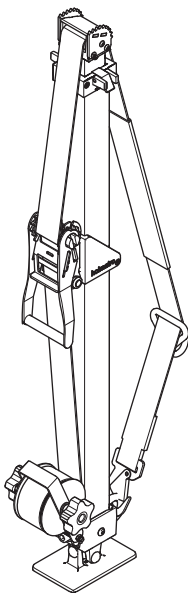
505 McCormick Drive  
Glen Burnie, MD 21061, U.S.A.  
Tel: +1 410 768 9662  
Fax: +1 410 768 4878  
e-mail: [info@holmatro-usa.com](mailto:info@holmatro-usa.com)  
home page: [www.holmatro.com](http://www.holmatro.com)

### **Holmatro China**

庞金路 1801 号  
苏州吴江经济技术开发区  
215200 中国  
电话: +86 512 6380 7060  
传真: +86 512 6380 4020  
电子邮件: [china@holmatro.com](mailto:china@holmatro.com)  
主页: [www.holmatro.com](http://www.holmatro.com)

## V-STRUT

Manual **EN**  
Mode d'emploi **FR**  
Manual **ES**



---

5	<b>EN</b>	To read the manual, please fold out the first and the last page of the cover.
14	<b>FR</b>	Pour lire le manuel, veuillez déplier la première et la dernière page de la couverture.
24	<b>ES</b>	Para leer este manual, por favor despliegue la primera y la última página de este manual.

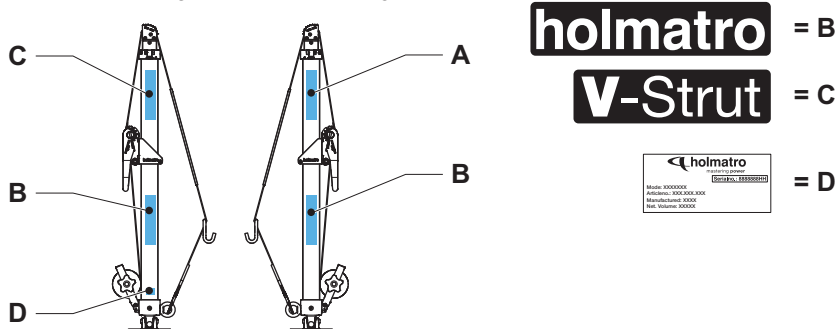
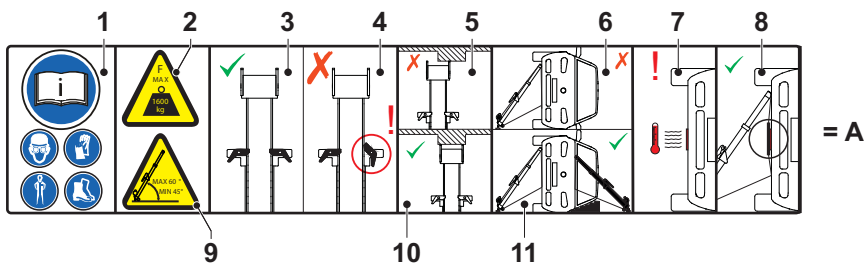


Fig. 1

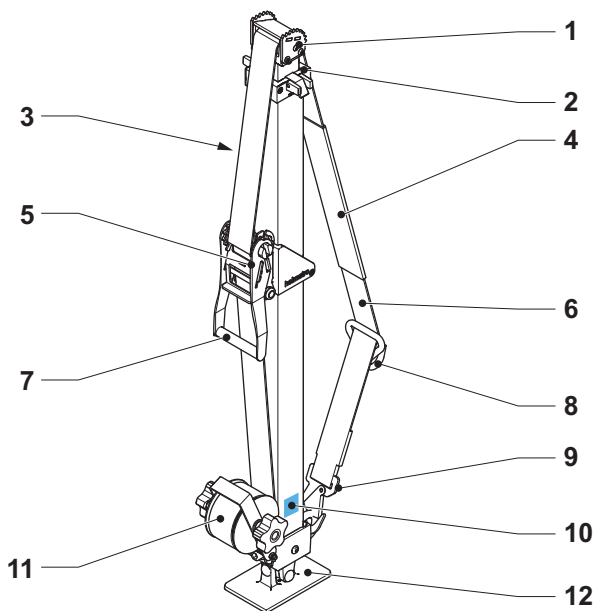


Fig. 2

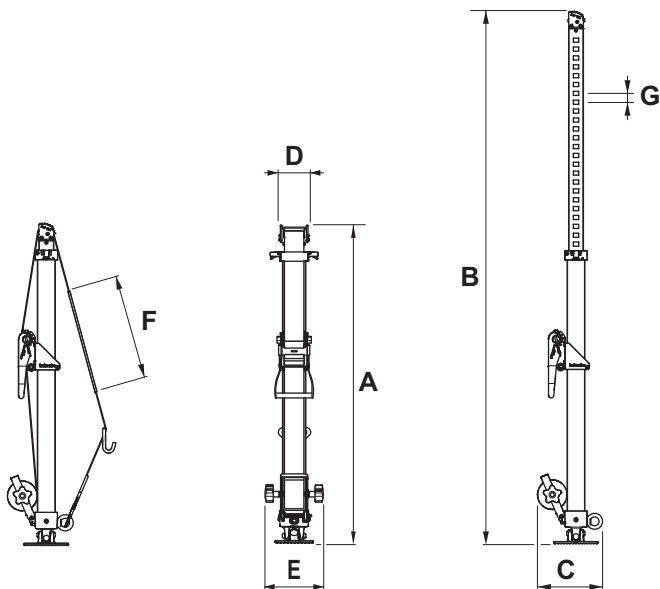


Fig. 3

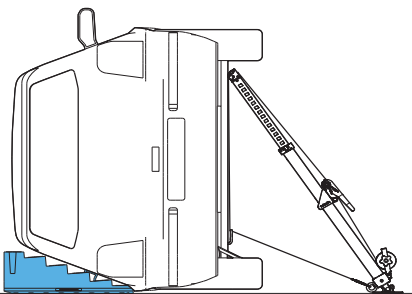


Fig. 4

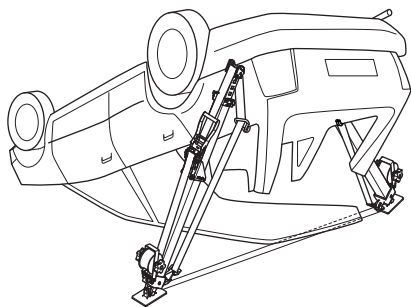


Fig. 5



# 1 Introduction

## 1.1 Disclaimer

All rights reserved. Nothing from this publication may be disclosed, reproduced, or modified in any way without prior written consent from Holmatro. Holmatro reserves the right to modify or alter parts of tools without prior notification. The contents of this user manual can likewise be modified at all times. This user manual is based on and is related to the models manufactured at this moment and legislation currently in place. Holmatro accepts no liability whatsoever for possible damage resulting from the use of this user manual with respect to any equipment supplied or possibly to be supplied, subject to intent or gross negligence on the part of Holmatro. For detailed information about the use of the user manual, maintenance and/or repair of Holmatro equipment, Holmatro or the official, appointed distributor must be contacted. All possible attention has been given to the composition and precision of this user manual. However, Holmatro cannot be held liable for errors and omissions or obligations issuing from them. If the correctness or completeness of this user manual is unclear, you must contact Holmatro.

## 1.2 About this manual

The original instructions in this manual are written in English. Other language versions of this manual are a translation of the original instructions.

## 1.3 General

Congratulations on your purchase of this Holmatro product. This user manual provides instructions on the operation and maintenance of the equipment concerned. Safety regulations for the use of the Holmatro system are also described in this user manual.

Everyone involved in putting the equipment into operation and maintaining it must have read and understood this user manual, particularly the safety regulations.

To prevent errors of operation and to ensure that the equipment works trouble-free, the user manual must always be available to the operator.

## 1.4 Application

The Holmatro V-strut is a vehicle stabilization system to quickly and efficiently stabilize all types of cars, minibuses, SUV's, MPV's, and truck cabins in all kind of difficult positions and on any surface to obtain maximum safety for rescue workers and victims. The struts can be used separately or in sets to create a stable situation in which the rescue operation can proceed.

The V-strut is not suitable for lifting vehicles.

The length of the V-strut can easily be adapted just by moving the tubes out of each other. They are locked automatically to each other by 2 spring activated pawls.

The ratchet belt has a sleeve to protect the belt itself against sharp objects and heat parts like the exhaust system.

The knife to cut sheet metal is an accessory to force a slot in the vehicles bodywork so the hook of the ratchet belt can be fixed properly.

## 1.5 Qualified personnel

The system may only be operated by people trained in its use. Always obey local legislation, safety and environmental regulations. Repair work may only be performed by a Holmatro Certified Technician.

## 1.6 Guarantee

Refer to the general terms and conditions of sale for the guarantee conditions, available from your Holmatro dealer on request.

Holmatro draws your attention to the fact that every guarantee on your piece of equipment or system will lapse and that you must indemnify Holmatro against any possible product liability and responsibility if:

- service and maintenance are not carried out strictly in accordance with the instructions, repairs are not performed by a Holmatro Certified Technician or are performed without prior written consent;
- self-made changes, structural changes, deactivation of safety devices, or faulty repairs have been carried out;
- non-genuine Holmatro parts or lubricants other than the types prescribed are used;
- the piece of equipment or the system is used injudiciously, improperly, negligently, or not in accordance with its nature and/or purpose.

## 2 Safety regulations

### 2.1 Explanation of the symbols used in this manual

In the rest of the user manual the symbols below are used to indicate hazardous situations.



The DANGER symbol indicates a hazardous situation, which, if not avoided, will result in death or serious injury.



The WARNING symbol indicates a hazardous situation, which, if not avoided, could result in death or serious injury.



The CAUTION symbol indicates a hazardous situation, which, if not avoided, could result in minor or moderate injury.



The NOTICE symbol indicates a property damage message.

Always adhere to these regulations and to the locally prevailing safety regulations, and proceed very carefully.

Inform all people involved in the activities of the operation about these safety regulations.

### 2.2 Pictograms on the equipment

Refer to Fig. 1.

All pictograms attached to the equipment pertaining to safety and danger must be complied with and remain clearly legible.



Not following these instructions can result in serious personal injury, fatal accident, damage to the system or consequential loss.

Type of mark	Position	Description	Part number
Instruction	A.1	<ul style="list-style-type: none"> <li>Read the user manual before use.</li> <li>Wear a helmet with safety goggles/face shield.</li> <li>Wear safety gloves.</li> <li>Wear protective clothing that covers the entire body.</li> <li>Wear safety shoes.</li> </ul>	920.000.281
	A.2	Maximum load-bearing capacity of strut (centric)	
Warning	A.9	Minimum and maximum angle of use	
Instruction	A.3	Correct: both pawls have to interlock.	
	A.4	Incorrect: only 1 pawl is interlocking.	
	A.5	Incorrect: head is not loaded symmetrically.	
	A.10	Correct: head is loaded symmetrically.	
	A.6	Incorrect: vehicle is supported on 1 side only.	
	A.11	Correct: vehicle is supported on both sides.	
	A.7	Be careful for hot objects.	
	A.8	Put a cover between V-strut and sharp or hot objects.	

Other labels attached to the equipment (refer to Fig. 1):

Type of mark	Position	Description	Part number
Product label	D	Identification label	920.299.576

## 2.3 General safety regulations

- Use this equipment solely for the activities for which it was designed. If you are in doubt or uncertain, always consult your Holmatro dealer.
- Replace illegible safety symbols, pictograms, and information labels with identical ones, available from your Holmatro dealer.
- Varnished, plastic, and rubber parts are not resistant to corrosive acid or liquid. Rinse parts that have come into contact with corrosive acid or liquid with a lot of water. Consult your Holmatro dealer for a resistance list.
- Avoid an unhealthy posture while working. It can result in physical complaints.
- Follow the inspection and maintenance instructions.
- Conversion of the piece of equipment or the system may only be performed by a Holmatro Certified Technician. In case of a conversion, retain the original manual and the conversion manual.
- Use only genuine Holmatro parts and maintenance products prescribed by Holmatro.

## 2.4 Personal safety

Personnel that uses or assists in the use of the equipment must wear all personal means of protection as prescribed in the standard work procedure. Negligent use of personal means of protection can result in serious injury. During use wear at least the following personal means of protection:

- Helmet;
- Safety goggles or full face shield;
- Safety gloves;
- Safety clothing for the entire body with fire-retardant properties and reflective material;
- Safety shoes with good ankle support and toe protection;

## **2.5 Safety regulations with respect to the equipment**

- During use, load only the heads.
- Distribute the load over the entire surface of the heads.
- Protect the tension belt against/around sharp corners or glass.

