

GTS

INSTALLATION GUIDE



IMPORTANT:

This book should be kept with the machine at all times during and after coupler installation. Machine operators should be fully trained on the correct operational procedure for this particular coupler.

THANK YOU FOR PURCHASING A MILLER
GTS COMPACT QUICK COUPLER



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. No modifications are required to the buckets or machine. The couplers can utilize buckets in face mode position, operate hydraulic breakers and be used as a lifting tool.

The following information details the correct 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 TO BE OF SERVICE TO YOU AGAIN SOON.

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@millergroundbreaking.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 services to ensure the correct installation and operation of the coupler. These include coupler inspection, installation training and operation guidance.

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PRODUCT SAFETY INFORMATION



1.0 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.



1.0 GENERAL SAFETY INFORMATION

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 product table page 5 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 on page 5 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.

1.1 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.

Operators must be fully trained and familiar with the correct operating procedure for this particular coupler before attempting to operate the machine.

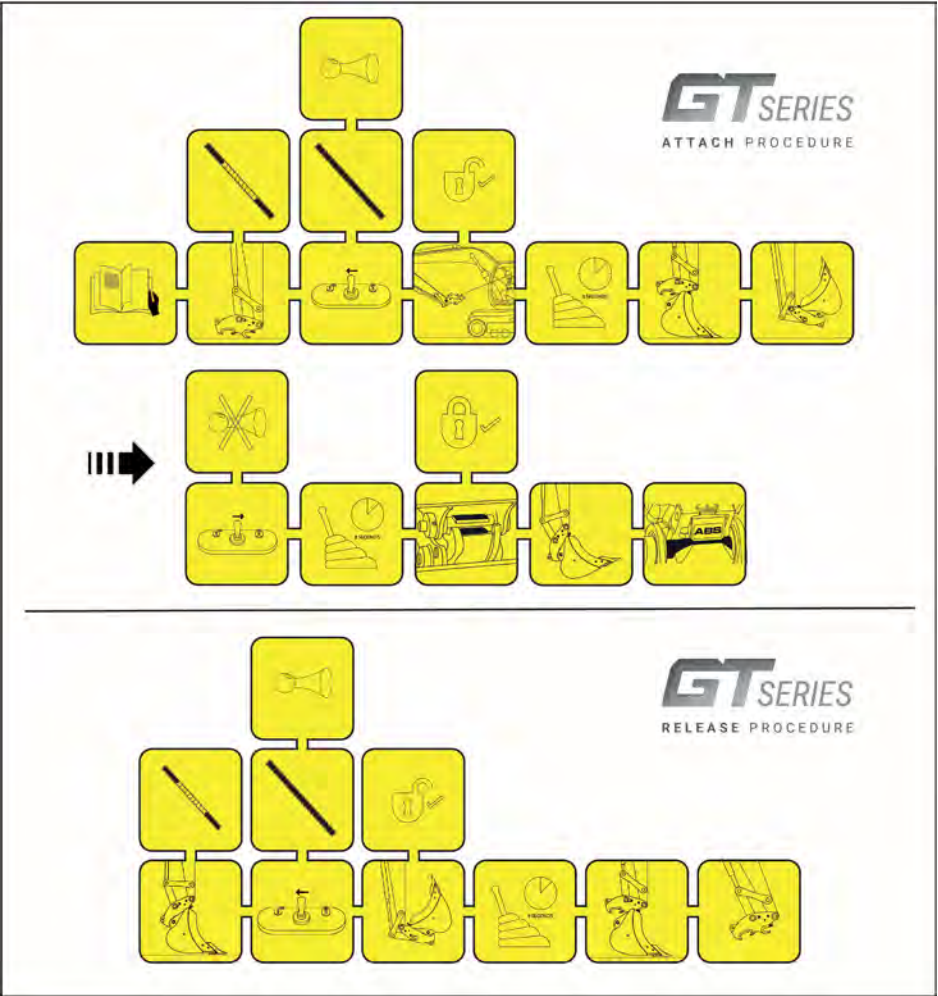


fig 1.0 Miller GTS Compact Quick Coupler Decal

1.2 MILLER GTS COMPACT QUICK COUPLER COMPONENTS LIST – CAST

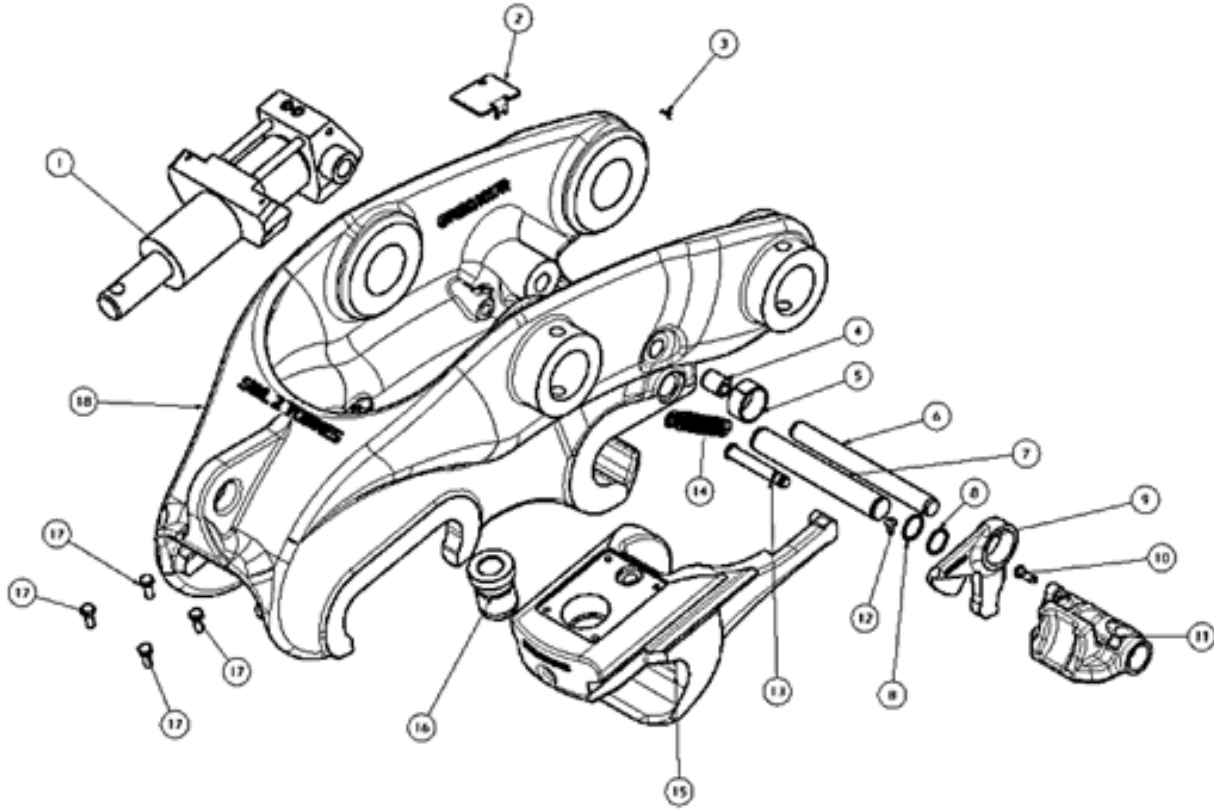


fig 1.1

Coupler Parts Reference Guide

1.	Ram	11.	Front Latch
2.	Spring Cover	12.	Button Head Screw
3.	Split Pin	13.	Spring Pin
4.	Ram Pin Bush	14.	Tension Spring
5.	ABS Pin Bush	15.	Hook
6.	ABS Pin	16.	Plunger
7.	Ram Pin	17.	Hexagonal Head Bolt
8.	Spiral Retaining Ring	18.	Frame
9.	Latch Actuator		
10.	Front Latch Clevis Pin		

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

! WARNING - Quick couplers extend the length of the dipper arm (fig 1.2) and with certain attachments could hit the cab in some positions (fig 1.3). Check this before operating the machine. If this is of concern ask your dealer about the Miller Scoop bucket (fig. 1.4).

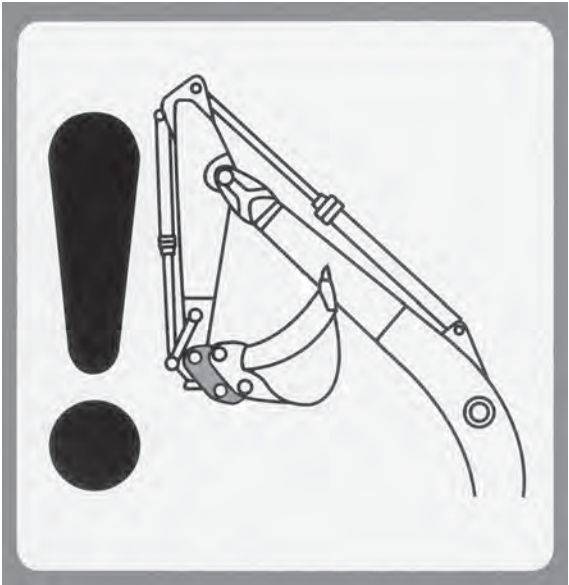


fig 1.2

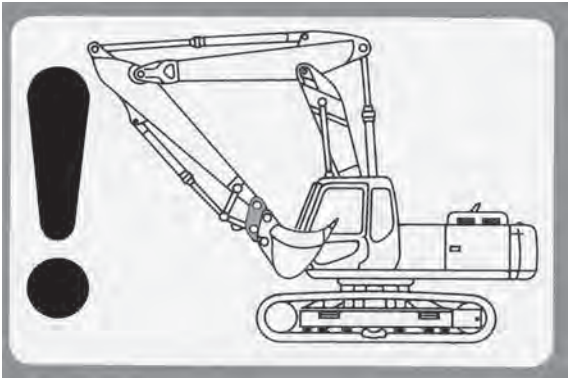


fig 1.3



fig 1.4
Miller Scoop Bucket and Miller Coupler in transit mode

Machine tonnage range	Miller coupler range	Approx. coupler weight (Kg)	Pin centres (mm)	Pick Up Width (mm)
1-1.5 T	0A	16.5	85-118	96
1.5-2.0 T	0B	19	121-161	103
2 T	1A	24	125-150	122
2 - 4T	1B	25	165-215	117
5 T	2A	57	220-285	144

1.4 COUPLER IDENTIFICATION

To ascertain the serial number, weight and Safe Working Load (SWL) of the coupler please refer to the Data Plate (fig .5), detailed below. Alternatively find the serial number and SWL stamped into the coupler as shown below (fig 1.5).

