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**WCO22CL – DOUBLE ACTING PIPE CUTTER**

**PRODUCT CODE No. 980537**

**INSTRUCTIONS FOR INSTALLATION,  
OPERATION & MAINTENANCE**

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## Description

The WCO22CL is a double acting tool primarily intended for use on BOP Stack, EDP Stack & LRP Cutting Loops. The tool has the capacity to cut stainless hydraulic tubing within the cut loop up to Ø9.525 (3/8") with a 210 bar hydraulic supply and up to Ø20mm with a 700 bar supply.

It may be used on alternative materials such as electrical power cables, communication cables and flexible hoses up to Ø22mm.

### 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 cannot 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 material that is under tension without a full and thorough safety risk assessment being carried out prior to the operation.

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

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 cylinder, 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.

**\*\*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 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. The anvil is designed to withstand multiple cuts, but any excessively damaged anvil should be replaced. This procedure is 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 WCO22CL is a double acting tool primarily intended for use on BOP Stack, EDP Stack & LRP Cutting Loops. The tool has the capacity to cut stainless hydraulic tubing within the cut loop up to Ø9.525 (3/8") with a 210 bar hydraulic supply and up to Ø20mm with a 700 bar supply.

It may be used on alternative materials such as electrical power cables, communication cables and flexible hoses up to Ø22mm.

Where smaller diameters are to be cut, effort should be made to place the material centrally in the mouth to minimise any offset loading. This cutter is not intended for use on steel wire rope, chain or solid bar.

### 3. INSTALLATION

Four threaded M12 holes are machined in the tool body (see Figure 1) which can be used for any attachment necessary to mount the cutter.

The cylinder is a pressure vessel and must not be used as a mounting point.

The cylinder should not be drilled, machined, mutilated or damaged in any way. The manufacturer's warranty will be invalidated by such actions.

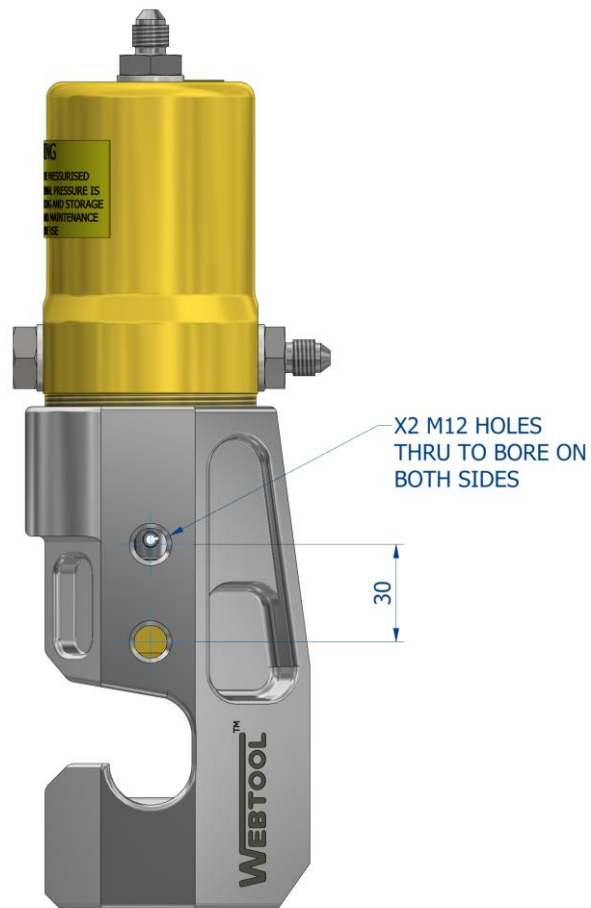


Figure 1 - View of mounting hole positions

The weight of the tool in air is **7.15kg**

The weight of the tool in water is **6.23kg**

A hydraulic supply is required, ported as shown (see Figure 2).

The maximum working pressures are shown in the table 1 below. Pressure limiting valves must be fitted into the supply to limit the maximum pressures to these levels.

