

Snaplock+ Quick Coupler Service and Maintenance Procedure

SERIAL NUMBER: _____



The Snaplock+ Coupler (Fully Automatic with Dual Pin Locking)

NZ Patent Nos. 579987 & 572477; Australian Patent Nos. 2009320503, 2014100573, 2010301197, 2012101853 & 2016201504; US Patent No. 9,206,582.
NZ Patent Application Nos. 711782; Australian Patent Application Nos. 2015203463 & 2016201504; US Patent Application Nos. 13/127,450 & 14/844,481;
European Patent Application Nos. 09829374.9 & 10820884.4; Canadian Patent Application No. 2,813,185.

IMPORTANT:

The booklet should be kept with the machine at all times during and after quick coupler installation. Machine operators must read and fully understand the operations manual before use.

Snaplock+ Couplers are compliant with Australian Standard AS4772-2008, Workcover NSW WC01783 position paper, European Standard EN474, ISO13031 revision E

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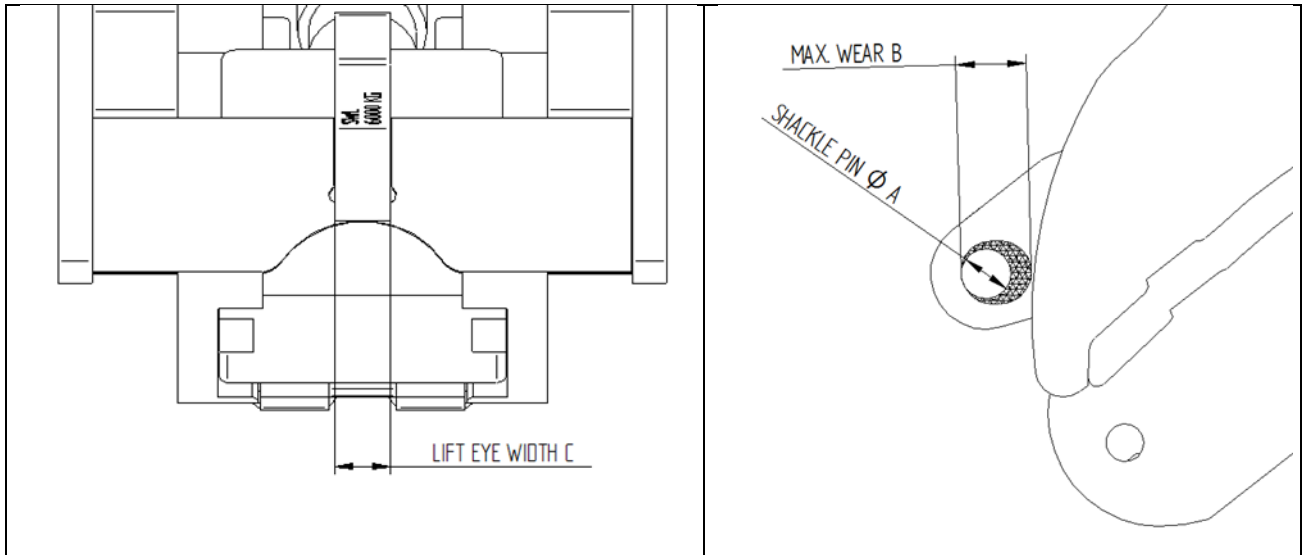
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PREVENTITIVE MAINTENANCE



LIFTING EYE WEAR LIMIT – 6 monthly or 1000hrs (whichever occurs first)

The lifting eye MUST be formally checked every six months for wear or damage, if the lifting eye wear is outside the tolerances shown in the chart below, do not use.



Shackle Pin ØA (mm)	Max. Wear B (mm)	Lift Eye Width C (mm)	Coupler Model	SWL
13	16	16		
16	19	20		
22	16	25		
25	30	32		
32	38	40		
35	42	50		
Lift point limits table				

PREVENTITIVE MAINTENANCE



SNAPLOCK+ WEAR LIMITS – 6 monthly or 1000hrs (whichever occurs first)



The Snaplock+ quick coupler range **MUST NOT** be used if the wear limits below are exceeded:

Pin Size (mm)	WL 1 Open C (mm)	WL1 Open C Gauge No.	WL 2 Front Lock (mm)	WL 3 Attachment Pins (mm)
40	42	CG-40	37	38
45	47	CG-45	41	43
50	53	CG-50	45	47
55	58	CG-55	50	52
60	63	CG-60	55	57
65	69	CG-65	60	61
70	74	CG-70	65	66
80	84	CG-80	74	76
90	95	CG-90	83	85
100	105	CG-100	92	95
110	114	CG-110	102	104
120	126	CG-120	111	114
130	137	CG-130	120	123

How to check wear limits

	<p>Open C (WL 1)</p> <p>Fully retract jaw so that front lock is in the disengaged position. Try fitting a test gauge (available from your Doherty dealer) into the open C by rolling into the base of the C from the front. If the gauge fits all the way into the back of the open C then the wear limit has been reached and the open C must be built back up to the original diameter.</p>
	<p>Front Lock (WL 2)</p> <p>Fully extend jaw so that front lock is in the locked position. Measure from point to point as shown. If the measurement exceeds that in the table then the lock on the cylinder or the open C must be built up back to original dimensions.</p>
	<p>Implement Pins (WL 3)</p> <p>The diameter of the pins of the attached implement should be checked as per below. Measure for both wear on the circumference and also any flat spots. Any pins measuring undersize as listed should be replaced.</p>

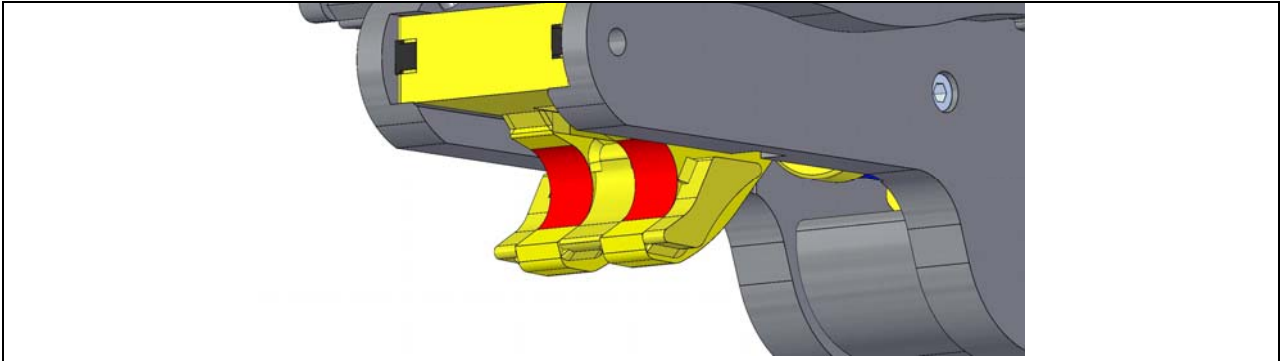
PREVENTITIVE MAINTENANCE



OEM mounting pins diameter should be checked against the suppliers recommendations. Replace pins if required.

Jaw Wear

Inspect the contact surfaces of the Jaw. If there is evidence of the rear pin contacting the radial surface of the jaw then the wear limit has been reached and further inspections listed below must be made.

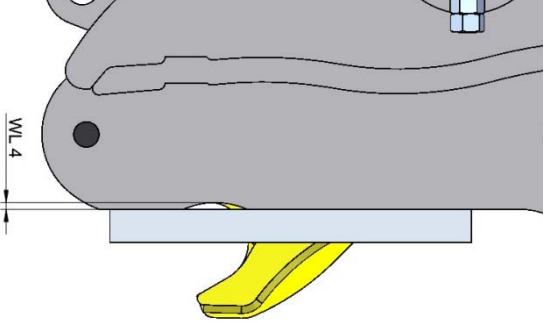
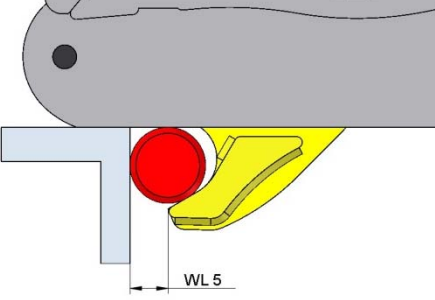
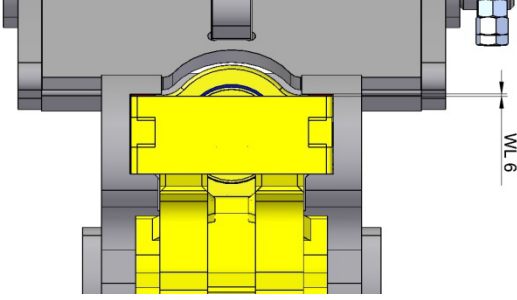


There are three wear areas that could be causing contact. It may be one area that is worn excessively or any combination of all three areas. All three areas should be checked and rectified if the below wear limits are exceeded.