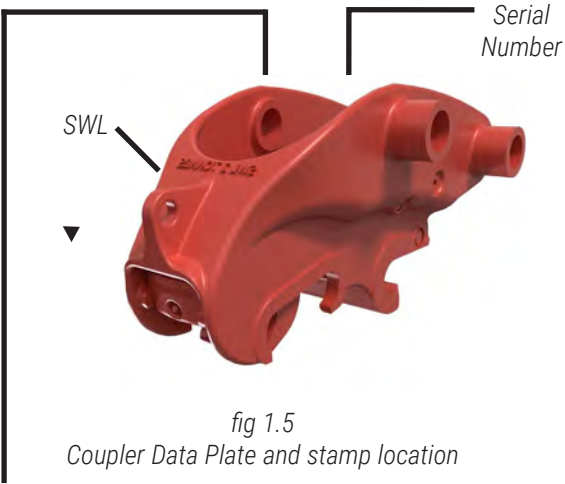


fig 1.5
Coupler Data Plate and stamp location

 Miller (UK) Ltd (Manufacturing and Distribution) (UK) MC23 000 Tel: +44 (0) 1871 401 272 (www.millergroundworking.com)		 PATENTS PENDING: GB 2 511 724 GB 2 511 725 GB 2 511 726 GB 2 511 727 GB 2 511 728 GB 2 511 729 GB 2 511 730 GB 2 511 731 GB 2 511 732 GB 2 511 733 GB 2 511 734 GB 2 511 735 GB 2 511 736 GB 2 511 737 GB 2 511 738 GB 2 511 739 GB 2 511 740 GB 2 511 741 GB 2 511 742 GB 2 511 743 GB 2 511 744 GB 2 511 745 GB 2 511 746 GB 2 511 747 GB 2 511 748 GB 2 511 749 GB 2 511 750 GB 2 511 751 GB 2 511 752 GB 2 511 753 GB 2 511 754 GB 2 511 755 GB 2 511 756 GB 2 511 757 GB 2 511 758 GB 2 511 759 GB 2 511 760 GB 2 511 761 GB 2 511 762 GB 2 511 763 GB 2 511 764 GB 2 511 765 GB 2 511 766 GB 2 511 767 GB 2 511 768 GB 2 511 769 GB 2 511 770 GB 2 511 771 GB 2 511 772 GB 2 511 773 GB 2 511 774 GB 2 511 775 GB 2 511 776 GB 2 511 777 GB 2 511 778 GB 2 511 779 GB 2 511 780 GB 2 511 781 GB 2 511 782 GB 2 511 783 GB 2 511 784 GB 2 511 785 GB 2 511 786 GB 2 511 787 GB 2 511 788 GB 2 511 789 GB 2 511 790 GB 2 511 791 GB 2 511 792 GB 2 511 793 GB 2 511 794 GB 2 511 795 GB 2 511 796 GB 2 511 797 GB 2 511 798 GB 2 511 799 GB 2 511 800 GB 2 511 801 GB 2 511 802 GB 2 511 803 GB 2 511 804 GB 2 511 805 GB 2 511 806 GB 2 511 807 GB 2 511 808 GB 2 511 809 GB 2 511 810 GB 2 511 811 GB 2 511 812 GB 2 511 813 GB 2 511 814 GB 2 511 815 GB 2 511 816 GB 2 511 817 GB 2 511 818 GB 2 511 819 GB 2 511 820 GB 2 511 821 GB 2 511 822 GB 2 511 823 GB 2 511 824 GB 2 511 825 GB 2 511 826 GB 2 511 827 GB 2 511 828 GB 2 511 829 GB 2 511 830 GB 2 511 831 GB 2 511 832 GB 2 511 833 GB 2 511 834 GB 2 511 835 GB 2 511 836 GB 2 511 837 GB 2 511 838 GB 2 511 839 GB 2 511 840 GB 2 511 841 GB 2 511 842 GB 2 511 843 GB 2 511 844 GB 2 511 845 GB 2 511 846 GB 2 511 847 GB 2 511 848 GB 2 511 849 GB 2 511 850 GB 2 511 851 GB 2 511 852 GB 2 511 853 GB 2 511 854 GB 2 511 855 GB 2 511 856 GB 2 511 857 GB 2 511 858 GB 2 511 859 GB 2 511 860 GB 2 511 861 GB 2 511 862 GB 2 511 863 GB 2 511 864 GB 2 511 865 GB 2 511 866 GB 2 511 867 GB 2 511 868 GB 2 511 869 GB 2 511 870 GB 2 511 871 GB 2 511 872 GB 2 511 873 GB 2 511 874 GB 2 511 875 GB 2 511 876 GB 2 511 877 GB 2 511 878 GB 2 511 879 GB 2 511 880 GB 2 511 881 GB 2 511 882 GB 2 511 883 GB 2 511 884 GB 2 511 885 GB 2 511 886 GB 2 511 887 GB 2 511 888 GB 2 511 889 GB 2 511 890 GB 2 511 891 GB 2 511 892 GB 2 511 893 GB 2 511 894 GB 2 511 895 GB 2 511 896 GB 2 511 897 GB 2 511 898 GB 2 511 899 GB 2 511 900 GB 2 511 901 GB 2 511 902 GB 2 511 903 GB 2 511 904 GB 2 511 905 GB 2 511 906 GB 2 511 907 GB 2 511 908 GB 2 511 909 GB 2 511 910 GB 2 511 911 GB 2 511 912 GB 2 511 913 GB 2 511 914 GB 2 511 915 GB 2 511 916 GB 2 511 917 GB 2 511 918 GB 2 511 919 GB 2 511 920 GB 2 511 921 GB 2 511 922 GB 2 511 923 GB 2 511 924 GB 2 511 925 GB 2 511 926 GB 2 511 927 GB 2 511 928 GB 2 511 929 GB 2 511 930 GB 2 511 931 GB 2 511 932 GB 2 511 933 GB 2 511 934 GB 2 511 935 GB 2 511 936 GB 2 511 937 GB 2 511 938 GB 2 511 939 GB 2 511 940 GB 2 511 941 GB 2 511 942 GB 2 511 943 GB 2 511 944 GB 2 511 945 GB 2 511 946 GB 2 511 947 GB 2 511 948 GB 2 511 949 GB 2 511 950 GB 2 511 951 GB 2 511 952 GB 2 511 953 GB 2 511 954 GB 2 511 955 GB 2 511 956 GB 2 511 957 GB 2 511 958 GB 2 511 959 GB 2 511 960 GB 2 511 961 GB 2 511 962 GB 2 511 963 GB 2 511 964 GB 2 511 965 GB 2 511 966 GB 2 511 967 GB 2 511 968 GB 2 511 969 GB 2 511 970 GB 2 511 971 GB 2 511 972 GB 2 511 973 GB 2 511 974 GB 2 511 975 GB 2 511 976 GB 2 511 977 GB 2 511 978 GB 2 511 979 GB 2 511 980 GB 2 511 981 GB 2 511 982 GB 2 511 983 GB 2 511 984 GB 2 511 985 GB 2 511 986 GB 2 511 987 GB 2 511 988 GB 2 511 989 GB 2 511 990 GB 2 511 991 GB 2 511 992 GB 2 511 993 GB 2 511 994 GB 2 511 995 GB 2 511 996 GB 2 511 997 GB 2 511 998 GB 2 511 999
COUPLER TYPE	WEIGHT	
SERIAL No.	SWL	
PART No.	WP 400 BAR Max	
MANUFACTURE DATE	MADE BY 	

fig 1.6
Coupler Data Plate

INSTALLATION

2.0 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 on page 5 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

2.1 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 DIN-EN 853 2SN (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 2.0)
- ii) Dummy bucket and attachment pins, complete with locking bolts (fig 2.1 & 2.2)

WARNING - Dummy Pins Do not use the dummy pins to fit the coupler directly to the machine, as it may cause damage to the coupler. 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 2.0



fig 2.1



fig 2.2

2.2 MACHINE PREPARATION

1

fig 2.3



Fit the first weld-on clamp approximately in-line with the link arm pin hole. Pull hoses to a snug fit and neatly straighten them ensuring the spring guard is placed between the coupler cylinder and the first clamp

WARNING: Remember to isolate excavator prior to performing welding operations.

