



Allspeeds Ltd.
Royal Works, Atlas St
Clayton le Moors
Accrington
Lancashire
England
BB5 5LW

Tel +44 (0)1254 615100
www.allspeeds.co.uk

WIRE ROPE CUTTER RCV75HD

PRODUCT CODE No. 980235

**INSTRUCTIONS FOR INSTALLATION,
OPERATION & MAINTENANCE**

Revision 9 issue 3. Modification No. 20620 Date 18TH. Sept 2013

© Copyright Allspeeds Holdings Ltd.
This document must not be modified in any way.

Description

The RCV75HD 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. Please note that although the tool can be used sub-sea it isn't designed to be left sub-sea for long periods of time.

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

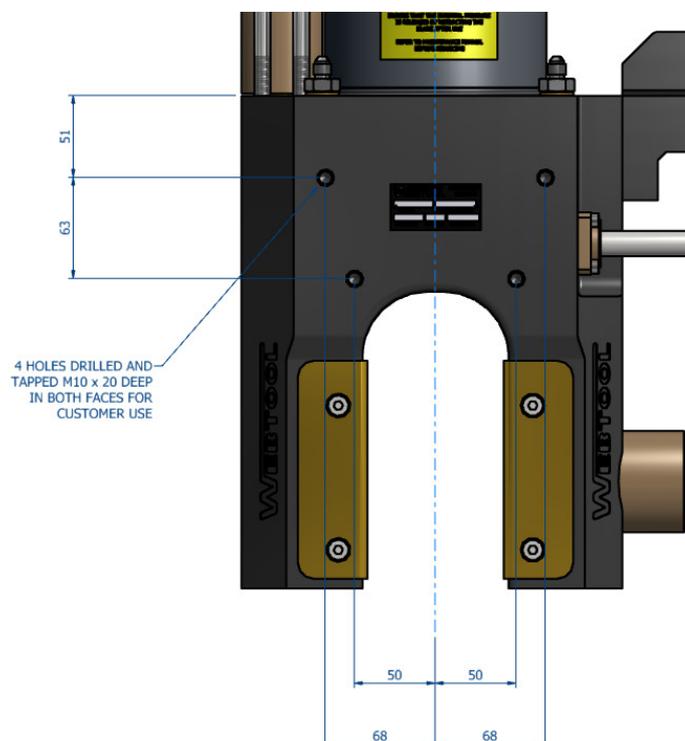
CAUTION – USE OF BLADES AND PARTS NOT APPROVED BY WEBTOOL MAY RESULT IN TOOL FAILURE AND CONSEQUENTIAL DAMAGE

2. CUTTING CAPACITY

The 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 on each face (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.

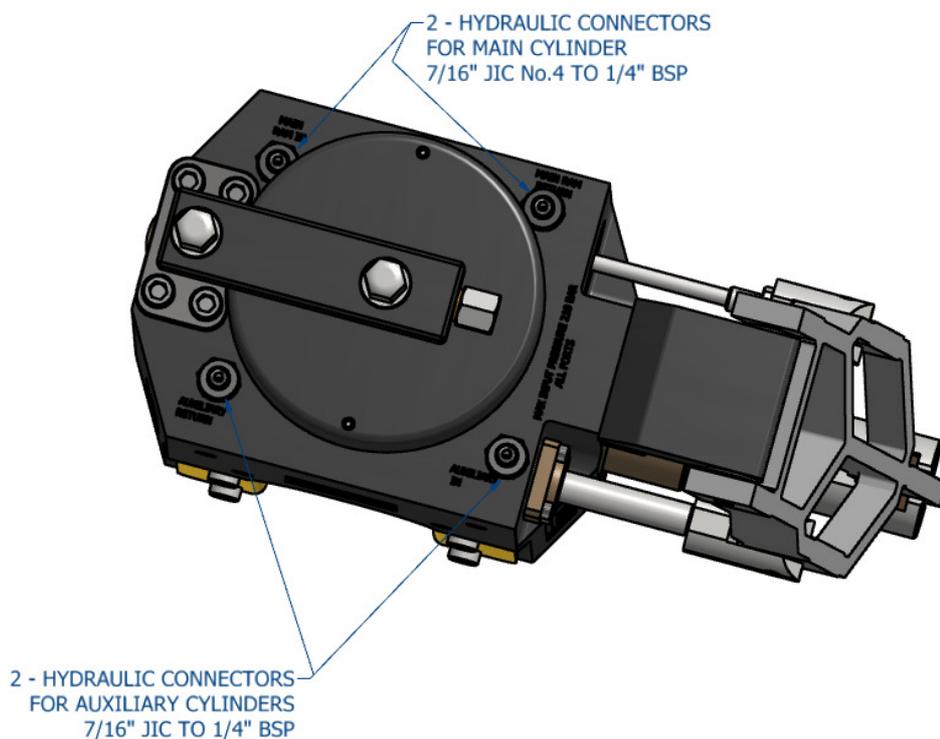


A hydraulic supply is required, ported as shown (see sketch).

