

Operating instructions for rescue equipment



Cutter



159R195 US
Edition 03.2012

Content




Page

1. Hazard classes	4
2. Product safety	5
3. Intended use	8
4. Description of the functions	9
4.1 <i>Description</i>	9
4.2 <i>Tool in detail</i>	9
4.3 <i>Circuit diagram</i>	10
4.4 <i>Control of the operating movements</i>	10
4.5 <i>Hydraulic supply</i>	10
4.6 <i>Hoses</i>	10
5. Connecting the equipment	11
5.1 <i>General information</i>	11
5.2 <i>Coupling the mono-couplings</i>	11
5.3 <i>Coupling the quick-disconnect couplings</i>	12
6. Operation	12
6.1 <i>Preparations</i>	13
6.2 <i>Operating the star grip</i>	13
7. Cutting	14
7.1 <i>Safety notes</i>	14
7.2 <i>Cutting</i>	14
8. Dismantling the equipment / deactivation following operation	15
8.1 <i>Cutters</i>	15
8.2 <i>Hydraulic unit</i>	15
8.3 <i>Hoses</i>	15
9. Maintenance and service	16
9.1 <i>Cutters, overall</i>	16
9.2 <i>Protective equipment</i>	17
10. Repairs	17
10.1 <i>General information</i>	17
10.2 <i>Preventative service</i>	18
10.3 <i>Repairs</i>	19

11. Troubleshooting	25
12. Technical Data	27
12.1 <i>Cutter</i>	27
12.2 <i>Torque of the pivot bolt</i>	30
12.3 <i>Recommended hydraulic fluid</i>	30
12.4 <i>Operating and storage temperature Ranges</i>	30
12.5 <i>Conversions</i>	30
13. Notes	31

1. Hazard classes

We distinguish between various categories of safety notes. The table below gives you an overview of the assignment of symbols (pictograms) and key words to the specific hazard and possible consequences.

Pictogram	Damage / injury to	Key word	Definition	Consequences
	human	DANGER!	Immediate danger	Death or major injury
		WARNING!	Potentially dangerous situation	Potential death or major injury
		CAUTION!	Less dangerous situation	Minor or slight injury
	device	CAUTION!	Danger of damage to device / environment	Damage to the equipment, damage to the environment, damage to surrounding materials
	-	REMARK	Advice for application and other important / useful information and advice	No injury / damage to persons / environment / equipment



Wear helmet with face protection



Wear safety gloves



Wear safety shoes



Proper recycling



Observe principles of environmental protection



Read and observe operating instructions

2. Product safety

JAWS OF LIFE products are developed and manufactured in order to guarantee the best performance and quality when used properly.

Operator safety is the most important aspect of the product design. Moreover, the operating instructions are intended to help the safe use of JAWS OF LIFE products.

The generally applicable, legal and other binding regulations pertaining to the prevention of accidents and protection of the environment apply and are to be implemented in addition to the operating instructions.

The equipment may only be operated by persons with appropriate training in the safety aspects of such equipment – otherwise, there is a danger of injury occurring.

We would like to point out to all users that they should read the operating instructions carefully and the instructions contained therein before they use the equipment, and that they should carefully follow such.

We further recommend that a qualified trainer train you in the use of the product.



WARNING / CAUTION!

The operating instructions for the hoses, the accessories and the connected hydraulic equipment must also be observed!

























Even if you have already received instructions on how to use the equipment, you should still read the following safety notes through again.






WARNING / CAUTION!

Ensure that the accessories and connected equipment used are suitable for the max. operating pressure!

	<p>Please ensure that no body parts or clothing get stuck between the visibly moving parts (e.g. blade arms).</p>	<p>It is prohibited to work under load if this load is lifted exclusively by hydraulic equipment. If this work is absolutely imperative, additional mechanical supports must be used.</p>	
	<p>Wear protective clothing, safety helmet with visor, protective gloves</p>	<p>Inspect the equipment before and after use for visible defects or damage</p>	
 	<p>The responsible department is to be informed immediately of any changes (including to the operating behavior)! If necessary, the equipment is to be deactivated immediately and secured!</p>	<p>Inspect all cables, hoses and screwed connections for leaks and externally visible damage! If necessary, repair immediately! Squirting hydraulic fluid can result in injuries and fires.</p>	
 	<p>In the event of malfunctions, immediately deactivate the equipment and secure it. The malfunction is to be repaired immediately.</p>	<p>Do not carry out any changes (additions or conversions) to the equipment without obtaining the prior approval of HURST.</p>	

 	<p>Observe all safety and danger notes on the equipment and in the operating instructions.</p>	<p>All safety and danger notes on the equipment are to be kept complete in a legible condition.</p>	 
 	<p>Any mode of operation which impairs safety and/or stability of the equipment is forbidden!</p>	<p>Comply with all specified dates or dates specified in the operating instructions pertaining to regular controls / inspections on the equipment.</p>	
 	<p>Safety devices may never be deactivated!</p>	<p>The maximum permitted operating pressure noted on the equipment must not be exceeded.</p>	 
	<p>Before the equipment is switched on/started up, and during its operation, it must be ensured that nobody will be endangered by the operation of the equipment.</p>	<p>Only original HURST accessories and spare parts may be used for repairs.</p>	
		<p>Please ensure that, when working with this equipment or during transportation of such, you don't get caught in the looped hoses and trip.</p>	 
 	<p>When working close to live components and cables, suitable measures must be taken to avoid current transfers or high-voltage transfers to the equipment.</p>	<p>Please note that, when cutting or spreading, tearing or breaking can cause falling material, or sudden removal of such can cause it to suddenly catapult off: necessary precautions need to be taken.</p>	
	<p>The build-up of static charge with the potential consequence of spark formation is to be avoided when handling the equipment.</p>	<p>Only touch any broken-off parts or the cut-off parts wearing protective gloves, since the torn / cut edges can be very sharp.</p>	
	<p>The equipment is filled with a hydraulic fluid. These hydraulic fluids can be dangerous to health if swallowed or their vapors inhaled. Direct contact with the skin is to be avoided for the same reason. Please also note that hydraulic liquids can also have a negative effect on biological systems.</p>	<p>When working with or storing the equipment, ensure that the function and the safety of the equipment are not impaired by the effects of stark external temperatures or that the equipment is damaged in any way. Please note that the equipment can also heat up over a long period of use.</p>	
	<p>Ensure adequate lighting when you are working.</p>	<p>Before transporting the equipment, always ensure that the accessories are positioned such that they cannot cause an accident.</p>	

	Always keep these operating instructions within reach where the equipment is used.	Ensure the proper disposal of all removed parts, left-over oil and hydraulic fluid as well as packaging materials!	 
--	--	--	---


The generally applicable, legal and other binding national and international regulations pertaining to the prevention of accidents and protection of the environment apply and are to be implemented in addition to the operating instructions.