Pin Size (mm)	WL 4 Body Rear Pin surface (mm)	WL 5 Jaw Contact surface (mm)	WL 6 Jaw Rails (mm)
40	2	14	3
45	2	12	3
50	3	20	3
55	3	24	3
60	3	18	4
65	4	23	4
70	4	21	4
80	4	25	4
90	5	25	5
100	5	39	5
110	6	32	5
120	6	37	5
130	7	40	5

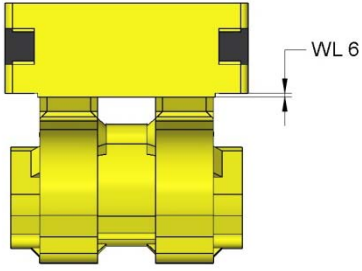
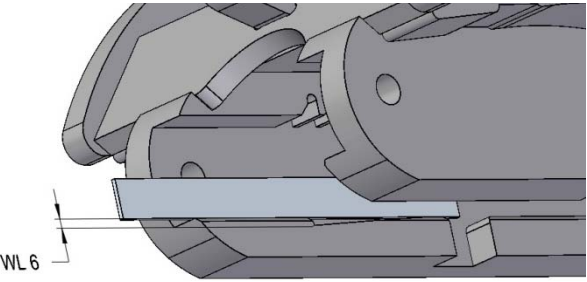
PREVENTITIVE MAINTENANCE

How to check wear limits

	<p><u>Body Rear Pin Surface (WL 4)</u></p> <p>Place straight edge along rear pin contact surface. Measure any gap between straight edge and surface. If the wear limit is exceeded the surface must be built up and ground back to original dimension.</p>
	<p><u>Jaw Contact Surface (WL 5)</u></p> <p>Place a square between rear pin contact surface and pin. Measure dimension and if it is less than the wear limit then the contact face of the jaw must be built up to original dimensions.</p>
	<p><u>Jaw Rail Clearance (WL 6)</u></p> <p>Measure the distance from the top of the jaw to the top edge of the jaw slot. If the gap exceeds the dimension shown then additional checks must be made. (see Jaw Rail Checks)</p>

PREVENTITIVE MAINTENANCE

Jaw Rail Checks

 <p>A technical drawing of a yellow jaw base plate. A horizontal line with arrows at both ends is drawn across the bottom surface of the plate, labeled 'WL 6'. The plate has a complex, multi-ported design with several vertical protrusions and recessions.</p>	<p><u>Jaw Check</u></p> <p>Remove jaw from hitch body. Inspect jaw base plate for any grooving on the underside. If the grooving exceeds the WL 6 limit the jaw base plate must be built up and ground back to original dimensions.</p>
 <p>A technical drawing of a hitch body in grey. A light blue straight edge is placed against the lower rail surface. A horizontal line with arrows at both ends is drawn below the straight edge, labeled 'WL 6'. The drawing shows the internal structure and various components of the hitch body.</p>	<p><u>Jaw Rail Check</u></p> <p>Remove jaw from hitch body. Place a straight edge along the lower rail surface. If there are any gaps that exceed the WL 6 limit then the hitch body must be taken out of service.</p>

