



# Installation Guide and User Instructions for the AutoLatch Quick Coupler

## **AUTOLATCH**

**IMPORTANT:**

This book should be kept with the machine at all times during and after coupler installation





Thank you for purchasing  
a Miller Quick Coupler

The following information details  
the installation & operation procedure  
for your Miller Quick Coupler.

Please take the time to read the instructions carefully and install the coupler in accordance with Miller's recommendations. This will enable you to benefit from the many features incorporated within your Miller Coupler aimed at providing you with increased versatility at the flick of a switch.

We trust that you will enjoy many trouble free years with your Miller Coupler and hope that we may look forward to being of service to you again soon.

**Pioneering Attachment Changeover Technology.**



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CONTACT DETAILS – Please See Back Cover.  
Miller reserves the right to amend detail or specification without prior notification



Installation Guide and User Instructions  
for the AutoLatch Quick Coupler

# PRODUCT INFORMATION

## 1.0 MILLER QUICK COUPLERS

### The Versatility of Miller Quick Couplers

Miller Quick Couplers are designed to facilitate the easy changeover of standard buckets and work tools. The couplers can operate with a range of buckets from a variety of machine manufacturers within the same size range (fig1.0).

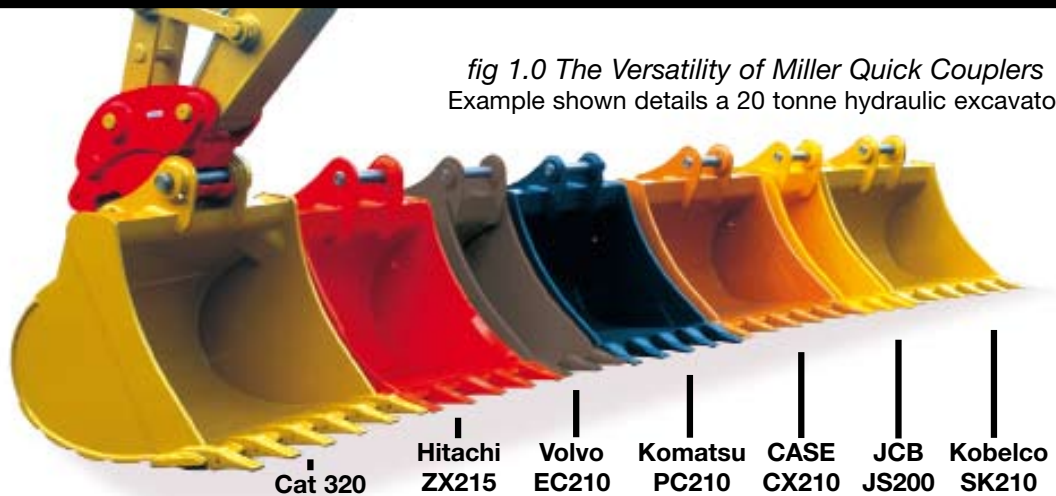
No modifications are required to the buckets or machine. The couplers can utilise buckets in face mode position (fig 1.1), operate hydraulic breakers (fig 1.2) and be used as a lifting tool (fig 1.3). Couplers can also work in a range of applications and with a wide variety of work tools (fig 1.4 – 1.6).

### Replacement Parts

Miller recommends that you fit genuine replacement parts. For advice or to order parts contact Miller on +44 (0)1670 707 272 or via [info@miller.gb.com](mailto:info@miller.gb.com) quoting the **coupler serial number** which can be found on the coupler data plate (section 2.3 page 7).

### Coupler Installation and Operation

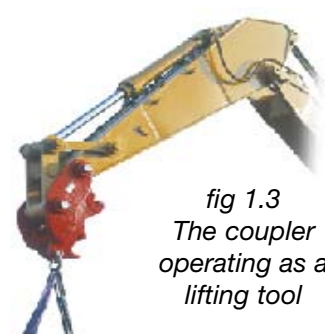
Miller offers a number of free services to ensure the correct installation and operation of the coupler. These include coupler inspection, installation training and operation guidance. Miller also offers a 'New for Old' scheme in which it buys back an old or alternative manufacturer's coupler in part exchange for one of its universal designs. Terms and conditions apply.



*fig 1.1*  
The coupler operating with a standard bucket in face mode



*fig 1.2*  
The coupler operating with a hydraulic breaker



*fig 1.3*  
The coupler operating as a lifting tool



*fig 1.4*



*fig 1.5*



*fig 1.6*

## 1.1 THE FULLY AUTOMATIC AUTOLATCH

The AutoLatch Quick Coupler has a unique and patented locking mechanism. This mechanism negates the need to manually insert a safety pin, hence there is no safety pin hole in the coupler frame (fig 1.7). The AutoLatch can therefore be operated solely from the machine's cab (see Section 4 Operation, page 16).



*The AutoLatch Quick Coupler  
fig 1.7*

## 1.2 THE PERFECT PARTNER

Specifically designed to be used with a Miller Quick Coupler, the Miller Scoop is a revolutionary bucket that can maximise machine productivity, efficiency and profitability.



*The Scoop Bucket  
fig 1.8*

The Scoop profile enables the bucket to cut through the ground more effectively with minimal resistance and drag. The self fill action gives an increased pay load. These combined benefits result in time and fuel savings.

## 1.2 THE AUTOLATCH SAFETY FEATURES

Clear visibility of the locking system aids secure attachment.

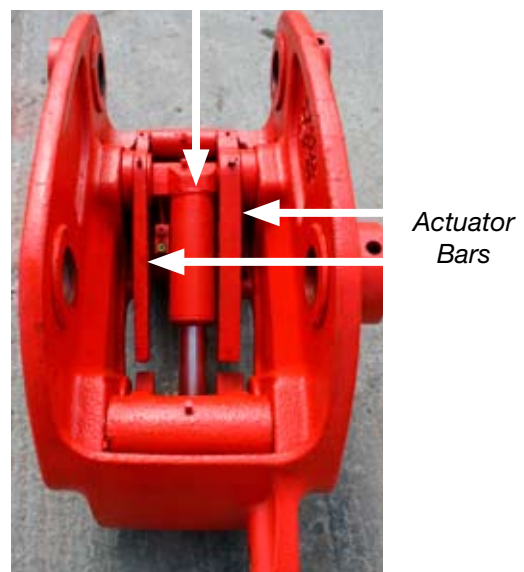
Hydraulic check valves in the cylinder (fig 1.9) and the solenoid prevent the attachment from being released in the unlikely event of a hydraulic failure.

The locking mechanism is made up of two Actuator Bars (fig 1.9, one on either side of the cylinder) and a Front Latch (fig 1.10).

The Front Latch locks the front pin in position in the event of loss of engagement forces to the rear pin. It also acts as a visual indicator in the operational process.

The Retaining Jaw (fig 1.10) is a reliable safety feature that ensures it is only possible to disengage in a safe and controlled manner.

*Hydraulic cylinder*



*fig 1.9*



*Front Latch and Retaining Jaw  
fig 1.10*




# Installation Guide and User Instructions for the AutoLatch Quick Coupler


# SAFETY


## 2.0 GENERAL SAFETY INFORMATION


**Miller Couplers** are designed to provide a safe and reliable solution for the easy changeover of **standard OEM buckets** and attachments for most popular machines in the same operating weight.


 **WARNING - Miller couplers must be installed and operated by appropriately trained and experienced personnel. Miller can provide an installation service and operator training if required. Please contact Miller and/or an authorised distributor for details.**


Miller cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this publication and on the product are, therefore, not all-inclusive. If a tool, procedure, work method or operating technique that is not specifically recommended by Miller is used; you must satisfy yourself that it is safe for you and for others. You should also ensure that the product will not be damaged or be made unsafe by the operation, lubrication, maintenance or repair procedures that you choose. It is the owner's and operator's responsibility therefore to ensure the coupler is in a good safe working condition.


 **WARNING IMPORTANT NOTICE - This product may enable the operator to use buckets or attachments for which it is not specifically designed, i.e. oversized tools, buckets or equipment. You must always ensure that the operating capacity of the excavator is not exceeded as the excavator may become unstable and could be dangerous.**


 **DANGER - Hydraulic Fluid** Never use your hands to search for hydraulic fluid leaks, use a piece of paper or cardboard. Escaping fluid under pressure can be invisible and can penetrate the skin and cause serious injury. If affected, see a doctor at once.


 **WARNING - Coupler Condition** A defective coupler could injure you or others. Do not operate a coupler that is defective.


 **WARNING - Decals** To ensure the safe operation of the quick coupler you must place the coupler decal in the machine cab where it can be seen clearly. Replace unreadable or missing decals with new ones before operating the machine.


 **WARNING - Modification and Welding** Non-approved modifications can cause injury and damage, making your coupler unsafe. Please call Miller for advice and service requirements.


 **WARNING - Protective Clothing** Oil resistant safety gloves must be worn during installation and dismantling. Field Service personnel and operators must be fully conversant with the installation and operating procedures. If in doubt, seek advice.


 **WARNING - Smoking** Do not smoke whilst working on the hydraulic system.


 **WARNING - Lifting** Always use the correctly rated shackle and lifting equipment. Refer to the table section 2.2, page 7 to ascertain product weight. Never use worn, damaged or undersized lifting equipment.

 **WARNING - Machine Operation** Always stop the machine and shut off the engine when leaving the machine. Never keep the machine running whilst installing or servicing the coupler.

 **WARNING - Maintenance Work** Maintenance work must only be done by competent personnel.

 **WARNING - Manual Handling** Take care when manually handling coupler & components, bucket and installation pins. Refer to the table section 2.2 page 7 to ascertain product weights.

 **CAUTION - Metal Splinters** Flying metal splinters can cause injury when driving metal pins in and out. Use a soft-faced hammer or drift to fit and remove metal pins. Always wear safety glasses.

 **WARNING - Safety Shutdown Procedure** Work of any type on machinery is always more dangerous when the machine is operating. Before cleaning, lubricating or servicing this unit, the following Safety Shutdown Procedure should **always** be followed:

- 1 Move the host machines propulsion control to the neutral position and idle the engine down.
- 2 Shut off the hydraulic fluid flow to the Coupler.
- 3 Position the coupler so that it is completely resting on the ground.
- 4 Engage the host machine's park brake.
- 5 Move the host machine's throttle to slow idle, shut the engine off and remove the ignition key.

