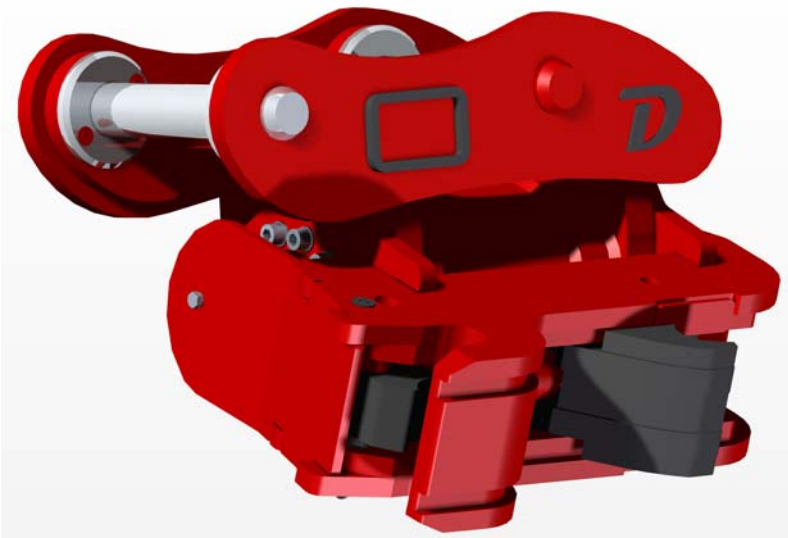


## Snaplock Tilt Quick Coupler

### HST Tilt Hitch Installation & Operation Manual

### Manual Safety Pin Model Only



**REVISION 1.1**  
**DATE 20 JULY 2011**

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## APPENDIX

Appendix 1 .....	Parts list
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If at any time in the future, you require additional information on the

HST SNAPLOCK TILT COUPLER or any aspects of its use, please do not hesitate to contact:

**DOHERTY ENGINEERED ATTACHMENTS LTD**

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**WWW.DOHERTYDIRECT.NET**

# Pre delivery check

**DOHERTY**  
ENGINEERED ATTACHMENTS LTD

Installation completed by:	
Company:	
Name:	
Date:	
Excavator Make & Model	
Tilt Coupler serial No.	
End User Name	
End User Phone No.	
End User Address	

Doherty Electrical Kit Fitted	YES	NO	if not record type	
Doherty Coupler Control Valve fitted	YES	NO	if not record type	
Safety Pin Fitted and locked	YES	NO		
Tilt Circuit Pressure checked at				Bar
Lock Circuit Pressure checked at				Bar
Unlock Circuit Pressure checked at				Bar
Tilt speed from Full left to full right timed at				Seconds
Hose routings checked and abrasion free throughout full crowd and tilt movement.				<input type="checkbox"/>
Actuator cavity bled using lower bleed screw.				<input type="checkbox"/>
All supplied attachments locked and unlocked from coupler.				<input type="checkbox"/>
All hydraulic connections, clean, tight and leak free.				<input type="checkbox"/>

**This form must be returned to Doherty Engineered upon completion of Installation to validate warranty.**

NOTES:

# Important safety information

The HST range of Tilt Hitches comply to AS4772-2008 Australian standard for Earthmoving machinery – Quick hitches (Couplers) for excavators and backhoe loaders AS4772-2008 Clause 2.1.4

Remember that on any job, YOU are the key to safety. Good safe practices not only protect the people around you; they are also your own best protection. Study this section and any relevant manufacturer's operation manuals covering your equipment. Read all warning and caution instructions.

1. This manual must be READ and UNDERSTOOD before any installation and operation work begins. A copy must be kept in the operator's cabin for ongoing use.
2. Operators should note that the use of a quick coupler may affect the machine's breakout force, balance and may result in attachments being able to come into contact with the boomset and or operators cabin.
3. Operators should note that the weight of the coupler is stamped on the ID Plate and this must be taken into account which calculating the machine's lifting capacity.
4. Doherty Engineered Attachments Tilting Couplers are designed for use with Doherty Approved attachments only. Approval must be obtained for use with non Doherty attachments.
5. In particular bucket widths should not exceed those specified in the chart below:

Model	weight class (T)	Max bucket width (mm)	Model	weight class (T)	Max bucket width (mm)
HST015	1-1.5	1000	HST240	19-24	2200
HST025	1.6-2.5	1200	HST290	25-29	2200
HST035	2.6-3.5	1500	HST350	30-35	2500
HST055	3.6-5.5	1700	HST450	35-45	2500
HST080	5.6-8	1800	HST550	46-55	2500
HST140	10-14	2500	HST650	55-65	2800
HST180	15-18	2500			

6. The hydraulic actuators fitted to Doherty Tilt Couplers contain no site serviceable parts. Contact Doherty Service department BEFORE carrying out any disassembly work. Failure to do so may void any applicable warranty.
7. All Doherty Tilt couplers must be connected and installed in full compliance with this manual. Any variations may cause the coupler to operate in an unsafe manner and/or void the warranty. Doherty are available to advise on particular issues as required.
8. Due to the self tightening and automatic wear compensation features of this coupler it is recommended that the locking cylinder be disengaged at the end of each day.
9. 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.
10. All excavator operators should familiarise themselves with all coupler/attachment combinations before attempting to operate the coupler. This should include, but be not limited to, practicing engaging and disengaging each attachment. Furthermore when new attachments are added to the machine's fleet, the operators should proceed with the same "familiarisation" process before it is used on the job site.
11. Never use the Coupler as a prying tool.
12. Never use the Coupler as a clamping device.

The HST series Snaplock Tilt couplers utilise a Hydraulic Actuator to provide the tilting action. This is a precision machined high strength component which must be correctly installed and connected to provide optimum service life. PLEASE READ this manual carefully prior to installation. If additional information is required – contact Doherty – don't assume.

The actuator contains only two moving parts, the piston and the rotating shaft which connects to the end flanges. Because the moving parts operate in clean hydraulic oil, the actuator requires no regular maintenance apart from periodic flushing and cleaning of the external end seals.

The locking system is based on the well proven sliding jaw design but incorporates a number of patented features to ensure safe and secure operation. The locking system is based on the well proven sliding jaw design which incorporates a SAFETY PIN fitted to the front end of the coupler preventing the front lock from releasing the front bucket pin. This is the primary safety device and **UNDER NO CIRCUMSTANCES SHOULD THE MACHINE BE OPERATED WITH THIS PIN REMOVED.**

Operator maintenance is restricted to weekly cleaning of the coupler to ensure no excessive build up of material on the interior surfaces and greasing of the two end seals.

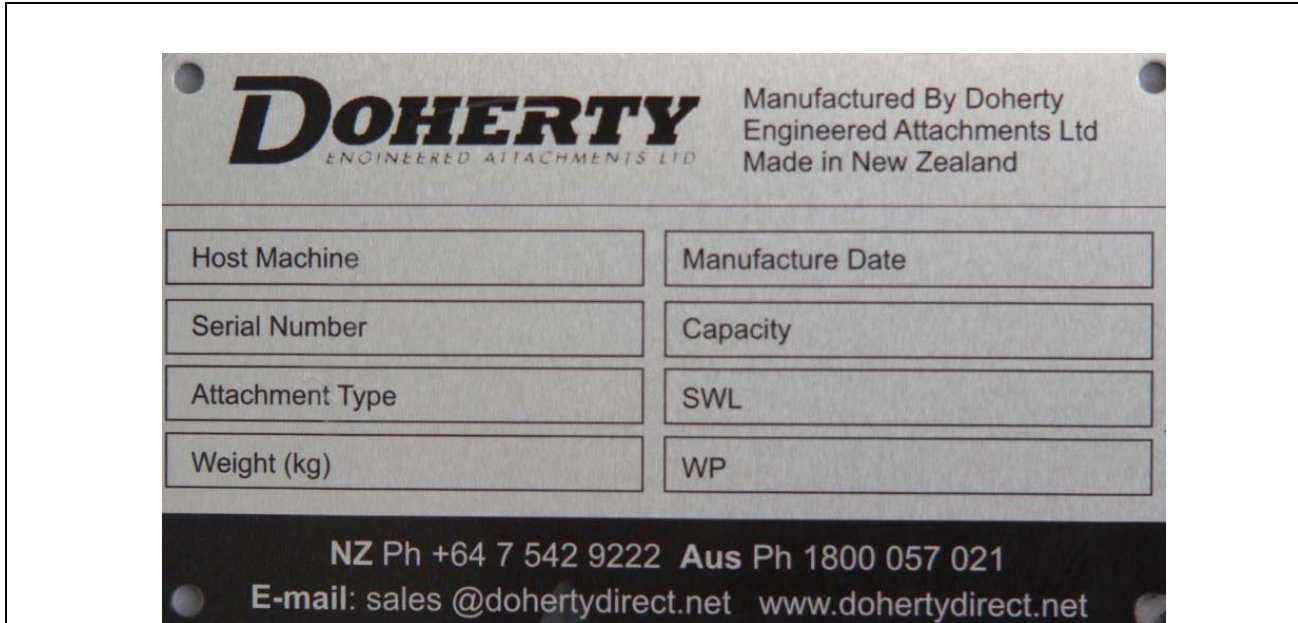
HST Actuators (with the exception of the smallest HST015, HST025 & HST035) require no special valving as the main relief valve is built into the housing. However it is important that to achieve maximum load holding, normal operating pressure must be maintained in the control lines. This may require the fitting of port check or lock valves. HST 015,025 & 035 models will also require an external cross line relief valve to protect the actuator from overloads. Maximum flow rates and pressures are specified in this manual and these must not be exceeded as this may result in damage and/or voiding of any applicable warranty. Normal good hydraulic practice including pre cleaning of lines and hoses must be followed to ensure no contamination enters the actuator during installation.