2

fig 2.4



Fit the remaining weld-on clamps up the dipper arm of the excavator at appropriately spaced intervals (approx. 200 - 250mm). 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.

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

3

fig 2.5



(The following is an example only - location of the solenoid valve differs in other machine models)

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. (May need non-return valve fitted in the return to tank line)

4

fig 2.6



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 power supply via a 5-amp fuse.

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 attach or on position.

1



fig 2.7

RANGE 0 (ONLY)

Using a punch, knock out the hydraulic ram eye pin and the retaining roll pin. Slide the hook assembly out of the frame and remove the plugs from the hydraulic cylinder.



fig 2.8

RANGE 1A-2A

Remove plugs from cylinder ports. Fit the first short hydraulic hose to the cylinder B Port and tighten to correct torque value (Torque Value 15lbs.ft or 20Nm).

2



fig 2.9

Fit the first short hydraulic hose to the cylinder B Port and tighten to correct torque value (Torque Value 15lbs.ft or 20Nm). Fit the Second short hydraulic hose to the cylinder A Port and tighten to correct torque value (Torque Value 26lbs.ft or 35Nm).



fig 2.10

Fit the Second short hydraulic hose to the cylinder A Port and tighten to correct torque value (Torque Value 26lbs.ft or 35Nm).

3

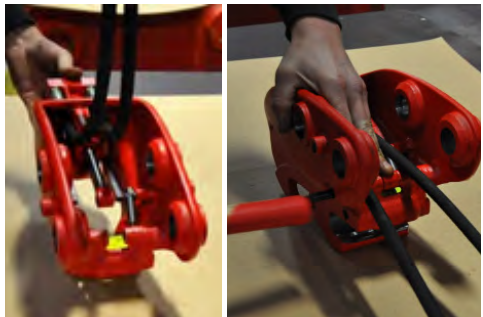


fig 2.11

Feed the hoses through the frame and slide the hook back into position. Align the frame and hydraulic cylinder bores. Push in pin and knock the retaining roll pin back into place.

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.

4



fig 2.12

Align link arm then install the original OEM bucket pin through the coupler and link arm bores.

5



fig 2.13

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

6



fig 2.14

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.

7



fig 2.15

Install the original OEM bucket pin through the coupler and link arm bores and fit the locking bolt and nuts (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.

8



fig 2.16

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 as shown.

9

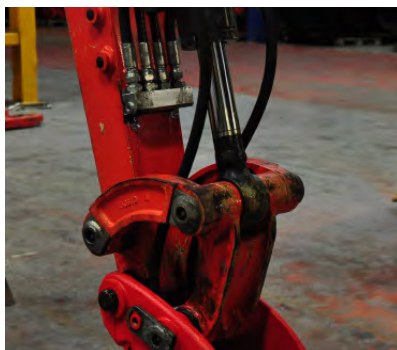
fig 2.17



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.

10

fig 2.18



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, as this will damage the hose. The hoses should be free to move 10-20mm in either direction across the dipper arm.

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' on to the manifold block (fig 2.18).

11

fig 2.19



Fit the weld-on clamps up the dipper arm of the excavator at appropriately spaced intervals (approx. 450mm). 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.

WARNING: Remember to isolate excavator prior to performing welding operations.

12

fig 2.20



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. Note: if machine boom and dipper are hollow to allow routing for other hydraulic hoses it is possible to route the installation kit through this area. Take care when doing so to reduce the risk of nipping and kinking the hoses.

Route the hoses through the machine internals to the solenoid valve installed into the pump compartment ensuring you secure them where possible. Connect the hoses to the solenoid valve. You should now be ready to test the coupler and the hydraulic system.

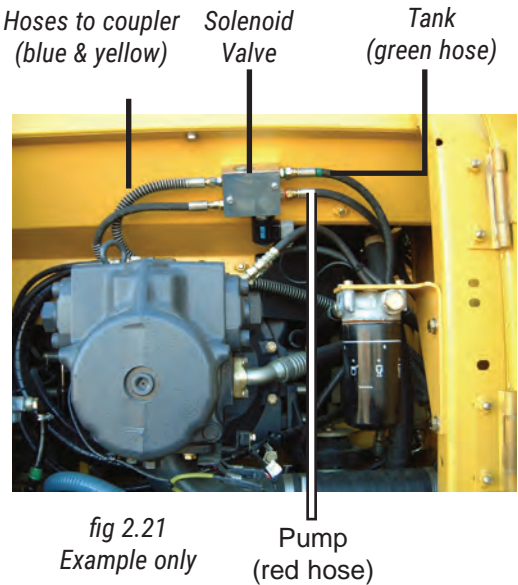


fig 2.21
Example only

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.

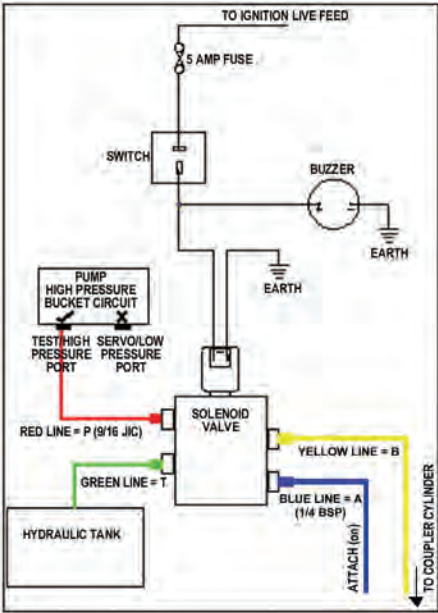
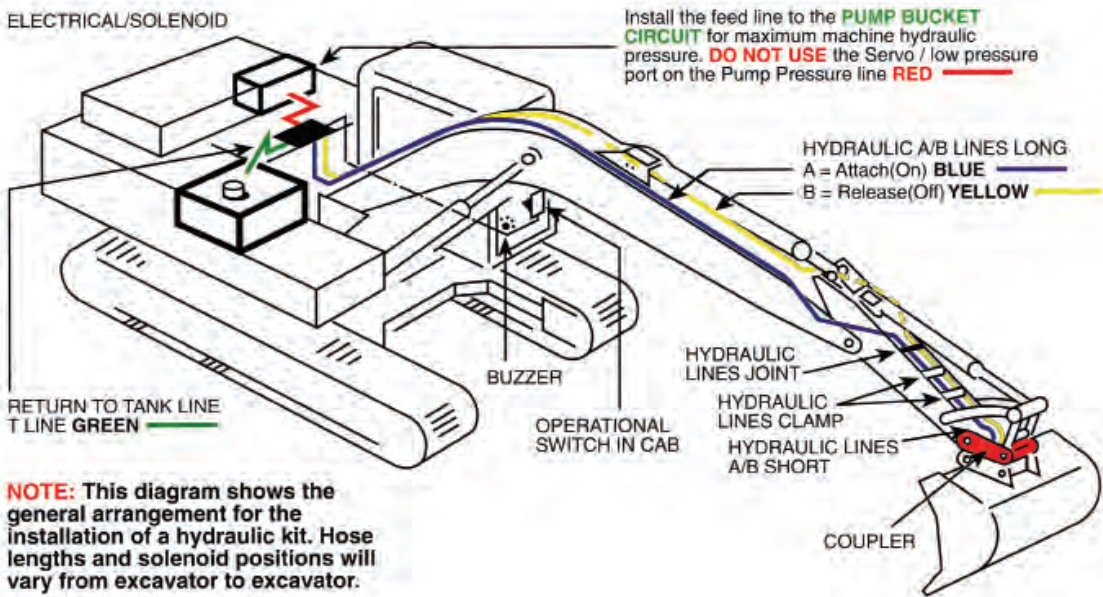


fig 2.22
Solenoid & Hose Arrangement

Connect up all hoses to solenoid valve, tank and pump. (Green, Red, Blue and Yellow hoses)
(maximum working pressure = 400 bar).
Please refer to 5.4 for torque specifications.

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



Maximum working pressure 400 bar
fig 2.23
Hydraulic Hose Installation

13

fig 2.24



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

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.

fig 2.25



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

14

fig 2.26



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.

2.5 COUPLER REMOVAL

fig 2.27



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 coupler follow the installation procedure in reverse order starting at Step 13.

2.6 GROUND TOUCH FITMENT (ETOG SAFETY SYSTEM)

1

fig 2.29



Connect the ETOG Solenoid Adaptor Harness to the excavator's solenoid valve and tighten securely.

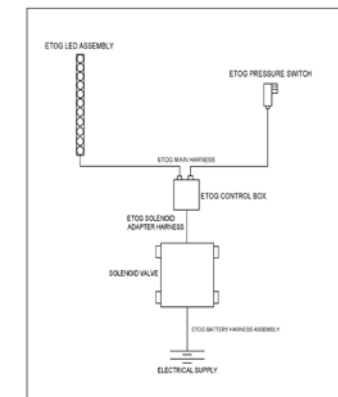


fig 2.28

2

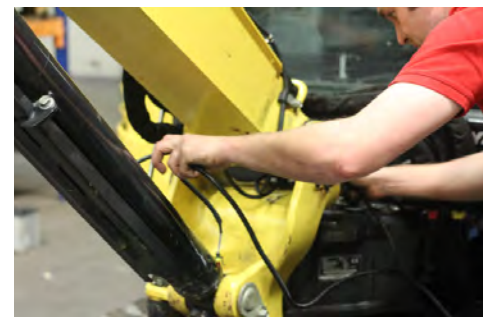
fig 2.30



On the bottom side of the excavator's boom cylinder remove the hose from the integrated housing and install a T-piece assembly between the hose and the integrated housing.