PREVENTITIVE MAINTENANCE

How to check for cylinder bypass

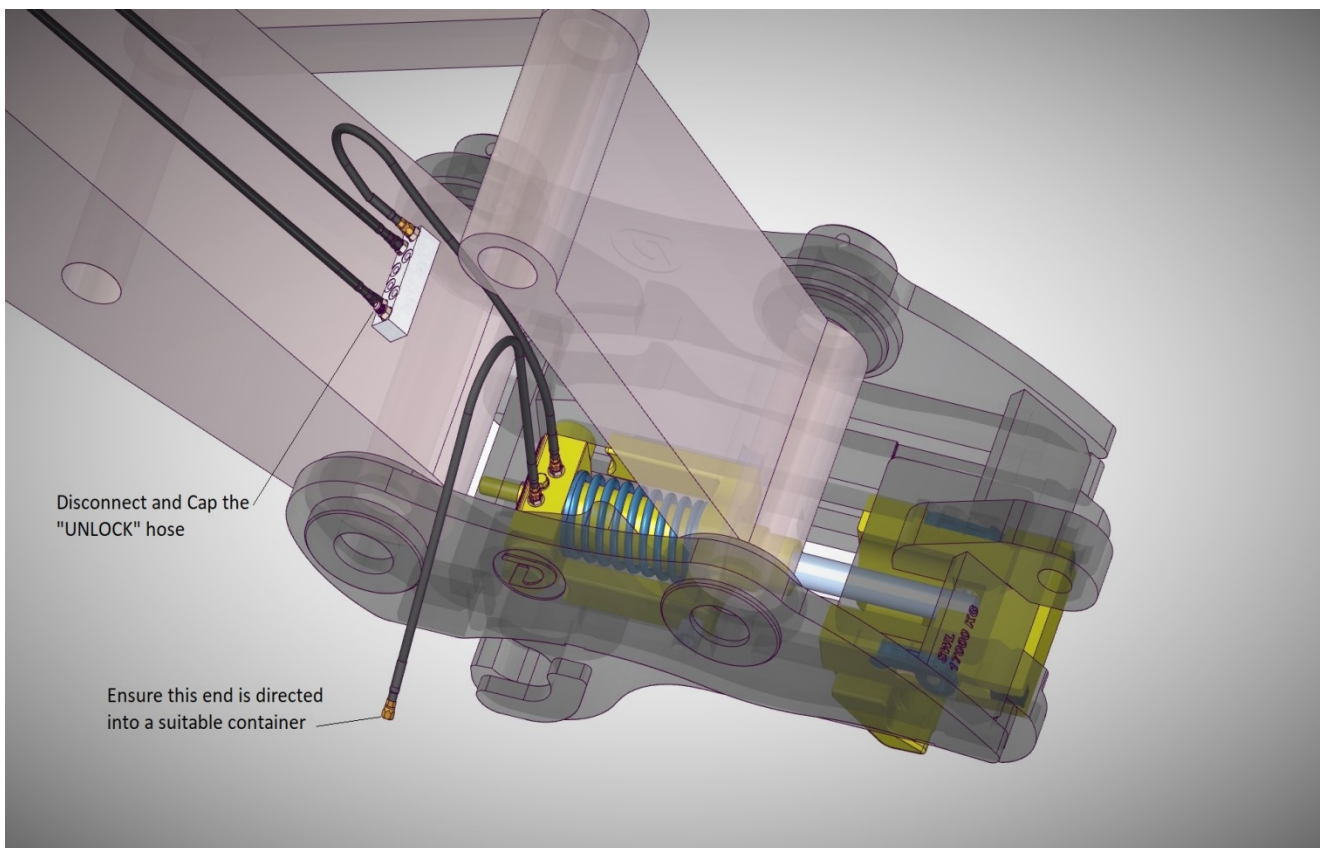
Step 1: Remove Bucket from Coupler

Step 2: Shut down machine, turn ignition on without starting. Lower safety bail and operate bucket crowd function to relieve line pressure. Turn off key and raise Bail

Step 3: Disconnect UNLOCK Hose at Dipper Arm manifold block. Ensure manifold fittings are capped to stop leakage.

Step 4: Place open end of unlock hose in a suitable container to contain any oil leakage.

Step 5: Re-start machine, lower Bail and note any bypass. (should be minimal) Operate bucket crowd function momentarily to detect any oil from bypass. If Bypass detected then cylinder will require replacing or re sealing.



MAINTENANCE



Daily Prestart Check

1. Disengage attachment from coupler.
2. Check all attachment pin retainer bolts and nuts for tightness.
3. Check attachments for pin wear - The Snaplock Quick Coupler is designed to take up wear, however if mounting pin wear exceeds 5% of the original diameter, immediately replace implement pins. Refer to Page 23-24.
4. Check all hydraulic hoses and fittings for any leaks or wear.
5. Clean away any material build up around cylinder guide ways, spring apertures and the pin engagement surfaces.



Weekly

1. Thoroughly clean coupler – (Water blast recommended).
2. Check Coupler for evidence of fatigue, weld failure, cracks or stress. Do not operate with a cracked weldment.
3. Repeat daily checks above.



