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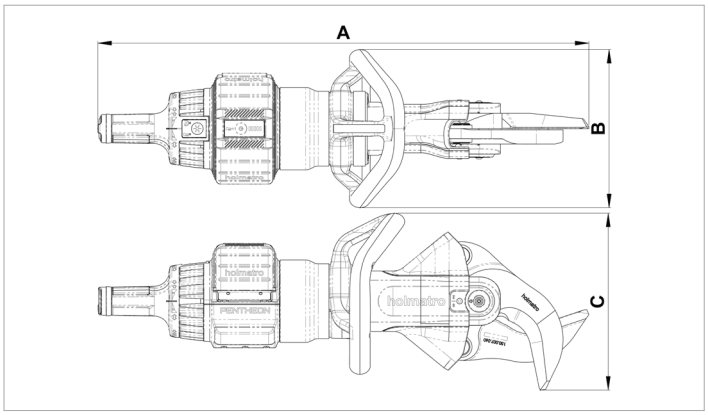
Technical specification sheet

PCU40 | Cutter

Specifications		
article number		151.001.475
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)	78
sound emission @ 4m/13ft	dB(A)	69
hydraulic oil type		ISO-L HV VG 36
NCT		yes
cutter jaw		inclined
weight, ready for use	kg	19.0
temperature range	°C	-20 + 55
weight excl. battery	kg	17.5
dimensions (AxBxC)	mm	832 x 270 x 300
EN 13204 compliant		yes
EN 13204 classification		BC165I-19
EN 13204, cutting capacity		1I 2I 3I 4J 5J
NFPA 1936 compliant		yes
NFPA 1936, cutting capacity		A7 B7 C6 D7 E8 F3
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 articles	
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/AU/NZ)	151.001.518
Battery Charger PBCH8 (AC-IN)	151.001.519
Battery PBPA287 (CN)	151.001.854

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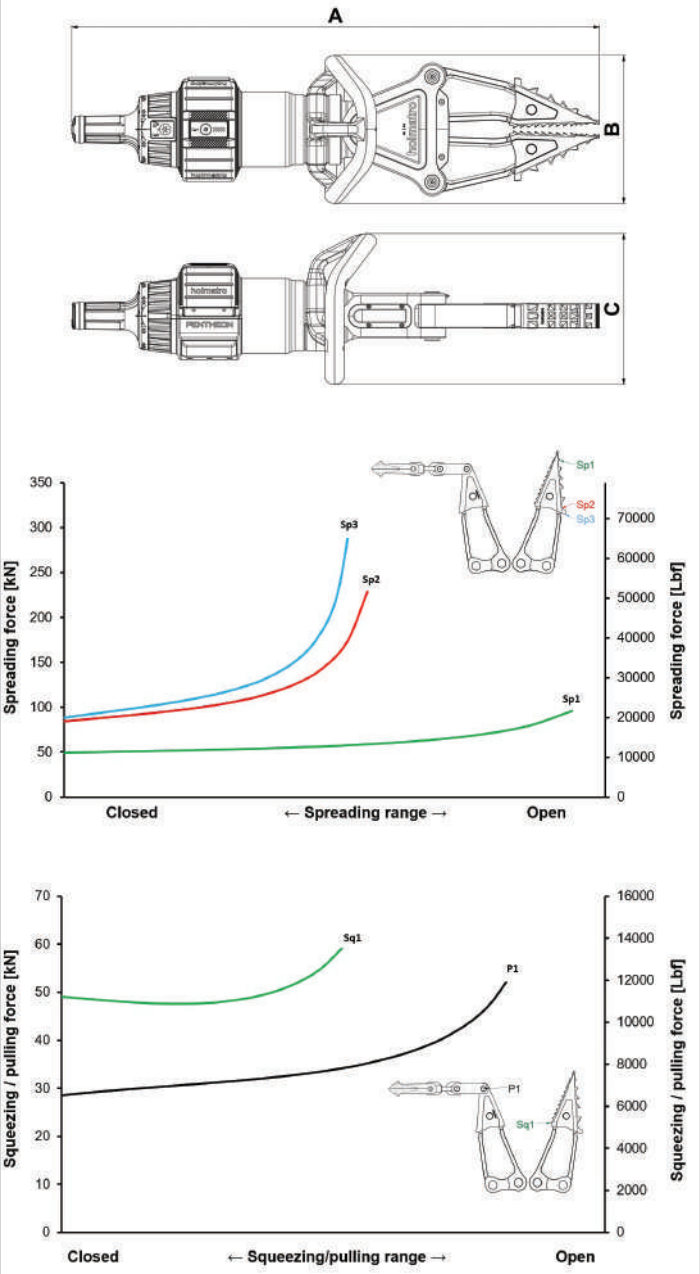
Technical specification sheet

PSP40 | Spreader

Specifications		
article number		151.000.685
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)	76
sound emission @ 4m/13ft	dB(A)	67
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
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 articles	
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/AU/NZ)	151.001.518
Battery Charger PBCH8 (AC-IN)	151.001.519
Battery PBPA287 (CN)	151.001.854



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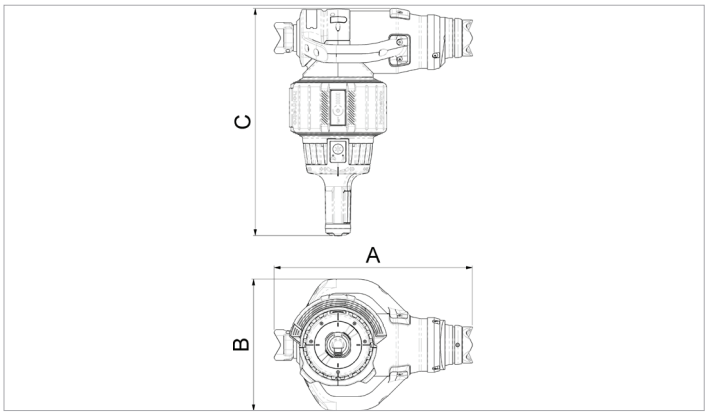
Technical specification sheet

PTR40 | Telescopic Ram

Specifications		
article number		151.001.653
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)	78
sound emission @ 4m/13ft	dB(A)	69
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



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 articles	
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/AU/NZ)	151.001.518
Battery Charger PBCH8 (AC-IN)	151.001.519
Battery PBPA287 (CN)	151.001.854

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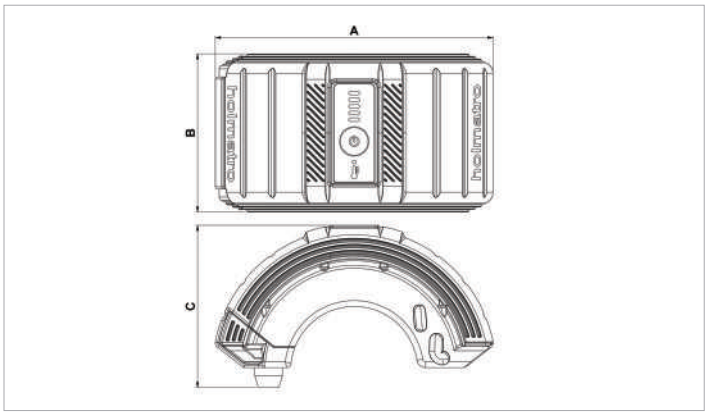
Technical specification sheet

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



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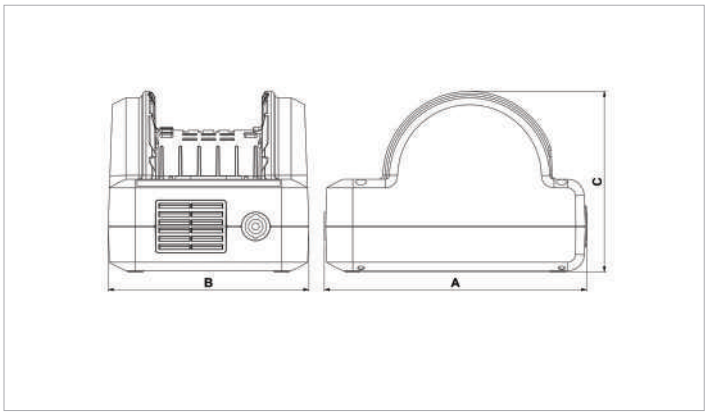
Technical specification sheet

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



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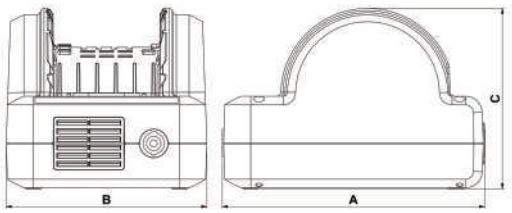
Technical specification sheet

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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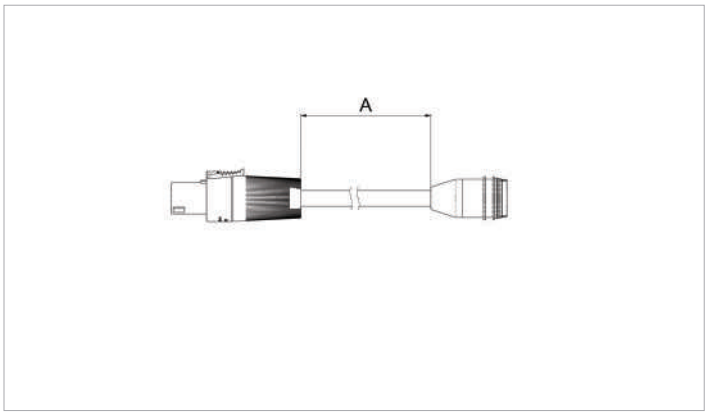
Technical specification sheet

POTC1 | On-Tool Charging Cord

Specifications		
article number		151.000.499
model		POTC1
short description		On-Tool Charging Cord
weight, ready for use	kg	0.3
temperature range	°C	-20 + 55

Technical drawing dimensions		
dimension A	mm	2000



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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

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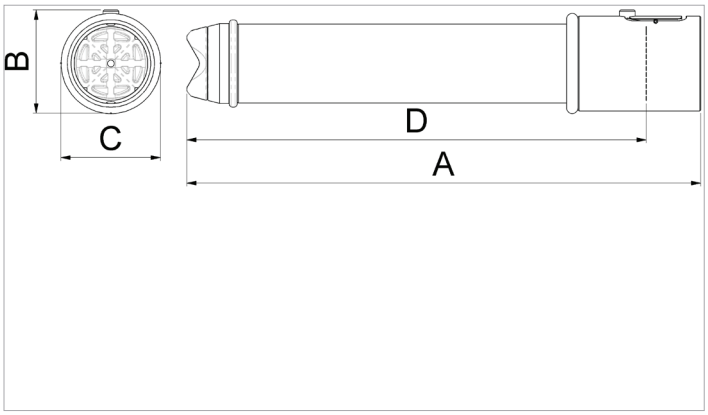
Technical specification sheet

TRE05 | Extension Pipe

Specifications		
article number		151.001.902
model		TRE05
short description		Extension Pipe
weight, ready for use	kg	4.6
dimensions (AxBxC)	mm	490 x 98 x 90
temperature range	°C	-20 + 55

Technical drawing dimensions		
dimension D	mm	440



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Technical specification sheet

PAS 02 | Pulling Attachment Set

Specifications		
article number		150.182.274
model		PAS 02
short description		Pulling Attachment Set
weight, ready for use	kg	4.6

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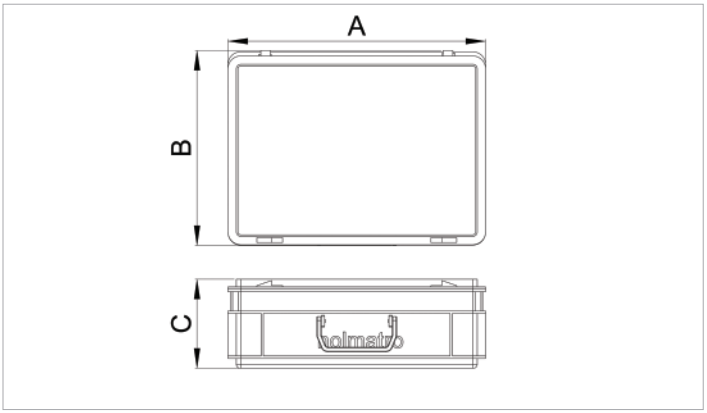
Technical specification sheet

PCS 02 | Pulling Chains Set In Case

Specifications		
article number		150.582.021
model		PCS 02
short description		Pulling Chains Set In Case
weight, ready for use	kg	12.8
dimensions (AxBxC)	mm	400 x 300 x 133

Standard supplied with

- Chain thickness 10mm/0.4in
- Chain lengths 1.5m/5ft + 3m/10ft



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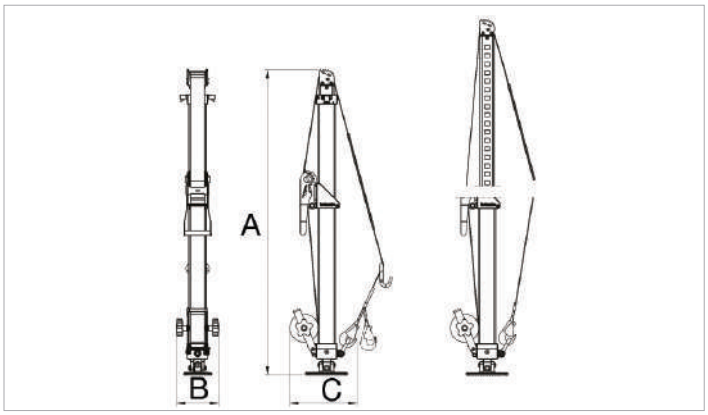
Technical specification sheet

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

Model/Type/Serial Ref.	Designations	Cutting Performance
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

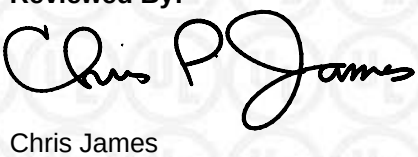
Conclusion: * The submitted cutters, Model CU 5040, GCU 5040 EVO, GCU 5040 EVO 3, CU 5040 i, GCU 5040 i EVO, GCU 5040 i EVO 3, PCU40, and PCU40S did comply with the clauses as evaluated to in accordance with EN 13204. Refer to Report Reference No. SA34094-D4-ENEC-Original, SA34094-D4-ENEC-Amendment-1,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



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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:

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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:

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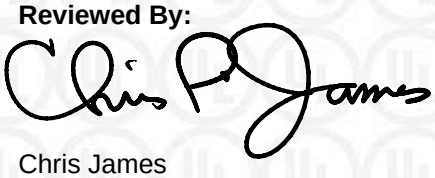
Reviewed By:



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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 :

Magic View s.r.l.
Str. Andrei Muresanu nr. 6, sector 1
cod 011843, Bucuresti Romania

is an exclusive distributor for the marketing, selling and servicing of Holmatro rescue tools in Romania and Moldova. The distributor is authorized to sell these Holmatro products in Romania and Moldova.
The dealer may provide its customers with a copy of this declaration.

