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HOSE/UMBILICAL CUTTER HCV100

PRODUCT CODE No. 980292

**INSTRUCTIONS FOR INSTALLATION,
OPERATION & MAINTENANCE**

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Description

The HCV100 is a lightweight double acting cutting tool primarily intended for use on umbilical cable and hose and will cut up to 100mm diameter. It may be used on alternative materials, such as electrical power or communication cables, again up to a maximum of 100mm diameter. It may be mounted on an ROV or manipulator arm. Where small diameters are to be cut, every effort should be made to place the material centrally along the anvil to minimize offset loading. The anvil can be automatically withdrawn to allow placement. The cutter is **not** designed to cut wire rope.

1. SAFETY

Before operation, read and understand this operations manual.

Whilst the tool is intended for remote or local operation sub-sea, there is no reason why it should not be used above surface.

Ensure that the tool, hoses and pump are in good condition and properly connected.

Ensure that suitable pressure regulation equipment is used and that the unit is not subjected to pressures higher than those stated in section 3

In all cases, where an operator is present, the safety aspects must be reviewed before the cutting operation is commenced.

No attempt should be made to cut any material that is under tension.

Ensure that the operator is shielded from the cutting blade during the cutting operation.

When cutting near the very end of hose or rope, individual cut wires can be expelled from the tool, please ensure that the operator is shielded from these.

If in doubt please contact the manufacturer (Allspeeds Ltd) or an authorized distributor for assistance.

If at any time it is necessary to carry out proof tests on the tool, e.g. after service on the hydraulic cylinders, it must be returned to the supplier for testing where the following procedures apply.

The maximum proof test pressure should not exceed 125% of the maximum working pressure and this should only be done by Allspeeds using our specially adapted test rig.

The tool should be guarded during the proof test operation, and be carried out in a safe working environment.

The proof pressure should be applied gradually, until the maximum pressure is reached.

INSPECT THE TOOL BEFORE USE

With the cutter isolated from the hydraulic supply, check the condition of the blade edge. If the blade is damaged or blunt replace with a fresh blade before cutting. This procedure is as described in section 8.

Ensure that care is taken when checking the blade as the edge may be sharp
Check the condition of the anvil. It is normal that the anvil will show an indent where the blade has pressed down into it and can withstand multiple cuts, but any excessively damaged anvil should be replaced. This procedure is as described in section 7

Ensure that all retaining bolts are tight

CAUTION – USE OF BLADES AND PARTS NOT APPROVED BY WEBTOOL MAY RESULT IN TOOL FAILURE AND CONSEQUENTIAL DAMAGE

2.CUTTING CAPACITY

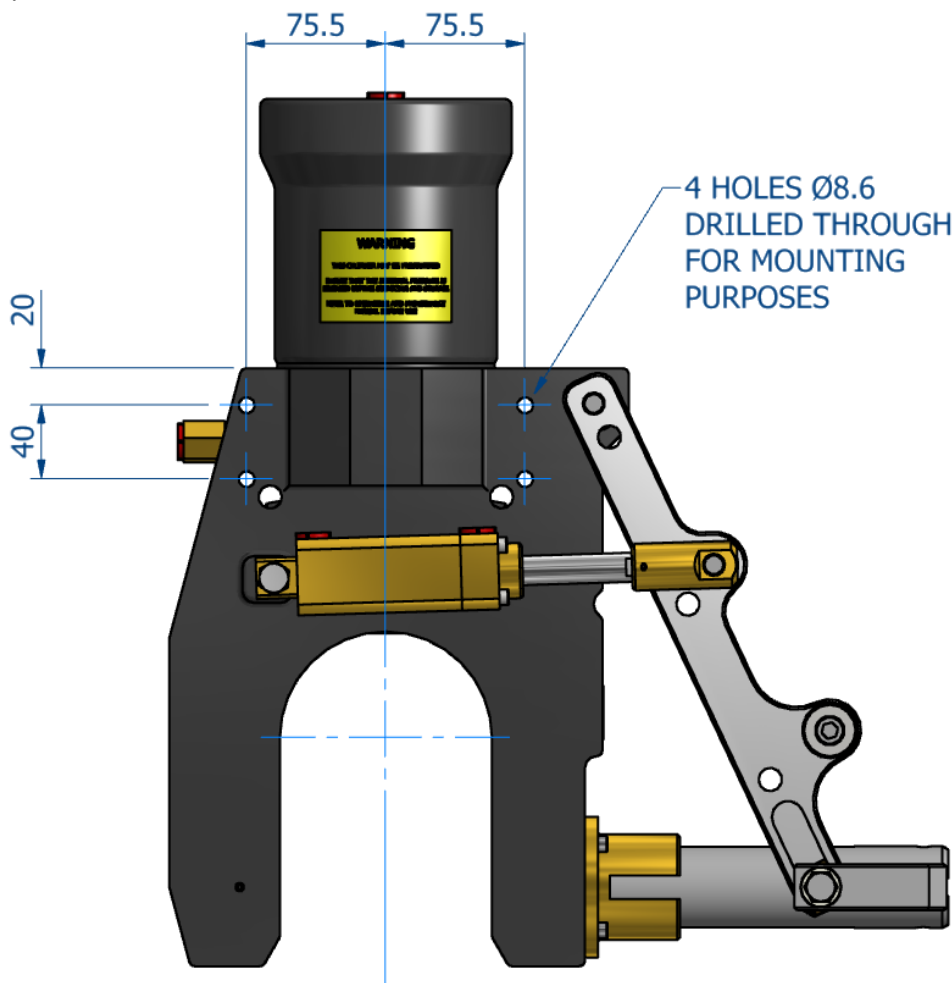
The HCV100 is a double acting tool primarily intended for use on soft materials i.e. umbilical cable and hose and will cut up to 100mm diameter. It may be used on alternative materials, such as electrical power lines (inc double row armoured cable) or communication cables, again up to a maximum of 100mm diameter.