3

fig 2.31



Attach the ETOG Pressure Switch to the open end of the T-piece assembly and ensure that all of the hose connections are securely tightened.

4

fig 2.32

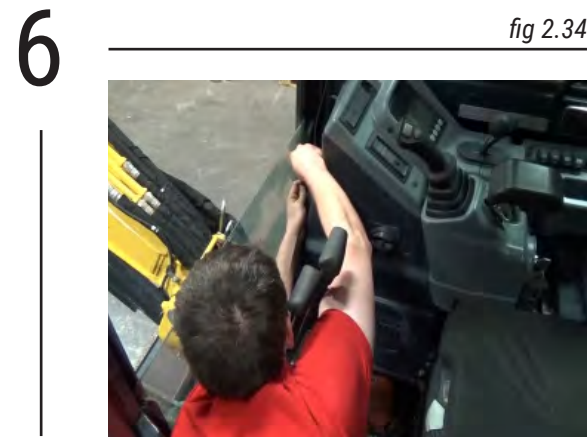


Route the wiring from the ETOG Pressure Switch down the excavator boom towards the front of the excavator cab while checking for any knotting or tangling of cables. Feed the ETOG Main Harness from the exterior to the interior of the cab via the front access panel

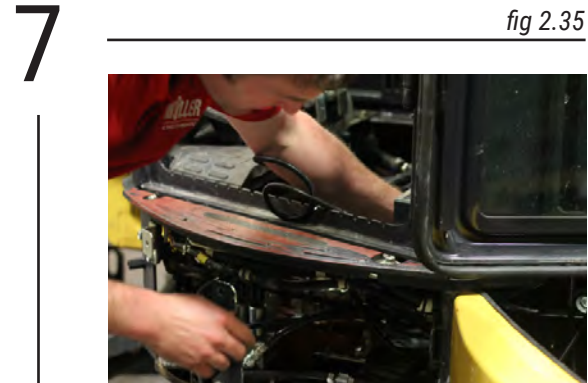


Remove the plastic cover from the adhesive strip on the rear of the ETOG LED Assembly. Attach the ETOG LED Assembly to inside of the excavator cab. Ensure the ETOG LED Assembly is orientated vertically, with the end of the cable connection at the base.

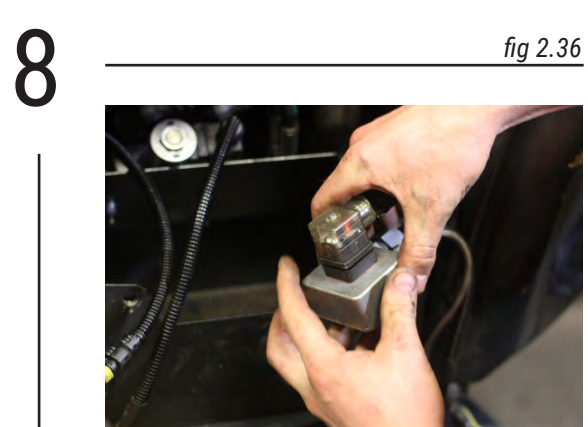
NOTE: It is strongly advised that the LED strip is positioned adjacent to the excavator controls ensuring it is visible to the operator at all times.



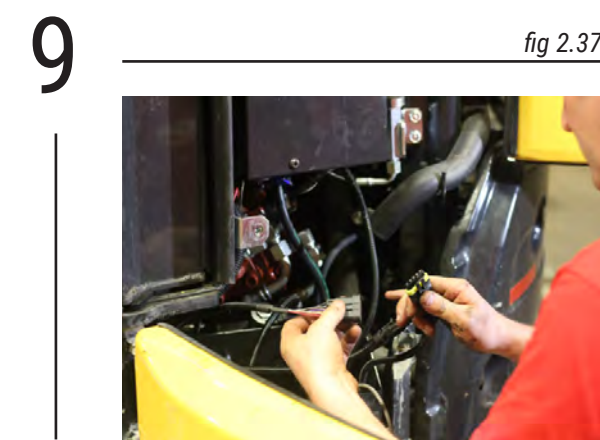
Connect the ETOG LED Assembly to the ETOG Main Harness using the plastic adaptors fitted to the end of each wiring harness.



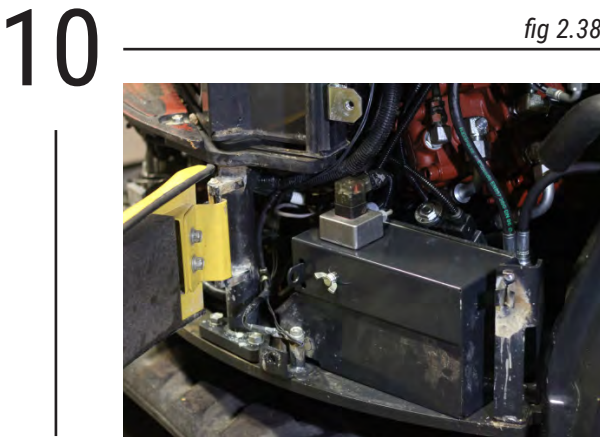
Route the ETOG Main Harnesses from inside the excavator cab towards the excavator's solenoid valve.



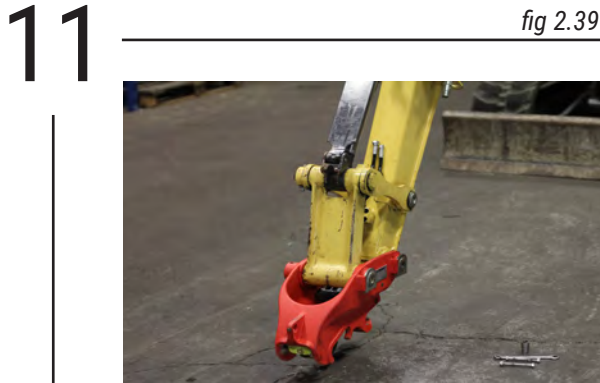
Attach the end of the ETOG Main Harness to the ETOG Control Box, screw into place and tighten securely.



Connect the open end from the ETOG Main Harness to the ETOG Control Box using the hosing adaptor fitted to the ETOG Control Box. Continue to connect the ETOG Solenoid adaptor and Battery Harness using wiring adaptors provided.



Route the ETOG Battery Harness from the ETOG Control Box to the excavator's electrical ignition live. Connect the ETOG Battery Harness to the excavator's electrical supply by attaching the both ends of the ETOG Battery Harness to the relevant terminals.



Reconnect the excavator's battery and turn on the engine. Place the Miller GTS Coupler on the ground to test the ETOG Safety System.



Fit overload warning sensor to E port.

OPERATION

3.0 OPERATION

FOR YOUR SAFETY: The Miller PowerLatch has an innovative locking mechanism. Please familiarise yourself with the following section before operating the Miller GTS Compact Quick Coupler.

Machine operators MUST be fully trained and familiar with the correct operating procedure for this particular coupler before attempting to operate the machine.



WARNING - Never place your hands inside the coupler, or attempt to make adjustments or repairs while the hydraulic system is pressurised. Never switch to the release or off position while the coupler is in use. Never use the front or back of the hydraulic hook/jaw as a lifting device.

WARNING - The operator should be competent and fully trained on the correct use of the coupler before operation.

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 PowerLatch 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 lifted or moved without BOTH bucket/attachment pins being FULLY ENGAGED. Failure to do so could result in serious injury or fatality.

(3.0) MILLER GTS COUPLER OPERATION - ATTACH PROCEDURE

1

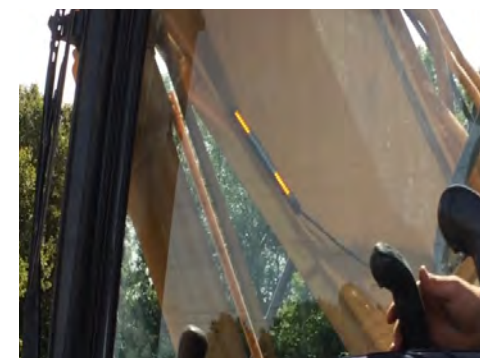
fig 3.0



Touch coupler on the ground to initiate the release process.

2

fig 3.1



Wait for the LED to turn amber to indicate decouple procedure can commence (Approx. 3 seconds).

3

fig 3.2



Flick the switch to activate the decoupling process – LED will turn red. Buzzer will sound.

4

fig 3.3



Place coupler in the curled/crowded position. Hold the bucket crowd lever for approx. 5-10 seconds to allow the hook to fully retract. Visually inspect to check the hook is fully retracted.

(3.0) MILLER GTS COUPLER OPERATION - ATTACH PROCEDURE

5 *fig 3.4*



Ensure the hook and ABS are fully retracted before attempting to engage the bucket/attachment. Place the coupler above the bucket /attachment. Move coupler to engage front jaw with the front pin

6 *fig 3.5*



Curl the coupler to engage the bucket pins. Turn **switch** to release or **off** position hold the bucket crowd lever for approx. 5-10 seconds to allow the hook to power on. Hook will engage to ensure full hydraulic force on front and back pins.

7 *fig 3.6*



To ensure that the bucket/attachment pins are securely held by the coupler, apply pressure to the bucket/attachment by rotating it against the ground and away from the machine before operating. This is often referred to as a 'Bump Test'.