HST Actuator relief valves are pre-set and require no further adjustment. However the Coupler Lock / Unlock control valve will require pressure setting following installation. Pressure settings are noted on the schematics.

Due to the large number of Excavator Makes and Models available, it is not possible to provide a rigid set of installation instructions that will cover every situation. Modern Excavator control systems are complex and sophisticated. Auxiliary connections must be carried out with care to ensure the manufacturer's warranty is not voided. It is therefore extremely important that only appropriately qualified and experienced persons carry out the installation. It is **STRONGLY RECOMMENDED** that the excavator dealer be consulted to ensure the auxiliary connections are correctly made.

All DEA attachments are supplied with an ID plate attached to the left or right hand mounting plate. In addition, a SERIAL # is stamped into the top edge of the Left Hand mounting plate.

This is a copy of your products ID Plate



It is recommended that a copy of these details be kept in the office for future reference.

Always quote these details when contacting Doherty Engineered Attachments for Service or Parts.

In addition your Doherty Engineered Attachments may be fitted with a number of SAFETY and MAINTENANCE DECALS. These decals must be kept clean, in good condition and be visible from a distance of 3 meters. Replacements for damaged decals may be obtained from the Doherty parts department.

The Doherty Snaplock Tilt Coupler also requires that the following OPERATOR DECALS be fitted by the Installer in the machine's cabin. These must be clearly visible from the operating position and maintained in a clean and legible condition. These decals will be supplied in the same pouch as this manual – please check that all are included. Replacements for damaged or missing decals may be obtained from the Doherty parts department.

Decals to be located in Cab in clear view for the operator.

## OPERATION DECAL

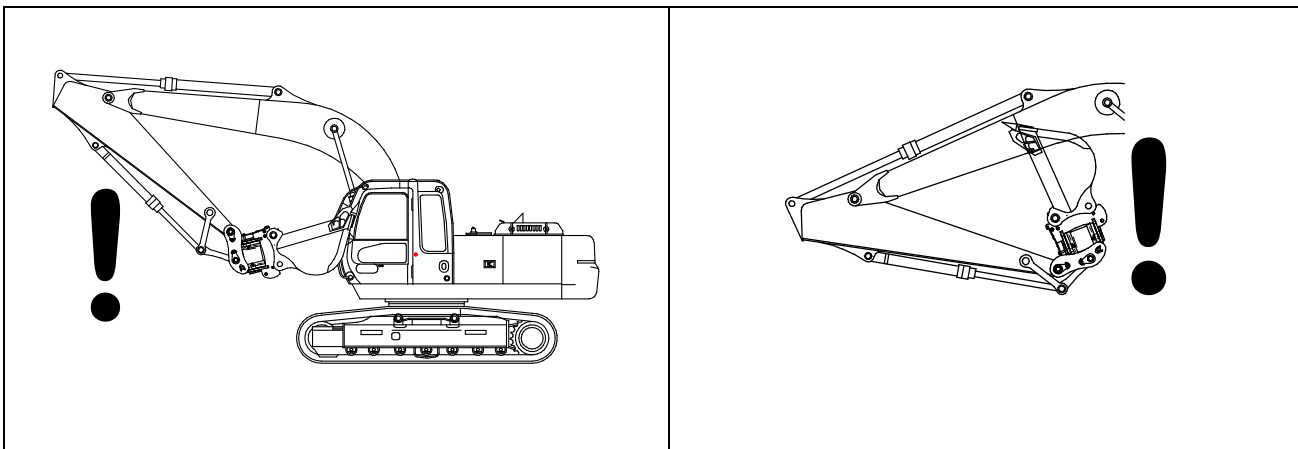
**ENGAGE**

1. Warning symbol (exclamation mark in triangle) and decal placement diagram.
2. Operator looking through the cab window at the boom.
3. Horn symbol and decal placement diagram.
4. Boom moving up.
5. Boom moving down.
6. Boom moving forward.
7. Control panel with buttons and a 5-second timer icon.
8. Operator in cab with a checkmark indicating correct decal placement and a crossed-out 'X' indicating incorrect placement.

**DISENGAGE**

1. Boom moving down.
2. Operator looking through the cab window at the boom.
3. Horn symbol and decal placement diagram.
4. 5-second timer icon.
5. Boom moving up.
6. Boom moving down.
7. Boom moving forward.

## CONTACT WARNING DECALS

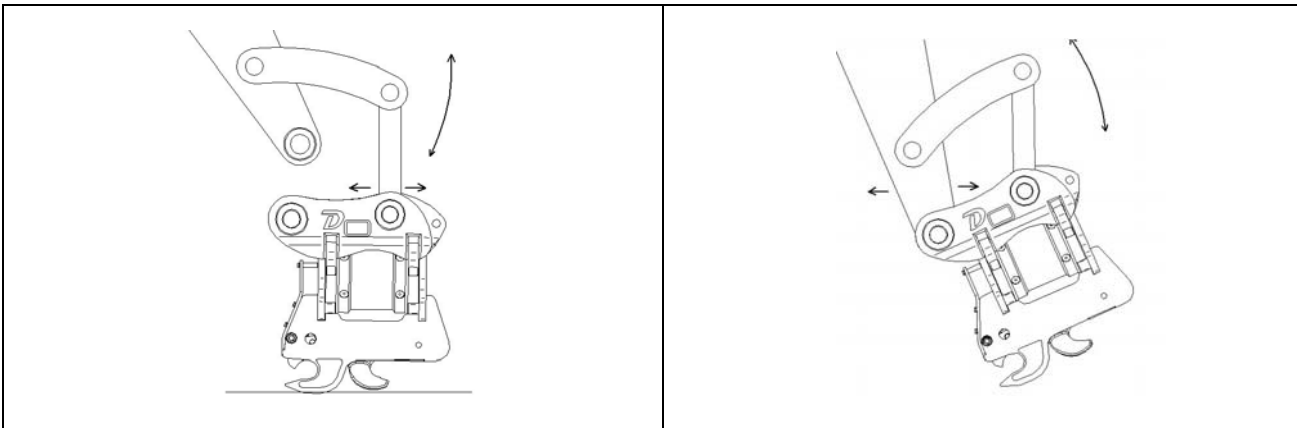


## IMPORTANT INSTALLATION NOTES

- Installation personnel must be competent and experienced in this type of work.
- Best hydraulic practice will be used to ensure that all components remain clean and free of contamination and that all hoses are suitably routed and armoured to prevent, crushing, pinching or chaffing damage.
- The requirements detailed in this publication must be fully understood and complied with.
- No changes to the host machine's control systems should be made without express agreement by the manufacturer and or distributor.
- All current Health and Safety Regulations pertaining to this installation and subsequent operation must be complied with.
- **The Pre Delivery check sheets (including pressure readings) must be fully completed, signed and returned to Doherty.**
- Contact Doherty for additional assistance, if required.
- Failure to comply with these guidelines may cause equipment damage and/or void any applicable warranty.

## FITTING THE COUPLER

1. Remove any existing attachments from the machine. Some models of Doherty tilt couplers are supplied with purpose designed hardened mounting pins. If these are not supplied, the coupler is mounted using the OEM pins which were supplied with your machine. **NOTE** Hardened pins **MUST** be used for this application do not use non hardened attachment pins.
2. **CLEAN** all bores and pin surfaces, pre-lubricate pins with grease and set aside on a clean surface.
3. Carefully align the link arm between the two bosses, which are furthestest from the cab of the machine. Ensure the O rings are correctly positioned and fit one pin. Shim as required to eliminate excessive side float. Shim sets are available from Doherty Parts department if required.