Where small diameters are to be cut, every effort should be made to place the material centrally along the anvil to minimize offset loading. It is **not** intended for use on high tensile wire rope, chain or solid steel bar.

N.B. If in doubt about the size and type of material to be cut please refer to the manufacturer. Failure to do so may result in permanent damage to the tool.

3.INSTALLATION

Four holes are provided in the tool body which can be used for any attachment necessary to mount the tool to an operating arm/vehicle. (See below). The cylinder is a pressure vessel and is not recommended as a mounting point, the cylinder should not be drilled, machined, mutilated or damaged in any way, any warranty could be invalidated by such actions.



Two hydraulic supplies are required, one at 640 Bar, usually through an intensifier, for the main ram and another at 190 Bar max. for the auxiliary cylinders.

The main ram return is rated and tested for 640 Bar but may be operated from the low pressure supply if this is more convenient. The maximum working pressures and port tappings are shown below.

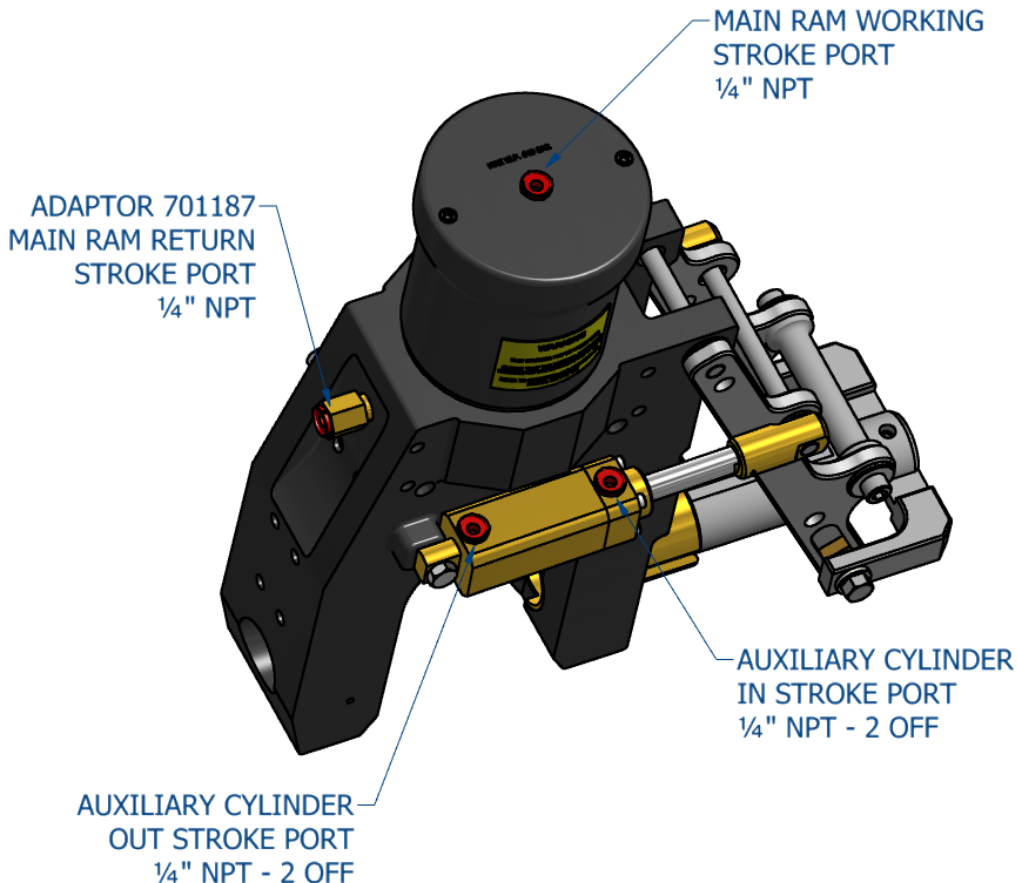
Note - A relief valve should also be incorporated in the return line. This is to prevent excessively high pressures in the annular side of the hydraulic cylinders should the return to tank become blocked for any reason. The oil supply must be clear and free from contamination. A good quality ISO32 grade hydraulic oil, e.g. Shell Tellus 32 or equivalent, is suitable.

The weight of the tool is 28.5Kg.

Table 1.

Operation	Max. working Pressure		Swept Volume (ml)	Port Tapping
	(Bar)	(psi)		
Main Ram Working Stroke	640	9,280	720	¼" NPT
Main Ram Return Stroke	640*	9,280	355	¼" NPT
Auxiliary Cylinder Out Stroke (To Retract Anvil)	190	2,750	30	¼" NPT
Auxiliary Cylinder In Stroke (To Reset Anvil)	190	2,750	20	¼" NPT

* N.B. Actual Pressure Required To Return Ram < 15 Bar (215 p.s.i.)