IMPORTANT:- This tool should be connected to a valve pack or HPU with centre open valves, connection to centre closed valves could result in a dangerous condition or result in a dangerous tool breakage, this includes workshop testing and servicing.

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. The cutter has a relief valve built in which will restrict the cutting pressure to approx. 760 bar, the normal working pressure should be 700 bar.

Do not operate auxiliary cylinder (anvil) unless main cylinder is connected to an open centre or centre float valve.



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 43kg.

TABLE 1.

Function	Normal Pressure		Swept Volume	
	psi	bar	ml.	U.S. Gallon
Working Stroke	10,000	700	890	(0.197)
Return Stroke	3,040	210	580	(0.130)
Auxiliary Cylinders	3,040	210		

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.

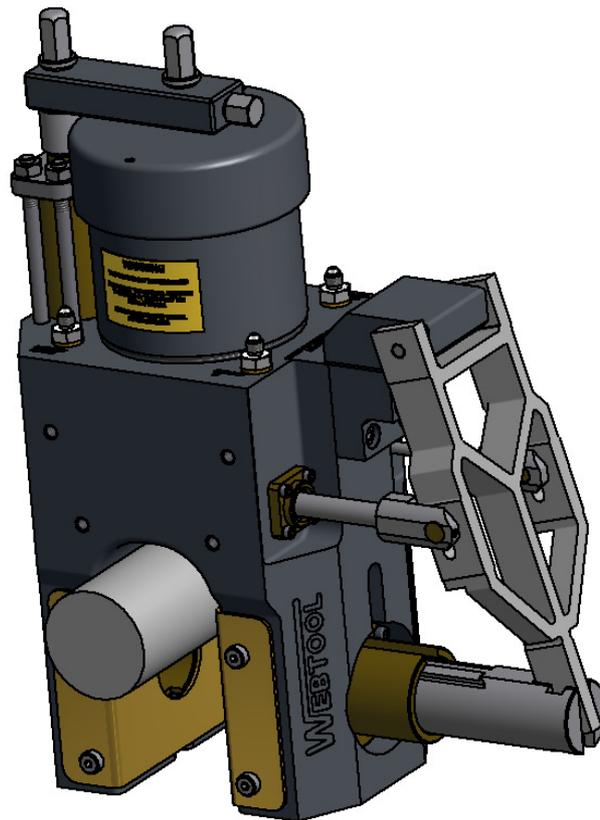
Prior to use, ensure no damage has occurred to the blade or anvil.

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

Hydraulically draw back the anvil. Place the cutter over the wire rope. Ensure that the wire rope is as far into the cutter as possible.



Activate the hydraulics to close the anvil. It is important that the anvil is fully home before cutting commences, this will prevent damage to the tool. To prevent the cutting operation from starting too early a valve has been built into the cutter, this will only allow the main cylinder to

be activated when the anvil has been correctly positioned.

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

Please note that this tool has a relief valve fitted which will blow off at approx. 750 bar, DO NOT leave the pressure on so that the relief valve is continually blowing off.

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 210 bar (3,000psi). Please note The tool is fitted with a 4:1 intensifier and a relief valve which will prevent the total pressure going above 700 bar.

If the rope to be cut is still not severed after multiple cycles and at a pressure of 210 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 BEFORE 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.

Please note that the tool is not designed to be left on the sea bed permanently or for long periods of time. 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.

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	Part Number	995077
Wear plate kit	Part Number	995078
Anvil	Part Number	761286
Blade	Part Number	705062c
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 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 i.e. threads and sealing faces, as any damage or abrasive contamination could cause galling or seizing on re-assembly.

