

GTT

INSTALLATION GUIDE

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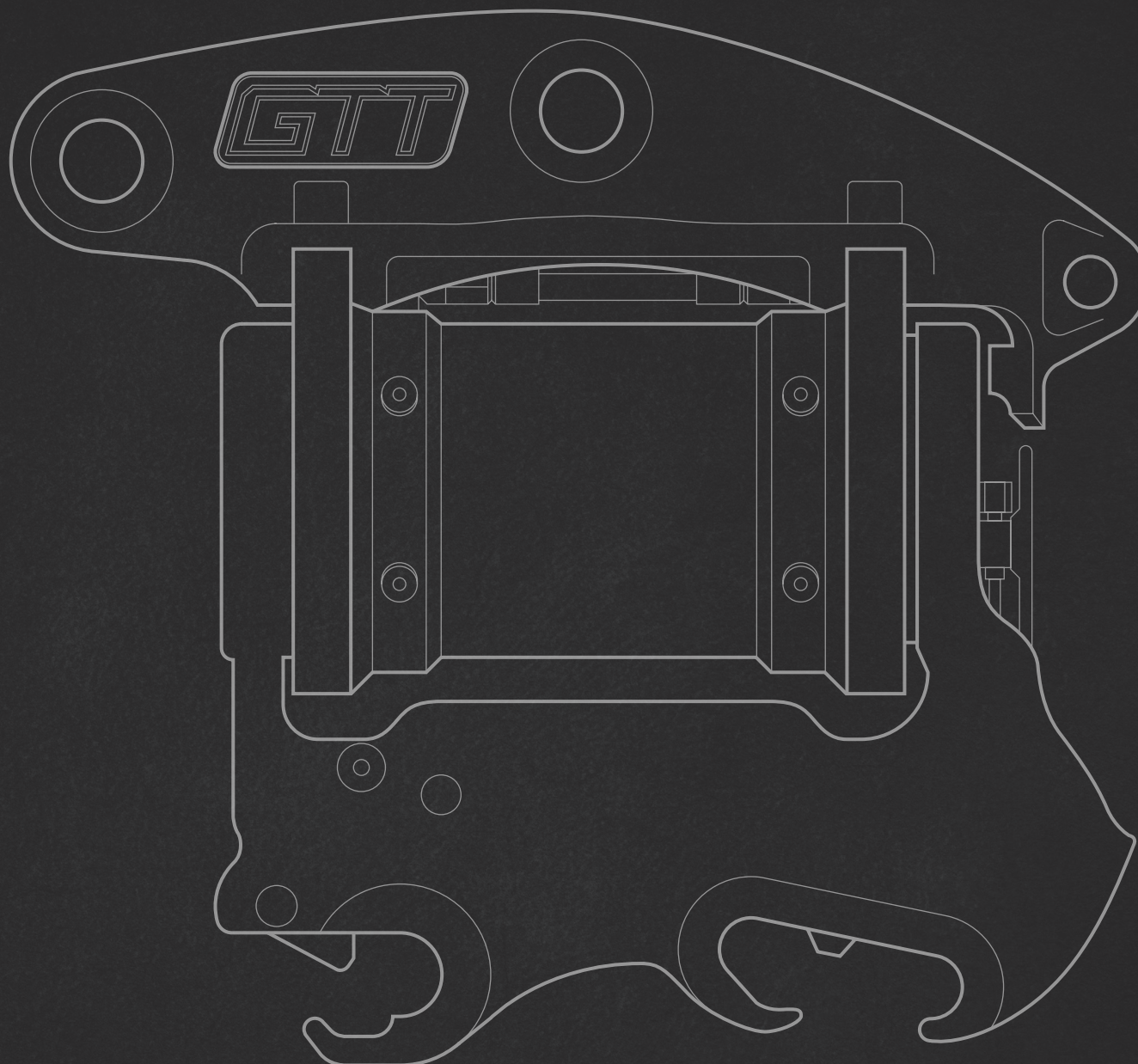
GTT Installation Guide First Issue

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K:/Design/GT Installation Kit Procedure and Process/ Installation Manual



THANK YOU...

for purchasing a Miller GTT Compact Tilt Coupler – the number one in the market for efficiency, safety, and versatility.

With over 40 years in the industry, this coupler is a product of decades of Miller engineering, manufacturing and quality control know how.

We take great pride in you owning and using something we have put our heart and soul into designing and manufacturing and we hope you will feel the same. We would love to see what applications, projects and results you achieve when using our latest compact tilt coupler. Our staff would like to share your experiences, please use the **#mymiller** on all social media posts and we can join in on your journey.

If you have any challenges or queries – let us fix it by contacting our dedicated Technical Support Team on **01670 707 272**.

We trust that you will enjoy many trouble-free years with your Miller Coupler and hope to be of service to you again soon.

IMPORTANT:

This book should always be kept with the machine during and after coupler installation.

Machine operators should be fully trained on the correct operational procedures for this coupler.

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PRODUCT SAFETY

I. PRODUCT SAFETY INFORMATION

The following information details the correct installation and operation procedure for your Miller GTT Coupler. Please take the time to read the instructions carefully and install the coupler in accordance with Miller's recommendations.

Prior to the install it is advised that the installer executes the appropriate workplace assessment to ensure the work area is adequate to carry out each step of the installation in a safe and systematic manner.

Miller recommend that couplers be installed and operated by appropriately trained and experienced personnel. Miller can provide additional direct training, an installation service as well as operator training if required. Please contact Miller and/or an authorised distributor for details. Further information on our Field Service Division can be found on our website at www.millergroundbreaking.com/services.

Miller cannot anticipate every possible circumstance that might involve a potential hazard. The warnings in this following section and on the product therefore, are 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. Please contact Miller at convenience if such a scenario occurs whereby we will be happy to assist.

SAFETY NOTICE

The industry's "**Safety Alert Symbol**", is used throughout this guide and on specific end user machines to warn of the possibility of personal injury. Read the following instructions carefully. It is imperative that you read the instructions and safety regulations before you attempt to assemble the coupler to the machine.

Danger: Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Warning: Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.

Important: Indicates that equipment or property damage could occur if instructions are not followed.

Note: Gives helpful information.



SAFETY NOTICE

Warning: We recommend protective 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.

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.

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: Modification and/or welding non-approved modifications can result in making your coupler unsafe and invalidate your warranty. Please call Miller for advice and service requirements.

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.

Caution: Manual handling - take care when manually handling coupler & components, bucket and installation pins please take relevant precautions when attempting to lift items – weights and sizes of components are included with this manual.

Caution: Lifting - always use the correctly rated shackle and lifting equipment. Refer to the product table below to ascertain product weight. Never use worn, damaged or undersized lifting equipment.

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.