4. OPERATION

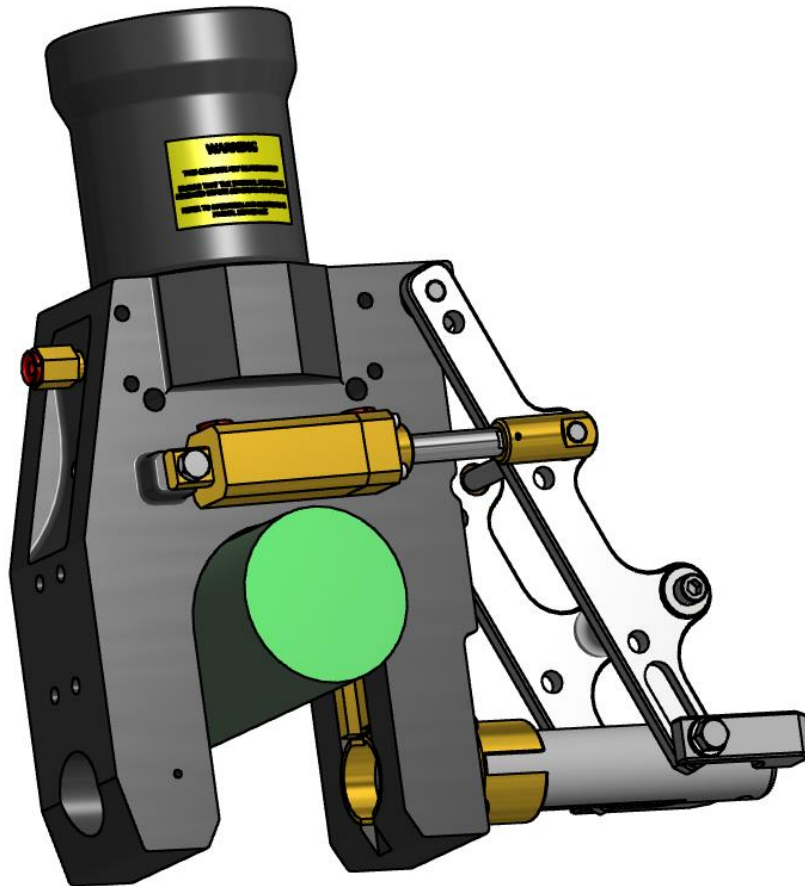
Before deployment, function test the tool and ensure that all operators are familiar with this procedure. If used with an ROV or similar equipment, observation of the tool should be maintained at all time during operation. Prior to use, ensure no damage has occurred to the blade or anvil. Ensure the anvil is fully retracted.

Important: Please note this tool is designed for intermittent subsea use. Please refer to the manufacturer (Allspeeds Ltd) or an authorized distributor should you wish to use this tool subsea for any period over 14 days.

CAUTION – Any modification made to this tool will invalidate the warranty and may lead to equipment failure or personal injury. If in doubt please contact the manufacturer (Allspeeds Ltd) or an authorised distributor for assistance.

DEPLOYMENT

Place the cutter over the material. Ensure that the material is as far into the cutter as possible.



Pressurize the auxiliary cylinders to fully extend the anvil, thus retaining the material in the body of the tool. Check visually that the anvil is fully home, this is important to prevent damage to the tool.

Operate the main ram power port to sever the material, hold pressure until the material is severed.

N.B. Do not operate the auxiliary cylinders when the main ram is fully extended since this would damage the anvil.

Once the material is severed, pressurize the main ram retract port to withdraw the cutting blade. Then, and only then, retract the anvil. It is important not to operate the auxiliary cylinders whilst the main ram and blade are in the fully extended position.

If a further cut is required, the above procedure should be repeated.

TROUBLESHOOTING

If the material does not cut through completely on the first attempt, cycle the blade by retracting it slightly and then attempting the cut again.

If the material does not completely cut after multiple cycles of the blade, check the input pressure to the main input of the cylinder. This can be a maximum of 640 bar (9,280psi). If the material to be cut is still not severed after multiple cycles and at a pressure of 640 bar, retract the blade and then the anvil and return the tool to the surface for inspection of the blade and anvil, replace if necessary.

IMPORTANT NOTE – ENSURE THAT THE BLADE IS FULLY RETRACTED AND THAT ALL PRESSURE TO THE CUTTER IS RELIEVED AS IT IS RAISED TO THE SURFACE. FAILURE TO DO THIS CAN LEAD TO A DANGEROUS BUILD UP OF PRESSURE IN THE CYLINDER.

5. AFTER USE

When the tool is retrieved from a marine environment, it should be hosed off with clean water, allowed to drain and sprayed externally with a de-watering fluid. Before storage, inspect the general condition of the tool. Particular attention should be paid to the anvil and blade. The anvil should be clean and free from any damage or bruising on the outside diameter that would prevent it from retracting properly, The blade edge should be smooth and free from any serrations. Note that a slight ripple to the blade edge is acceptable and will not cause problems. Any minor damage can be smoothed off with an oil stone if necessary.

IMPORTANT – DO NOT STORE THE TOOL WITH A COMPLETELY SEALED CYLINDER AS PRESSURE MAY BUILD UP DUE TO TEMPERATURE CHANGES.

6. SERVICE

IMPORTANT – ENSURE THERE IS NO HYDRAULIC PRESSURE IN THE CYLINDER BEFORE PERFORMING ANY SERVICE OR MAINTENANCE PROCEDURES ON THIS CUTTER

It is unlikely that service would be required on the hydraulic components of the tool under normal circumstances, but a seal spares kit is available if required. The only parts that would need intermittent replacement would be the anvil and blade, depending on the frequency of use and materials being cut. These parts can be ordered up on the following spares reference numbers, but in addition please quote the tool serial number.

HCV100 seal kit for cutter and auxiliaries	Part Number	995291	
Anvil	Part Number	CC6378	
Blade	Part Number	705010c	
Blade Retaining Pin	Part Number	030648	3 off

We advise that any servicing should be carried out by an authorised distributor only. If required, the tool can be returned to the manufacturer, Allspeeds Ltd, for servicing and testing.

If servicing is to be undertaken by the user, please see note on proof testing under SAFETY (Section 1), and the following:-

All servicing operations should be carried out in a clean environment to prevent contamination of the oil and mating components.

Care should be taken with all mating areas ie. threads and sealing faces, as any damage or abrasive contamination could cause galling or seizing on re-assembly.