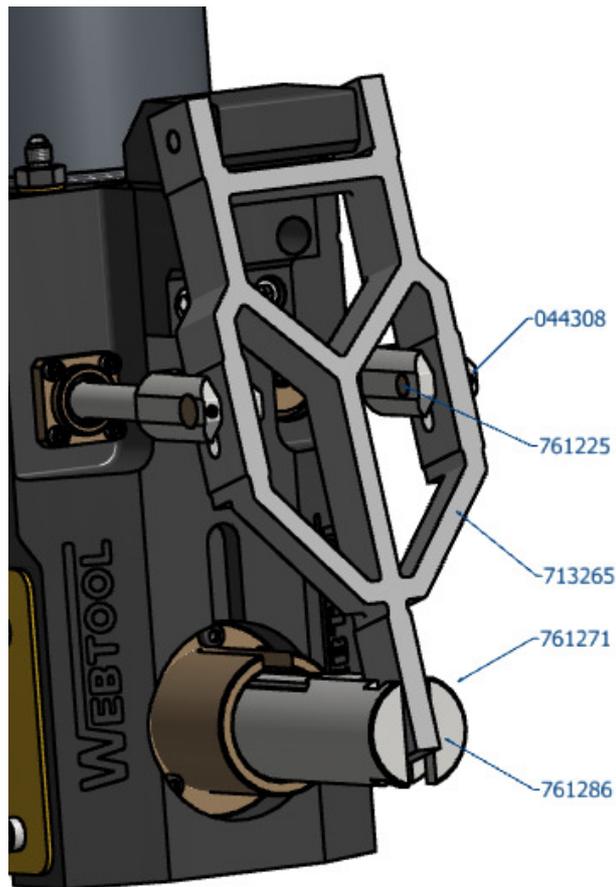
Please note that we coat the stainless steel cylinders with a titanium nitride coating to prevent galling, however, a suitable anti-galling paste should be used (we recommend Swagelok Silver Goop) on all stainless steel threads.

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 the two screws 044308 securing the pivot pins 761225, this allows the pivot pins to be removed, the lever frame is now free. Lift the lever frame 713265, this will draw out the anvil 761286 which is fixed to the lever frame with a pin 761271. When the pin becomes visible, remove it, the anvil can now be removed.