4. You can now lift the coupler off the ground and use the crowd and arm controls to accurately line up the main dipper arm bore. Position the O rings and fit the second pin. Shim as required.
5. Ensure the pin retaining bolts are fitted and tightened. Use Nyloc or lock nuts.
6. Grease up both pivot points as required.
7. Using the excavator hydraulics, carefully crowd the quick coupler to the extremes of the crowd travel and check that there is adequate clearance between the coupler and the dipper arm surfaces and linkages.

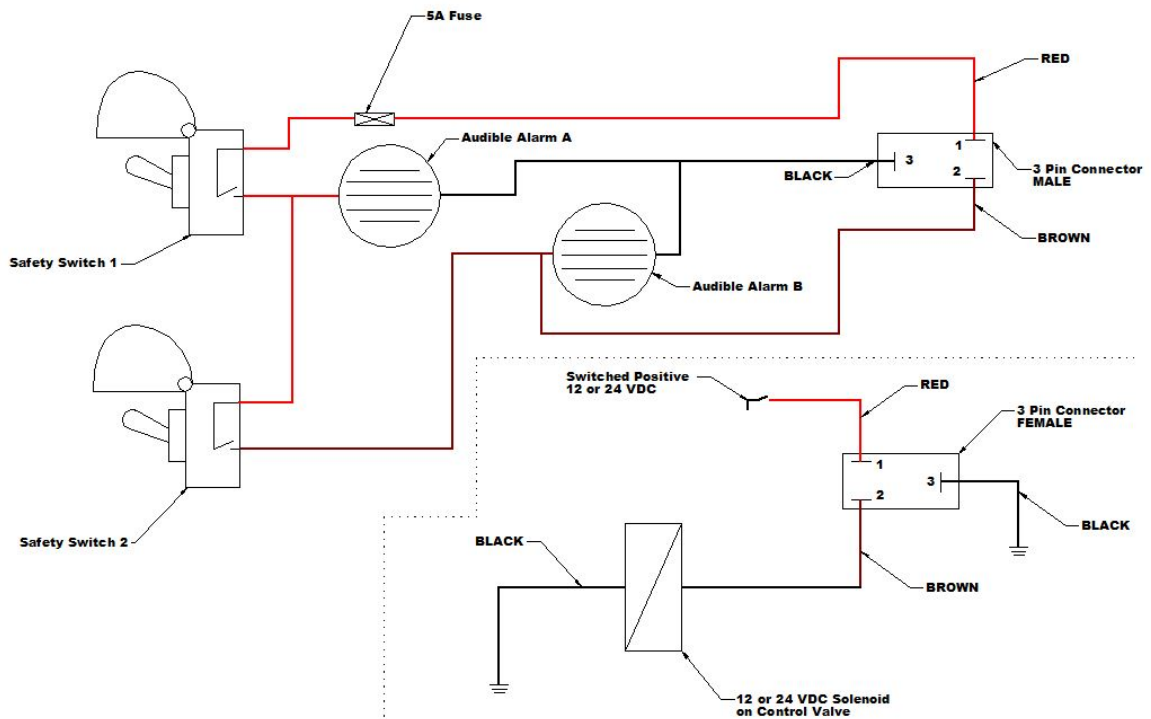
## CONNECTING THE COUPLER LOCK CIRCUIT

### A. ELECTRICAL

The Lock/Unlock control is operated by an electrical solenoid valve via an approved Two Stage safety switch circuit which must be installed in the cabin and connected to the machine's electrical system as shown on the following schematic.



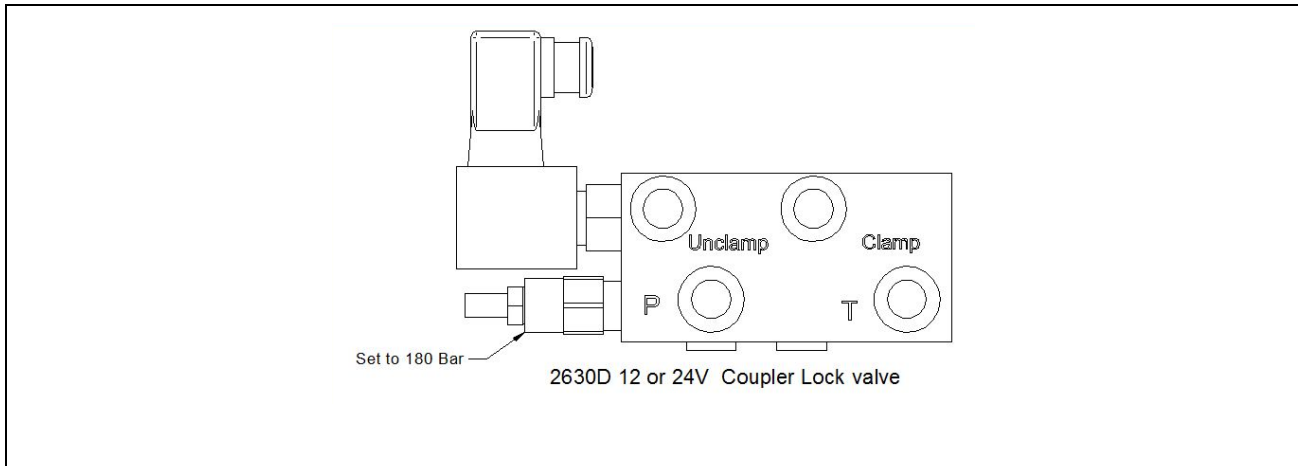
Approved safety switch kits are available from Doherty and will be included as part of the Coupler Fitting Kit if this was ordered with the coupler.



HS SERIES COUPLER - ELECTRICAL CONNECTIONS

## B. HYDRAULIC

The Doherty Snaplock is designed to operate at 180 bar (2500 psi), therefore an approved control valve with pressure control must be fitted. The valve must be open to the locking port so that in the event of an electric problem, the coupler will always remain locked when the machine is operating. Approved Control Valves (12 and 24V) are available from Doherty and will be included as part of the Coupler Fitting Kit if this was ordered with the coupler.



This Valve will need to be mounted in a convenient location on the machine. When selecting locations please keep in mind subsequent maintenance and pressure adjustments. Hydraulic pressure is sourced by teeing into the test port on the machine's hydraulic pump. If two pumps are fitted, identify the one which operates the bucket crowd function and connect into that test port as shown on the following schematic. This is important because:

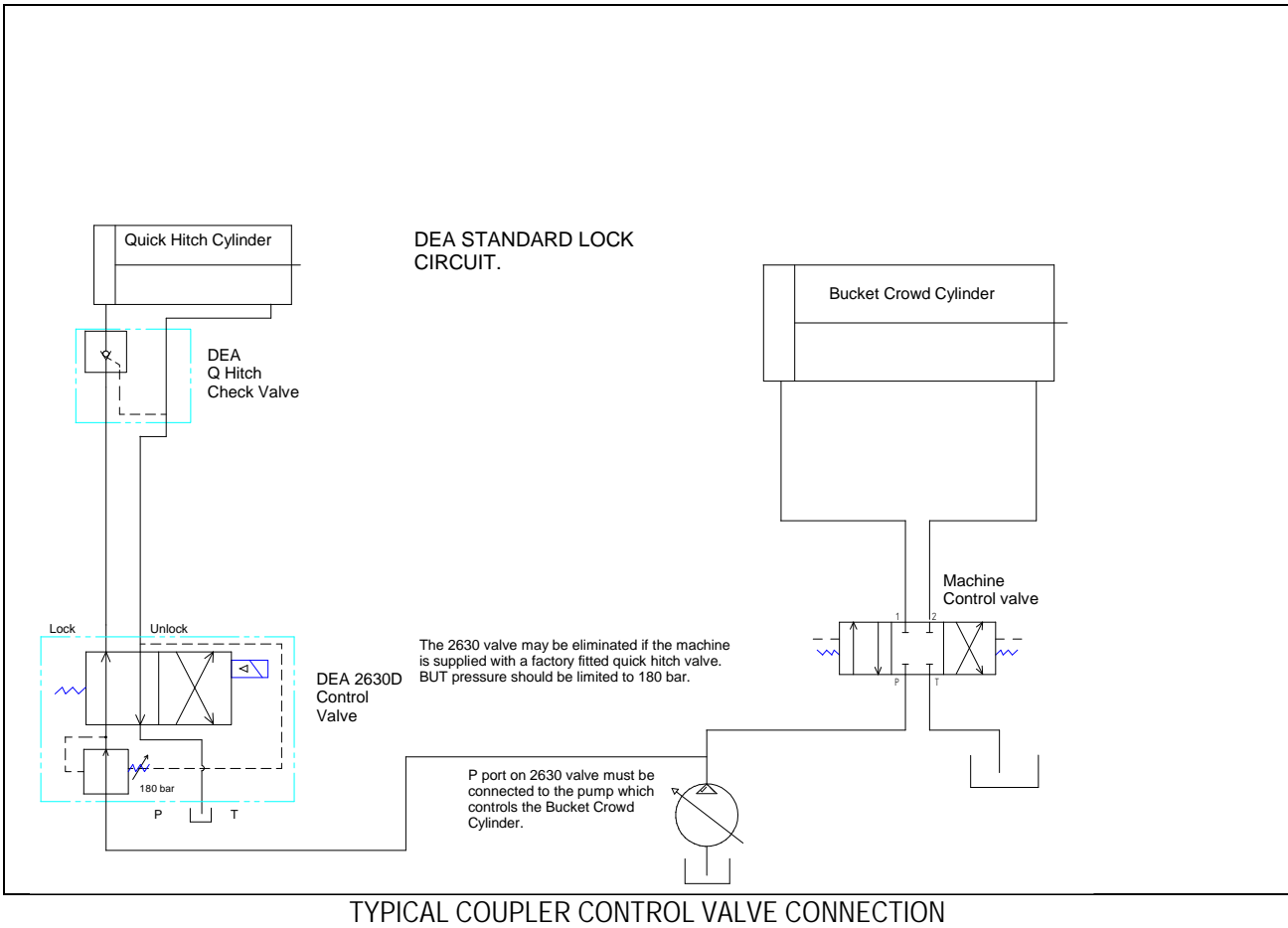
1. When attachments are being changed, the crowd function is always used and
2. while in work, the coupler will remain tightly clamped because the cylinder will automatically activate every time the crowd function is used.