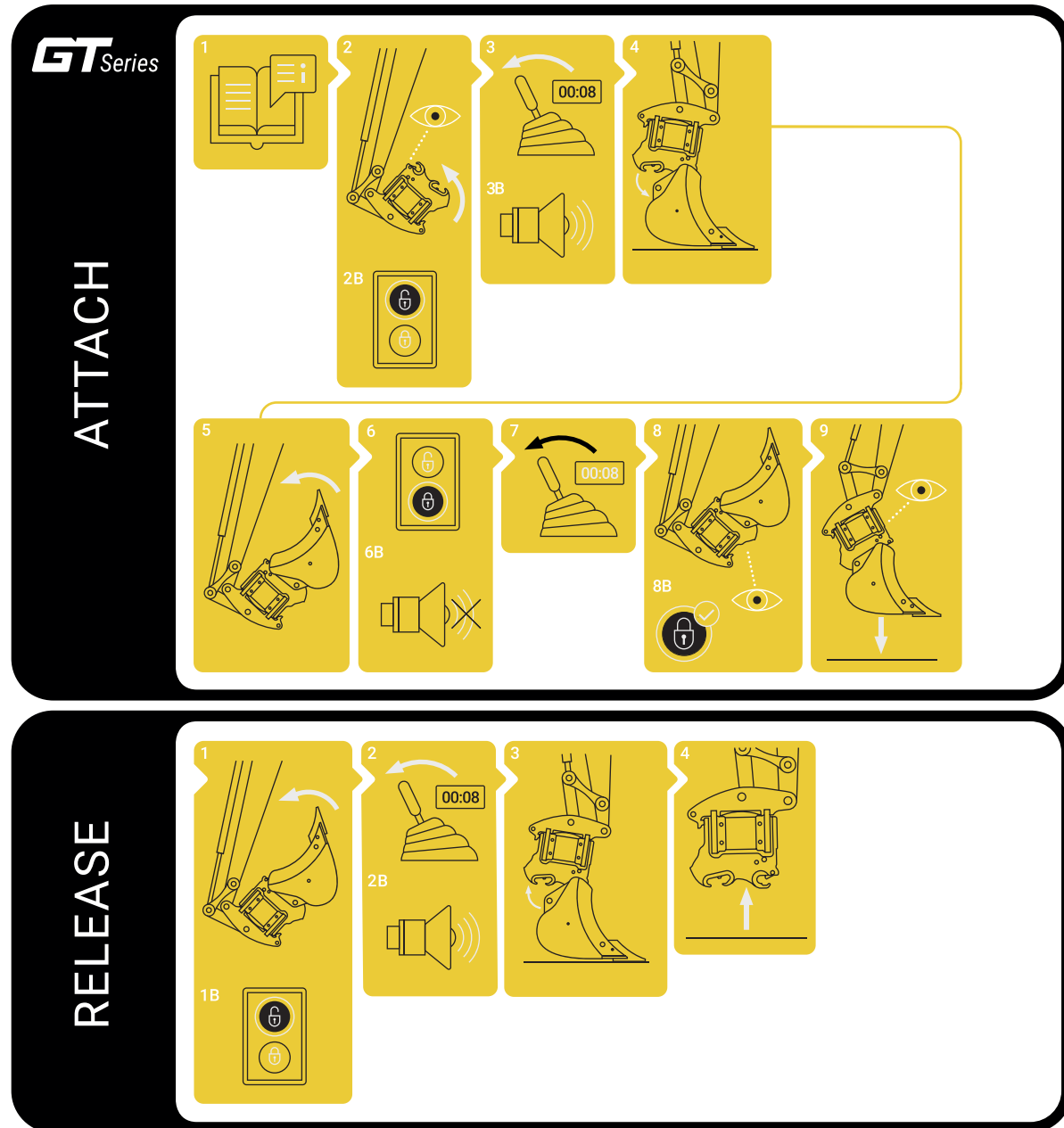
1.1. PRODUCT SPECIFICATION TABLE

COUPLER RANGE	EXCAVATOR RANGE	SECTION (A) PIN DIAMETER (MM)	SECTION (B) PIN SPREAD (MM)	SECTION (C) PIN CENTRES (MM)	SECTION (D) OFFSET HEIGHT (MM)	SECTION (E) PICK UP WIDTH (MM)	TILT ANGLE (DEGREES)	COUPLER WEIGHT (KGS)
GTT-0A	1-1.5T	30	100-128	85-118	321	96	180	50.5
GTT-0B	1.5-2T	30	131-150	121-161	317	103	180	52
GTT-1A	2T	35	145-150	125-150	370	105	180	86
GTT-1B02	2-3T	35	164-200	164-200	367	117	180	90
GTT-1B01	3-3.5T	40	208-213	172-215	406	117	180	95
GTT-2A	4-6T	45	265	220-285	478	144	180	158

1.2. IN CAB DECALS

A safety decal detailing the safe operation of the quick coupler is supplied with the product.

Important: 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.



1.3. COUPLER IDENTIFICATION

To ascertain the serial number, weight, and safe working load (SWL) of the coupler please refer to the data plate detailed below.

The I.D plate can be located on the inside of the couple frame.

		Miller UK Ltd, Bassington Lane, Cramlington, UK, NE23 8AD. Tel: +44 (0) 1670 707 272 www.millergroundbreaking.com			
COUPLER TYPE		MASS			
		kg			
SERIAL No.		LIFTING EYE RATING			
		kg			
PART No.		WORKING PRESSURE		MIN - MAX	BAR / MPA
MANUFACTURE DATE		ATTACHMENT PIN DIAMETER		PIN CENTRE	
		MM		MM	



PRE-INSTALL INFORMATION AND CHECKS

2. RECOMMENDED PRE-INSTALL CHECKS AND PRODUCT INFORMATION

Note: This manual has been written in conjunction with expert installation personnel to ensure that the most time efficient process is achieved.

Should you encounter any technical problems during the install please feel free to contact the Miller Technical Support Team.

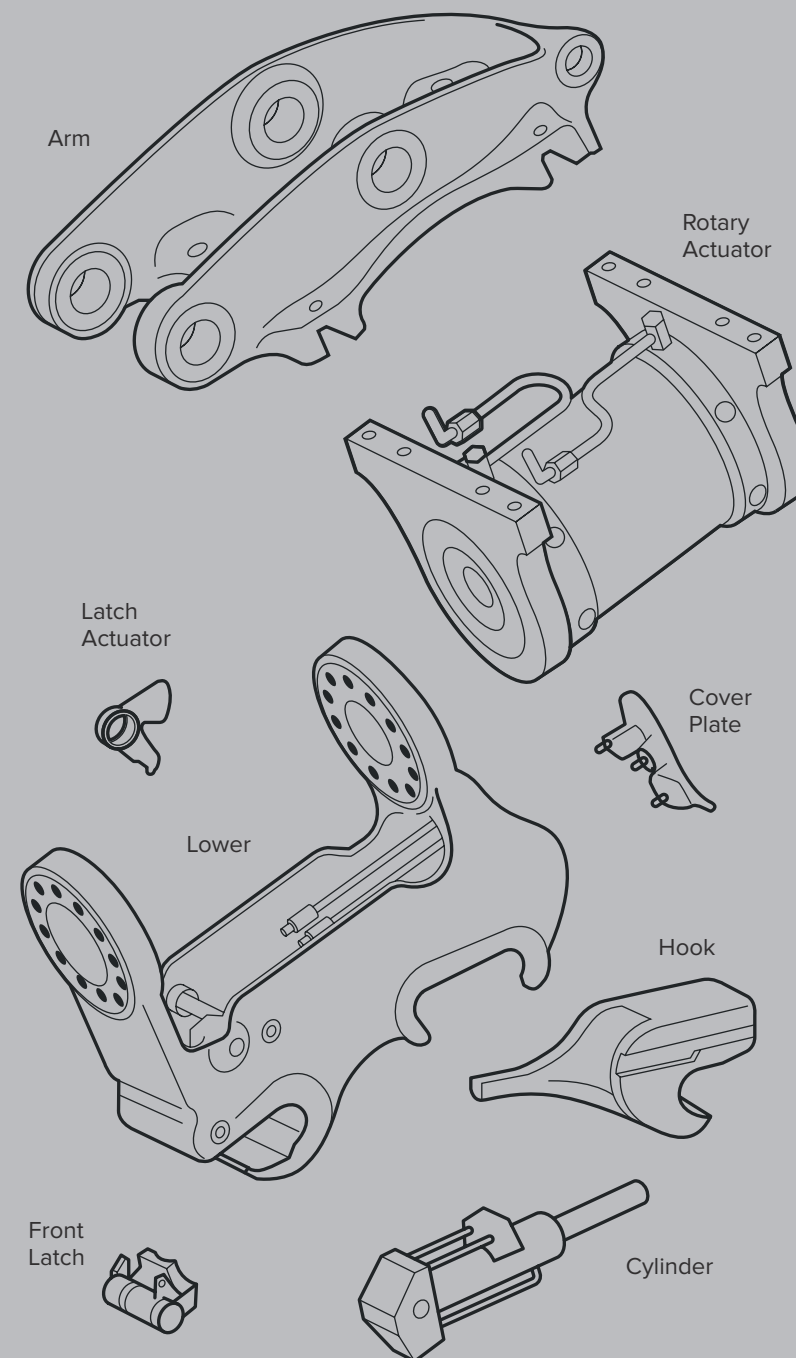
2.1. COUPLER INTERNAL COMPONENTS DRAWING

Example shown opposite: GTT Coupler Components Drawing – please refer to the Miller GTT drawing guide for alternative drawings specific to your machine

2.2. INSTALL KIT & PARTS LIST

Open the installation kit and cross check the items with the supplied picklist to familiarise yourself with the contents of this installation. To ensure a timely install - all items should be accounted for prior to each phase of the installation such that the install can be approached systematically.

If you require additional part(s) or indeed an instance where part(s) are misplaced please contact the Miller Technical Support Team for additional items.



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

[illegible]

Date:

2.3. RECOMMENDED TOOLS FOR INSTALL

TOOL REQUIREMENTS	CUSTOMER CHECK
Vacuum pump	☐
Oil spill mats	☐
2x 10mm spanners	☐
13mm spanner	☐
14mm spanner	☐
2x 15mm combination spanners	☐
17mm spanner	☐
2x 19mm combination spanners	☐
2x 22mm combination spanners	☐
6mm parallel punch	☐
Hammer	☐

TOOL REQUIREMENTS	CUSTOMER CHECK
Hand drill	☐
7-8mm drill bit	☐
Assortment of torque keys	☐
Assortment of screw drivers	☐
Wire cutters	☐
Crimping pliers	☐
Stanley knife	☐
Scissors	☐
Flush cutting pliers	☐
Grease gun	☐

RECOMMENDED TOOLS FOR INSTALL

2.4. PPE REQUIREMENTS

Do not wear loose fitting clothing, dangling jewellery or long hair that can catch on controls or other moving parts of the machine.

Wear relevant personal protective equipment (PPE) such as a hard hat, safety glasses, safety shoes and oil resistant safety gloves along with a high visual jacket when operating or servicing the coupler or machine.





2.5. PREPARATION FOR INSTALLATION

Miller recommend the following checks in advance of the coupler installation. Surveying specific locations of the machine ahead of the installation will ensure a fast and systematic install is achieved and avoid repeat work scope being carried out due to the discovery of component clashes mid-way through the install.

Note: Pre checks should take no longer than five minutes and will help identify any special mounting components or fittings which can be requested from Miller Technical Support Team. The following steps have been listed below to assist the operator during this stage.

1. **Workplace safety** – put down working and fluid spill mats where necessary.
2. **Identify relevant work tools** prior to each phase of the install and place them in a convenient location for easy access.
3. **Strip back any protective covers, pipe routing and pipe clamps** that may cause any interferences during phase three of the install.
4. **Identify a suitable location on the machine to fit the solenoid valve.** Miller would recommend mounting the solenoid bracket next to the main control valve in the hydraulic bay.
5. **Check for any clashes with moving machine parts.** Pay particular attention to interferences with the boom and bucket **RAMS** as well as the kingpost at the base of the boom.

Important: Point 4 – please avoid fitting the solenoid valve close to a heat source and ensure easy accessibility to allow for attaching of hoses.

