

# **WEBTOOL**

**CUTTING EDGE TECHNOLOGY**

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## **RCV75HD**

**WIRE ROPE CUTTER**

**PRODUCT CODE No. 980235 rev 5**

**INSTRUCTIONS FOR INSTALLATION,**

**OPERATION & MAINTENANCE**

**Issue 2. 12<sup>th</sup>. April 2012**

## 1. INSTALLATION

- 1.1** Eight tapped holes M10 x 20mm deep are provided in the tool body, 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.
- 1.2** Two hydraulic supplies are required, ported as shown. The maximum working pressures are shown in Table 1 and a pressure limiting valve should be fitted into the source to limit the pressures to these levels.

TABLE 1.

Function	Max. Working Main Ram cutting stroke		Max Working Pressure		Swept Volume	Port Tapping
	psi	bar	psi	bar		
Main ram working stroke.	11,000	760	3,040	210	890	1/4" BSP.
Main ram return stroke.	3,040	210	3,040	210	580	1/4" BSP.
Auxiliary cylinder Out-stroke. (To retract anvil)	-	-	3,040	210	35	1/4" BSP.
Auxiliary Cylinder In-stroke. (To reset anvil)	-	-	3,040	210	21	1/4" BSP.

## 2. CUTTING CAPACITY

The cutter is primarily intended for use on wire rope, having a maximum strength of 1960N/mm<sup>2</sup> up to 3" diameter. It may be used on alternative materials, such as electrical power or communication cables, again up to a maximum of 3" diameter. Where diameters smaller than 3" are to be cut, an effort should be made to place the material centrally along the anvil to minimise any offset loading.

We expect the RCV75HD to cut most 3" diameter ropes of 1960N/mm<sup>2</sup> grade at a maximum working input pressure of 210 bar. Please note: This cutter has been fitted with a relief valve in the main ram set to blow off at 760bar.

### **IMPORTANT**

Do not connect the cutter to an intensifier panel – the pressure intensifier is built into the cutter and the maximum pressure that should be applied to any connection during operation is 210 bar.

The auxiliary cylinders (anvil closing/opening) will work satisfactorily at pressures between 150 and 210 bar

If it is required to extend the recommended use of the cutter, for instance to cut solid bar members of steel, please refer to the manufacturer with full details of size and tensile strength. Failure to do so may result in damage to the anvil and blade

### 3. SAFETY

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

- 3.1** In all cases, where an operator is present, the safety aspects must be reviewed before the cutting operation is commenced.
- 3.2**
  - i.* Ensure that the tool, hoses and pump are in good condition and properly connected.
  - ii.* No attempt should be made to cut wire ropes or other material that is under tension.
  - iii.* Ensure that the operator is shielded from the cutting blade during the cutting operation. When cutting near the very end of the rope, individual cut wires can be expelled from the tool, please ensure that the operator is shielded from these.
- 3.3** Proof Tests.  
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.
  - i.* 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.
  - ii.* The tool should be guarded during the proof test operation.
  - iii.* The proof pressure should be applied gradually, until the maximum pressure is reached.
  - iv.* Under no circumstances should a pressure of more than 210 bar be applied through the intensifier
- 3.4** **IMPORTANT:** The blade **MUST** be retracted after the cut or any testing to ensure there is no remaining pressure in the main cylinder before the cutter is brought to the surface, put into storage or any maintenance is carried out.

### 4. OPERATION

- 4.1** Prior to use, the auxiliary cylinder outstroke should be operated to withdraw the anvil. This clears access for the cutter to be placed over the wire rope.
- 4.2** Place the cutter over the wire rope. Ensure that the wire rope is as far into the cutter as possible so that the anvil does not foul as it is reset.
- 4.3** Operate the auxiliary cylinder instroke to position the anvil fully home under the wire rope, the main ram cannot be activated until the anvil is within approx 3mm of its maximum position.
- 4.4** Operate the main ram down-stroke to sever the wire rope. When this is done, retract the main ram until it is fully home.
- 4.5** If a further cut is required, the above procedure should be repeated.  
**N.B.** Do not operate the auxiliary cylinders when the main ram is fully extended since this would damage the anvil.

- 4.6** The main ram cutting port requires a power pack with a minimum flow of between 2 and 15 litres /min, 210 bar max.
- 4.7** **IMPORTANT:** The blade **MUST** be retracted after the cut to ensure there is no remaining pressure in the main cylinder before the cutter is brought to the surface, put into storage or any maintenance is carried out.