W A R N I N G / C A U T I O N !

The equipment **is to be used exclusively** for the **purpose stated in the operating instructions (see chapter “Intended use”)**. Any other or further use is **not considered Intended use**. The manufacturer / supplier is not liable for any damages resulting from not intended use. The user bears sole responsibility for such.

Observance of the operating instructions and compliance with the inspection and maintenance conditions are part of the Intended use.

 **Never work when you are overtired or intoxicated!** 

 **WARNING / CAUTION!**
 HURST BLUE hydraulic fluid is a custom blended fluid. In case of skin contact, wash off with soap and water. In case of eye contact, flush with generous amounts of running water for at least 15 minutes. If discomfort persists following flushing, see physician for symptomatic treatment.

3. Intended use

JAWS OF LIFE cutters are designed specifically for rescuing victims in traffic, rail or air accidents and for making rescues from buildings. They serve the purpose of freeing injured people in accidents e. g. by cutting doors, roof bars and hinges

Basically, JAWS OF LIFE cutters can only be used to cut objects. All objects which are to be worked on are to be secured using stable supports or substructures.

Sample application of the cutters:



JAWS OF LIFE cutters can also be used under water at a depth of up to 40m (131 ft).



CAUTION!

In this case, you must strictly observe any leaks in order to avoid threats to the environment.



CAUTION!

All objects which are to be worked on are to be secured using stable supports or substructures.



WARNING / CAUTION!

The following may not be cut:

- **live cables**
- **hardened** parts such as springs, spring steels, steering columns and rollers
- tubes / hoses under gas or liquid pressure,
- compound materials (steel/concrete)
- explosive bodies such as SRS Systems



NEVER operate the rescue equipment at a higher operating pressure than that stated in the chapter "Technical data". A higher setting can result in material damage and/or injuries.

HURST rescue cutters may **NOT** be used where there is a risk of explosions!

The rescue equipment should not come into contact with acids or alkalis. If this is unavoidable, clean the equipment immediately afterwards with a suitable cleaning agent.

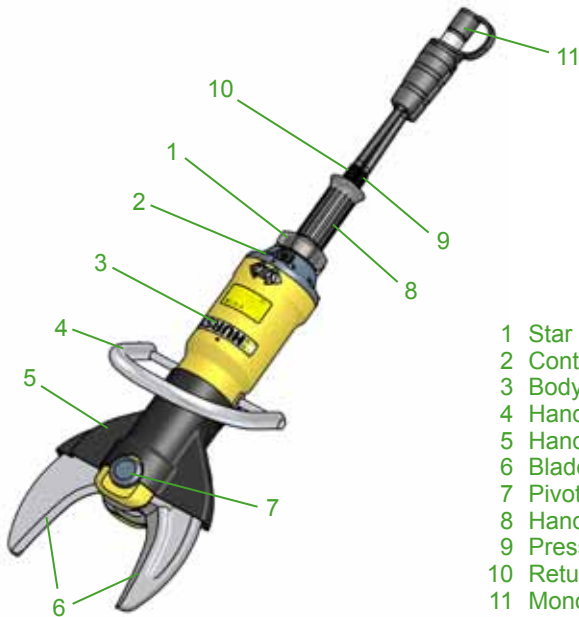
4. Description of the functions

4.1 Description

The equipment is designed such that, via a hydraulically activated piston, two equal, opposite blade arms are symmetrically opened / closed by mechanical joints, thereby opening blade arms or cutting objects.

All cutters ensure full load-holding function when disconnected from the hydraulic supply (e. g. when being accidentally decoupled; defective hose, etc.).

4.2 Tool in detail



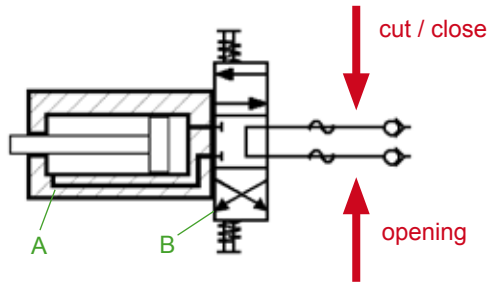
quick-disconnect coupling system:



- 1 Star grip
- 2 Control valve
- 3 Body of rescue tool
- 4 Handle
- 5 Hand guard
- 6 Blade arm
- 7 Pivot bolt with self-locking nut
- 8 Handhold
- 9 Pressure hose
- 10 Return hose
- 11 Mono-coupling male
- 12 Quick-disconnect coupling (male)
- 13 Quick-disconnect coupling (female)

4.3 Circuit diagram

To enable comprehension of the function, a simplified hydraulic cylinder of the rescue equipment (A) + hand valve (B) are depicted here.



4.4 Control of the operating movements

The blade arm movement is controlled via the star grip on the mounted valve.



4.5 Hydraulic supply

A HURST motor pump or hand pump only may be used to drive the equipment. If the pump unit is a different make, you must make sure that it complies with HURST specifications, otherwise potential dangers may occur which are not the responsibility of HURST. Ensure in particular that the authorized operating pressure for HURST equipment is not exceeded.



REMARK:

Before you use pumps from a different manufacturer, you must contact HURST or an authorized dealer.

4.6 Hoses

The pump unit and the rescue tool are connected by hoses.