## 2.1 IN CAB DECALS

A safety decal detailing the safe operation of the quick coupler is supplied with the product. This must be fitted to the machine's cab where it can be clearly viewed by the operator.

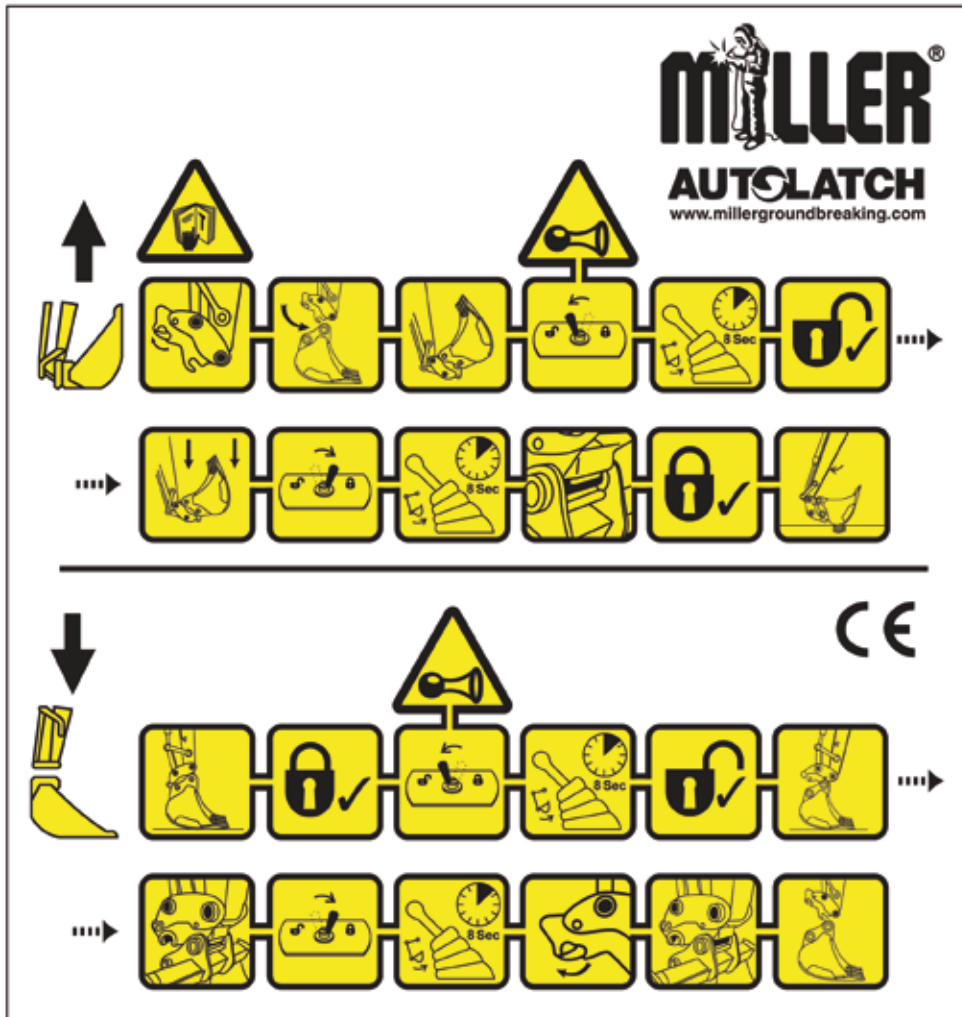


fig 2.0 AutoLatch Coupler Decal

**⚠ WARNING** - Quick couplers extend the length of the dipper arm (fig 2.2) and with certain attachments could hit the cab in some positions (fig 2.3). Check this before operating the machine. If this is of concern ask your dealer about the Miller Scoop bucket (fig. 2.4).

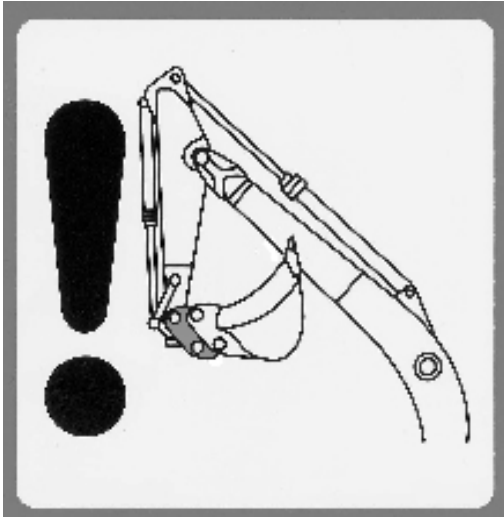


fig 2.1

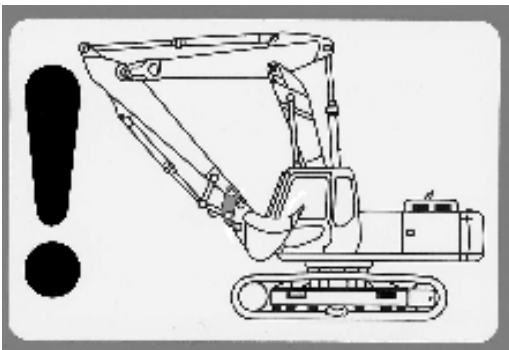


fig 2.2



fig 2.3  
Miller Scoop Bucket and Miller Coupler in transit mode

## 2.2 QUICK COUPLER WEIGHT CHART

Machine tonnage range	Miller coupler range	Approx. coupler weight Kg	Approx. pin weight Kg	Approx. cylinder weight Kg
3	P Class	36	1.75	2
4 - 5	R Class	54	3.5	3
6 - 9	3	98	8.5	7
10 - 13	4	210	20	11
14 - 18	5	257	30	13
19 - 21	6	345	44	13
22 - 27	7	513	52	29

\* The weight of range 10 - 12 couplers can vary significantly with model. Please refer to the coupler Data Plate, section 2.3, (fig 2.6).

## 2.3 COUPLER IDENTIFICATION

To ascertain the serial number, weight and Safe Working Load (SWL) of the coupler please refer to the Data Plate (fig 2.4), detailed below. Alternatively find the serial number and SWL stamped into the coupler as shown below (fig 2.5).