HOSE INSTALL

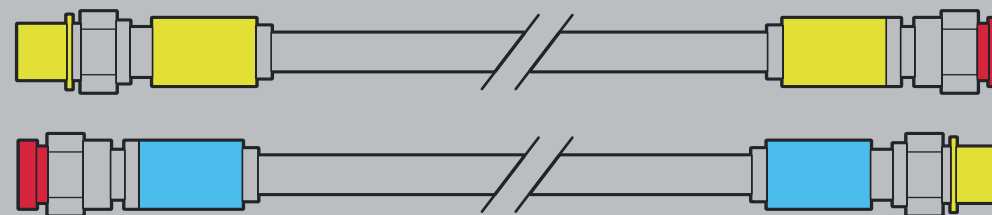
3. ATTACHING COUPLER HOSES

Note: Please have on hand the coupler internal components drawings located in the GTS drawings guide to assist with the identification of key components required for the installation of the coupler.

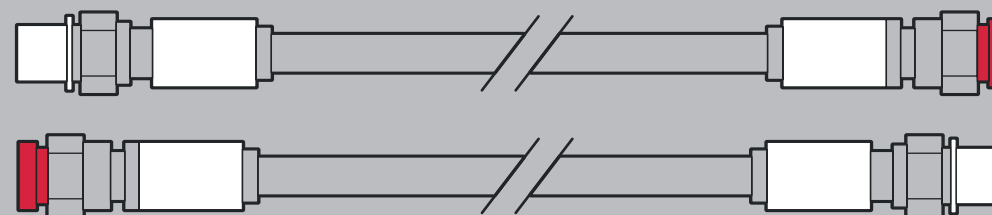
Important: For specific torque requirements please refer to Appendix C.

PARTS REQUIRED

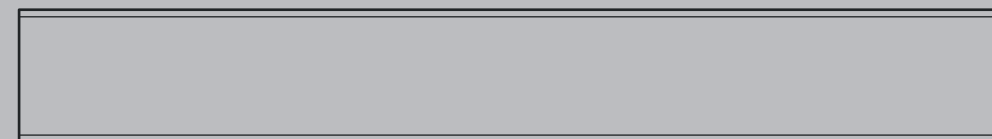
(1) Coupler Hose A (blue) / Coupler Hose B (yellow)



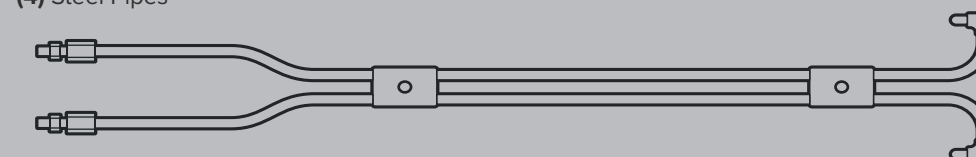
(2) Coupler Hose C (white) / Coupler Hose D (white)



(3) Burst Sleeve



(4) Steel Pipes

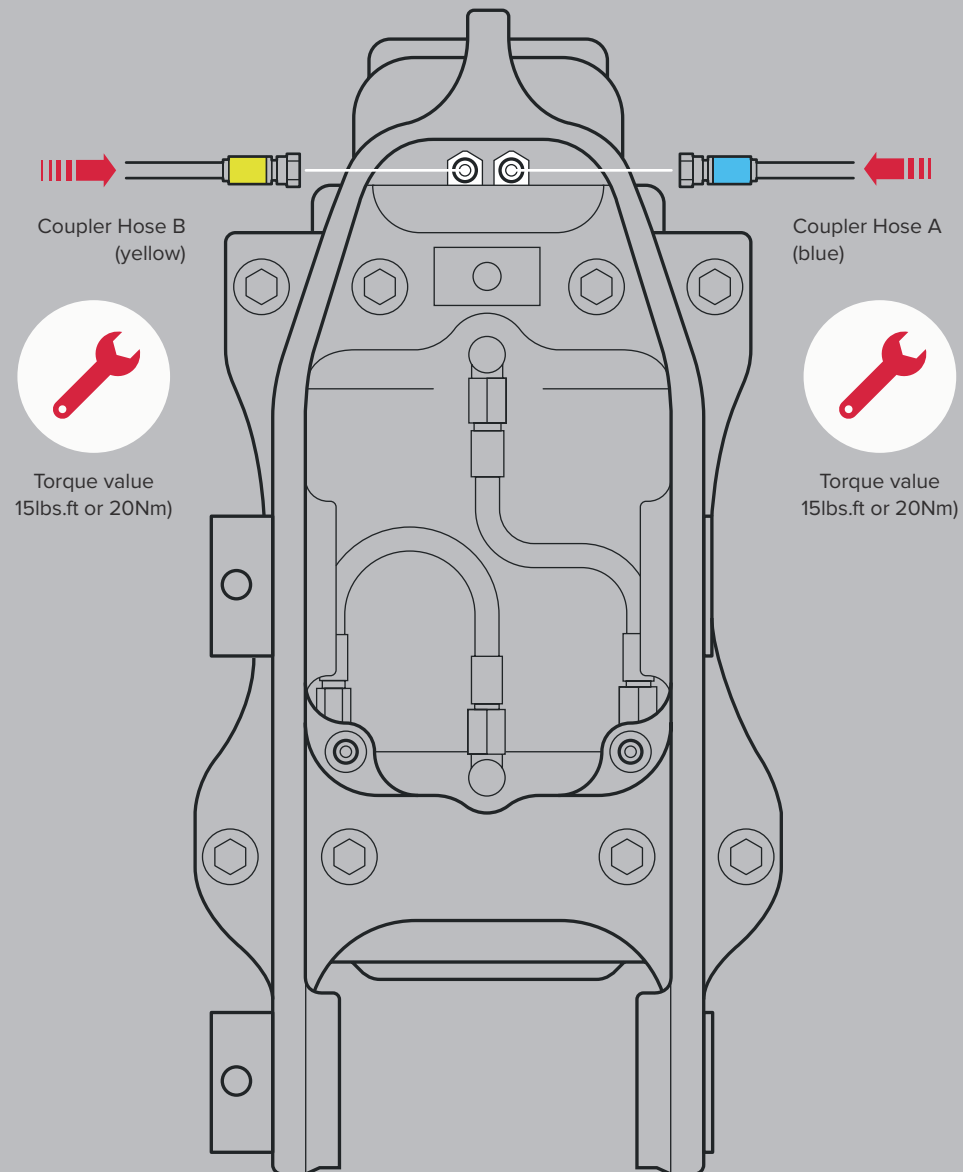


3. ATTACHING COUPLER HOSES

1. Fit hose A (blue) and Hose B (yellow) to the ports on the steel braided micro-bore hosing located at the rear of the coupler. Tighten both hoses to the correct torque value (torque value 15lbs.ft or 20Nm); this can be completed without removing any coupler internals.

Important: When both the coupler and auxiliary hoses are fitted, the coupler should be positioned such that the lifting eye is pointing away from the excavator and placed on the ground.

1.



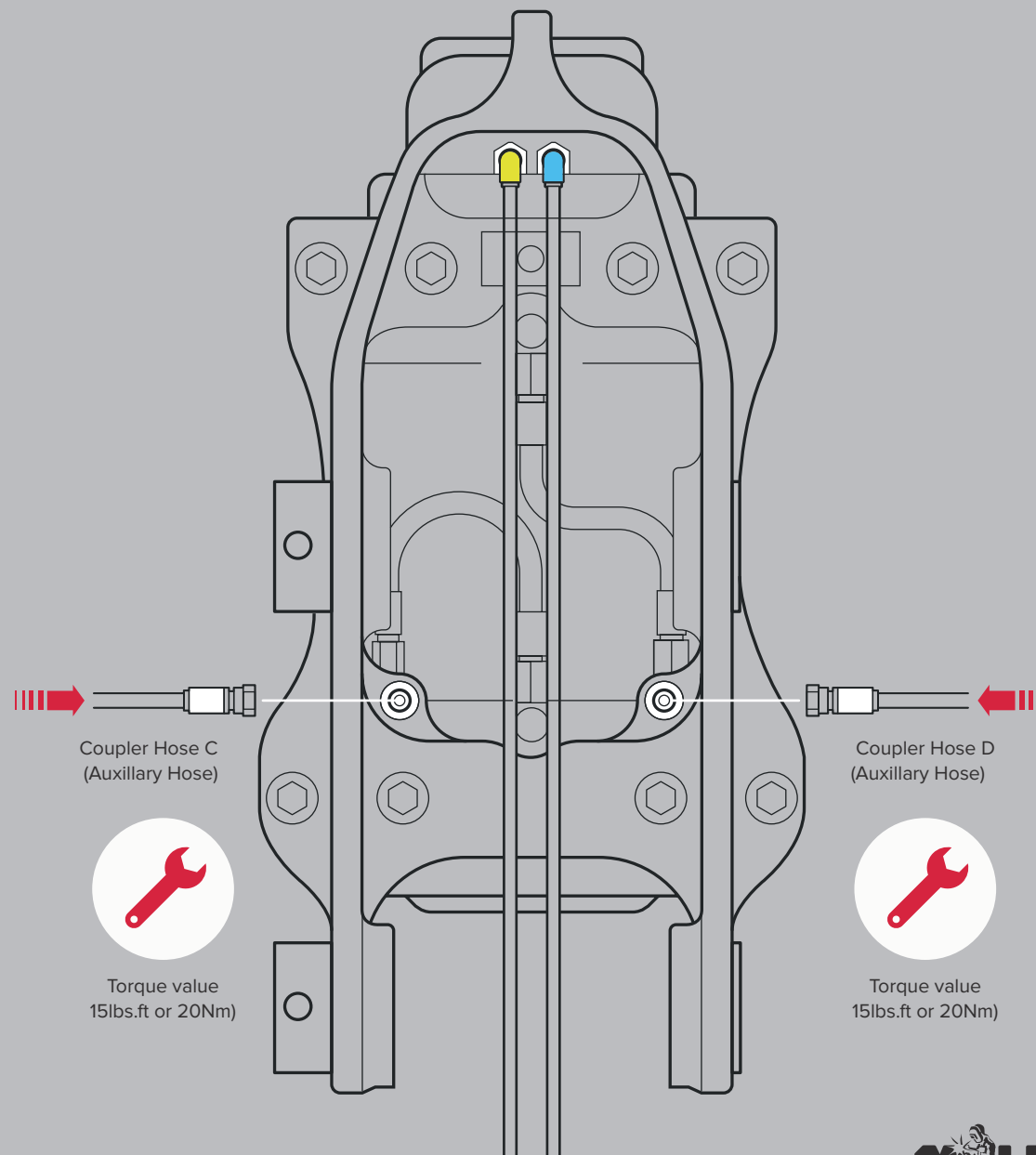
3.1. ATTACHING AUXILIARY HOSES

2. Fit hose C & D (white) directly to the banjo ports located on the actuator.

Tighten both hoses to the correct torque value (torque value 15lbs..ft or 20Nm); this can be completed without removing any coupler internals.