NOTE: Some excavators are now equipped with factory fitted Quick Coupler lock/unlock controls. In general, these controls are suitable for use with Doherty couplers PROVIDED

1. the 180 bar (2500 psi) operating pressure can be controlled.

It is the installer/dealers' responsibility to ensure that any factory fitted controls fully comply with all current Health and Safety Regulations.

(Please refer to the schematic below.)



## CONNECTING THE COUPLER TILT CIRCUIT

The following pages contain information and schematics which detail the hydraulic requirements for correct operation of the Doherty rotary actuator. It is the installer's responsibility to ensure that these requirements are complied with and that the selected connection method is compatible with the host machine.

Doherty strongly recommend that no changes are made to the machine control system without consulting and obtaining agreement from the Dealer / Manufacturer.

Contact Doherty for additional assistance, if required.

## HYDRAULIC PIPING REQUIREMENTS.

For best performance, purpose run hydraulic tubing should be fitted to the boom and dipper arm. Two runs of 3/8" OD tube are required for the coupler lock / unlock circuit. Two runs are also required for the tilt function. Take care to ensure tube and hoses are adequately sized to provide the recommended flow rates.

It is recommended that a manifold block be fixed to the end of the dipper arm as shown in the following drawing. This is a convenient place to connect the coupler control hoses and allows adequate room for hose movement during bucket crowding. Please ensure all new tubing and hoses are thoroughly cleaned (blown out) before final assembly.

This chart shows the flow and pressure requirements for the tilt function of the Doherty Tilt coupler. Refer to the ID plate to select the correct model.

COUPLER	Litres / Min	MinTube Dia	Hose
HST015-180 deg	4	¼	¼
HST025-180 deg	4	¼	¼
HST035-180 deg	5	¼	¼
HST055-140 deg	10	¼	¼
HST080-140 deg	15	3/8	¼
HST140-140 deg	45	¼	3/8
HST240-140 deg	60	5/8	1/2
HST290-140 deg	60		
HST350-100 deg	75	¾	½
HST450-100 deg	80	¾	½
HST650-100 deg	90	1	¾

## NOTE

Some excavators have factory fitted breaker piping. This may be used for tilt coupler connections (if no breaker is to be fitted) provided:

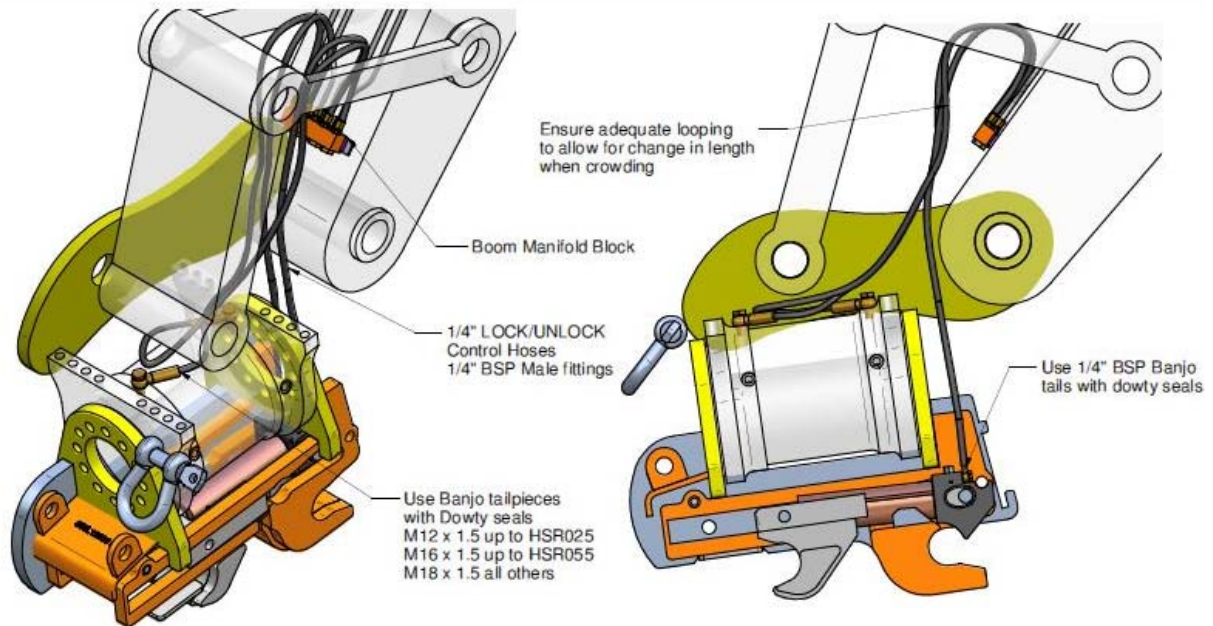
1. The nominated operating pressure and flow rates can be maintained.
2. A directional control valve is connected.
3. Some breaker circuits employ an open centre valve spool which vents to tank when in the open position and this can cause the tilt action to be "soft" or "spongy".
4. Excessive oil volume in larger breaker lines can cause some actuator movement due to oil compression, especially on long boom sets.

Conditions 3 and 4 above may require the installation of a port checked cross line relief valve, lock valve, or counterbalance valve, close to the coupler, to ensure correct operation.

## PLUMBING THE TILT COUPLER.

The recommended hose routing is shown on the sketch below. Unlike many other tilt couplers the hose connections on the Doherty Rotary Tilt do not move during tilting so there is no need to allow extra length.

To establish the correct control hose lengths, crowd the coupler right forward and make up hoses to suit. Take care when crowding back to ensure excess hose rolls up dipper arm and does not foul on anything. The use of kevlar sleeves or "spaghetti" armoring is strongly recommended.