The cylinder is a pressure vessel and should not be drilled, machined, mutilated or damaged in any way for mounting purposes or to assist in its removal for servicing, any warranty could be invalidated by such actions. Also see section 9

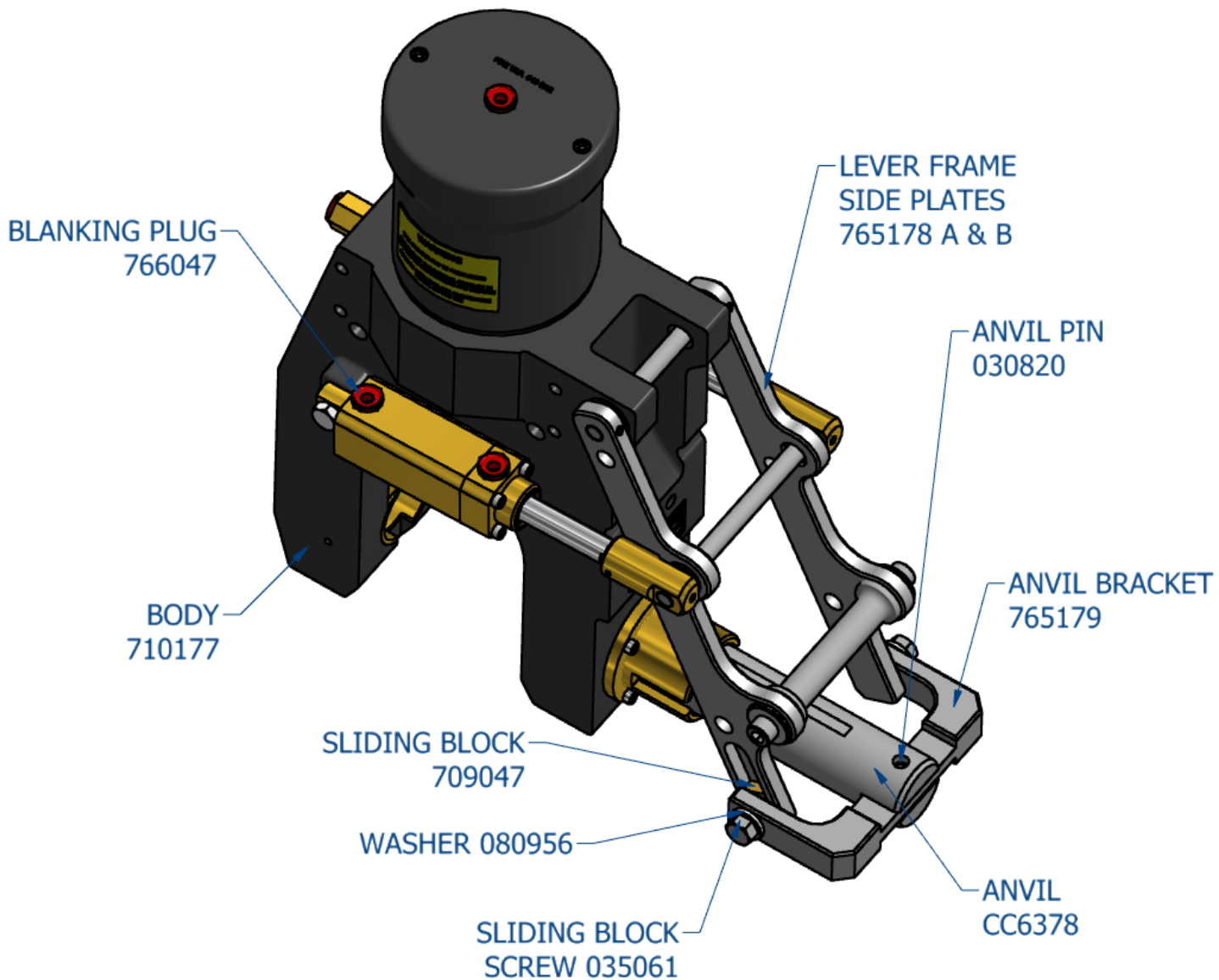
The use of stilsons to remove the cylinder is not recommended as damage will occur.

7. REPLACEMENT OF THE ANVIL

To remove the anvil, follow this procedure:

Disconnect the anvil CC6378 from the anvil bracket 765179 by removing the spring pin 030820. The anvil can then be passed through the body and removed.

To replace the anvil the reverse is required.