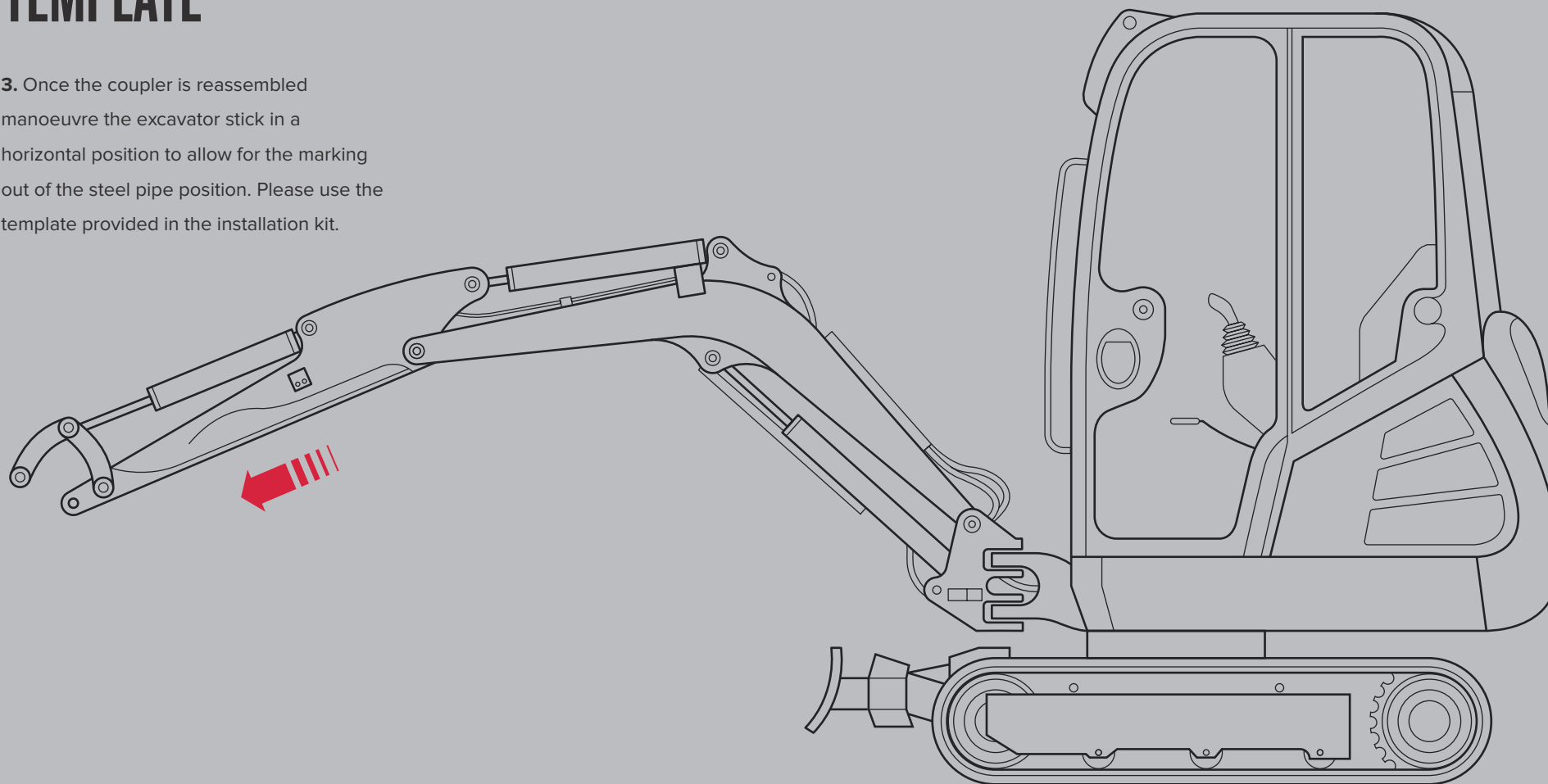
Note: The port configuration may vary based on the coupler model and size. The illustration to the right is based on the 2A (5t) coupler.

3.



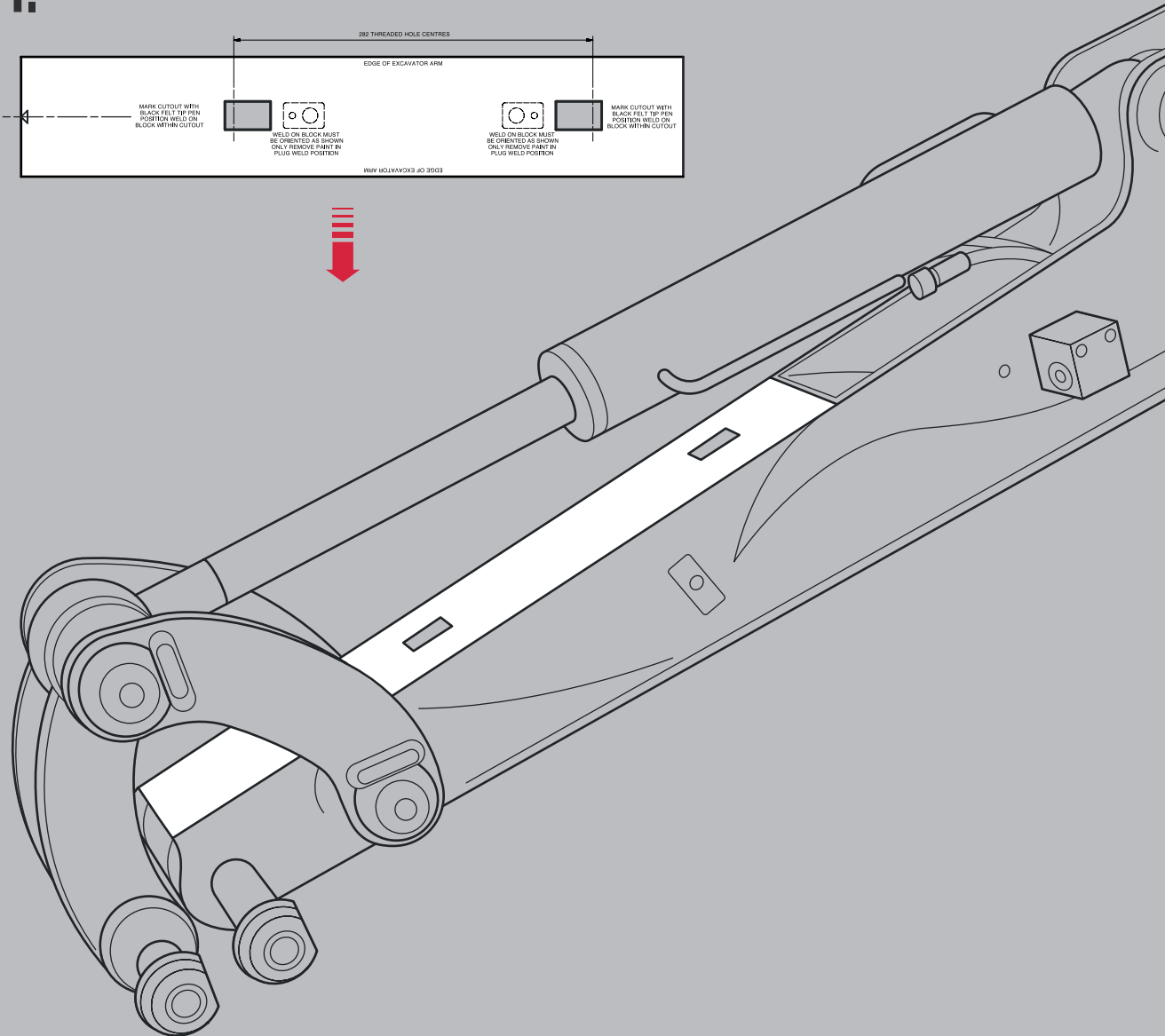
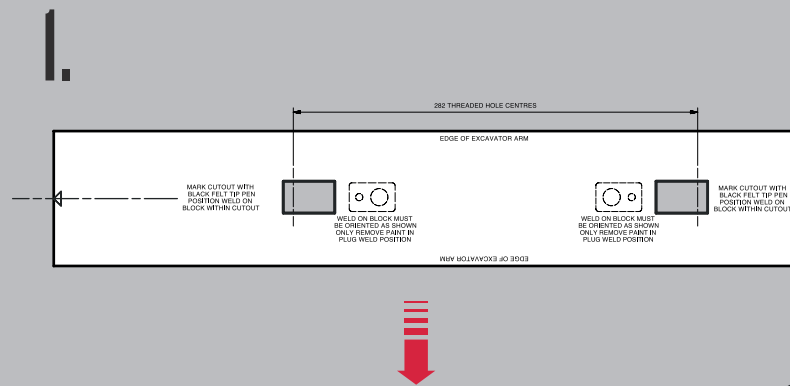
3.2. PREPARING THE TEMPLATE

3. Once the coupler is reassembled manoeuvre the excavator stick in a horizontal position to allow for the marking out of the steel pipe position. Please use the template provided in the installation kit.