## 5. AFTER USE

**IMPORTANT:** The blade **MUST** be retracted after the cut or testing to ensure there is no pressure in the cylinder before the cutter is put into storage or any maintenance is carried out. When the tool is retrieved, 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.

## 6. SERVICE

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, blade and wear plates 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	Part Number 995 077
Anvil	Part Number 761 286
Blade	Part Number 705 062C
Wear Plate Kit	Part Number 995 078

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

**WARNING:** The blade **MUST** be retracted after the cut or testing to ensure there is no remaining pressure in the main cylinder before any maintenance is carried out on the cutter.

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.

The factory set lock nut 020212 must not be altered, this ensures the anvil is fully across before the blade can be activated, altering this can cause excessive load to be placed on the legs of the cutter.

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 TiN 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.

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

## 7. REPLACEMENT OF ANVIL, BLADE, SEALS or FILTERS

Before attempting to remove any parts please refer to note 9.

To withdraw the anvil and/or blade, proceed as follows.

- i. To remove the anvil, first unscrew the M5 screws securing the pivot pins 761225, remove the pivot pins allowing the lever frame 713261 to swing free. Pulling the lever frame back will remove the anvil.
- ii. To remove the blade, first remove the 8 screws 035135 securing the wear plates, then remove the anvil as described above, pump out the main ram until the two  $\frac{1}{4}$ " diameter blade retaining pins 030632 can be seen. Remove the pins and slide the blade out of the tool.
- iii. Replacing the blade and/or anvil is the reverse of the above. When finally replacing the M5 socket set screw, smear some Loctite Threadlocker 222 on the last couple of threads. Screw down until the point engages with the groove in the pivot pin, then back off  $\frac{1}{4}$  turn. (The screw provides axial retention, but the pivot pin should be free to rotate).
- iv. To gain access to the piston seals etc, ensure there is no pressure in the cutter, remove collar nuts 020123, remove the banjo bolt connector 765317 and the bonded washers, also remove the banjo bolt 761288 this makes it easier to remove the cylinder. Remove the 2 grub screws in the top of the cylinder and fasten a bar across the top of the cylinder using the 2 tapped holes, unscrew the cylinder with this bar. Do not use stils ons to remove the cylinder as damage will occur.

By tapping out the bearing ring all seals will now be accessible.

To refit, first locate the bearing ring ensuring it is fully home before fitting the cylinder, failure to do so can damage the O ring seals and result in leaks on the return stroke. To refit the cylinder, first place the piston in the cutter and assemble the blade. Fit the bolt 761287 in the cylinder and secure to stop it falling into the assembled cylinder. Assemble the cylinder using the bar and 2 screws described above, ensure that the banjo bolt still comes through the top of the cylinder. Lay the cutter to its side and refit the bonded washers, banjo bolts and domed nuts. Remove the plug 766088 and fit a pin in the hole locating in the hole of the banjo bolt 761287 this will prevent it turning when tightening the domed nut. Refit the bonded washer and plug 766088.

To change the seal in the relief valve, gain access to the piston, unscrew the plug in the top of the piston there is a seal under the plug. Unscrew the relief valve another seal is positioned in the end.

Before refitting the relief valve and the plug, fill the cavity in the piston with oil to ensure there is no air lock present.

- v. To gain access to the Plunger seals, disconnect the lever frame as described above, remove spring cap 766085, ball and plunger gland 774019. Tap out the plunger bush, all seals are now accessible. When rebuilding before fitting the spring cap, with the auxiliary cylinder fully home check the distance from the plunger stem to the ball valve face, the stem should be protruding 1.5mm.

- vi. To gain access to the auxiliary seals, disconnect the lever frame as described above, remove the screws 035064, remove the piston, all seals are now accessible.

## 8. REMOVING THE INTENSIFIER AND CHANGING FILTERS

If the Intensifier needs to be removed for any reason, unscrew 4 nuts and remove captive plate, remove one of the 2 screws at the front and lift out the intensifier. When replacing the Intensifier ensure that the port stamped 'IN' is positioned towards the plunger side of the cutter and the port stamped 'R' at the auxiliary cylinder side. (see sketch)

The filters are positioned in the ports for the intensifier, note the orientation of the filters, the gauze in the filter in the 'IN' port faces down, the gauze in the filter in the 'R' port faces up.