Signed for true and correct at Raamsdonksveer 20th January 2023

Holmatro Rescue Equipment B.V.
P.O. Box 33, 4940 AA Raamsdonksveer
The Netherlands
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www.holmatro.com

Bert Willems
CCO Rescue
Holmatro Group

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S.C. Magic View S.R.L. MAGIC VIEW Bucuresti

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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

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Holmatro, Quality department
Hans Muste,
QHSE Manager

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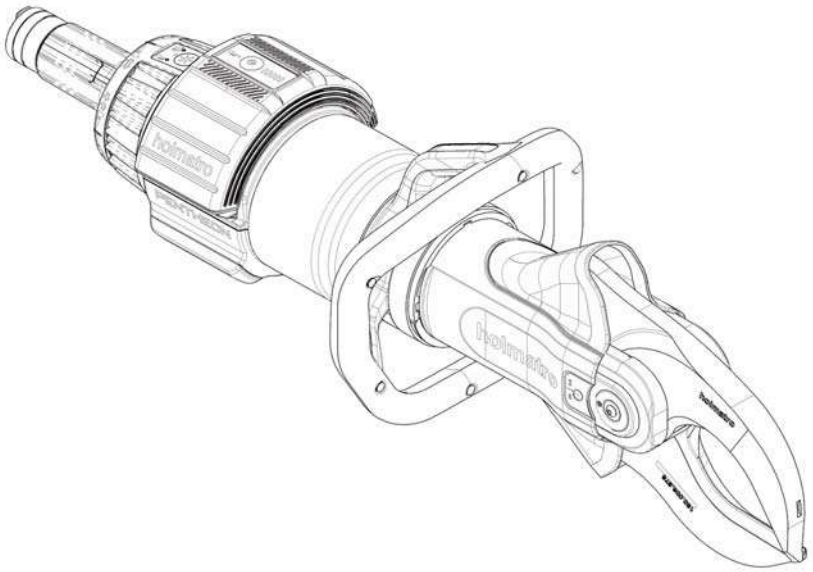
PCU

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



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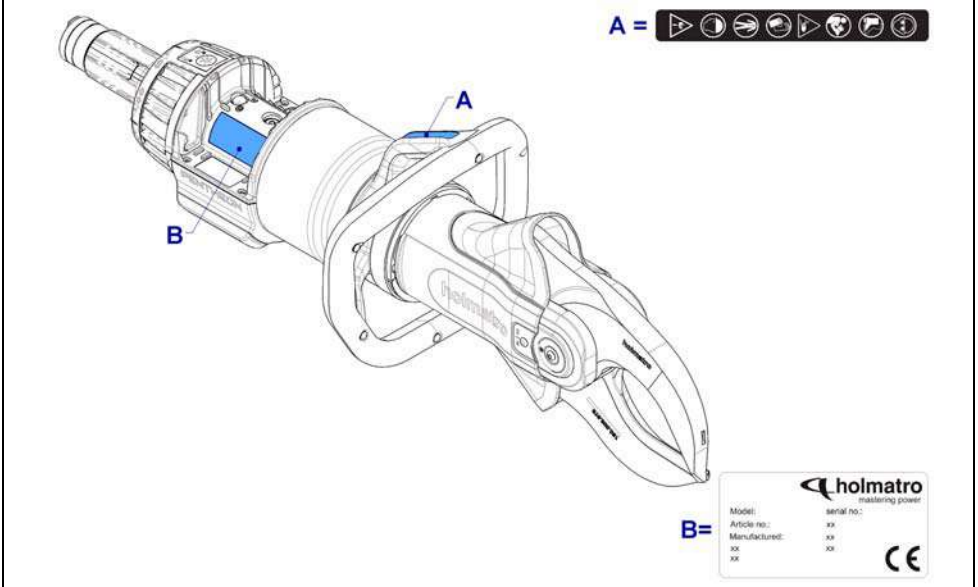
CERTIFIED

CE


A =
A
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B=
holmatro
mastering power
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serial no.:
Article no.:
Manufactured:

Fig. 1

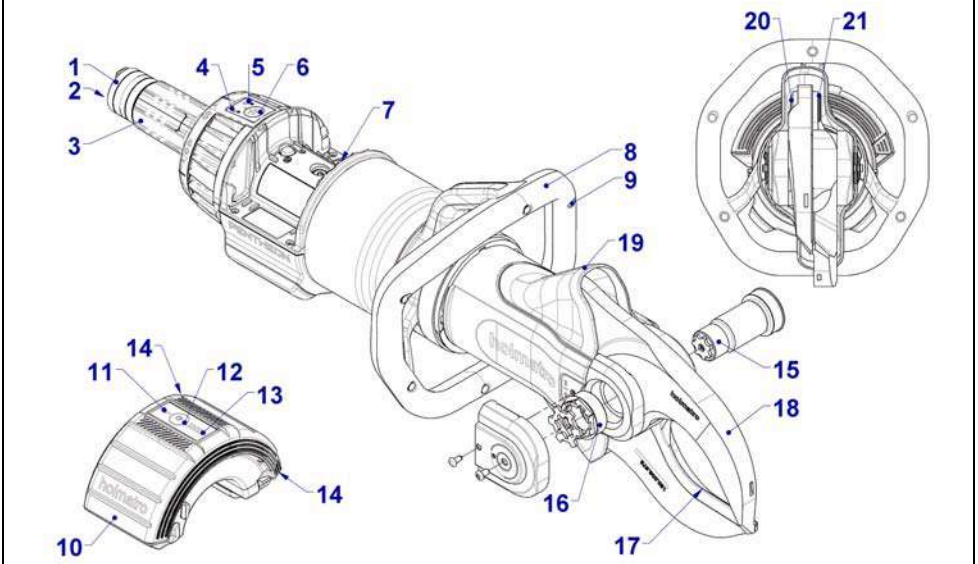
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Fig. 2

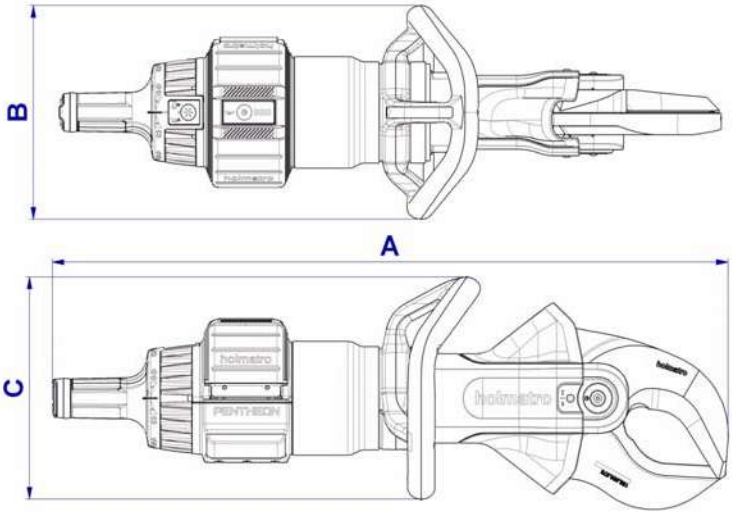

Fig. 3

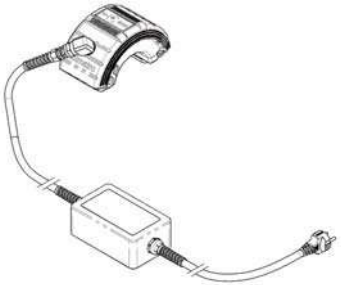

Fig. 4

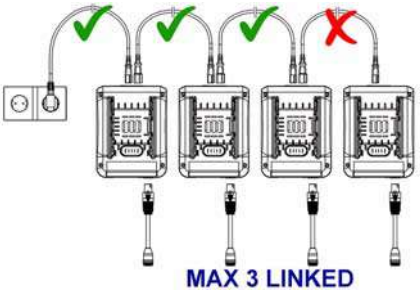

Fig. 5

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		**WARNING** Danger of cutting or pinching parts of the body.	921.000.084.
		**NOTE** Read the user manual before use.	
		**DANGER** Danger of crushing parts of the body.	
		**WARNING** Wear safety shoes with good ankle support and toe protection.	
		**WARNING** Wear safety gloves.	
		**WARNING** Wear safety clothing for the entire body with reflective material.	
		**WARNING** Wear safety goggles (or full face shield).	
		**WARNING** Wear a helmet.	

Pos.	Type of mark	Description	Part no.
B	Model plate	Model plate with: • Model indication • Serial number • Date of construction • CE marking	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 batterry 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 flammable 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 batterry 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
2 On-tool charge connector
3 Deadman's handle
4 Tool temperature indicator
5 Maximum force indicator
6 Light switch for LEDs
7 Battery pack fitting / adapter fitting
8 Carrying handle
9 LEDs
10 Battery pack
11 Battery temperature indicator
12 On/off switch
13 State Of Charge (SOC) indicator (see section 3.6.2)
14 Battery pack lock
15 Centre bolt
16 Centre nut and lock ring
17 Blade cutting edge
18 Blade
19 Protective sleeve
20 Hinge pin
21 Snap ring

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/s²	< 2,5
protection rate	-	IP57[1]
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[1]		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 < -20C (-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 maxmimum 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 toxical 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.	• Check the battery pack condition. See section 3.6.2. • Replace the battery pack by a fully charged battery pack.
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: • Push the on/off switch.
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: • Push the on/off switch.
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[1].
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.

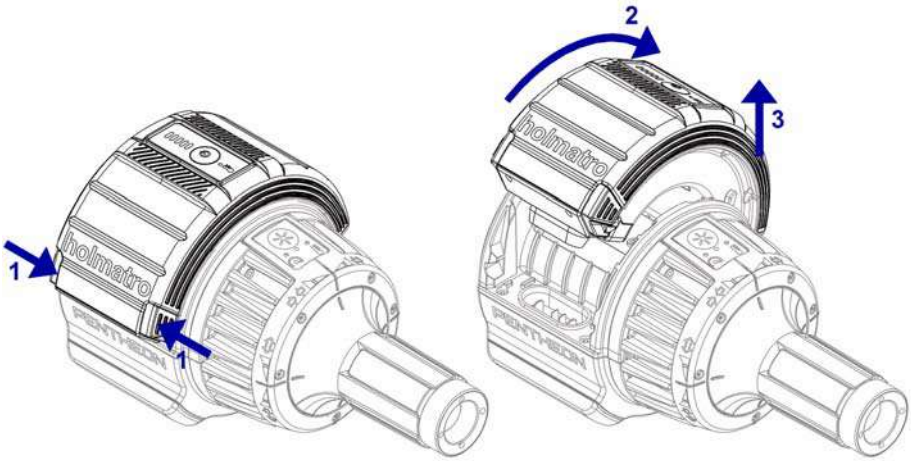
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Fig. 6

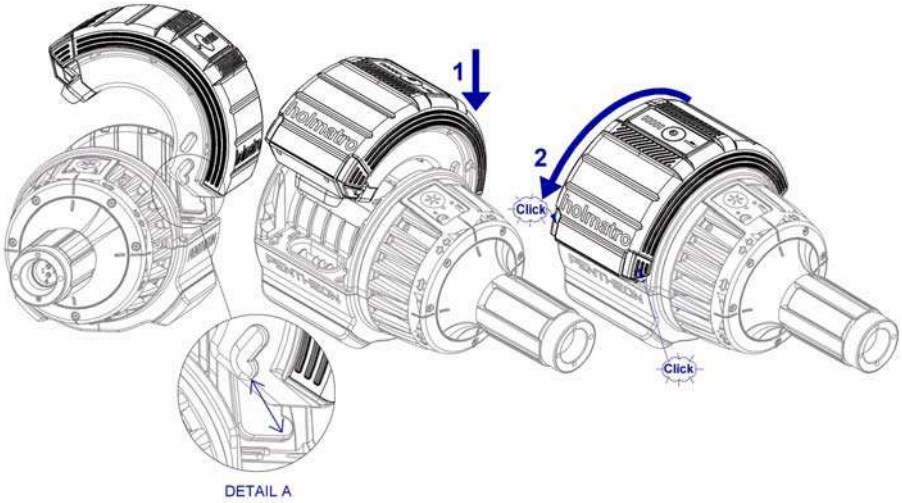
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Fig. 7

Fig. 8

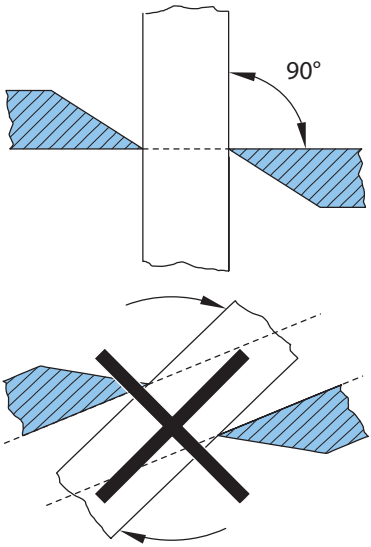

Fig. 9

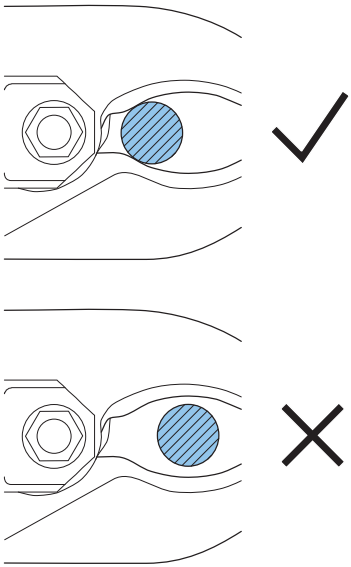

Fig. 10

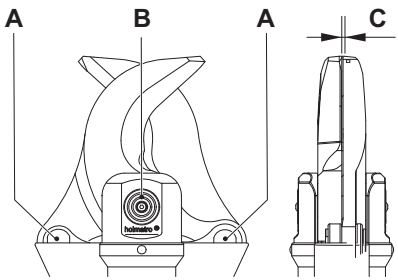

Fig. 11

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

profiel type category letter ↓	1 round bar	2 flat bar	3 round tube	4 square tube	5 rectangular tube
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

profiel type category letter ↓	1 round bar	2 flat bar	3 round tube	4 square tube	5 rectangular tube
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

profiel 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

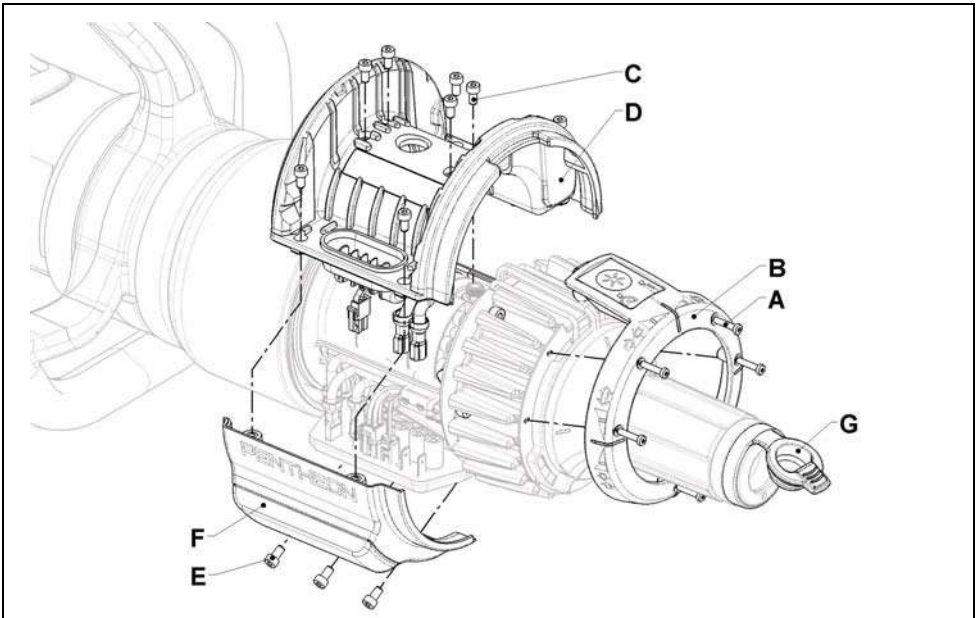

Fig. 16

Contact information

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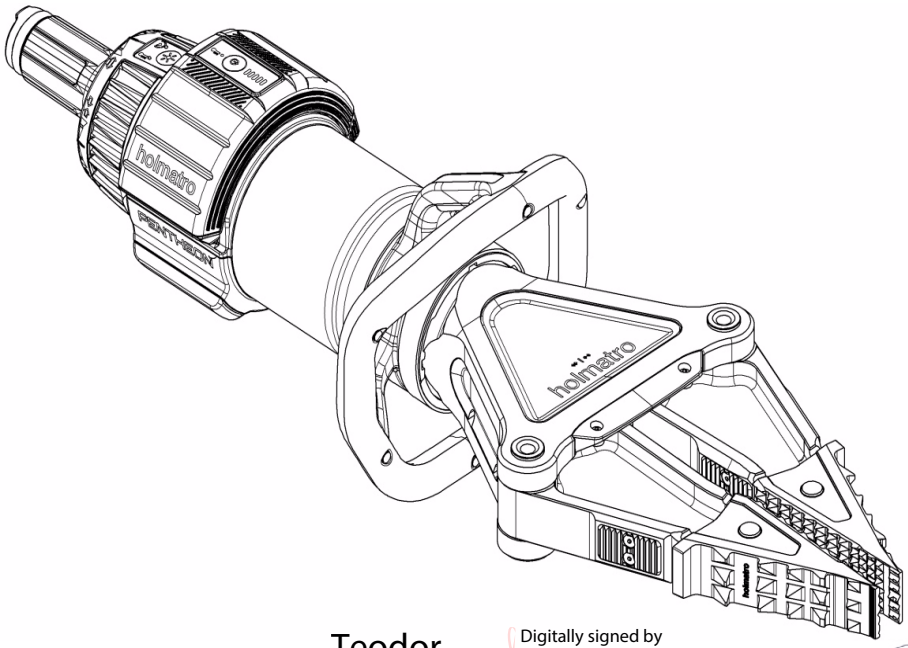
PSP (CL)

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



Teodor Munteanu

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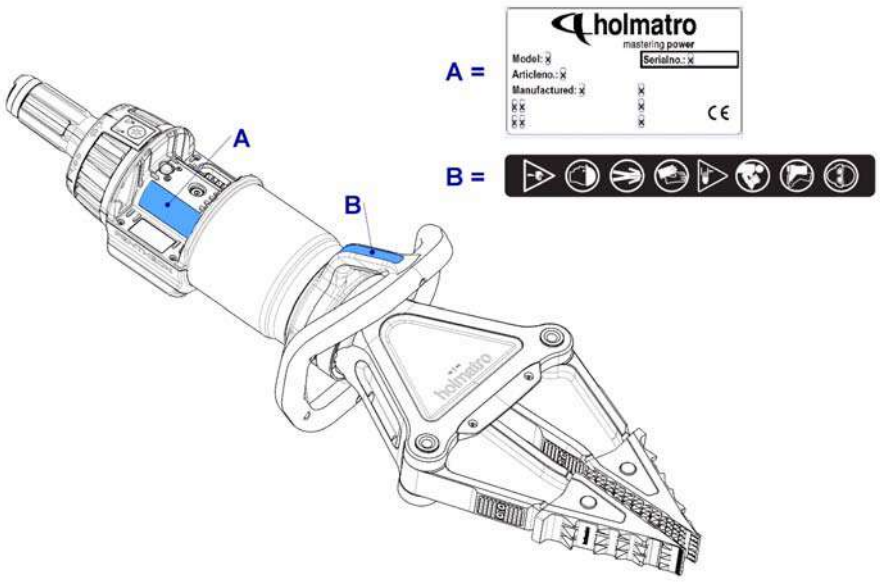
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Fig. 1