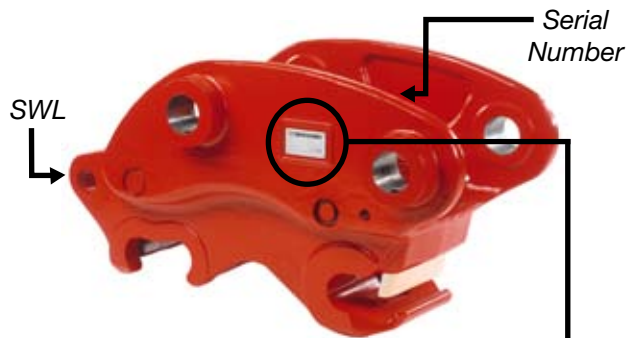


fig 2.4  
Coupler Data Plate and stamp location

AUTOLATCH		CE
Miller, Suite 93, International Commercial Centre, Casemates Square, Gibraltar. Tel: +44 (0) 1670 787 272 www.millergroundbreaking.com		
COUPLER TYPE AUTOLATCH	WEIGHT	PATENTS: GB2330579 GB2330600 EP1114413 JP2002-524673 US6481125 GB2330605 GB2330609 US6502969 PATENTS PENDING: GB2330610 GB2330612 GB2330613 GB2330614 GB2330615 GB2330616 GB2330617 GB2330618 GB2330619 GB2330620 GB2330621 GB2330622 GB2330623 GB2330624 GB2330625 GB2330626 GB2330627 GB2330628 GB2330629 GB2330630 GB2330631 GB2330632 GB2330633 GB2330634 GB2330635 GB2330636 GB2330637 GB2330638 GB2330639 GB2330640 GB2330641 GB2330642 GB2330643 GB2330644 GB2330645 GB2330646 GB2330647 GB2330648 GB2330649 GB2330650 GB2330651 GB2330652 GB2330653 GB2330654 GB2330655 GB2330656 GB2330657 GB2330658 GB2330659 GB2330660 GB2330661 GB2330662 GB2330663 GB2330664 GB2330665 GB2330666 GB2330667 GB2330668 GB2330669 GB2330670 GB2330671 GB2330672 GB2330673 GB2330674 GB2330675 GB2330676 GB2330677 GB2330678 GB2330679 GB2330680 GB2330681 GB2330682 GB2330683 GB2330684 GB2330685 GB2330686 GB2330687 GB2330688 GB2330689 GB2330690 GB2330691 GB2330692 GB2330693 GB2330694 GB2330695 GB2330696 GB2330697 GB2330698 GB2330699 GB2330700 GB2330701 GB2330702 GB2330703 GB2330704 GB2330705 GB2330706 GB2330707 GB2330708 GB2330709 GB2330710 GB2330711 GB2330712 GB2330713 GB2330714 GB2330715 GB2330716 GB2330717 GB2330718 GB2330719 GB2330720 GB2330721 GB2330722 GB2330723 GB2330724 GB2330725 GB2330726 GB2330727 GB2330728 GB2330729 GB2330730 GB2330731 GB2330732 GB2330733 GB2330734 GB2330735 GB2330736 GB2330737 GB2330738 GB2330739 GB2330740 GB2330741 GB2330742 GB2330743 GB2330744 GB2330745 GB2330746 GB2330747 GB2330748 GB2330749 GB2330750 GB2330751 GB2330752 GB2330753 GB2330754 GB2330755 GB2330756 GB2330757 GB2330758 GB2330759 GB2330760 GB2330761 GB2330762 GB2330763 GB2330764 GB2330765 GB2330766 GB2330767 GB2330768 GB2330769 GB2330770 GB2330771 GB2330772 GB2330773 GB2330774 GB2330775 GB2330776 GB2330777 GB2330778 GB2330779 GB2330780 GB2330781 GB2330782 GB2330783 GB2330784 GB2330785 GB2330786 GB2330787 GB2330788 GB2330789 GB2330790 GB2330791 GB2330792 GB2330793 GB2330794 GB2330795 GB2330796 GB2330797 GB2330798 GB2330799 GB2330800 GB2330801 GB2330802 GB2330803 GB2330804 GB2330805 GB2330806 GB2330807 GB2330808 GB2330809 GB2330810 GB2330811 GB2330812 GB2330813 GB2330814 GB2330815 GB2330816 GB2330817 GB2330818 GB2330819 GB2330820 GB2330821 GB2330822 GB2330823 GB2330824 GB2330825 GB2330826 GB2330827 GB2330828 GB2330829 GB2330830 GB2330831 GB2330832 GB2330833 GB2330834 GB2330835 GB2330836 GB2330837 GB2330838 GB2330839 GB2330840 GB2330841 GB2330842 GB2330843 GB2330844 GB2330845 GB2330846 GB2330847 GB2330848 GB2330849 GB2330850 GB2330851 GB2330852 GB2330853 GB2330854 GB2330855 GB2330856 GB2330857 GB2330858 GB2330859 GB2330860 GB2330861 GB2330862 GB2330863 GB2330864 GB2330865 GB2330866 GB2330867 GB2330868 GB2330869 GB2330870 GB2330871 GB2330872 GB2330873 GB2330874 GB2330875 GB2330876 GB2330877 GB2330878 GB2330879 GB2330880 GB2330881 GB2330882 GB2330883 GB2330884 GB2330885 GB2330886 GB2330887 GB2330888 GB2330889 GB2330890 GB2330891 GB2330892 GB2330893 GB2330894 GB2330895 GB2330896 GB2330897 GB2330898 GB2330899 GB2330900 GB2330901 GB2330902 GB2330903 GB2330904 GB2330905 GB2330906 GB2330907 GB2330908 GB2330909 GB2330910 GB2330911 GB2330912 GB2330913 GB2330914 GB2330915 GB2330916 GB2330917 GB2330918 GB2330919 GB2330920 GB2330921 GB2330922 GB2330923 GB2330924 GB2330925 GB2330926 GB2330927 GB2330928 GB2330929 GB2330930 GB2330931 GB2330932 GB2330933 GB2330934 GB2330935 GB2330936 GB2330937 GB2330938 GB2330939 GB2330940 GB2330941 GB2330942 GB2330943 GB2330944 GB2330945 GB2330946 GB2330947 GB2330948 GB2330949 GB2330950 GB2330951 GB2330952 GB2330953 GB2330954 GB2330955 GB2330956 GB2330957 GB2330958 GB2330959 GB2330960 GB2330961 GB2330962 GB2330963 GB2330964 GB2330965 GB2330966 GB2330967 GB2330968 GB2330969 GB2330970 GB2330971 GB2330972 GB2330973 GB2330974 GB2330975 GB2330976 GB2330977 GB2330978 GB2330979 GB2330980 GB2330981 GB2330982 GB2330983 GB2330984 GB2330985 GB2330986 GB2330987 GB2330988 GB2330989 GB2330990 GB2330991 GB2330992 GB2330993 GB2330994 GB2330995 GB2330996 GB2330997 GB2330998 GB2330999 GB2331000
SERIAL No.	SWL	
PART No.	WP	400 BAR Max
MANUFACTURE DATE	MADE IN CHINA BY MILLER	

fig 2.5  
Coupler Data Plate



Installation Guide and User Instructions  
for the AutoLatch Quick Coupler

# INSTALLATION

### 3.0 PRE-INSTALLATION INFORMATION

#### SAFETY NOTE:

**⚠ WARNING – Decals** To ensure the safe operation of the quick coupler you must place the coupler decal in the machine cab where it can be seen clearly. Replace unreadable or missing decals with new ones before operating the machine.

**⚠ WARNING – Protective Clothing** Oil resistant safety gloves must be worn during installation/dismantling. Field Service personnel and operators must be fully conversant with the installation and operating procedures. If in doubt, seek advice.

**⚠ WARNING – Smoking** Do not smoke whilst working on the hydraulic system.

**⚠ WARNING – Manual Handling** Take care when manually handling coupler and components. Refer to the table in section 2.2, page 7 to ascertain product weight.

**⚠ WARNING** - Solenoid valves supplied may be 12 or 24 volts depending on machine; check you have the correct voltage solenoid valve before installation.

#### **⚠ PRE INSTALLATION INFORMATION**

- Each hydraulic coupler is supplied with the following:

- i) An electro hydraulic solenoid valve (12v or 24v)
- ii) Installation instructions (this book)
- iii) All required paperwork, certificates and decal

### 3.1 INSTALLATION KIT

#### Check List of Parts Required

- 1 x Hydraulic coupler
- 1 x Operation attach/release switch
- 1 x Warning buzzer
- 1 x Short hose A (blue tag) with spring guard
- 1 x Short hose B (yellow tag) with spring guard
- 1 x Long hose A (blue tag)
- 1 x Long hose B (yellow tag)
- 1 x Hose P (red tag) hydraulic pump to solenoid
- 1 x Hose T (green tag) solenoid to hydraulic tank
- 2 x Hose joint fittings
- 6 x (approx) Weld on hose clamps (number required dictated by model of machine)
- 1 x cable ties (packet quantities)

**Note:** All hydraulic hose specifications to 2 SN DIN – EN 853 (DIN 20022). All the hoses require the appropriate fittings to make the connection to the machine, depending on machine manufacturer.

Spare parts and hydraulic hose kits suitable for most excavators are available by contacting Miller or an authorised distributor. If in doubt, please ask.

#### Options which may be supplied are:

- i) Full installation kit and installation instructions (*fig 3.0*)
- ii) Dummy bucket and attachment pins, complete with locking bolts (*fig 3.1 & 3.2*)
- iii) Lifting shackles including test certificates (*fig 3.3*)

**⚠ WARNING – Dummy Pins** Do not use the dummy pins to fit the coupler directly to the machine. The dummy pins are only intended to be attached to the bucket or attachment. Use the machine's original OEM specification hardened pins to connect the coupler to the dipper arm and link.



fig 3.0



fig 3.1



fig 3.2



fig 3.3

### 3.2 COUPLER INSTALLATION PROCEDURE

**⚠ IMPORTANT** - The following installation procedure is intended for mini excavators, backhoe loaders and larger excavators. The difference between mini excavators and larger excavators is simply down to scale so the principles of the procedure remain the same. Backhoe loaders follow the same procedure but have extendible dipper arms that need to be taken into consideration. Types of extendible dipper arms vary depending on the machine brand. When installing a hydraulic coupler to a backhoe loader machine it is important to ensure the hydraulic hoses do not foul on the machine when the dipper arm is extended. The hose routing around the end of the dipper arm is explained in step 12 of the installation process and must be taken into consideration. If you have any queries or require more information relating to the best installation method for your machine model please contact Miller for assistance.

#### Step 1



fig 3.4

Remove plugs from cylinder ports

#### Step 2



fig 3.5

Fit first hydraulic hose to coupler (cylinder port B – **yellow line**) and tighten to correct torque (15lb.ft or 20 Nm) This is the short hose with yellow tag and spring guard fitted.

#### Step 3



fig 3.6

Fit second hydraulic hose to coupler (cylinder port A – **blue line**) and tighten to correct torque (26lb.ft or 35Nm). This is the short hose with the blue tag and spring guard fitted.

#### Step 4



fig 3.7

When both hydraulic hoses are fitted, the coupler should be positioned in such a way that the lifting eye is pointing away from the excavator.

#### Step 5



fig 3.8

Align the coupler with the end of the dipper arm and fit seals and shims where required. Lightly grease the O-ring seals and place over the edge of the coupler as shown.

### Step 6



fig 3.9

Slowly lower the dipper arm into place while making sure the O-ring seals do not enter the pin bore or get damaged. Align the bores in the coupler with the bores in the dipper arm.

### Step 8



fig 3.11

Slowly lower the link arm into place while making sure the O-ring seals do not enter the pin bore or get damaged. Align the bores in the coupler with the bores in the link arm as shown above.

### Step 7



fig 3.10

Install the original OEM bucket pin through the coupler and dipper arm bores and fit with either roll pin or locking bolt and nut (this will vary depending on machine model, the appropriate fittings will be supplied).

**⚠ WARNING:** Use original OEM spec hardened pins to connect coupler to dipper/link. Use the supplied dummy pins for the bucket or attachment only. **DO NOT USE DUMMY PINS TO FIT THE COUPLER TO THE MACHINE.**

### Step 9



fig 3.12

Align link arm then install the original OEM bucket pin through the coupler and link arm bores, fit with either roll pin or locking bolt and nut (this will vary depending on machine model, the appropriate fittings will be supplied).

## Step 10



fig 3.13

Once both the OEM pins have been secured, place the coupler in a horizontal position. Straighten the hydraulic hoses, **removing any twist before fitting them** to machine dipper arm.

## Step 11

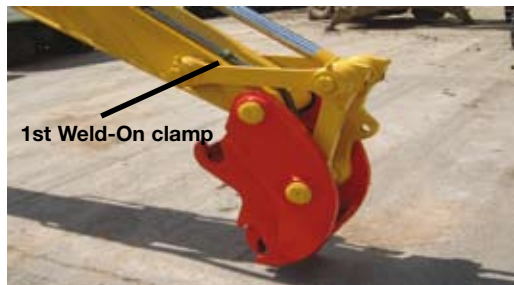


fig 3.14

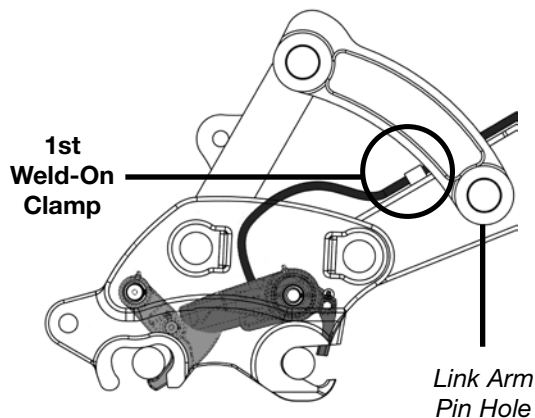


fig 3.15

Position the coupler into full crowd position and feed hydraulic hoses up through the coupler and onto the dipper arm. Connect 'long hose **A**' to 'short hose **A**' and 'long hose **B**' to 'short hose **B**' (fig 3.14).