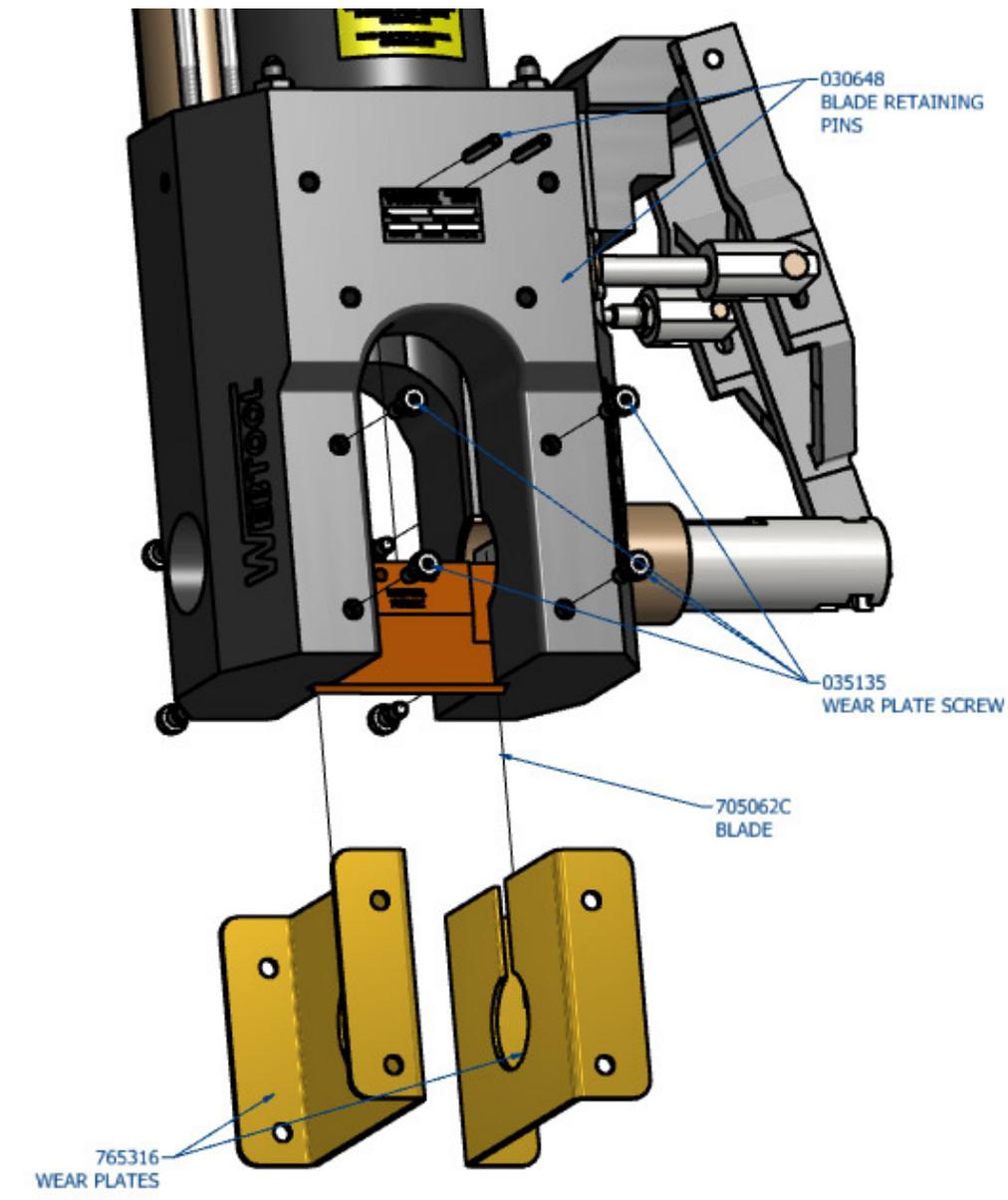


Re assembly is the reverse of the above. When assembling the two pivot pin screws smear some Loctite Threadlocker 222 on the last couple of threads, screw down until the point engages with the groove in the pivot pin then back off a quarter of a turn. The screw provides axial retention, but the pivot pin should be free to rotate.

8. REPLACEMENT OF THE CUTTING BLADE

First remove the 8 screws 035135 securing the two wear plates 765316, then remove the anvil as described in section 7. Pump out the main ram until the two blade retaining pins 030648 can be seen, knock out the pins and slide out the blade.

Replacing the blade is the reverse of the operation described above.