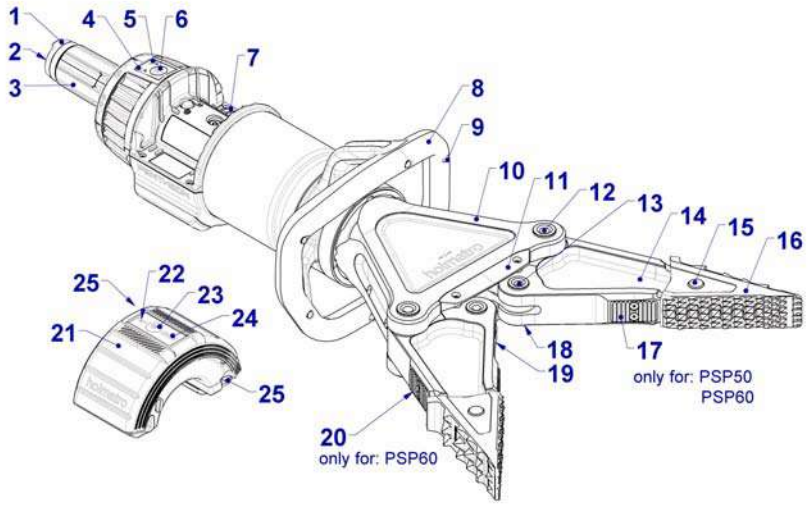
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Fig. 2

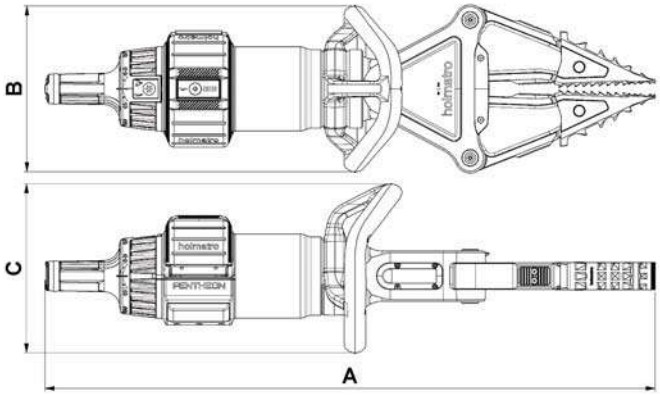

Fig. 3

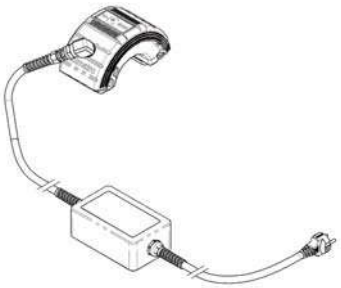

Fig. 4

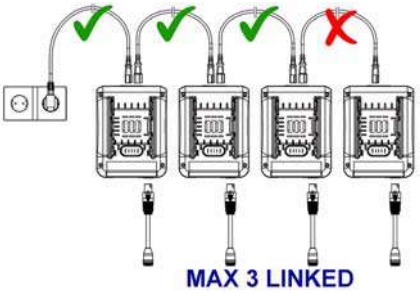

Fig. 5

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

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: • Model indication • Serial number • Date of construction • CE marking	Please contact Holmatro.

Pos.	Type of mark	Description	Part no.
B		**WARNING** Wear safety goggles (or full face shield).	921.000.084.
		**WARNING** Wear safety shoes with good ankle support and toe protection.	
		**NOTE** Read the user manual before use.	
		**WARNING** Wear safety gloves.	
		**WARNING** Wear safety clothing for the entire body with reflective material.	
		**WARNING** Wear a helmet.	
		**DANGER** 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 loose 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 batterry 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 flammable 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 batterry 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
2 On-tool charge connector
3 Deadman's handle
4 Tool temperature indicator
5 Maximum force indicator
6 Light switch for LEDs
7 Battery pack fitting / adapter fitting
8 Carrying handle
9 LEDs
10 Yoke
11 Protection hood
12 Hinge pin
13 Hinge pin
14 Spreading arm
15 Lock pin
16 Spreading tip
17 Squeezing plate
18 Snap ring
19 Snap ring
20 Spreading plate
21 Battery pack
22 Battery temperature indicator
23 On/off switch
24 State Of Charge (SOC) indicator (see section 3.6.2)
25 Battery pack lock

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/s²	<2,5 m/s²
protection rate	-	IP57[1]
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[1]		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 < -20C (-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 maxmimum 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 toxical 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 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.	• Check the battery pack condition. See section 3.6.2. • Replace the battery pack by a fully charged battery pack.
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: • Push the on/off switch.
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: • Push the on/off switch.
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[1].
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			

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 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 ± 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.

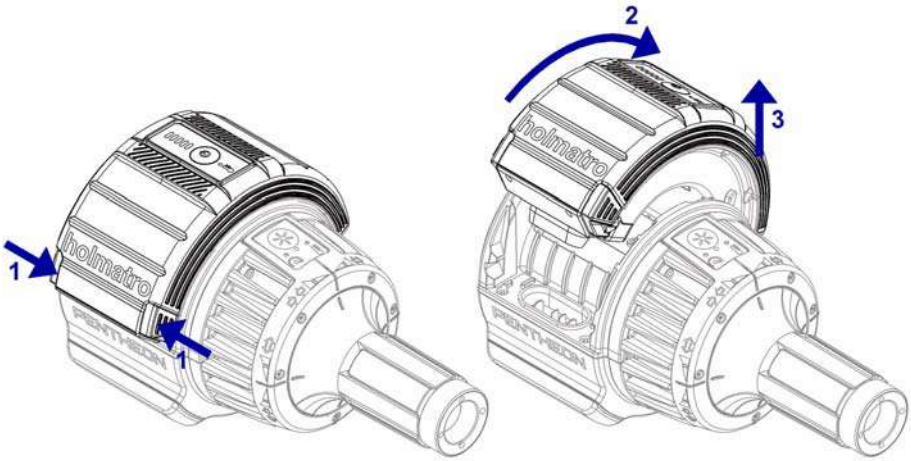
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Fig. 6

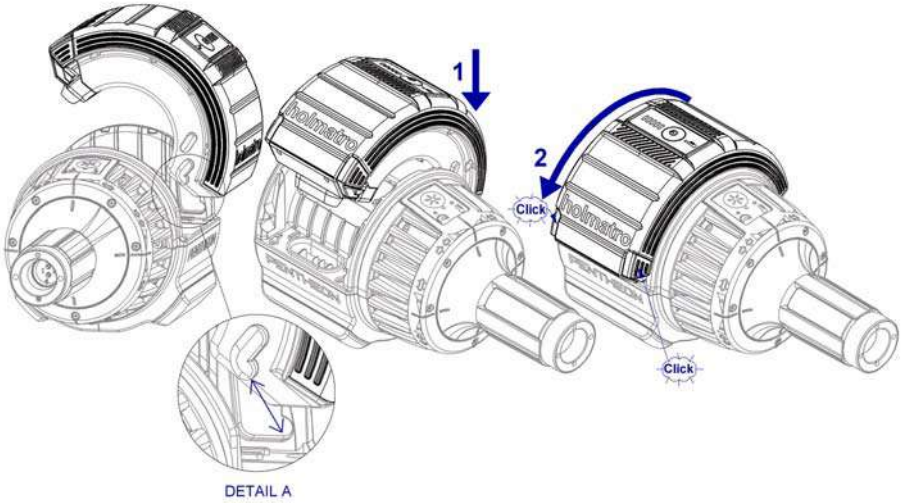
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Fig. 7

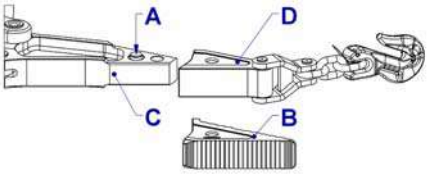

Fig. 8

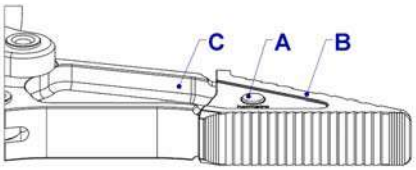

Fig. 9

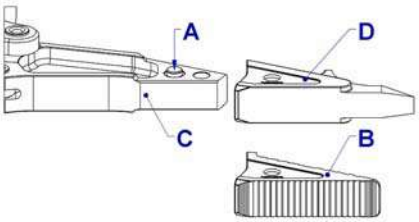

Fig. 10

Fig. 11

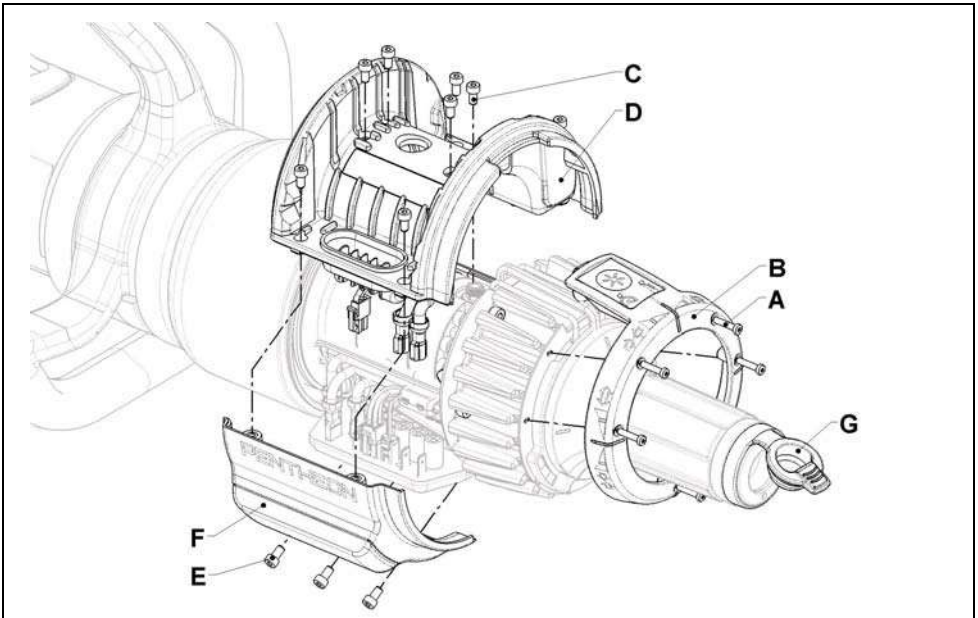

Fig. 12

Contact information

Holmatro Netherlands
Zalmweg 30
4941 VX, Raamsdonkveer, The Netherlands
Tel.: +31 (0)162 - 589200
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Fax: +1 410 768 4878
e-mail: info@holmatro-usa.com
home page: www.holmatro.com

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215200 中国
电话：+86 512 6380 7060
传真：+86 512 6380 4020
电子邮件：china@holmatro.com
主页：www.holmatro.com

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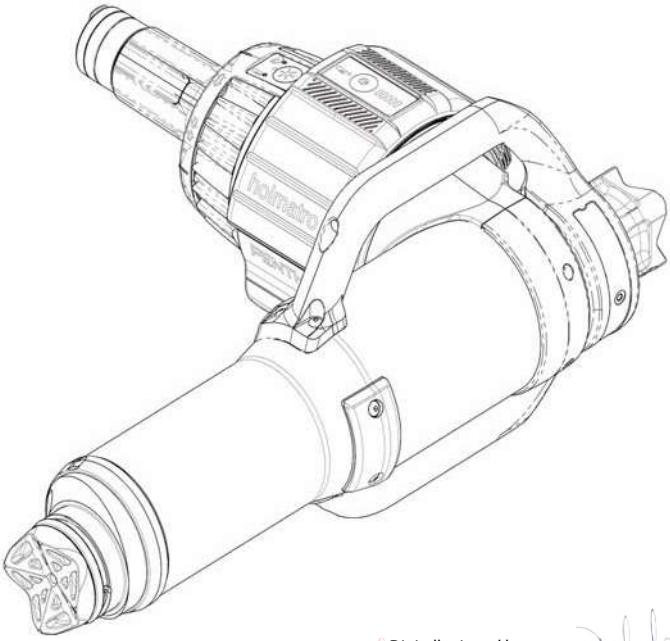
Handleiding **NL**
Manual **EN**
Mode d'emploi **FR**
Betriebsanleitung **DE**
Manual **ES**
Manual **PT**
手册 **ZH**



Teodor Munteanu

Digitally signed by Teodor Munteanu
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S.C. Magic View S.R.L. MAGIC VIEW Bucuresti

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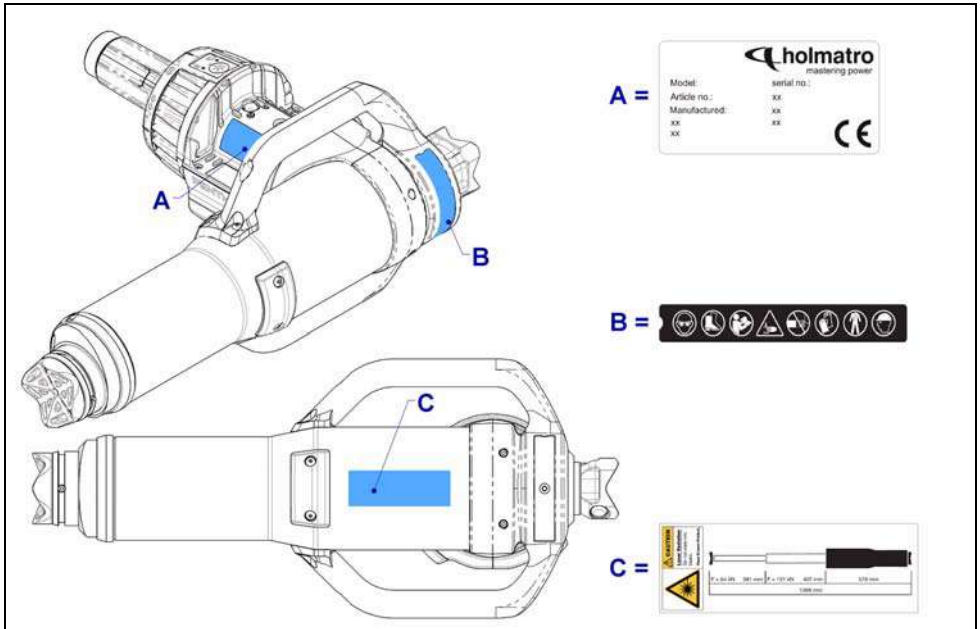
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Fig. 1

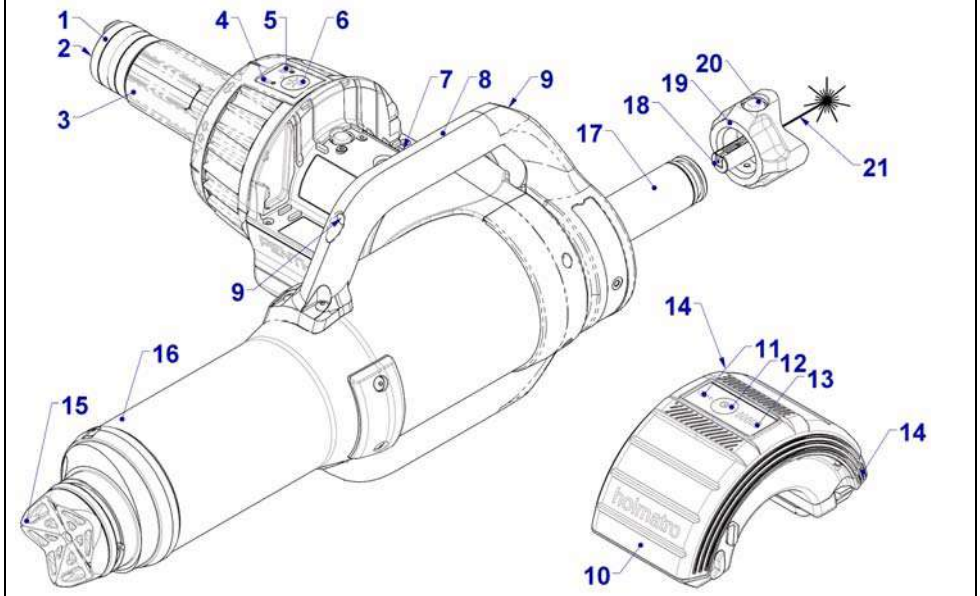
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Fig. 2

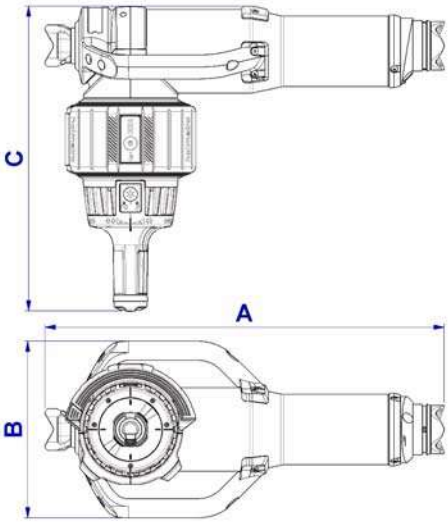


Fig. 3

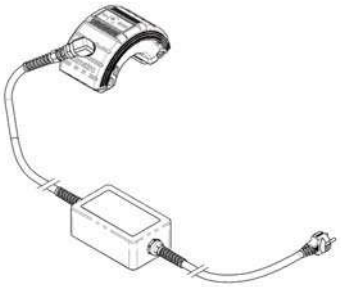


Fig. 4

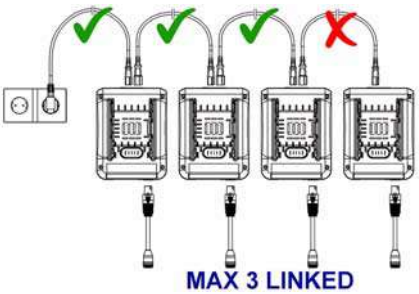


Fig. 5

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: • Model indication • Serial number • Date of construction • CE marking	Please contact Holmatro.

