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WIRE ROPE CUTTER WCS75HDZ

PRODUCT CODE No. 980482

**INSTRUCTIONS FOR INSTALLATION,
OPERATION & MAINTENANCE**

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Description

The WCS75HDZ is a double acting tool primarily intended for use on steel wire rope, having a maximum tensile strength of 1770N/mm and will cut ropes up to 75mm diameter. It may be used on alternative materials, such as electrical power or communication cables, again up to a maximum of 75mm diameter.

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 wire ropes or other 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

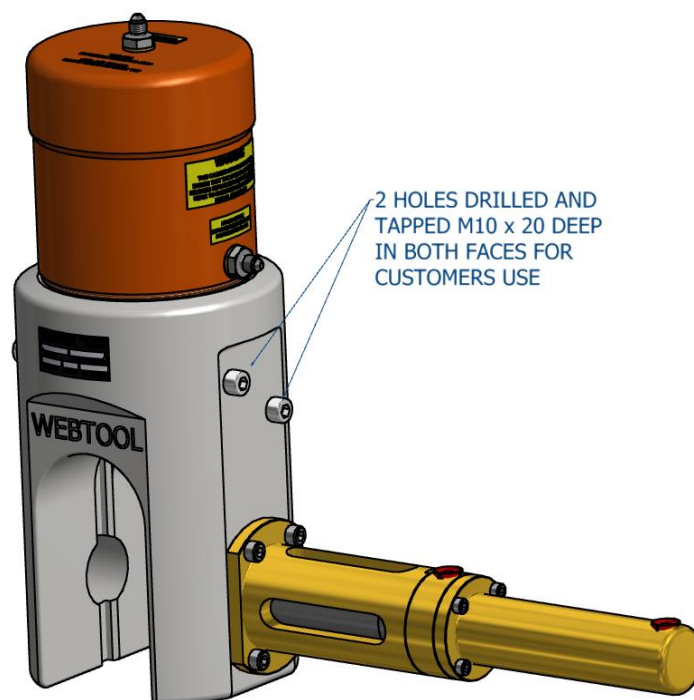
CAUTION – USE OF BLADES AND PARTS NOT APPROVED BY WEBTOOL MAY RESULT IN TOOL FAILURE AND CONSEQUENTIAL DAMAGE

2. CUTTING CAPACITY

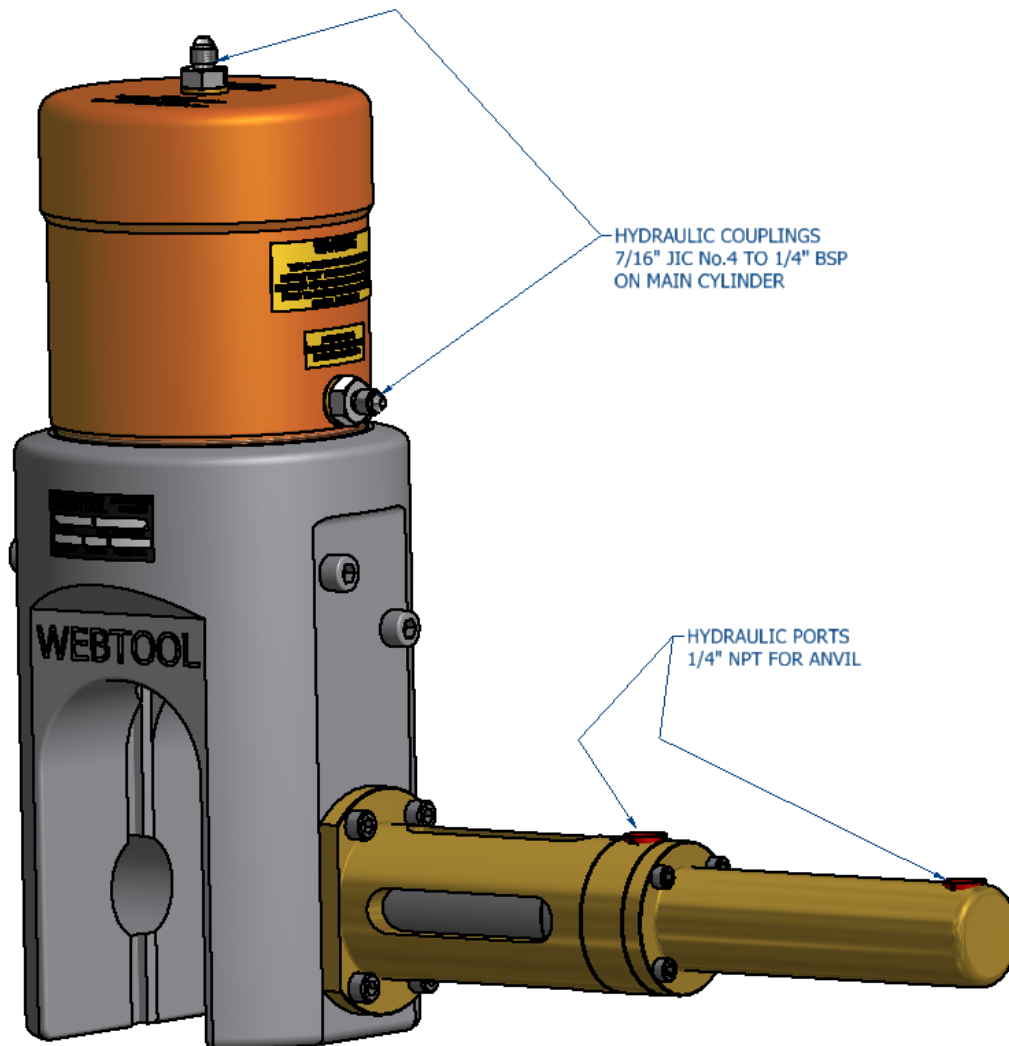
The cutter is primarily intended for use on steel wire rope, having a maximum tensile strength of 1770N/mm and will cut ropes up to 75mm diameter. It may be used on alternative materials, such as electrical power or communication cables, again up to a maximum of 75mm diameter. Where smaller diameters are to be cut, effort should be made to place the material centrally along the anvil to minimise any offset loading. This cutter is not intended for use on chain or solid steel bar.