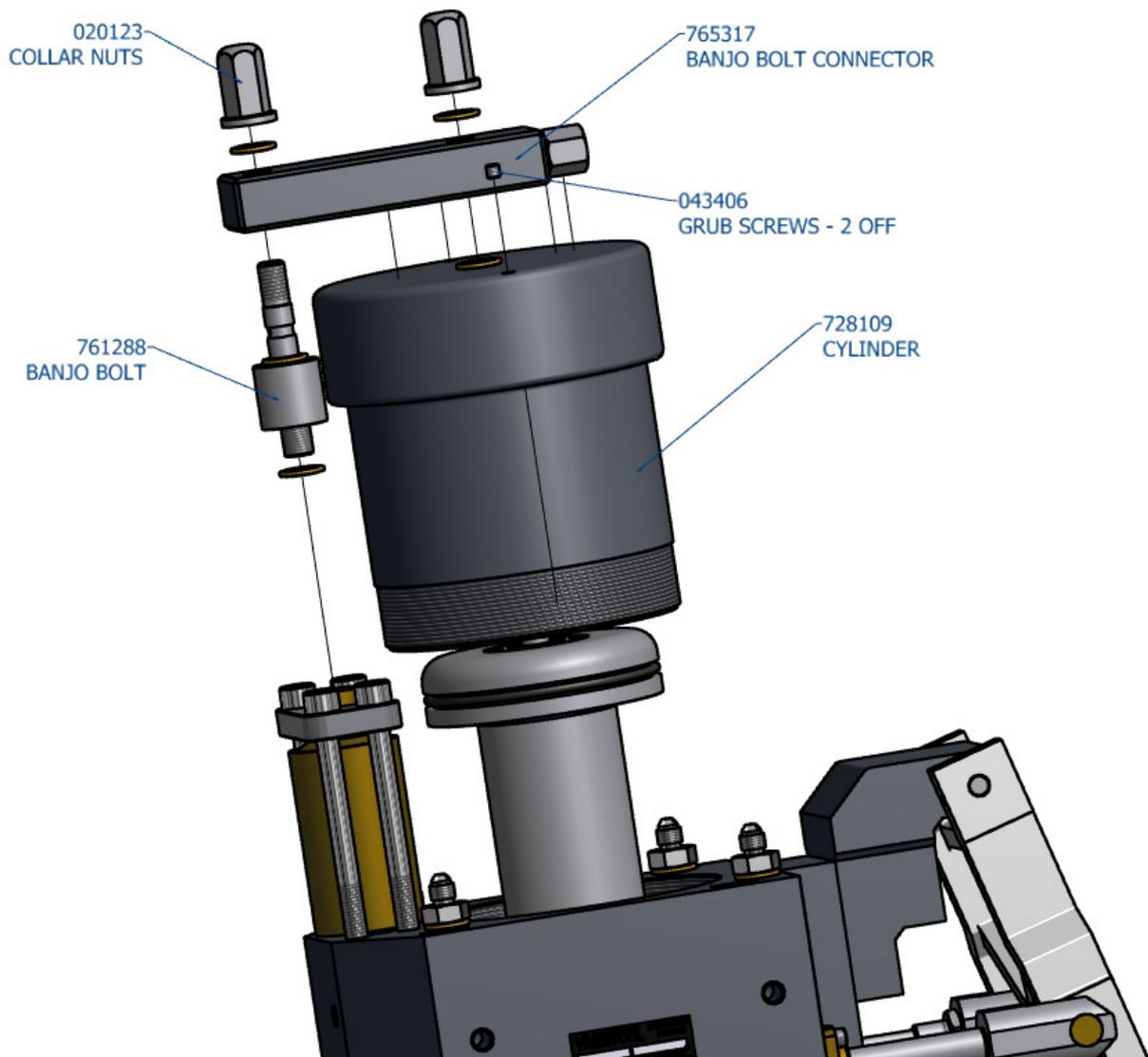


9. REMOVAL OF THE MAIN CYLINDER

To remove the cylinder, ensure there is no pressure in the cylinder, remove the collar nuts 020123, remove the banjo bolt connector 765317 with the bonded washers, also the banjo bolt 761288 this makes it easier to remove the cylinder. Remove the two grub screws in the top of the cylinder and fasten a bar across using the two tapped holes, the bar must be fastened in such a way that there is a handle at either side of the cylinder, the cylinder must be unscrewed from both sides and not with a force just applied to one side, unscrew the cylinder with this bar. Do not use stilsons to remove the cylinder as damage will occur.

Assembly is the reverse of above.

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



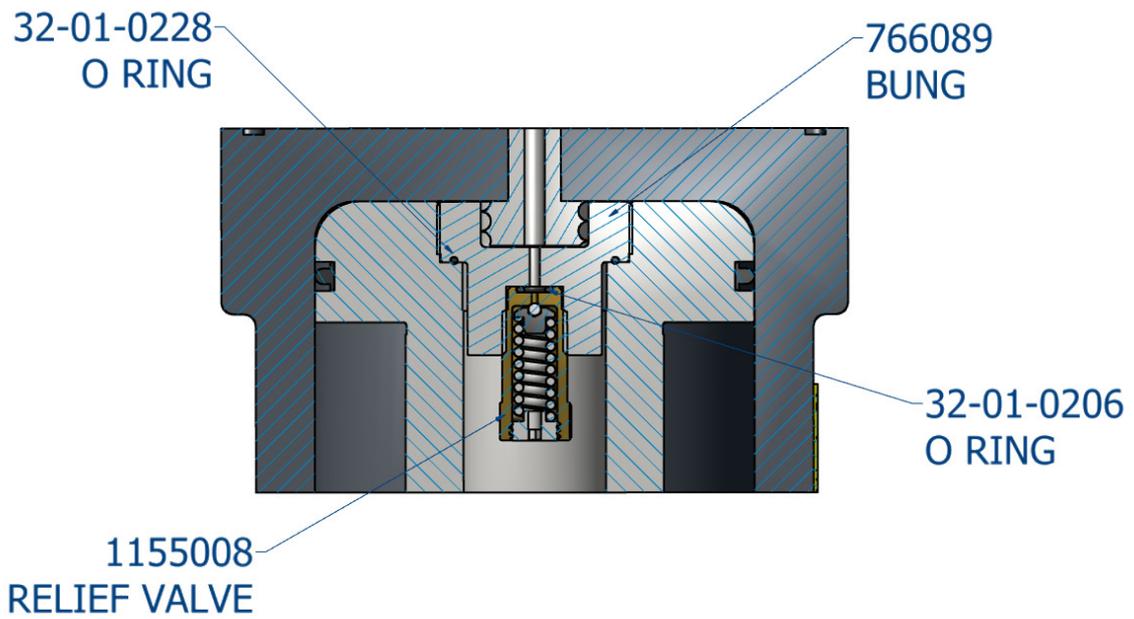
10. CHANGING THE SEALS

To remove the piston, first detach the blade from the piston by removing the two blade retaining pins. Remove the cylinder as described above, this will allow the piston to be removed and the piston seal becomes accessible.