Fit 1st weld-on clamp approx 50 mm down from link arm pin hole (fig 3.15). Pull hoses to a snug fit and neatly straighten them ensuring spring guard is placed between the coupler cylinder and the first clamp.

Shorten spring guard to required length (The spring guard is only fitted from the pipes to the cylinder to the first clamp). Tighten clamp to hold hoses in place. (20lb.ft/27Nm). Do not over tighten bends. The minimum bend radius should be 100mm.

## Step 12



fig 3.16

**The hose routing should be snug around the nose of the dipper** as shown, (the coupler is in the full crowd position) but not too tight. The hoses should be free to move 10-20mm in either direction across the dipper arm.

## Step 13



fig 3.17

Fit the remaining weld-on clamps up the dipper arm of the excavator at appropriately spaced intervals (approx. 450mm). Also ensure that hoses are flush and in line with the dipper arm to eliminate snagging. Follow the natural curve of the original excavator hydraulic hoses and steel pipes and clamp or cable tie where required up to the solenoid valve. Make sure that the hoses are not twisted.

## Step 14



fig 3.18

Continue to fit hoses up the length of the dipper and tighten clamps. Ensure that all hoses are flush to the boom to prevent snagging during operation.

## Step 15



fig 3.19

Shown above is a typical 'contact area' where hose guards should be fitted. Cable tie hydraulic hoses into position following the curve of the original hydraulic hoses.

## Step 16



fig 3.20

Continue to fit hoses along the boom and clamp or cable tie into position where appropriate. This may vary with different machine makes.

## Step 17 SOLENOID VALVE INSTALLATION

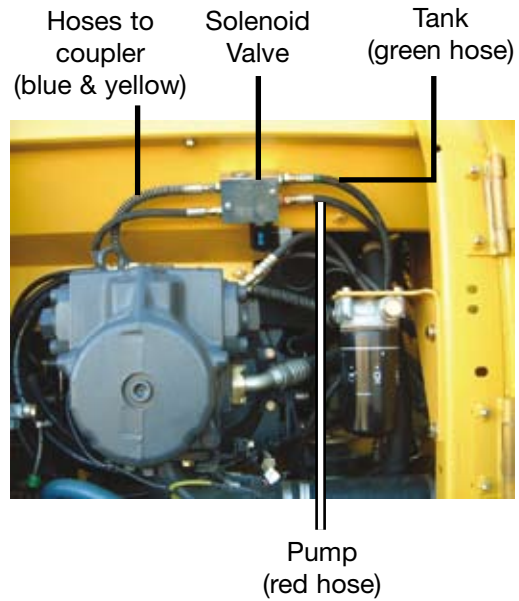


fig 3.21

Example only - location differs in other machine models

**⚠ WARNING - Do not use low/servo pressure.** This coupler needs full working pressure to ensure satisfactory operation.

Fit the solenoid valve in the vicinity of the pump compartment, in a safe and dry area near to the hydraulic pump. Locate 'take-off point' for **maximum** machine hydraulic pressure to supply to the solenoid valve, stamped **P**. Use either the pressure gauge test port or tap into the main pressure system between the pump and main control valve on the bucket cylinder circuit.

Make a connection into the tank for the return oil from the solenoid valve, stamped **T**. The tank and pressure fittings may not be supplied as they vary for different machine models. Connect up all hoses to solenoid valve, tank and pump. (Green, Red, Blue and Yellow hoses) (**maximum working pressure = 400 bar**).

## Step 18

On/Off  
Operating Switch



fig 3.22  
Example of an OEM style  
on/off operating switch.  
(Switches differ with machine interior)



fig 3.23  
Example of a Miller style on/off operating switch  
(switch style does differ)

Install the on/off operating switch inside the cab in a safe place for the operator to use. Connect the electrical wiring. The live feed for the switch is taken from the ignition side. Connect the 12 volts DC or 24 volts DC power supply via a 5-amp fuse.

**⚠ CAUTION** - Do not connect a 12V solenoid to a 24V supply, or vice versa as damage to the solenoid will result.

**⚠ CAUTION** - Ensure the switch is installed in an area where it cannot be accidentally activated.

**NOTE:** The solenoid is energised when the switch is in the **release** or **off** position. In normal working conditions, the solenoid should be electrically disconnected and the switch in the **attach** or **on** position. The buzzer should only sound when the switch is in the **release** or **off** position. Install the buzzer inside the instrument console, in a safe convenient position and fasten securely.

You should now be ready to test the coupler and the hydraulic system.

## Step 19

Power up machine engine revolutions to approximately quarter throttle and bottom out the bucket crowd link to put the hydraulics under pressure. Operate the switch to ensure the coupler cylinder is working correctly. This will give pressurised flow to the coupler cylinder and assist in the bleeding of the system. Repeat this procedure several times. After testing, check for leaks and rectify if necessary. If the system is free from leaks, the coupler should now be ready for use.

**⚠ DANGER Hydraulic Fluid** - Never use your hands to search for hydraulic fluid leaks, use a piece of paper or cardboard. Escaping fluid under pressure can be invisible and can penetrate the skin and cause serious injury. If affected, see a doctor at once.

### 3.3 COUPLER REMOVAL



fig 3.24

Position the coupler so it is standing on the ground. Switch off the machine and operate the controls to vent residual pressure in the hydraulic system. Unscrew the short hoses from the long hoses and 'blank off' the ends of the long hoses using blanking plugs.

To remove the couplers follow the installation procedure in reverse order starting at Step 9 page 11.

### 3.4 ELECTRICAL & HOSE INSTALLATION DIAGRAMS

Please turn to the inside back cover for a full colour version of these diagrams.

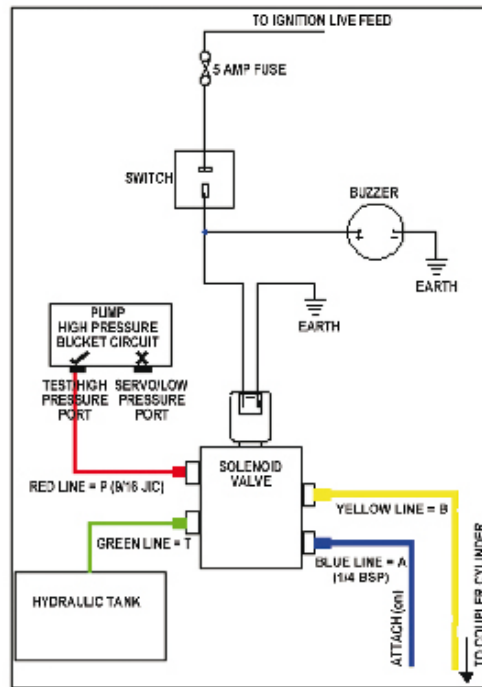
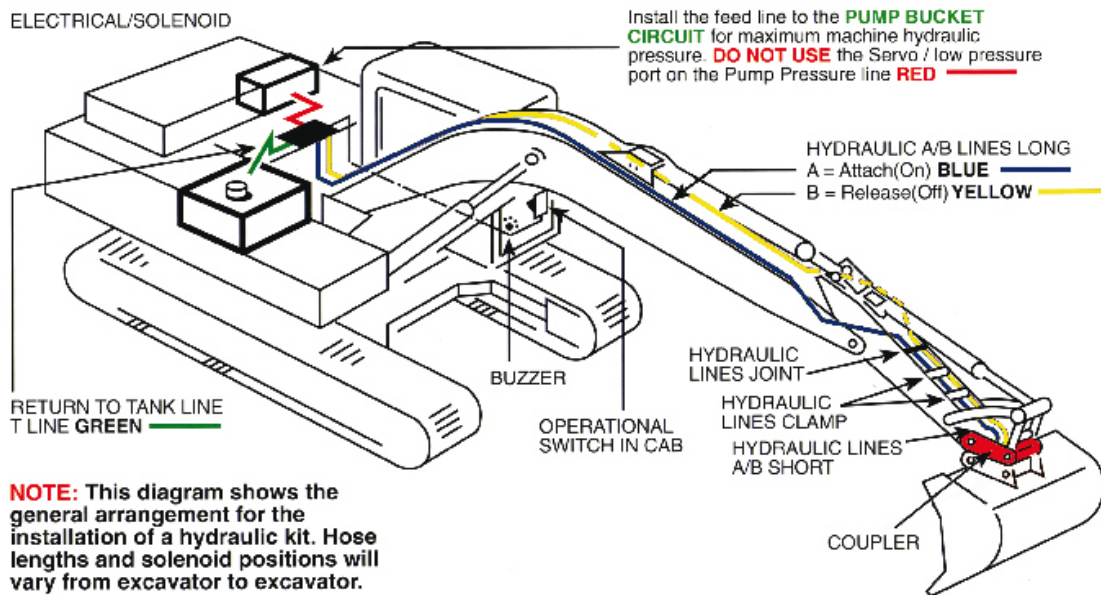


fig 3.25  
Solenoid & Hose Arrangement



**NOTE:** This diagram shows the general arrangement for the installation of a hydraulic kit. Hose lengths and solenoid positions will vary from excavator to excavator. Maximum working pressure 400 bar

fig 3.26  
Hydraulic Hose Installation



## Installation Guide and User Instructions for the AutoLatch Quick Coupler

# OPERATION

**NOTE:** The Miller AutoLatch has an innovative locking mechanism and as such has a unique operating procedure that is like no other Miller Coupler. Please familiarise yourself with the following section before operating the AutoLatch.

## 4.0 AUTOLATCH COUPLER OPERATION - TO ATTACH

**WARNING** - The operator should be familiar with the correct use of the coupler before operation.

**WARNING** - Never place your hands on or inside the coupler, or attempt to make adjustments or repairs while the machine is switched on.