3. INSTALLATION

Four tapped Holes, M10 x20mm deep, are provided in the tool body (see sketch) which can be used for any attachment necessary to mount the cutter. 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.



A hydraulic supply is required, ported as shown (see sketch). The maximum working pressures are shown in the table 1 below and pressure limiting valves must be fitted into the supply to limit the pressures to these levels.



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 46.5kg. TABLE 1.

Function	Working Pressure		Swept Volume	
	psi	bar	ml.	U.S. Gallon
Working Stroke	10,000	700	750	(0.197)
Return Stroke	2,750	190	490	(0.130)
Auxillary Stroke	2,750	190	80	(0.021)

Please note: For the main ram the max working pressure and max return stroke pressure is 700 bar

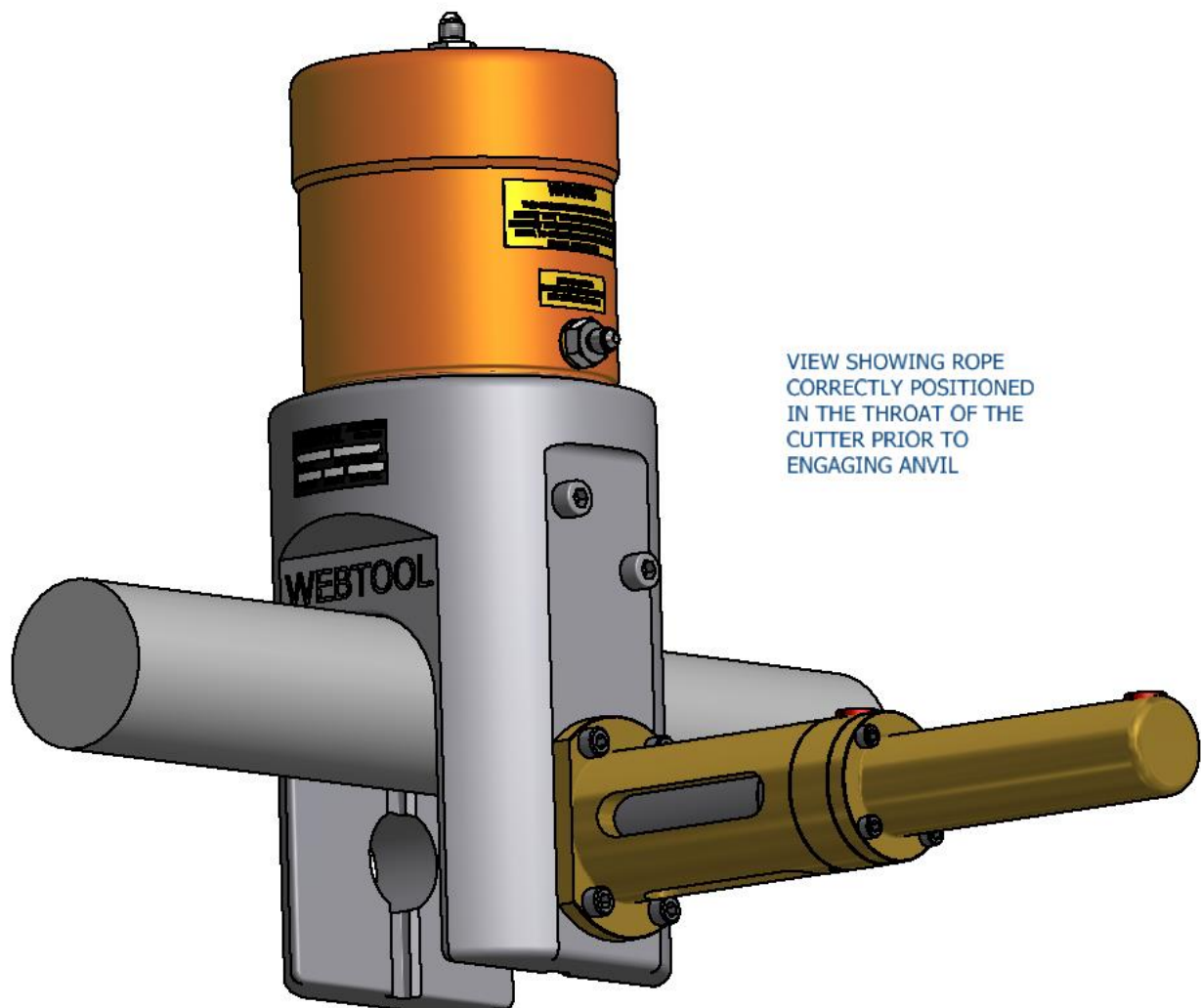
4. OPERATION

Before deployment, function test the tool and ensure that all operators are familiar with this procedure. ROV observation of the tool should be maintained at all time during operation.

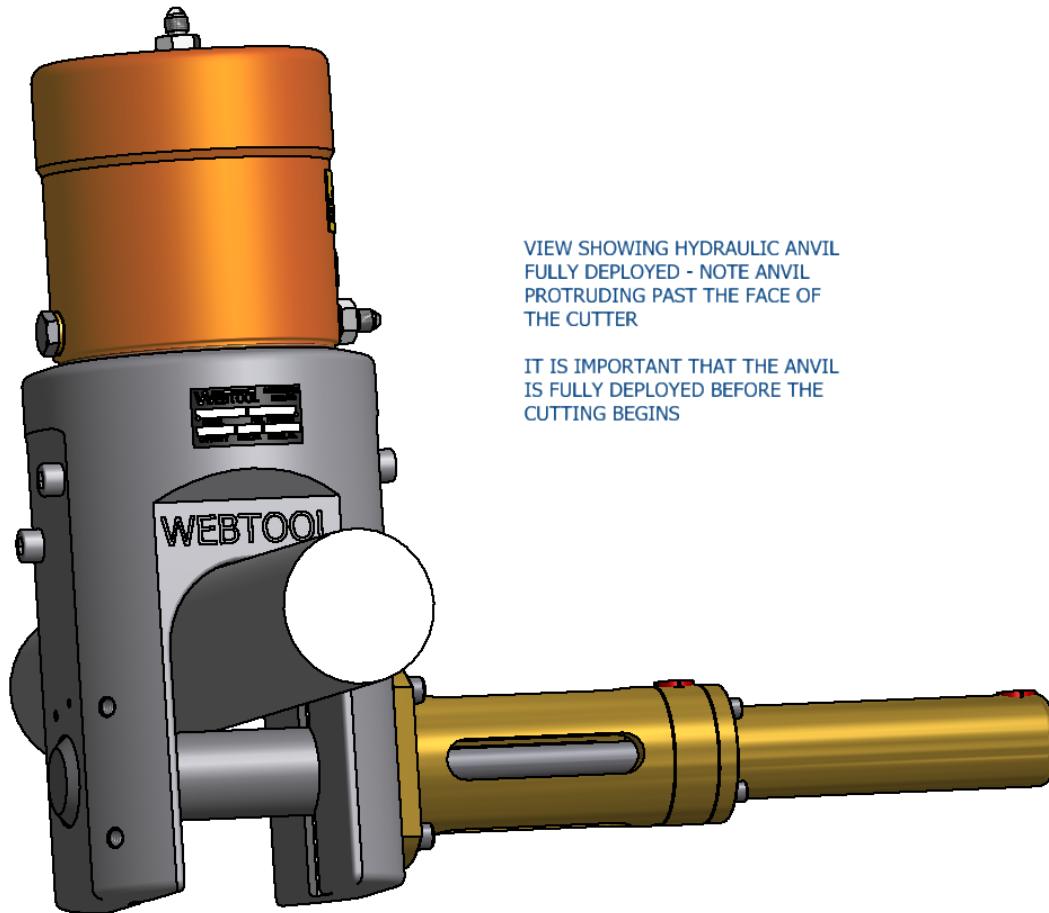
Prior to use, ensure no damage has occurred to the blade or anvil. Ensure the anvil is fully retracted.