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

Pos.	Type of mark	Description	Part no.
C		**DANGER** 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 ± 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 batterry 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 flammable 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 batterry 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
2 On-tool charge connector
3 Deadman's handle
4 Tool temperature indicator
5 Maximum force indicator
6 Light switch for LEDs
7 Battery pack fitting / adapter fitting
8 Carrying handle
9 LEDs
10 Battery pack
11 Battery temperature indicator
12 On/off switch
13 State Of Charge (SOC) indicator (see section 3.6.2)
14 Battery pack lock
15 Grip head (base side)
16 Cylinder
17 Plunger
18 Battery for laser pointer
19 Grip head with laser pointer (plunger side)
20 Light switch for laser pointer
21 Laser beam

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)	540 / 54
	psi	7832
hydraulic oil type	-	ISO-L HV VG 36
vibration level	m/s²	<2,5 m/s²
protection rate	-	IP57[1]
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[1] 		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 < -20C (-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 Accesories

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 l=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 maxmimum 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 toxical 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 ± 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.	• Check the battery pack condition. See section 3.6.2. • Replace the battery pack by a fully charged battery pack.
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: • Push the on/off switch.
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: • Push the on/off switch.
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[1].
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 ± 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.

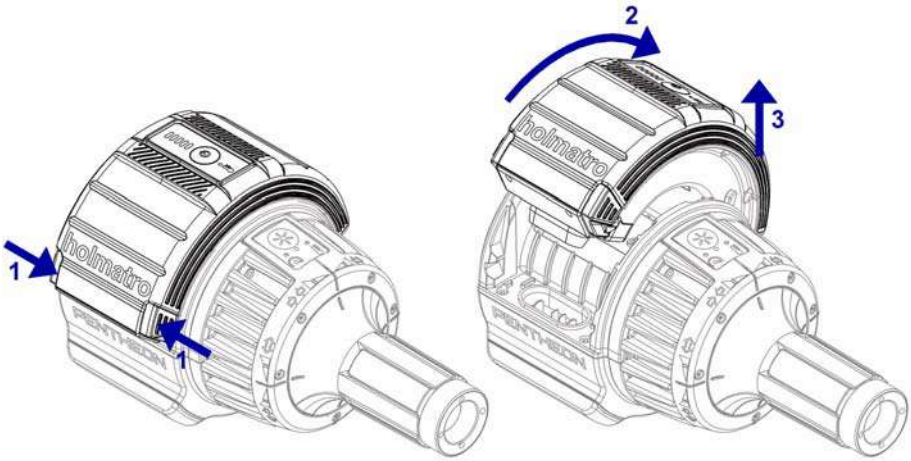
CAUTION
If the battery pack is removed from the tool and is not being recharged, it will slowly loose its energy. Make sure that the battery pack is recharged at least once every year.

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.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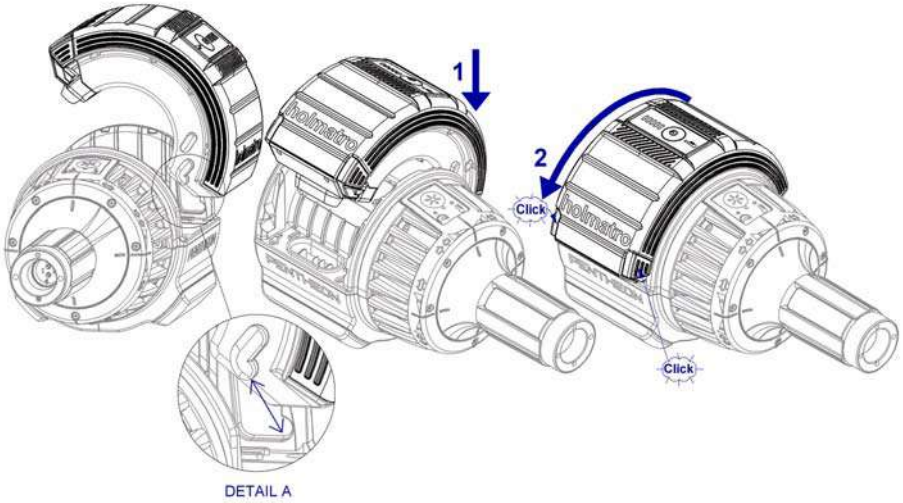
holmatro
holmatro

Fig. 6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DETAIL A

Fig. 7

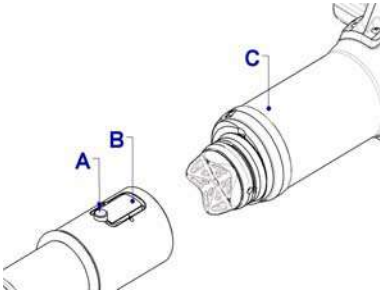


Fig. 8

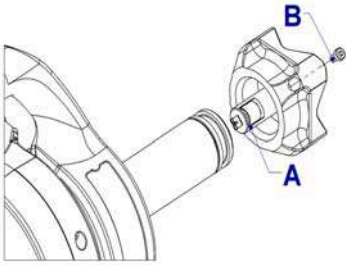


Fig. 9

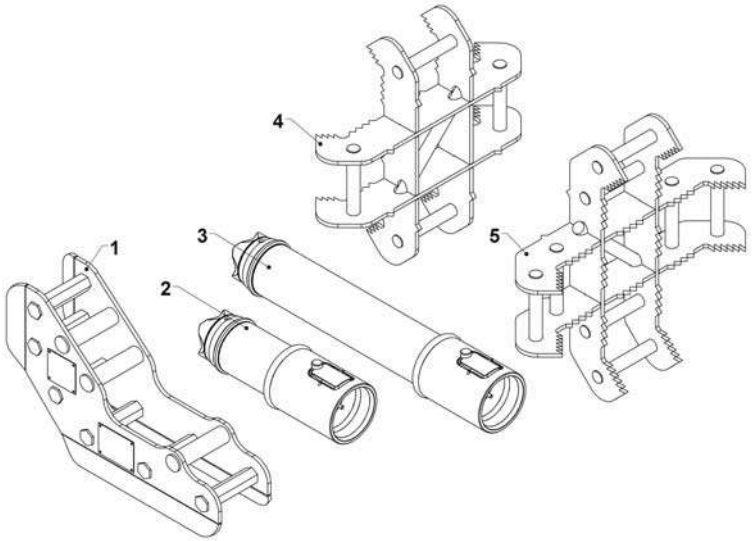


Fig. 10

Fig. 11

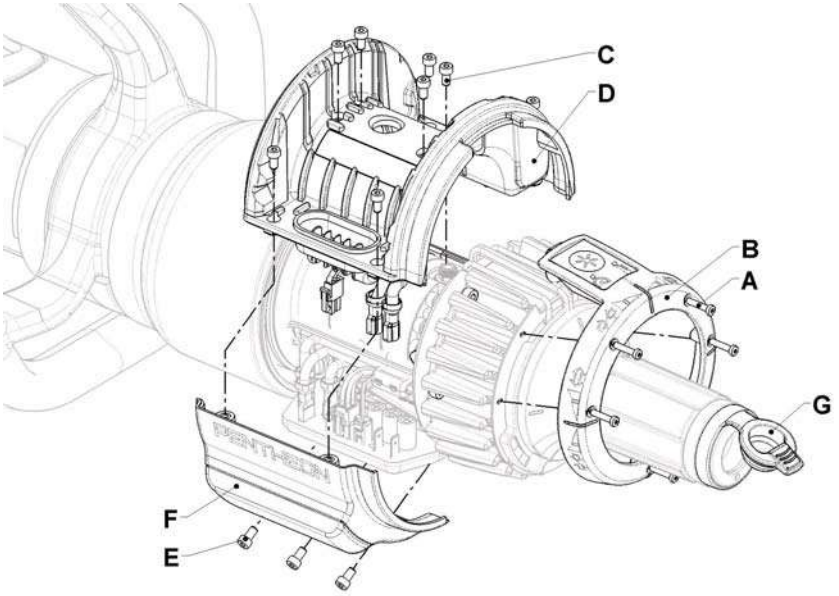


Fig. 12

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
home page: www.holmatro.com

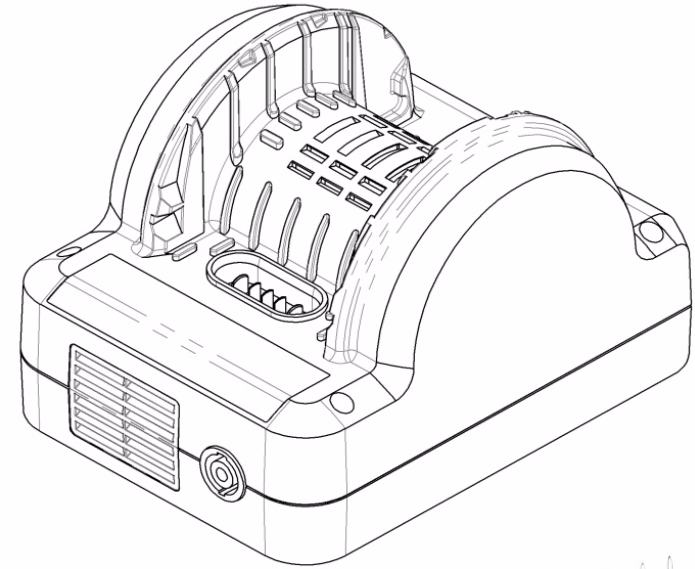
Holmatro USA
505 McCormick Drive
Glen Burnie, MD 21061, U.S.A.
Tel: +1 410 768 9662
Fax: +1 410 768 4878
e-mail: info@holmatro-usa.com
home page: www.holmatro.com

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
主页：www.holmatro.com

holmatro
mastering power

Battery Charger PBCHx

Handleiding **NL**
Manual **EN**
Mode d'emploi **FR**
Betriebsanleitung **DE**
Manual **ES**
Manual **PT**
手册 **ZH**
Руководство по эксплуатации **RU**



Teodor Munteanu

Digitally signed by Teodor Munteanu
Date: 2023.03.29 11:12:48 +03'00'

S.C. Magic View S.R.L. MAGIC VIEW Bucuresti

ISO 9001
CERTIFIED

CE

5	**NL**	Voor het lezen van de handleiding s.v.p. het eerste en laatste blad van de omslag uitvouwen. Deze handleiding is ook te vinden op www.Holmatro.com.
22	**EN**	To read the manual, please fold out the first and the last page of the cover. This manual can also be found at www.Holmatro.com
37	**FR**	Pour lire le manuel, veuillez déplier la première et la dernière page de la couverture. Ce manuel est également disponible sur www.Holmatro.com.
54	**DE**	Beim Lesen dieser Anleitung schlagen Sie bitte zunächst das erste und das letzte Blatt des Umschlags auf. Dieses Handbuch finden Sie auch unter www.Holmatro.com
71	**ES**	Para leer este manual, por favor despliegue la primera y la última página de este manual. Este manual también se puede encontrar en www.Holmatro.com.
87	**PT**	Antes de ler o manual desdobre s.f.f. a primeura e a última folha das capas. Este manual também pode ser encontrado em www.Holmatro.com
104	**ZH**	阅读本手册前，请先将封面和封底折叠。该手册也可以在 www.Holmatro.com 上找到
117	**RU**	Чтобы прочитать данное руководство, разверните первую и последнюю страницы обложки. Это руководство также доступно на веб-сайте www.Holmatro.com
	BG	Ако езикът на Вашата страна липсва, моля, свържете се с Холматро.
	CS	Chybí-li jazyk vaší zeme, kontaktujte Holmatro.
	DA	Kontakt venligst Holmatro, hvis der ikke findes en brugervejledning på dit sprog.
	EL	Σε περίπτωση που η μητρική σας γλώσσας δεν υπάρχει, επικοινωνήστε με τη Holmatro.
	ET	Juhul kui Teie emakeel puudub, palun võtke ühendust Holmatroga.
	FI	Ota yhteyttä Holmatroon, jos käyttöopasta ei ole saatavilla omalla äidinkielelläsi.
	HU	Ha az Ön országának nyelve hiányozna, kérjük lépjen kapcsolatba a Holmatro céggel.
	IS	Ef enginn texti er á tungumáli lands þíns, vinsamlegast hafðu samband við Holmatro.
	IT	Contattare Holmatro se il manuale utente non è disponibile nella propria lingua.
	LT	Jeigu nera Jusu šalies kalbos, prašome susisiekti su Holmatro.
	LV	Ja jusu valsts valoda nav mineta, ludzu, sazinieties ar Holmatro.
	MT	Jekk il-lingwa ta' pajjizek hija nieqsa, jekk joghgbok ikkuntattja lil Holmatro.
	NO	Hvis ditt lands språk mangler, vær vennlig å kontakte Holmatro.
	PL	Jeśli podręcznik użytkownika nie jest dostępny w Twoim języku, skontaktuj się z Holmatro.
	RO	Dacă limba ţării Dvs. lipseşte, vă rugăm contactaţi Holmatro.
	SK	Ak chýba jazyk vašej krajiny, kontaktujte, prosím, spolocnost Holmatro.
	SL	Ce jezik vaše države manjka, vas prosimo, da stopite v stik s Holmatro.
	SV	Kontakta Holmatro om denna användarmanual inte finns tillgänglig på ditt språk.

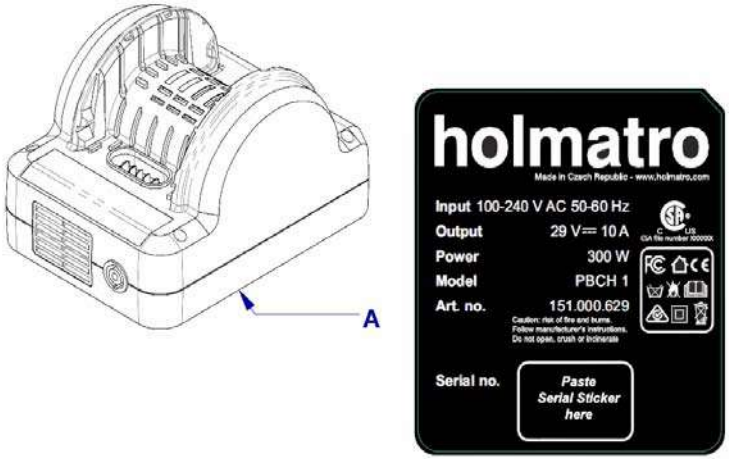

A
holmatro
Made in Czech Republic - www.holmatro.com
Input 100-240 V AC 50-60 Hz
Output 29 V⎓ 10 A
Power 300 W
Model PBCH 1
Art. no. 151.000.629
Caution: risk of fire and burns.
Follow manufacturer's instructions.
Do not open, crush or incinerate
Serial no.
Paste
Serial Sticker
here

Fig. 1

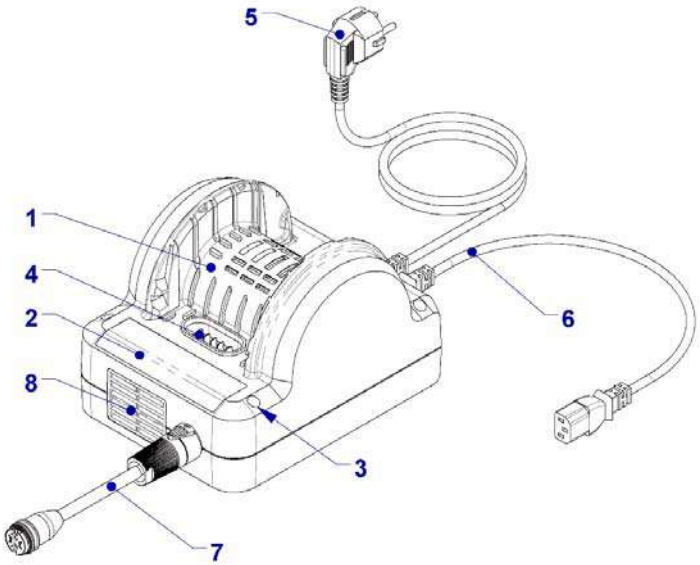

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Fig. 2

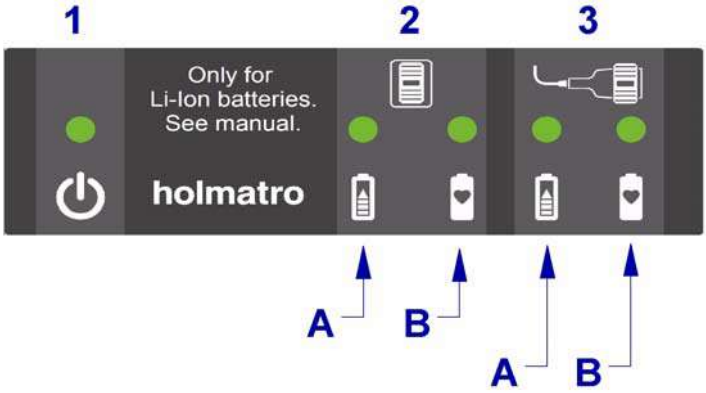

Fig. 3

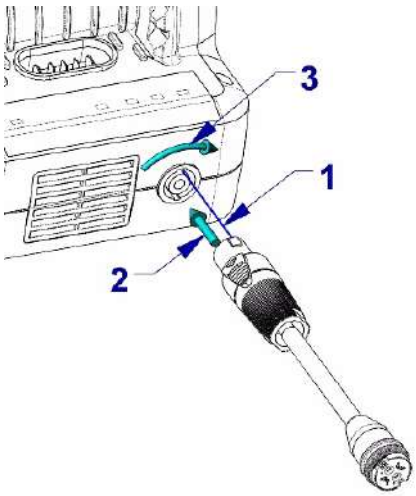

Fig. 4

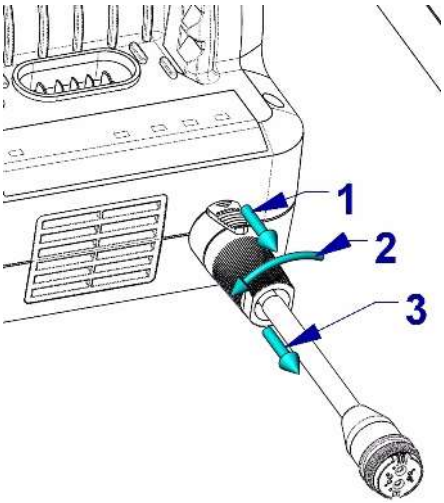

Fig. 5

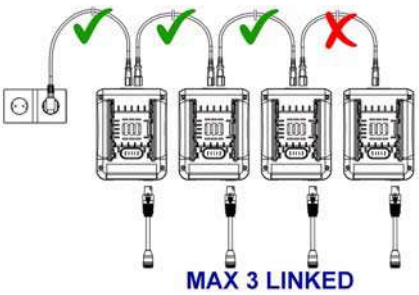

Fig. 6

1 Safety regulations

1.1 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.