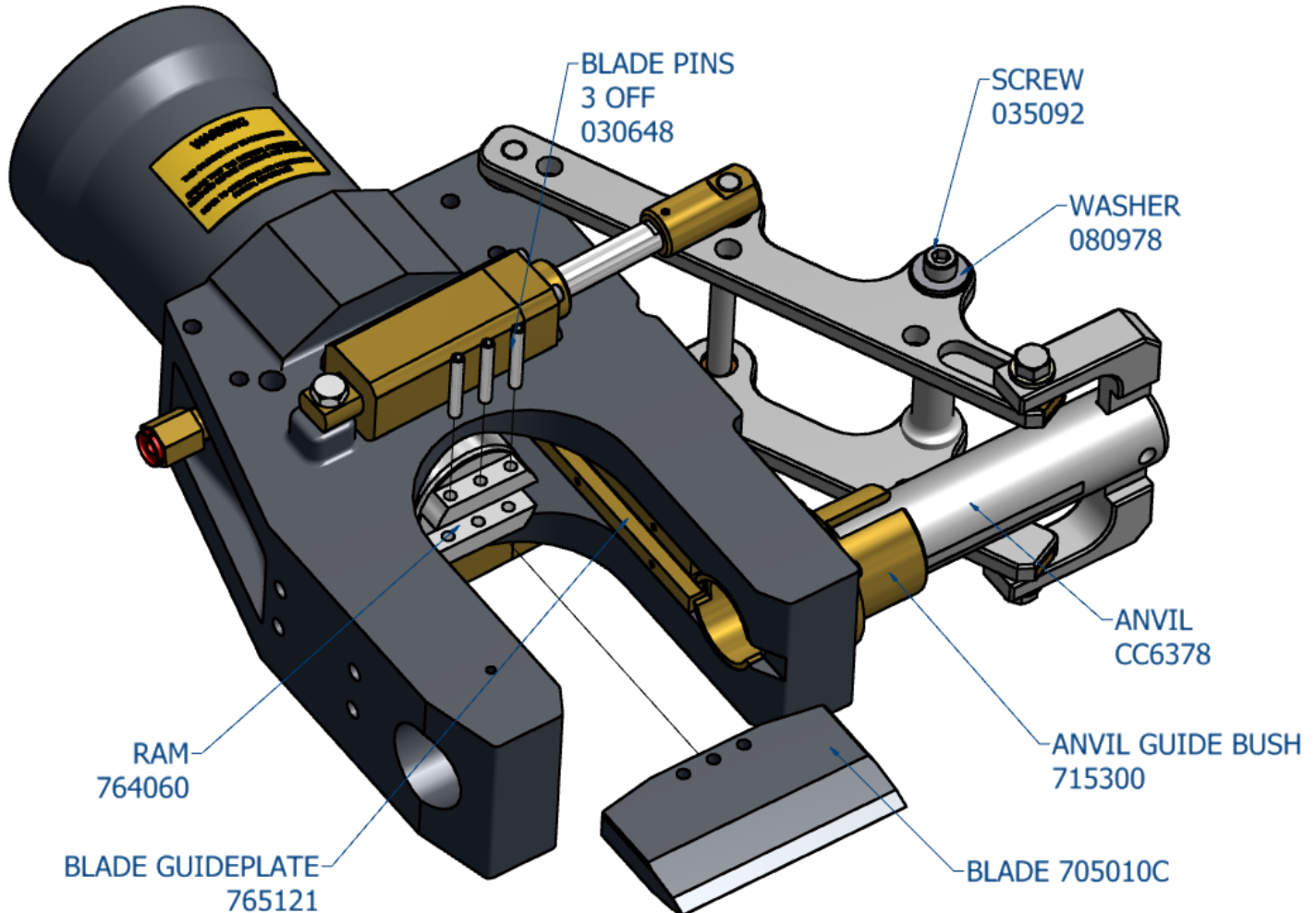


8. REPLACEMENT OF THE BLADE

To remove the blade, follow this procedure:

To remove the blade 705010c, ensure the anvil CC6378, has been fully retracted in the anvil guide bush 715300, pump out the main ram 764060 until the three ¼" diameter blade-pins 030648 are accessible. Drift out the blade pins, the blade, supported in the blade guideplates, will now slide out of the tool.

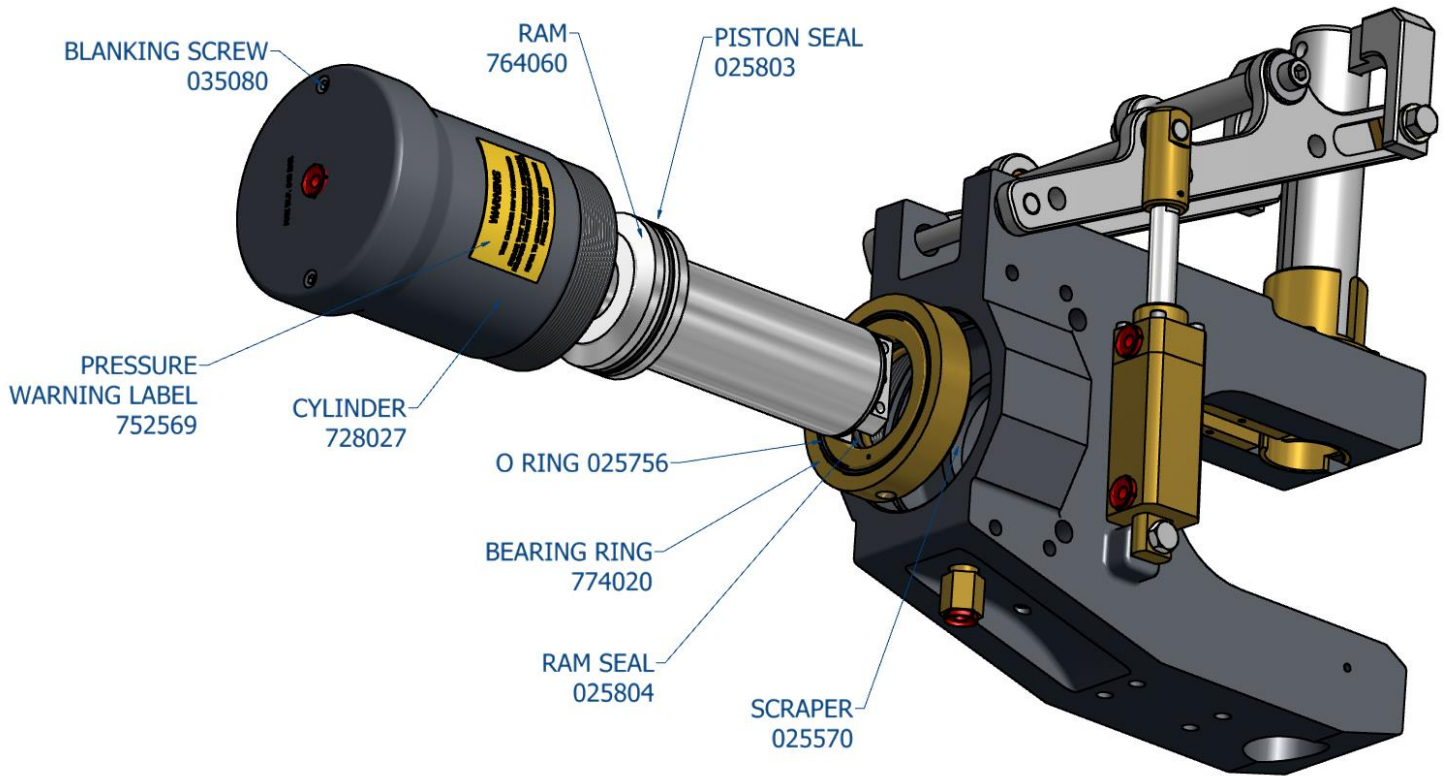
To replace the blade the reverse is required.