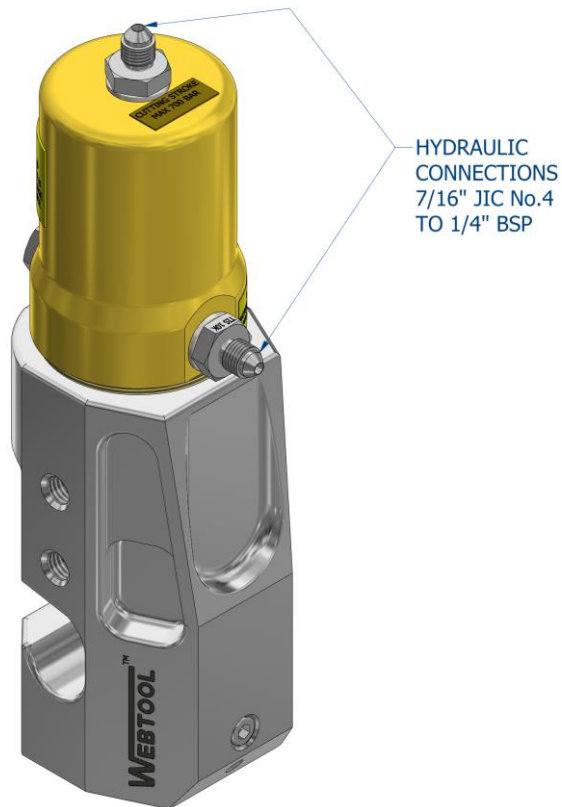


Figure 2 – View of hydraulic connections

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 cylinder, should the return to tank become blocked for any reason.

The oil supply must be clean and free from contamination. Good quality ISO32 grade hydraulic oil, e.g. Shell Tellus 32 or equivalent, is recommended.

Table 1:

Function	Max Working Pressure		Swept Volume	
	psi	bar	ml.	U.S. Gallon
Working Stroke	10,000	700	50	(0.013)
Return Stroke	3,000	210	40	(0.010)

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 times during operation.

Prior to use, ensure no extensive damage has occurred to the blade or anvil.

#### DEPLOYMENT

Place the tool over the hydraulic line.

Ensure that the tool is firmly in position over the line before the cut is started.

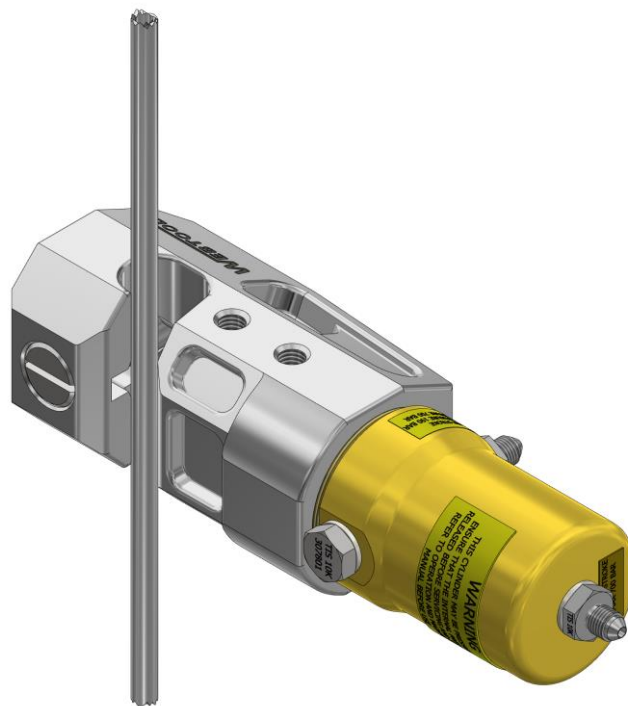


Figure 3 – Example positioning of tool on the cut loop hydraulic line

Operate the main ram power port to cut the line. Hold pressure until the line is seen to be ruptured.

Once the line is severed, pressurise the main ram retract port to withdraw the cutting blade.

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

## **TROUBLESHOOTING**

If the pressure in the line does not relieve, cycle the blade by retracting it and attempting the cut again.

If the line does not completely cut after multiple cycles of the blade, check the input pressure to the top of the cylinder. This can be a maximum of 700 bar (10,000psi).

If the line has still not severed after multiple cycles at a pressure of 700 bar, retract the blade and return the tool to the surface for inspection of the blade and anvil.