## 9. PLEASE NOTE IF FITTED WITH RETURN SPRING

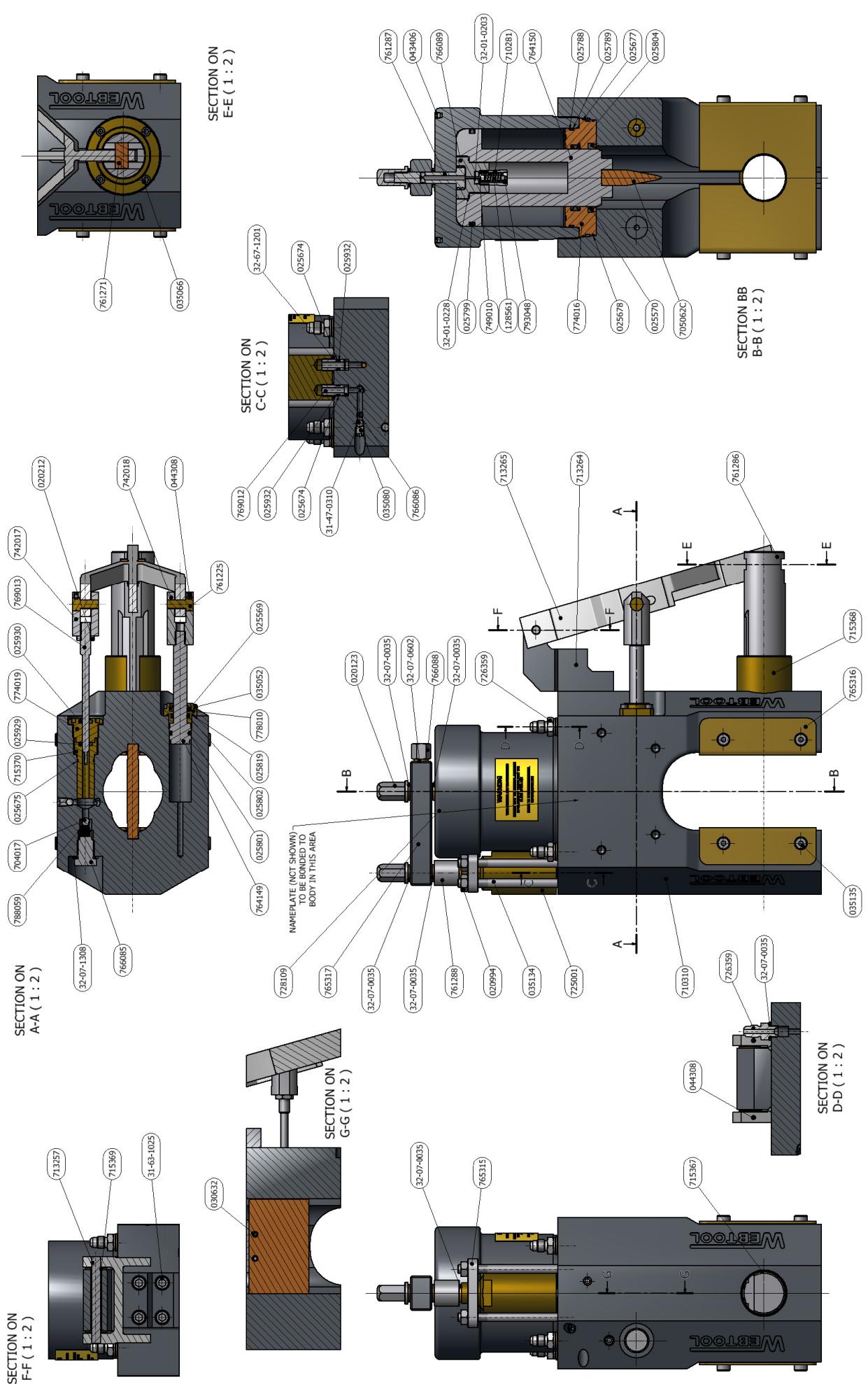
All RCV75HD cutters with a serial number lower than 41450 will have been fitted with a return spring and the old type (non stepped) bearing ring which uses 2 – 025677 'o' rings.