9. REMOVAL OF MAIN CYLINDER

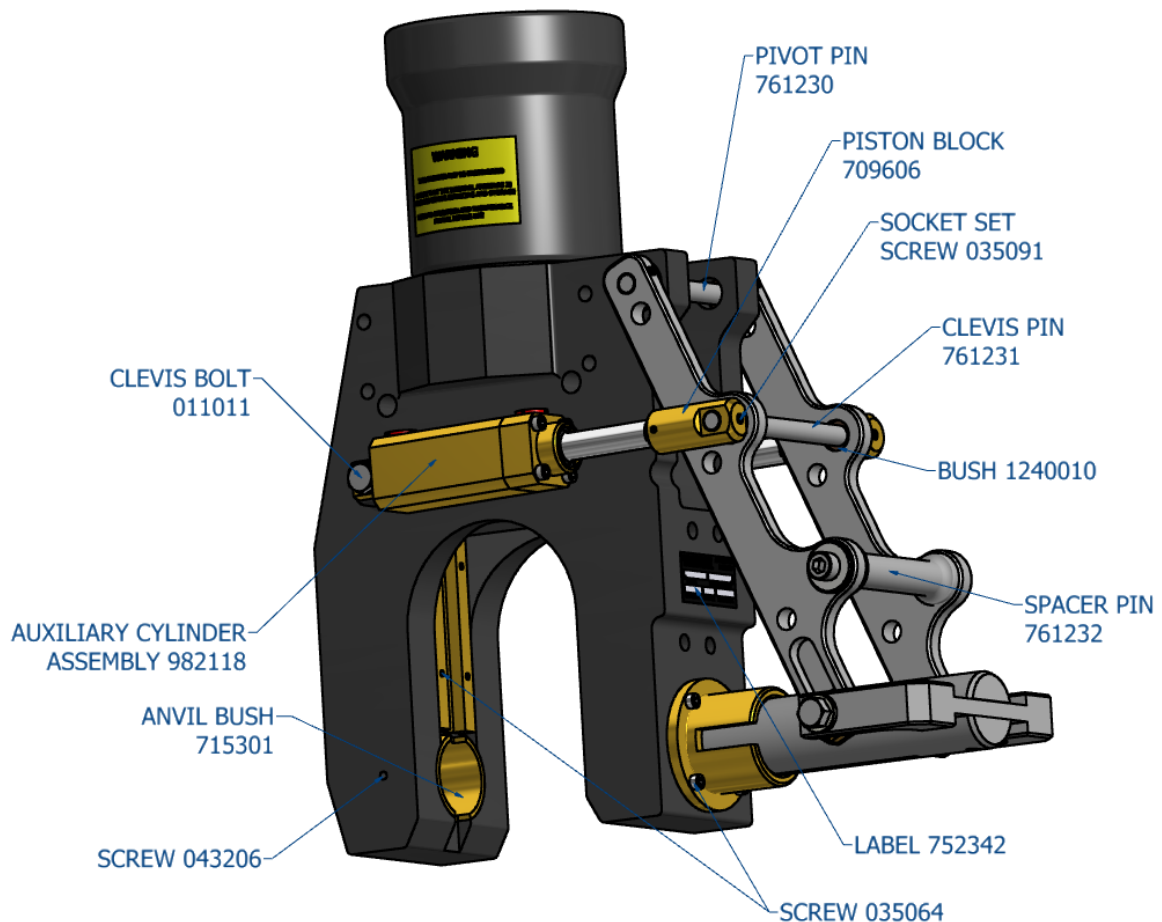
If it is necessary to renew the hydraulic seals, first remove the blade 705010C as described above in section 8, the cylinder must then be removed from the tool. As an aid to this, remove the 2 blanking screws 035080, then a bar is to be fastened to the top of the cylinder using the 2 tapped holes, apply a torque and not a bending moment when unscrewing the cylinder. The cylinder is a pressure vessel and should not be drilled, machined, mutilated or damaged in any way for mounting purposes or to assist in its removal for servicing, any warranty could be invalidated by such actions. Do not use Stilsons to remove the cylinder as damage will occur.