5. Connecting the equipment

5.1 General information

There are two short hoses on the side of the equipment: they are connected to the pump unit via two hoses. All hoses have couplings to enable unmistakable connection.



REMARK:

The devices can be equipped with different coupling systems. They differ only by the article number and not by the designation. Of course the coupling systems can also be reequipped at a later time.



WARNING / CAUTION!

Before connecting the equipment you have to pay attention that **all used components** are suitable to the **max operation pressure of the pump unit!** In the case of doubt you **have to inquire HURST** directly!

5.2 Coupling the mono-couplings

The equipment is connected to the hydraulic pump via mono-coupling halves (male and female).



Before coupling, remove dust protection caps, then connect male and female, and turn the locking sleeve of the female to direction “1” until the locking sleeve locks into place. The connection is now in place and secure. Decoupling is by turning the locking sleeve to direction “0”.

The equipment can also be coupled under pressure provided the connected equipment is not activated.

**REMARK:**

We **recommend** coupling the coupling halves in a **pressureless** state, when working in areas with low ambient temperature and the usage of extension hose assemblies / hose reels, otherwise coupling may require a very high expenditure of force.

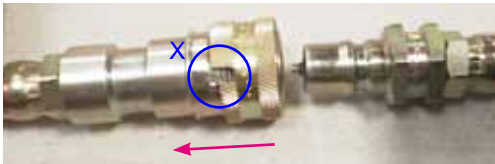
To protect them from dust, the accompanying dust protection caps must be put back on.

**WARNING/CAUTION!**

The mono-couplings **may not** be **screwed off** the hose assemblies and / or the hose assemblies be **confused!**

5.3 Coupling the quick-disconnect couplings

The equipment is connected to the hydraulic pump via quick-disconnect-coupling halves (male and female).



Before coupling unlock the connect socket by turning the sleeve into position X. Retract sleeve and connect plug and socket. Release sleeve and turn it in the direction shown in the right picture above till stop.

Now the connection has been made and locked. Uncoupling is done in the reverse order.

**CAUTION!**

Always connect the return line first and afterwards the supply line!

**REMARK:**

Coupling of the devices is only possible, when the hoses are **depressurized**.

To protect them from dust, the accompanying dust protection caps must be put back on.

**WARNING/CAUTION!**

The quick-disconnect-couplings partly have special functions. Therefore it is not permitted to **screw** them **off** from the hoses or to **exchange** them!

6. Operation

**WARNING/CAUTION!**

Check the equipment before and after use for visible defects or damage!

See *Section 9* for more information.

6.1 Preparations

6.1.1 Commissioning

Before commissioning and following repairs, the equipment must be deaerated.

- Connect the equipment to the hydraulic pump (see chapter “Connecting the equipment”).
- Open / close the blade arms of the equipment without any load at least twice (see chapter “Operation of the star grip”).



REMARK:

We recommend that during deaeration, the attached aggregate for the hydraulic supply should stand on a higher level than the body of the rescue tool.

Recommended procedure for deaeration of the rescue tool:

- 1.) open and close fully with the blade arms facing **upwards**.
- 2.) open and close fully with the blade arms facing **downwards**.
- 3.) open and close fully with the blade arms facing **upwards**.
- 4.) open and close fully with the blade arms facing **downwards**.

6.1.2 Inspection of the pump unit



See separate operating instructions for the relevant unit (or for the hand pump).



REMARK:

Before each start-up of the hydraulic unit you have to make sure that the actuating valves are set to depressurized circulation.



REMARK:

Before coupling the quick-disconnect couplings, the actuating valves of the hydraulic unit are set to depressurized circulation.

If you use mono-couplings, you can also couple when the hoses are pressurized!

6.2 Operating the star grip

Opening the device ():

Turn the star grip in the direction of the relevant symbol and keep in this position.

Closing the device ():

Turn the star grip in the direction of the relevant symbol and keep in this position.

“Dead-man’s” function:

Following release, the star grip automatically returns to the central position, guaranteeing full load-holding.



7. Cutting

7.1 Safety notes

Before rescue work can commence, the position of the obstacle must be stabilized. You must ensure an adequate substructure and / or adequate support of the object. World-wide, safety guidelines pertaining to the specific country are to be observed and complied with. In areas at risk of explosion, the equipment can only be used if an explosion has been prevented by appropriate measures.

The following are to be worn when working with the rescue equipment:

- protective clothing,
- safety helmet with visor or protective goggles,
- protective gloves,
- protective shoes
- and, if necessary, ear protection

Before activating the rescue equipment, always ensure that there is no danger to persons either involved / uninvolved in the action by the movement of the rescue equipment or by flying fragments. Further avoid unnecessary damage to property belonging to others, objects not involved by the rescue equipment / flying fragments.



Reaching between the blade arms is strictly forbidden!



WARNING / CAUTION!

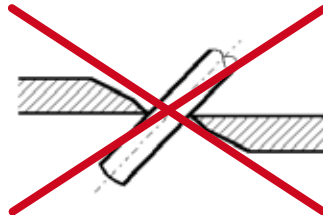
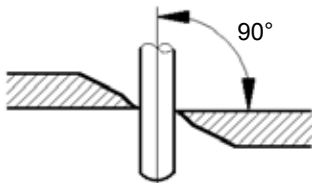
The particular effect of the force of the rescue equipment during operation could cause pieces of the vehicle to break off or fly off, posing a danger to persons. Those not involved in the rescue operation should therefore **keep at a distance appropriate to the situation.**

7.2 Cutting

The blades must be positioned at a 90° angle to the object to be cut.



RIGHT

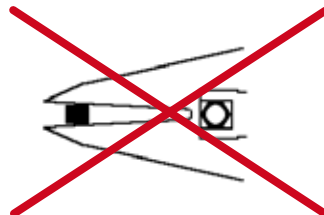
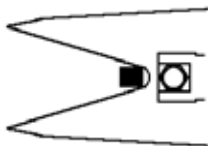


WRONG

Higher cutting capacities can be achieved by cutting as close as possible to the blade's pivot point.