Ensure the pressure in the cylinder is relieved before the tool is returned to the surface.

Replace the blade and anvil 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, dried off and sprayed externally with 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 excessive damage.

A 'witness' line created by the blade edge and some slight indentation from the cut item is normally observed.

The blade edge should be smooth and free from any serrations.

The blade in this tool has a fine edge. Ensure the coating has not been compromised by the cutting operation and that the edge is still clean and sharp.

Note that a slight ripple to the blade edge is acceptable and should not cause problems under normal cutting conditions.

**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 components that require intermittent replacement are the anvil and blade. The life of these components depend on the frequency of use, materials being cut and corrosive conditions present during the cutting operation.

These components can be ordered on the following spares reference numbers, but in addition please quote the tool serial number.

<b>Seal Kit</b>	Part Number: <b>995140</b>
<b>Anvil</b>	Part Number: <b>761334</b>
<b>Blade</b>	Part Number: <b>705082C</b>
<b>Blade Retaining Pin</b>	Part Number: <b>030515</b>

We advise that servicing should be carried out by an authorised distributor or the manufacturer (Allspeeds Ltd).

If servicing is to be undertaken by the user, please see note on proof testing under SAFETY (Page 2), 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 including threads and sealing faces. Any damage or abrasive contamination could cause galling or seizing on re-assembly.
- Please note that we coat stainless steel cylinders with TiN to help prevent galling, however, a suitable anti-galling compound should be applied to all stainless steel threads (we recommend Swagelok Silver Goop).
- The cylinder is a pressure vessel and must not be used as a mounting point.
- The cylinder should not be drilled, machined, mutilated or damaged in any way. The manufacturer's warranty will be invalidated by such actions.
- The use of a Stilson wrench to remove the cylinder is prohibited.



## 7. REPLACEMENT OF THE ANVIL

Release the cap head screw (035066) in the back of the cutter, this will allow the anvil (761334) to be easily removed from the front of the tool.

If the anvil surface is badly marked it can be rotated to offer a new surface when further cuts are to be made.

A 'witness' line created by the blade edge and some slight indentation from the cut item, is normally observed.

Re-assembly is the reverse of the above process.

