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WIRE ROPE CUTTER RCO40

PRODUCT CODE No. 980502

**INSTRUCTIONS FOR INSTALLATION,
OPERATION & MAINTENANCE**

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Description

The RCO40 is a double acting tool primarily intended for use on steel wire rope. This model of cutter will accommodate wire rope up to 38.1mm (1.5") diameter with maximum tensile strength of 1960N/mm. Individual wire strands **MUST** be above 1.5mm (1/16") diameter to be compatible with this tool. (Consult section 2, cutter capacity for the full range). It may be used on alternative materials, such as electrical power or communication cables, again up to a maximum of 38mm 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

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

2. CUTTING CAPACITY

The cutting range begins at 25.4mm (1") diameter wire rope with a maximum tensile strength of 2160N/mm up to 38mm diameter with maximum tensile strength of 1960N/mm. The tool may be used on alternative materials, such as electrical power or communication cables, again up to a maximum of 38.1mm (1.5") 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.

IMPORTANT: Please note this tool is capable of cutting wire rope with a minimum strand diameter of 1.5mm. For wire rope with smaller strands please consider the cutters vs grade table below. We also recommend that cutting is performed at a distance no less than 10X rope diameter from the end, otherwise premature blade failure may occur.

The table below represents both the capacity and known application data for Webtool steel wire rope cutters. Where tools are known to be capable of cutting larger or tougher ropes these are also indicated, but the manufacturer can only guarantee the cutting capacity stated in the operating manual. If you need information on superseded or obsolete models please contact us.

Please check our website regularly for new products. Note: For compacted ropes (i.e.Dyform) assume rope is one grade higher than actual.

Model	Part No.	Wire rope size, and corresponding rope grade (N/mm ²)											Updated on 17/09/14		
		1/2 "	3/4"	1"	1.25"	1.5"	1.75"	2"	2.5"	3"	4"	4.5"	5"	6"	7.5"
		13mm	19mm	25mm	32mm	38mm	45mm	51mm	64mm	76mm	102mm	115mm	127mm	153mm	190mm
WCS22D	980468	1960	1770												
WCOS22D	980493	1960	1770												
WCS38D	980487	2160	2160	2060	1960	1770									
WCOS38D (Obsolete)	980490	2160	2160	2060	1960	1770									
WCOS38DLP (Obsolete)	980488	2160	2160	2060	1960	1770									
RCO40	980502			2160	2060	1960									
RCO40LP	980503			2160	2060	1960									
WCS54D	980492				2160	1960	1960	1770							
WCOS54D	980485				2160	1960	1960	1770							
RCO54	980495				2160	1960	1960	1960							
WCS75D (Obsolete)	980480					1960	1770	1770	1770						
WCS75HD	980483					2160	2060	1960	1770	1770					
WCS75HDZ	980482					2160	2060	1960	1770	1770					
RCV75	980296					2160	2160	1960	1770	1770					
RCV75HD	980235					2160	2160	2160	2160	1960					
RCV115	980290					2160	2160	2160	2160	2160	1960	1770			
RCV135	980212							2160	2160	2160	1960	1770	1770		
RCV155	980218									2160	2160	2160	1960	1880	
RCV190	980230									2160	2160	2160	2160	1960	1880