RIGHT



WRONG

During cutting, the gap between the blade tips (in the crosswise direction) may not be exceeded, otherwise the blade is in danger of breaking:

Cutter	max. gap on the blade tips [mm] / [in.]
JL-500	3 / 0.12
MOC	3 / 0.12
MOC II	3 / 0.12
MOC Ultra	3 / 0.12
X-Tractor	3 / 0.12



CAUTION!

Avoid cutting particularly high-strength parts of the vehicle's bodywork (e.g. side-impact protection): this almost always causes damage to the cutter!

8. Dismantling the equipment / deactivation following operation

8.1 Cutters

Once work has been completed, the blade arms are to be closed so that there is a tip distance of just a few mm/in.. This relieves the hydraulic and mechanical strain on the equipment.



REMARK:

Never store the cutter with fully closed blade arms! The complete closure of the blade arms can cause hydraulic and mechanical stress to build up again.

Free the rescue equipment of any stubborn dirt which may have become attached during use.

If the equipment is to be stored for a longer period of time, the exterior is to be cleaned completely and the mechanically mobile parts are to be lubricated.

Avoid storing the rescue equipment in a damp environment.

Also observe the separate manual for the hydraulic hoses.

8.2 Hydraulic unit

Upon completion of work, the unit must be deactivated.

8.3 Hoses

First of all, decouple the pressure hose then the return hose as described in chapter "Connecting the equipment".

Ensure that you put the dust protection caps back on to the couplings.

9. Maintenance and service

The equipment is subject to very high mechanical stresses. A visual inspection is to be carried out after every use: however, at least one visual inspection is to be carried out every six months. These inspections enable the early detection of wear and tear, which means that punctual replacement of the wearing parts prevents breakages from occurring. Also regularly check the torque of the pivot bolt. (Torque M_A see "Technical Data")

Every three years a crack test of the blades is essential. Therefore a special crack testing kit is available.

Every three years or if there is any doubt regarding the safety or reliability of the equipment, a function test must also be performed. (Please also observe the relevant valid national and international regulations pertaining to service intervals of rescue equipment).



CAUTION!

Clean off any dirt before actuating the equipment!



WARNING / CAUTION!

In order to carry out maintenance and repair work, tools appropriate for the job and personal protective equipment are essential.



9.1 Cutters, overall

Inspections to be carried out:

Visual inspection

Cutter

- Opening width of the blade arms on the tips (see chapter "Technical data"),
- Open the blades fully, decommission the pump and visually inspect all lever elements, bolts, nuts and the piston rod for wear, presence and proper alignment.
- General tightness (leaks),
- Operability of the star grip (deadman-function),
- Existence and stability of handle,
- Labels completely existent and legible,
- Covers in perfect condition,
- Control of the torque of the pivot bolt (torque M_A see "Technical Data"),
- Couplings must be easy to couple,
- Dust protection caps must be available.

Blade arms

- Blade arms free of cracks and without any chipped spots or deformations on the cutting surfaces,
- Cutting surfaces go on top of each other without making contact,
- Bolts and retaining rings of the blade arms must be present and in correct working order,

Hoses (also refer to separate manual for the hydraulic hoses.)

- Visual check for visible damage,
- Check for leaks.

Function test

- Opening and closing function flawlessly upon activation of the star grip,
- no suspicious noises.
- no further movement of the blade arms upon interruption of the valve activation during the process (“dead-man’s” function)

9.2 Protective equipment

- Control of the protective equipment on / around the rescue equipment, especially the hand guard of the moveable parts (they must be free of tears!).

10. Repairs

10.1 General information

Servicing may only be carried out by JAWS OF LIFE manufacturer or personnel trained by the manufacturer and by authorized HURST dealers.

Only HURST spare parts may be used to replace all components (see spare parts list) since special tools, assembly advice, safety aspects, inspections might have to be complied with (see also chapter “Maintenance and Service”).

During assembly, ensure the complete cleanliness of all components, since dirt can damage the rescue equipment!



WARNING / CAUTION!

Protective clothes must be worn when repairs are being carried out, since parts of the units can also be pressurized in an idle state.



REMARK:

Please always return the guarantee registration card to HURST JAWS OF LIFE or register your tool on the HURST website. Only then are you entitled to the extended guarantee.



REMARK:

Before you use couplings from a different company, you must contact HURST or an authorized dealer.



CAUTION!

Because HURST rescue equipment are appropriate for highest achievements, only components may be exchanged, which are specified in the spare parts list of the appropriate equipment.

Further components of the equipment may only be exchanged, when:

- you have participated in appropriate HURST service training.
- you have the explicit permission of the HURST Service department (After inquiry, examination for the distribution of permission. Examination in each individual case necessary!)

Spare parts and accessories for the rescue tool can be ordered from your authorized HURST-dealer!

10.2 Preventative service

10.2.1 Care regulations

The exterior of the equipment is to be cleaned from time to time in order to protect it from external corrosion. Oil is to be applied to the metallic surfaces.

10.2.2 Function and load test

If there is any doubt regarding the safety or reliability of the equipment, a function and load test must be performed.

HURST offers appropriate test equipment to this end.

10.2.3 Changing the hydraulic fluid

- The hydraulic fluid must be changed after the equipment has been used approx. 200 times / after three years at the latest.
- It must always be changed whenever the hydraulic fluid for the accompanying pump (motor / hand pump) is changed. This is to prevent the fresh hydraulic fluid from becoming contaminated by the used fluid from the rescue equipment.