1.2 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.

Type of mark	Pos.	Description	Part no.
Model plate	A	Model plate with: • Manufacturer's name and address • Model indication • Electrical specifications • CE marking • Warnings and instructions (see below)	If the information on the model plate is illegible, have the model plate replaced by the Holmatro dealer.

Note
(Only for 100 - 120 VAC version):
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules.

WARNING
Use the battery charger only indoors.

Caution
Do not dispose the battery charger into the house- and residual waste removal.

WARNING
Do not expose the battery charger to damp or wet conditions.

WARNING
Do not expose the battery charger to fire, sparks or heat.

Note
Read the user manual before using the battery charger.

1.3 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.

1.4 IMPORTANT SAFETY INSTRUCTIONS with respect to battery chargers

SAFE THESE INSTRUCTIONS

- Read all instructions carefully before you use the battery charger.
- Only use a power supply with the correct voltage and frequency. See the electrical specifications on the model plate.
- Use the battery charger only indoors.
- Do not expose the battery charger to damp or wet conditions.
- Never carry the battery charger by its power cord. 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 attempt to 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.
- This appliance can be used by children aged from 8 years and above and persons with physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- Strictly observe the minimum and the maximum charging temperature. See section 3.4.
- Do not use a damaged battery charger (e.g. when it has been dropped, or when the power cord or the power plug have been damaged).
- Do not disassemble the battery charger.
- Risk of short-circuit: protect the battery charger against metal objects.
- This manual contains important safety and operating instructions.
- Read all instructions and cautionary markings carefully before using it.

- Not following these instructions can result in serious personal injury, fatal accident, damage to the system or consequential loss.
- Risks of fire, electric shock, or injury to persons. To reduce the risk, follow the instruction listed below.

1.5 Safety regulations with respect to the PBCH*-series battery chargers

WARNING

- This equipment is intended for use by professionals. It has been tested and found to comply with the applicable limits. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
- This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

- To reduce risk of injury, charge only PBPA-series type rechargeable batteries. Other types of batteries may burst causing personal injury and damage.
- Make sure to keep the ventilation slots of the battery charger free from metal chips.

2 Introduction

2.1 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.

2.2 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.

2.3 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.

2.4 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.

2.5 Application

This product is only intended for charging Holmatro PBPA-series rechargeable battery packs.

2.6 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.

2.7 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 hydraulic valves 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.

3 Description

3.1 Equipment

The PBCH-series battery chargers have been specially developed for charging the Holmatro PBPA-series battery packs.

WARNING
The battery chargers may only be used with the PBPA-series battery packs.

3.2 Type designation

Example: PBCH1

Digit	Example	Description
1-4	PBCH	Pentheon Battery CHarger
5	1	PBCH1: for use in region: Europe PBCH2: for use in region: US PBCH3: 12 - 24 VDC PBCH4: for use in region: Japan PBCH5: for use in region: UK PBCH6: for use in region: Korea PBCH7: for use in region: China PBCH8: for use in region: India

3.3 Product identification

Refer to Fig. 2.

1	Adapter for the battery pack	5	Power cord and power plug
2	Condition indicator label (see section 5.1.1)	6	Daisy chain cable (optional)
3	Fastening points	7	On-tool-charge cable (optional)
4	Electrical contacts (for battery pack)	8	Fan outlet

3.4 Technical specifications

Model	Unit	PBCH1, PBCH2, PBCH4, PBCH5, PBCH6, PBCH7, PBCH8	PBCH3
Input voltage	-	100 - 240 VAC	12 - 24 VDC
Frequency	Hz	50 - 60	-
Power	W	300	73.5
Charge current	A	10	2
Protection class	-	IP 20	
Output voltage	VDC	28	
Operating temperature	°C / °F	0 to +45 / +32 to +113	
Storage temperature	°C / °F	-20 to +40 / -4 to +104	
Weight	kg / lb	1.6 / 3.5	
Length of power cord	m / ft	1.5 / 5	
dimensions (LxWxH) (excl. battery pack)	mm in	222 x 170 x 153 8.7 x 6.7 x 6	
dimensions (LxWxH) (incl. battery pack)	mm in	220 x 170 x 182 8.7 x 6.7 x 7.4	
Type of battery pack	-	Li-Ion, 7S2P	
Nominal max. voltage of the battery pack	VDC	25.2	
Max. capacity of the battery pack	Ah	7	
Country of manufacture	-	Czech Republic	

The actual values can differ slightly from these specifications because of specific conditions of use.

3.5 Safety features of the battery charger

The battery charger has the following safety features:

- Microprocessor controlled battery charging
- Protection against short-circuit and reverse polarity
- Battery defect recognition
- Battery pressure increase protection
- Dynamic charge current adjustment
- Automatic voltage detection
- Protection against under and over voltage.

3.6 Accessories Pentheon system

Description	model		
Battery pack	PBPA287		151.000.583
	PBPA287	China	151.000.854

Description	model	plug type	
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 Installation of the battery charger

Refer to Fig. 7 and Fig. 8.

- Check the battery charger for completeness and damage. Do not use the battery charger if it is damaged; in that case contact the Holmatro dealer.
- Mount the battery charger in a dry, cool, well-ventilated and dust-free area. The battery charger can be mounted both on a horizontal and a vertical surface.
- Insert the power plug of the battery charger into a power outlet with the correct voltage and frequency. See the electrical specifications on the model plate.The LED on the left part of the condition indicator label will light up, to indicate that the power is on.

4.2 Using more than one battery charger

Refer to Fig. 6.
You can connect up to a maximum of three battery chargers to a single electric socket.
Use daisy-chain power cables to connect the battery chagers. Refer to Fig. 2, 6.

5 Operation

5.1 Condition indicator

5.1.1 Condition indicators on the charger

Refer to Fig. 3.
The LEDS on the condition indicator label show the status of the charger and the battery pack. Two battery packs can be connected to a charger. One battery pack can be put on the charger. Another battery pack can also be charged on the tool with the on-tool-charge cable.

Symbols on the battery charger.		
1		The status of the charger. Refer to 5.1.2.

Symbols on the battery charger.		
2		The condition of the battery pack that is charged on the charger.
3		The condition of the battery pack that is charged on the tool.
A		The state of charge of the battery pack that is charged. Refer to 5.1.3.
B		The state of health of the battery pack that is charged. Refer to 5.1.4.

5.1.2 Status of the battery charger

Refer to Fig. 3, 1

	color:	
	no light	No power
	green	Mains ok.
	orange	Voltage too low. (only for PBCH3)
	red, flashing	Malfunction.

5.1.3 State of charge of the battery pack.

Refer to Fig. 3, A

	color:	
	no light	No battery pack detected.
	green	Battery pack connected, fully charged
	green, flashing	Battery pack connected, charging
	orange	Battery pack connected, on hold (other battery pack is charged first)
	red, flashing	Replacement of battery pack necessary.

5.1.4 State of health of the battery pack.

Refer to Fig. 3, B

	color:	
	no light	No battery pack detected.
	green	Battery pack connected. Battery OK.
	orange	Replacement of battery pack necessary.

5.1.5 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%		80-100%		100%
		color: green	40-60%		60-80%		80-100%
Error. all LEDs: red, flashing[1] 		color: orange	20-40%		40-60%		60-80%
		color: red	10-20%		20-40%		40-60%
		color: red, flashing	0-10%		0-20%		20-40%
			0%				0-20%

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

5.2 Charging a battery pack

Refer to Fig. 10

- Study the instructions of the battery pack before you start charging.

NOTE
Best results and longest life of the battery pack are achieved by charging in a dry environment at a temperature between 18 °C and 24 °C (64 °F and 75 °F).

CAUTION
The battery pack can be damaged if charged at a temperature below 0 °C or above 45 °C (below 32 °F or above 113 °F).
Only use the battery charger to charge one of the prescribed Holmatro battery packs. See section 3.1.

- Insert the power plug of the battery charger into a power outlet with the correct voltage and frequency. See the electrical specifications on the model plate.
  The red LED on the left part of the condition indicator label will light up, to indicate that the power is on.
- Slide the battery pack into the adapter until the battery pack lock snaps tight.
  The green LED on the right part of the condition indicator label will light up, to indicate that the battery pack is being charged.

NOTE

- The battery pack can remain connected to the battery charger for an indefinite period of time, because it is protected against overcharging.
- 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 On-tool-charging

A battery pack can be charged while it remains on the tool.
This way, the battery pack can be charged while another battery pack remains on the charger. The battery pack on the tool is charged first. After that, the battery pack on the charger will be charged.

5.3.1 Connect a battery with the on-tool-charge cable

Refer to Fig. 4.
1. Align the top notches.
2. Push the connector into the charger.
3. Turn the connector clockwise to lock the connector.

5.3.2 Disconnect the on-tool-charge cable

Refer to Fig. 5.
1. Pull the release knob backwards.
2. Turn the connector counterclockwise.
3. Pull the connector from the charger.

5.4 Charging time

The charging time depends on several factors, such as:

- the discharge state of the battery pack
- the ambient temperature during charging
- the temperature of the battery pack
- the age of the battery pack

The table below shows the average charging times (at a temperature between 18 °C and 24 °C [64 °F and 75 °F])

Battery pack model	max. charging time PBCH3	max. charging time PBCH1,2,4,5,6,7,8
PBPA287 (on charger)	205 min	60 min
PBPA287 (on tool)	205 min	95 min

5.5 After use

- Check the battery charger for completeness and damage. Do not use the battery charger if it is damaged; in that case contact the Holmatro dealer.
- If necessary, clean the battery charger.
- A battery charger that has not been mounted as described in section 4.1, must be carefully stored. See the instructions in section 7.5.

6 Troubleshooting

6.1 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.

6.2 The battery charger does not charge the battery pack at all

Possible cause	Solution
No power supply; the red LED on the left part of the condition indicator label does not light up.	• Check the power supply. • Replace fuse. (behind cover adjacent to the power cord connection) • Type PBCH3: printed circuit board fuse is broken. Contact your Holmatro dealer.

7 Maintenance

7.1 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.

7.2 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 charger (exterior)	Check	x			
Cables	Check	x			

7.3 Maintenance activities

- After every use, check the battery charger for completeness and damage. Do not use the battery charger if it is damaged; in that case contact the Holmatro dealer.

7.4 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 2.7). The Holmatro dealer can organize the yearly maintenance for you on a contract basis.

7.5 Storage

- After every use, store the battery charger in a dry, cool, well-ventilated and dust-free area.
- Strictly observe the maximum storage temperature. See section 3.4. The recommended relative humidity range is: 0% - 80%.
- Store the battery charger out of reach of children.

8 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.

9 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: Holmatro Li-ion battery charger
Models:

PBCH1, part no. 151.000.629	**PBCH5, part no. 151.000.631**
PBCH2, part no. 151.000.742	**PBCH6, part no. 151.001.209**
PBCH3, part no. 151.000.632	**PBCH7, part no. 151.001.518**
PBCH4, part no. 151.000.630	**PBCH8, part no. 151.001.519**

Conform to the requirements of the following Directives of the European Union:

Low voltage directive 2014/35/EC
EMC directive 2014/30/EC
RoHS directive 2011/65/EC

and to relevant national legislation transposing these directives.
The complete EC Declaration of Conformity is available from Holmatro Netherlands, Zalmweg 30, 4941 VX Raamsdonksveer, The Netherlands

Netherlands, Raamsdonksveer, 08.08.2019

Ing. H. W. M. Hermans MBA
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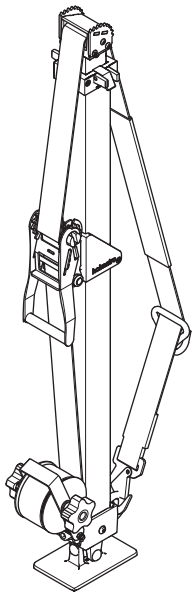
V-STRUT

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



Teodor Munteanu

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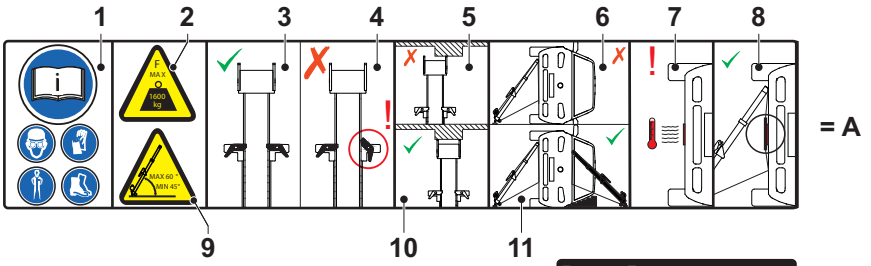
S.C. Magic View S.R.L. MAGIC VIEW Bucuresti

Certified by ISO 9001 BUREAU VERITAS Certification

ISO 9001 CERTIFIED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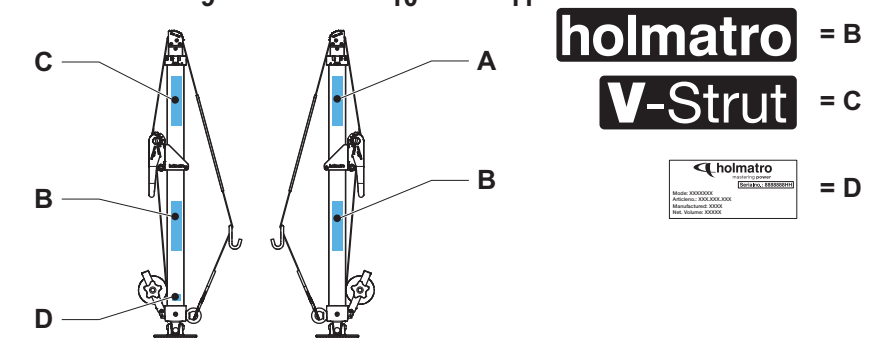
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Fig. 1

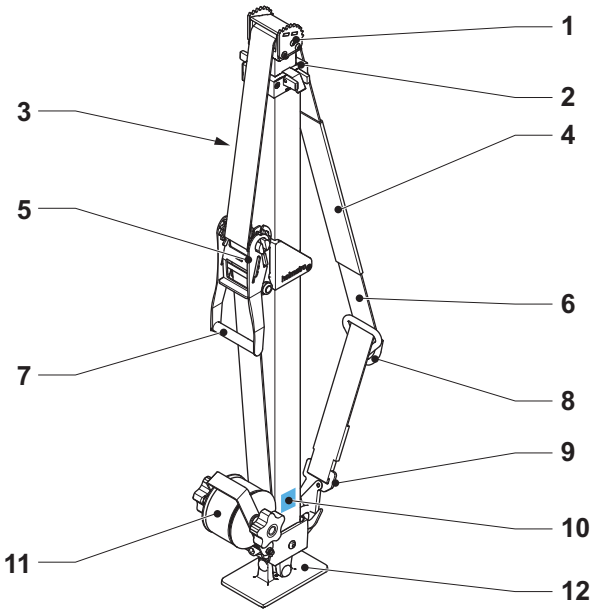
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Fig. 2

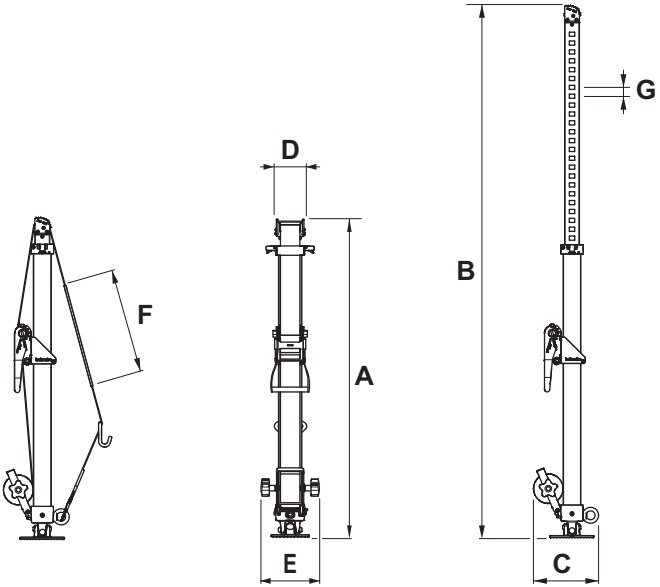


Fig. 3

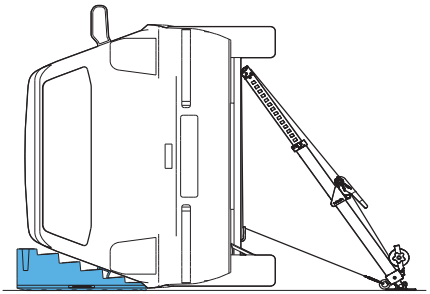


Fig. 4

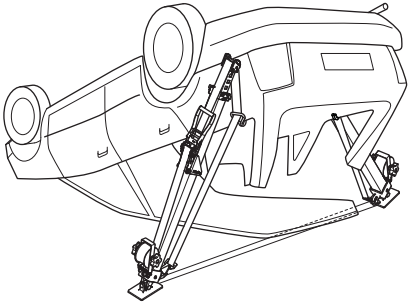


Fig. 5

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.