A cylinder assembly tool is available as an optional extra part, number SK4377A



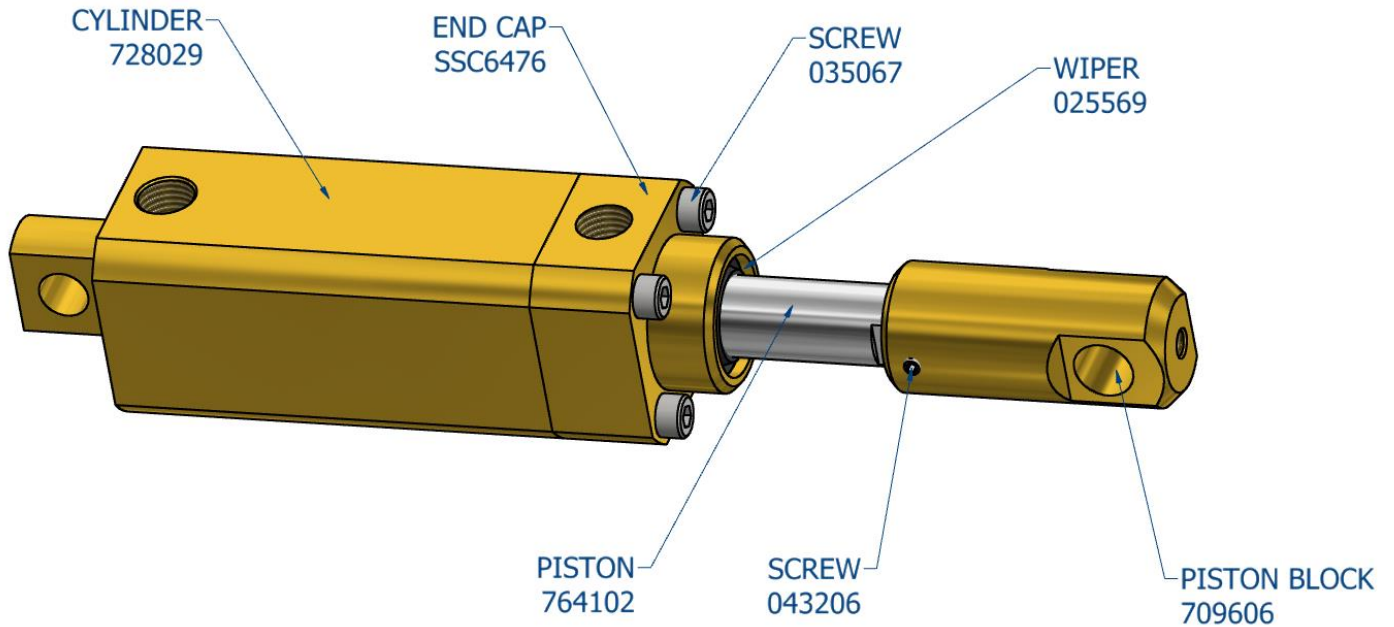
10. REMOVAL OF THE AUXILIARY CYLINDERS

First remove the hoses from the auxiliary cylinders. Remove the set screw 035091 from the end of the piston block 709606, unscrew the clevis bolt 011011, the auxiliary cylinder 982118 will now come away from the cutter body.

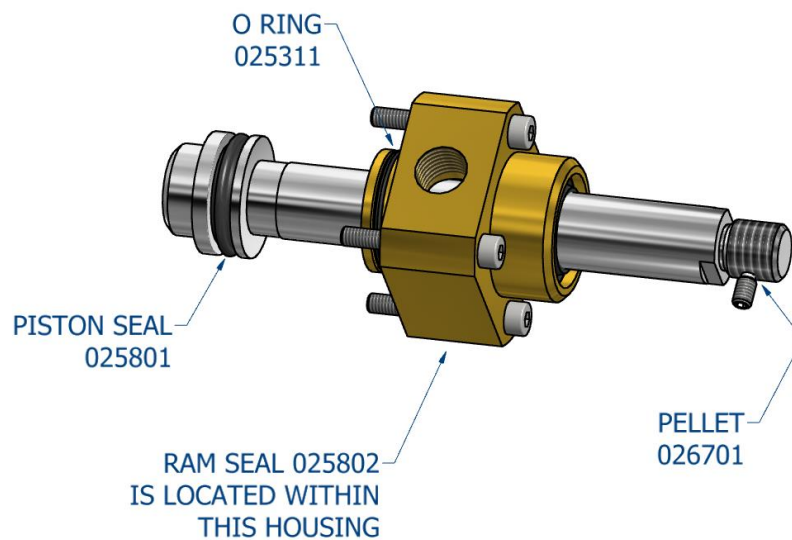


11. REMOVAL OF THE AUXILIARY SEALS

First, remove the auxiliary cylinder assembly from the cutter body. Remove the 4 screws 035067 to free the end cap SSC6476, remove the set screw 035062 to allow the piston block 709062 to be unscrewed, under the screw 035062 is an aluminium pellet 026701, this is used to prevent the screw damaging the thread on the piston, the piston can now be removed, all seals are now accessible



Assembly shown below with cylinder body 728029 and piston block 709606 removed



PART No.	DESCRIPTION	Qty.
710 177	Body	1
728 027	Cylinder, main	1
764 060	Ram	1
774 020	Bearing ring	1
CC6378	Anvil	1
715 300	Bush, anvil guide	1
715 301	Bush, anvil	1
709 047	Block, sliding	2
765 121	Guide plate, blade	2
701 187	Adaptor	1
011 011	Bolt, clevis	2
035 061	Screw, sliding block	2
080 956	Washer	2
705 010c	Blade	1
025 570*	Scraper, ram	1
025 756*	'O' ring	1
025 803*	Seal, main cylinder	1
025 804*	Seal, ram	1
043 206	Screw, socket set, anvil bush	1
035 080	Screw, sock set, main cylinder	2
035 064	Screw, socket cap, blade guide	16
030 648	Pin, spring, blade	3
030 820	Pin, spring, anvil	1
982 118	Cylinder, lever	2
765 179	Bracket, anvil	1
761 231	Clevis pin	1
761 230	Pivot pin	1
761 232	Spacer pin	1
765 178	Frame legs	2
080 978	Washers, spacer pin	2
035 091	Screw, socket set, clevis pin	2
1240010	Bush	4
035 092	Screw, socket cap, spacer pin	2
035 073	Screw, socket set, pivot pin	2
766 047	Blanking plug	6
752 342	Nameplate	1
752 569	Pressure warning label	1

⚠N.B. Parts Marked Thus * Are in Seal Kit

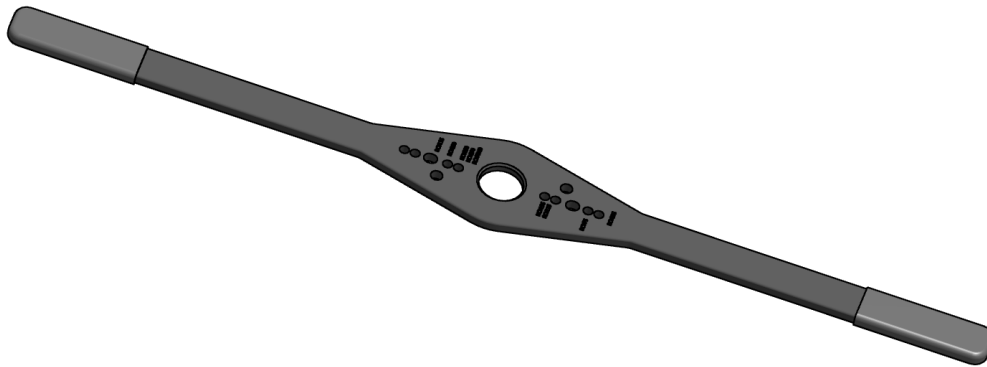
PART No.	DESCRIPTION	QTY
709 606	Piston block	1
728 029	Cylinder, lever	1
SSC6476	End cap	1
764 102	Piston	1
026 701	Pellet, Aluminium	1
025 311*	'O' ring, end cap	1
025 569*	Scraper, rod	1
025 801*	Seal piston	1
025 802*	Seal, rod	1
043 206*	Screw, socket set, piston block	1
035 067	Screw, socket cap	4

N.B. Parts marked thus * are in seal kit

This HCV100 cutter is compatible with the following optional extras, not supplied as standard.