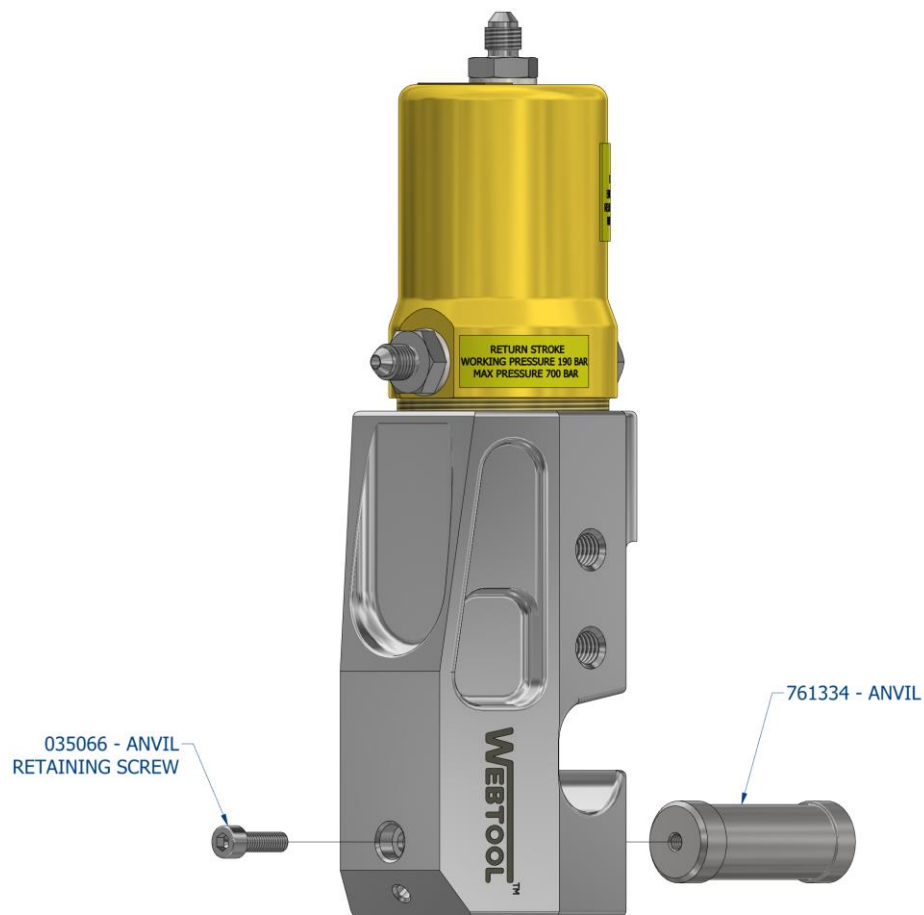


Figure 4 – View of anvil removal procedure and components involved

## 8. REPLACEMENT OF THE CUTTING BLADE

First remove the anvil as previously described.

Ensure the blade is fully retracted. The blade pin (030515) can be seen through the M12 hole closest to the cylinder.

Knock out the pin with a punch and slide the blade (705082C) through the base 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 fitted within the outside diameter of the ram on both sides.

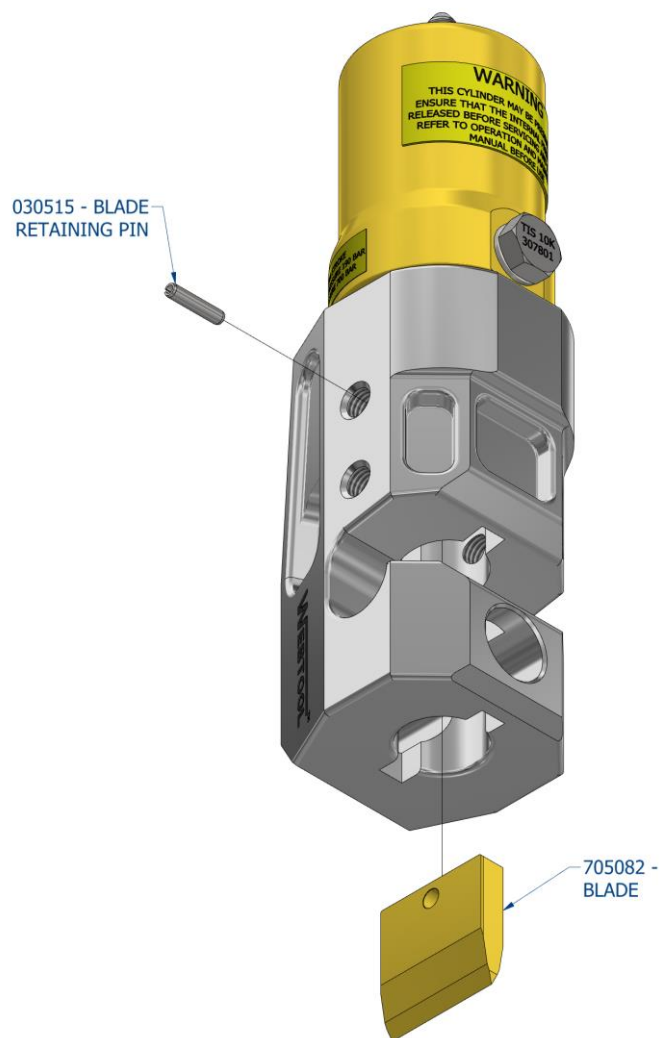


Figure 5 – View of blade removal procedure and components involved

## **9. REMOVAL OF THE MAIN CYLINDER**

If it is necessary to renew the hydraulic seals, first remove the blade as previously described in section 8. The cylinder must then be removed from the tool.

As an aid to this, the hydraulic ports for the connector (791157) and blanking plug (766084) on the sides of the cylinder (728100) can be used.

The hydraulic fittings should first be removed. Ensure the cylinder is free from any residual pressure prior to this operation. Screw a threaded bar into each port. Apply a torque and not a bending moment when screwing or unscrewing the cylinder.