DEPLOYMENT

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



Pressurize the anvil cylinder to fully extend the anvil, thus retaining the wire rope in the body of the tool. Check visually that the anvil is fully home, this is important to prevent damage to the tool (The end of the anvil should just be proud of the body of the tool on the opposite face to the anvil cylinder).



VIEW SHOWING HYDRAULIC ANVIL FULLY DEPLOYED - NOTE ANVIL PROTRUDING PAST THE FACE OF THE CUTTER

IT IS IMPORTANT THAT THE ANVIL IS FULLY DEPLOYED BEFORE THE CUTTING BEGINS

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

Once the wire 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 anvil cylinder 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 rope does not cut through completely on the first attempt, cycle the blade by retracting it slightly and then attempting the cut again.

If the rope 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 700 bar (10,000psi).

If the rope to be cut is still not severed after multiple cycles and at a pressure of 700 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, 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.

Seal Kit main power cylinder only	Part Number	995119	
Seal Kit anvil cylinder only	Part Number	995122	
Seal kit for main cylinder and anvil	Part number	995123	
Anvil	Part Number	WC6377	
Blade	Part Number	705009c	
Blade Retaining Pin	Part Number	030648	2 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) or an authorized distributor for servicing and testing.

If servicing is to be undertaken by the user, please see note on proof testing under SAFETY (Chapter 3), 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.