## **2.6 Safety regulations with respect to the operation of the system**

- Make a risk assessment of the rescue operation before you start work (EN-ISO 12100).
- Keep bystanders at a distance and be extra careful in the vicinity of people and animals.
- Make sure the work area is clearly laid out and has good lighting.
- Avoid stress and work in a structured way. This reduces the risk of errors, combinations of dangers, and accidents.
- Before use, check the equipment for damage. Do not use the equipment if it is not in good condition and consult your Holmatro dealer.
- Monitor the situation of the equipment and the structure continuously while using the equipment.
- Use only genuine Holmatro accessories and ensure that they have been attached correctly.
- Make sure that parts of the body never come between moving parts. There is a risk that parts of the body may be crushed or cut.
- Stop immediately if the equipment makes strange noises or displays abnormal behaviour.
- Make sure the head of the strut grips as far as possible above the center of gravity of the vehicle.
- Stop and find a new push-off point if the head starts to lose its grip.

## **2.7 Safety regulations with respect to maintenance**

- Wear personal means of protection when performing maintenance tasks.
- Never work in a way that could jeopardize safety.

# **3 Description**

## **3.1 Equipment**

The Holmatro V-strut has been designed to provide stability in a strut/shoring system.

The system is divided into a strut (shore) and a tension belt for applying pretension. Both components must be used to guarantee good stability.

Using a strut/shoring system increases the base area of the vehicle by adding extra points of support, thus improving the stability.

## **3.2 Characteristics**

- The V-strut consists of two anodized aluminium tubes.
- The tubes are locked to each other by two spring-activated pawls.
- For maximum grip to the vehicle's bodywork the head has serrated plates.
- To achieve minimum weight and to prevent corrosion, most parts are made out of anodized aluminium.
- The base plate can swivel for maximum grip.
- A protection cover can protect the belt against sharp and hot objects.
- A hook fixes the belt to the bodywork of the vehicle.
- A safety hook, mounted to the V-strut or to another V-strut, prevents the device from slipping away from the vehicle.
- The grip of the ratchet belt can be used to carry the V-strut easily.
- The belt is stored on a belt reel.

### 3.3 Product identification

Refer to Fig. 2.

- |   |                                      |    |   |
|---|--------------------------------------|----|---|
| 1 | Grip head                            | 7  | Handle                                  |
| 2 | Mechanical lock                      | 8  | Hook                                    |
| 3 | Information label, refer to Fig. 1.A | 9  | Safety hook                             |
| 4 | Cover                                | 10 | Identification label, refer to Fig. 1.D |
| 5 | Ratchet mechanism                    | 11 | Belt reel                               |
| 6 | Tension belt                         | 12 | Base                                    |

### 3.4 Technical specifications

Refer to Fig. 3.

Specifications V-STRUT	Value	Unit
Weight	7.9	kg
	17.4	lbs
Width	149	mm
	5.9	inch
Height	210	mm
	8.3	inch
Length, minimum (A)	1080	mm
	42.5	inch
Length, maximum (B)	1800	mm
	70.9	inch
Stroke	720	mm
	28.4	inch
Steps	24	
Step size (G)	30	mm
	1.18	inch
Depth at bottom (C)	220	mm
	8.7	inch
Width of grip head (D)	71	mm
	2.8	inch
Width of belt reel (E)	149	mm
	5.9	inch
Length of cover (F)	350	mm
	13.8	inch
Maximum axial load, symmetrical on head	1600	kgf
	3528	lbf
Temperature range	-20 / +60	°C
	-4 / +140	°F
Country of manufacture	The Netherlands	

Specifications Tension belt	Value	Unit
Maximum load	1250	kgf
	2756	lbf
Length	5	m
	16.4	ft
Width	50	mm
	1.9	inch
Standard	NEN-EN 12195-2	
Country of manufacture	The Netherlands	

### 3.5 Part numbers

Description	Part number
V-STRUT	150.062.194
Knife to cut sheet metal	150.062.183
Base support plate	150.011.519

## 4 Preparation for first use

Check the equipment for completeness and damage. Do not use the equipment if it is damaged; in that case contact the Holmatro dealer.

## 5 Operation

### 5.1 Examples of use

Refer to Fig. 4 and Fig. 5 for examples of the use of one or multiple V-struts.

### 5.2 Transport

- Carry the V-strut by the handle of the ratchet mechanism. Refer to Fig. 2.

### 5.3 Before use

The equipment of a rescue system must always be ready for use.

#### **⚠ WARNING**

Make sure you are up to date on all safety regulations and that you have mastered the use of the equipment you are going to work with.

## 5.4 Use

### 5.4.1 Prepare the V-strut

- Release the ratchet mechanism. Refer to Fig. 6.
- Extend the tension belt. Refer to Fig. 7. Optionally remove the safety hook from the eye at the bottom of the V-strut.
- Extend the V-strut. Refer to Fig. 8.
- Lock the V-strut.

**⚠ WARNING** Make sure that both pawls interlock the inner tube. Refer to Fig. 9.

### 5.4.2 Place a V-strut against the bottom side of the vehicle

- Before you place the strut, make sure that the car can not tip over or move as a result of the placement of the strut and its tension belt.

**⚠ WARNING** Before you start stabilizing the vehicle, pre-stabilize it sufficiently with cribbing material.  
Refer to Fig. 4.

- Select a position for the V-strut at which the hook of the tension belt can be attached as low as possible to the vehicle.
- Place the base of the V-strut on a strong flat ground surface.
- If the ground is too soft, put the base support plate under the base. Refer to section 3.5 and Fig. 10.
- Place the grip head of the V-strut against a vertical surface of the vehicle. Do not place the grip head under a horizontal surface or edge. Refer to Fig. 12 and Fig. 13. When the tension belt will be tightened the grip head will be pulled firmly down and against the vehicle to provide stabilization.
- Make sure that the load is distributed evenly over the grip head. Refer to Fig. 11.
- Put the cover between the V-strut and possible sharp or hot objects. Refer to Fig. 14.
- Make sure that the angle of the V-strut is between 45° and 60°. Refer to Fig. 14.

**NOTICE** Rule of thumb: if the height of the grip head is  $H$ , the distance of the base to the vehicle must be minimal  $0.6 \cdot H$  and maximal  $H$ .  
For example, if the grip head is at 1275 mm above the ground, the base must be between 750 mm and 1275 mm from the vehicle.

### 5.4.3 Put the belt under tension

- Attach the upper hook of the tension belt as low as possible to the vehicle. Refer to Fig. 14.
- Make sure that the safety hook of the tension belt is attached to the eye at the bottom of the V-strut.
- Manually pull the loose end of the tension belt and check that the grip head, the base, and the cover stay on their correct places. Refer to Fig. 15.

**⚠ WARNING** Make sure that no body part is between the vehicle, the strut, and the tension belt.

- Repeatedly move the handle of the ratchet up and down to bring the tension belt under the tension that is needed to stabilize the vehicle. Refer to Fig. 15.
- Coil the tension belt. Refer to Fig. 16.
- During the rescue operation regularly check the tension of the tension belt.

**⚠ WARNING** Be aware that the load on the V-strut can increase during a rescue operation.

#### **5.4.4 Place a V-strut against the top side of the vehicle**

- Before you place the strut, make sure that the car can not tip over or move as a result of the placement of the strut and its tension belt.

#### **⚠ WARNING**

Before you start stabilizing the vehicle, pre-stabilize it sufficiently with cribbing material.

Refer to Fig. 4.

- Mark the position where the hook of the tension belt must be attached to the car body. Use the knife to determine the correct height to cut the car body. Refer to Fig. 17.a.
- Make a cut in the car body with the knife. Refer to Fig. 17.b.
- Widen the cut with the rear side of the knife. Refer to Fig. 17.c.
- Mount the hook of the tension belt in the cut. Refer to Fig. 17.d.
- Place the V-strut as described in section 5.4.2.
- Put the belt under tension as described in section 5.4.3.

#### **5.4.5 Remove a V-strut**

#### **⚠ WARNING**

Make sure that the vehicle will stay stable when you remove the V-strut.

- Release the tension belt. Refer to Fig. 6.
  - Optionally remove the safety hook from the eye at the bottom of the V-strut.
  - Remove the hook from the vehicle.
  - Remove the V-strut from the vehicle.
  - Slightly lift the inner tube to unlock both pawls.
  - Keep the pawls in the unlocked position and slide the inner tube into the outer tube.
- Optionally repeat this procedure for the other V-struts that were used during this rescue operation.

### **5.5 After use**

#### **5.5.1 Clean**

- Check the strut, heads, tension belt, the ratchet, and optionally the knife and the base support plate for completeness, operation, and damage.
- Remove any dirt with clean running water.
- Dry the equipment.
- Coil the tension belt. Refer to Fig. 16.

#### **5.5.2 Store**

#### **NOTICE**

Do not store the equipment before the tension belt is dry.

Damp material can be detrimental to the belt material and the metal.

- Rub a light layer of WD-40 preservative oil on the steel parts.
- Store the equipment in a dry and well-ventilated area.



# 6 Maintenance

For standard installation instructions, refer to the Service & Support section of the Holmatro website.

## 6.1 General

Proper preventive maintenance of the equipment preserves the operational safety and extends the life of the equipment.

**⚠ CAUTION** When performing maintenance activities, always comply with the relevant safety regulations. Wear the prescribed personal protection equipment.

### 6.1.1 Dangerous substances

**⚠ CAUTION** Used or leaked fluids and any other products consumed during the activities, must be collected and disposed of in an environmentally responsible way.

## 6.2 Maintenance materials

Application	Type of maintenance material	Amount
Hinge pins	Teflon lubricating oil	As required
Steel parts	WD-40 preservative oil	As required
	Tectyl ML from Valvoline (long term preservation)	As required

Contact the Holmatro dealer for information on spare parts.

## 6.3 Yearly maintenance

We recommend having the equipment inspected, checked, set, and tested once a year by a Holmatro Certified Technician who has the appropriate knowledge and the necessary tools.

The Holmatro dealer can organize the yearly maintenance for you on a contract basis. In this way you are assured of correct and safe operation.

## 6.4 Long term storage

- For long-term storage, apply preservative to the external steel parts.
- Store the equipment in a dry, well-ventilated area.

# 7 Decommissioning/Recycling

At the end of its service life the equipment can be scrapped and recycled.

The equipment is made of steel, polyester, and plastic and does not contain any pressurized components.

- Consult the Holmatro dealer about recycling.
- Make sure that the equipment is put out of order to avoid any use.