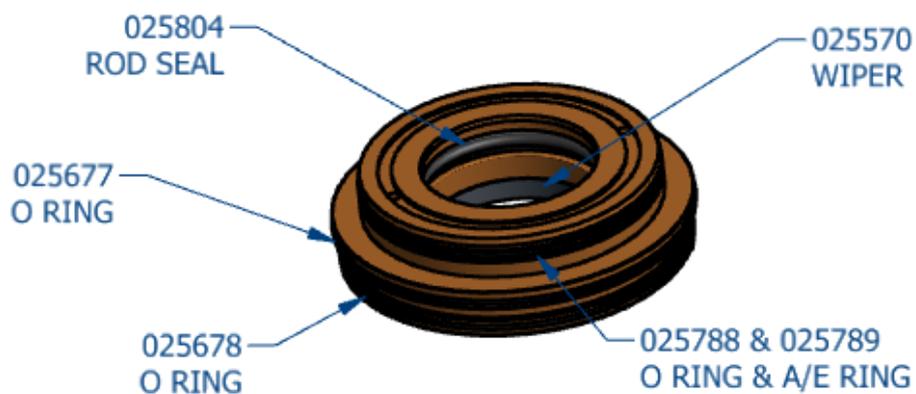
In the top of the piston is a bung which carries a relief valve, remove the bung using the two small holes in the top, the relief valve is attached underneath, remove the relief valve with a 17mm a/f socket without altering its setting, the O Ring is located inside.

An O Ring seals the underside of the bung

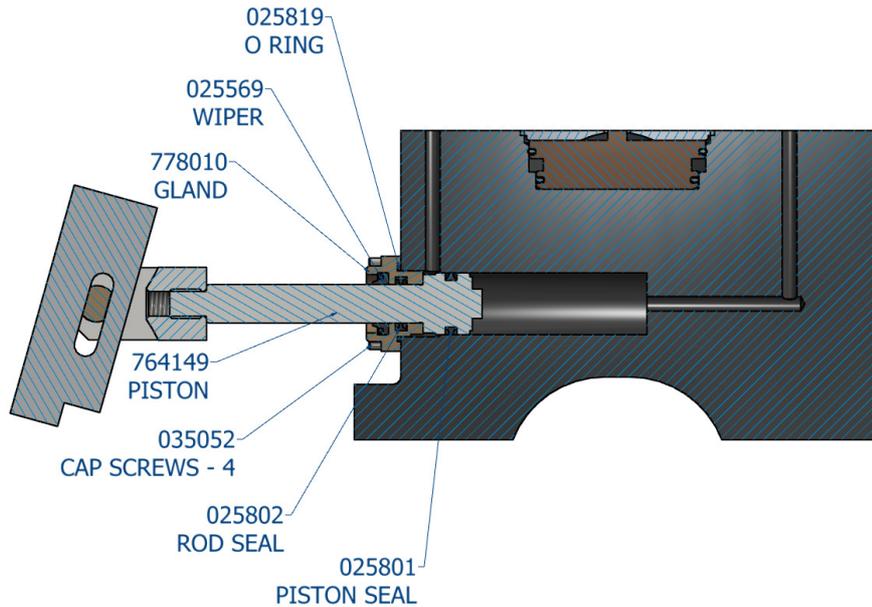
When the bung and relief valve are re assembled, ensure the face of the bung is below the face of the piston.