(3.1) MILLER GTS COUPLER OPERATION - RELEASE PROCEDURE

1 *fig 3.7*



Touch attachment on the ground to initiate the release process.

2 *fig 3.8*



Wait for the LED to turn amber to indicate decouple procedure can commence (Approx. 3 seconds). *fig 3.9*

3 *fig 3.10*



Flick the switch to activate the decoupling process – LED will turn red. Buzzer will sound.

4 *fig 3.10*



Curled/crowded attachment to allow the hook to fully retract. The bucket/attachment can now be released.



WARNING - Do not try to 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.

(3.2) LIFTING WITH THE MILLER GTS COMPACT COUPLER

! 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 (on 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

Where an excavator/backhoe is regarded as lifting equipment, it requires thorough examination by a competent person at least every 12 months*. (See LOLER (1998) PUWER (1998) Regulation 9).

Front end loaders, not modified or adapted for lifting operations, do not require thorough examination under LOLER (1998) PUWER (1998), but still require regular inspection under PUWER which will be to a similar standard. If the loader is used for object handling it will require thorough examination under LOLER (1998) PUWER (1998) at least every 12 months.

Where a quick hitch is permanently mounted on an excavator then the thorough examination for the excavator will also cover the quick hitch. If the quick hitch is moved from one machine to the other it is classed as an accessory and should be thorough examined every 6 months.

Slings, loose hooks, chain slings, polyester slings, shackles etc are classed as lifting accessories and must be thorough examined every 6 months.

Buckets with integrated hooks/lifting eyes are also classed as lifting accessories and should be thorough examined every 6 months.

*In the absence of a written examination scheme drawn up by a competent person.

(3.3) 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 mounted directly to the machine, as it has not been designed to work with prolonged excessive vibration.



fig 3.13

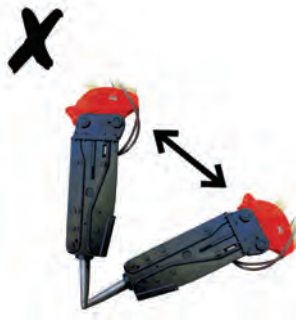


fig 3.14



fig 3.15

(3.4) INCORRECT COUPLER USE

The following information highlights some of the operating bad practices that occur in the field. This is not fully exhaustive, for illustration purposes only. 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. Picking up items before the hook is retracted



4. 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

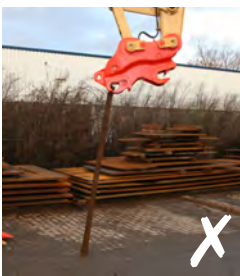


2. Using jaw or hook to hammer products into the ground



USING THE HOOK TO LIFT AND MANOEUVRE ITEM

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.

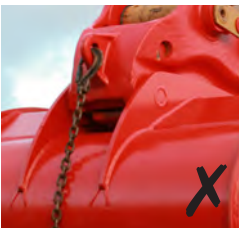


6. Using the cylinder to pick up items with chains.



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



2. Close up of the above.

MAINTENANCE

(4.0) MILLER GTS GENERAL MAINTENANCE

Ensure that the correct maintenance checks are carried out to prevent potentially significant financial costs and endangering the lives of those onsite.

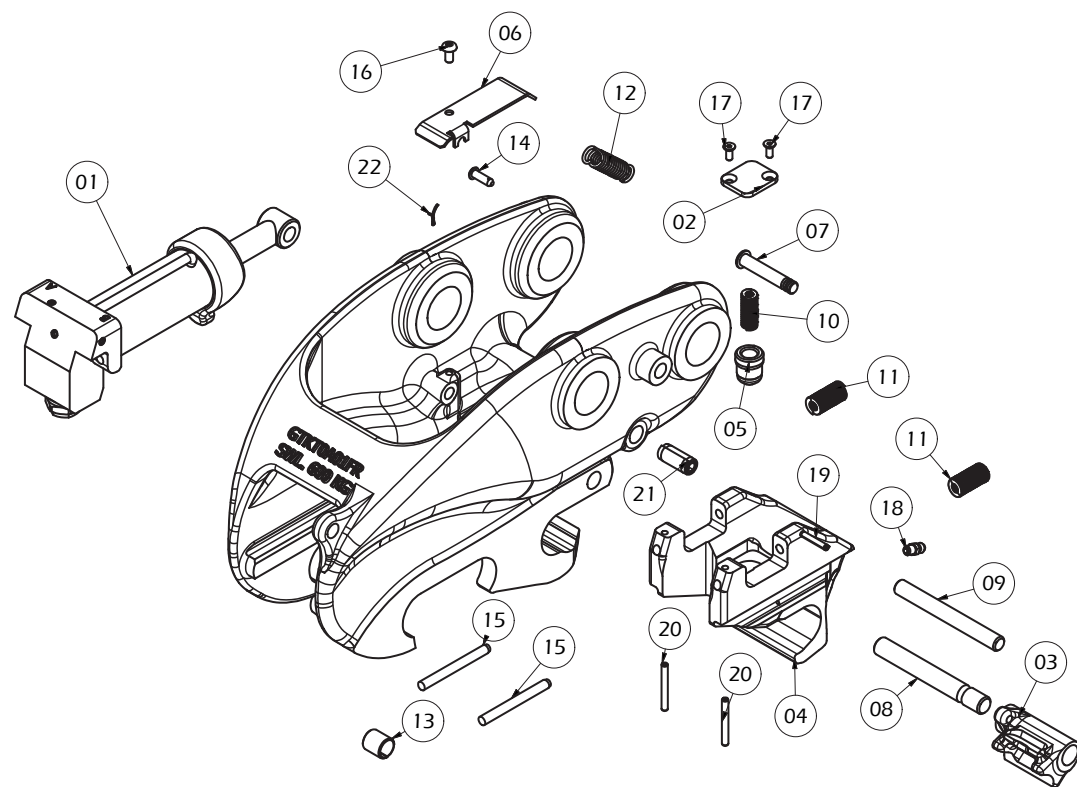


fig 4.0

(4.0) MILLER GTS 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 (fig 2.5).

(4.1) DAILY SAFETY 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 the front latch swings freely and that the hook notch area (back of hook) is free from dirt or debris.
4. Check the security of the mounting pins, locking bolts and nuts.
5. Check the condition of the hydraulic hoses, fittings and hydraulic system generally. Replace any that are damaged.
6. Open and close the ram to check that it is working correctly.
7. Check that the switch/buzzer is working.

(4.2) WEEKLY SAFETY CHECKS

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

1. Ensure daily checks have been carried out.
2. Lubrication points - Ensure that all grease points are greased regularly
 - i. Release the bucket/attachment. (Refer to the operation instructions- page 17).
 - ii. Retract the coupler cylinder. Switch off the engine.
 - iii. Apply grease, via grease nipple A to the cylinder.
3. Check coupler frame for signs of wear

(4.3) TORQUE SPECIFICATIONS

Securing bolts for lever (PowerLatch)	30lb.ft	40Nm (Fit
Thread locking adhesive)		
Check valve	30lb.ft	40Nm
B hose connection male (cylinder hose)	15lb.ft	20Nm
A 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		
A Line filter fitting ¼ BSP M/M Adapter	25lb.ft	34Nm
B Line filter fitting 7/16 JIC x 7/16 UNF	15lb.ft	20Nm
P Line 9/16 JIC x 9/16 UNF	26lb.ft	35Nm
T 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