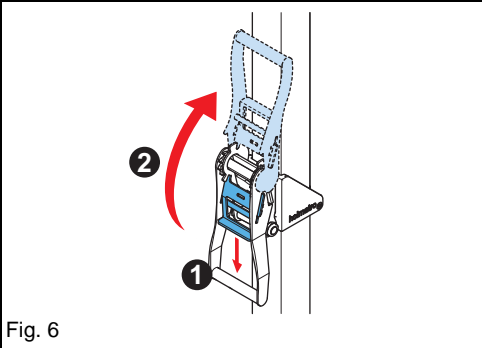


Fig. 6

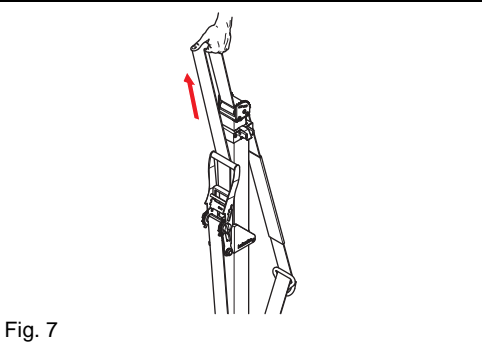


Fig. 7

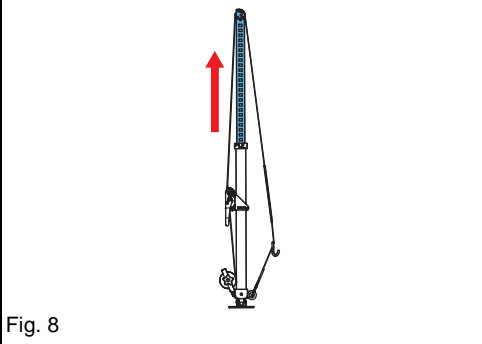


Fig. 8

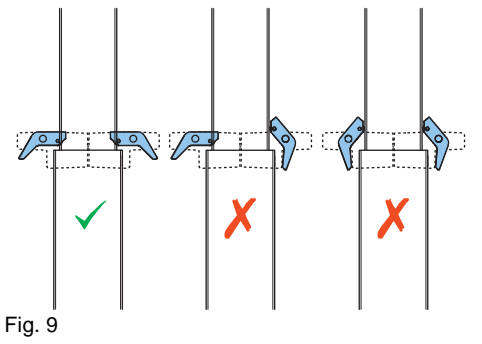


Fig. 9

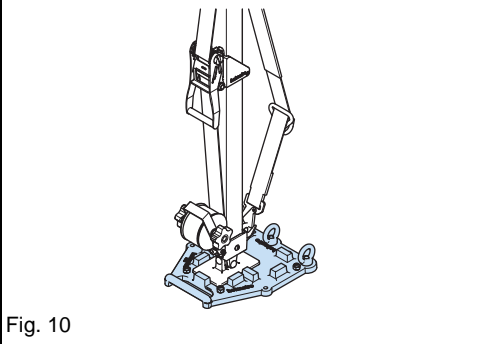


Fig. 10

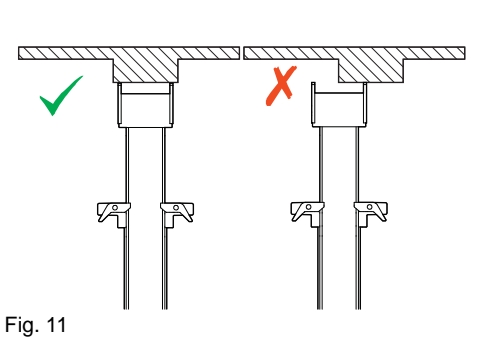


Fig. 11

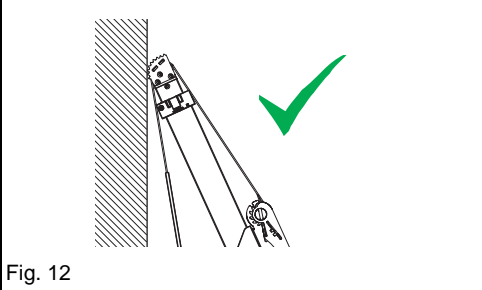


Fig. 12

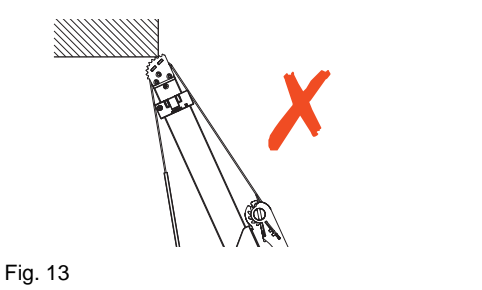


Fig. 13

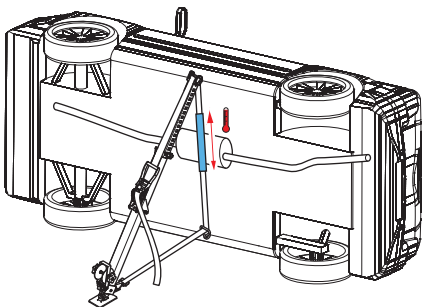


Fig. 14

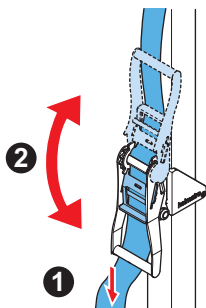
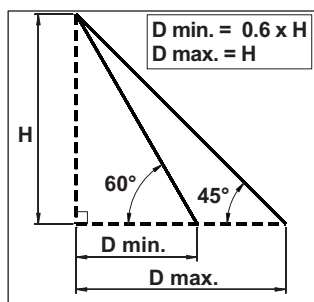


Fig. 15

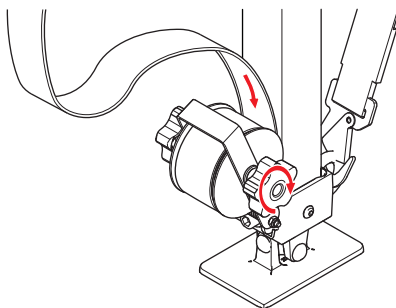


Fig. 16

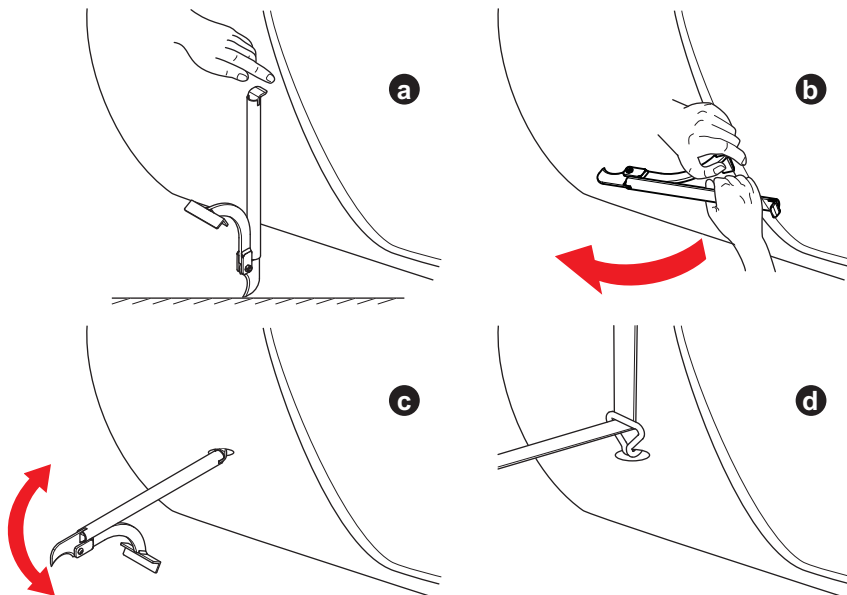
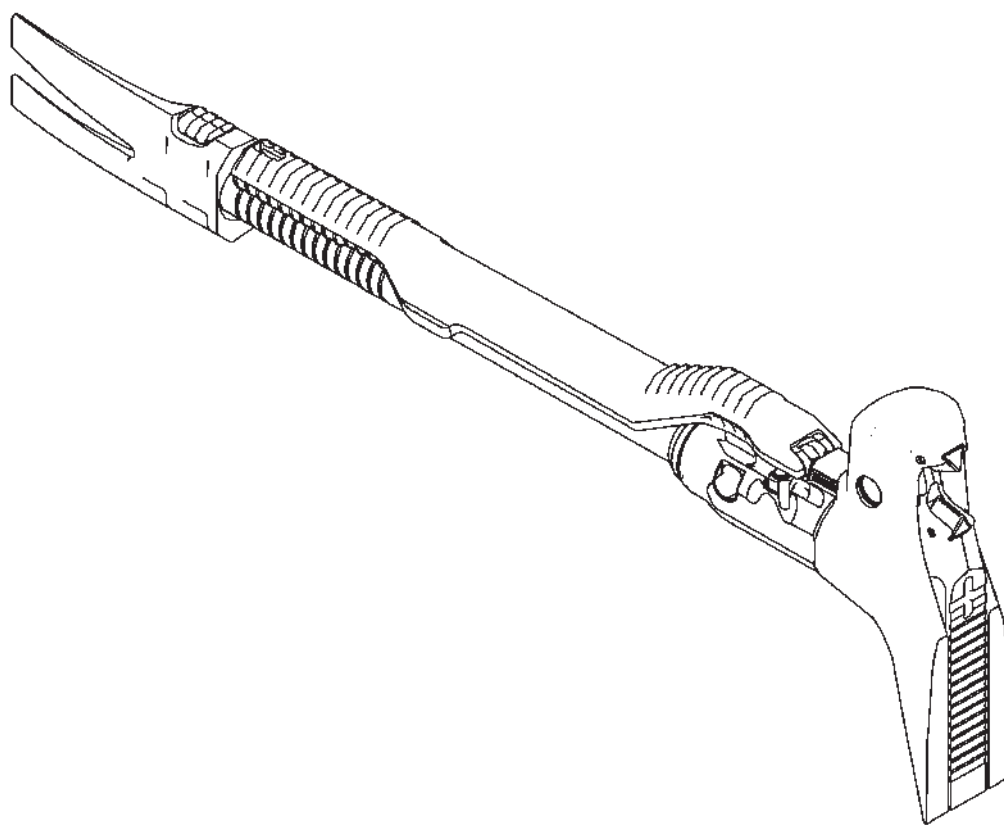


Fig. 17

**T1**

Handleiding	<b>NL</b>
Manual	<b>EN</b>
Mode d'emploi	<b>FR</b>
Betriebsanleitung	<b>DE</b>
Manual	<b>ES</b>
Manual	<b>PT</b>
手册	<b>ZH</b>