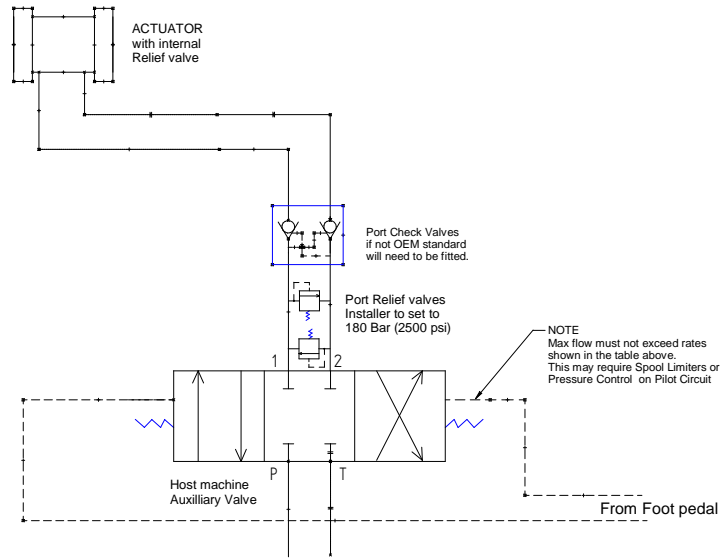


**SUGGESTED HSR  
HOSE CONNECTIONS**

Refer to chart for tube/hose sizing

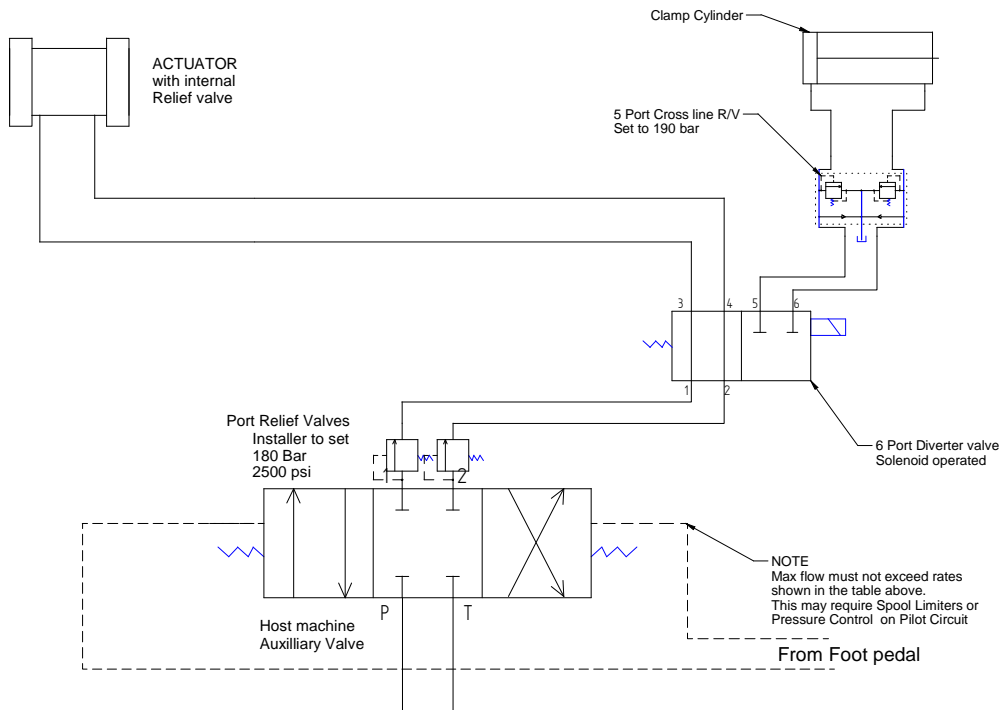
## HYDRAULIC CONTROLS.

Typical control schematics are shown in the following figures. It is the responsibility of the installer to ensure that the selection method is fully compatible with the host machine.



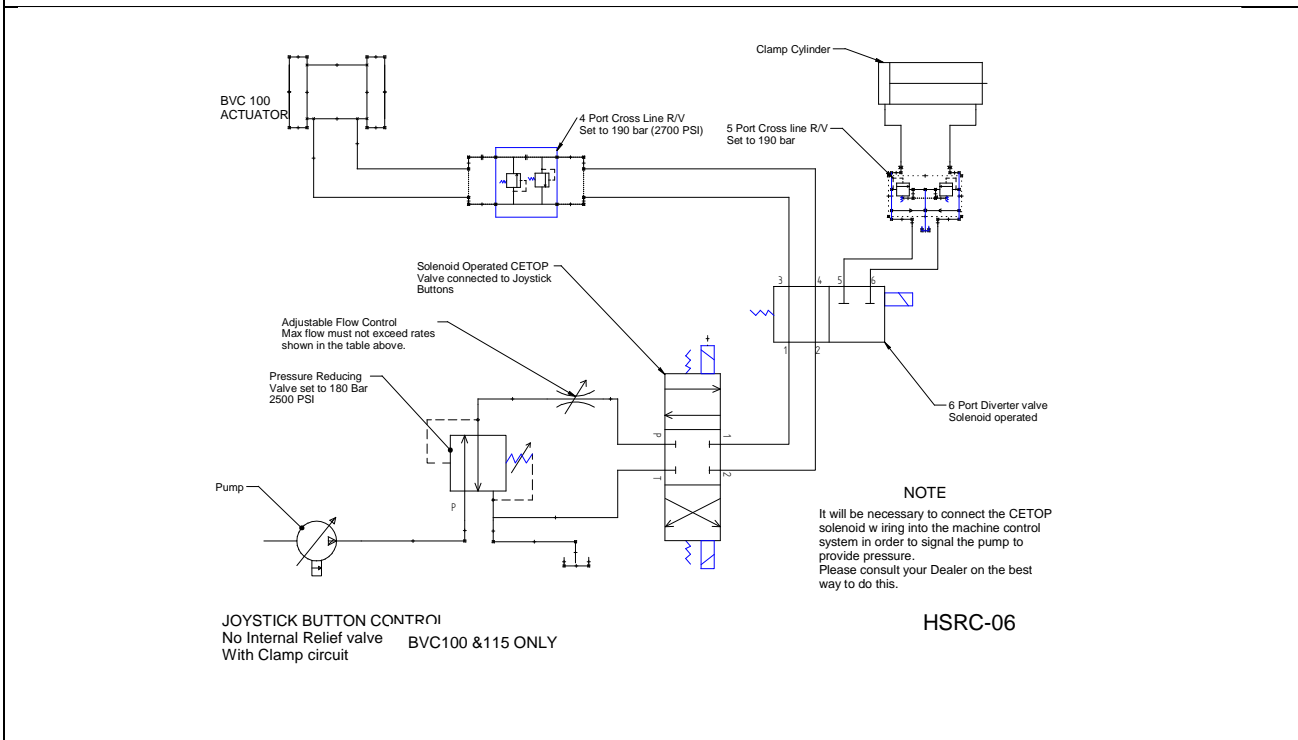
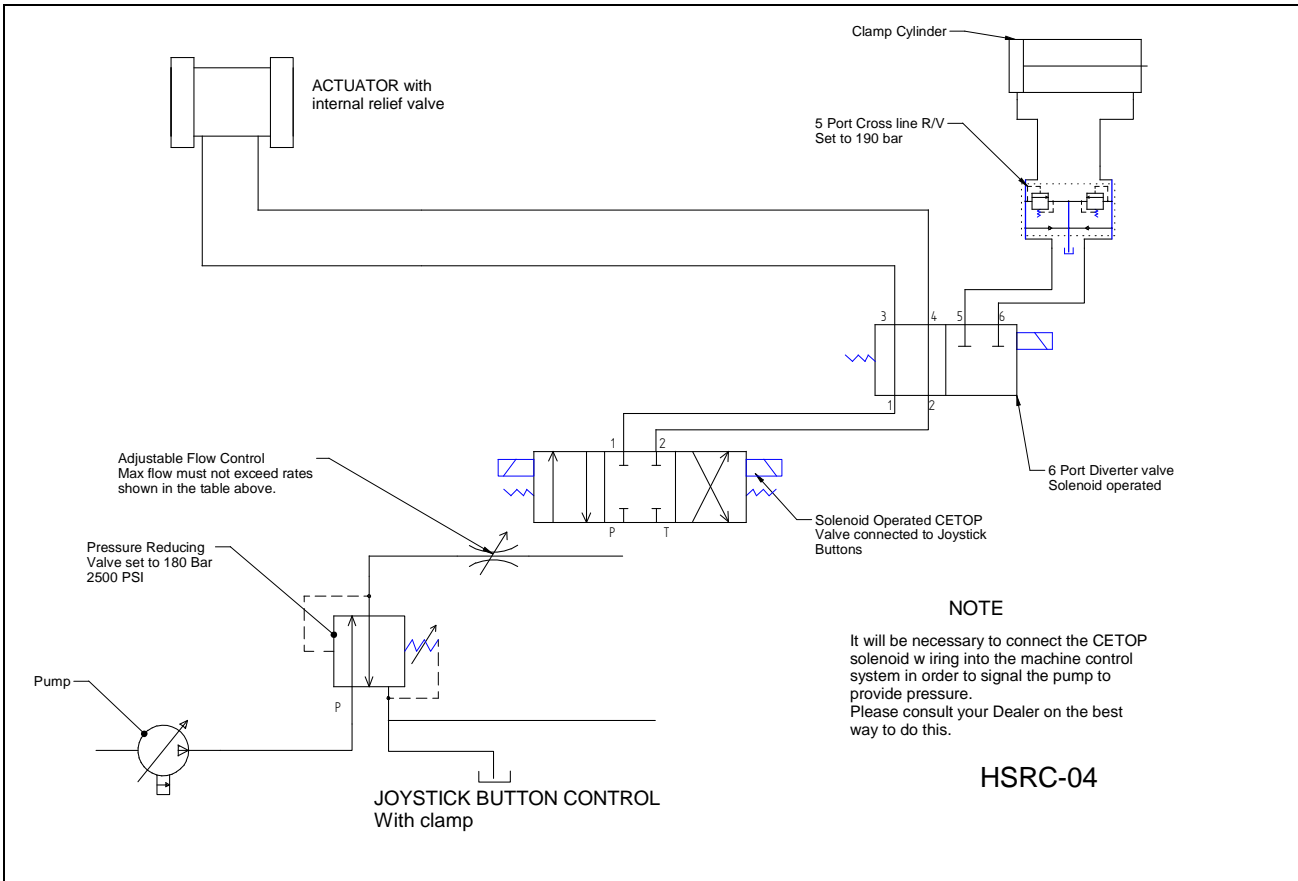
FOOT PEDAL OPERATED AUXILIARY VALVE