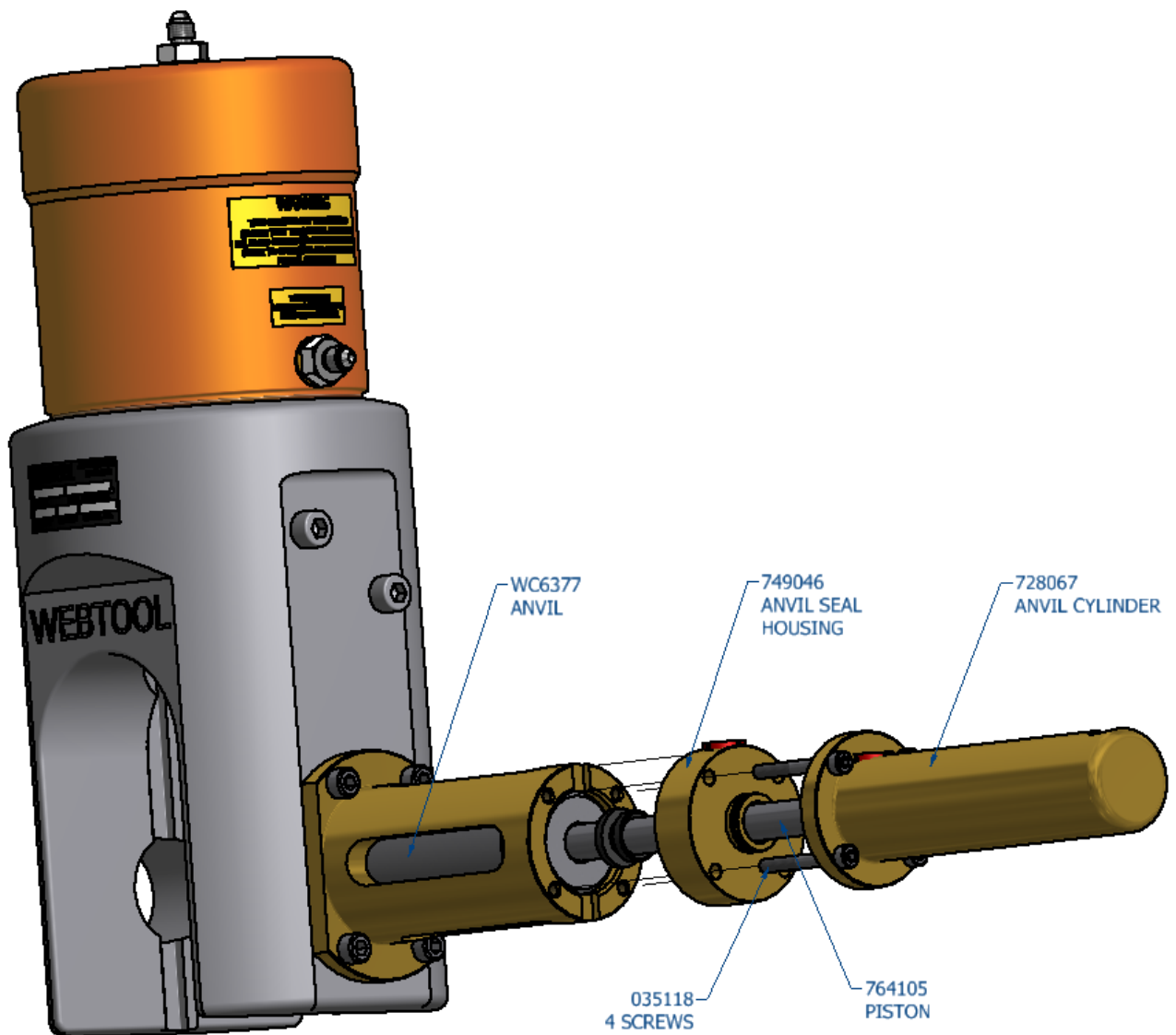
Please note that we coat the stainless steel cylinders with a titanium nitride coating to prevent galling, however, a suitable anti-galling paste should be used (we recommend Swagelok Silver Goop) on all stainless steel threads.

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

Loosen and remove the four screws 035118. The cylinder body 728067 will now pull free. The anvil WC6377 may now be unscrewed from the piston 764105. The piston may now be removed from the anvil seal housing 749046, all seals are now accessible. The anvil can now be removed. Re-assembly is the reverse of the above process.