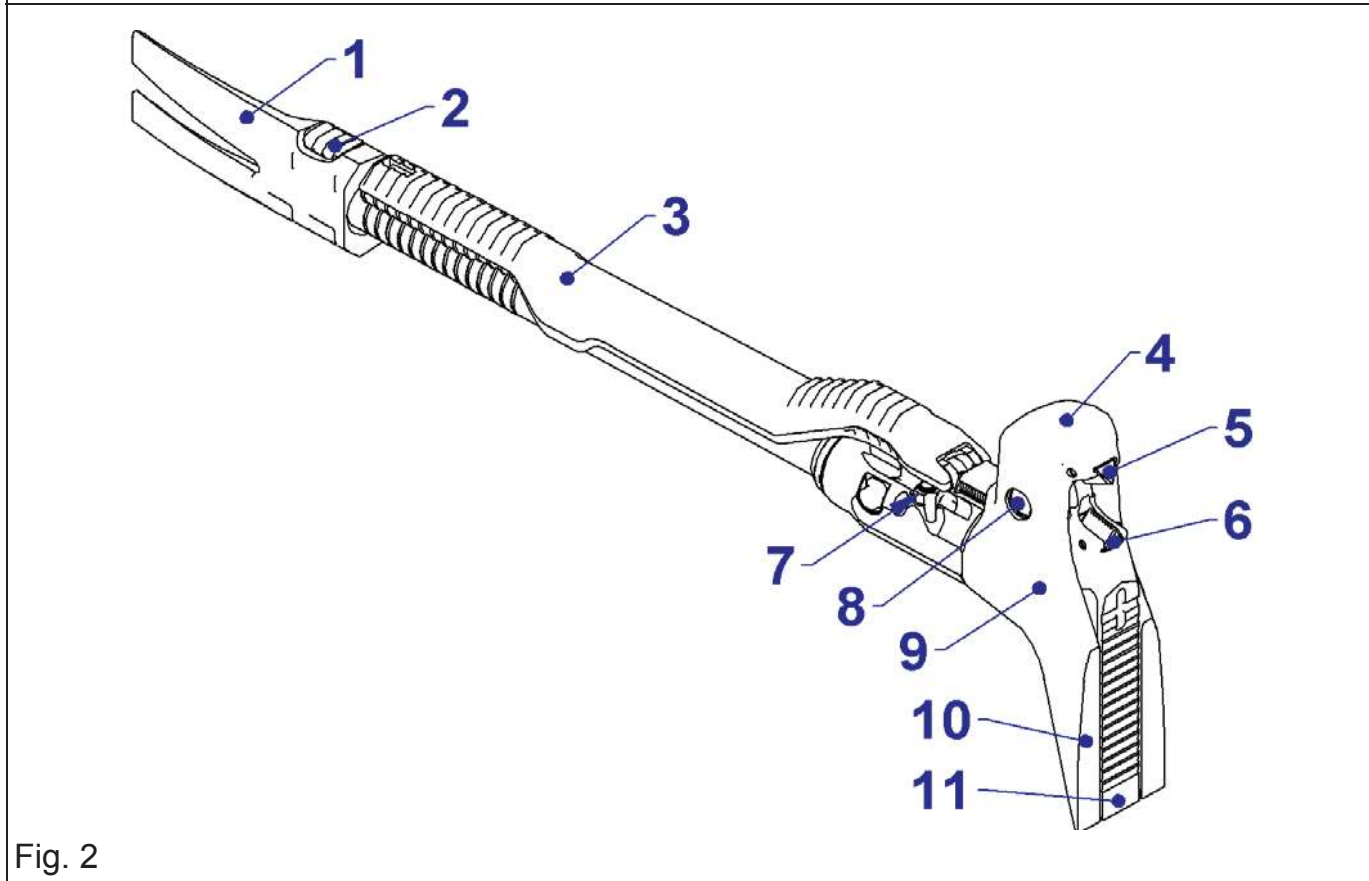
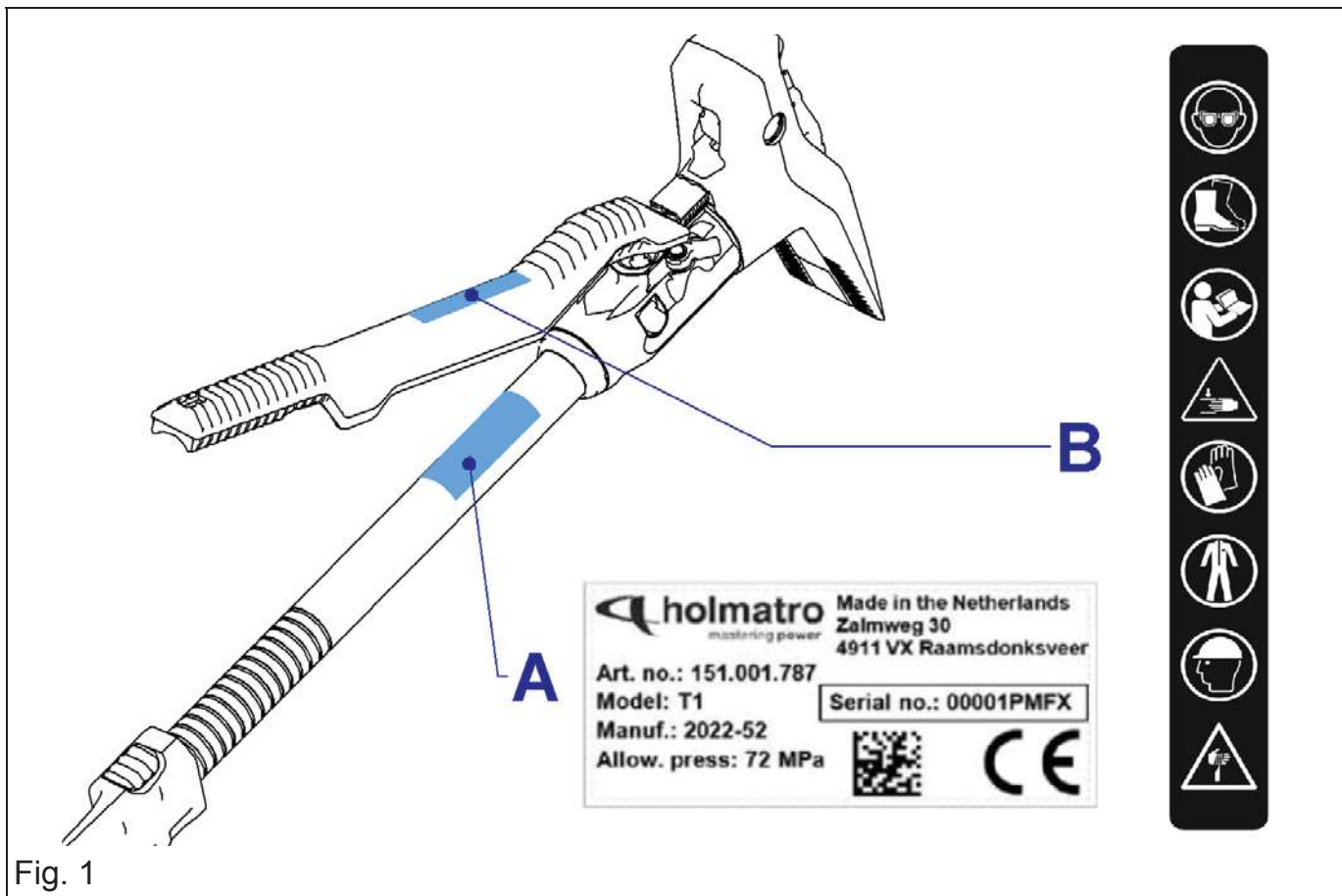


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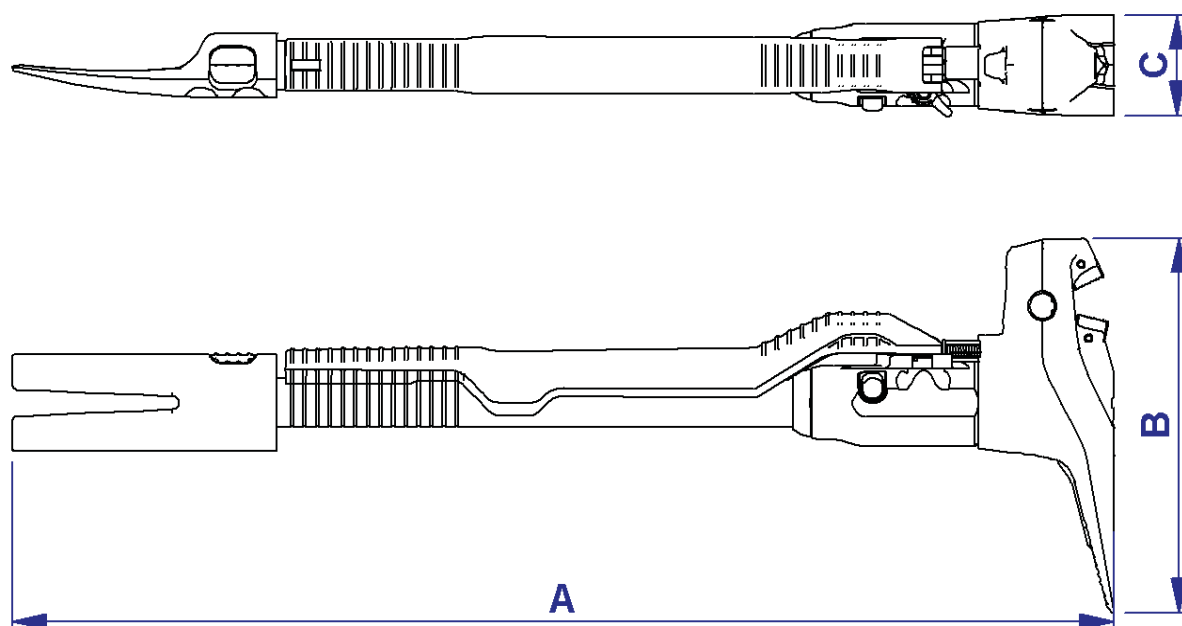


Fig. 3

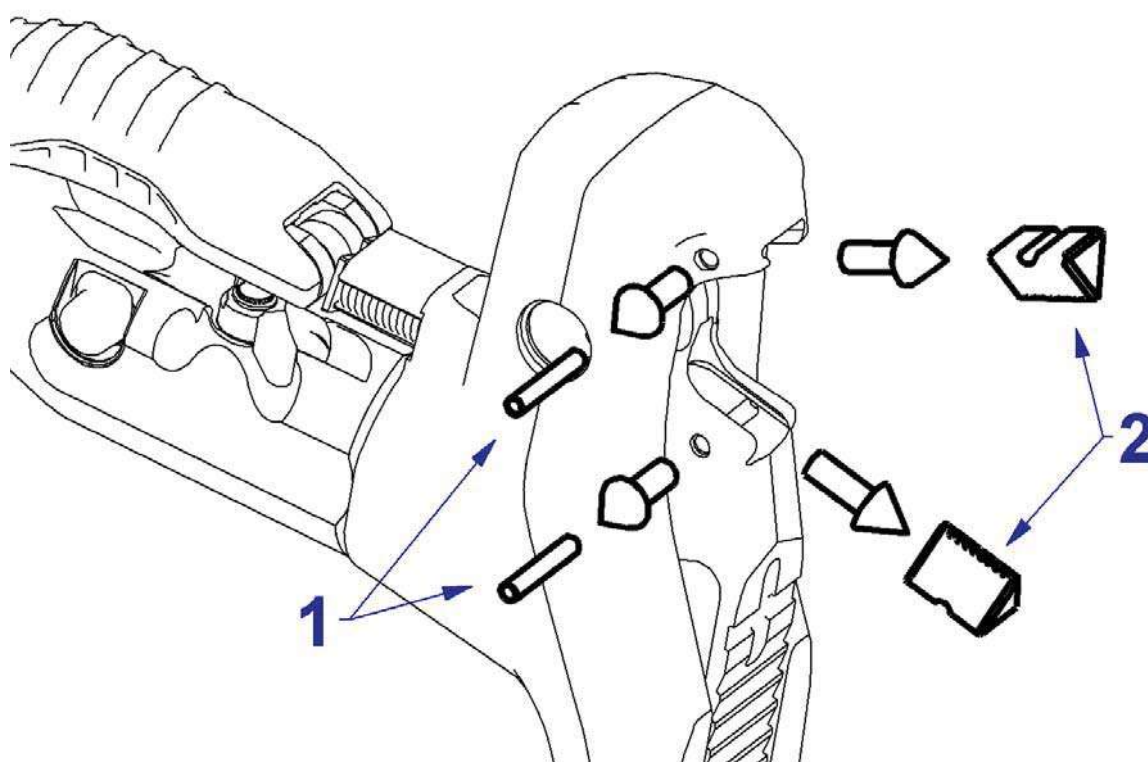


Fig. 4

# 1 Introduction

## 1.1 Disclaimer

All rights reserved. Nothing from this publication may be disclosed, reproduced or modified in any way without prior written consent from Holmatro. Holmatro reserves the right to modify or alter parts of tools without prior notification. The contents of this user manual can likewise be modified at any time. This user manual is based on and is related to the models manufactured at this moment and legislation currently in place. Holmatro accepts no liability whatsoever for possible damage resulting from the use of this user manual with respect to any equipment supplied or possibly to be supplied, subject to intent or gross negligence on the part of Holmatro. For detailed information about the use of the user manual, maintenance and/or repair of Holmatro equipment, Holmatro or the official, appointed distributor must be contacted. All possible attention has been given to the composition and precision of this user manual. However, Holmatro cannot be held liable for errors and omissions or obligations issuing from them. If the correctness or completeness of this user manual is unclear, you must contact Holmatro.

## 1.2 About this manual

The original instructions in this manual are written in English. Other language versions of this manual are a translation of the original instructions.

## 1.3 Definitions

System:	the assembly of pump and tool(s).
Pump:	device that supplies hydraulic flow and pressure.
Tool:	hydraulic device such as a cutter, spreader, combi tool, ram or cylinder.
Equipment:	tool(s), hose(s), pump or accessories.

## 1.4 General

Congratulations on your purchase of this Holmatro product. This user manual provides instructions on the operation, maintenance, malfunctions and safety of the equipment concerned. Safety regulations for the use of a complete Holmatro system are also described in this user manual. Illustrations in this user manual can differ slightly, depending on the model.

Everyone involved in putting the equipment into operation, using it, maintaining it and solving malfunctions must have read and understood this user manual, particularly the safety regulations. To prevent errors of operation and ensure that the equipment works trouble-free, the user manuals must always be available to the operator.

## 1.5 Application

This product is part of the equipment intended for use by emergency services.

The function of this high-tech tool is to get access. This tool is made to open doors, lift heavy objects, and cut hard materials.

This tool is more than a manual forcible entry tool. It also contains hydraulic and moving parts. Be careful and take care not to damage the tool when you operate the tool.

## 1.6 Qualified personnel

The system may only be operated by people trained in its use. Always obey local legislation, safety and environmental regulations. Repair work may only be performed by a Holmatro Certified Technician.

## 1.7 Guarantee

Refer to the general terms and conditions of sale for the guarantee conditions, available from your Holmatro dealer on request.

Holmatro draws your attention to the fact that every guarantee on your piece of equipment or system will lapse and that you must indemnify Holmatro against any possible product liability and responsibility if:

- service and maintenance are not carried out strictly in accordance with the instructions, repairs are not performed by a Holmatro Certified Technician or are performed without prior written consent;
- self-made changes, structural changes, deactivation of safety devices, injudicious adjustment of hydraulics and faulty repairs have been carried out;
- non-genuine Holmatro parts or lubricants other than the types prescribed are used;
- the piece of equipment or the system is used injudiciously, through errors of operation, improperly, negligently or not in accordance with its nature and/or purpose.

## 1.8 Declaration of Conformity

The equipment is CE certified. It means that the equipment complies with the essential requirements concerning safety. The original Declaration of Conformity is supplied with the equipment.

The standards and directives that have been taken into consideration in the design are listed in the section Technical Specifications in this document.

# 2 Safety regulations

## 2.1 Explanation of the symbols used in this manual

In this manual the symbols below are used to indicate possible dangers.



### **DANGER**

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.



### **WARNING**

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.