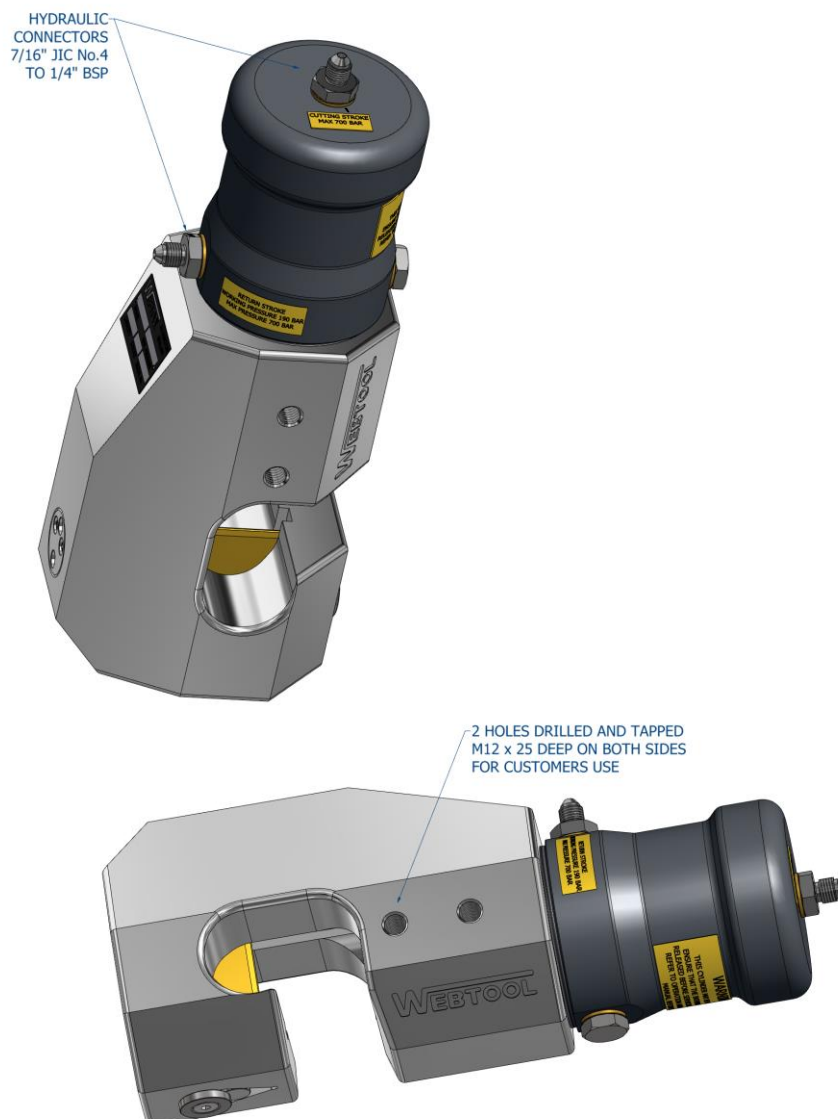
This chart is based on current design revision, and in all cases above 1770N/mm² the blade used must be the coated version denoted by a C suffix.

Rope manufacturers are constantly improving their products, increasing crush resistance, material properties and constructions, we reserve the right to update and amend this chart as required. Please check the latest version at www.allspeeds.co.uk/webtool .

There are design modifications in progress to uprate most of the range, these include physical changes, alternative blades and increased working pressure.

3. INSTALLATION

Four tapped holes, M12 x 25 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. 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 in air is - 16.8kg

The weight of the tool in water is – 14.7kg

TABLE 1:

Function	Working Pressure		Swept Volume	
	psi	bar	ml.	U.S. Gallon
Working Stroke	10,000	700	100	(0.027)
Return Stroke	2,750	190	50	(0.014)

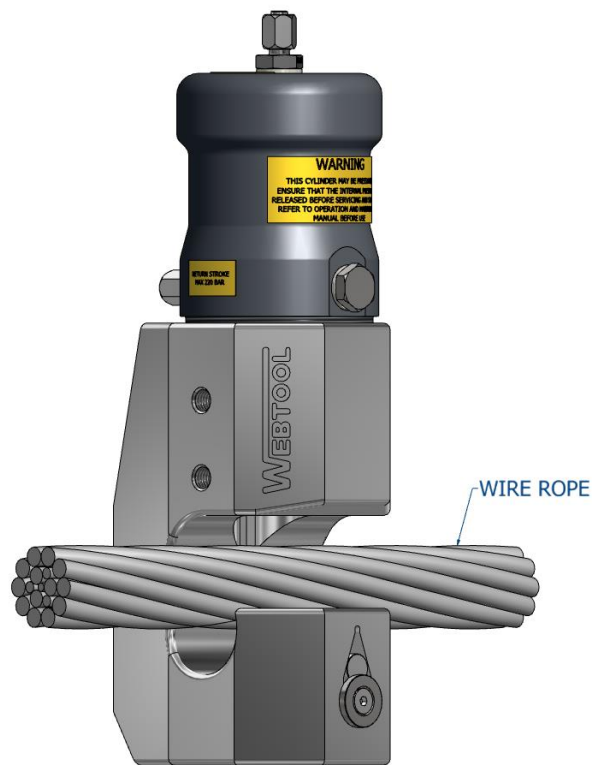
Please note: Max working pressure and max return stroke pressure is 700 bar

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.