3.2. PREPARING THE TEMPLATE

4. Using a marking pen, mark out the position of the steel pipes as indicated on the template. Once each position has been marked remove the template and continue with the next stage of the coupler install.



COUPLER INSTALL

4. COUPLER INSTALL

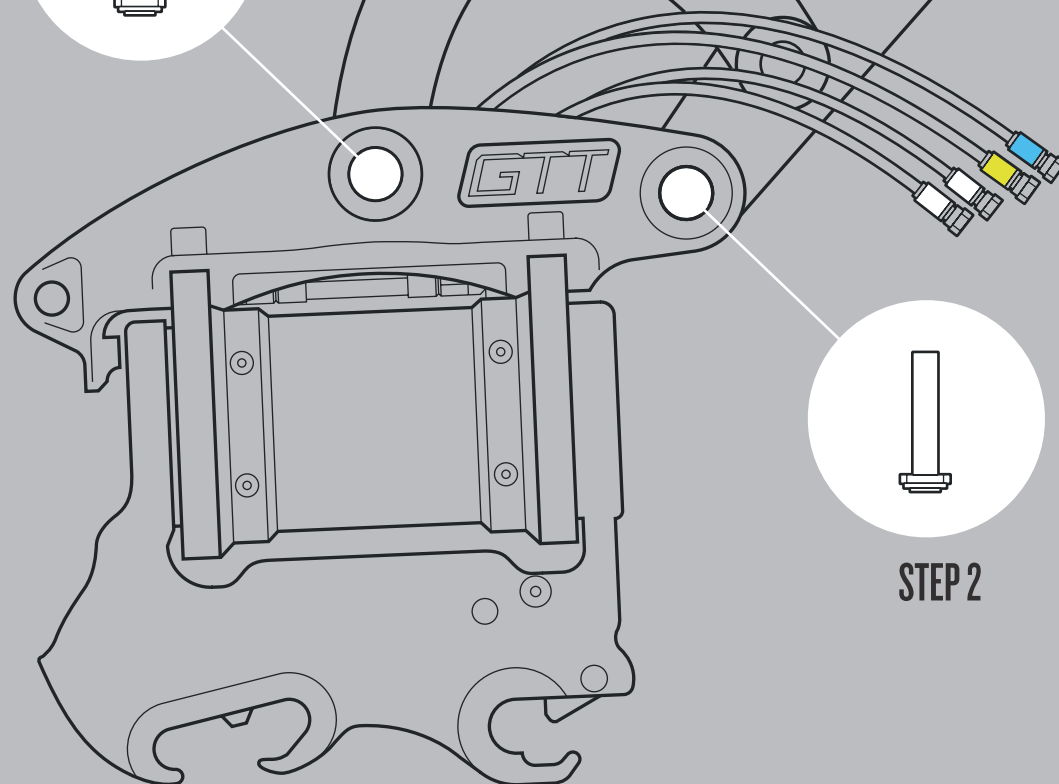
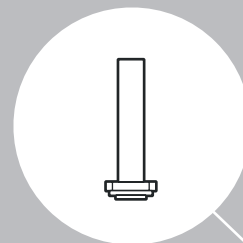
Important: Install the original OEM bucket pin through the coupler and link arm bores and fit the locking bolt and nuts (if supplied).

Important: Do not use dummy pins to fit the coupler directly to the machine. This 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 stick and link.

1. Lower the excavator stick and align the link arm directly above the coupler – once in position manoeuvre both the dipper and link arm in line with the inside boss faces.

1.

STEP 1



STEP 2

COUPLER INSTALL

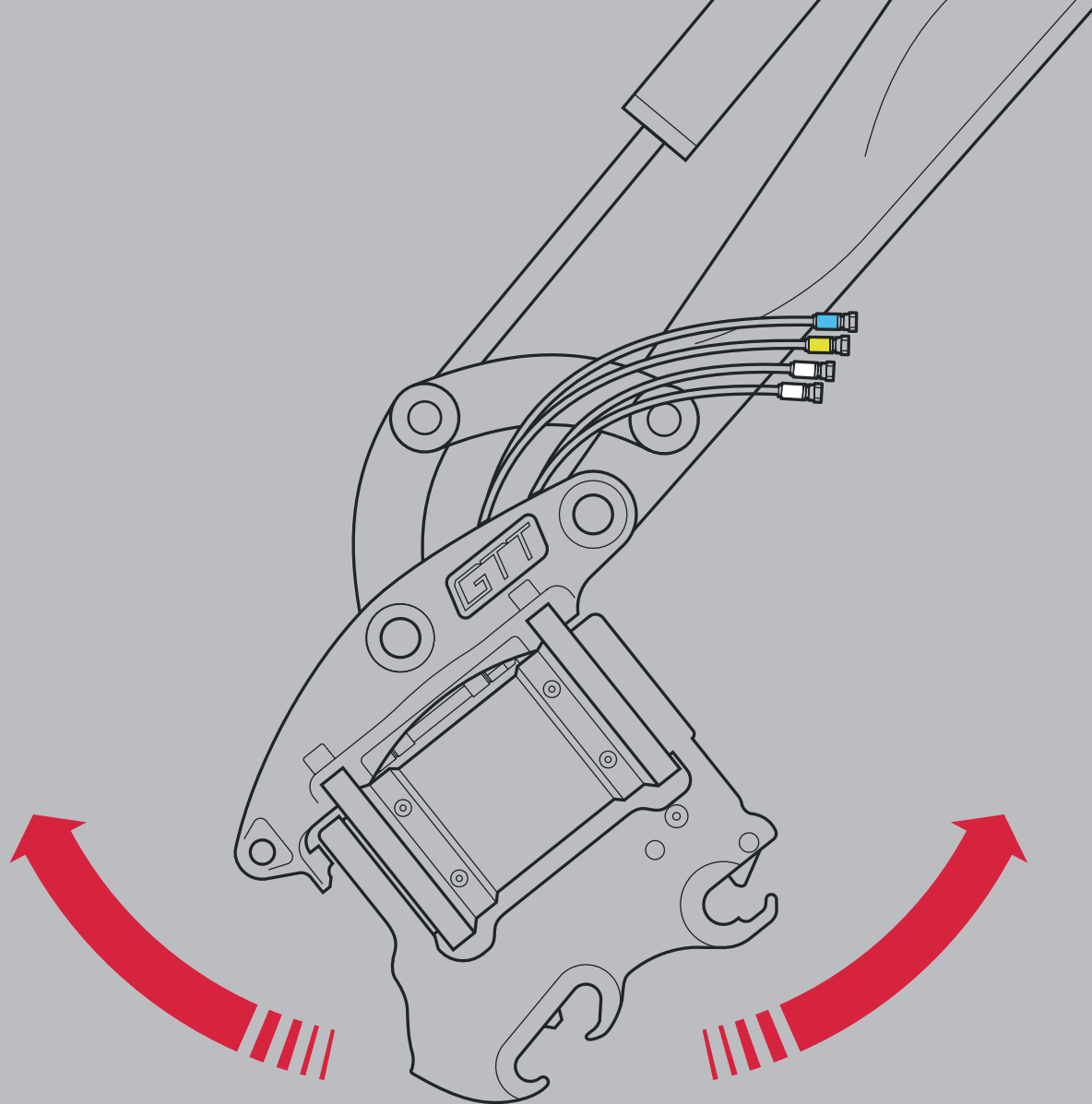
4. COUPLER INSTALL

2. Align the coupler with the end of the link arm and fit seals and shims where required. Please start with the linkage pin first which will be inserted in between the rear bosses. Whilst lowering the linkage into the rear boss, place lightly greased O-rings on either side of the link before fully aligning.

Note: Please do not insert or move shims with bare hands.

3. Slowly lower the link arm into place to align the bores on the coupler with the bores of the link arm. Be careful that the O-ring seals do not nip between the machine and coupler bores.

4. Proceed to insert the OEM pins and secure them using the lock-in nut and bolts provided. Return the coupler to the horizontal position.



STEEL PIPE INSTALL



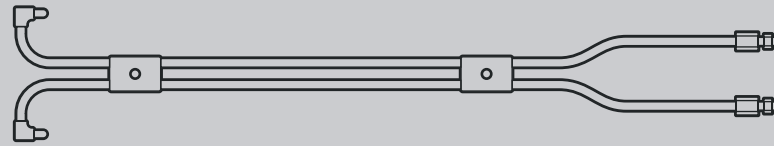
5. ATTACHING THE STEEL PIPES

Important: If your excavator has been installed with a full OEM factory hydraulic install. This typical consists of a solenoid valve, steel hydraulic piping down the stick and hosing running directly to the hydraulic pump and oil tank. In this instance – the fitter will need to follow the steps indicated in Appendix A) OEM Factory Fit – Conversion Kit.