INSPECTION SAFETY NOTES

Report Necessary Repairs. If your check uncovers any item that needs attention, repair, replacement or adjustment; **REPORT IT NOW!** The most minor defects could result in more serious trouble. If the machine is operated, only perform the work you are authorised to do. Do not attempt repairs you do not understand.

Check for broken, defective or missing parts and replace them. Keep equipment clean and free of dirt and oil so you can spot loose or defective parts.

Any damage to the Coupler should be reported immediately to either your site manager or directly to Doherty Engineered Attachments Ltd.



Annually or 2000 hrs (whichever occurs first)

1. Check all pin contact surfaces for wear. Build up and machine as required.
2. Remove Jaw and Check Condition of Safety Pawls. Any sign of deformation or wear indicates the need for **REPLACEMENT**.
3. Replace the Pawl springs/rubbers annually.

MAINTENANCE



IMPORTANT CAUTION – WELDING

Do not weld directly to the Quick Coupler without Doherty Engineered approval.

Do not weld any attachment while it is connected to the coupler. This may result in internal arc damage to the and cylinder and void any applicable warranty.

Always disconnect machine battery before any welding work is started.



CAUTION

Never allow a hydraulic line or component to become contaminated. This could cause serve system damage. Contact an authorised machine distributor to obtain proper caps and plugs to be used on this machine.



MAINTENANCE SAFETY NOTES

Improper operation and maintenance of this equipment could result in serious injury or death. Read the operator's manual and this book thoroughly before operating and/or maintaining this equipment.

Maintenance should only be performed by experienced and qualified personnel

Always wear protective clothing when performing maintenance.

Avoid oil spills. Use containers, rags, and/or absorbent towels to contain any oil leakage. Dispose of all waste oils, fluids, lubricants and other hazardous waste property

Do not operate the machine with a defective quick coupler. Inspect the Quick Coupler and all components before starting operation. Perform any necessary repairs before operating the Quick Coupler.

Make sure the Quick Coupler and any attachments connected are resting on the ground and property supported before performing any work on the Quick Coupler.

Unauthorised modification to the Quick Coupler or any of the Quick Coupler components may impair function, affect performance and affect the life of the quick coupler and the excavator. Unauthorised modification may impair personnel safety. Unauthorised modification will void your warranty.

Under normal conditions, all machine hydraulic circuits are under extreme pressure. When inspecting for leaks, use a small piece of cardboard, wood or metal to locate leakages. Small (pinhole) leaks can be dangerous if contact with skin or eyes is made. Wear approved safety glasses and/or face shield, gloves, hard hat, safety shoes, and work clothes during all inspection and maintenance procedures.

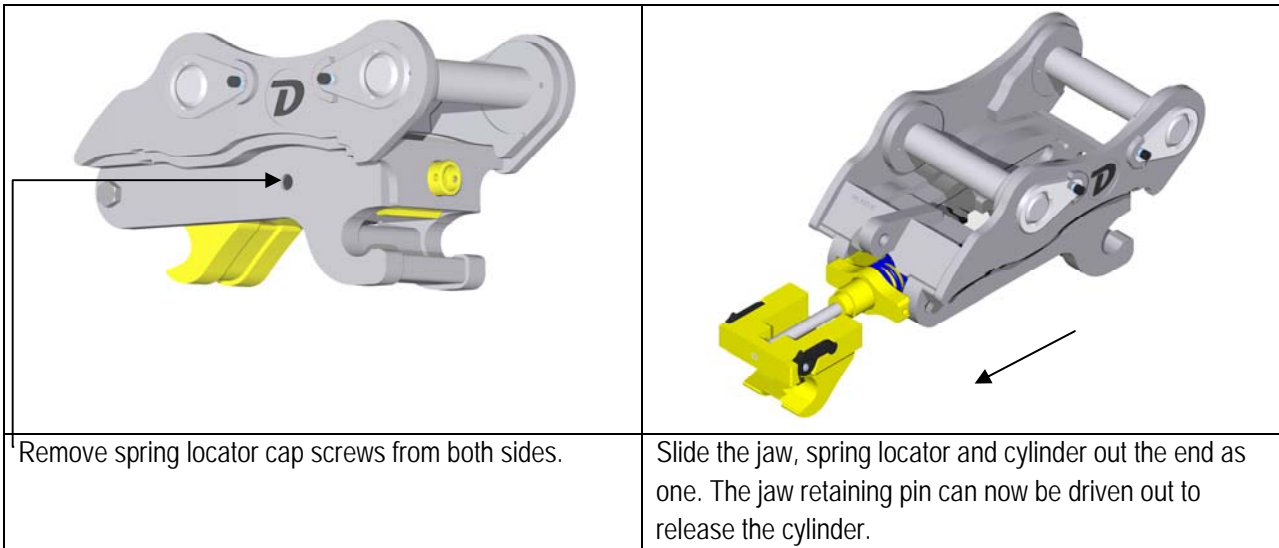
All coupler/attachment combinations should be checked for possible interference before using. Ensure that the coupler engages and disengages properly and easily.