DEPLOYMENT



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

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. Do not try to remove the anvil when the blade is fully extended. 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 remove 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	Part Number	995114
Anvil Kit	Part Number	761311
Blade	Part Number	705032C
Blade Retaining Pin	Part Number	030522

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 alloy steel cylinders with a Nitrotec coating to prevent galling, however, a suitable anti-galling paste should be used (we recommend Swagelok Silver Goop) on all stainless steel threads.

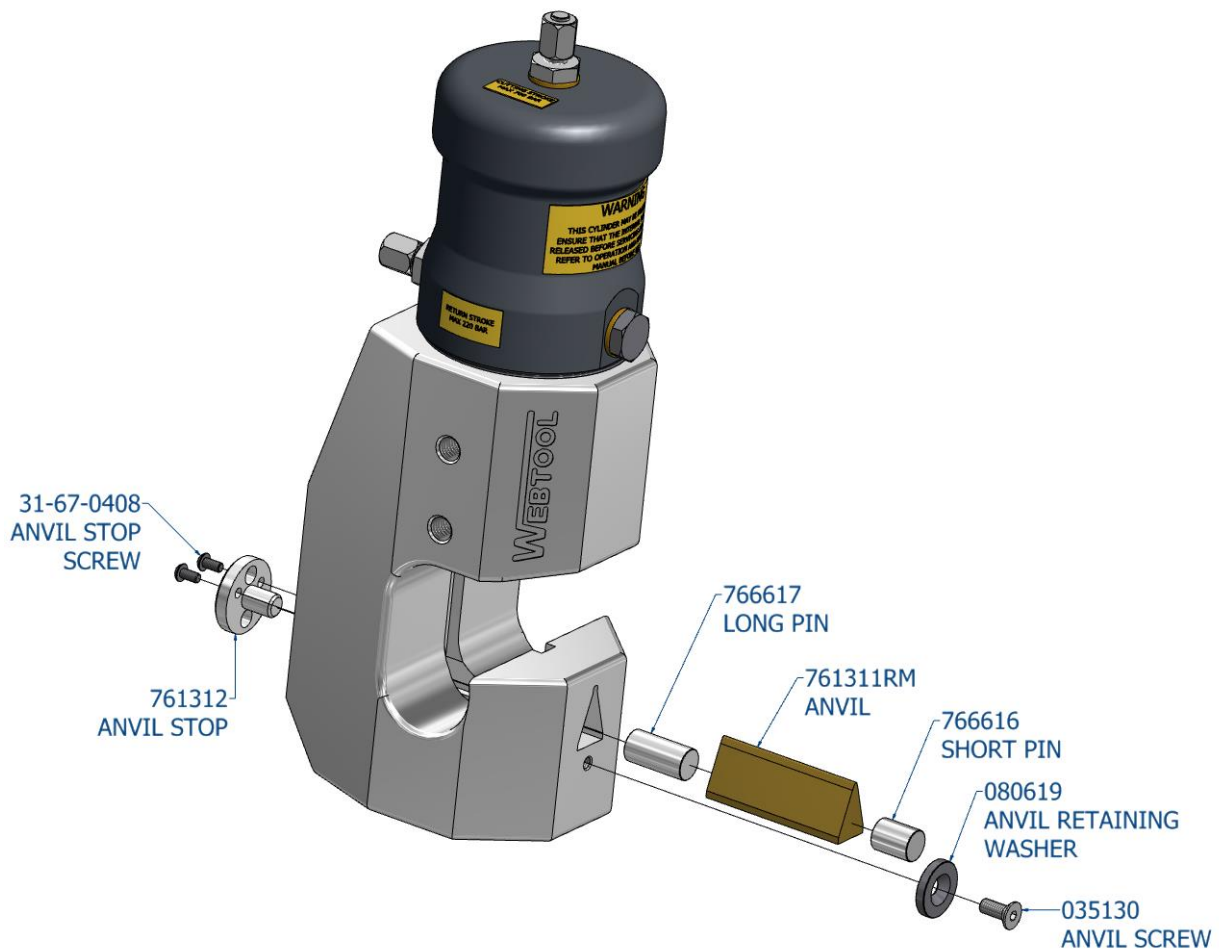
The cylinder is a pressure vessel and should not be drilled, machined, mutilated or damaged in any way for mounting purposes or to assist in its removal for servicing, any warranty could be invalidated by such actions. Also see section 9

The use of a Stillson wrench to remove the cylinder is prohibited as damage will occur.