By knocking out the bearing ring the other seals become accessible

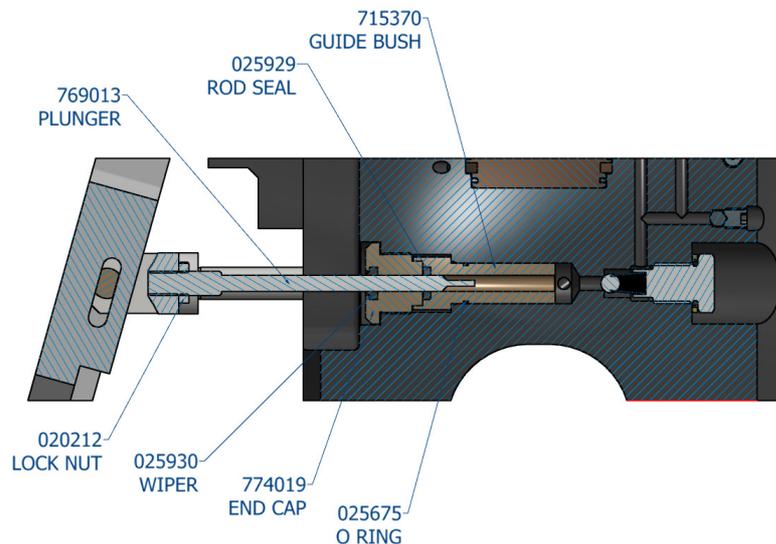


To access the seals on the auxiliary side, first remove the screws 044308 and the pivot pins 761225, the lever frame 713265 can now be moved away, remove the 4 screws 035052 the auxiliary gland can now be removed with the piston, unscrew the piston from the piston fork and remove from the gland, all seals are now accessible. Assembly is the reverse of above.

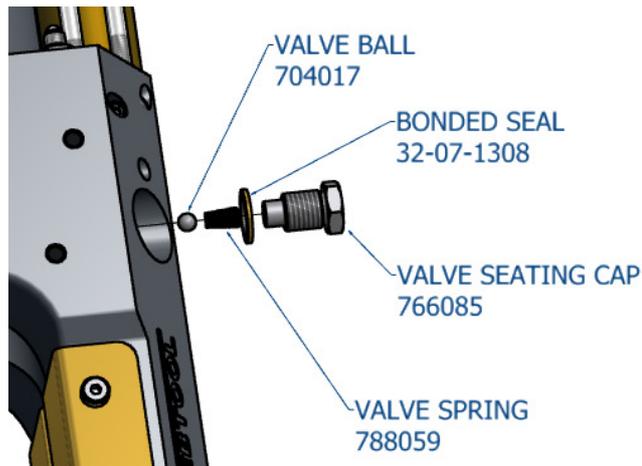


The seals on the plunger side are accessed by first removing the screws 044308 and the pivot pins 761225, the lever frame 713265 can now be moved away, remove the plunger assembly with the piston rod fork 742017 from the body, unscrew the plunger end cap 774019, use a hook to remove the guide bush 715370, all seals are now accessible. Assembly is the reverse of above. The lock nut 020212 sets the plunger 769013 in such a position that the blade cannot be activated until the anvil is almost fully home. **Do not** alter this setting.

If this setting is disturbed the manufacturer should be contacted for details of how to re-set the plunger correctly, failure to do this could lead to a dangerous occurrence or tool breakage.

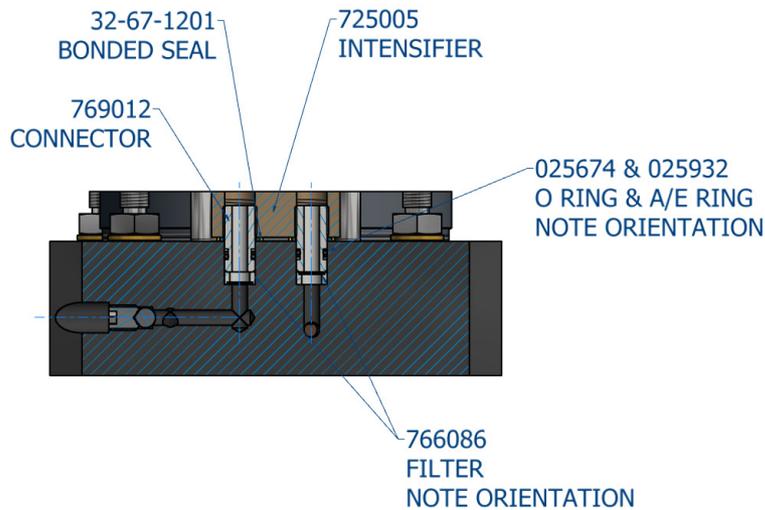


To access the seal at the opposite end to the plunger, using a 1" a/f socket remove the valve seating cap 766085 this will allow the valve ball 704017, valve spring 177059 and bonded seal to be accessed 31-07-1308



To replace the seals under the intensifier, remove the collar nuts 020123, remove the banjo bolt connector 765317 with the bonded washers, also the banjo bolt 761288, then remove the four cap screws 31-75-1120 above the intensifier captive plate 765315, remove the plate and the intensifier 725005, the two connectors 769012 under the intensifier have seals and a/e rings, these are now accessible. Assembly is the reverse of the above.