8. REPLACEMENT OF THE CUTTING BLADE

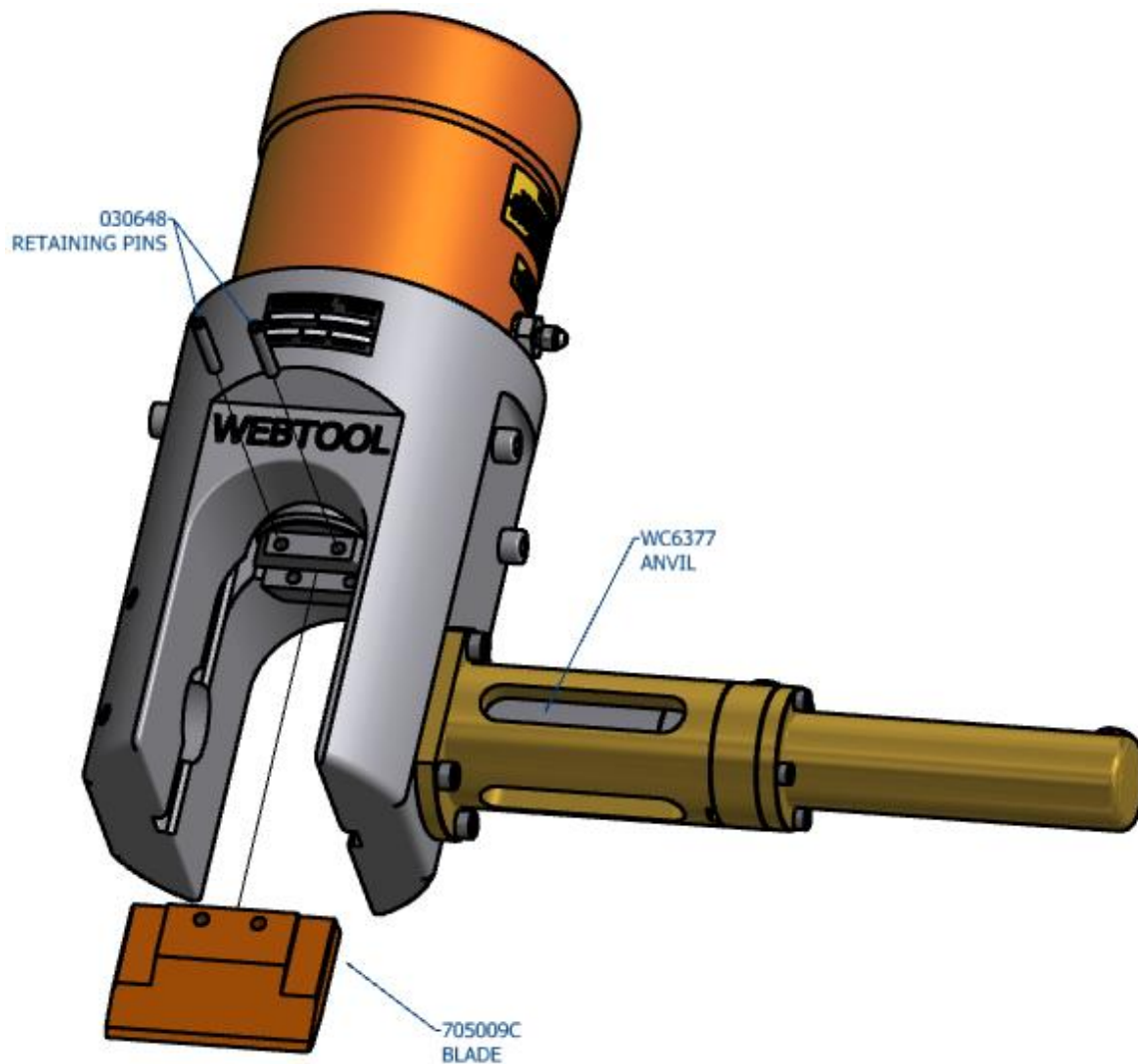
First withdraw the anvil as described above.

Pump out the main ram until the blade retaining pins 030632 can be seen in the opening of the cutter body.