7. REPLACEMENT OF THE ANVIL

Remove the screw (035130) in the front of the cutter and the washer (080619). This will allow the anvil (761311RM) and the two pins (766616 & 766617) to be removed from the cutter. If the anvil doesn't come out freely remove the stop (761312) at the back of the cutter held in by two screws (31-67-0408) and tap out the anvil.

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 pin (030522) can be seen in the hole in the cutter body.

Knock out the pin and slide the blade (705032C) out of the tool.

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

When refitting the new blade ensure the retaining pin is 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 ports used by 791157 and blanking plug (766100) on the sides of the cylinder (728119) can be used.

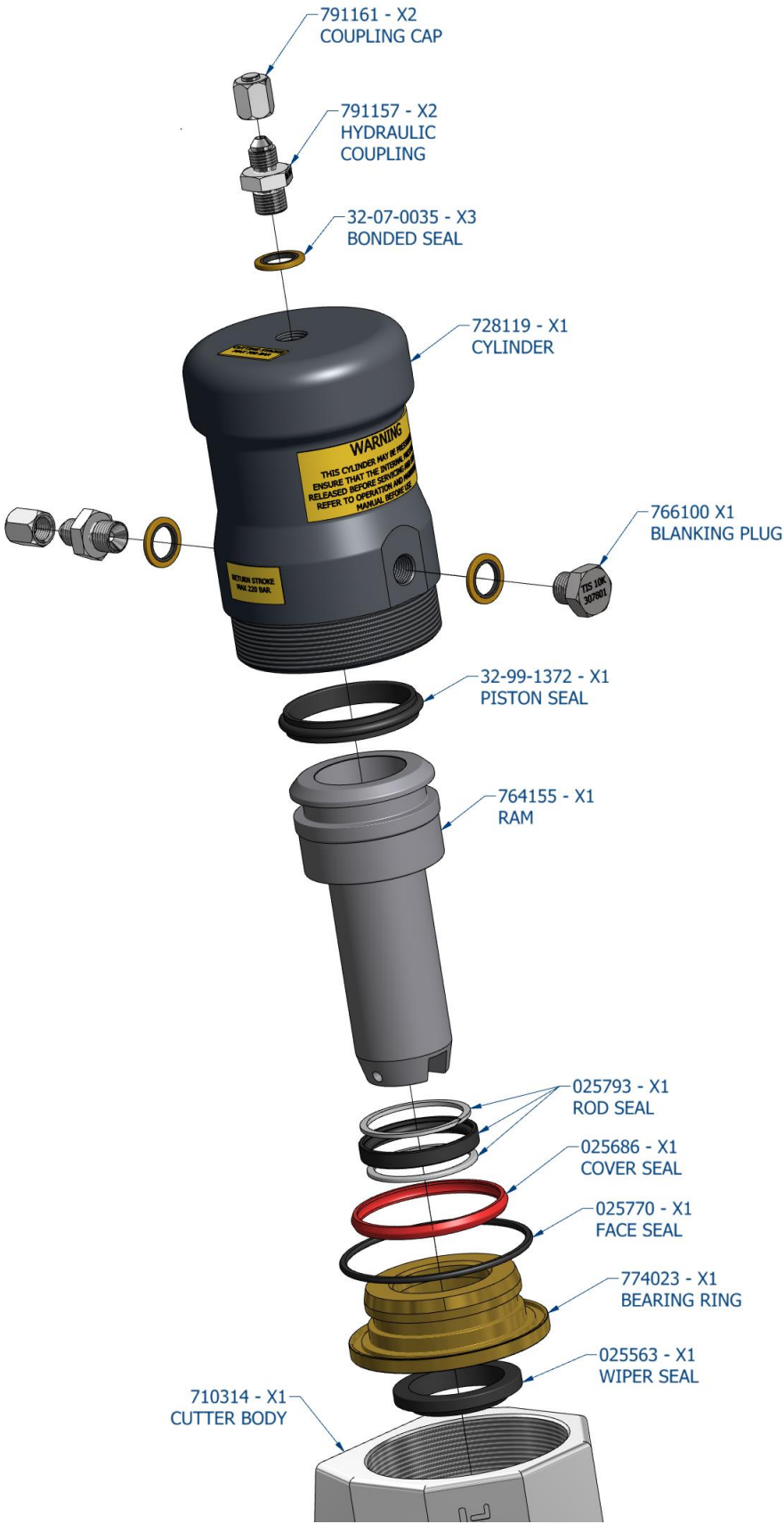
The hydraulic fittings should first be removed, then a threaded bar is to be screwed into each port, apply a torque and not a bending moment when screwing the cylinder. The threads in the ports are ¼" BSP. These can be used to loosen or re-tighten the cylinder.