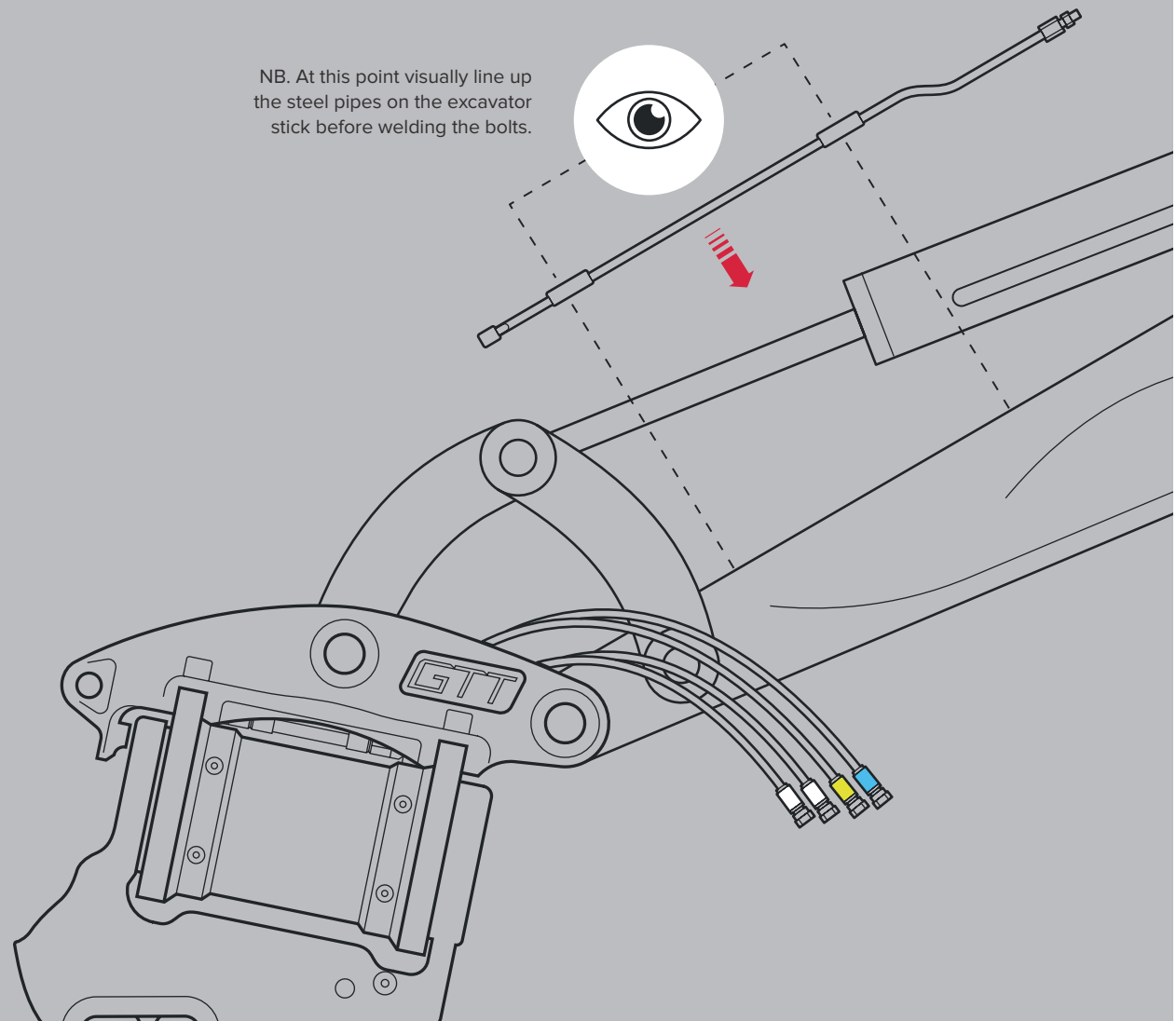
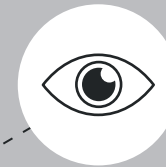
Important: To avoid any damage whilst welding the steel pipes to the machine, turn off the engine and disconnect the excavator battery.

Note: If a welding machine is not available the fitter may need to drill and tap the stick to mount the steel pipes.

Steel pipes



NB. At this point visually line up the steel pipes on the excavator stick before welding the bolts.

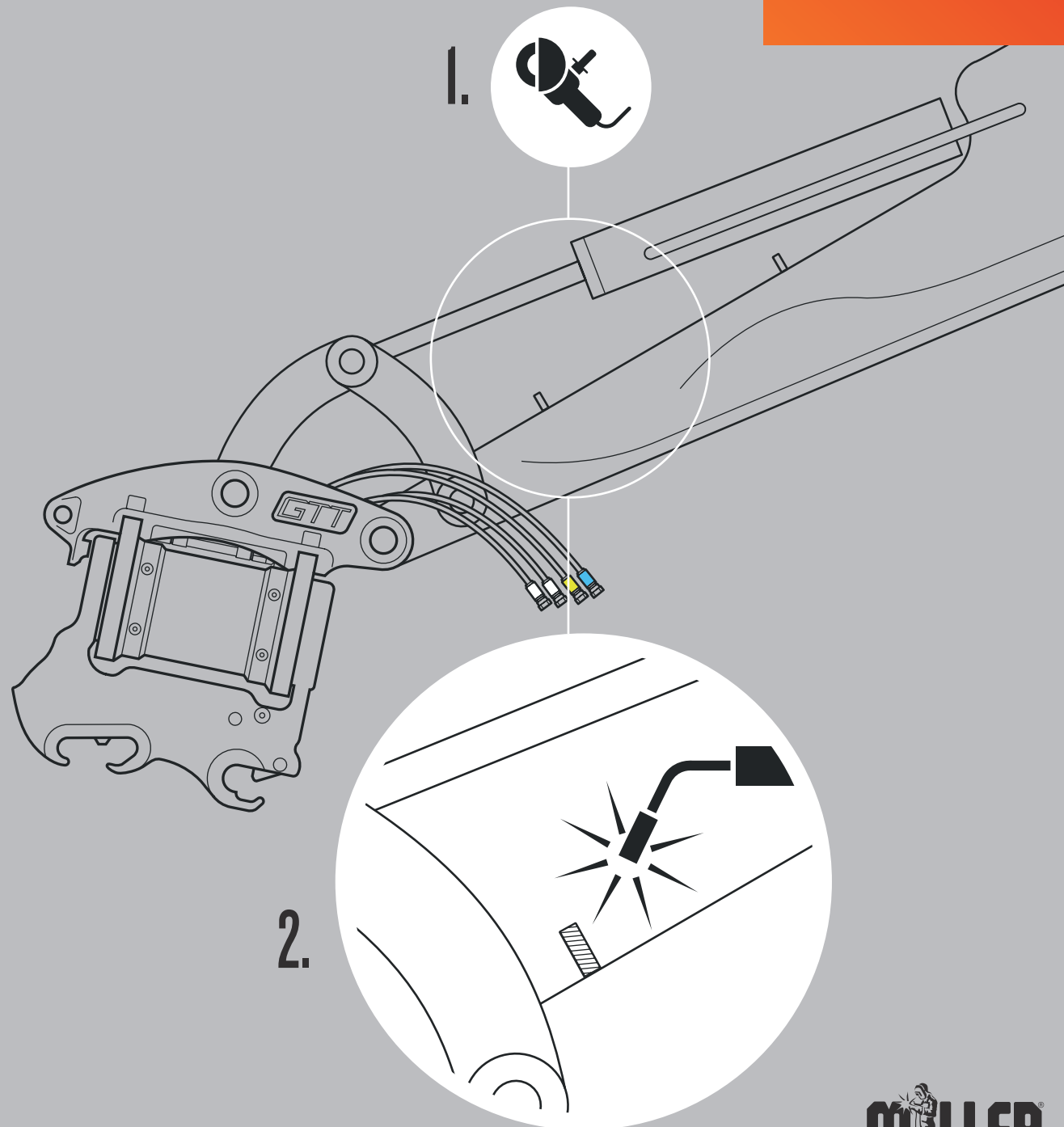


5. ATTACHING THE STEEL PIPES

1. Using the pre-marked positions on the excavator stick, remove the local paint adjacent to each mounting location by grinding or buffing the paint to bare metal.