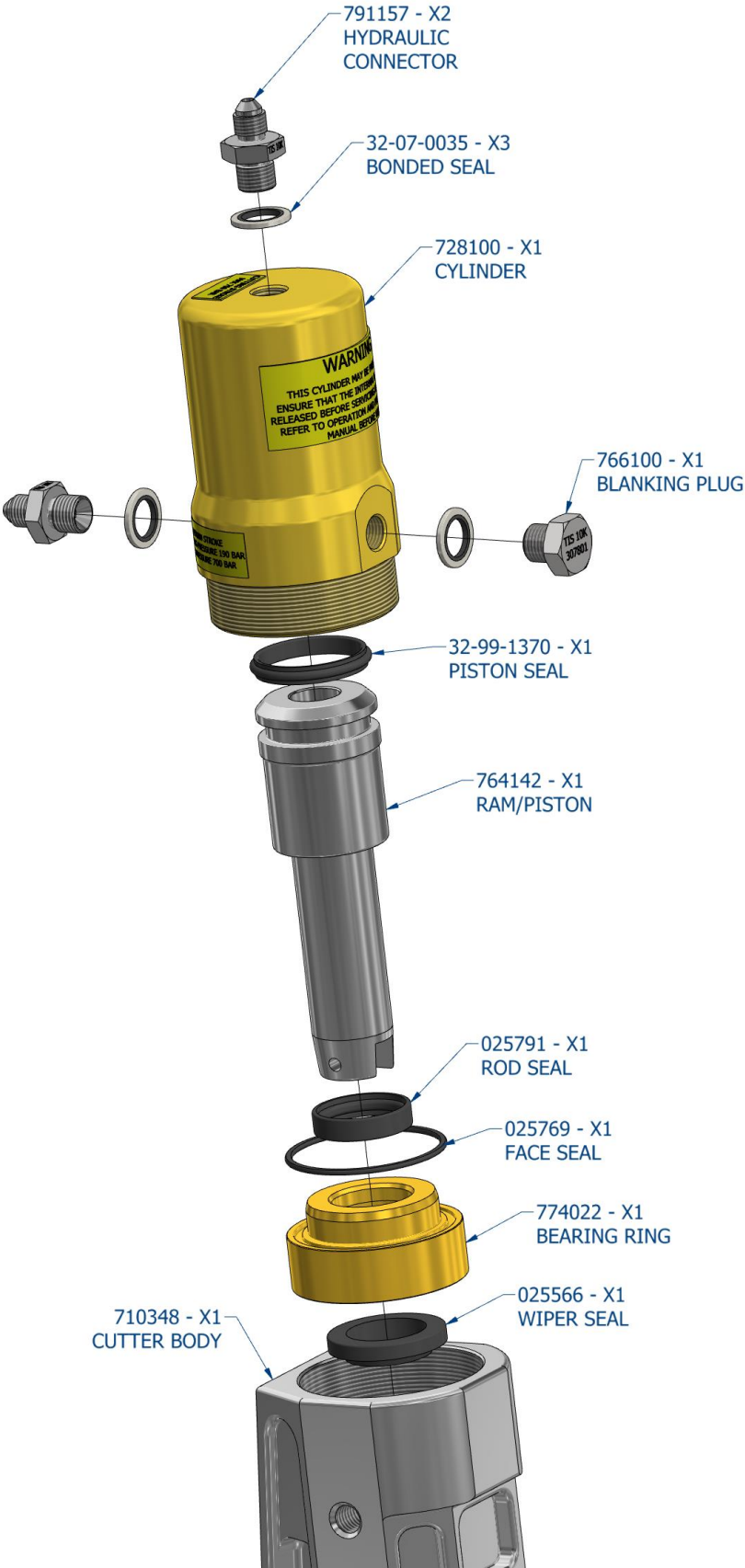
The cylinder port threads are ¼" BSPP.

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. The manufacturer's warranty will be invalidated by such actions.