HSRC-01



FOOT PEDAL OPERATED AUXILIARY VALVE  
With Clamp

HSRC-02



## TILT CIRCUIT NOTES

FLOW REGULATION. Refer to the chart on page 10 for recommend maximum flow rates. Suitable flow rate can be verified by timing the tilt from extreme left to extreme right. MAXIMUM TIMES should not exceed

100 degree tilt	5 seconds
140 degree tilt	6-7 seconds
180 degree tilt	7-8 seconds

Faster tilt speeds will cause excessive shock loadings which may result in damage to coupler and machine and will also VOID the WARRANTY.

## PRESSURE SETTING

To ensure the tilt operating pressure is correctly set the gauge should be fitted into the connections on the coupler or at the dipper arm manifold.. Maximum pressure is 180 Bar (2500 PSI).

## FINAL CHECK

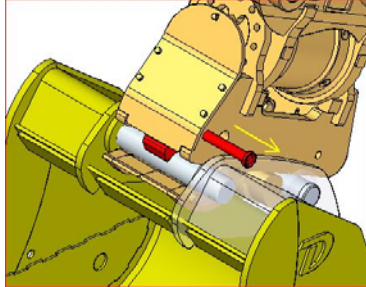

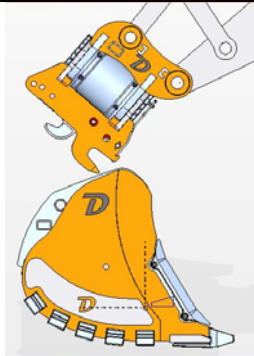
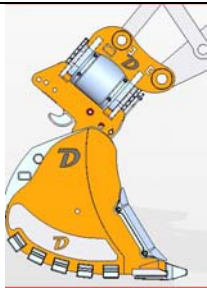
- Verify all fittings and fasteners are tight and secure.
- Check the entire system for leaks.
- Move the Coupler through its entire motion slowly checking for the following:
  - A. Hose chaffing.
  - B. Proper hose lengths.
  - C. Any type of mechanical interference.
- Attach and detach all attachments to be supplied with the machine and ensure coupler locks securely.
- Ensure that all product and cab decals are correctly fitted and visible.
- Complete Warranty registration and Pre-delivery forms and return to Doherty Engineered Attachments to activate warranty.
- Ensure the installation manual ( or a copy) is kept in the operator's cab

Additional copies of this manual are available in hard copy or electronic form from Doherty Engineered Attachments.

## LOCKING / UNLOCKING PROCEDURE

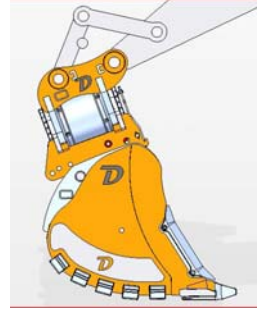
The HST range of Tilt Hitches comply to AS4772-2008 Australian standard for Earthmoving machinery – Quick hitches (Couplers) for excavators and backhoe loaders AS4772-2008 PROVIDED THE FACTORY SUPPLIED SAFETY PIN IS CORRECTLY FITTED WHILE IN OPERATION. Clause 2.1.4 and requires a particular procedure for successful locking and unlocking which may vary from other couplers. *It is important that all operators fully understand the correct procedure as described and illustrated below.*

### TO ATTACH:

<p><b>STEP 1</b></p> <p>Place attachment flat on ground and remove safety pin</p>	
<p><b>STEP 2</b></p> <p>Place coupler in the curled/crowded position. Turn the coupler switch to the release or ON position – the buzzer will sound. Hold the bucket crowd lever for approx. 3-5 seconds to allow the hook to fully retract. Visually inspect to check the hook is fully retracted.</p>	
<p><b>STEP 3</b></p> <p>Ensure that the jaw is fully retracted before attempting to engage the bucket. Place the coupler above the attachment.</p>	
<p><b>STEP 4</b></p> <p>Curl the coupler to engage the front pin.</p>	

## STEP 5

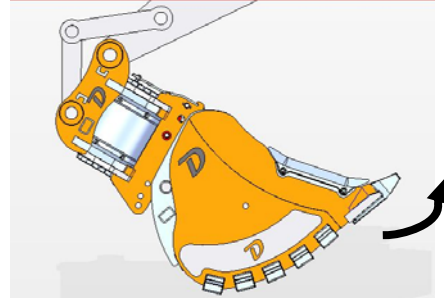
Continue to curl the coupler until the attachment is lifted off the ground



## STEP 6

Fully curl/crowd the bucket. Switch off unlock switch, the buzzer will cease. Hold the bucket crowd lever for approx. 3-5 seconds to allow jaw to fully engage and clamp the bucket pin.

**DANGER** – If the bucket/attachment pins have not been correctly engaged the jaw **MUST NOT** be retracted. This could force the bucket to be unintentionally released from the coupler and could result in machine damage or personal injury. Please refer to step 7 for remedial action.

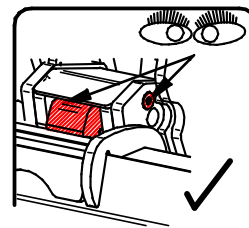


## STEP 6

Visually inspect and check that the jaw is engaged.

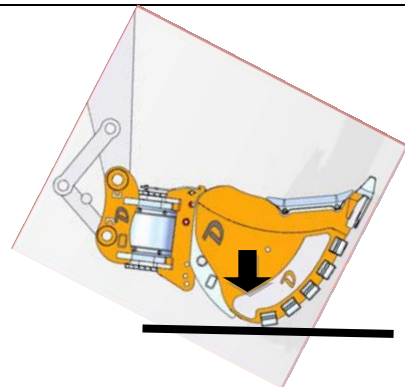
Refit the safety pin and ensure the pin retainer is in the locked position.

If the Safety pin cannot be fully inserted, the jaw may not be correctly engaged. **DO NOT OPERATE** unless the pin is fully inserted and locked.

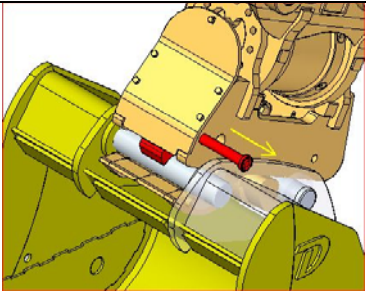
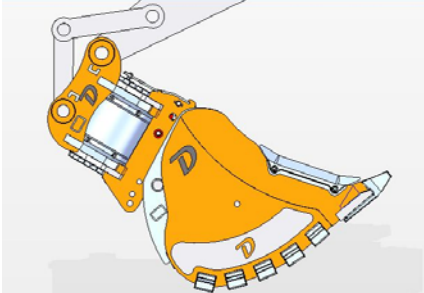
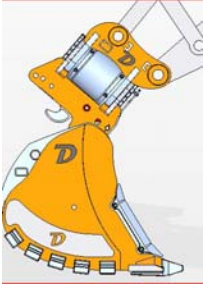
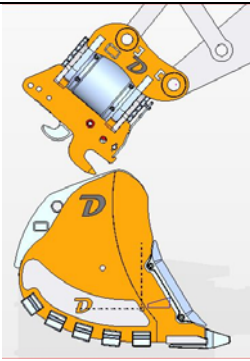


## STEP 7

To ensure that the bucket pins are securely held by the coupler, apply pressure to the bucket by rotating it against the ground and away from the machine before operation.