Procedure:

1. Close blade arms (until the tips are almost touching).
2. Change the hydraulic fluid of the pump. Please observe the separate operating instructions for the pump being used!
3. Screw off the return hose on the pump:
 - **when the hose connection is directly into the pump:**
completely unscrew the connection nut of the connection piece of the return hose.
 - **when the hose connection is via mono-coupling to the pump:**
remove the cover from the mono-coupling (male).
completely unscrew the connection nut of the return hose on the mono-coupling (male).
 - **when the hose connection is via quick-connect-coupling to the pump:**
completely unscrew the connection nut on the quick-disconnect-coupling of the return hose.
4. Put the return hose into a separate collecting basin for the hydraulic fluid still in the equipment.
5. Slowly open the tool (the pump must be working during this time). The old hydraulic fluid from the ring space side runs via the return hose into the separate collecting basin, and is to be disposed of in the same manner as the old hydraulic fluid of the pump.
6. Switch the pump off (motor pump) / no longer activate it (e.g. hand pump).
7. Reconnect the return hose to the pump:
 - **when the hose connection is directly into the pump:**
screw the connection nut of the connection piece of the return hose back on.
(Please observe the necessary torque of $M_A = 40 \text{ Nm} / 29.5 \text{ ft.lbs.}$!)
 - **when the hose connection is via mono-coupling to the pump:**
screw the connection nut of the return hose back onto the mono-coupling (male).
(Please observe the necessary torque of $M_A = 40 \text{ Nm} / 29.5 \text{ ft.lbs.}$!)
Pull back the cover on the couplings as far as the limit stop.
 - **when the hose connection is via quick-connect-coupling to the pump:**
screw the connection nut back onto the quick-disconnect-coupling of the return hose.
(Please observe the necessary torque of $M_A = 35 \text{ Nm} / 25.8 \text{ ft.lbs.}$!)
8. Deaerate the rescue tool as described in the chapter "Preparations".

10.3 Repairs



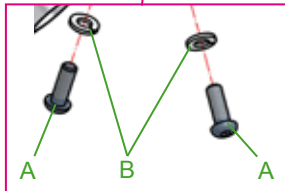
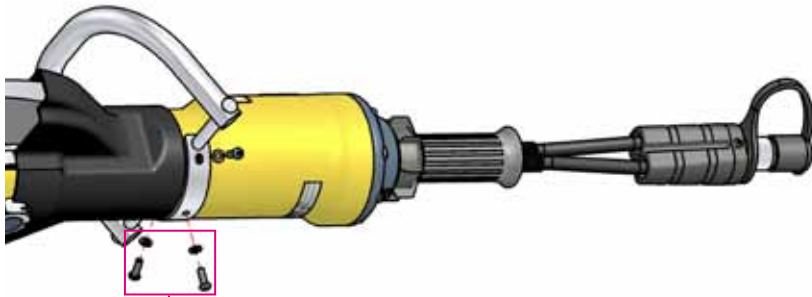
NOTE:

The illustrations show the JL-500 cutter. Assembly and disassembly are nearly identical for the other cutters!

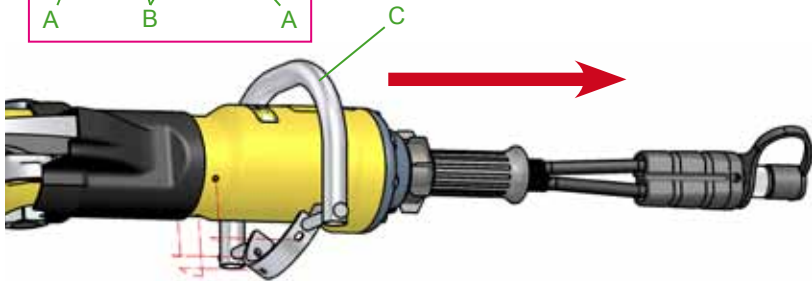
10.3.1 Replacing blades, protective covers and handles

Work steps:

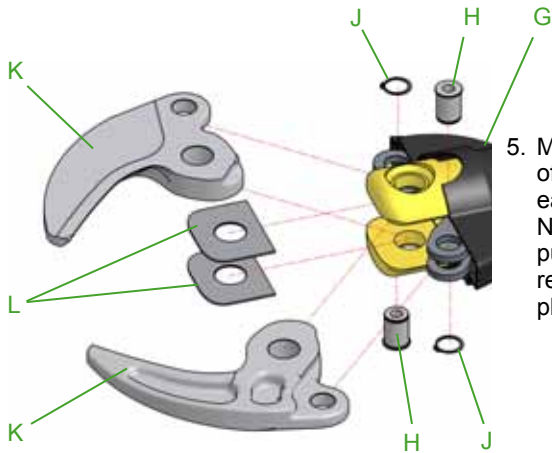
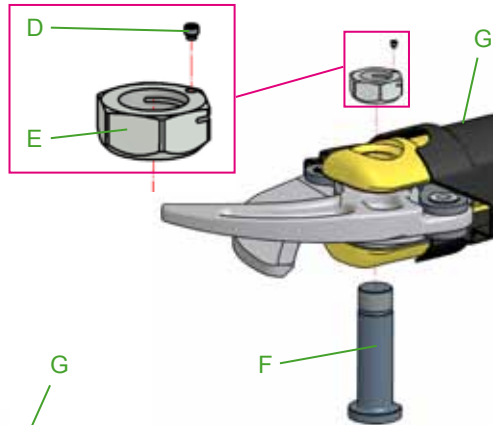
1. First of all, carefully clean the rescue equipment.
2. Next, close the blade arms so that the tips are almost touching. Turn the power unit off and disconnect the cutter from the hydraulic supply (uncouple)



3. Remove the fixing screws 'A' and spring washers 'B'. Now you can remove the handle 'C' in direction of the star grip (see picture).".

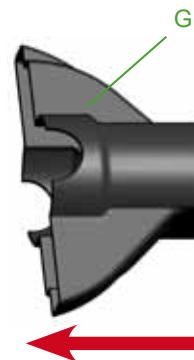
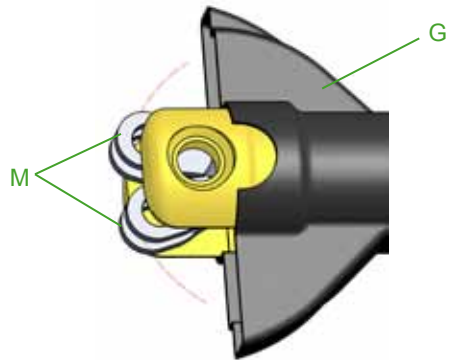


4. Remove the grub screw 'D' (only for JL-500 cutter), then unscrew the nut 'E' and pull out the pivot bolt 'F'.



5. Move the hand guard 'G' in the direction of the star grip till stop. This will make it easier to reach the safety bolts 'H'. Now remove the retaining rings 'J' and push out the bolts 'H'. Then you can remove the blades 'K' and the sliding plates 'L'.