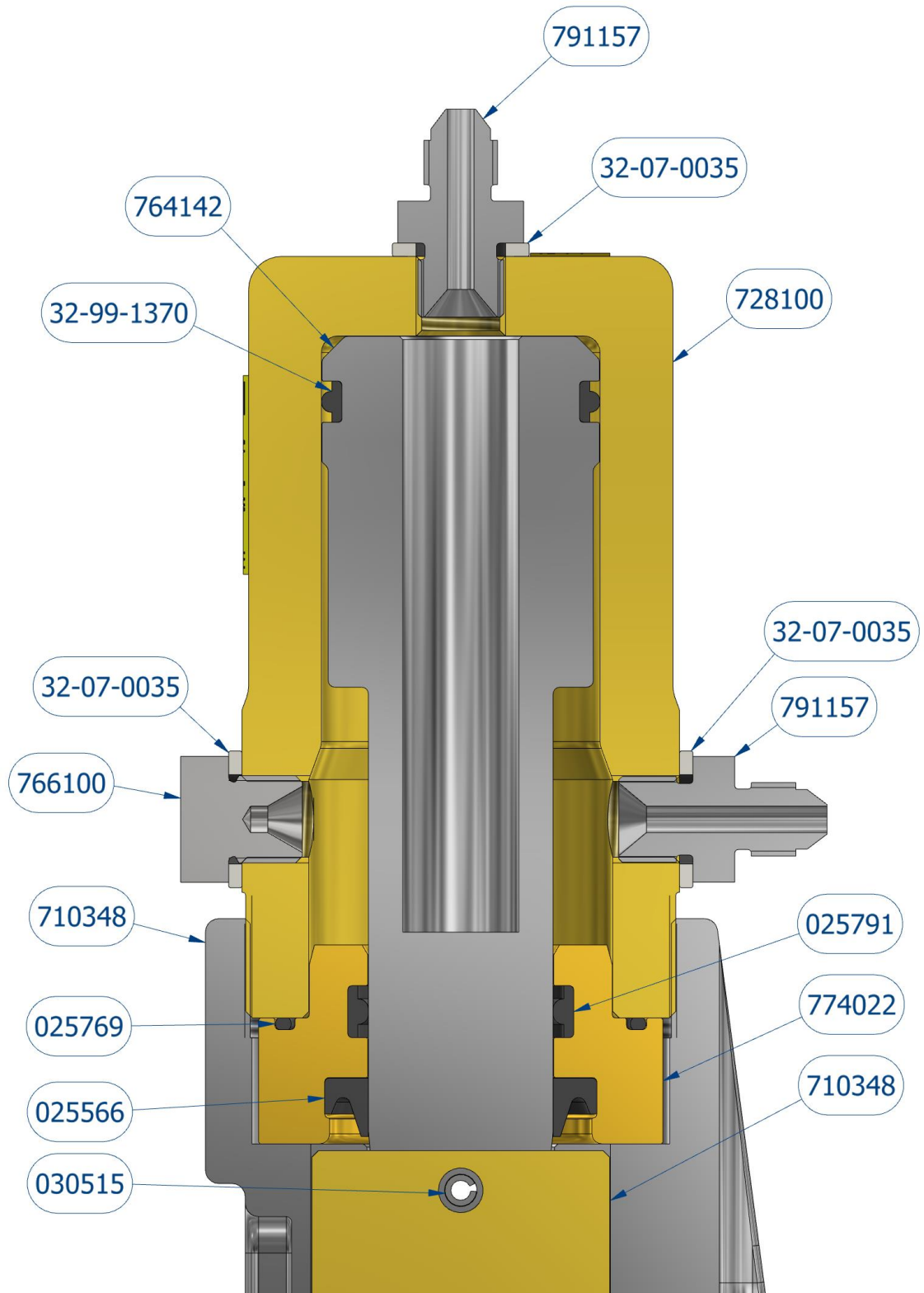
Do not use a Stilson wrench to remove the cylinder as damage will occur.

See overleaf for an exploded view of the cylinder assembly and its internal components.