**WARNING** - Never switch to the **release** or **off** position while the coupler is in use.

**WARNING** - Never use the front or back of the hydraulic hook/jaw as a lifting device.

**WARNING** - Place the coupler decal in the machine cab where it can be seen clearly. Replace unreadable ones with new ones before operating the machine.

**WARNING** - The operator must ensure that all steps of the quick coupler operation attachment procedure, found on these pages and also on the in-cab decal, are followed in the correct order. Failure to do so may result in the bucket or attachment being inadvertently released due to incorrect operation.

**WARNING** - Buckets/attachments must **NEVER** be operated or moved without **BOTH** bucket/attachment pins being **FULLY ENGAGED**. Failure to do so will result in bucket/attachment release and could result in serious injury or fatality.

**WARNING** - Do not try to attach, 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 **on** position at all times, except during bucket/attachment changing only.

### Step 1

**NOTE:** The switch shown is a representation only. Switch types differ depending on your machine. Ensure you are familiar with the location and operation of this switch.

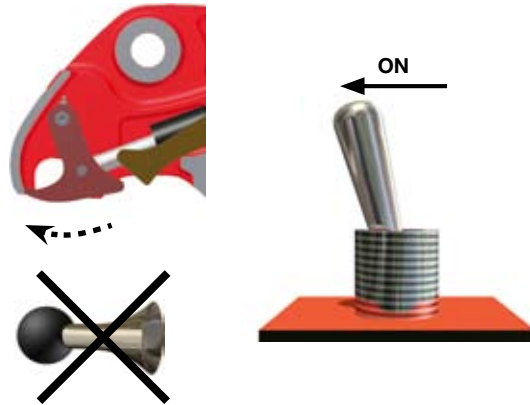


fig 4.0

As the coupler goes to engage the front bucket pin the hook needs to be closed to lift the front latch. If the hook is open move the switch to the attach/on position (the buzzer will not sound) and hold the bucket crowd lever for approximately 5-10 seconds.

### Step 2

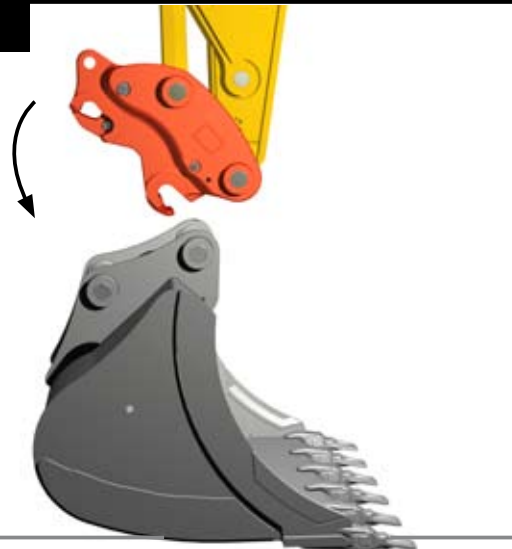


fig 4.1

Once the hook is in the closed position and the front latch has been retracted into the coupler frame the AutoLatch is ready to engage the front bucket pin. Ensure jaw is clear of debris before engaging the front bucket pin

### Step 3

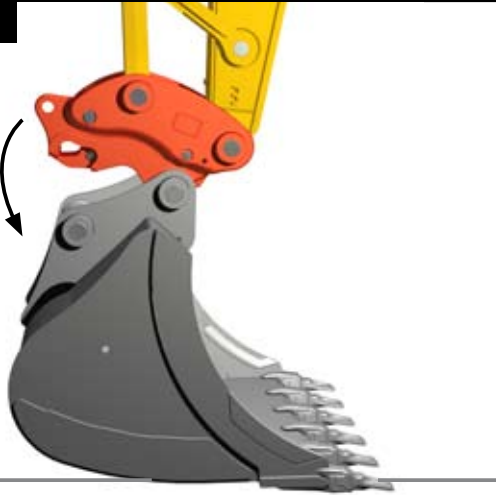
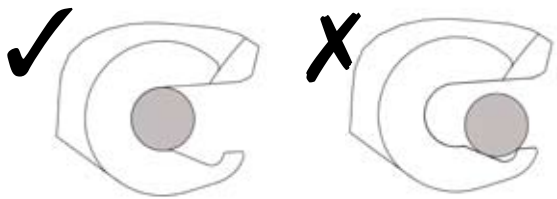


fig 4.2

Starting with the dipper approximately vertical engage the front bucket pin into the **back of the jaw** and curl the coupler towards the machine while the hook is still closed.



Correct operation

Incorrect operation

### Step 4



fig 4.3

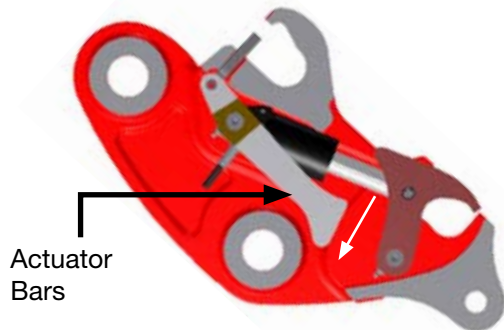
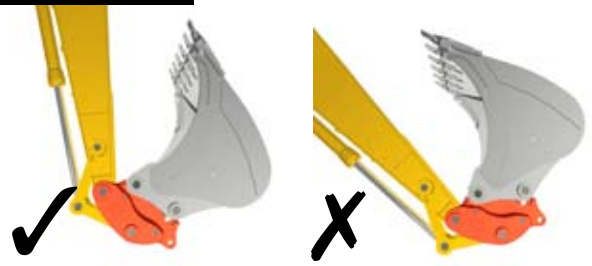


fig 4.4

Continue to curl the coupler towards the machine (fig 4.3) until it is in a position that allows the Actuator Bars to fall out of position (fig 4.4).

### Step 4 cont



Correct operation

Incorrect operation

fig 4.5

### Step 5

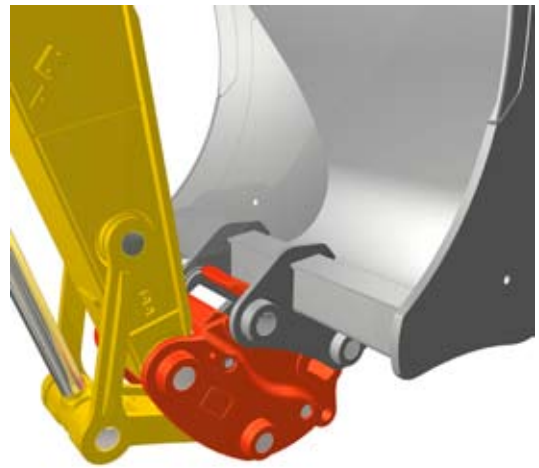


fig 4.6

In this position the front latch moves into place securing the front bucket pin.

### Step 6

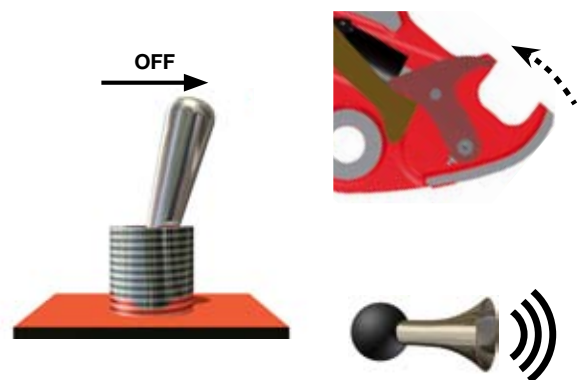


fig 4.7

Move the switch to the release/off position (the buzzer will sound) and hold the bucket crowd lever for approximately 5-10 seconds.

### Step 7

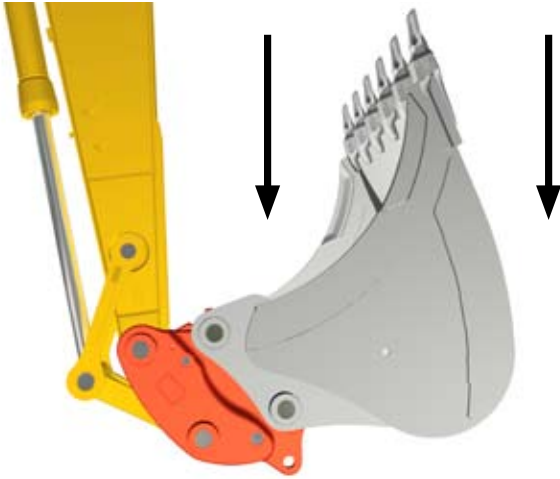


fig 4.8

Once the hook is opened the rear bucket pin falls into position and is seated in the horseshoe area of the coupler frame. Observing the bucket it should be clear when this movement has occurred.

### Step 9

#### PRIMARY VERIFICATION



fig 4.10

Apply pressure to the bucket or attachment by rotating it against the ground and away from the machine, if the AutoLatch remains securely attached continue to operate. If the AutoLatch does not remain securely attached start the attach procedure again.

### Step 8

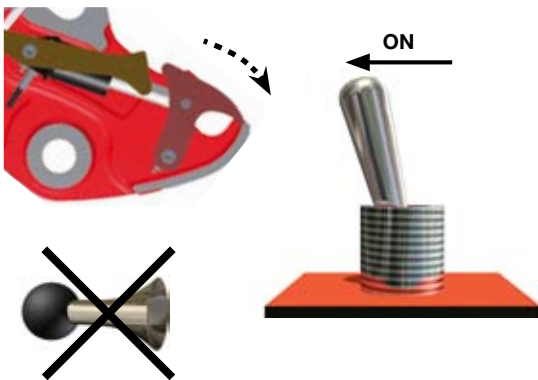
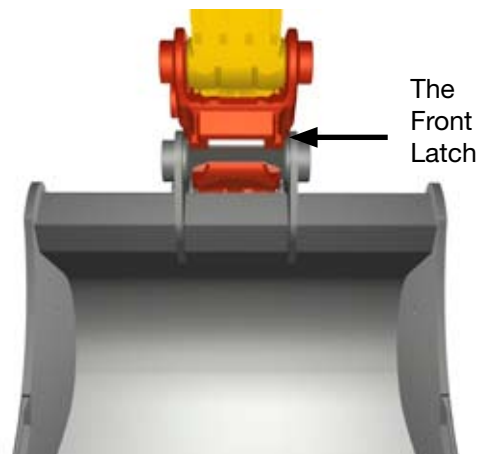


fig 4.9

Move the switch to the attach/on position (the buzzer will not sound) and hold the bucket crowd lever for approximately 5-10 seconds. This will close the hook again to secure the rear bucket pin in position and with positive force.