(4.5) MILLER GTS REPLACEMENT PARTS

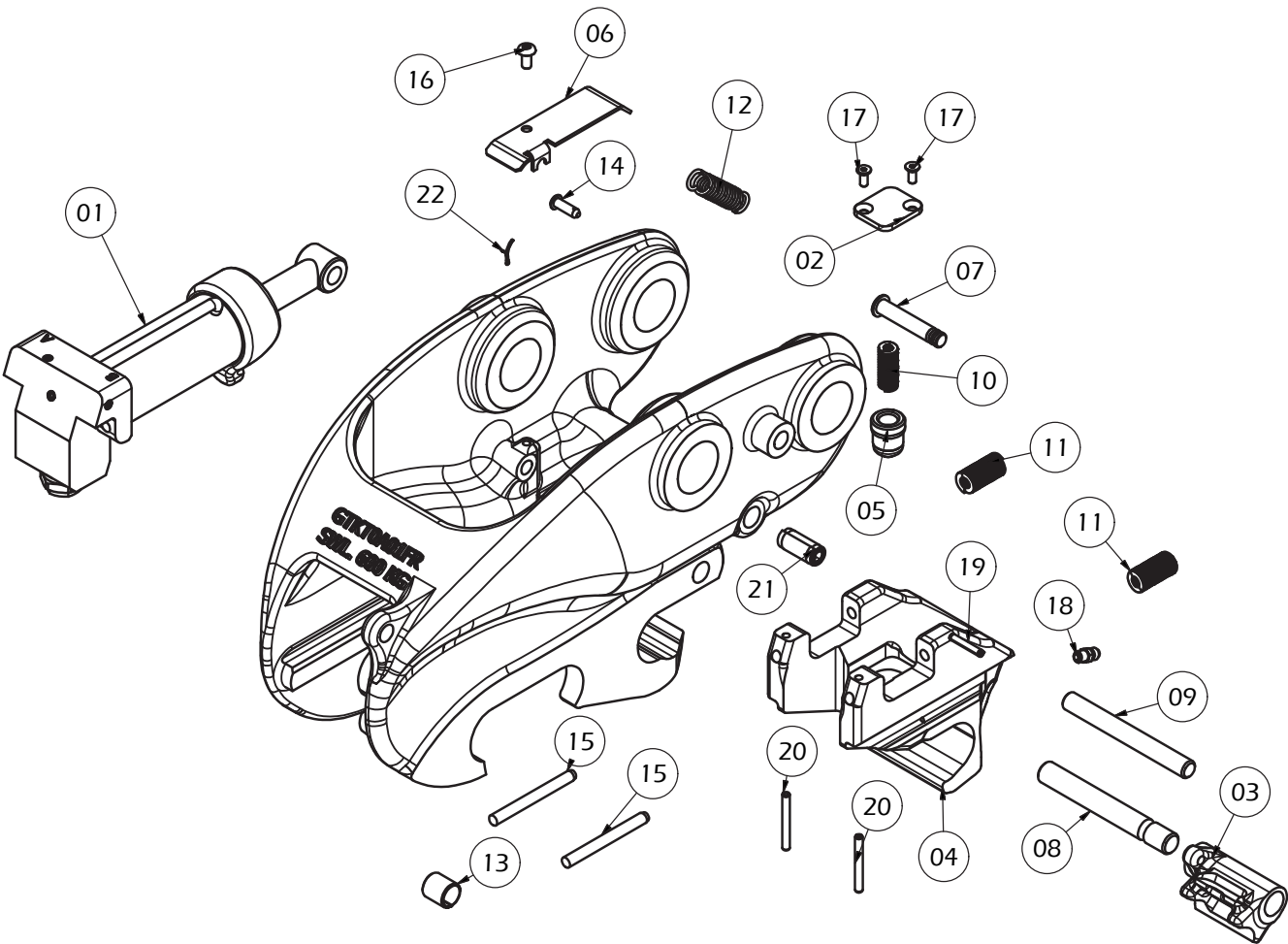


fig 4.1

Balloon No.	Part No.	Description
	1 GTCY0A-032-016-1	RANGE 0A RAM
	2 GTMW0A01CP	RANGE 0A COVER PLATE
	3 GTMW0A01FL	RANGE 0A FRONT LATCH
	4 GTMW0A01HK	RANGE 0A HOOK
	5 GTMW0A01PL	RANGE 0A HARDENED PLUNGER
	6 GTMW0A01SC	RANGE 0A SPRING COVER
	7 GTMW0A03SP	RANGE 0A SPRING PIN
	8 P0940012CD1000	FRONT LATCH PIN
	9 P0900010000000	RAM PIN
	10 VOSPRCOMP90604115	COMPRESSION SPRING 9 - 0604 - 115
	11 VOSPRCOMP90804215	COMPRESSION SPRING 9 - 0804 - 215
	12 VOSPRTENSt32210	TENSION SPRING T32210
	13 VO1215DU	Ø12 x 15L DU BUSH
	14 VOCLE0501601	CLEVIS PIN M5 X 16
	15 P0600060000S0	HARDENED STEEL PIN ISO 8734
	16 BNM05L010HTHSB	HEX SOCKET BUTTON HEAD BOLT M5 X 10mm
	17 BNM04L010HTCSK	COUNTERSUNK BOLT M4 X 10mm
	18 VOBNIPPLEM6STR	M6 STRAIGHT GREASE NIPPLE
	19 VO01PZSCM04022	ROLL PIN 4mm D X 22mm LG
	20 VO01PZSCM04035	ROLL PIN 4mm D X 35mm LG
	21 VO01PZSCM12024	ROLL PIN 12mm D X 24mm LG
	22 VOCOT0120801	SPLIT PIN 1.2 x 8



(4.5) MILLER GTS REPLACEMENT PARTS

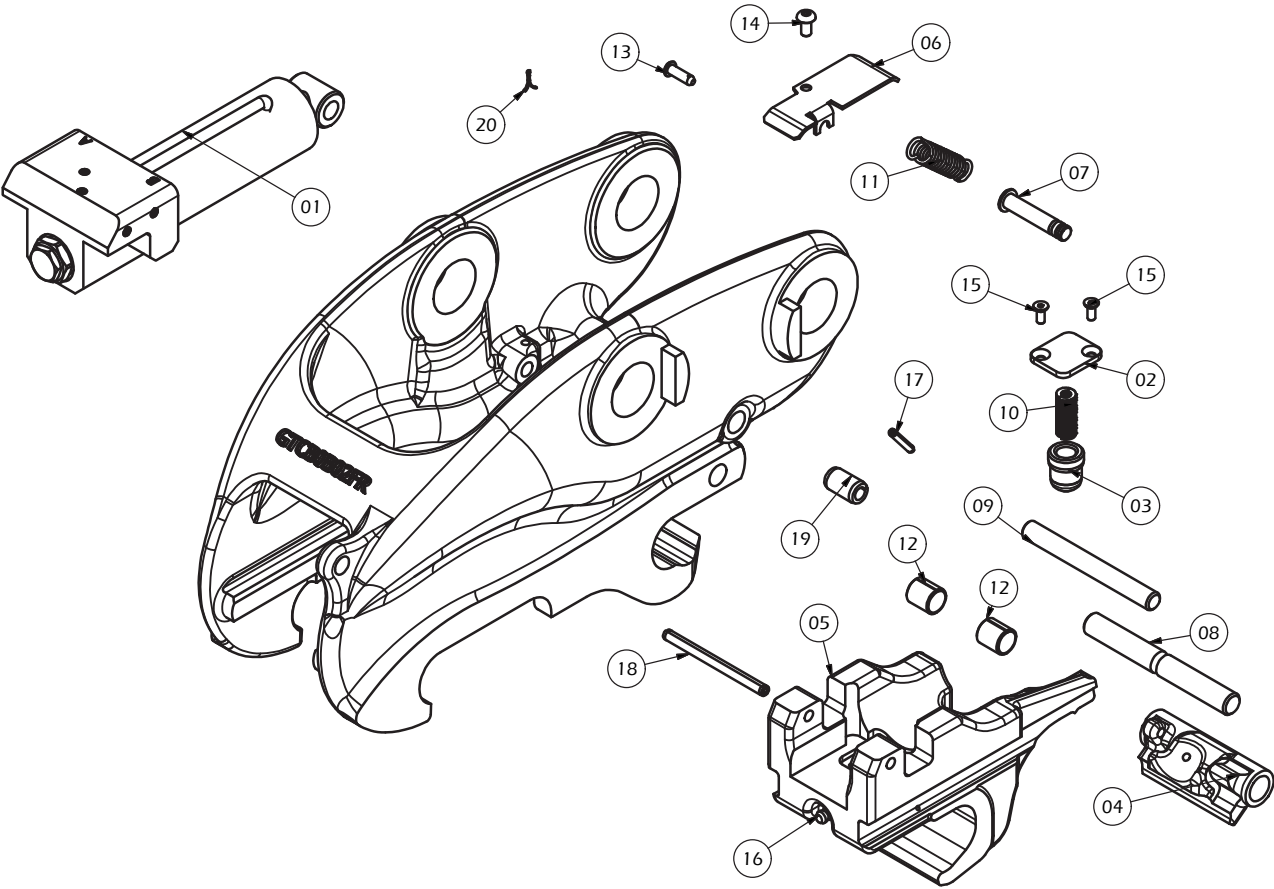


fig 4.2

Balloon No.	Part No.	Description
1	GTCY0B-032-016-0	RANGE 0B RAM
2	GTMW0A01CP	RANGE 0A COVER PLATE
3	GTMW0A01PL	RANGE 0A HARDENED PLUNGER
4	GTMW0B01FL	RANGE 0B FRONT LATCH
5	GTMW0B01HK	RANGE 0B HOOK
6	GTMW0B02SC	RANGE 0B SPRING COVER (NARROW FRAME)
7	GTMW0B02SP	RANGE 0B SPRING PIN (NARROW FRAME)
8	P1010012CD1000	FRONT LATCH PIN
9	P0900010000000	RAM PIN
10	VOSPRCOMP90604215	COMPRESSION SPRING 9 - 0604 - 215 TENSION
11	OSPRTENST32210	SPRING T32210
12	VO1215DU	Ø12 x 15L DU BUSH
13	VOCLE0501601	CLEVIS PIN M5 X 16
14	BNM05L010HHSB	HEX SOCKET BUTTON HEAD BOLT M5 X 10mm
15	BNM04L010HTCSK	COUNTERSUNK BOLT M4 X 10mm
16	VOBNIPPLEM6STR	M6 STRAIGHT GREASE NIPPLE
17	VO01PZSCM04022	ROLL PIN 4mm D X 22mm LG
18	VO01PZSCM05065	ROLL PIN 5mm D X 65mm LG
19	VO01PZSCM12020	ROLL PIN 12mm D X 20mm LG
20	VOCOT0120801	SPLIT PIN 1.2 x 8