Always relieve hydraulic pressure before removing hydraulic fittings.

MAINTENANCE

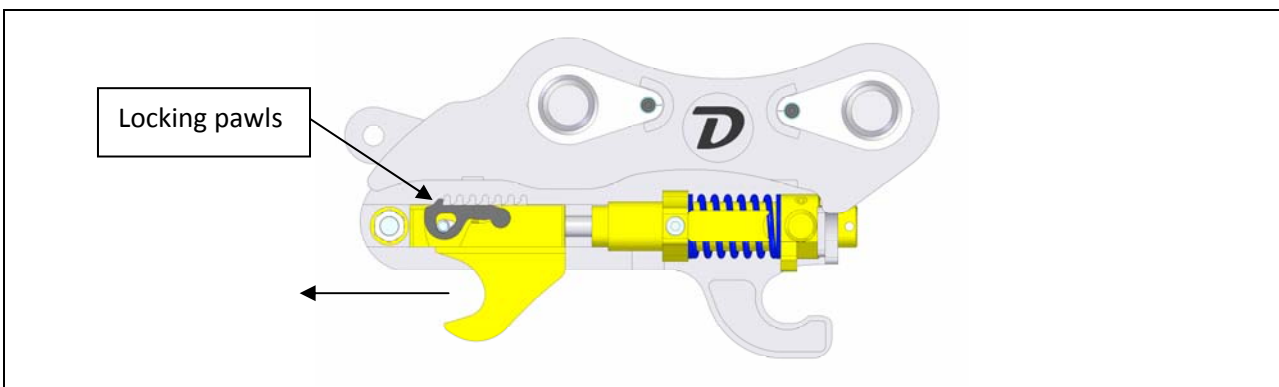
TO REMOVE CYLINDER

Vent pressure in hydraulic lines. Disconnect at the cylinder and plug all open ports and fittings.



To refit:

1. Slide the main spring and spring locator over the cylinder.
2. Refit the jaw pin, ensure the pawl rubbers are in place and in good condition.
3. Fit the pawls and slide assembly into hitch coupler body.
4. Press the lock pawls down to allow the jaw to slide into the body.
5. Use a G clamp to pull the spring locator into alignment and fit the cap screws.



Please ensure this maintenance record is completed for any work completed on quick coupler.

TORQUE SETTINGS AND PORT SIZES

Recommended Bolt Torque

Thread Size	Cap Screw (Gr 12.9)	Bolt (Gr 8.8)
	Nm (ft-lb)	Nm (ft-lb)
M6	18 (13)	12.1 (8.9)
M8	43 (32)	29 (21)
M10	85 (63)	57 (42)
M12	146 (108)	98 (72)
M14	233 (172)	157 (116)
M16	355 (262)	240 (177)
M20	696 (513)	470 (347)
M24	1199 (884)	809 (597)
M27	1749 (1290)	1183 (872)
M30	2385 (1759)	1613 (1190)



Note: Using copper/graphite thread lubricant and Nordlock Washer

Check Valve

	Nm (ft-lb)	
Check Valve	54 (40)	



Note: Do not use thread lubricant. Overtightening may damage seals.