Cylinder Assembly Tool - SK4377A

This tool can be used on RCV75, RCV75HD, RCV115, RCV135, RCV155, RCV190, HCV100, HCV120, HCV250 and HCV270 cutting tools

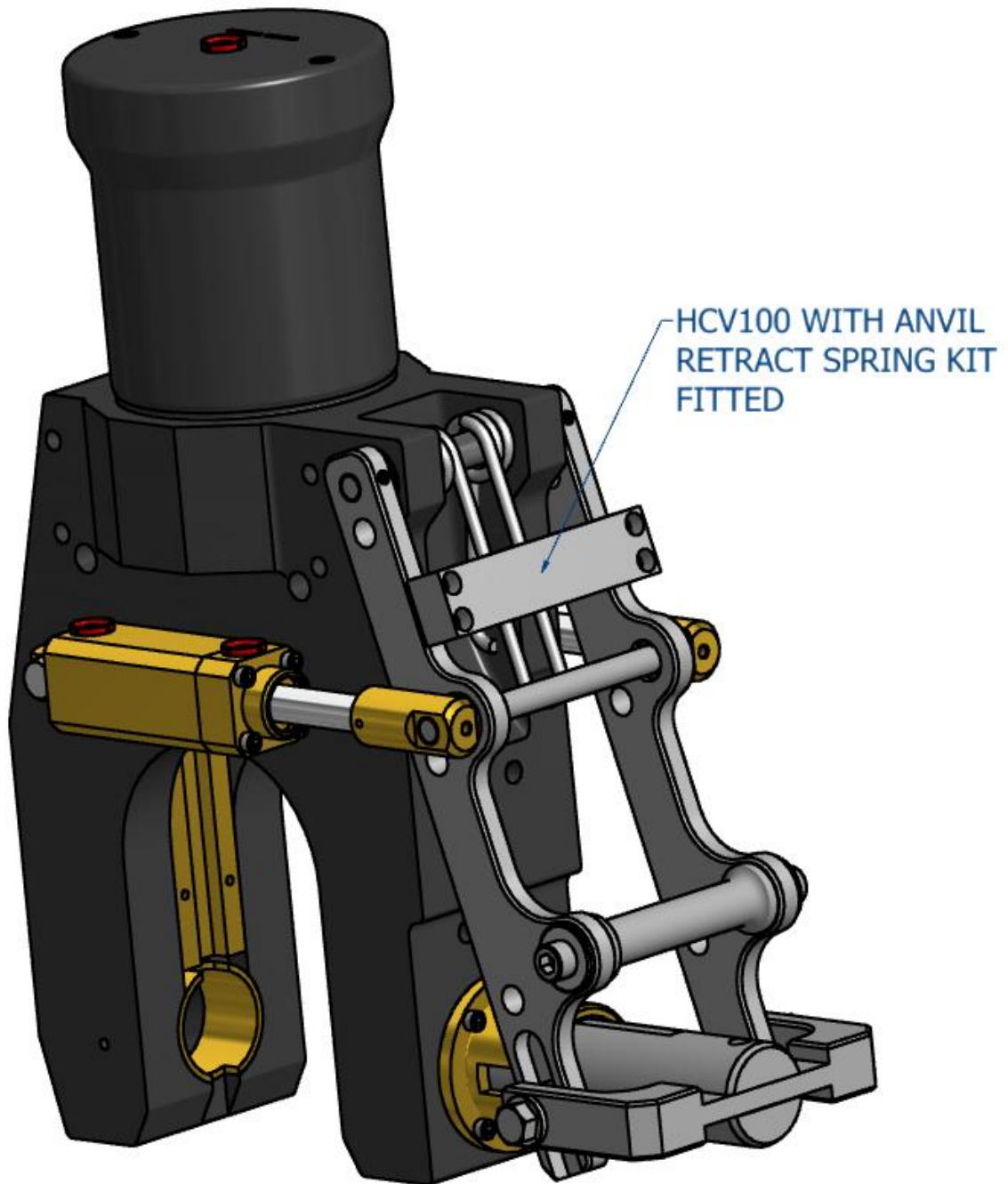


Webtool Hydraulic Intensifier – HP690A (available in a range on intensification ratios)



For further information contact the manufacturer (Allspeeds Ltd) or an authorised distributor.

Anvil Retract Spring Kit – 995111 Also available as an add on for this cutter, the anvil lever frame would need to be drilled and tapped to attach this kit



WEBTOOL

CUTTING EDGE TECHNOLOGY

Webtool specialises in engineering powerful hydraulic tools for cutting and gripping rope, cable and umbilicals.

Models designed for use in subsea environments by ROV's, and surface applications in hostile environments.

- Wire rope cutters (WCS and WCOS) – capable of cutting steel wire rope up to 75mm diameter
- Wire Rope Cutters (RCV) – capable of cutting steel wire rope up to 190mm diameter
- Cable Cutters (HCV) – capable of cutting cable, umbilical and armoured flexible pipe lines up to 330mm diameter
 - Softline Cutters (SL) – capable of cutting fibre ropes in various sizes
 - Wire Rope / Cable Grippers
 - Wire Rope Clamps
 - Automatic Shackles

Application specific solutions

Our in house design and manufacturing capability means we can quickly and efficiently develop a solution to suit your particular application. Contact our engineering department to discuss how we can help.

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