## TO RELEASE:

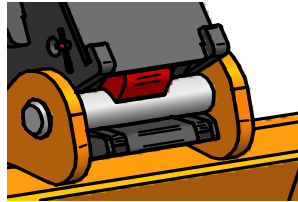
<p><b>STEP 1</b></p> <p>Place attachment flat on ground and remove safety pin</p>	
<p><b>STEP 2</b></p> <p>Fully extend bucket crowd cylinder.. Switch both safety switches to the On to the release or on position – the buzzer will sound. Hold the bucket crowd on relief for 3-5 seconds to allow the hook to fully retract.</p> <p><b>WARNING</b> – Do not release or change the bucket near any persons or in any areas that may result in an accident or injury occurring. The switch should be in the attach or OFF position at all times, expect during bucket changing.</p>	
<p><b>STEP 3</b></p> <p>Once the jaw is fully retracted, lower the attachment to ground and slowly curl the coupler back to release the rear bucket pin.</p>	
<p><b>Step 4</b></p> <p>Lift the dipper arm until the coupler has disengaged the front bucket pin. The attachment is now safety disengaged.</p>	

## HANDY TIPS

1. Coupler should be unlocked on a daily basis to ensure satisfactory operation. This is particularly important when using hammers or digging in hard ground as the constant vibration can cause the wedged surfaces to become very tight.
2. If your machine is to remain inactive for an extended period we suggest that the attachment be released to eliminate the possibility of seizing.
3. The operator may experience slow or unexpected movement of functions when operating with cold hydraulic oil. Likewise, damage to the hydraulic components may result due to cold oil. Make sure to warm up hydraulic system before operation.

## OPERATIONAL SAFETY NOTES

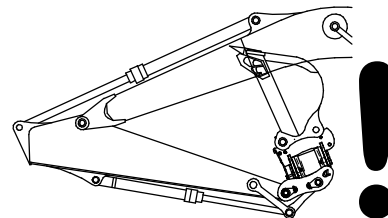
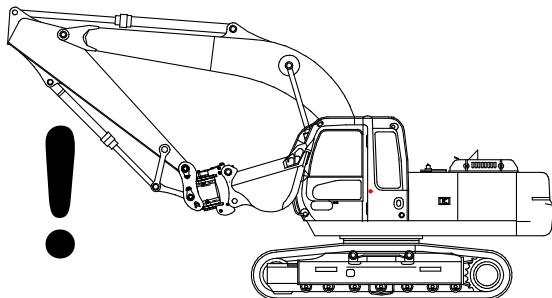
Site Personnel must stay clear when engaging and disengaging a bucket or an attachment.



If Red Snaplock tag is not visible, the coupler is incorrectly attached. **DO NOT OPERATE.** Lower to the ground and carefully check for obstructions.

If alarm continues to sound after switching to LOCK there is an electrical fault. **DO NOT OPERATE THE MACHINE** until this is rectified.

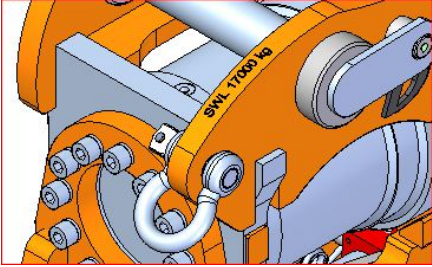
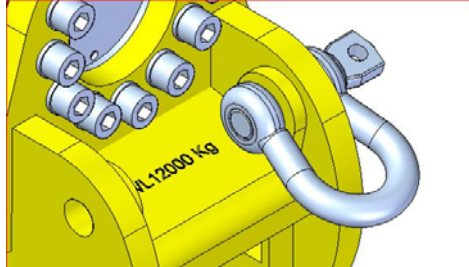

If alarm **FAILS** to sound when switching to UNLOCK, there is an electrical fault. **DO NOT OPERATE THE MACHINE** until this is rectified.



The installation of a quick coupler effectively lengthens the reach of your excavator's dipper arm. This may enable various attachments to come into contact with the boom set and operators cabin. Operators must be aware of this and take appropriate care.

## USING THE LIFTING POINT.

Depending on the model, your DEA Tilt Coupler may have a lifting point located on either the upper or lower weldment. The safe working load (SWL) in Kilograms is stamped adjacent to the lifting point and must not be exceeded. Note this rating must be checked against the machines lift chart ratings and the lower figure used in all situations.

		
Location A	Location B	Certified Bow Shackle

These lifting points are designed for use only with certified BOW Shackles and no other fixing devices are to be used.

## LIFTING SAFETY NOTES

- Use ONLY A CERTIFIED BOW SHACKLE through the lifting pint aperture.
- The safe working load (SWL) rating for the coupler is stamped adjacent to the lifting point. It is also noted on the ID Plate and in this manual. THIS MUST NOT BE EXCEEDED under any circumstances.
- ALWAYS remove the attachment from the coupler before lifting.
- Fully extend the crowd cylinder when lifting.
- Do not attaching lifting chains or slings to any other part of the coupler.

## Daily Prestart Check

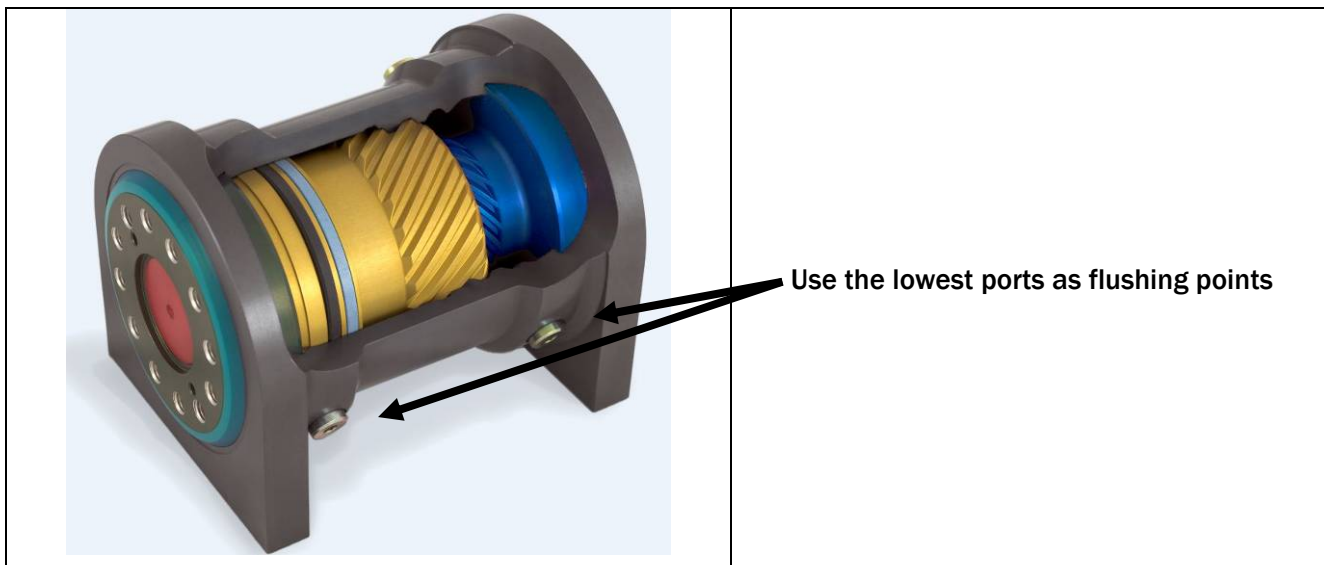
1. Disengage attachment from coupler.
2. Check all attachment pin retainer bolts and nuts for tightness.
3. Check attachments for pin wear - The Snaplock Quick Coupler is designed to take up wear, however if mounting pin wear exceeds 5% of the original diameter, immediately replace implement pins.
4. Check all hydraulic hoses and fittings for any leaks or wear.
5. Clean away any material build up around rotary actuator end seals, cylinder guide ways, spring apertures and the pin engagement surfaces.
6. Start the machine, fully extend crowd cylinder, switch on both safety switches and hold crowd on relief for 3-5 seconds. Check that front snap lock has fully retracted allowing unobstructed pin access. If not, switch off, check for obstructions and repeat.

## Weekly

1. Thoroughly clean coupler – (Water blasting is NOT recommended as this may damage the end seals).
2. Check Coupler for evidence of fatigue, weld failure or stress. Do not operate with a cracked weldment.
3. Repeat daily checks above.
4. Ensure the external surfaces of the green end seals on the actuator are clean and free of grit.
5. Models fitted with tertiary O ring end seals should be greased weekly or more often in abrasive applications. Note if tertiary O ring end seals are fitted, you will be unable to see the green end seals as stated in 3 above.
6. Ensure oil is up to operating temperature. Fully tilt coupler and hold on relief for 5 seconds. Repeat in opposite direction. This will ensure that the actuator is flushed with clean oil. It is also an ideal time to check for leaks.