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

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

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

NOTICE 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.

⚠ WARNING 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	• Read the user manual before use. • Wear a helmet with safety goggles/face shield. • Wear safety gloves. • Wear protective clothing that covers the entire body. • Wear safety shoes.	920.000.281
Warning	A.2	Maximum load-bearing capacity of strut (centric)	
	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
2 Mechanical lock
3 Information label, refer to Fig. 1.A
4 Cover
5 Ratchet mechanism
6 Tension belt
7 Handle
8 Hook
9 Safety hook
10 Identification label, refer to Fig. 1.D
11 Belt reel
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*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.

1 Présentation

1.1 Clause de non responsabilité

Tous droits réservés. Vous n'avez en aucun cas le droit de divulguer, de reproduire ou de modifier de quelque façon que ce soit les parties de cette publication sans en avoir obtenu l'accord préalable de la société Holmatro. Holmatro se réserve le droit de modifier ou de corriger des éléments de ses outils sans préavis. Le contenu de ce manuel de l'utilisateur peut également faire, à tout moment, l'objet de modifications. Ce manuel de l'utilisateur concerne les modèles fabriqués actuellement et selon la législation en vigueur. Holmatro décline toute responsabilité pour les dommages affectant tout équipement, livré ou à livrer, pouvant résulter de l'utilisation de ce manuel, sous réserve de faute grave ou d'acte délibéré de la part de Holmatro. Veuillez contacter Holmatro ou le distributeur officiel concerné si vous souhaitez de plus amples renseignements concernant l'utilisation du manuel de l'utilisateur, l'entretien et/ou la réparation des équipements Holmatro. Toute l'attention possible a été portée à la rédaction et à la précision de ce manuel de l'utilisateur. Toutefois, la société Holmatro décline toute responsabilité pour les erreurs et les omissions ou les obligations survenues lors de l'utilisation du manuel. Nous vous prions de contacter la société Holmatro en cas d'erreur ou d'omission dans ce manuel.

1.2 À propos de ce manuel

Les instructions d'origine de ce manuel sont rédigées en anglais. Les versions de ce manuel dans d'autres langues sont des traductions des instructions d'origine.

1.3 Généralités

Nous vous félicitons pour l'achat de ce produit Holmatro. Ce manuel de l'utilisateur contient des instructions concernant le fonctionnement et la maintenance de l'équipement concerné. Les règles de sécurité pour l'utilisation du système Holmatro sont également décrites dans le présent manuel.
Toute personne responsable de la mise en route et de la maintenance de l'équipement doit impérativement avoir lu et compris le manuel de l'utilisateur, particulièrement le chapitre concernant les règles de sécurité.
Afin de parer à diverses erreurs et d'assurer un bon fonctionnement de l'équipement, le manuel de l'utilisateur doit toujours être à la disposition de l'opérateur.

1.4 Application

Le vérin en V Holmatro est un système de stabilisation de véhicule destiné à stabiliser rapidement et efficacement tous les types de voitures, minibus, monospaces et cabines de camion dans toutes les positions difficiles et sur toutes les surfaces afin de maximiser la sécurité des victimes et des secouristes. Les vérins peuvent être utilisés séparément ou ensemble pour créer une situation stable dans laquelle l'opération de secours peut être menée.
Le vérin en V n'est pas adapté au levage des véhicules.
La longueur du vérin en V est facilement adaptable en rentrant ou sortant simplement les tubes l'un dans l'autre. Ils sont automatiquement verrouillés entre eux par 2 cliquets à ressort.
La sangle à cliquet comporte un manchon de protection contre les objets coupants et les pièces chaudes, notamment les systèmes d'échappement.
Le couteau à tôle est un accessoire pour forcer une fente dans la carrosserie des véhicules afin de fixer correctement le crochet de la sangle à cliquet.

1.5 Personnel qualifié

Seules des personnes formées à cet effet peuvent utiliser le système. Respectez en permanence la législation locale ainsi que les réglementations relatives à la sécurité et à l'environnement. Les travaux de réparation doivent être confiés uniquement à un technicien agréé par Holmatro.

1.6 Garantie

Afin de connaître les conditions de la garantie, consultez les conditions générales de vente, disponibles sur demande auprès de votre distributeur Holmatro.
Holmatro attire votre attention sur le fait que toute garantie liée à un élément de l'équipement ou du système comporte un terme et que vous devez préserver Holmatro de toute responsabilité concernant le produit :

- si l'entretien et la maintenance ne sont pas effectués correctement, conformément aux instructions, et si les réparations ne sont pas réalisées par un Technicien agréé par Holmatro ou l'ont été sans autorisation écrite préalable ;
- en cas de modification de votre propre chef, de modification de structure, de désactivation des dispositifs de sécurité et de réparation incorrecte ;
- si vous utilisez des pièces non conformes aux instructions d'Holmatro ou des lubrifiants autres que ceux des types recommandés ;
- si une partie de l'équipement ou du système est utilisée d'une façon peu judicieuse, inadaptée, négligente ou non conforme à la nature ou à l'usage prévu.

2 Règles de sécurité

2.1 Explication des symboles utilisés dans ce manuel

Dans ce manuel, les symboles ci-dessous ont pour but de signaler des dangers possibles à l'utilisateur.

⚠ DANGER

DANGER
Le symbole DANGER indique une situation dangereuse qui, si elle n'est pas évitée, entraînera la mort ou des blessures graves.

⚠ WARNING

AVERTISSEMENT
Le symbole AVERTISSEMENT indique une situation dangereuse qui, si elle n'est pas évitée, pourrait entraîner des blessures graves, voire mortelles.

⚠ CAUTION

Attention
Le symbole ATTENTION indique une situation dangereuse qui, si elle n'est pas évitée, pourrait entraîner des blessures mineures ou modérées.

NOTICE

Remarque
Le symbole REMARQUE indique un message dommages à la propriété.

Respectez ces règles en permanence de même que les réglementations relatives à la sécurité en vigueur localement et procédez avec un soin extrême.
Informez toutes les personnes concernées dans les interventions des règles de sécurité existantes.

2.2 Pictogrammes sur l'équipement

Voir Fig. 1.
Tous les pictogrammes qui figurent sur l'équipement participent à la signalisation de danger et de sécurité. Ces symboles graphiques doivent être respectés et devront rester lisibles.

⚠ WARNING **AVERTISSEMENT**
Le non-respect de ces instructions peut occasionner des blessures graves, des accidents mortels, des dommages du système ou des pertes conséquentes.

Type de marque	Emplacement	Description	Numéro de série
Instructions	A.1	• Lisez le manuel de l'utilisateur avant utilisation. • Portez un casque et des lunettes de protection/masque de protection adéquats. • Portez des gants de sécurité. • Portez des vêtements de protection qui recouvrent entièrement le corps. • Portez des chaussures de sécurité.	920.000.281
Avertissement	A.2	Capacité de charge maximum du vérin (centrique).	
	A.9	Angles minimum et maximum d'utilisation	
Instructions	A.3	Correct : les deux cliquets doivent se verrouiller entre eux.	
	A.4	Incorrect : un seul cliquet est verrouillé.	
	A.5	Incorrect : la tête n'est pas chargée symétriquement.	
	A.10	Correct : la tête est chargée symétriquement.	
	A.6	Incorrect : le véhicule est soutenu d'un seul côté.	
	A.11	Correct : le véhicule est soutenu des deux côtés.	
	A.7	Attention aux objets chauds.	
	A.8	Placez un cache entre le vérin en V et les objets chauds ou coupants.	

Autres étiquettes fixées sur l'équipement (voir Fig. 1) :

Type de marque	Emplacement	Description	Numéro de série
Étiquette du produit	D	Étiquette d'identification	920.299.576

2.3 Règles générales de sécurité

- Utilisez cet équipement uniquement dans le but pour lequel il a été conçu. En cas de doutes ou d'hésitations, veuillez prendre contact avec votre distributeur Holmatro.
- Veuillez remplacer les symboles de sécurité, les pictogrammes et les étiquettes d'information devenus illisibles avec des étiquettes de sécurité identiques disponibles chez votre distributeur Holmatro.
- Les parties vernies, en plastique ou en caoutchouc ne sont pas résistantes aux acides ou aux liquides corrosifs. Rincez abondamment à l'eau froide les parties qui sont entrées en contact avec de l'acide ou un liquide corrosif. Veuillez prendre contact avec votre distributeur Holmatro si vous souhaitez obtenir une liste des résistances chimiques.

- Veillez à adopter une position correcte pendant l'utilisation. Une mauvaise position pourrait entraîner des problèmes physiques.
- Respectez les instructions d'inspection et de maintenance.
- Toute modification de pièces sur l'équipement ou sur le système doit être exécutée par un technicien agréé Holmatro. En cas de conversion, conservez le manuel d'origine et le manuel de conversion.
- Utilisez uniquement des pièces Holmatro d'origine et des produits de maintenance recommandés par Holmatro.

2.4 Sécurité personnelle

Le personnel qui utilise ou assiste l'utilisateur de l'équipement doit porter tout l'équipement de protection personnelle décrit dans la procédure de travail normale. Une utilisation négligente des moyens de protection personnelle peut engendrer des blessures graves. Pendant l'utilisation, portez au moins les équipements de protection personnelle suivants :

- Casque ;
- Lunettes de protection ou masque de protection complet ;
- Gants de sécurité ;
- Vêtements de sécurité recouvrant entièrement le corps et équipés de retardateur de flamme et de matériel réfléchissant ;
- Chaussures de sécurité hautes avec protection des orteils;

2.5 Règles de sécurité concernant l'équipement

- Pendant l'utilisation, chargez uniquement les têtes.
- Répartissez la charge sur toute la surface des têtes.
- Protégez la sangle de tension contre/autour d'angles vifs ou de verre.

2.6 Consignes de sécurité concernant le fonctionnement du système

- Évaluez le risque relatif à l'opération de sauvetage avant de démarrer l'intervention (EN-ISO 12100).
- Tenez les passants à distance et soyez extrêmement prudent avec les personnes et les animaux à proximité.
- Assurez-vous que la zone d'intervention est bien dégagée et dotée d'un bon éclairage.
- Évitez toute panique et travaillez de manière organisée. Vous éviterez ainsi tout risque d'erreur, de danger et d'accident.
- Avant chaque utilisation, contrôlez l'équipement et vérifiez les dégâts éventuels. N'utilisez pas l'équipement s'il est en mauvais état. Dans ce cas, prenez contact avec votre distributeur Holmatro.
- Surveillez continuellement la situation de l'équipement et la structure pendant l'utilisation.
- Utilisez uniquement des accessoires Holmatro d'origine et assurez-vous qu'ils sont fixés correctement.
- Assurez-vous qu'aucune partie du corps n'entre en contact avec les parties en mouvement car il existe un risque de blessure par écrasement ou par coupure.
- Arrêtez immédiatement l'équipement s'il émet des bruits étranges ou si son fonctionnement est anormal.
- Assurez-vous que la tête du vérin s'accroche aussi loin que possible au-dessus du centre de gravité du véhicule.
- Arrêtez-vous et trouvez un nouveau point d'appui si la tête commence à se libérer de son emprise.

2.7 Consignes de sécurité concernant la maintenance

- Portez un équipement de protection personnelle pendant les tâches de maintenance.
- Lors de l'utilisation de l'équipement, ne mettez surtout pas votre vie en danger.

3 Description

3.1 Équipement

Le vérin en V Holmatro est conçu pour assurer la stabilité grâce à un système de vérin/étayage. Le système est composé d'un vérin (étai) et d'une sangle de tension pour l'application d'une pré-tension. Les deux éléments doivent être utilisés pour garantir une bonne stabilité.
L'utilisation d'un système de vérin/étayage augmente la surface de base du véhicule en ajoutant des points supplémentaires de soutien pour améliorer ainsi la stabilité.

3.2 Caractéristiques

- Le vérin en V comprend deux tubes d'aluminium anodisés.
- Les tubes sont verrouillés entre eux par 2 cliquets à ressort.
- Pour maximiser la prise sur la carrosserie du véhicule, la tête présente des plaques dentelées.
- Pour minimiser le poids et éviter la corrosion, la plupart des pièces est en aluminium anodisé.
- La plaque de base peut pivoter afin de maximiser la prise.
- Un cache de protection peut protéger la sangle contre les objets coupants ou chauds.
- Un crochet fixe la sangle à la carrosserie du véhicule.
- Un crochet de sécurité monté sur le vérin en V, ou sur un autre vérin en V, empêche le dispositif de glisser du véhicule.
- La poignée de la sangle à cliquet peut servir à transporter facilement le vérin en V.
- La sangle est rangée sur une bobine de sangle.

3.3 Identification du produit

Voir Fig. 2.

1 Tête à pincer
2 Verrou mécanique
3 Étiquette d'information, voir Fig. 1.A
4 Cache
5 Mécanisme de cliquet
6 Sangle de tension
7 Poignée
8 Crochet
9 Crochet de sécurité
10 Étiquette d'identification, voir Fig. 1.D
11 Bobine de sangle
12 Base

3.4 Caractéristiques techniques

Voir Fig. 3.

Spécifications VÉRIN EN V	Valeur	Unité
Poids	7,9	kg
	17.4	lbs
Largeur	149	mm
	5,9	pouces
Hauteur	210	mm
	8,3	pouces

Spécifications VÉRIN EN V	Valeur	Unité
Longueur, minimum (A)	1.080	mm
	42,5	pouces
Longueur, maximum (B)	1.800	mm
	70,9	pouces
Course	720	mm
	28,4	pouces
Étapes	24	
Taille d'étape (G)	30	mm
	1,18	pouces
Profondeur au fond (C)	220	mm
	8,7	pouces
Largeur de tête à pincer (D)	71	mm
	2,8	pouces
Largeur de bobine de sangle (E)	149	mm
	5,9	pouces
Longueur de cache (F)	350	mm
	13,8	pouces
Charge axiale maximum, symétrique sur la tête	1.600	kgf
	3.528	lbf
Sensibilité de température	-20 / +60	°C
	-4 / +140	°F
Pays de fabrication	Pays-Bas	

Spécifications Sangle de tension	Valeur	Unité
Charge maximum	1.250	kgf
	2.756	lbf
Longueur	5	m
	16,4	ft
Largeur	50	mm
	1,9	pouces
Standard	NEN-EN 12195-2	
Pays de fabrication	Pays-Bas	

3.5 Numéros de pièce

Description	Numéro de série
VÉRIN EN V	150.062.194
Couteau à tôle	150.062.183
Plaque de support de base	150.011.519

4 Préparation à la première utilisation

Vérifiez si l'équipement est complet et ne présente pas de dommage. N'utilisez pas l'équipement si celui-ci est endommagé. Si tel est le cas, veuillez contacter votre distributeur Holmatro.

5 Fonctionnement

5.1 Exemples d'utilisations

Voir Fig. 4 et Fig. 5 pour des exemples d'utilisations d'un ou de plusieurs vérins en V.

5.2 Transport

- Transportez le vérin en V par la poignée du mécanisme de cliquet. Voir Fig. 2.

5.3 Avant l'utilisation

L'équipement du système de sauvetage doit toujours être prêt à l'emploi.

⚠ WARNING **AVERTISSEMENT**
Assurez-vous que vous êtes à jour avec les consignes de sécurité et que vous maîtrisez l'utilisation de tous les équipements avec lesquels vous travaillez.