If the filters 766086 are to be changed please note the orientation of each filter is different.



RCS75HD – Part List		980235
Part No.	Description	Qty.
710 310	Cutter body	1
728 109	Cylinder	1
764 150	Ram	1
774 016	Bearing ring	1
705 062c	Blade	1
761 286	Anvil	1
715 367	Anvil Bush	1
761 271	Anvil Pin	1
715 368	Anvil Guide Bush	1
713 265	Lever Frame	1
713 264	Lever Frame Bracket	1
761 225	Lever Frame Pivot Pin	2
713 257	Lever Frame Axle	1
715 369	Axle Bush	2
764 149	Auxiliary Piston	1
778 010	Auxiliary Cylinder Cap	1
742 017	Piston Rod Fork Plunger	1
765 315	Intensifier Captive Plate	1
766 085	Spring Plug	1
769 013	Plunger	1
715 370	Plunger Bush	1
774 019	Plunger End Cap	1
769 012	Connector	2
742 018	Piston Rod Fork Auxiliary Cylinder	1
765 317	Banjo Bolt Connector	1
761 287	Banjo Bolt Cylinder	1
761 288	Banjo Bolt Intensifier	1
766 088	Blanking Plug 1/8" BSP	1
766 089	Relief Valve Plug	1
31-75-1120	Intensifier Plate screw	4
020 123	Domed Nut M12	2
030 648	Spirol Pin	2
035 080	Socket Set Screw Cup Point M10 x 12 SS	7
035 052	Socket Cap Screw M5 x 16 long	4
035 066	Socket Cap Screw M6 x 20 long	3
044 308	Screw Set Cone Point M5 x 8	4
31-63-1025	Socket Cap Screw M10 x 25 ss	4
704 017	Ball valve	1
31-47-0310	Blanking Ball 5/16" dia	7
752 342	Nameplate	1
725 005	Intensifier HC2W-4.0-B-1	1
020 212	Lock Nut M12 ss	1
7260359	Nipple	4
788 059	Plunger Ball Spring	1
766 086	Filter	2
043 406	Socket Set Screw	2

Cutter Seal Kit		995077
Part No.	Description	Qty
025 569	Wiper Auxiliary Piston	1
025 570	Wiper Ram	1
025 799	Piston seal	1
025 801	Seal Auxiliary Piston	1
025 929	Double Acting Seal Plunger	1
025 930	Wiper for Plunger	1
025 802	Seal Piston Rod	1
025 804	Seal Bearing Ring	1
025 788	O Ring Ram Bearing Ring / Cylinder	1
025 789	A/E Ring for 025788	1
025 819	O Ring Auxiliary Cylinder Bearing Cap	1
025 677	O Ring Bearing Ring / Body Ref 049	2
025 678	O Ring Bearing Ring / Body Ref 546	1
025 675	O Ring Bush Seal	1
025 674	O Ring Intensifier Connector	2
025 932	A/E Ring for 025674	2
32-07-0602	Bonded Seal	1
32-07-0035	Bonded Seal Nipples and Blanking Plug	9
32-07-1308	Bonded Seal Spring Plug	1
32-67-1201	Bonded Seal Intensifier / Body	2
32-01-0228	O Ring for Relief Valve Plug	1
32-01-0203	O Ring for Relief Valve	1
32-01-0206	O Ring for Aluminium Bronze Relief Valve	1

Wear Plate Kit		995078
Part No.	Description	Qty
765 316	Wear Plate	2
035 135	Shoulder Screw M8 10dia x 10 long	8

Aluminium Bronze Relief Valve Assembly		1155008
Part No.	Description	Qty
710 315	Body	1
128 561	Spring	1
749 010	Ball carrier	1
793 083	Adjuster	1
32-01-0206	O Ring	1
704 033	Ceramic Ball	1

This RCV75HD cutter is compatible with the following optional extra, 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



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.

Allspeeds Ltd, Royal Works, Atlas Street, Clayton-Le-Moors,
Accrington, Lancashire, BB5 5LW, England

T: +44 (0)1254 615100

F: +44 (0)1254 615199

E: info@allspeeds.co.uk

W: www.allspeeds.co.uk