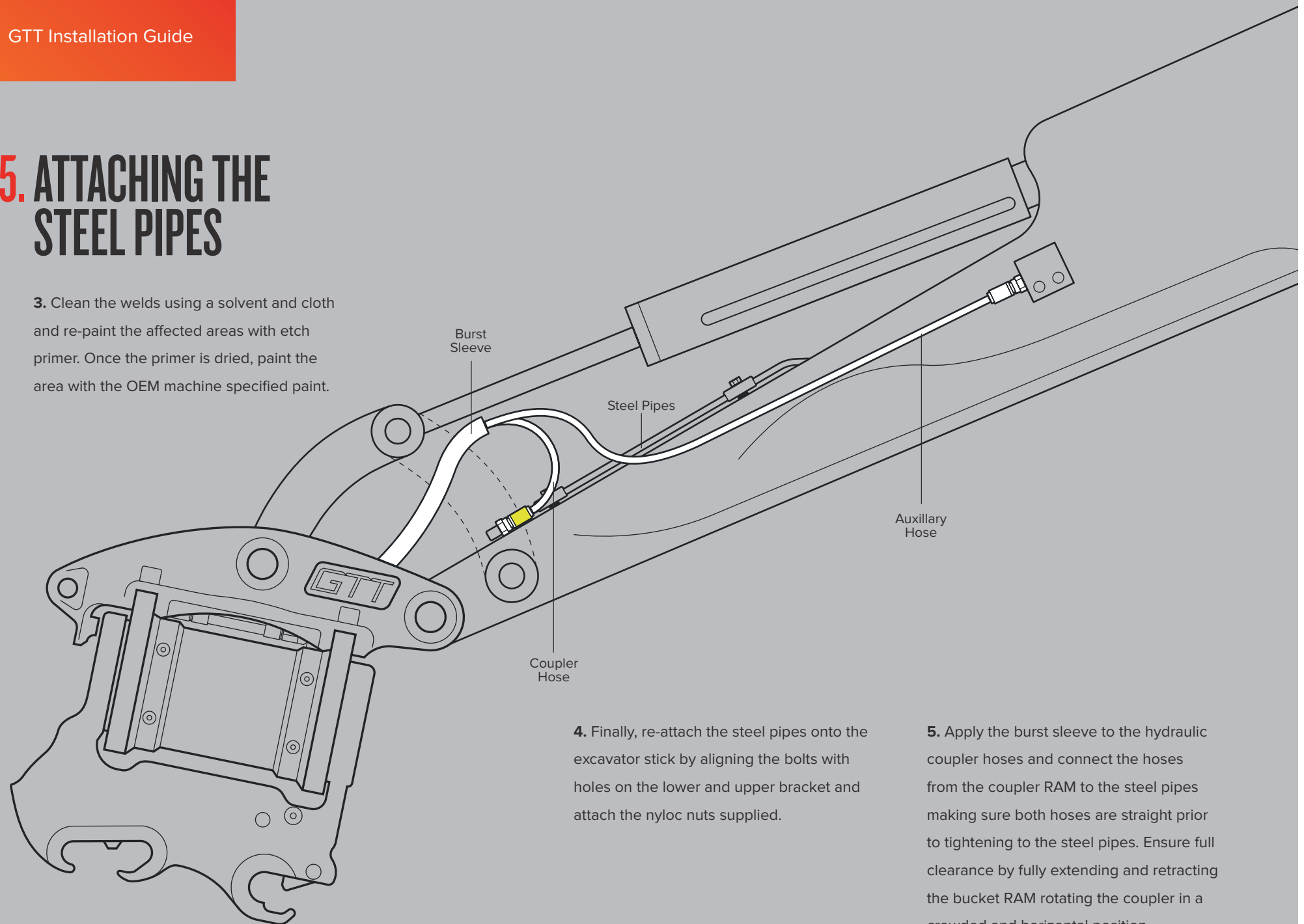
2. Position the bolts in the desired mounting location and tack weld in place. Ensure the bolts are straight and the steel pipes fit prior to fully welding. Test fit the steel pipes – if necessary, break the tack welds on the bolts and reposition to suit.

Note: Once both bolts are fully welded, extend and retract the RAM on the dipper arm to ensure there is no interference with the mounting bolts.



5. ATTACHING THE STEEL PIPES

3. Clean the welds using a solvent and cloth and re-paint the affected areas with etch primer. Once the primer is dried, paint the area with the OEM machine specified paint.



4. Finally, re-attach the steel pipes onto the excavator stick by aligning the bolts with holes on the lower and upper bracket and attach the nyloc nuts supplied.

5. Apply the burst sleeve to the hydraulic coupler hoses and connect the hoses from the coupler RAM to the steel pipes making sure both hoses are straight prior to tightening to the steel pipes. Ensure full clearance by fully extending and retracting the bucket RAM rotating the coupler in a crowded and horizontal position.

HYDRAULIC INSTALL – COUPLER TO SOLENOID VALVE



6. PREPARATION & SAFETY NOTES

Note: To help with this phase of the install please refer to the solenoid drawing located in the GTT drawing pack.

Important: Please refer to Appendix C for torque specifications.

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

PARTS REQUIRED

(1) Hydraulic Hose A (blue)

(1a) Hose A extension (blue)



(2) Hydraulic hose B (yellow)

(2a) Hose B extension (yellow)



(3) Burst sleeve



(4) 1 x pack of cable ties



6.1. INSTALLATION OF HYDRAULICS

1. Connect the hydraulic boom hoses to the top of the steel pipes ensuring both the A & B line are running parallel with the coupler hoses.

2. Connect both auxiliary hoses to the push fit adapters located on the auxiliary ports.

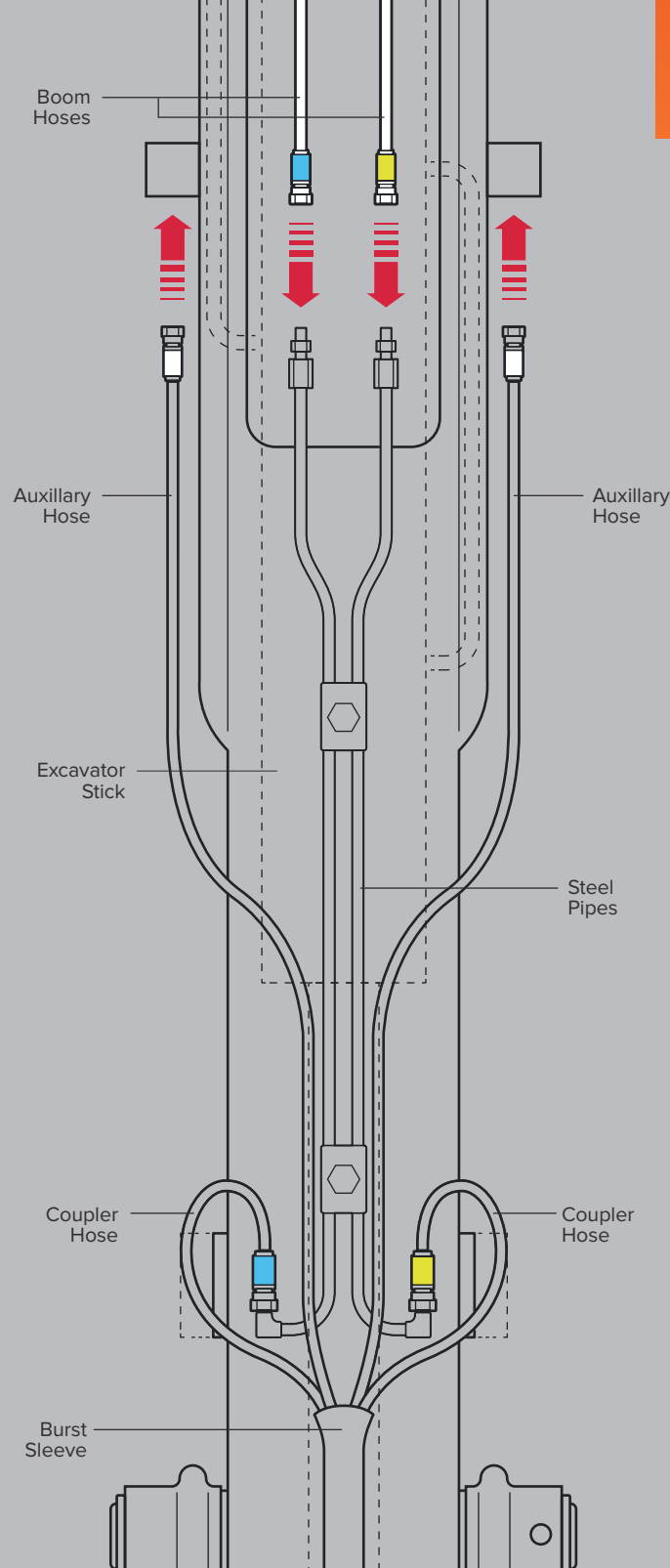
Note: please do not overlap the hoses, ensure they adjacent to one another from the actuator up to the ports.

Note: Please refer to solenoid kit drawing in the GTT drawing pack to assist you through the installation of the solenoid valve and hydraulic hoses.

Important: In tight areas use 90 degree fittings supplied in the installation kit to help connect the P & T line to the solenoid valve from the manifold.

Important: Ensure that the hydraulic pressure is set to a minimum 150 bar. Please use a pressure gauge to determine the pressure.

Important: Please refer to Appendix C for torque specifications.