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.

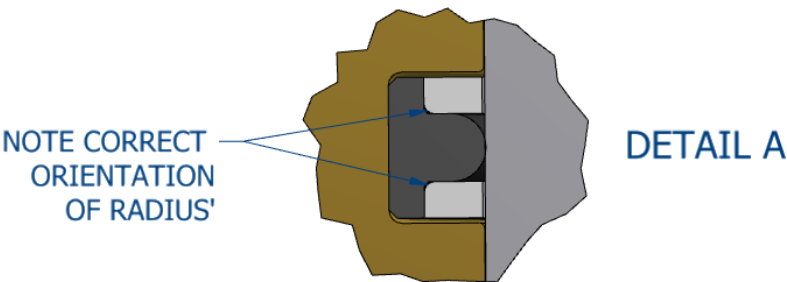
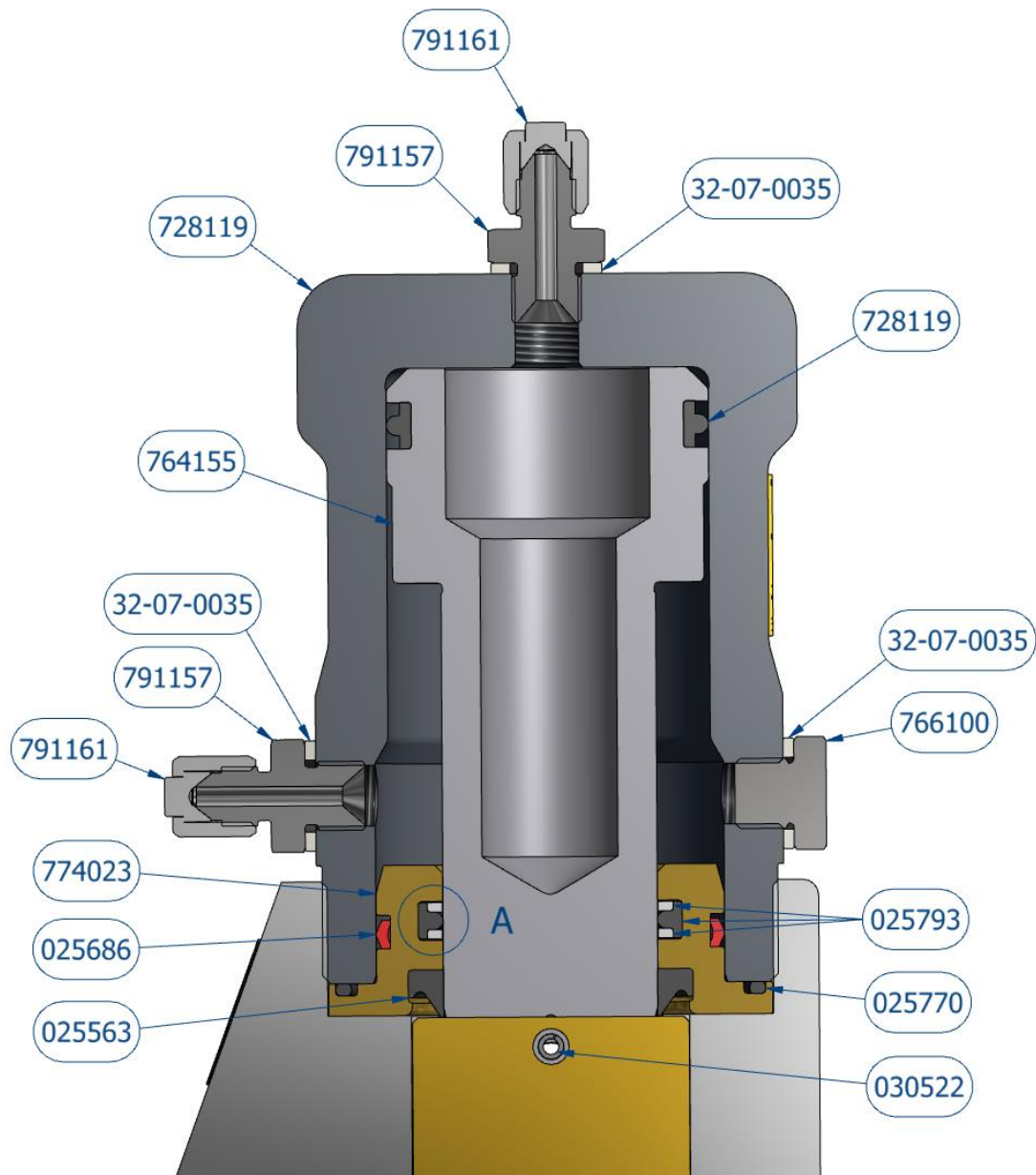
The use of a Stillson wrench to remove the cylinder is prohibited as damage will occur.