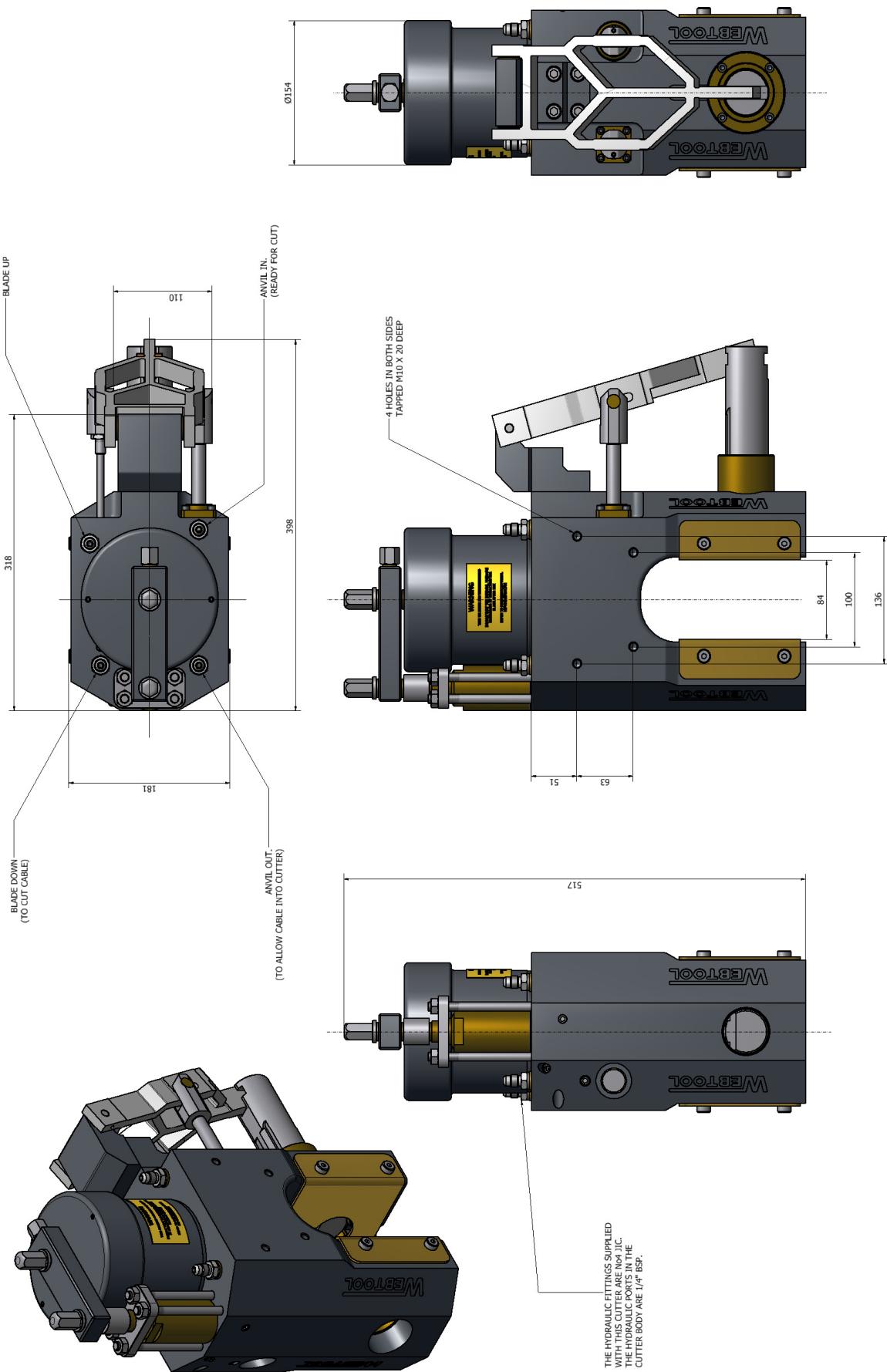
Please note that cutters produced after December 2009 (serial number 41450 onwards) will be fitted with a newer type stepped bearing ring which uses 'o' rings 025677 and 025678 – 1 off each.

For a cutter that's been fitted with a return spring, the procedures for accessing all parts are identical to that described in section 7 parts i to iii, except for removing the cylinder, to do this proceed as listed below.

To gain access to the piston seals etc, ensure there is no pressure in the cutter, remove collar nuts 020123, remove the banjo bolt connector 765317 and the dowty washers, also remove the banjo bolt 761288 this makes it easier to remove the cylinder. Remove the 2 grub screws in the top of the cylinder and fastening a bar across the top of the cylinder using the 2 tapped holes, unscrew the cylinder. By tapping out the bearing ring all seals will now be accessible.

To refit, first locate the bearing ring ensuring it is fully home before fitting the cylinder, failure to do so can damage the O ring seals and result in leaks on the return stroke. To refit the cylinder, first place the piston in the cutter and assemble the blade, support the blade so that it does not protrude into the throat of the cutter. Assemble the cylinder using the bar and 2 screws described above, ensure that the banjo bolt in the piston comes through the top of the cylinder. Fit the washer and banjo bolt to the intensifier, fit the banjo bolt connector without bonded seals and tighten the nut to pull the cylinder banjo bolt through the cylinder then remove the nut and connector and fit the 2 bonded washers, fit rest of washers and nuts and tighten.





# 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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