5.4 Utilisation

5.4.1 Préparation du vérin en V

- Libérez le mécanisme de cliquet. Voir Fig. 6.
- Étendez la sangle de tension. Voir Fig. 7. Vous pouvez aussi retirer le crochet de sécurité de l'œillet au fond du vérin en V.
- Étendez le vérin en V. Voir Fig. 8.
- Verrouillez le vérin en V.

⚠ WARNING **AVERTISSEMENT**
Assurez-vous que les deux cliquets verrouillent entre eux le tube intérieur. Voir Fig. 9.

5.4.2 Placer un vérin en V contre la partie inférieure du véhicule.

- Avant de placer le vérin, assurez-vous que la voiture ne bouge pas ou ne bascule pas suite au placement du vérin et de sa sangle de tension.

⚠ WARNING **AVERTISSEMENT**
Avant de commencer à stabiliser le véhicule, préstabilisez-le suffisamment avec le matériel d'étayage.
Voir Fig. 4.

- Sélectionnez une position pour le vérin en V dans laquelle vous pouvez fixer le crochet de la sangle de tension aussi bas que possible sur le véhicule.
- Placez la tête de prise du vérin en V contre une surface verticale du véhicule. Ne placez pas la tête de prise sous une surface horizontale ou un bord. Voir Fig. 12 et Fig. 13. Lorsque la sangle de tension est serrée, la tête de prise est tirée fermement vers le bas contre le véhicule afin d'assurer la stabilisation.

- Si le sol est trop mou, placez la plaque de support de base sous la base. Voir les sections 3.5 et Fig. 10.
- Placez la tête de prise du vérin en V contre le véhicule. Voir Fig. 14.
- Assurez-vous que la charge est répartie uniformément sur la tête de prise. Voir Fig. 11.
- Placez le cache entre le vérin en V et les objets chauds ou coupants potentiels. Voir Fig. 14.
- Assurez-vous que le vérin en V adopte un angle entre 45° et 60°. Voir Fig. 14.

NOTICE

Remarque
Principe de base : pour une hauteur de tête de prise *H*, la distance de la base du véhicule doit être au minimum de *0,6 x H* et au maximum de *H*.
Par exemple, si la tête de prise est à 1275 mm au-dessus du sol, la base doit être entre 750 mm et 1275 mm du véhicule.

5.4.3 Tendre la sangle

- Attachez le crochet supérieur de la sangle de tension aussi bas que possible sur le véhicule. Voir Fig. 14.
- Assurez-vous que le crochet de sécurité de la sangle de tension est fixé à l'œillet au fond du vérin en V.
- Tirez manuellement le bout libre de la sangle de tension et vérifiez que la tête de prise, la base et le cache restent bien en place. Voir Fig. 15.

⚠ WARNING

AVERTISSEMENT
Assurez-vous qu'aucun élément de carrosserie ne se trouve entre le véhicule, le vérin et la sangle de tension.

- Abaissez et remontez de manière répétée le cliquet afin de tendre la sangle de tension suffisamment pour stabiliser le véhicule. Voir Fig. 15.
- Enroulez la sangle de tension. Voir Fig. 16.
- Durant l'intervention, contrôlez régulièrement la tension de la sangle de tension.

⚠ WARNING

AVERTISSEMENT
Notez que la charge sur le vérin en V peut s'accroître durant une intervention.

5.4.4 Placer un vérin en V contre la partie supérieure du véhicule

- Avant de placer le vérin, assurez-vous que la voiture ne bouge pas ou ne bascule pas suite au placement du vérin et de sa sangle de tension.

⚠ WARNING

AVERTISSEMENT
Avant de commencer à stabiliser le véhicule, préstabilisez-le suffisamment avec le matériel d'étayage.
Voir Fig. 4.

- Repérez la position de fixation du crochet de sangle de tension sur la carrosserie du véhicule. Utilisez le couteau pour déterminer la hauteur correcte de coupe de la carrosserie du véhicule. Voir Fig. 17.a.
- Coupez la carrosserie du véhicule avec le couteau. Voir Fig. 17.b.
- Élargissez la coupe avec la partie arrière du couteau. Voir Fig. 17.c.
- Insérez le crochet de sangle de tension dans la coupe. Voir Fig. 17.d.
- Placez le vérin en V selon les indications de la section 5.4.2.
- Tendez la sangle selon les indications de la section 5.4.3.

5.4.5 Retirer un vérin en V

⚠ WARNING **AVERTISSEMENT**
Assurez-vous que le véhicule restera stable après le retrait du vérin en V.

- Détendez la sangle de tension. Voir Fig. 6.
- Vous pouvez aussi retirer le crochet de sécurité de l'œillet au fond du vérin en V.
- Retirez le crochet du véhicule.
- Retirez le vérin en V du véhicule.
- Levez légèrement le tube intérieur pour déverrouiller les deux cliquets.
- Maintenez les cliquets en position déverrouillée et glissez le tube intérieur dans le tube extérieur.

Vous pouvez répéter cette procédure pour les autres vérins en V utilisés, le cas échéant, durant l'opération de secours.

5.5 Après utilisation

5.5.1 Nettoyer

- Contrôlez le caractère complet, le fonctionnement et l'état du vérin, des têtes, de la sangle de tension, du cliquet et, en option, du couteau et de la plaque de support de base.
- Retirez toute salissure à l'eau propre.
- Séchez l'équipement.
- Enroulez la sangle de tension. Voir Fig. 16.

5.5.2 Entreposage

NOTICE **Remarque**
Ne rangez pas l'équipement avant que la sangle de tension ne soit sèche.
Un matériel humide peut endommager la constitution de la sangle et le métal.

- Frottez une légère couche d'huile protectrice WD-40 sur les parties métalliques.
- Rangez l'équipement dans un local sec et bien aéré.

6 Maintenance

6.1 Généralités

Pour les instructions d'installation standard, voir la section Service & Assistance du site Web de Holmatro.

Une maintenance préventive correcte de l'équipement préserve la sécurité de son fonctionnement et prolonge sa durée de vie.

⚠ CAUTION **Attention**
Lorsque vous procédez à la maintenance, suivez toujours les règles de sécurité correspondantes. Portez l'équipement de protection personnelle prescrit.

6.1.1 Substances dangereuses

⚠ CAUTION **Attention**
Les fluides utilisés et leurs fuites potentielles ainsi que tout autre produit consommé durant les activités doivent être recueillis et mis au rebut de manière écologique.

6.2 Maintenance du matériel

Application	Type de maintenance de matériel	Quantité
Goupille articulée	Huile lubrifiante Téflon	Selon les besoins
Pièces en acier	Huile protectrice WD-40	Selon les besoins
	Tectyl ML de Valvoline (conservation longue durée)	Selon les besoins

Contactez votre distributeur Holmatro pour des informations sur les pièces détachées.

6.3 Maintenance annuelle

Nous vous conseillons de faire inspecter, contrôler, régler et tester l'équipement une fois par an par un technicien agréé Holmatro doté des connaissances adéquates et des outils nécessaires.
Vous pouvez bénéficier d'un contrat d'entretien annuel chez votre distributeur Holmatro. Dans ce cas, vous êtes assuré d'un fonctionnement correct et sûr.

6.4 Entreposage à long terme

- Pour un entreposage de longue durée, appliquez de l'huile protectrice sur les parties métalliques externes.
- Rangez l'équipement dans un local sec et bien aéré.

7 Mise hors service/Recyclage

À la fin de sa durée de vie, l'équipement peut être mis hors service et recyclé.
L'équipement est en acier, polyester et plastique et ne contient aucun composant pressurisé.
- Consultez votre distributeur Holmatro pour toute question concernant le recyclage.
- Assurez-vous que l'équipement est mis hors service afin d'éviter tout usage ultérieur.

1 Introducción

1.1 Exención de responsabilidad

Todos los derechos reservados. Ningún fragmento de esta publicación podrá ser divulgado, reproducido o modificado en modo alguno sin el consentimiento previo por escrito de Holmatro. Holmatro se reserva el derecho de modificar o cambiar piezas de herramientas sin previo aviso. Los contenidos de este manual de usuario pueden asimismo ser modificados en cualquier momento. Este manual de usuario hace referencia a los modelos fabricados en este momento y a la legislación actualmente en vigor. Holmatro no acepta responsabilidad alguna por posibles daños derivados del uso de este manual de usuario con respecto a ningún equipo suministrado o que posiblemente sea suministrado, sujeto a negligencia grave o intencionada por parte de Holmatro. Si desea más información sobre el uso del manual de usuario, el mantenimiento y/o reparación del equipo Holmatro, póngase en contacto con Holmatro o el distribuidor oficial designado. Se ha prestado toda la atención posible a la composición y precisión de este manual de usuario. Sin embargo, Holmatro no se hace responsable por errores y omisiones u obligaciones que pudieran surgir. Si la corrección o integridad de este manual de usuario no estuviera clara, deberá ponerse en contacto con Holmatro.

1.2 Acerca de este manual

Las instrucciones originales de este manual se han escrito en inglés. Las versiones en otros idiomas de este manual son una traducción de las instrucciones originales.

1.3 General

Le agradecemos la compra de este producto Holmatro. Este manual de usuario proporciona instrucciones sobre el funcionamiento y el mantenimiento del equipo en cuestión. Se describen también en este manual de usuario las normas de seguridad para el uso de un sistema Holmatro.
Cualquier persona relacionada con la puesta en funcionamiento del equipo y su mantenimiento deberá haber leído y comprendido este manual de usuario, en particular las normas de seguridad.
Para evitar errores de funcionamiento y asegurarse de que el equipo funcione sin problemas, deberá mantener siempre el manual de usuario a disposición del operario.

1.4 Aplicación

La riostra en V de Holmatro es un sistema de estabilización de vehículos para estabilizar de forma rápida y eficaz todo tipo de coches, minibuses, todoterrenos, monovolúmenes y cabinas de camión en cualquier posición difícil y sobre cualquier superficie para obtener una seguridad máxima para personal de rescate y víctimas. Las riostras pueden usarse por separado o en grupos, a fin de crear una situación estable que permita realizar la operación de rescate.
La riostra en V no es adecuada para elevar vehículos.
La longitud de la riostra en V puede adaptarse fácilmente sacando los tubos uno de otro. Éstos se bloquean automáticamente entre sí mediante 2 trinquetes a resorte.
La correa con trinquete tiene un manguito para proteger la correa frente a objetos afilados y piezas con calor como el sistema de escape.
La cuchilla para cortar chapa metálica es un accesorio para abrir una ranura en la carrocería de los vehículos de modo que el gancho de la correa con trinquete pueda fijarse correctamente.

1.5 Personal cualificado

El sistema únicamente puede ser manejado por personas con formación para su uso. Respete siempre la legislación local, así como los reglamentos de seguridad y medioambientales. El trabajo de reparación sólo podrá ser realizado por un técnico certificado de Holmatro.

1.6 Garantía

Consulte los términos y condiciones generales de venta para conocer las condiciones de la garantía, disponibles a través de su agente Holmatro bajo pedido.
Holmatro le advierte que la garantía de sus piezas de equipo o sistema vencerá, debiendo indemnizar a Holmatro frente a cualquier responsabilidad respecto de los productos dañados en caso de que:

- el servicio o mantenimiento no se hubiera llevado a cabo siguiendo estrictamente las instrucciones, las reparaciones no hubieran sido ejecutadas por un técnico certificado de Holmatro o se hubieran llevado a cabo sin consentimiento previo por escrito;
- se hayan realizado cambios de fabricación propia, cambios estructurales, desactivación de los dispositivos de seguridad o reparaciones defectuosas;
- se hubieran utilizado piezas o lubricantes no originales de Holmatro distintos de los recomendados aquí;
- la pieza del equipo o el sistema se haya utilizado imprudente o inadecuadamente, con negligencia o de forma no acorde con su naturaleza y/o finalidad.

2 Normas de seguridad

2.1 Explicación de los símbolos usados en este manual

En el resto del manual de usuario se usan los siguientes símbolos para indicar posibles peligros.

⚠ DANGER

PELIGRO
El símbolo de PELIGRO indica una situación de peligro que, si no se evita, puede provocar la muerte o lesiones graves.

⚠ WARNING

ADVERTENCIA
El símbolo de ADVERTENCIA indica una situación de peligro que, si no se evita, podría causar la muerte o lesiones graves.

⚠ CAUTION

Precaución
El símbolo de PRECAUCIÓN indica una situación de peligro que, si no se evita, podría resultar en lesiones menores o moderadas.

NOTICE

Nota
El símbolo de NOTA indica un mensaje de daños a la propiedad.

Respete siempre estos reglamentos, así como los reglamentos de seguridad vigentes localmente, y proceda con sumo cuidado.
Informe sobre estas normas de seguridad a todas las personas relacionadas con las actividades de la operación.

2.2 Pictogramas en el equipo

Consulte el capítulo Fig. 1.
Todos los pictogramas fijados al equipo y relativos a peligro y seguridad deberán ser acatados y permanecer claramente legibles.

⚠ WARNING

ADVERTENCIA
El incumplimiento de estas instrucciones puede provocar daños personales, accidentes mortales, daños al sistema o pérdidas importantes.

Tipo de marca	Posición	Descripción	Número de pieza
Instrucción	A.1	• Lea el manual de usuario antes de comenzar. • Use un casco con pantalla o gafas de seguridad. • Use guantes de seguridad. • Use ropa protectora que cubra su cuerpo por completo. • Use calzado de seguridad.	920.000.281
Advertencia	A.2	Capacidad máxima de carga de la riostra (centrada).	
	A.9	Ángulo de uso mínimo y máximo	
Instrucción	A.3	Correcto: ambos trinquetes deben interbloquearse.	
	A.4	Incorrecto: sólo se interbloquea 1 trinquete.	
	A.5	Incorrecto: el cabezal no se carga simétricamente.	
	A.10	Correcto: el cabezal se carga simétricamente.	
	A.6	Incorrecto: el vehículo es soportado sólo en 1 lado.	
	A.11	Correcto: el vehículo es soportado en ambos lados.	
	A.7	Tenga cuidado con los objetos calientes.	
	A.8	Ponga una cubierta entre la riostra en V y objetos afilados o calientes.	

Otras etiquetas añadidas al equipo (consulte Fig. 1):

Tipo de marca	Posición	Descripción	Número de pieza
Etiqueta de producto	D	Etiqueta de identificación	920.299.576

2.3 Normas de seguridad generales

- Use este equipo exclusivamente para las actividades para las que ha sido diseñado. Si tiene alguna duda o cuestión, consulte siempre a su agente de Holmatro.
- Reemplace los símbolos, pictogramas y etiquetas de información ilegibles por otros idénticos, disponibles a través de su agente de Holmatro.
- Las piezas barnizadas, plásticas o de goma no son resistentes a líquidos o ácidos corrosivos. Lave las piezas que hayan entrado en contacto con líquido o ácido corrosivo con abundante agua. Consulte a su agente de Holmatro para una lista de resistencia.
- Evite posturas incorrectas mientras trabaja. Pueden provocar lesiones físicas.
- Siga las instrucciones de revisión y mantenimiento.
- La modificación de las piezas del equipo o del sistema sólo puede ser llevada a cabo por un técnico certificado de Holmatro. En caso de modificaciones, conserve el manual original y el manual de la modificación.
- Use solamente piezas originales de Holmatro y los productos de mantenimiento recomendados por Holmatro.

2.4 Seguridad personal

El personal que utilice o asista en la utilización de este equipo deberá llevar todos los medios de protección personales prescritos para el procedimiento estándar de trabajo. El uso negligente de los medios de protección personal podría ocasionar graves lesiones. Durante el uso utilice al menos los siguientes medios de protección personales:

- Casco;
- Gafas o pantalla completa de seguridad;
- Guantes de seguridad;
- Ropa de seguridad para todo el cuerpo con propiedades ignífugas y material reflectante;
- Calzado de seguridad con un buen apoyo para los tobillos y protección en la puntera;

2.5 Normas de seguridad con respecto al equipo

- Durante el uso, cargue sólo los cabezales.
- Distribuya la carga sobre toda la superficie de los cabezales.
- Proteja la correa a tensión frente/alrededor de cristales o esquinas agudas.

2.6 Normas de seguridad con respecto al funcionamiento del sistema

- Haga una valoración del riesgo de la operación de rescate antes de comenzar a trabajar (EN-ISO 12100).
- Mantenga a los transeúntes a distancia y tenga extremo cuidado con la proximidad de personas y animales.
- Asegúrese de que el área de trabajo esté claramente dispuesta y tenga una buena iluminación.
- Evite el estrés y trabaje de forma estructurada. Esto reduce el riesgo de errores, combinaciones de peligros y accidentes.
- Antes de su uso, compruebe que el equipo no presente daños. No use el equipo si no está en perfectas condiciones, y consulte a su agente de Holmatro.
- Vigile la situación del equipo y la estructura continuamente mientras usa el equipo.
- Use solamente accesorios originales Holmatro y asegúrese de que han sido conectados correctamente.
- Asegúrese de no poner nunca partes del cuerpo entre piezas en movimiento. Existe riesgo de que estas partes del cuerpo puedan ser aplastadas o cortadas.
- Deténgase inmediatamente si el equipo hace ruidos extraños o muestra un comportamiento anormal.
- Asegúrese de que el cabezal de las sujeciones de las riostras queda lo más encima posible del centro de gravedad del vehículo.
- Deténgase y busque un nuevo punto de empuje si el cabezal comienza a perder su agarre.