Please see over leaf for an exploded view of the internal components within the cylinder.

Exploded view of Internal Components



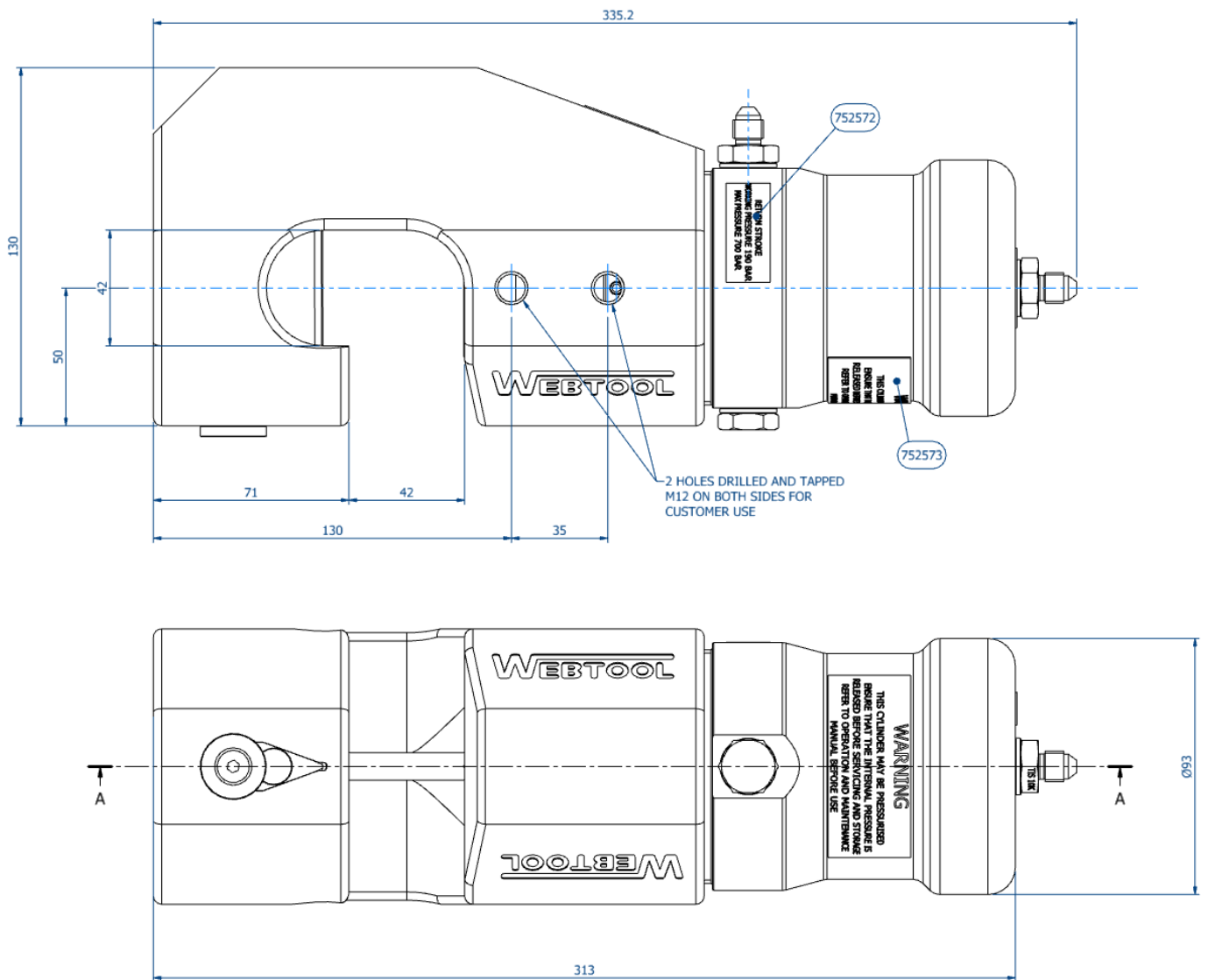
View of Internal Components in Assembled State