### Step 10


#### SECONDARY VERIFICATION





Operators View  
fig 4.11


For further peace of mind the front latch will also be visible once the bucket is moved away from the machine. Viewing only part of the latch indicates successful attachment of both bucket pins (the amount of the latch which is visible will vary depending on the pin centre of the attachment being picked up).


## AUTOLATCH COUPLER OPERATION - TO RELEASE


 **WARNING** - The operator should be familiar with the correct use of the coupler before operation.


 **WARNING** - Never place your hands on or inside the coupler, or attempt to make adjustments or repairs while the machine is switched on.


 **WARNING** - Never switch to the **release** or **off** position while the coupler is in use.

 **WARNING** - Never use the front or back of the hydraulic hook/jaw as a lifting device.

 **WARNING** - Place the coupler decal in the machine cab where it can be seen clearly. Replace unreadable ones with new ones before operating the machine.

 **WARNING** - The operator must ensure that all steps of the quick coupler operation attachment procedure, found on these pages and also on the in-cab decal, are followed in the correct order. Failure to do so may result in the bucket or attachment being inadvertently released due to incorrect operation.

 **WARNING** - Buckets/attachments must **NEVER** be operated or moved without **BOTH** bucket/attachment pins being **FULLY ENGAGED**. Failure to do so will result in bucket/attachment release and could result in serious injury or fatality.

 **WARNING** - Do not try to attach, 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 **on** position at all times, except during bucket/attachment changing only.

### Step 1



fig 4.12

To release, curl the bucket away from the machine and lower into a safe place to disengage the front bucket pin.

### Step 2

**NOTE:** The switch shown is a representation only. Switch types differ depending on your machine. Ensure you are familiar with the location and operation of this switch.

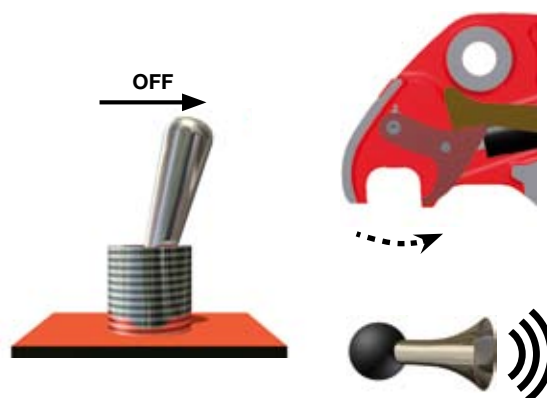
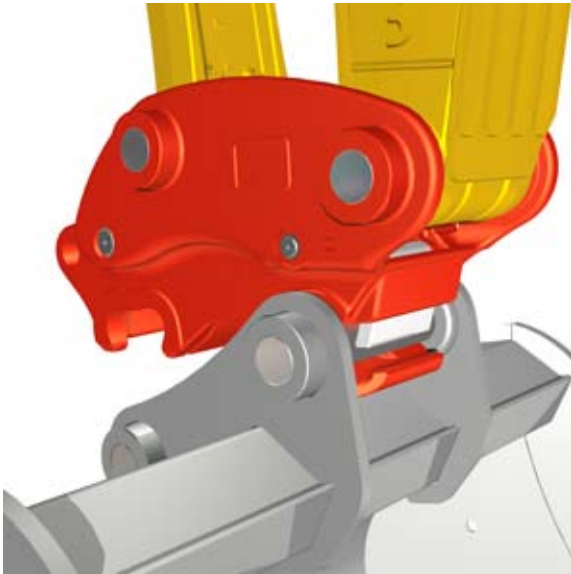


fig 4.13

Move the switch to the release/off position (the buzzer will sound) and hold the bucket crowd lever for approximately 5-10 seconds. The rear bucket pin should now no longer be engaged by the hook.

### Step 3



*Hook Open  
fig 4.14*

Once the hook has released the rear bucket pin the front latch will be fully visible. This is again confirmation that the hook is open and is not securing the rear bucket pin.

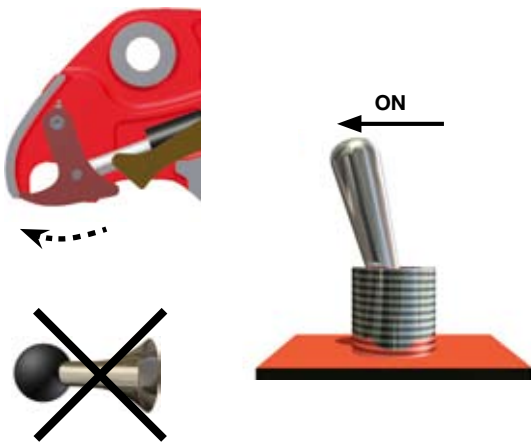
### Step 5



*Hooked Closed  
fig 4.16*

Once the hook is in the closed position this in turn retracts the front latch up into the coupler frame, opening up the front jaw and enabling the front pin to be released.

### Step 4



*fig 4.15*

Once in position (as shown in step 4) move the switch to the attach/on position (the buzzer will not sound) and allow the hook to fully close.

### Step 6



*fig 4.17*

Lower the bucket to the ground and rotate the coupler away from the bucket to disengage.

#### 4.1 LIFTING WITH THE COUPLER (IF APPLICABLE)

**⚠ WARNING - Lifting** Always use the correctly rated shackle and lifting equipment. Refer to the table section 2.2, page 7 to ascertain product weight. Never use worn, damaged or undersized lifting equipment.

The coupler has an integral and certified lifting eye, the Safe Working Load of which can be found stamped into the coupler frame (next to the lifting eye). Do not lift over the SWL limit of the coupler. The lifting capability of the machine should also be checked prior to lifting. Lift with the coupler in a vertical position (fig 4.36).

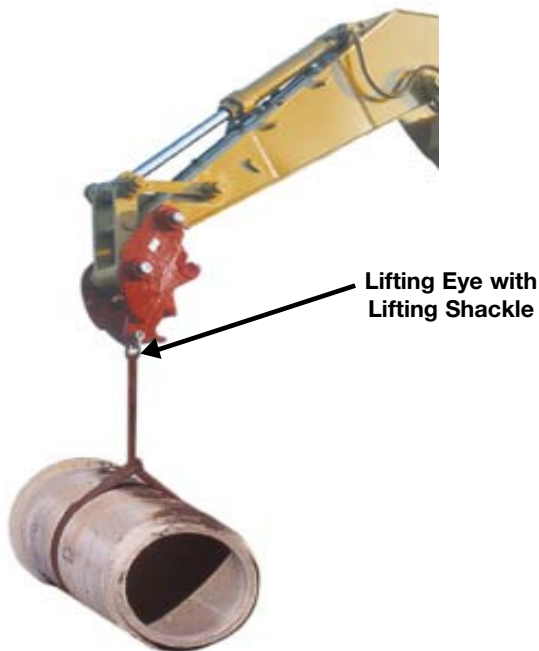


fig 4.36

#### 4.2 USING DEMOLITION ATTACHMENTS & WORK TOOLS

Miller Couplers are able to work with hydraulic breakers, various attachments, and work tools, depending on pin spread and weight.

**⚠ CAUTION** - Do not use any tool that is not in the correct tonnage class i.e. that is larger than that specified by the machine manufacturers. When operating a breaker you must always use it in the vertical position when ever possible. Never use the breaker as a lever. If using other attachments, the same procedure applies.

**⚠ WARNING** - If the coupler is fitted with a hydraulic breaker it should not be used for long periods without a periodic inspection of all working parts. If the hydraulic breaker has to be used continuously for long periods of time Miller recommend the coupler should be removed and the breaker should be mounted directly to the machine.



fig 4.37



fig 4.38



fig 4.39

### 4.3 INCORRECT COUPLER USE

The following information highlights some of the operating bad practices that occur in the field. **Miller strongly advises against these practices and recommends that the coupler should only be used as per the operating instructions.**



#### INCORRECT USE OF COUPLER TO PICK UP AND MOVE ATTACHMENTS

1. Moving attachments by front pin only



2. Using hook only to lift attachments

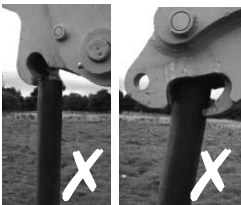


3. Nipping or jamming the rear pin with the hook



#### USING THE JAW AS A LIFTING TOOL OR HAMMER

1. Moving items held in the jaw

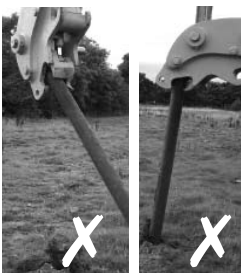


2. Using jaw to hammer items into the ground



#### USING THE HOOK TO LIFT AND MANOEUVRE PRODUCT

1. Moving items using the hook



2. Positioning items gripped with hook



#### INCORRECT USE OF COUPLER TO PICK UP PRODUCTS USING CHAINS OR SLINGS

1. Using the jaw to pick up items with chains.



2. Using the corner of the jaw to pick up items with chains.



3. Using the hook to pick up items with chains.



4. Using the coupler body to pick up items with chains.



5. Using the dipper arm to pick up items with chains.



6. Using the cylinder to pick up items with chains.



#### INCORRECT USE OF THE LIFTING EYE

1. When the bucket is still attached it is not possible to see the shackle and what is happening to the chain



Installation Guide and User Instructions  
for the AutoLatch Quick Coupler

# MAINTENANCE

## 5.0 GENERAL MAINTENANCE



### **WARNING - Maintenance Work**

Maintenance work must only be done by competent personnel or ask Miller to assist.