2.7 Normas de seguridad con respecto al mantenimiento

- Use medidas de protección personales cuando realice tareas de mantenimiento.
- Nunca trabaje de modo que pudiera poner en peligro la seguridad.

3 Descripción

3.1 Equipo

La riostra en V de Holmatro se ha diseñado para proporcionar estabilidad en un sistema de riostras/puntales.
El sistema se compone de una riostra (puntal) y una correa tensora para aplicar tensión previa. Deben usarse ambos componentes para garantizar una buena estabilidad.
El uso de un sistema de riostra/puntal aumenta el área de la base del vehículo añadiendo puntos de soporte extra, con lo que se mejora la estabilidad.

3.2 Características

- La riostra en V consta de dos tubos de aluminio anodizado.
- Los tubos se bloquean entre sí mediante dos trinquetes a resorte.
- Para un agarre máximo a la carrocería del vehículo, el cabezal tiene placas dentadas.
- Para lograr un peso mínimo y evitar la corrosión, la mayoría de las piezas están fabricadas de aluminio anodizado.
- La placa base puede oscilar para un agarre máximo.
- Una cubierta protectora puede proteger la correa frente a objetos afilados y calientes.
- Un gancho fija la correa a la carrocería del vehículo.
- Un gancho de seguridad, montado a la riostra en V o a otra riostra en V, impide que el dispositivo se deslice del vehículo.
- La sujeción de la correa con trinquete puede utilizarse para transportar la riostra en V con facilidad.
- La correa está almacenada en un carrete de correa.

3.3 Identificación del producto

Consulte el capítulo Fig. 2.

1 Cabezal de presión
2 Cierre mecánico
3 Etiqueta de información, consulte Fig. 1.A
4 Cubierta
5 Mecanismo de trinquete
6 Correa tensora
7 Agarradera
8 Gancho
9 Gancho de seguridad
10 Etiqueta de identificación, consulte Fig. 1.D
11 Carrete de correa
12 Base

3.4 Especificaciones técnicas

Consulte Fig. 3.

Especificaciones RIOSTRA EN V	Valor	Unidad
Peso	7,9	kg
	17,4	lbs
Ancho	149	mm
	5,9	pulgadas
Altura	210	mm
	8,3	pulgadas
Longitud, mínima (A)	1080	mm
	42,5	pulgadas

Especificaciones RIOSTRA EN V	Valor	Unidad
Longitud, máxima (B)	1800	mm
	70,9	pulgadas
Carrera	720	mm
	28,4	pulgadas
Pasos	24	
Tamaño de paso (G)	30	mm
	1,18	pulgadas
Profundidad en el fondo (C)	220	mm
	8,7	pulgadas
Anchura del cabezal de presión (D)	71	mm
	2,8	pulgadas
Anchura de carrete de correa (E)	149	mm
	5,9	pulgadas
Longitud de cubierta (F)	350	mm
	13,8	pulgadas
Carga axial máxima, simétrica en cabezal	1600	kgf
	3528	lbf
Intervalo de temperatura	-20 / +60	°C
	-4 / +140	°F
País de fabricación	Holanda	

Especificaciones correa tensora	Valor	Unidad
Carga máxima	1250	kgf
	2756	lbf
Longitud	5	m
	16,4	ft
Ancho	50	mm
	1,9	pulgadas
Estándar	NEN-EN 12195-2	
País de fabricación	Holanda	

3.5 Números de pieza

Descripción	Número de pieza
RIOSTRA EN V	150.062.194
Cuchilla para cortar chapa metálica	150.062.183
Placa de soporte base	150.011.519

4 Preparación para el primer uso

Compruebe que el equipo esté completo y no sufra daños. No use el equipo si está dañado; en ese caso, contacte con el agente de Holmatro.

5 Funcionamiento

5.1 Ejemplo de uso

Consulte Fig. 4 yFig. 5 si desea ejemplos de uso de una o múltiples riostras en V.

5.2 Transporte

- Transporte la riostra en V por la agarradera del mecanismo de trinquete. Consulte el capítulo Fig. 2.

5.3 Antes del uso

El equipo de un sistema de rescate debe estar siempre preparado para su uso.

⚠ WARNING **ADVERTENCIA**
Asegúrese de que está al día en todas las normas de seguridad y de que domina el uso del equipo con el que va a trabajar.

5.4 Uso

5.4.1 Preparación de la riostra en V

- Suelte el mecanismo de trinquete. Consulte el capítulo Fig. 6.
- Extienda la correa tensora. Consulte el capítulo Fig. 7. Opcionalmente, retire el gancho de seguridad de la orejeta en la parte inferior de la riostra en V.
- Extienda la riostra en V. Consulte el capítulo Fig. 8.
- Bloquee la riostra en V.

⚠ WARNING **ADVERTENCIA**
Asegúrese de que ambos trinquetes interbloqueen el tubo interior. Consulte el capítulo Fig. 9.

5.4.2 Colocación de una riostra en V contra la parte inferior del vehículo

- Antes de colocar la riostra, asegúrese de que el coche no pueda volcar o moverse como resultado de la colocación de la riostra y su correa tensora.

⚠ WARNING **ADVERTENCIA**
Antes de empezar a estabilizar el vehículo, preestabilícelo lo suficiente con material de apuntalamiento.
Consulte el capítulo Fig. 4.

- Seleccione una posición para la riostra en V en la que pueda fijarse el gancho de la correa tensora lo más bajo posible al vehículo.
- Coloque la base de la riostra en V sobre una superficie de suelo plana y fuerte.
- Si el suelo es demasiado blando, ponga la placa de soporte de la base debajo de ésta. Consulte la sección 3.5 y Fig. 10.

- Coloque el cabezal de presión de la riostra en V contra una superficie vertical del vehículo. No coloque el cabezal de presión bajo una superficie horizontal o un borde. Consulte Fig. 12 y Fig. 13. Cuando se aplique tensión a la correa tensora, el cabezal de presión descenderá con firmeza y contra el vehículo para ofrecer estabilización.
- Asegúrese de que la carga se distribuya de forma uniforme sobre el cabezal de presión. Consulte el capítulo Fig. 11.
- Ponga la cubierta entre la riostra en V y posibles objetos afilados o calientes. Consulte el capítulo Fig. 14.
- Asegúrese de que el ángulo de la riostra en V esté entre 45° y 60°. Consulte el capítulo Fig. 14.

NOTICE

Nota
Como norma: si la altura del cabezal de presión es *H*, la distancia de la base al vehículo debe ser mínima *0.6*H* y máxima *H*.
Por ejemplo, si el cabezal de presión está a 1275 mm por encima del suelo, la base debe estar entre 750 mm y 1275 mm del vehículo.

5.4.3 Cómo poner la correa bajo tensión

- Fije el gancho superior de la correa tensora lo más bajo que sea posible al vehículo. Consulte el capítulo Fig. 14.
- Asegúrese de que el gancho de seguridad de la correa tensora esté fijado a la orejeta de la parte inferior de la riostra en V.
- Tire manualmente del extremo suelto de la correa tensora y compruebe que el cabezal de presión, la base y la cubierta están en sus posiciones correctas. Consulte el capítulo Fig. 15.

⚠ WARNING

ADVERTENCIA
Asegúrese de que no haya partes del cuerpo entre el vehículo, la riostra y la correa tensora.

- Repetidamente, mueva la manivela del trinquete arriba y abajo para poner la correa tensora bajo la tensión necesaria para estabilizar el vehículo. Consulte el capítulo Fig. 15.
- Enrolle la correa tensora. Consulte el capítulo Fig. 16.
- Durante la operación de rescate, compruebe periódicamente la tensión de la correa tensora.

⚠ WARNING

ADVERTENCIA
Tenga en cuenta que la carga en la riostra en V puede aumentar durante la operación de rescate.

5.4.4 Colocación de una riostra en V contra la parte superior del vehículo

- Antes de colocar la riostra, asegúrese de que el coche no pueda volcar o moverse como resultado de la colocación de la riostra y su correa tensora.

⚠ WARNING

ADVERTENCIA
Antes de empezar a estabilizar el vehículo, preestabilícelo lo suficiente con material de apuntalamiento.
Consulte el capítulo Fig. 4.

- Marque la posición donde el gancho de la correa tensora debe fijarse a la carrocería del coche. Utilice la cuchilla para determinar la altura correcta para cortar la carrocería del coche. Consulte Fig. 17.a.
- Marque un corte en la carrocería del coche con la cuchilla. Consulte Fig. 17.b.
- Amplíe el corte con el lado posterior de la cuchilla. Consulte Fig. 17.c.
- Monte el gancho de la correa tensora en el corte. Consulte Fig. 17.d.

- Coloque la riostra en V como se describe en la sección 5.4.2.
- Ponga la correa bajo tensión como se describe en la sección 5.4.3.

5.4.5 Retirada de una riostra en V

⚠ WARNING **ADVERTENCIA**
Asegúrese de que el vehículo permanezca estable cuando retire la riostra en V.

- Suelte la correa tensora. Consulte el capítulo Fig. 6.
- Opcionalmente, retire el gancho de seguridad de la orejeta en la parte inferior de la riostra en V.
- Retire el gancho del vehículo.
- Retire la riostra en V del vehículo.
- Levante ligeramente el tubo interior para desbloquear ambos trinquetes.
- Mantenga los trinquetes en la posición de desbloqueo y deslice el tubo interior en el tubo exterior.

Opcionalmente, repita este procedimiento para las otras riostras en V que se hayan empleado durante esta operación de rescate.

5.5 Después del uso

5.5.1 Limpiar

- Compruebe la riostra, los cabezales, la correa tensora, el trinquete y opcionalmente la cuchilla y la placa de soporte de la base para ver si están completas, funcionan y no presentan daños.
- Retire la suciedad con agua corriente limpia.
- Seque el equipo.
- Enrolle la correa tensora. Consulte el capítulo Fig. 16.

5.5.2 Almacenamiento

NOTICE **Nota**
No almacene el equipo antes de que se seque la correa tensora.
La humedad puede resultar perjudicial para el material de la correa y el metal.

- Aplique una ligera capa de aceite conservante WD-40 en las piezas de acero.
- Almacene el equipo en un lugar seco y bien ventilado.

6 Mantenimiento

Para conocer las instrucciones de instalación estándar, consulte la sección de servicio y soporte del sitio web de Holmatro.

6.1 General

El mantenimiento preventivo adecuado del equipo preserva la seguridad de funcionamiento y alarga la vida útil del mismo.

⚠ CAUTION

Precaución
Al realizar actividades de mantenimiento, cumpla siempre las normas de seguridad correspondientes. Lleve los equipos de protección personal prescritos.

6.1.1 Sustancias peligrosas

⚠ CAUTION

Precaución
Los fluidos utilizados y las fugas de éstos, así como otros productos consumidos durante las actividades, deben recogerse y desecharse de forma responsable con el medio ambiente.

6.2 Materiales de mantenimiento

Aplicación	Tipo de material de mantenimiento	Cantidad
Pasadores de articulación	Aceite lubricante de Teflón	Según sea necesario
Piezas de acero	Aceite conservador WD-40	Según sea necesario
	Tectyl ML de Valvoline (conservación a largo plazo)	Según sea necesario

Contacte con el agente Holmatro si desea información sobre las piezas de repuesto.

6.3 Mantenimiento anual

Recomendamos que el equipo sea inspeccionado, revisado, ajustado y probado una vez al año por un técnico certificado de Holmatro que tenga los conocimientos adecuados y las herramientas necesarias. El agente de Holmatro puede llevar a cabo el mantenimiento anual para usted a través de una base contractual. De este modo podrá asegurarse un funcionamiento seguro y adecuado.

6.4 Almacenamiento a largo plazo

- Para un almacenamiento a largo plazo, aplique conservador a las piezas de acero externas.
- Almacene el equipo en un lugar seco y bien ventilado.

7 Retirada del servicio activo/reciclaje

Al final de su vida útil el equipo puede ser desechado y reciclado.
El equipo está fabricado de acero, poliéster y plástico y no contiene componentes presurizados.

- Consulte con el agente de Holmatro sobre el reciclaje.
- Asegúrese de que no pueda volver a utilizarse el equipo.

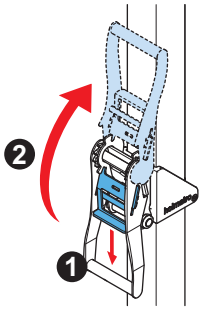


Fig. 6

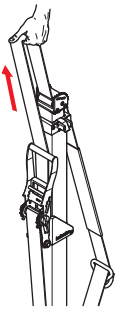


Fig. 7

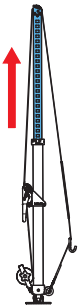


Fig. 8

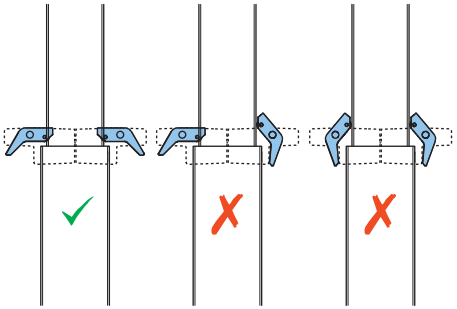


Fig. 9

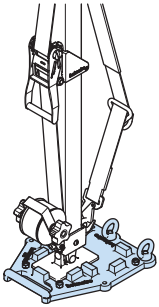


Fig. 10

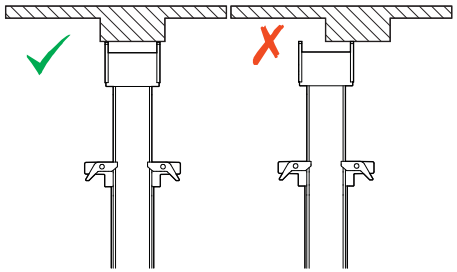


Fig. 11

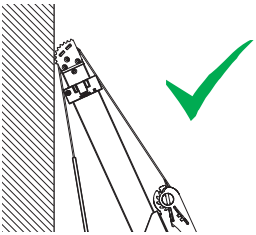


Fig. 12

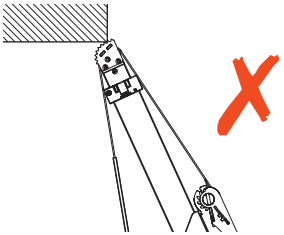
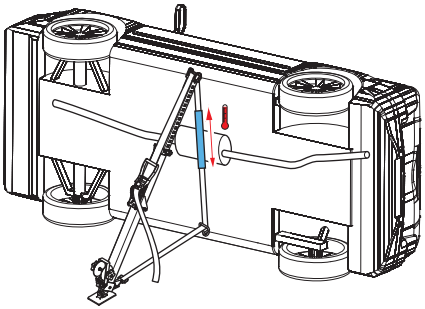


Fig. 13



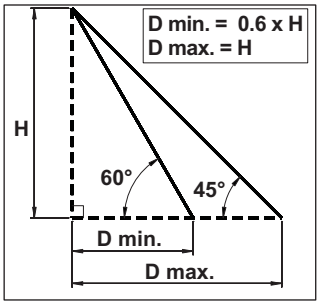


Fig. 14

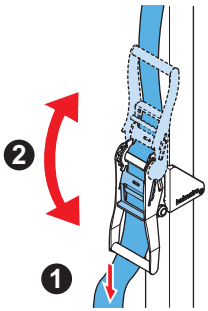


Fig. 15

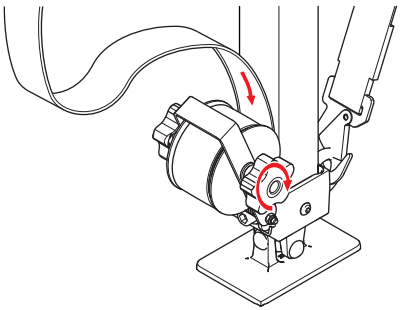


Fig. 16

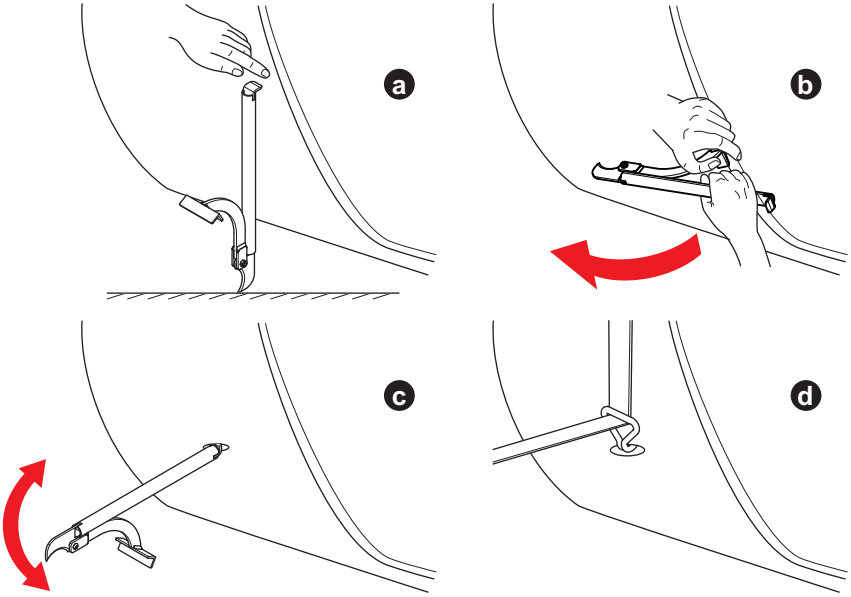


Fig. 17