Drift out the pins 030648 and slide the blade 705009c out of the tool.

Gloves may be worn to protect the hands when removing the blade from the tool

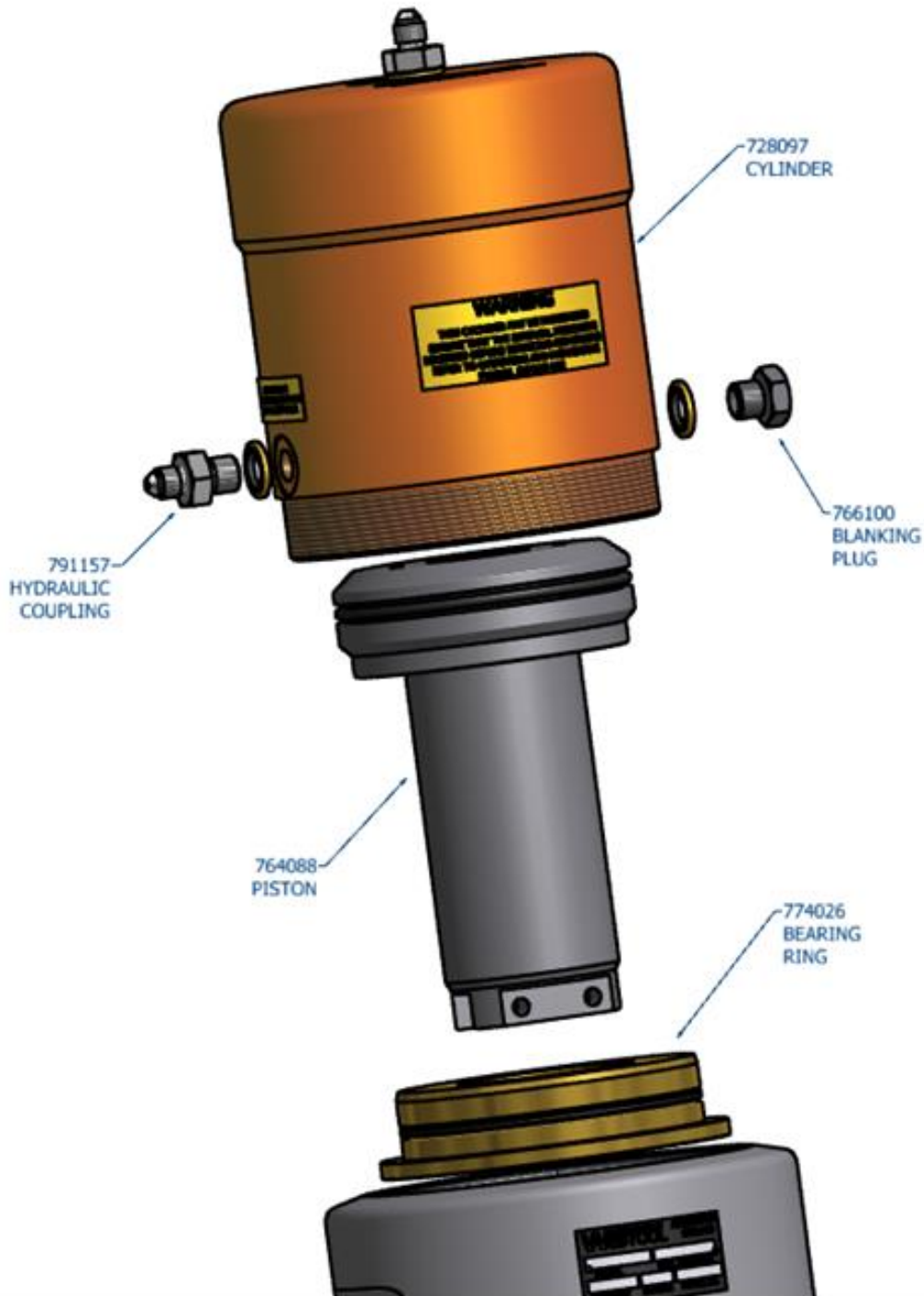
When refitting the new blade ensure the retaining pins are below the surface of the ram on both sides.