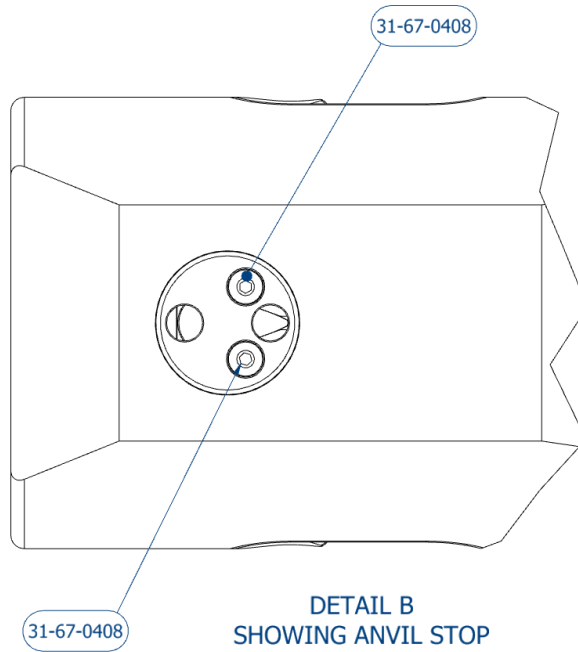
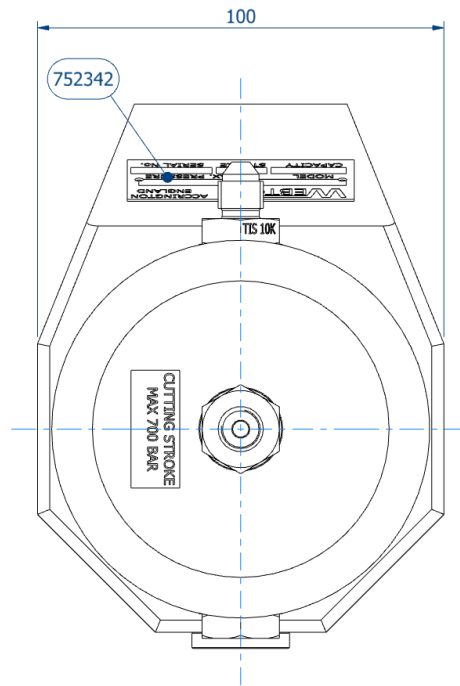


RCO40 – Part List		980502
Part No.	Description	Qty.
710 314	Cutter body	1
728 119	Cylinder	1
764 155	Ram	1
774 023	Bearing ring	1
705 032c	Blade	1
766 100	Blanking plug	1
761 311	Anvil Kit	1
030 522	Blade retaining pin	1
761 312	Anvil stop	1
31-67-0408	Anvil stop screw	2
035 130	Anvil screw	1
080 619	Anvil retaining washer	1
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
752 342	Webtool nameplate	1
791 161	Cap for coupling	2

Cutter Seal Kit		995114
Part No.	Description	Qty
025 563	Ram wiper	1
025 770	Face Seal	1
32-99-1372	Piston seal	1
025 793	Rod seal	1
32-07-0035	Bonded seal	3
025686	Cover Seal	1

Dimensions & Parts Identifier:





Also available as an optional extra for this tool is:-

Webtool handle kit - Part number 999023 an optional add on available for this cutter shown below:



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



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



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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