6. Fold the lever elements 'M'



7. Finally, remove the hand guard 'G' from the cutter as depicted.

8. The work steps must be carried out in reverse order to fit the new parts.



CAUTION!

Don't forget to apply HURST special grease to all sliding surfaces.



REMARK:

The torque required can be taken from the spare parts list.

10.3.2 Changing or tightening hoses

Hoses of the pressure and/or return pipe leaks or hoses are defective. Tighten the hoses on the safety valve.

(Please note! Observe torque of $M_A = 40 \text{ Nm} / 29.5 \text{ ft.lbs.}$)



REMARK:

If you want to change the hoses, you have to dismantle the couplings.



CAUTION (by usage of mono-coupling-system)!

Take care that the port 'T' of the rescue tool is always connected to the port 'T' of the mono-coupling.

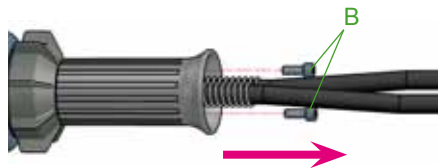


CAUTION (by usage of quick-disconnect-coupling-system)!

The return hose, which is screwed into the port "T" of the rescue tool, must always be equipped with a quick-disconnect-coupling (male). However the supplying hose line must be equipped with a quick-disconnect-coupling (female).

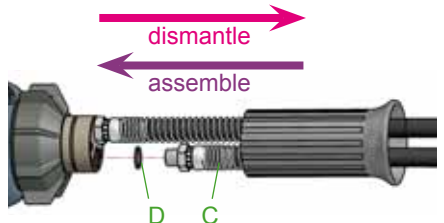
Procedure:

1. Loosen the 2 screws 'B' in the handle sleeve (hexagon socket)



2. Remove handle sleeve 'A'.

3. Dismantle hose 'C' and sealing ring 'D'. (There is no need to carry out this point if the hoses are just being tightened).



4. Screw the hose with sealing ring back on.

5. Tighten the hose connection on the valve.

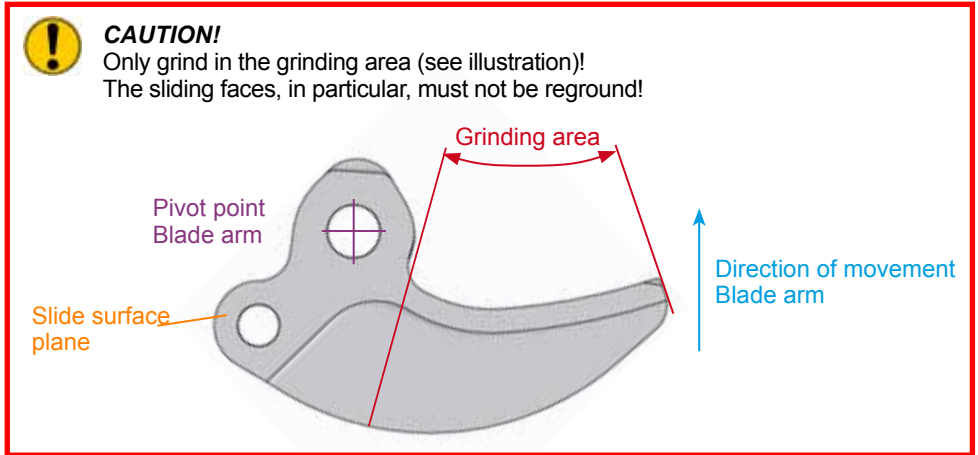
(Please note! Observe the necessary torque of $M_A = 40 \text{ Nm} / 29.5 \text{ ft.lbs.}$)

6. Then replace handle sleeve and screws, tighten (Torque: $5 \text{ Nm} / 3.7 \text{ ft.lbs.}$) and secure it with threadlocking fluid (e. g. LOCTITE 243).

10.3.3 Sharpening the blades

Only remove and smoothen any burrs!

Chips or deep grooves cannot be ground away. The blades must be replaced in these cases.



Tools required:

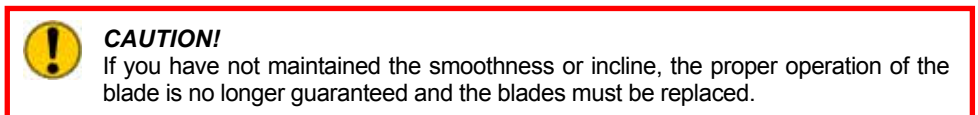
1. Use jaw protection on clamping device (e.g. vice) in order not to damage the blades
2. Grinder (e.g. angle grinder or belt grinder) with abrasive having a grain size of 80.

Procedure:

1. Clamp the blade securely into the clamping device so that it cannot move, but with the grinding area exposed.
2. Carefully grind the burr away evenly until you reach the sliding surface level. (see illustration)



In addition, when grinding, you must make sure that the inclination of the cutting surface in the direction of the blade arm movement is not changed. Check the incline and smoothness of the ground surface, using a suitable measuring tool.



10.3.4 Mono-couplings

The mono-couplings must be replaced in the event of:

- external visible damage,
- the locking device not working,
- hydraulic fluid continually leaking in a coupled/uncoupled state.



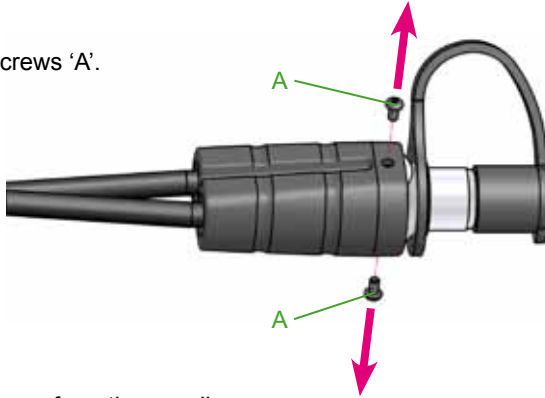
WARNING / CAUTION!