Spring Locator Screws

Thread Size	Cap Screw (Gr 12.9) Nm (ft-lb)	
M12	77 (57)	
M20	372 (274)	
M24	640 (472)	

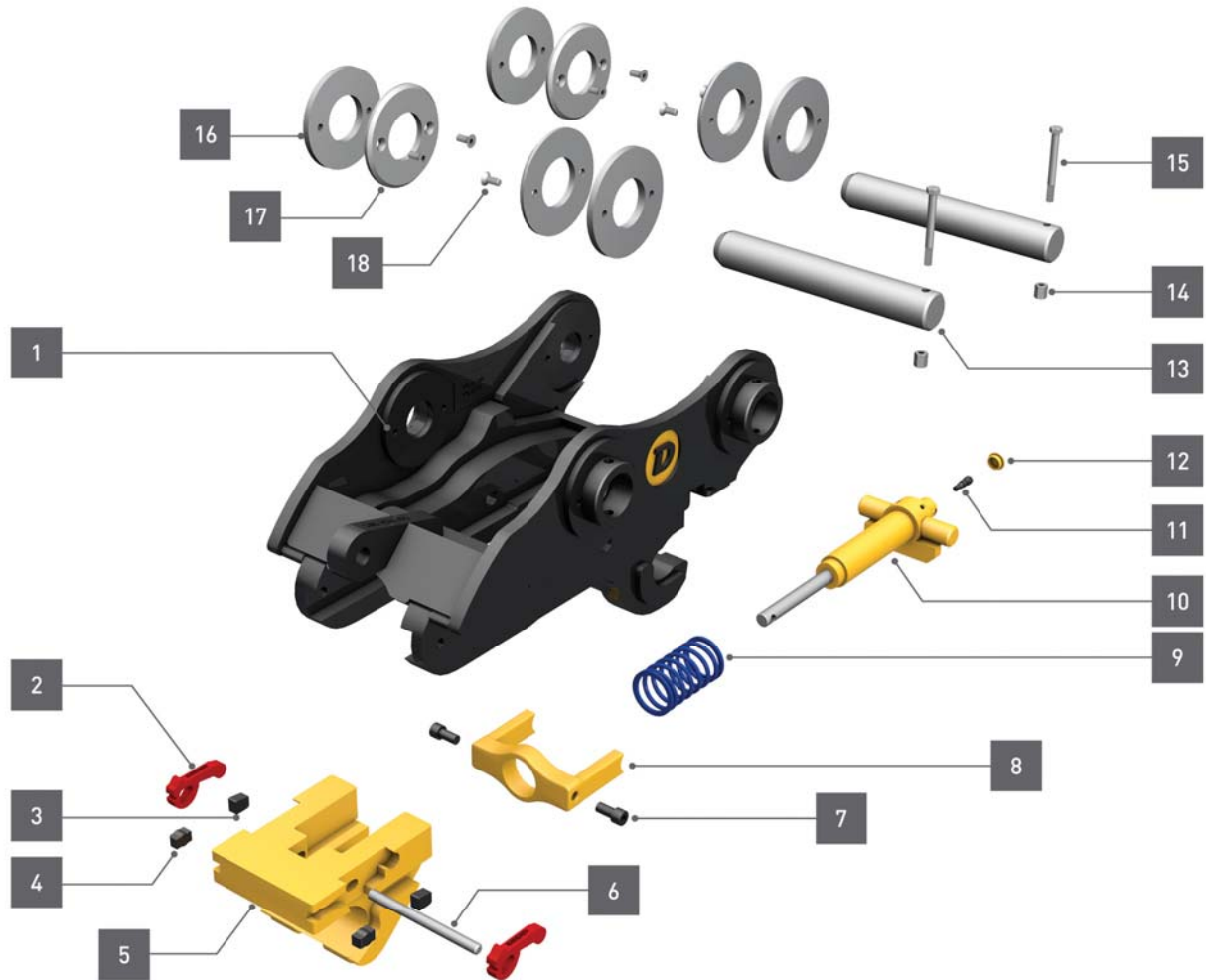


Note: Using thread locking agent and no washer

Port sizes of hydraulic cylinder

Coupler Model	Port Size
HD035	1/8 BSP
HD055-HD290	7/16 JIC
HD350 & ABOVE	1/4 BSP

UNIVERSAL COUPLER



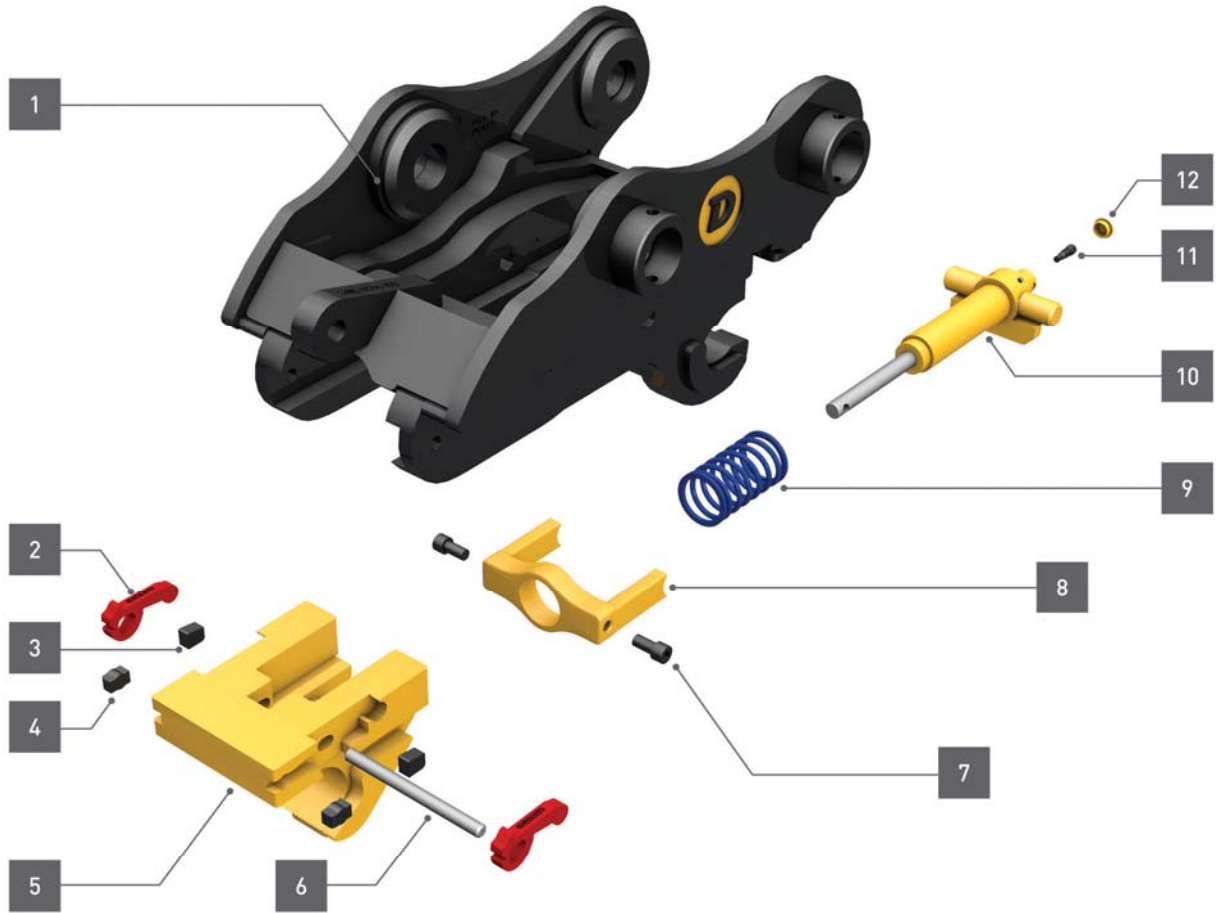
REFERENCE #	DESCRIPTION	QUANTITY
1	Coupler Body	1
2	Lock Pawl	2
3	Pawl Rubber	2
4	Seal Block	2
5	Jaw	1
6	Jaw Pin	1
7	Spring Locator Bolt	2
8	Spring Locator	1
9	Spring	1

REFERENCE #	DESCRIPTION	QUANTITY
10	Cylinder	1
11	Counterbalance Valve	1
12	End Cap	1
13	Mounting Pins	2
14	Mounting Pin Lock Nuts	4
15	Mounting Pin Bolts	2
16	Spacer	4
17	Shim	4
18	Shim Countersung Screw	8



Always quote make and model of excavator and serial number of coupler when ordering parts, this is a reference guide only.

OEM COUPLER



REFERENCE #	DESCRIPTION	QUANTITY
1	Coupler Body	1
2	Lock Pawl	2
3	Pawl Rubber	2
4	Seal Pawl	2
5	Jaw	1
6	Jaw Pin	1

REFERENCE #	DESCRIPTION	QUANTITY
7	Spring Locator Bolt	2
8	Spring Locator	1
9	Spring	1
10	Cylinder	1
11	Counterbalance Valve	1
12	End Cap	1



Always quote make and model of excavator and serial number of coupler when ordering parts, this is a reference guide only.