### **DANGER - Hydraulic Fluid**

Never use your hands to search for hydraulic fluid leaks, use a piece of paper or cardboard. Escaping fluid under pressure can be invisible and can penetrate the skin and cause serious injury. If affected, see a doctor at once.



### **WARNING - Coupler Condition**

A defective coupler could injure you or others. Do not operate a coupler that is defective.

### **Maintenance and Service**

To ensure that your quick coupler works safely and to maximum efficiency it is imperative that it is properly maintained in accordance with the following service guidelines.

### **Replacement Parts**

We recommend that you fit genuine replacement parts. You will need to quote the **coupler serial number** stamped on the coupler data plate.

## 5.1 DAILY CHECKS

1. Thoroughly clean the coupler.
2. Check the coupler for cracked, bent or broken components, distressed welds, missing parts and oil leaks. Replace broken parts if required.
3. Check that all circlips are in place, secure and undamaged.
4. Check that the Actuator Bars swing freely and that the inside of the coupler is free from dirt or debris.
5. Check the security of the mounting pins, locking bolts and nuts.
6. Check the condition of the hydraulic hoses, fittings and hydraulic system generally. Replace any that are damaged.
7. **Do not** operate the coupler if broken and replace any broken or damaged parts immediately.

## 5.2 WEEKLY CHECKS

It is recommended that the following procedures are carried out at least once per week.

1. Carry out all daily checks.
2. Lubrication points - Ensure that all grease points are greased regularly (at least once a week minimum). If damaged, replace and grease. It is important to follow the lubrication instructions in sequence i to vii so that none of the grease nipples are overlooked.
  - i. Release the bucket/attachment. (Refer to the operation instructions- section 4, page 18).
  - ii. Retract the coupler cylinder. Switch off the engine.
  - iii. Apply grease, via grease nipples **A** to the actuator bars.

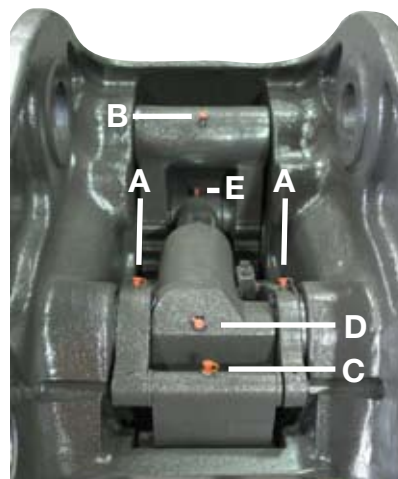


fig 5.0

- iv. Apply grease via nipple **B** to the hook.
- v. Apply grease via nipple **C**, to the front latch
- vi. Start the engine. Extend the bucket cylinder in order to position the coupler so the cylinder grease nipples are accessible. Switch off the engine.
- vii. Grease the cylinder via nipple **D** on the piston end, and **E** on the rod end.

### 5.3 TORQUE SPECIFICATIONS

The torque specifications are as follows:

Check valve	30lb.ft	40Nm
<b>B</b> hose connection male (cylinder hose)	15lb.ft	20Nm
<b>A</b> hose connection male (cylinder hose)	26lb.ft	35Nm
Pressure hose connection female	20lb.ft	27Nm
Tank return hose connection female	55lb.ft	75Nm
Weld on block	20lb.ft	27Nm
Solenoid Valve		
<b>A</b> Line filter fitting ¼ BSP M/M Adapter	25lb.ft	34Nm
<b>B</b> Line filter fitting 7/16 JIC x 7/16 UNF	15lb.ft	20Nm
<b>P</b> Line 9/16 JIC x 9/16 UNF	26lb.ft	35Nm
<b>T</b> Line 3/8 BSP M/M Adapter	55lb.ft	75Nm
Spool Valve	40.6lb.ft	54.2Nm
Check Valve	33.8lb.ft	40.6Nm
Electro-magnetic lock nut	5.4lb.ft	8.1Nm
Plug	9.3lb.ft	13Nm

### 5.4 HYDRAULIC MAINTENANCE

1. Check the hydraulic cylinder for leaks and damage. Check the coupler hose fittings are tight, not leaking and are at the correct torque specification (see section 5.3).

2. There are approximately six hydraulic hoses with each hydraulic coupler. Two coupler hoses, two boom hoses and two engine hoses (the engine hoses are a tank return hose and a pressure hose - see section 3.4, hydraulic hose installation). Check each hose for tightness, damage and fatigue. Miller recommends that you replace the pressure hose every two years.

3. Miller hydraulic coupler systems are equipped with two check valves, one in the hydraulic cylinder and one in the solenoid valve. The valves are none serviceable items. Miller recommends that both of these valves are replaced every 3 years.

## 5.5 TROUBLE SHOOTER GUIDE



### **DANGER - Hydraulic Fluid**

Never use your hands to search for hydraulic fluid leaks, use a piece of paper or cardboard. Escaping fluid under pressure can be invisible and can penetrate the skin and cause serious injury. If affected, see a doctor at once.



**WARNING** - Ensure the bucket attachment or work tool is placed on the ground before carrying out any of the following activities.



**WARNING** - Always vent the hydraulic tank before working on the coupler.



**WARNING** - Ensure that all personnel are clear of the coupler before carrying out any of the checks.

**If the coupler begins to work erratically or fails to work, check the following:**

### **GENERAL - Check:**

1. Snapped, bent or lost pins.
2. Hydraulic leaks
3. Hose leaks, wear or damage to hoses.
4. Damaged or bent cylinder.
5. Loose or broken nuts and bolts

### **ELECTRICAL - Check:**

1. The in line fuse to the cab switch has not blown.
2. The magnetic coil on the solenoid valve has not become loose or burnt out through vibration.
3. That no electrical wires are broken
4. That the switch and/or buzzer is not broken
5. That the voltage to the magnetic coil is correct (24 volts main line feed, to a 24 volt system).
6. Electrical wiring. (fig 3.26 Page 14)

### **HYDRAULIC - Check:**



**WARNING** - Always remove the electrical supply to the switch before commencing work on the hydraulics (Remove machine key and disconnect battery).

Contamination - The most common cause of coupler failure is contaminated hydraulic oil (dirty oil or rubber hose particles in the system, caused by incorrect installation of hose lines). If this occurs, the coupler may work slowly, release/attach erratically, or lock **on** or **off**. In this situation the following procedure needs to be applied:

1. Check the solenoid valve block assembly for contamination as follows:

- i. Switch off the machine and operate the controls to vent residual pressure in the hydraulic system
- ii. Vent pressure from the hydraulic tank by releasing the hydraulic tank filler cap.
- iii. Remove the solenoid valve and dismantle and inspect it for blockages or damaged seals
- iv. Clean and replace all seals if necessary.
- v. Clean or change filter fittings.
- vi. Re-assemble solenoid unit and install to the machine. If in doubt, change solenoid valve unit.

2. Re-connect up all hydraulic hoses to correct ports as detailed in the installation procedure. Ensure the pressure feed hose connects to the port marked **P** and the tank return hose connects to the port marked **T** (fig 3.26 Page 14)

3. Check that the coupler hydraulic cylinder has not 'locked on' due to contamination as follows:

- i. switching the coupler to the release position and disengage the machine hydraulics.
- ii. When the cylinder is fully retracted, switch off the machine and operate the controls to vent residual pressure in the hydraulic system.



**WARNING** - Care must be taken whilst unscrewing the check valve as there may be some residual pressure in the hydraulic cylinder. Unscrew the valve slowly to allow any trapped pressure to escape.

- iii. Slowly unscrew the check valve in the hydraulic cylinder.
- iv. Inspect the check valve, clean or replace the O-ring seals.
- v. Clean all cavities including the cylinder
- vi. Reassemble the check valve into the cylinder.
- vii. If there is any damage to the cylinder replace the complete unit including the check valve.

### **OPERATION - Check:**

If the coupler is switched to the **attach** or **on** position but the bucket can be powered off, then the cylinder or the cylinder check valve is losing hydraulic pressure and may need re-sealing or replacing. To check for loss of pressure, place the bucket on the ground and attempt to move the coupler on the bucket. If the coupler does not hold firmly, this means the coupler is losing hydraulic pressure due to a failed cylinder or check valve.