(4.5) MILLER GTS REPLACEMENT PARTS

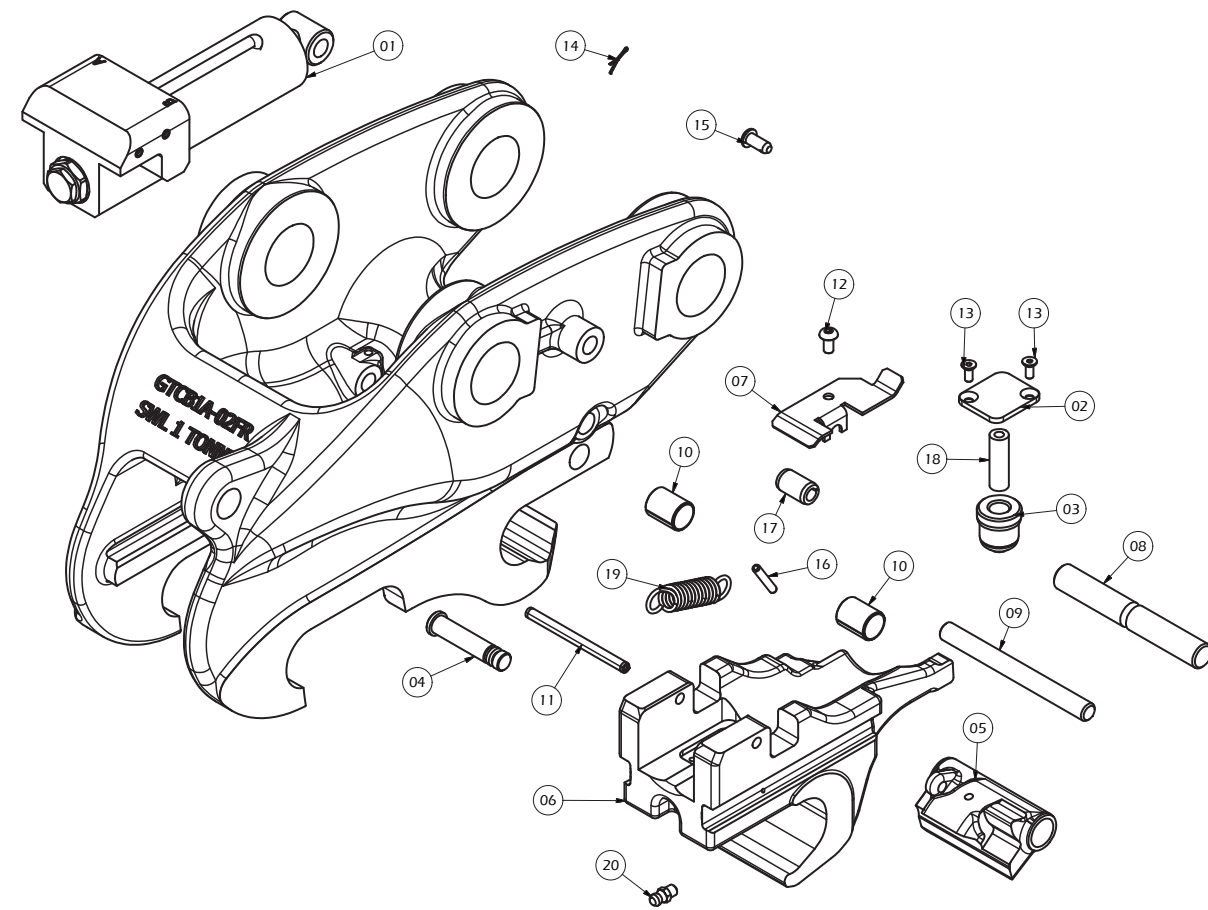


fig 4.3

Balloon No.	Part No.	Description
1	GTCY1A-032-016-1 2	RANGE 1A NARROW RAM
	GTMW1A01CP	RANGE 1A COVER PLATE
3	GTMW1A01PL	RANGE 1A HARDENED PLUNGER
4	GTMW1A01SP	RANGE 1A LATCH SPRING PIVOT (NARROW)
5	GTMW1A02FL	RANGE 1A NARROW FRONT LATCH
6	GTMW1A02HK	RANGE 1A NARROW HOOK
7	GTMW1A03SC	RANGE 1A SPRING COVER
8	P1020014CD1000	LATCH PIVOT PIN (NARROW)
9	P1040010000000	RANGE 1A RAM PIN (NARROW)
10	VO1420DU	Ø14 X 20L DU BUSH
11	VO01PZSCM06070	ROLL PIN 6mm D X 70mm LG
12	BNM05L010HTHSB	HEX SOCKET BUTTON HEAD BOLT M5 X 10mm
13	BNM04L010HTCSK	COUNTERSUNK BOLT M4 X 10mm
14	VOCOT0121001	SPLIT PIN 1.2 x 10
15	VOCLE0601401	CLEVIS PIN M6 x 14
16	VO01PZSCM04024	ROLL PIN 4mm D X 24mm LG
17	VO01PZSCM12020	ROLL PIN 12mm D X 20mm LG
18	VOSPRCOMP90605215	COMPRESSION SPRING 9 - 0605 - 215
19	VOSPRTENST32340	TENSION SPRING T32340
20	VOBNIPPLEM6STR	M6 STRAIGHT GREASE NIPPLE



(4.5) MILLER GTS REPLACEMENT PARTS

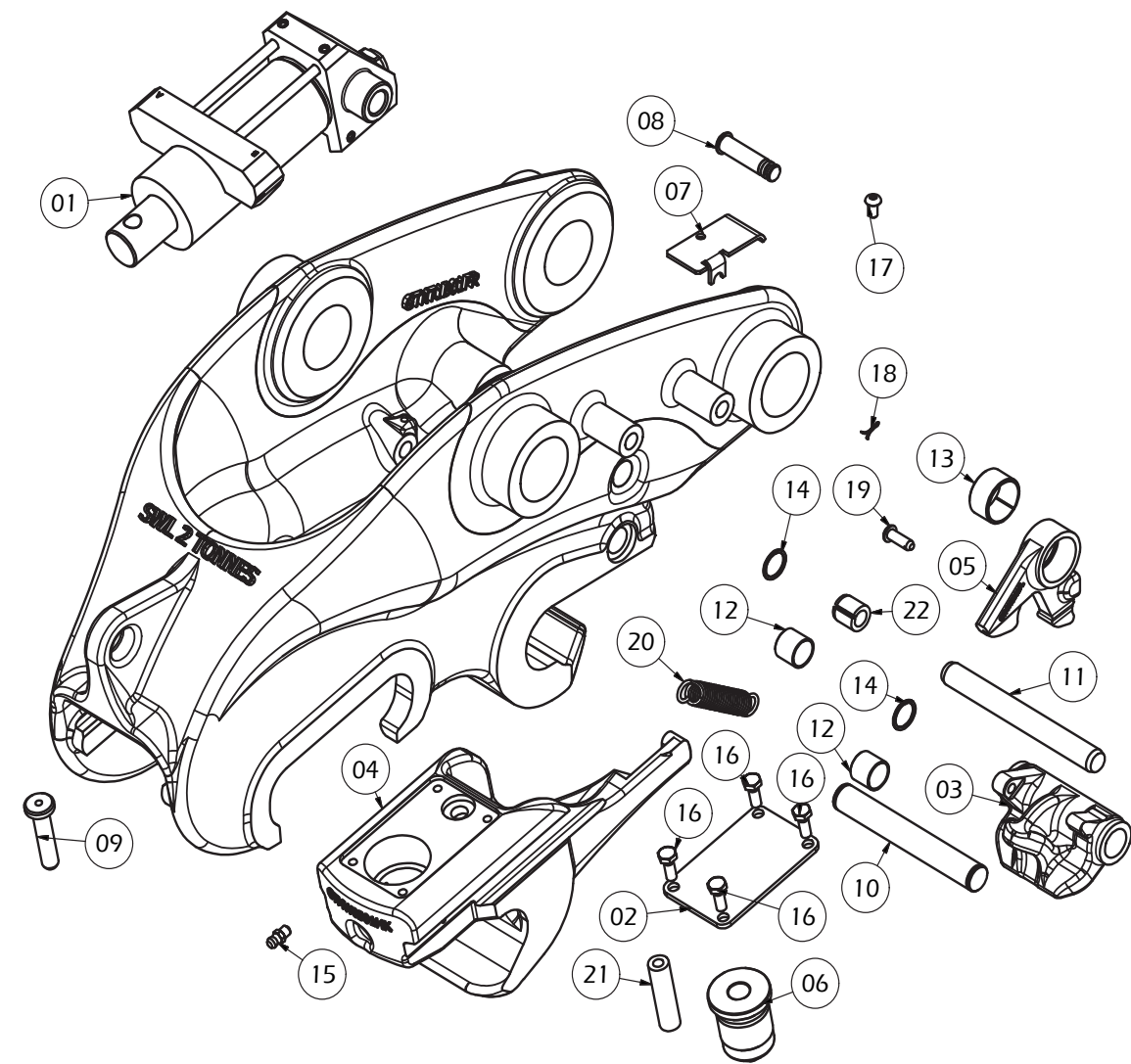


fig 4.4

Balloon No.	Part No.	Description
1	GTCY1B-040-025-0	RANGE 1B RAM
2	GTMW1B01CP	RANGE 1B COVER
3	GTMW1B01FL	RANGE 1B FRONT LATCH
4	GTMW1B01HK	RANGE 1B HOOK MACHINED
5	GTMW1B01LA	RANGE 1B LATCH ACTUATOR ARM
6	GTMW1B01PL	RANGE 1B PLUNGER
7	GTMW1B01SC	RANGE 1B SPRING COVER
8	GTMW1B03SP	RANGE 1B LATCH SPRING PIVOT
9	GTMW1B01CL	RANGE 1B CLEVIS PIN
10	P1150016CD1000	LATCH PIVOT PIN
11	P1260014000000	RAM PIN
12	VO1615DU	Ø16 X 15L DU BUSH
13	VO2515DU	Ø25 X 15L DU BUSH
14	VOSPIRRETECT01601	SPIRAL RETAINING RING TO SUIT 16MM PIN
15	VOBNIPPLEM6STR	M6 STRAIGHT GREASE NIPPLE
16	BNM06L016HTHEX	HEX HEAD BOLT M6 X 16mm
17	BNM05L010HHSB	HEX SOCKET BUTTON HEAD BOLT M5 X 10mm
18	VOCOT0120801	SPLIT PIN 1.2 x 8
19	VOCLE0601801	CLEVIS PIN M6 x 18
20	VOSPRTENST32350	TENSION SPRING T32350
21	VOSPRCOMP90808110	COMPRESSION SPRING 9-0808-110
22	VO01PZSCM16016	ROLL PIN 16mm D X 16mm LG