9. REMOVAL OF THE MAIN CYLINDER

If it is necessary to renew the hydraulic seals, first remove the blade as described above in section 8, the cylinder must then be removed from the tool. As an aid to this, the hydraulic port used by 791157 and blanking plug 766100 on the sides of the cylinder 728097 can be used.

The hydraulic fittings should first be removed, then a threaded bar is to be screwed into each port, apply a torque and not a bending moment when screwing the cylinder. The thread in the ports is 1/4" BSP. These can be used to loosen or re-tighten 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.



Also available as an optional extra

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



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

WCS75HDZ – Part List		980482
Part No.	Description	Qty.
710 302	Cutter body	1
728 097	Cylinder	1
764 088	Ram	1
774 026	Bearing ring	1
705 009c	Blade	1
766 100	Blanking plug	1
WC6377	Anvil	1
030 648	Blade retaining pin	2
728 067	Anvil cylinder	1
749 042	Anvil housing	1
764 105	Anvil piston	1
749 046	Anvil seal housing	1
31-75-0825	Socket cap screws M8	4
31-63-1025	Socket cap screw M10	4
035 118	Socket cap screw M6	4
752 342	Webtool nameplate	1
766 047	Plastic plug	2
791 157	Coupling , 7/16" JIC No.4 – ¼" BSP	2
752 573	Pressure warning label	1
752 571	Port pressure label – cutting	1
752 574	Port pressure label – return	1

Hydraulic Anvil Seal Kit		995122
Part No.	Description	Qty
025 801	Piston seal	1
025 802	Rod seal	1
025 569	Ram wiper	1
025 311	Seal O ring	1

Cutter Seal Kit		995119
Part No.	Description	Qty
025 570	Ram wiper	1
025 788	O seal	1
025 789	Anti extrusion ring	1
025 799	Piston seal	1
025 804	Ram seal	1
32-07-0035	Bonded seal	3

Hydraulic Anvil Kit		982117
Part No.	Description	Qty
728 067	Anvil cylinder	1
749 042	Anvil housing	1
764 105	Piston	1
WC6377	Anvil	1
749 046	Anvil seal housing	1
035 118	Socket cap screw M6	4
025 311	O ring seal	1
025 569	Rod wiper	1
025 801	Piston seal	1
025 802	Rod seal	1
31-75-0830	Socket cap screw M8	4
766 047	Plastic plug	2

WEBTOOLTM

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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