Never repair couplings: they are to be replaced by original HURST parts!

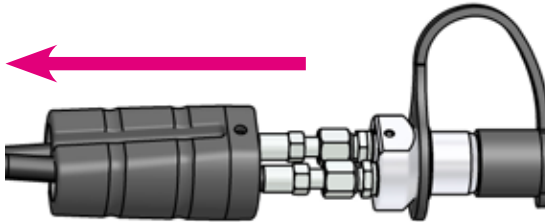
During assembly, tighten the connection nut of the hose assembly with a torque of $M_A = 40 \text{ Nm}$ / 29.5 ft.lbs..

Procedure:

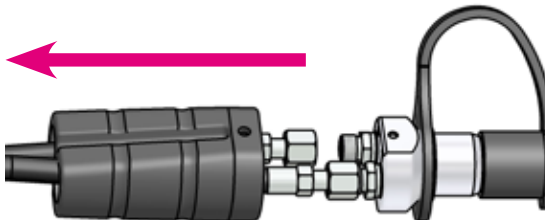
1. Remove the screws 'A'.



2. Remove the cover from the couplings.



3. Loosen the connection nuts of the hose assembly and remove the coupling.



4. Position the new coupling and tighten the connection nuts of the hose assemblies with a torque of $M_A = 40 \text{ Nm} / 29.5 \text{ ft. lbs.}$. After that, push the cover of the couplings back on and replace screws "A".

**CAUTION!**

Take care that the port 'T' of the rescue tool is always connected to the port 'T' of the mono-coupling.

10.3.5 Quick-disconnect-couplings

The quick-disconnect-couplings must be replaced in the event of:

- external visible damage,
- the locking device not working,
- hydraulic fluid continually leaking in a coupled/uncoupled state.

**WARNING / CAUTION!**

Never repair couplings: they are to be replaced by original HURST parts!

During assembly, tighten the connection nut of the hose assembly with a torque of $M_A = 35 \text{ Nm} / 25.8 \text{ ft. lbs.}$.

Procedure:

1. Loosen the connection nut of the hose assembly and remove the coupling.
2. Position the new coupling and tighten the connection nut of the hose assemblies with a torque of $M_A = 35 \text{ Nm} / 25.8 \text{ ft. lbs.}$.

**CAUTION!**

The return hose, which is screwed into the port "T" of the rescue tool, must always be equipped with a quick-disconnect-coupling (male). However the supplying hose line must be equipped with a quick-disconnect-coupling (female).

10.3.6 Control valve

Should the safety valve be deformed so severely that the star grip no longer functions correctly (e. g. loss of the deadman-function, etc.), the valve must be replaced in its entirety. Have repairs carried out by an authorized dealer, by personnel specially trained by HURST, or by HURST customer service only.

10.3.7 Labels

All damaged and/or illegible labels (safety notices, type plate, etc.) must be renewed.

Procedure:

1. Remove damaged and/or illegible labels.
2. Clean the surfaces using industrial alcohol.
3. Attach new labels.

Ensure that you attach the labels in the right position. If you are no longer sure about this, then please contact your authorized HURST dealer or HURST itself.

11. Troubleshooting

Trouble	Check	Cause	Solution
Blade arms move slowly or jerkily when activated	Are the hoses connected properly?	Air in the hydraulic system	Deaerate pump system
	Does the pump unit work?		
Device doesn't perform at its given power	Check the hydraulic fluid level in the supplying pump	Insufficient hydraulic fluid in the pump	Top off hydraulic fluid, deaerate
Following release, the star grip doesn't return to the central position	Cover damaged or star grip hard to move?	Damage to the torsion spring for reset	Repair by an authorized dealer, by personnel specially trained by HURST, or by HURST itself
		Soiled valve or star grip	
		Defective valve	
		Other mechanical damage (e. g. star grip)	
Hoses cannot be coupled	Is a mono-coupling mounted?	Pressure too high (e.g. caused by too-high ambient temperature)	Set hydraulic pump to pressureless circulation
		Pressurized	Relieve pump
		Coupling defective	Coupling needs to be replaced immediately
<u>only by use of mono-coupling-system:</u> It is frequently not possible to couple hose assemblies	Control the degree of viscosity and application temperature of the used hydraulic fluid	Hydraulic fluid not adapted to the application situation	Hydraulic fluid must be replaced (see chapter "Recommended Hydraulic fluids")
		Coupling defective	Coupling needs to be replaced immediately
Hydraulic fluid leak on the hoses or the fixing-ins	Are the hoses defective?	Leak, possible damage	Replace hoses
Damages on the surface of the hydraulic hoses		Mechanical damages or contact with aggressive agents	Replace hoses
Hydraulic fluid leaks on the piston rod		Defective rod seal	Repair by an authorized dealer, by personnel specially trained by HURST, or by HURST itself
		Damage to the piston	

Trouble	Check	Cause	Solution
Leak on the handhold	Does the pressure set on the pump comply with the maximum permissible pressure on the rescue equipment?	Pressure release in the Rescue tool.	Following the reduction in pressure, no further leak is present. Should, however, there be a further leak on the handhold, immediately deactivate the rescue equipment, and contact an authorized dealer or HURST itself.
	Hoses in handhold loose?	Hoses in handhold not tightened	Tighten hoses.
	Check the connections of the mono-coupling (female)	Supply and return connection of the mono-coupling (female) inverted	Reconnect the hoses of the mono-coupling (female) in the right way
Leak on the handhold	Is the return hose connected correctly to the quick-disconnect coupling?	Return hose is not coupled correctly or not connected.	Re-connect the return hose and secure it.
	check the connections between mono-coupling and hoses	hose connection to the couplings interchanged	reconnect the hoses to the coupling in the right way
		Returnline disabled	disconnect the returnline from the coupling, clean it and reconnect it.
Leak in the couplings	Is the coupling damaged?	coupling damaged	Coupling must be replaced immediately

If it isn't possible to rectify the malfunctions, inform an authorized HURST dealer or the HURST customer service department immediately!