## Monthly

1. Check all bolt torques using the schedule below.
2. Remove one lower bleed plug and pump approx 1 litre of oil into a suitable waste container. Replace plug and repeat operation at the opposite end of the actuator while tilting in the opposite direction. This will ensure any internal contamination within the actuator is flushed out.



## Annually or 2000 hrs (whichever occurs first)

1. Remove actuator from coupler and replace end seals.
2. Replace mounting bolts and lock washers. Use only Class 12.9 cap screws and torque to the table below.
3. Check all pin contact surfaces for wear. Build up and machine as required.

## BOLT TORQUE GUIDE

Loose bolts should immediately be replaced. Use only Class 12.9 cap screws and nordlock washers. Pre lubricate with a good quality anti seize coating. Do not use "loctite".

CAP SCREW SIZE	TORQUE (NM)
M8	41
M10	81
M12	142
M16	350
M20	680
M24	1170
M27	1700
M30	2325

## INSPECTION SAFETY NOTES

- Report Necessary Repairs. If your daily 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.

## IMPORTANT INFORMATION - 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 actuator and void any applicable warranty.
- Always disconnect machine battery before any welding work is started.

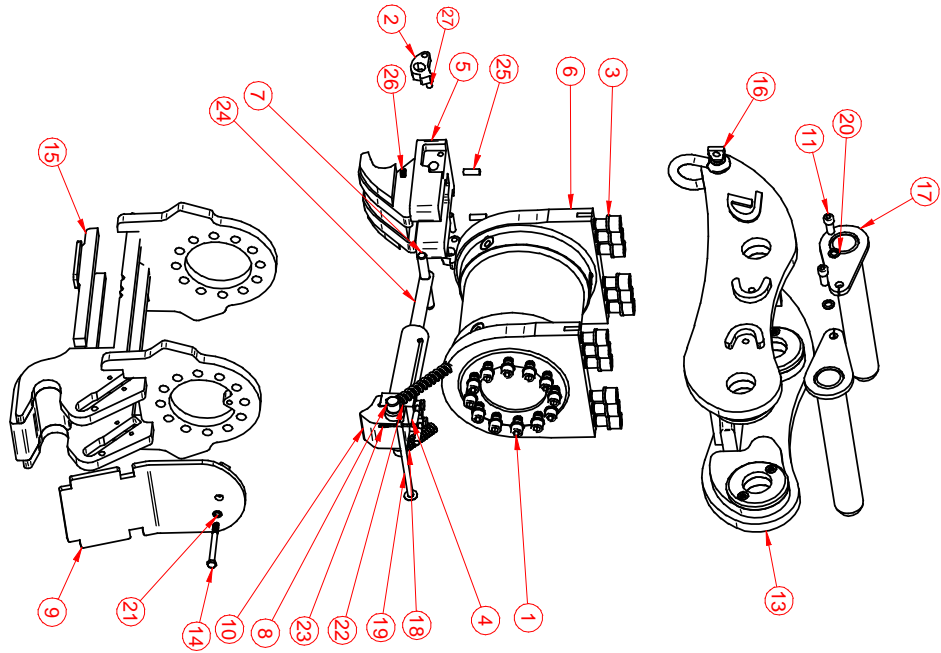
## CAUTION

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 properly 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.





## HST & HDT PARTS LIST

Item	File Name	Title	QTY
1	End Bolts	incl nordlock washers	24
2	dual lock profile	LOCK PAUL	2
3	Top Bolts	incl nordlock washers	12
4	BANJO 1-4	1/4 BSP BANJO	2
5	JAW		1
6	BVC Actuator		1
7	HS-PIN-01	JAW PIN	1
8	HS-PIN-03	CYLINDER PIN	1
9	HSR-PR06	Guard	1
10	CY-HS13-150	Cylinder	1
11	Pin bolts		2
13	HSR TOP	TOP WELDMENT (MARKESI)	1
14	B012-120	Guard Bolt	1
15	HSR LOWER		1
16	SHACKLE		1
17	HSR PIN	Mounting Pin	2
18	HS SPRING CLOSED		1
19	HS-PIN-06	SAFETY PIN	1
20	Nordlock washer	NORLOCK WASHER	2
21	Nordlock washer	NORLOCK	1
22	HS SPRING OPEN		1
23	Front lock		1
24	ROD-HS	CYLINDER ROD	1
25	HSR-PR50	Barrier Cord spring	2
26	Grub screw	GRUB SCREW	2
27	HS PIN	PAUL PIN	2

Refer to Appendix 1 for detailed parts list for your particular model.

## Warranty Period

Doherty Engineered Attachments Limited ("Doherty") standard warranty is for a **period of twelve (12) months from date of sale or one thousand (1000) machine hours, whichever occurs first.**

## Warranty Inclusions

This warranty covers defects in material and workmanship and is subject to receipt of supporting evidence and/or inspection by Doherty and confirmation that said attachment or part was installed and operated in accordance with Doherty's currently published instructions. Upon acceptance, Doherty shall repair or arrange for the repair and/or full or partial replacement of such attachment.

Any attachment or part repaired or replaced under the terms of this warranty policy shall retain the warranty period pertaining to the product's original date of purchase.

## Warranty Exclusions

This policy does not cover machinery, parts or accessories that are warranted directly to the end user by third party manufacturers, for example hydraulic cylinders, hoses, valves, or any other portions of hydraulic kits used in Doherty products but not manufactured directly by it. Failure to follow Doherty's or the third party manufacturer's recommendations for oil pressure and flow ratings on hydraulic components will invalidate all warranty claims relating to both the attachment and the hydraulic components of the attachment.

Doherty shall not be responsible for any problems associated with hose fittings, damage or malfunction after installation regardless of cause. If in doubt, contact Doherty for assistance and advice.

This policy does not apply to parts which have been repaired by the owner or a third party without prior formal written authorisation from Doherty.

This policy does not apply to parts which in Doherty's opinion, have been subjected to or adversely affected by operator misuse, accident, negligence, improper installation, maintenance, or storage.

Normal wear parts and parts requiring regular lubrication are not covered by this warranty.

This policy is restricted to the direct repair and/or replacement cost of the said part. It does not apply to any incidental or consequential costs such as transport, travel, injury, accident downtime, consumables and any other indirect expenses.

Doherty accepts no responsibility whatsoever for the suitability or otherwise of the carrier machine or other equipment to which a Doherty attachment may be mounted upon or fitted to.

Doherty shall not be held liable for injury or damage caused to any persons, place or machine by reason of the installation, use or mechanical failure of any Doherty attachment.

Doherty shall be under no liability in respect of any defect in the goods arising from any drawing, design or specification supplied by the buyer.

In relation to the supply of buckets by Doherty the above warranty shall only apply to cracking and bending of the buckets during correct and normal usage and shall not extend to the breakage of or failure of bucket teeth, cutting edges, bucket sides or base or to any other failure in performance due to a bucket being used in applications outside of its intended specified applications, including for example where a general purpose bucket or heavy duty bucket is used for rock and concrete excavations.

Doherty shall be under no liability under the above warranty (or any other warranty, condition or guarantee) if the total price of the goods has not been paid in full.

## **Doherty Obligations**

At its option, Doherty will repair or replace the said part. Any repair work may be carried out at Doherty's own premises, at the workshop of an authorized Service Agent/Dealer, on the site at which the part or attachment is being used, or at any other location that Doherty considers appropriate under the circumstances.

Under the terms of this warranty, Doherty's obligations are limited to the repair or full or partial replacement of the defective item(s) and do not include any costs, direct or indirect, associated with the removal or reinstallation of the attachment or part on the carry machine. This is the responsibility of the Customer.

Doherty warrants that any repair work carried out by it directly shall be conducted in a timely and professional manner. Where a third party is engaged to carry out repair work in connection with a Doherty warranty claim, Doherty's obligation and liability shall be limited to a refund of the authorized reimbursable costs charged in connection with the provision of such work.

## **Customer Obligations**

The Customer is responsible for the correct and proper installation of the part or attachment as detailed in the Operation and Maintenance documentation supplied by Doherty, including hydraulic and electrical connections.

The Customer is responsible for the completion of the formal Pre-delivery check and the Warranty Registration forms (which form part of the above documentation) and their return to Doherty within seven days of initial commissioning.

The Customer is responsible for ensuring that the part or attachment, including any hydraulic components and fittings, is operated and maintained using best industry practice and in accordance with the Operation and Maintenance documentation supplied by Doherty. (a copy of which is available on request.)

The Customer is also responsible for notifying Doherty as soon as it identifies a defect or problem that may potentially be subject to a claim under this policy and for following Doherty's published Warranty Claim Procedure.