**WARNING** Do not operate the coupler in this condition. Have repairs carried out immediately.

## 5.6 COUPLER COMPONENT LISTS

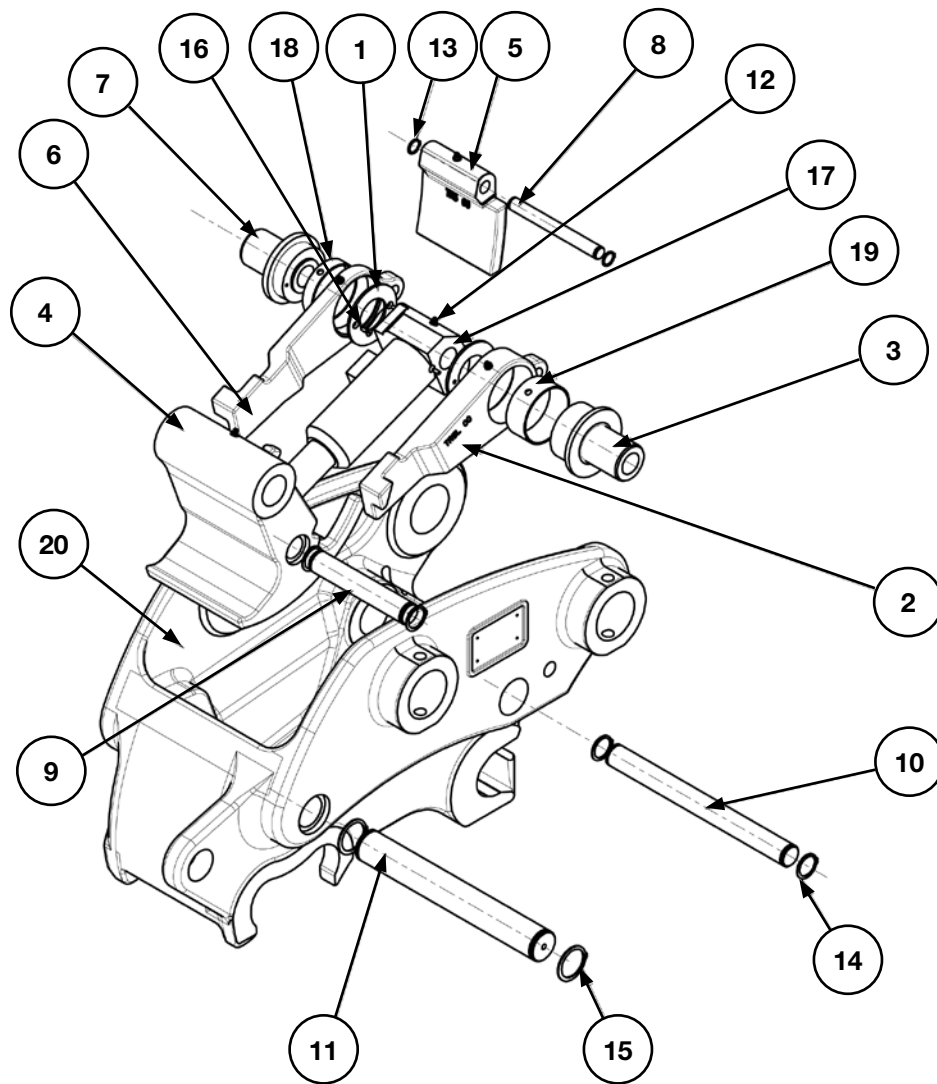


fig 5.1  
Quick Coupler Components

- |                                |                                |
|--------------------------------|--------------------------------|
| 1 Actuator Bar Retaining Plate | 11 Hook Pin                    |
| 2 Actuator Bar                 | 12 Grease Nipple               |
| 3 Actuator Bar Pivot           | 13 Circlips x 2 (Latch Pin)    |
| 4 Hook                         | 14 Circlips x 2 (Cylinder Pin) |
| 5 Latch                        | 15 Circlips x 2 (Hook Pin)     |
| 6 Actuator Bar                 | 16 Bolt                        |
| 7 Actuator Bar Pivot           | 17 Cylinder                    |
| 8 Latch Pin                    | 18 Actuator Bar Bush           |
| 9 Cylinder Hook Pin            | 19 Actuator Bar Bush           |
| 10 Cylinder Pin                | 20 Frame                       |

Miller reserves the right to amend detail or specification without prior notification

## 5.7 HYDRAULIC COUPLER CYLINDER REMOVAL

**⚠ WARNING - Manual Handling** Take care when manually handling coupler & components, bucket and installation pins. Refer to the table section 2.2 page 7 to ascertain product weight.

### Removal

1. Uncouple the bucket/attachment/work tool from the coupler. (Refer to the Operation - Section 4 page 19).
2. Lock the hook by moving the coupler switch to the lock/on position.
3. Remove the coupler from the machine. (Refer to Coupler Removal - Section 3.3, page 14).
4. Refer to Coupler Component lists on page 30 to identify the parts detailed in the removal procedure below.



fig 5.2

5. Remove the circlips (page 29, component 15) securing the cylinder hook pin.



fig 5.3

6. Remove the cylinder hook pin (page 29, component 9)



fig 5.4

7. Remove the circlips (page 29, component 14) securing the cylinder pin.



fig 5.5

8. Remove the cylinder pin (page 29, component 10).



fig 5.6

9. Remove the hydraulic cylinder (page 29, component 17).



fig 5.7

10. Remove hydraulic hoses A + B from the cylinder.

### Hook and Cylinder Removal

On some couplers the small cylinder hook pin is inaccessible because of the coupler frame. To change this remove the long hook pin (page 29, component 11) and lift out the hook and cylinder as one assembly then remove the small cylinder hook pin.

## 5.8 HYDRAULIC COUPLER CYLINDER REPLACEMENT

**⚠ WARNING** - Please make sure you **do not contaminate** any hydraulic fittings during the replacement procedure

**⚠ WARNING - Manual Handling** Take care when manually handling coupler & components, bucket and installation pins. Refer to the table section 2.2 page 7 to ascertain product weight.

### Replacement



*fig 5.8*

1. Fit hydraulic hoses A and B into the new hydraulic cylinder.



*fig 5.9*

2. Carefully lower the new hydraulic cylinder into position.



*fig 5.10*

3. Refit the cylinder pin, ensuring the new cylinder is correctly attached.



*fig 5.11*

4. Refit the circlips securing the cylinder pin.



*fig 5.12*

5. Refit the cylinder hook pin.



*fig 5.13*

6. Refit the circlips securing the hook pin.

7. The new cylinder is now successfully fitted. Refer to the installation section on page 8 to install the coupler to the machine. Remember to observe all relevant safety warnings.

### Replacement Cylinder Queries

If you are unsure about the above procedure, have encountered difficulties or simply have a query contact Miller for further assistance.

## 5.9 INSPECTING THE COUPLER FRAME

It is possible that over time the coupler could become worn or damaged in the horseshoe area of the frame (shown below).

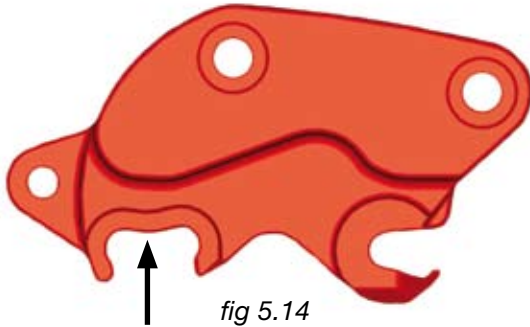


fig 5.14

To determine if the horseshoe area of the coupler is worn to an unacceptable level Miller recommends that you check the contact area on the coupler hook.



fig 5.15

Inspect the coupler hook to see where the bucket pin is coming into contact with the hook. The image above highlights the contact mark on the hook. This is an acceptable area for the bucket pin to come into contact with the hook. Please use the diagram below to establish if the contact point on your hook is in an acceptable location.

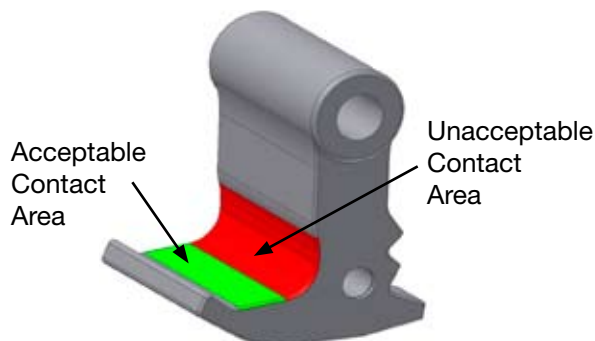


fig 5.16

If the bucket pin is secured by the hook in the unacceptable contact area this is an indication that the horseshoe area of the coupler frame is worn and will need repairing.

## 5.10 REPAIRING THE COUPLER FRAME

If the coupler frame becomes worn or damaged in the area shown below (see fig 5.17) then the following procedure must be adopted for repair.



fig 5.17

The maximum wear allowed around this area is 5mm. If the wear is more than this then repairs must be carried out.

1. Contact Miller for a template for the coupler quoting serial number and coupler type.
2. The worn area should be prepared with use of a grinder before being built up with weld to match the appropriate shape. Mig welding is recommended for these repairs. Alternatively, welding with low hydrogen electrodes (E7018 or equivalent) can be used. All welds should be blended in and smooth to avoid stress areas.
3. Once fully welded the repaired areas must be allowed to cool slowly in controlled conditions.
4. Fully dress the welded areas by grinding and check to ensure that they do not interfere with the movement of the hook or other parts of the coupler. Check that the dressed areas match that of the template provided.
5. Clean off all sharp edges and repaint the coupler. Carry out a maintenance check (sections 5.0 to 5.6) before refitting the coupler to the machine.

**Please contact Miller for more detailed information about the above process.**



Installation Guide and User Instructions  
for the AutoLatch Quick Coupler

# WARRANTY

## 6.0 WARRANTY

### Warranty Period

The warranty period is twelve (12) months from date of delivery to the first user, or eighteen (18) months from date of shipment ex-works MILLER, whichever is the sooner.

### Limitation of Liability

Miller shall not be liable for or in respect of:

1. Repair or replacement of **(i)** any normal wearing parts, **(ii)** any ageing or deterioration caused by foreign substances or by exposure to the natural elements or **(iii)** any consumable items, such as oil, grease, filters etc.
2. Any cost of repairs, alterations or replacements made without official Miller authorisation.
3. Any warranted product which has been subjected to:-
  - (a)** Misuse, improper operation or misapplication, including but not limited to operation beyond the rated capacity expressly prohibited by the manufacturer of the prime moving machine, as shown in the operator's manual or rated capacity charts furnished with the prime moving machine.
  - (b)** Neglect, including but not limited to **(i)** improper maintenance and storage, **(ii)** use of the product while any parts are loose, broken or out of order.
  - (c)** Accident.
  - (d)** Improper or unauthorised installation, adjustment, repair or alteration, including but not limited to **(i)** adjustment or assembly procedures, not recommended or authorised in the User Guide manual. **(ii)** use of unauthorised parts or attachments, **(iii)** unauthorised modification or alteration.

Miller shall be liable only for repair or replacement of parts as described under 'warranty coverage', and Miller shall not be liable, whether under breach of warranty, negligence or strict liability, for any other injury, loss, damage or expenses, whether direct or consequential, including but not limited to loss of use, income, profit or production, increased cost of operation, or spoilage of or damage to material.

### Alterations

Miller reserves the right to make alterations or modifications to their products and literature at any time, which in their opinion may improve the performance and efficiency of the product. Miller shall not be obliged to make such alterations or modifications to products already in service.

**The foregoing warranty is exclusively and in lieu of all other warranties, including warranties concerning merchantability or fitness for a particular purpose, which are expressly disclaimed, whether written, oral, express or implied.**

**Miller assumes no other obligations or responsibility with respect to the products whatsoever, and no employee or representative is authorized to change or extend this warranty in any way or grant any other warranty whatsoever.**

**If in doubt please contact Miller for free advice and assistance, please find contact details on back cover.**

NOTES

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Blank area for notes.



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