### **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.



### **NOTICE**

Is used to address practices not related to physical injury which, if not avoided, may result in property damage.



### **NOTE**

Emphasizes important information for optimal product use. This symbol is displayed in the user manual with all regulations related to product use or maintenance.

Always adhere to these regulations and to the locally prevailing safety regulations, and proceed very carefully.

Inform all people involved in the activities of the operation about these safety regulations.



## 2.2 General

Refer to Fig. 1.



All pictograms attached to the equipment pertaining to safety and danger must be complied with and remain clearly legible.









### WARNING

Not following these instructions can result in serious personal injury, fatal accident, damage to the system or consequential loss.

## 2.3 Model plate and CE marking on the equipment

Pos.	Type of mark	Description	Part no.
A	Model plate	Model plate with: <ul style="list-style-type: none"> <li>• Model indication</li> <li>• Serial number</li> <li>• Date of construction</li> <li>• CE marking</li> </ul>	Please contact Holmatro.
B		<b>DANGER</b> Danger of crushing parts of the body.	Please contact Holmatro.
		<b>WARNING</b> Danger of cutting or pinching parts of the body.	

Pos.	Type of mark	Description	Part no.
B		<b>WARNING</b> Wear safety goggles (or full face shield).	Please contact Holmatro.
		<b>WARNING</b> Wear safety shoes with good ankle support and toe protection.	
		<b>NOTE</b> Read the user manual before use.	
		<b>WARNING</b> Wear safety gloves.	
		<b>WARNING</b> Wear safety clothing for the entire body with reflective material.	
		<b>WARNING</b> Wear a helmet.	

## 2.4 General safety regulations

- Use this equipment solely for the activities for which it was designed. If you are in doubt or uncertain, always consult your Holmatro dealer.
- Replace illegible safety symbols, pictograms and information labels with identical ones, available from your Holmatro dealer.
- Varnished, plastic and rubber parts are not resistant to corrosive acid or liquid. Except for electrical parts, rinse parts that have come into contact with corrosive acid or liquid with a lot of water. Consult your Holmatro dealer for a resistance list.
- Protect equipment against sparks during welding or grinding activities.
- Avoid an unhealthy posture while working. It can result in physical complaints.
- Follow the inspection and maintenance instructions.

- Conversion of the piece of equipment or the system may only be performed by a Holmatro Certified Technician. In case of a conversion, retain the original manual and the conversion manual.
- Use only genuine Holmatro parts and maintenance products prescribed by Holmatro.

## **2.5 Personal safety**

Personnel that uses or assists in the use of the equipment must wear all personal means of protection as prescribed in the standard work procedure. Negligent use of personal means of protection can result in serious injury. During use wear at least the following personal means of protection:

- Helmet;
- Safety goggles or full face shield;
- Safety gloves;
- Safety clothing for the entire body;
- Safety shoes with good ankle support and toe protection.

## **2.6 Safety regulations with respect to the equipment**

- Make sure you do not get trapped when you retract the toe.
- Make sure that accessories are properly attached before use.
- Only one person controls the equipment.

## **2.7 Safety regulations with respect to the operation of the system**

- Make a risk assessment of the procedure before you start work (EN-ISO 12100).
- Keep bystanders at a distance and be extra careful in the vicinity of people and animals.
- Make sure the work area is clearly laid out and has good lighting.
- Avoid stress and work in a structured way. This reduces the risk of errors, combinations of dangers and accidents.
- Before use, check the equipment for damage. Do not use the equipment if it is not in good condition and consult your Holmatro dealer.
- Stand on a stable base and use both hands to hold the equipment.
- During operation, never get between the object and the equipment.
- Monitor the situation of the equipment and the structure continuously while using the equipment.
- Use only genuine Holmatro accessories and ensure that they have been attached correctly.
- Make sure that parts of the body never come between moving parts. There is a risk that parts of the body may be crushed or cut.
- Stop immediately if the system makes strange noises or displays aberrant behaviour.
- Stop immediately if the equipment leaks oil. Oil escaping under pressure can penetrate the skin and cause serious injury. Go immediately to a hospital with a person who is injected with oil for medical help. Give a specification of the oil to the medical staff.
- Return inactive equipment immediately to the tool station.
- Always adhere to the safety regulations that apply to other equipment that is used in the operation.

## **2.8 Safety regulations with respect to maintenance**

- Wear personal means of protection when performing maintenance tasks.
- Never work in a way that could jeopardize safety.
- Make sure that the equipment cannot roll away or tip over. The control and drive must be switched off and safeguarded against unexpected activation.
- Make sure that moving parts do not move unexpectedly.
- Used or leaked fluids, and any other products consumed during the activities, must be collected and disposed of in an environmentally responsible way.

## 3 Description

### 3.1 Equipment

Emergency services can use this forcible entry tool for different functions:

- Open doors.
- Lift heavy objects.
- Cut objects like rebar and padlocks.
- Make openings.

You can use the detachable wedge to:

- Make a first opening.
- Pull hinges from doors and windows.
- Breach doors.

### 3.2 Type designation

Example: T1

Digit	Example	Description
1-2	T1	Type number

### 3.3 Product identification

Refer to Fig. 2.

1	Detachable wedge	7	Pressure release button
2	Wedge release button	8	Hinge pin
3	Pump handle	9	Bottom
4	Hammer head	10	Toe
5	Fixed blade	11	Spreader tip
6	Moveable blade		

### 3.4 Technical specifications

Description	Unit	T1
max. working pressure, oil	(bar/MPa)	720 / 72
	psi	10443
hydraulic system	-	single acting
max. cutting force	(kN/t)	139 / 14.2
	lbf	31248
max. cutting opening	mm	29
	in	1.1
max. spreading / lifting force	(kN/t)	33 / 3.4
	lbf	7419
min. spreading force 25mm from tip	(kN/t)	26 / 2.7
	lbf	5845
max. spreading / lifting distance	mm	128
	in	5

Description	Unit	T1
Temperature range	°C	-20 +55
	°F	-4 +131
weight, ready for use	kg	7.7
	lb	17
dimensions (AxBxC) Refer to Fig. 3	mm	694 x 232 x 62
	in	27.3 x 9.1 x 2.4
EN13204 cutting capacity	-	Refer to Fig. 5

## 4 Use

### 4.1 General

The equipment of a rescue system must always be ready for use. That means the equipment must be checked and inspected directly after use, before it is put away.



#### **WARNING**

Make sure you are up to date on all safety regulations and that you have mastered the use of all equipment of the system you are going to work with.



#### **WARNING**

Refer to Fig. 7

- Make sure your fingers are not crushed under the pump handle.
- Do not pull the pump handle laterally.
- Do not pull or push the pump handle through the end stop.
- Operate the pump handle only by hand. Do not use your foot or an extension pipe.

### 4.2 Before use

*Do these checks:*

- Make sure that the tool is clean.
- Make sure that the tool operates correctly.
- Use the pump handle to operate the toe.
- The blades must close.
- Press the pressure release button. Make sure the toe retracts fully.
- Make sure the tool does not leak oil.

### 4.3 During use

#### **4.3.1 Use the tool as a hammer**

You can use the tool as a hammer.

Use this functionality only to create an opening with the detachable wedge or when you use the tool to breach.

Hit the object with the hammer head.



#### **WARNING**

- Make sure you hit the object only with the hammer head. Do not damage the pump handle or hydraulic parts.
- Make sure your fingers are not crushed when you hit an object.
- The hammer head can penetrate the object when you hit a soft object. Make sure the hydraulic parts are not damaged.
- Make sure the spreader tip and pump handle are fully retracted.

#### **4.3.2 Use the tool as a battering ram**

You can use the tool as a battering ram to open a door.  
Combine the weight of the tool with speed to hit the door.



#### **WARNING**

- Make sure the toe and pump handle are fully retracted.
- When you break a window glass fragments can fly around:
  - Make sure to wear protection for the body, hand and eyes.
  - Glass fragments can damage the tool and get between parts of the tool. Clean the tool after you have broken glass.

#### **4.3.3 Use the detachable wedge to make an opening**

Refer to Fig. 6.

*You can make a small opening with the detachable wedge:*

1. Put the wedge where you want to make an opening.
2. Press the wedge release button and pull the pump rod out from the wedge.
3. Hit the wedge with the hammer head of the tool.
4. Next to this opening you can insert the toes of the tool.



#### **WARNING**

- Make sure the spreader tip is fully retracted.
- Make sure you hit the object only with the hammer head. Do not damage the pump handle or hydraulic parts.

#### **4.3.4 Use the detachable wedge to remove hinges**

You can remove a hinge to open a window or door.

Refer to Fig. 10.

1. Put the toes of the detachable wedge behind the hinge.
2. Pull the base of the tool to pull out the hinge.

Refer to Fig. 11.

1. Put the toes of the detachable wedge behind the hinge.
2. Pull the spreader tip in the recess of the detachable wedge.
3. Operate the pump handle.

#### 4.3.5 *Use the tool as a hydraulic spreader*

Refer to Fig. 8.

Put the toe of the tool behind the door frame (A). You can use the detachable wedge to make an opening to start from.



##### **WARNING**

- Make sure to retract the spreader tip fully.
- Make sure you hit the object only with the hammer head. Do not damage the pump handle or hydraulic parts.
- Do not put the toe or spreader tip against a hard object like steel or concrete when you hit the tool with a hammer. Refer to Fig. 9.
- Make sure you use the full width of the spreader tip when you lift.



##### **CAUTION**

Push lightly when you close the pressure release valve.

Operate the pump handle to use the hydraulic spreader. (B)

#### 4.3.6 *Lifting a weight*

*You can use the tool to lift an object:*

1. Close the release valve. Push lightly.
2. Put the toe under the object.
3. Operate the pump handle.

Always use wedges and lock blocks to make sure the load remains stable in case the tool fails or the load changes.

Push the release button to remove the tool.



##### **WARNING**

Refer to Fig. 12

- Make sure your hand is not between the load and the pump handle when you lower the load. Your hand can be crushed if you hold the pump handle.
- Make sure you use the full width of the spreader tip when you lift.
- Make sure the spreader has good support from the ground.

#### 4.3.7 *Use the tool as a cutter*

Refer to Fig. 2, pos 5 and 6.

With the pump handle you can operate the blades to cut parts like rebar, padlocks, chains and fences.

### 4.4 **After use**

#### 4.4.1 *Shut down*

Refer to Fig. 2.

- Press the pressure release button. Make sure the spreader tip retracts fully.
- Put the pump handle in original position.
- Connect the detachable wedge.

#### 4.4.2 **Inspection**

- Check the system for completeness, leaks and damage. Do not use the system if it leaks or is damaged and contact the Holmatro dealer.
- Check the accessories for completeness and damage. Replace the accessory if the damage is considerable.

#### 4.4.3 **Cleaning and storage**

- Clean the tool and any accessories before storage.
- Dry the tool if it was used in wet conditions. Apply a thin coat of preservative oil to the external steel parts.
- Store the tool in a dry and well-ventilated area.

## 5 **Troubleshooting**

### 5.1 **General**

Consult the Holmatro dealer if the listed solutions do not give the desired result, or in case of other problems. For malfunctions or repair, always specify the model and serial number of the equipment.

### 5.2 **The spreader or cutter is not operating satisfactorily**

Possible cause	Solution
There is no oil left in the pump.	Ask Holmatro Certified Technician to add hydraulic oil.

### 5.3 **Cutting is poor**

Possible cause	Solution
The blades are damaged.	Replace the blades.
The blades are not aligned correctly.	Have it repaired by a Holmatro Certified Technician.

## 6 **Maintenance**

### 6.1 **General**

Proper preventive maintenance of the equipment preserves the operational safety and extends the life of the equipment. For malfunctions or repair, always specify the model and serial number of the equipment.



#### **CAUTION**

When performing maintenance activities, always comply with the relevant safety regulations. Wear the prescribed personal protection equipment.



## 6.2 Dangerous substances



### CAUTION

Used or leaked fluids, and any other products consumed during the activities, must be collected and disposed of in an environmentally responsible way.

## 6.3 Maintenance materials

Application	Type of maintenance material	Amount
Steel parts	WD-40 preservative oil, or equivalent	As required
	Tectyl ML from Valvoline (long term preservation)	As required
Hydraulic system	Hydraulic oil: ISO-L HV VG 15/22	As required

Contact the Holmatro dealer for information on spare parts.

## 6.4 Maintenance schedule

This schedule is an average. Depending on the intensity of use of your equipment, Holmatro can provide a specific maintenance schedule for you.