The address for the HURST customer service department is:

HURST **JAWS OF LIFE**
HALE PRODUCTS, INC.
A Unit of IDEX Corporation

711 N. Post Road
Shelby, NC 28150 USA
Phone: (704) 487-6961
Fax: (704) 487-7271
e-mail: contacthurst@idexcorp.com

12. Technical Data

Since all values are subject to tolerances, minor differences may occur between the data on your equipment and the data in the following schedules!

The values may also differ because of reading inaccuracies and/or tolerances in the measuring equipment used.



NOTE:

The following tables contain only the technical data required for standard acceptance.

Additional data concerning your unit can be obtained from HURST on request.

12.1 Cutter

type	JL-500	
ref.no.	362R513	362R528
dimensions l x w x h (w/o connection hoses)	[mm] <i>[in.]</i>	775 x 290 x 215 <i>30.51x11.42x8.46</i>
max. cutting opening	[mm] <i>[in.]</i>	194 <i>7.64</i>
weight incl. hydraulic fluid	[kg] <i>[lbs.]</i>	21,6 <i>47.6</i>
max. operating pressure	[MPa] * <i>[psi.]</i>	35 <i>5,000</i>
min. needed volume of hydraulic fluid	[l] ** <i>[gal.-US]</i>	0,2 <i>0.053</i>
coupling system	mono-coupling	quick-disconnect-coupling
classification (NFPA 1936)	A7/B9/C7/D8/E9	

* 1 MPa = 10 bar

** Necessary volume of hydraulic fluid in the hydraulic unit to operate the unit (differential volume on piston / rod side)

type		MOC	
ref.no.		362R486	362R386
dimensions l x w x h [mm] (w/o connection hoses) [in.]		790 x 230 x 228 31.11x9.06x8.98	
max. cutting opening [mm] [in.]		280 11.0	
weight incl. hydraulic fluid [kg] [lbs.]		20,5 45.2	
max. operating pressure [Mpa] * [psi.]		35 5,000	
min. needed volume of hydraulic fluid [l] ** [gal.-US]		0.14 8.8	
coupling system		mono-coupling	quick-disconnect-coupling
classification (NFPA 1936)		A7/B7/C7/D7/E8	

type		MOC II	
ref.no.		362R487	362R392
dimensions l x w x h [mm] (w/o connection hoses) [in.]		787 x 230 x 228 30.99x9.06x8.98	
max. cutting opening [mm] [in.]		180 7.1	
weight incl. hydraulic fluid [kg] [lbs.]		21,4 47.2	
max. operating pressure [Mpa] * [psi.]		35 5,000	
min. needed volume of hydraulic fluid [l] ** [gal.-US]		0.14 8.8	
coupling system		mono-coupling	quick-disconnect-coupling
classification (NFPA 1936)		A7/B9/C6/D7/E8	

* 1 MPa = 10 bar

** Necessary volume of hydraulic fluid in the hydraulic unit to operate the unit (differential volume on piston / rod side)

type		MOC Ultra	
ref.no.		362R488	362R428
dimensions l x w x h [mm] (w/o connection hoses) [in.]		751 x 240 x 228 <i>29.57x9.45x8.98</i>	
max. cutting opening [mm] [in.]		145 <i>5.7</i>	
weight incl. hydraulic fluid [kg] [lbs.]		21,0 <i>46.3</i>	
max. operating pressure [Mpa] * [psi.]		35 <i>5,000</i>	
min. needed volume of hydraulic fluid [l] ** [gal.-US]		0.14 <i>8.8</i>	
coupling system		mono-coupling	quick-disconnect-coupling
classification (NFPA 1936)		A8/B8/C6/D8/E8	

type		X-Tractor II	
ref.no.		362R485	362R402
dimensions l x w x h [mm] (w/o connection hoses) [in.]		732 x 278 x 185 <i>28.81x10.94x7.28</i>	
max. cutting opening [mm] [in.]		148 <i>5.83</i>	
weight incl. hydraulic fluid [kg] [lbs.]		17,9 <i>39.4</i>	
max. operating pressure [Mpa] * [psi.]		35 <i>5,000</i>	
min. needed volume of hydraulic fluid [l] ** [gal.-US]		0,08 <i>0.02</i>	
coupling system		mono-coupling	quick-disconnect-coupling
classification (NFPA 1936)		A6/B7/C6/D7/E7	

* 1 MPa = 10 bar

** Necessary volume of hydraulic fluid in the hydraulic unit to operate the unit (differential volume on piston / rod side)

12.2 Torque of the pivot bolt

type	JL-500	MOC	MOC II	MOC Ultra	X-Tractor II
torque [Nm]	150 + 10	130 + 10	130 + 10	130 + 10	117 + 10
torque [ft.lbs]	110.6 + 7.4	96.0 + 7.4	96.0 + 7.4	96.0 + 7.4	86.0 + 7.4

12.3 Recommended hydraulic fluid



CAUTION!

Use only the hydraulic fluid 'HURST BLUE'! Other fluids could cause damages to the rescue tool.

	Fluid temperature range	Chemical name	CAS number	Remarks
A	-20 +55°C	Polyether Polyol	9003-13-8	
	-4.0 +131°F			

12.4 Operating and storage temperature Ranges

Operating temperature	[°C] / [°F]	-20 ... +55	-4 ... +131
Ambient temperature (device in operation)	[°C] / [°F]	-25 ... +45	-13 ... +113
Storage temperature (device not in operation)	[°C] / [°F]	-30 ... +60	-22 ... +140

12.5 Conversions

1 MPa = 145.04 psi

1 Nm = 0.7376 ft.lbf

1 mm = 0.0394 in.

1 l = 0.2641 gal. (US)

1 kg = 2.2045 lbs.

13. Notes



Please dispose all packaging materials and dismantled parts properly.

HURST JAWS OF LIFE

HALE PRODUCTS, INC.

A Unit of IDEX Corporation

711 N. Post Road

Shelby, NC 28150 USA

Phone: (704) 487-6961

Fax: (704) 487-7271

e-mail: contacthurst@idexcorp.com

MADE IN USA