**Exploded View of Internal components**



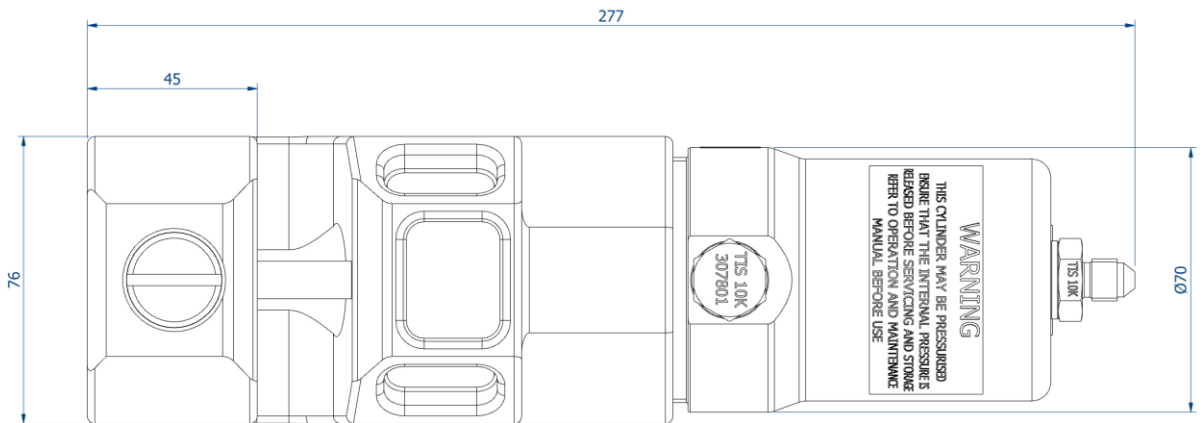
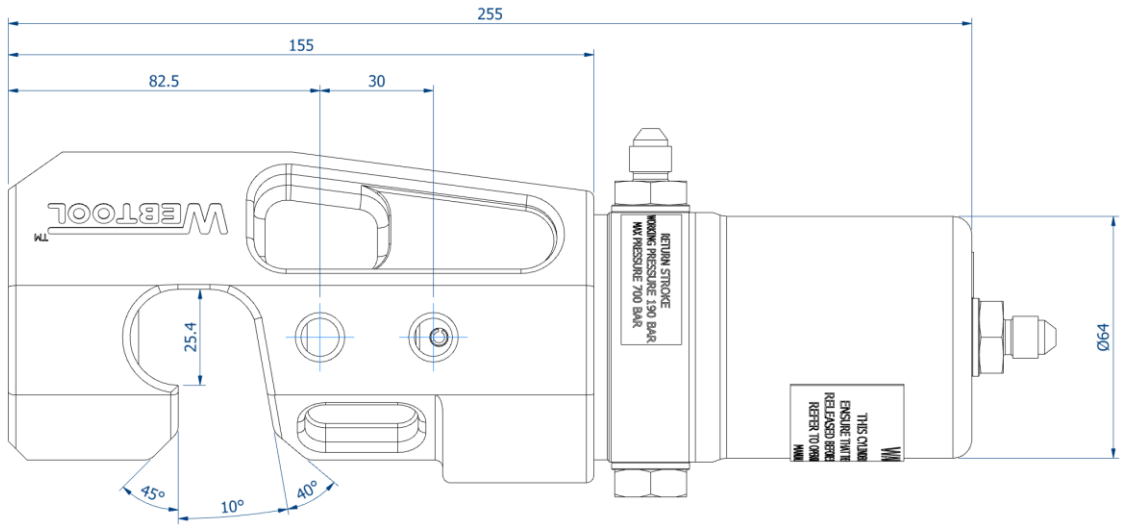
View of Internal Components in Assembled State



<b>WCOS22CL – Part List</b>		<b>980537</b>
<b>Part No.</b>	<b>Description</b>	<b>Quantity</b>
710348	Cutter Body	1
728100	Cylinder	1
764142	Ram	1
774022	Bearing Ring	1
705082C	Blade	1
766100	Blanking Plug	1
761334	Anvil	1
030515	Blade Retaining Pin	1
035066	Anvil Screw	1
752342	Webtool Nameplate	1
791157	Coupling , 7/16" JIC No.4 – ¼" BSP	2
752573	Pressure Warning Label	1
752571	Port Pressure Label – Cutting	1
752574	Port Pressure Label – Return	1

<b>Cutter Seal Kit</b>		<b>995140</b>
<b>Part No.</b>	<b>Description</b>	<b>Quantity</b>
025566	Ram Wiper	1
025769	O Seal	1
32-99-1370	Piston Seal	1
025791	Ram Seal	1
32-07-0035	Bonded seal	3

## General Tool Dimensions



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.





## **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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