(4.5) MILLER GTS REPLACEMENT PARTS

Balloon No.	Part No.	Description
1	GTCY2A-040-025-0	RANGE 2A RAM
2	GTMW2A01CP	RANGE 2A COVER PLATE
3	GTMW2A01FL	RANGE 2A FRONT LATCH
4	GTMW2A01HK	RANGE 2A HOOK
5	GTMW2A01LA	RANGE 2A LATCH ACTUATOR
6	GTMW2A01PL	RANGE 2A PLUNGER
7	GTMW2A02SP	RANGE 2A SPRING PIN
8	GTMW2A01SC	RANGE 2A SPRING COVER
9	GTMW2A01CL	RANGE 2A CLEVIS PIN Ø12 x 50L
10	P1420020CD1000	LATCH PIVOT PIN
11	P1650016000000	RAM PIN
12	VO2015DU	Ø20 x 15L DU BUSH
13	VO2815DU	Ø28 x 15L DU BUSH
14	VOBNIPPLEM6STR	M6 STRAIGHT GREASE NIPPLE
15	BNM06L016HTHEX	HEX HEAD BOLT M6 X 16mm
16	VOSPIRRETEXT02001	SPIRAL RETAINING RING TO SUIT 20MM PIN
17	VO01PZSCM16020	ROLL PIN 16mm D X 20mm LG
18	VOCLE0601801	CLEVIS PIN M6 X 18
19	VOSPRTENST32470	TENSION SPRING T32470
20	VOSPRCOMP91008115	COMPRESSION SPRING 9 - 1008 - 115
21	BNM05L010HTHSB	HEX SOCKET BUTTON HEAD BOLT M5 X 10mm
22	VOCOT0120801	SPLIT PIN 1.2 x 8

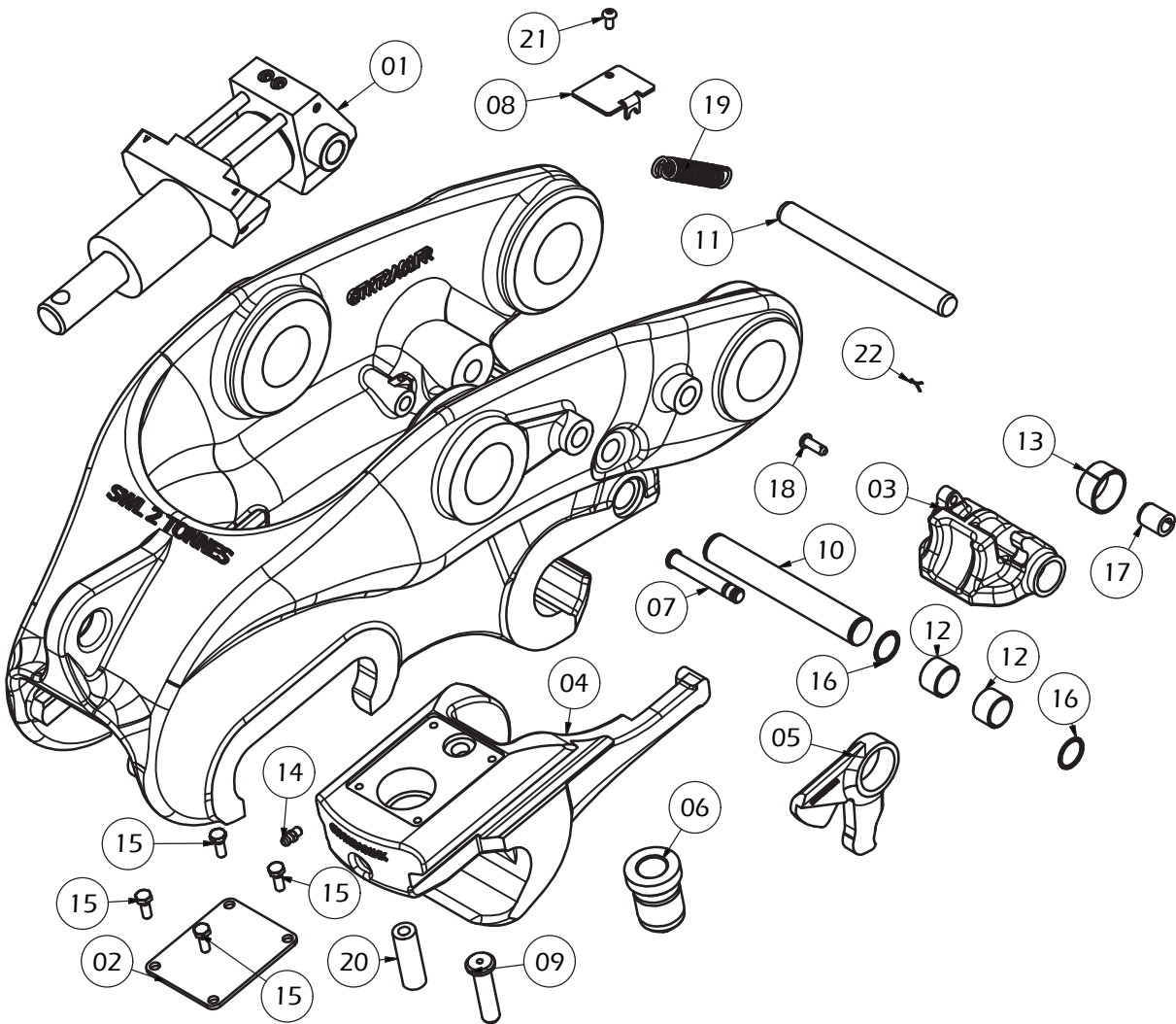


fig 4.5

TROUBLE SHOOTER GUIDE

WARRANTY

(4.5) 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 system). 24 volt
 6. Electrical wiring. (fig 3.24 Page 15).

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 2.20 Page 12).

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.

(5.0) WARRANTY

Warranty Period

The warranty period is 24 months for the coupler frame and 12 months for internals or 2,000 hours from date of delivery, 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.

Warranty Claims

In the event of any warranty claim being honoured, the following information must be provided to the Seller:-
i) Serial No., ii) hours worked, iii) host machine model and hours worked, iv) working environment/application, v) failure details including photographic evidence and vi) general overview of the concern and how the failure occurred.

THE WORLD OF MILLER



A HISTORY OF INNOVATION

As the inventors of the world's first fully automatic, universal pin grabber coupler range in 1986 we've been at the forefront of innovation in quick coupler design and manufacture for more than 40 years.

BRITISH DESIGN, GLOBAL REACH

We're proud to still have our headquarters in North East England, where it all began 40 years ago. Having grown from a reliable local craftsman to a globally renowned company, we are now equally as proud to supply the latest in coupler technology from our joint venture casting facility in Northern China. From both sites, buckets, quick couplers and other attachments are meticulously created and distributed worldwide.

SAFETY FIRST

The Miller name is an assurance of productivity, efficiency and above all, safety. We test all of our attachments to beyond breaking point before a design is approved, produced and operational on sites worldwide. With Miller, you and your operators have the peace of mind you need to get on with the job at hand.

CUSTOMER FOCUS

At Miller, we work as a team and we see all of our customers as part of that team. It's always been our aim to provide you with the durable, value for money products and services that will make the short, medium and long term difference for you and your customers. The relationships we have with you and reputations we share mean everything to us.

PASSION FOR EXCELLENCE

We are passionate about offering the safest products, the finest customer service and the most advanced attachment solutions in the world. It's why we continue to lead the way.

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1

fig 2.7



Place your coupler so that the lifting eye is pointing away from the excavator.

2

fig 2.9



Fit first hydraulic hose to coupler (cylinder port B) and tighten to correct torque.

3

fig 2.11



Fit the Second short hydraulic hose to the cylinder A Port and tighten to correct torque value.

4

fig 2.12



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.

5

fig 2.13



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

6

fig 2.14



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. Install the original OEM bucket pin through the coupler and link arm. bores
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.

7

fig 2.15



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 as shown.

8

fig 2.16



Install the original OEM bucket pin through the coupler and dipper arm.
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.

9

fig 2.7



Fit the locking bolt and nuts (supplied).

10

fig 2.9



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.

Position the coupler into full crowd position and feed hydraulic hoses up through the coupler and onto the dipper arm. Connect coupler hose A and B to manifold. (A Fig 2.9, B Fig 2.11).

11

fig 2.11



The hose routing should be snug around the nose of the dipper but not too tight, as this will damage the hose. The hoses should be free to move 10-20mm in either direction across the dipper arm.

12

fig 2.12



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.

13

fig 2.13



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

14

fig 2.14



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

15

fig 2.15



Link to ETOG pressure sensor.