Object	Action	Time interval		
		After every use	Yearly, Holmatro dealer maintenance.	After 5 years, Holmatro dealer mid-life maintenance.
General	Check	x	x	
Hinge pin	Check	x	x	
	Lubricate		x	
Blades	Check	x	x	
Wedge, toe	Check, clean, conserve	x		
Hammer head, pump housing	Check, clean, conserve	x		
Bellow	Replace			x
Oil	Check		x	
	Replace			x
Seals	Replace			x
Valves	Replace			x

## 6.5 Maintenance activities

### 6.5.1 General

- Check the accessories.
- Check the operation of the tool.

- Check the tool for damage and leaks. If the tool does not work properly and/or leaks, have it repaired by a Holmatro Certified Technician.
- Make sure that all pressure has been released.

### 6.5.2 *Blades*

Refer to Fig. 4.

Check the blades for damage. Replace damaged blades.



#### **CAUTION**

Using worn blades reduces the tool's performance.

#### **Remove the blades**

1. Open the blades as much as possible.
2. Remove the spring pins (1).



#### **NOTE**

Use a punch to remove the spring pins.

3. Remove the blades (2).



#### **NOTE**

High cutting forces can deform the blades. Use a screwdriver if you can not remove the blades manually.

4. Clean the openings in the jaws and the blades.

#### **Install the blades**

1. Install the blades (2).
2. Install the spring pins (1).

### 6.5.3 *Hinge pin*

Refer to Fig. 2, pos 8.

- Consult the Holmatro dealer if there is too much play around the hinge pin.
- Check that the snap ring of the hinge pin is present and is not damaged. Have a Holmatro Certified Technician mount a new snap ring if it is missing or damaged.
- Apply grease to the surfaces of the hinge pin.

## 6.6 **Yearly dealer maintenance**

We recommend having the equipment inspected, checked, set and tested once a year by a Holmatro Certified Technician who has the appropriate knowledge and the necessary tools (see also section 1.7). The Holmatro dealer can organize the yearly maintenance for you on a contract basis.

## 6.7 **Mid-life maintenance after 5 years**

We recommend to do mid-life maintenance after 5 years. Some parts need to be replaced. This keeps the tool safe and reliable.

## 6.8 Storage and transportation

- Ensure that the tool is completely depressurized.
- Store the equipment in a dry, well-ventilated area. Use additional preservatives on the external steel parts.

## 7 Decommissioning/Recycling

At the end of its service life the equipment can be scrapped and recycled.

- Make sure that the equipment is put out of order to avoid any use.
- Check that the equipment does not contain any pressurized components.
- Recycle the various materials used in the equipment such as steel, aluminum, NBR (Nitrile Butadiene Rubber) and plastic.
- Collect all dangerous substances separately and dispose of them in an environmentally responsible way.
- Consult the Holmatro dealer about recycling.

## 8 Declaration of Conformity

### EC DECLARATION OF CONFORMITY OF THE EQUIPMENT



Manufacturer: Holmatro Rescue Equipment B.V.

Address: Zalmweg 30, 4941 VX Raamsdonksveer, Netherlands

Declares that the following products:

Product type: Forcible entry tool. model: T1

Conform to the requirements of the following Directives of the European Union:  
2006/42/EG

and to relevant national legislation transposing these directives.

Netherlands, Raamsdonksveer, 20.08.2022

A handwritten signature in blue ink, appearing to be 'H. W. M. Hermans', written over a light blue grid background.

Ing. H. W. M. Hermans MBA  
Director




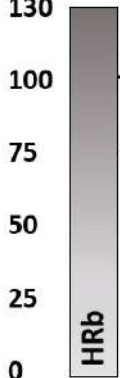

application	cutting performance		
	materials according EN 13204: S235	materials exceeding EN 13204 in terms of hardness	Cutting performance
 rebar   padlock   chain	 130 100 75 50 25 0 HRb	 68 60 50 40 30 22 ← 60 HRc --- Ø 6.5 mm ← 49 HRc --- Ø 10 mm ← 28 HRc --- Ø 14 mm ← 75 HRb --- Ø 18 mm	

Fig. 5

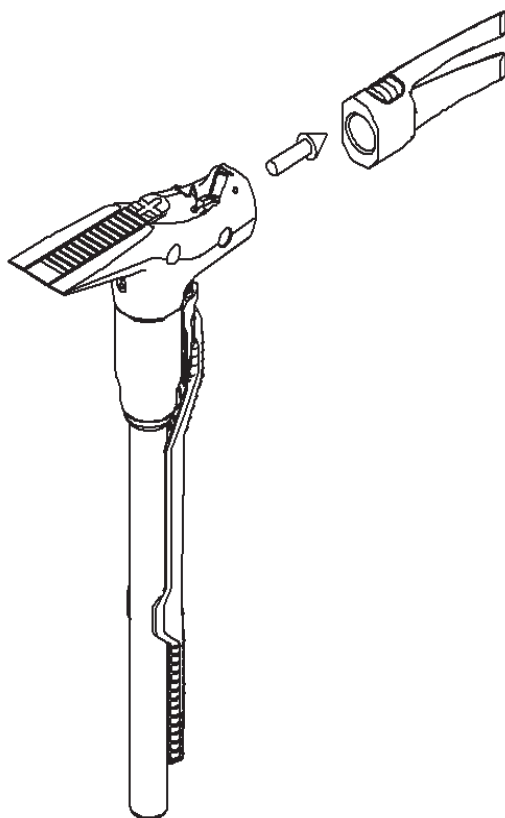


Fig. 6

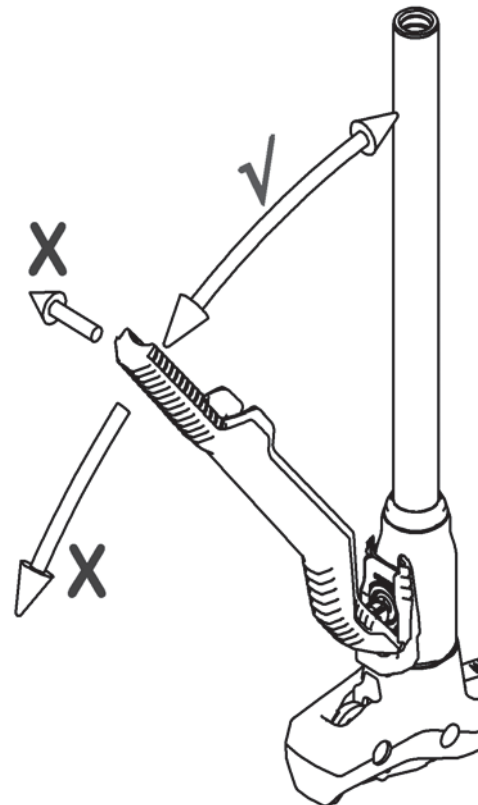


Fig. 7

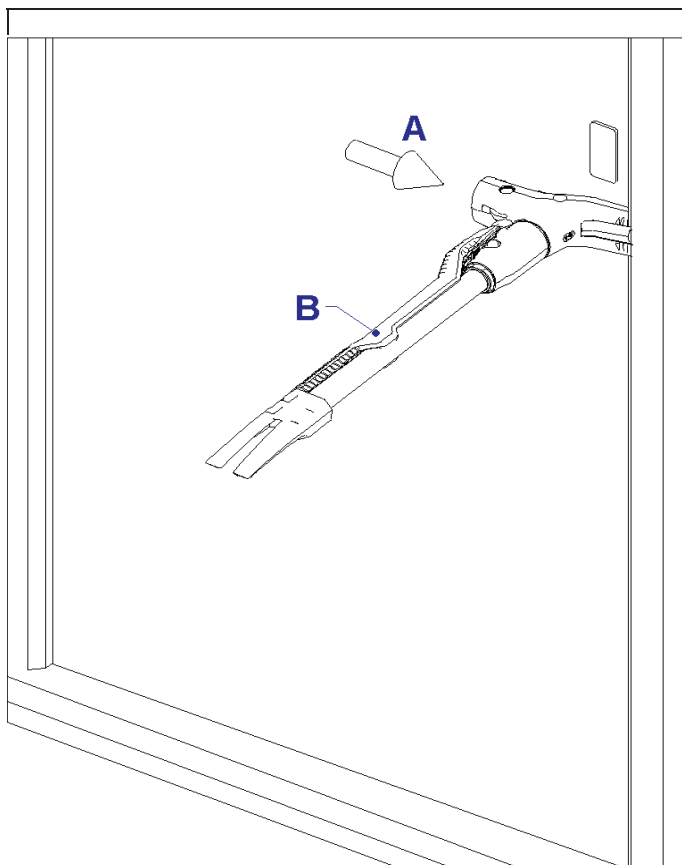


Fig. 8

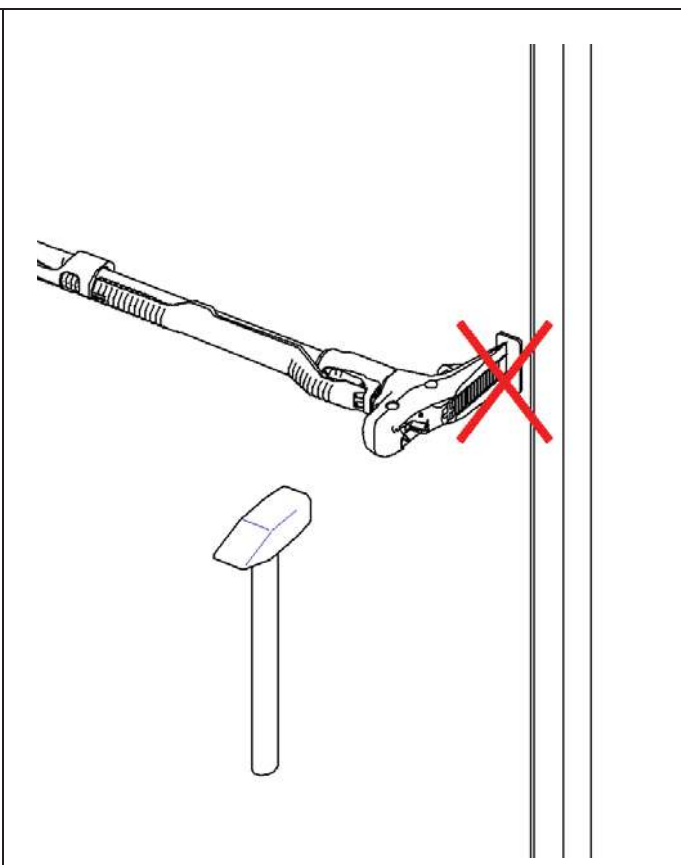


Fig. 9

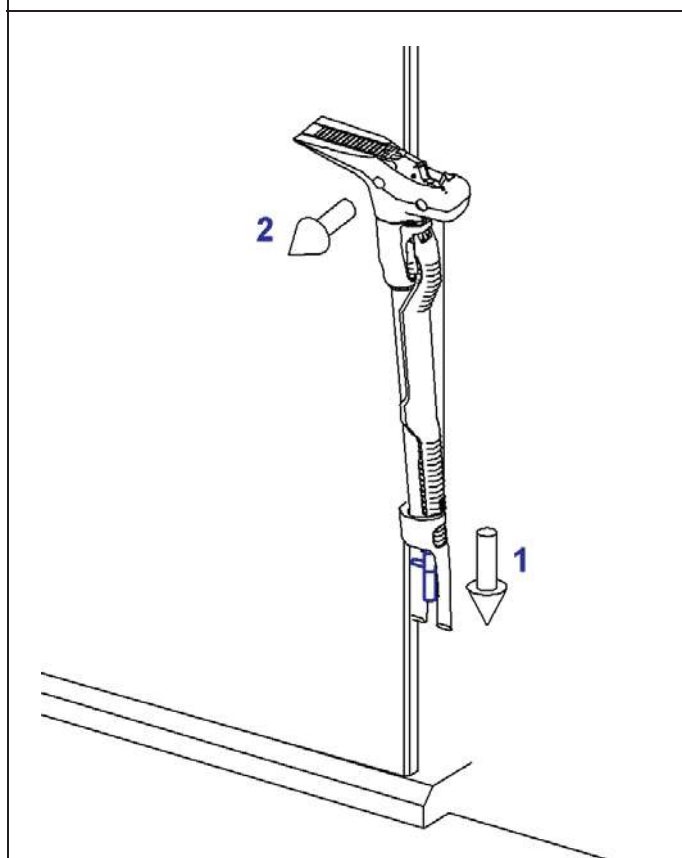


Fig. 10

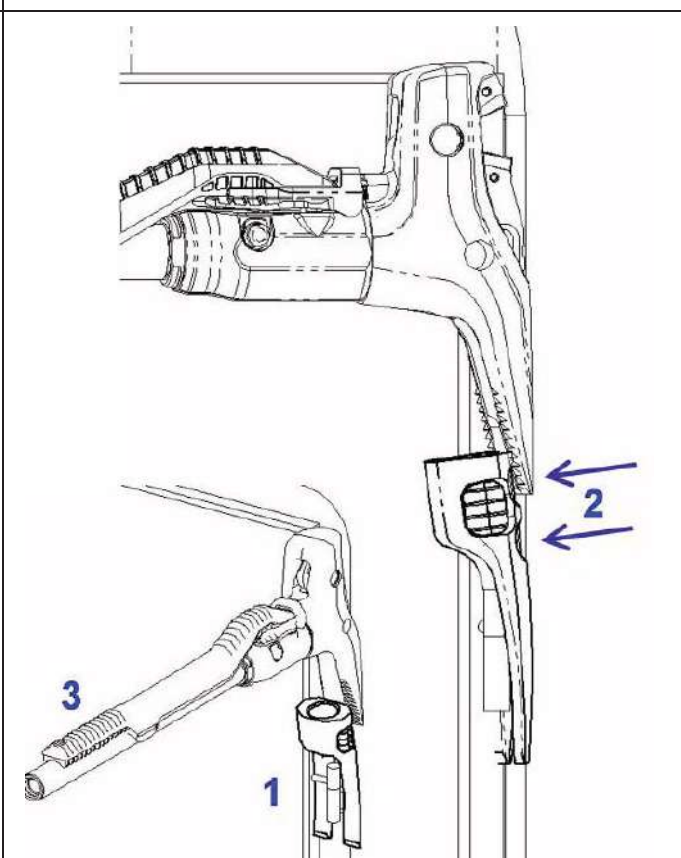


Fig. 11

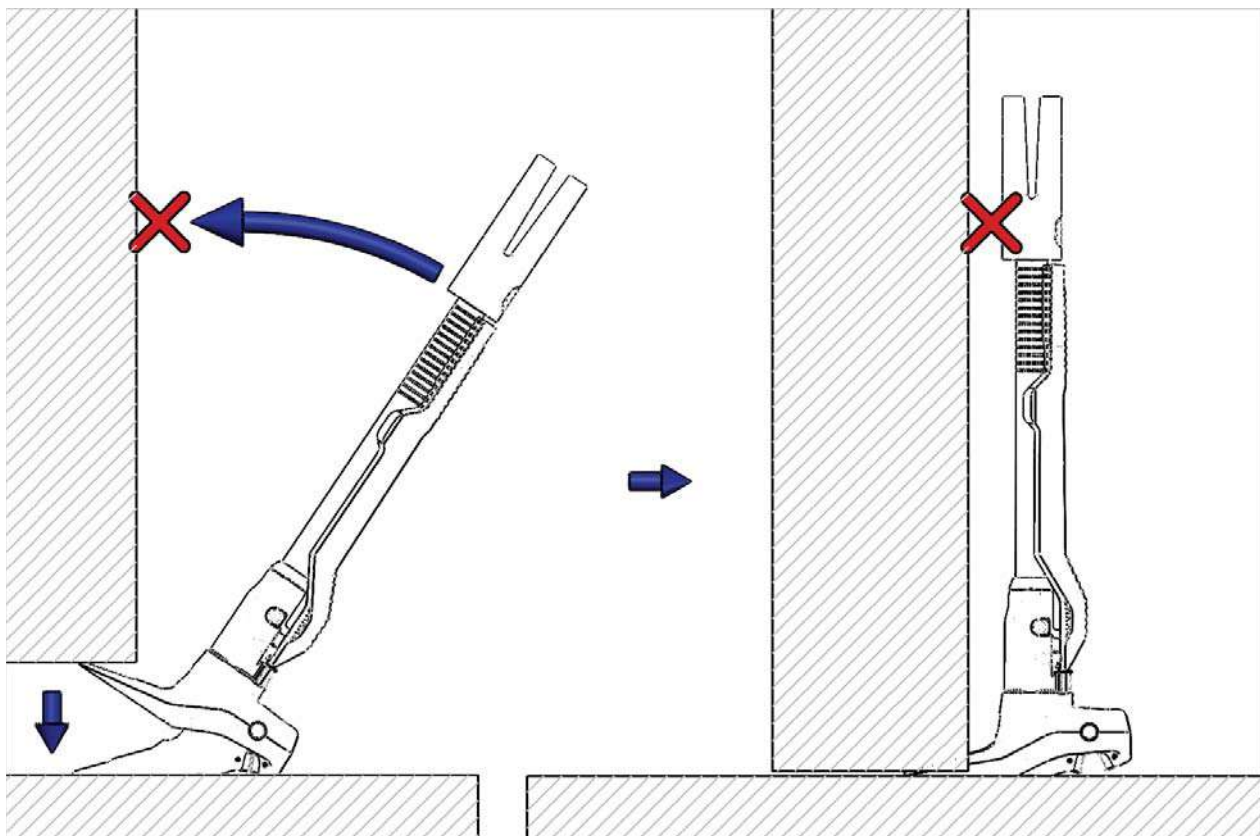


Fig. 12

## **Contact information**

### **Holmatro Netherlands**

Zalmweg 30  
4941 VX, Raamsdonkveer, The Netherlands  
Tel.: +31 (0)162 - 589200  
Fax: +31 (0)162 - 522482  
e-mail: [info@holmatro.com](mailto:info@holmatro.com)  
home page: [www.holmatro.com](http://www.holmatro.com)

### **Holmatro USA**

505 McCormick Drive  
Glen Burnie, MD 21061, U.S.A.  
Tel: +1 410 768 9662  
Fax: +1 410 768 4878  
e-mail: [info@holmatro-usa.com](mailto:info@holmatro-usa.com)  
home page: [www.holmatro.com](http://www.holmatro.com)

### **Holmatro China**

庞金路 1801 号  
苏州吴江经济技术开发区  
215200 中国  
电话: +86 512 6380 7060  
传真: +86 512 6380 4020  
电子邮件: [china@holmatro.com](mailto:china@holmatro.com)  
主页: [www.holmatro.com](http://www.holmatro.com)

# THE PENTHEON SERIES







## **THE NEW SUPERIOR PENTHEON SERIES UNRESTRAINED PERFORMANCE FOR YOUR MISSION.**

---

All around the world first responders work in the most extreme conditions to save people's lives. They are faced with different challenges every day, all requiring quick decision making and solid teamwork. Working under pressure, in a race against the clock, first responders need equipment they can fully rely on. It is for these men and women that we have developed our new Pentheon Series: High-tech rescue tools that are miles ahead of all other equipment on the market, cordless and hose tools alike.

Only the Holmatro Pentheon Series offers you the unrestrained performance, unparalleled speed and ultimate control you've never experienced before!

# PENTHEON



**UNRESTRAINED PERFORMANCE FOR YOUR MISSION**

- CUTTER PCU50 -

- TELESCOPIC RAM PTR50 -

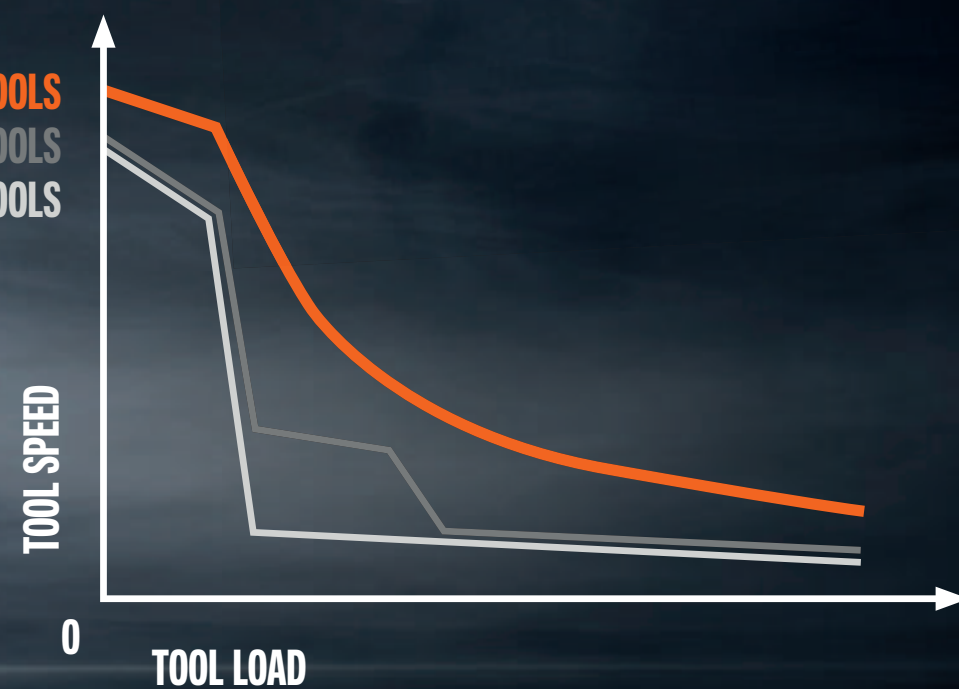
- COMBI TOOL PCT50 -

- SPREADER PSP40 -





**PENTHEON TOOLS**  
HOSE TOOLS  
BATTERY TOOLS



**UNPARALLELED TOOL SPEED AT ANY LOAD**

**PATENTED**

## UNPARALLELED SPEED STEPLESS SPEED MAXIMIZATION

Pentheon tools are the fastest rescue tools on the market. A revolutionary mechatronic system inside the tools continuously optimizes the motor and pump settings, to deliver a maximized oil flow over the full pressure range. This provides you, as a rescuer, with unparalleled tool speed at any load.

Where all other rescue tools show a significant decrease in speed when switching to another stage to deal with higher loads, Holmatro Pentheon tools stick to the ideal stepless speed curve.

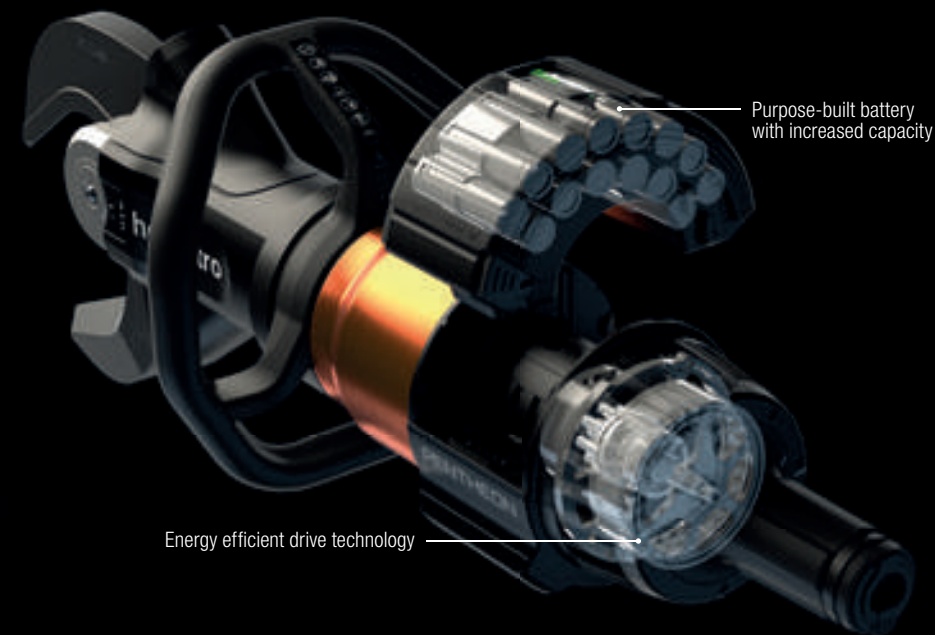


## ULTIMATE CONTROL TWO-MODE CONTROL HANDLE FOR ULTIMATE SPEED CONTROL

In the rescue business speed is nothing without control. Every second counts, but since you are working near a patient you need to be careful. Therefore our Pentheon tools have ultimate speed control. A unique two-mode control handle offers you the choice, at any time during the rescue operation, to switch between the tool's high-speed and low-speed modes. Within these two modes, the speed is still proportional to how far you turn the handle to its left or right.

**Experience ultimate control of the fastest rescue tools ever!**





Purpose-built battery  
with increased capacity

Energy efficient drive technology

Max. pressure reached

## MAXIMUM ENDURANCE EXTENDED WORKING TIME

Holmatro Pentheon tools help you get more work done without swapping batteries. These are the reasons why.

### PURPOSE-BUILT BATTERY WITH INCREASED CAPACITY

Specially developed to power our high-performance Pentheon tools, this battery contains extra large and powerful cells. Thanks to the bigger cell volume, it heats up much slower than regular batteries. This means you can complete more work, while using its maximum power.

### ENERGY EFFICIENT DRIVE TECHNOLOGY

The patented mechatronic system that controls the motor and pump settings of our Pentheon tools is extremely energy efficient. Especially when compared to the drive technology used in other cordless rescue tools. All with the aim to extend your working time.

### AUTO START/STOP FUNCTION: NO ENERGY WASTE

When the tool is not operated or has reached its maximum pressure, the motor stops automatically. This saves valuable battery capacity. Simply turn the control handle to restart the tool.





## MAXIMUM ENDURANCE USE IN ALL CONDITIONS

Whether it's hot or cold, in the rain or snow and even under water:  
Pentheon tools can be used in all conditions.

### TEMPERATURE MANAGEMENT TECHNOLOGY

Both tool and battery temperatures are continuously monitored to make sure these don't get too high, which would cause the tool to shut off. At extremely high temperatures Pentheon tools will automatically switch to working at a lower power consumption, without loss of force. All to make sure that you can keep going, even in hot weather and at high tool loads.

### UNDERWATER USE

Should you encounter a situation where you need to use your rescue tools completely submerged in water, our Pentheon tools are up for the job!





## USER CENTERED DESIGN BATTERY MANAGEMENT MADE EASY

What if battery management could be made as simple as just plugging it in?  
Well, that's exactly what we have done!

### ON-TOOL CHARGING

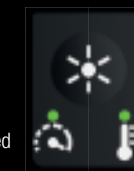
Stop swapping batteries! From now on you can charge the battery while it's still on the tool. Simply connect the tool to the charger and the whole charging process will regulate itself. The battery on the tool always has priority over the one on the charger, which will resume charging when the battery on the tool is 100% full. You can connect up to 3 chargers to be powered from a single outlet. This allows you to charge 6 batteries without any management.

### MAGNETIC CONNECTOR

Easy connection and no disconnection required: Our On-Tool Charging Cord allows you to grab a tool and walk away with it. Thanks to the cord's magnetic connector the tool releases itself.



Max. pressure reached



Tool temperature



### REALTIME DIAGNOSTICS

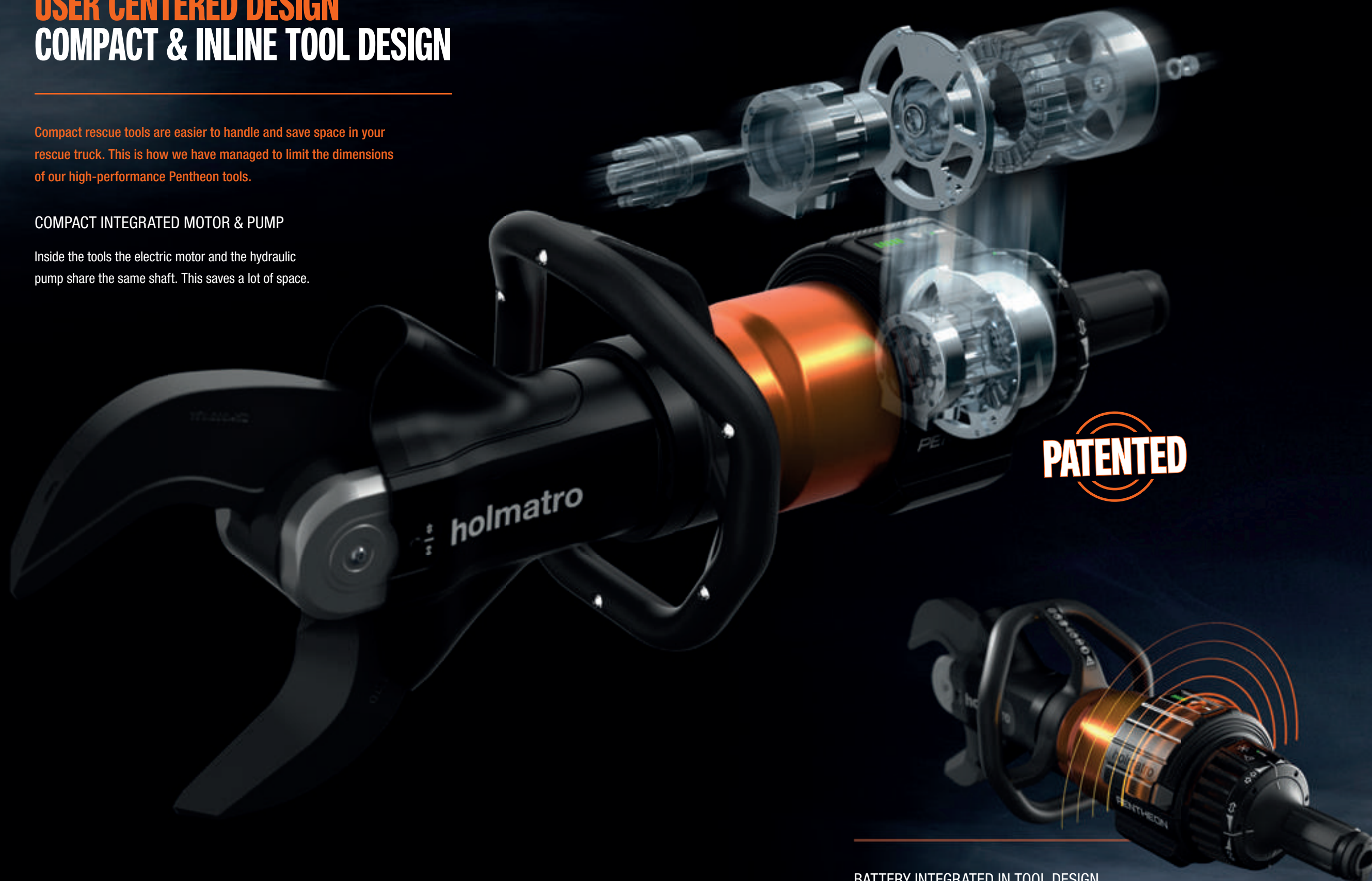
LED indicators on the battery and the charger give you instant feedback on the battery's temperature, state of charge and state of health. For more detailed battery information you can use our diagnostics software. A more extensive version of this software is available for authorized Holmatro (Dealer) Service Technicians. It combines in-depth tool diagnostics with integrated inspection procedures, to provide the best service for your Pentheon tools. Holmatro has special accessories available to connect the Pentheon tools and batteries to your laptop or pc.

## USER CENTERED DESIGN COMPACT & INLINE TOOL DESIGN

Compact rescue tools are easier to handle and save space in your rescue truck. This is how we have managed to limit the dimensions of our high-performance Pentheon tools.

### COMPACT INTEGRATED MOTOR & PUMP

Inside the tools the electric motor and the hydraulic pump share the same shaft. This saves a lot of space.



### BATTERY INTEGRATED IN TOOL DESIGN

The battery has a semi-circle shape which makes it fit around the tool like a bracelet. This also contributes to the slim design of our Pentheon tools.

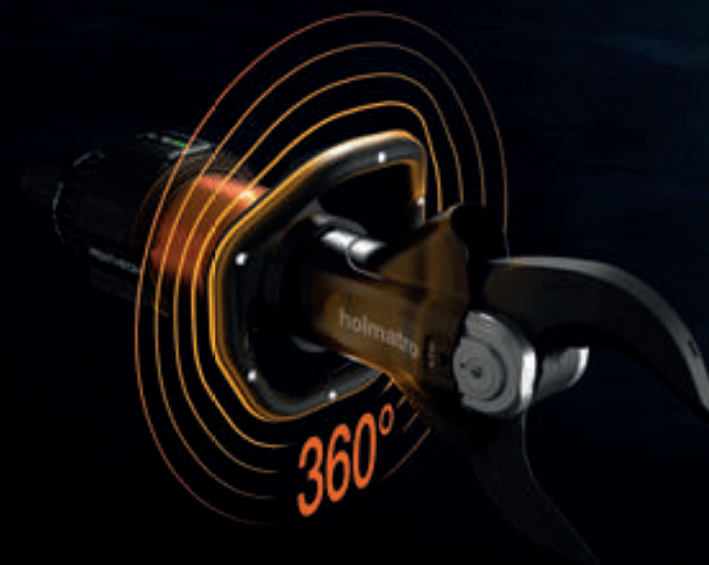


# USER CENTERED DESIGN EASE OF USE

At Holmatro we design rescue tools with the end user in the first, second and third place. Some examples:

## LED LIGHTS POWERED FROM MAIN BATTERY

Six high-output LED lights in the carrying handle illuminate your working area at night and neutralize annoying shadows during the day. They are powered from the main battery, which means they automatically switch on and off together with the tool. If desired, the lights can be switched off separately by pressing a button on the tool. But don't bother: their power consumption is next to nothing!



## 360° CARRYING HANDLE

With a carrying handle that goes all around the tool, you can hold the tool in any position. It also includes a suitcase grip for easy and well-balanced carrying. The handle is made of a damage-proof high-grade synthetic polymer. This extremely tough and elastic material has the unique property of always returning to its original shape.

## INLINE CONTROL HANDLE WITH 360° ACCESS

Centrally positioned on the back of the tool, our control handle is always within reach. This allows for easy tool operation at all sides of the car and in any position.















# YOU CAN COUNT ON US, FOR LIFE

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 Holmatro Rescue World

 @HolmatroRescue

 holmatrorescue

 HolmatroRescue



# FORCIBLE ENTRY TOOL T1



# **HOLMATRO *T1***



## **HOLMATRO FORCIBLE ENTRY TOOL T1**

This hydraulic forcible entry tool allows you to cut, wedge, ram, spread, hammer, and lift. With the T1, you always have the right tool for the job.

For more tools and more information, please visit [www.holmatro.com](http://www.holmatro.com).

# ***BREAKING ALL BARRIERS***



# FORCIBLE ENTRY TOOL T1



T1

specifications		T1
art. no.		151.001.787
spreading distance	mm	128
max. spreading force	kN/t	33 / 3,4
min. spreading force 25 mm tip	kN/t	26 / 2,7
max. cutting opening	mm	29
theoretical cutting force	kN/t	139 / 14,2
round bar (S235)	mm	18
weight, ready for use	kg	7,7



### Multifunctional tool

- The T1 can hammer, cut, spread, lift, wedge and ram. This means you always have the right tool for the job.
- The wedge is detachable, meaning no second person or tool is needed for creating the first gap.
- Having all these functions in one tool also saves weight and space in your vehicle.
- The T1 is a stand-alone tool, so you won't need batteries or an external pump.



### Optimized cutting blades and jaw design

- The T1 can easily cut rebar, chain and padlock.
- It can cut up to ø18 mm of round bar (S235).
- You can easily replace the cutting blades when they are damaged.



### 2-stage pump

- High power transmission means 30 kg of manual force on the pump rod gives you up to 14,2 ton hydraulic cutting force and up to 3,4 ton hydraulic spreading force.
- You will need less energy or breathing air, compared to traditional tools.



### Spreading tips

- For opening heavy doors in a controlled way
- The load-holding function makes the tool suitable for lifting and progressive lifting
- You can also use the spreading tips to create space in vehicles.



### Compact and powerful

- The patented hydraulic cutting/spreading mechanism of the T1 allows for high cutting & spreading forces in a compact tool design.
- Easy to use in confined spaces.
- Easy to carry and store.



### Detachable Wedge

- You don't need a second person or tool for creating the first gap, which makes forcing heavy inward opening doors a one-person job.
- The wedge can also be used for pulling hinges or manually forcing outward opening doors.



### Hammer head

- You can use the tool as a battering ram or hammer
- For opening light inward opening doors quickly
- The optimized weight of 7,7kg makes the tool light enough to carry and heavy enough to do the job





# HOLMATRO OFFICES AND DEALERS

All over the world

Thanks to our worldwide sales and service network there's always a Holmatro representative nearby, ready to assist you!

Find your nearest Holmatro representative on [holmatro.com](http://holmatro.com)



## **Holmatro Netherlands**

Raamsdonksveer,  
The Netherlands  
**T** +31 (0) 162 58 92 00

## **Holmatro USA**

Glen Burnie MD,  
USA  
**T** 410-768-9662

## **Holmatro China**

Suzhou, Jiangsu Province  
China  
**T** +86 (512) 6380 7060

**WATCH THE VIDEO ON  
[HOLMATRO.COM/T1](http://holmatro.com/T1)**

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FOR LIFE**

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