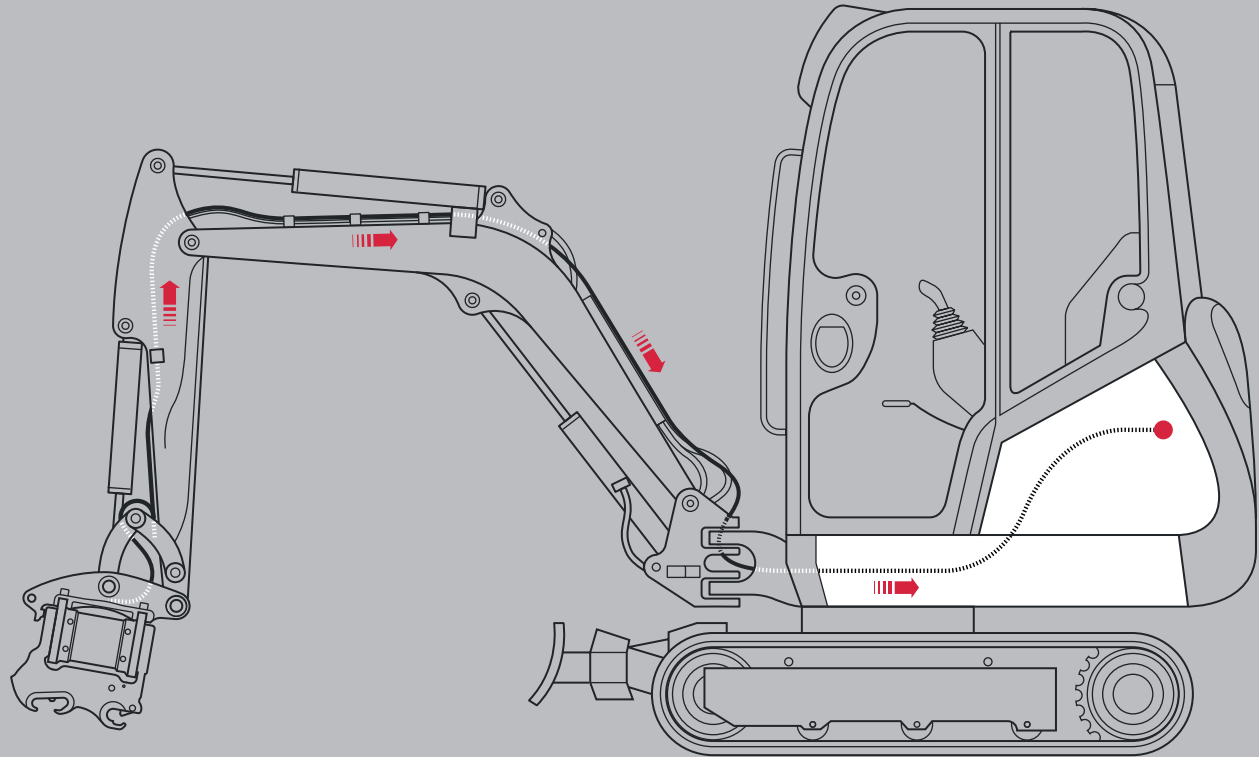


6.1. INSTALLATION OF HYDRAULICS

3. Follow the natural curve of the existing 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.

Important: The operator may need to remove top clamps already mounted on the digger machine to feed the hydraulic hoses along the stick and boom and into the cab for the second stage of the hydraulic installation.

4. Route the hoses through the machine internals to the solenoid valve ensuring you secure them where possible.



Important: If you find that the hoses are too short and do not reach the ports located on the solenoid valve. Extension hoses have been supplied and are included in the installation kit. Please ensure that Hose A (blue) is connected to Port A and Hose B (yellow) to port B on the solenoid valve.

Important: Extensions hoses are to only to be used from the boom hoses to the solenoid valve.

HYDRAULIC INSTALL – SOLENOID TO PRESSURE & TANK

Important: if the preference of the operator is to connect the tilt coupler directly to the hydraulic pump & tank please refer to Appendix B.

This will allow for horizontal release
- eliminating the need to fully extend the bucket RAM (fully crowd).



7. PREPARATION & SAFETY NOTES

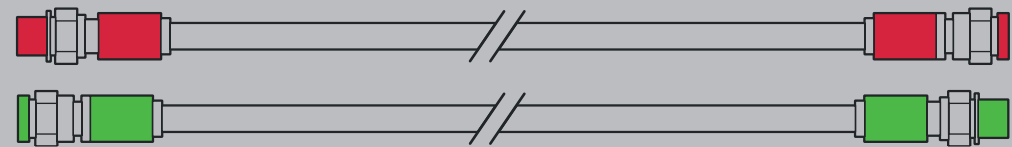
Note: Pre checks should take no longer than five minutes to complete prior to the installation of the secondary hydraulic system. Please adhere to the following preparation instructions to ensure a safe and timely installation.

Important: Connect all hoses to solenoid valve, tank and pressure. (Green, Red, Blue and Yellow hoses) (maximum working pressure = 400 bar).

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.

PARTS REQUIRED

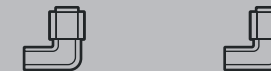
(1) Pressure hose (red) (2) Tank hose (green)



(3) 2 x compact elbow fittings

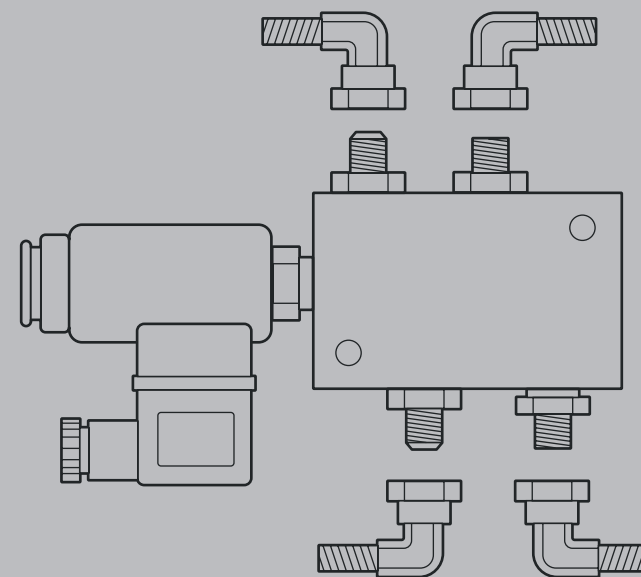


(4) 2 x male/female/male tee pieces

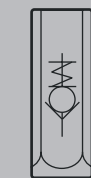


Solenoid Valve

2 x compact elbow fittings

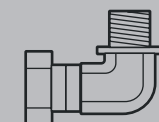


2 x dowty washers



Non-rerurn valve

2 x compact elbow fittings



7.1. INSTALLATION OF HYDRAULICS

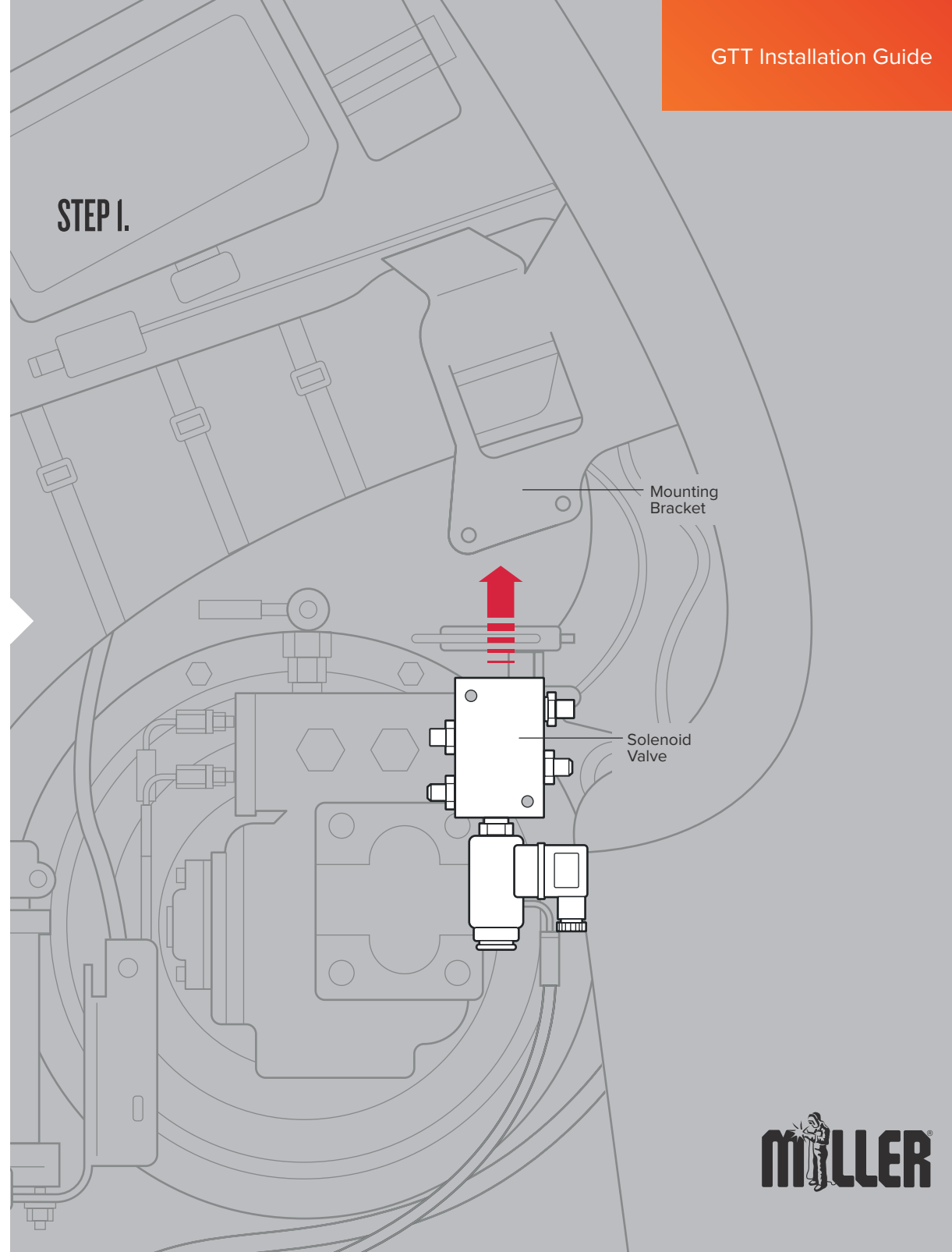
Note: Please refer to solenoid kit drawing in the GTT drawing pack to assist you through the installation of the solenoid valve and hydraulic hoses.

Important: In tight areas use 90 degree fittings supplied in the installation kit to help connect the P & T line to the solenoid valve from the manifold.

Important: Ensure that the hydraulic pressure is set to a minimum 150 bar. Please use a pressure gauge to determine the pressure.

Important: Please refer to Appendix C for torque specifications.

1. Position the compact coupler on the ground and vent the tank on the machine to allow the flow of air out of the storage tank. If needed refer to machine manual for further assistance.



7.1. INSTALLATION OF HYDRAULICS

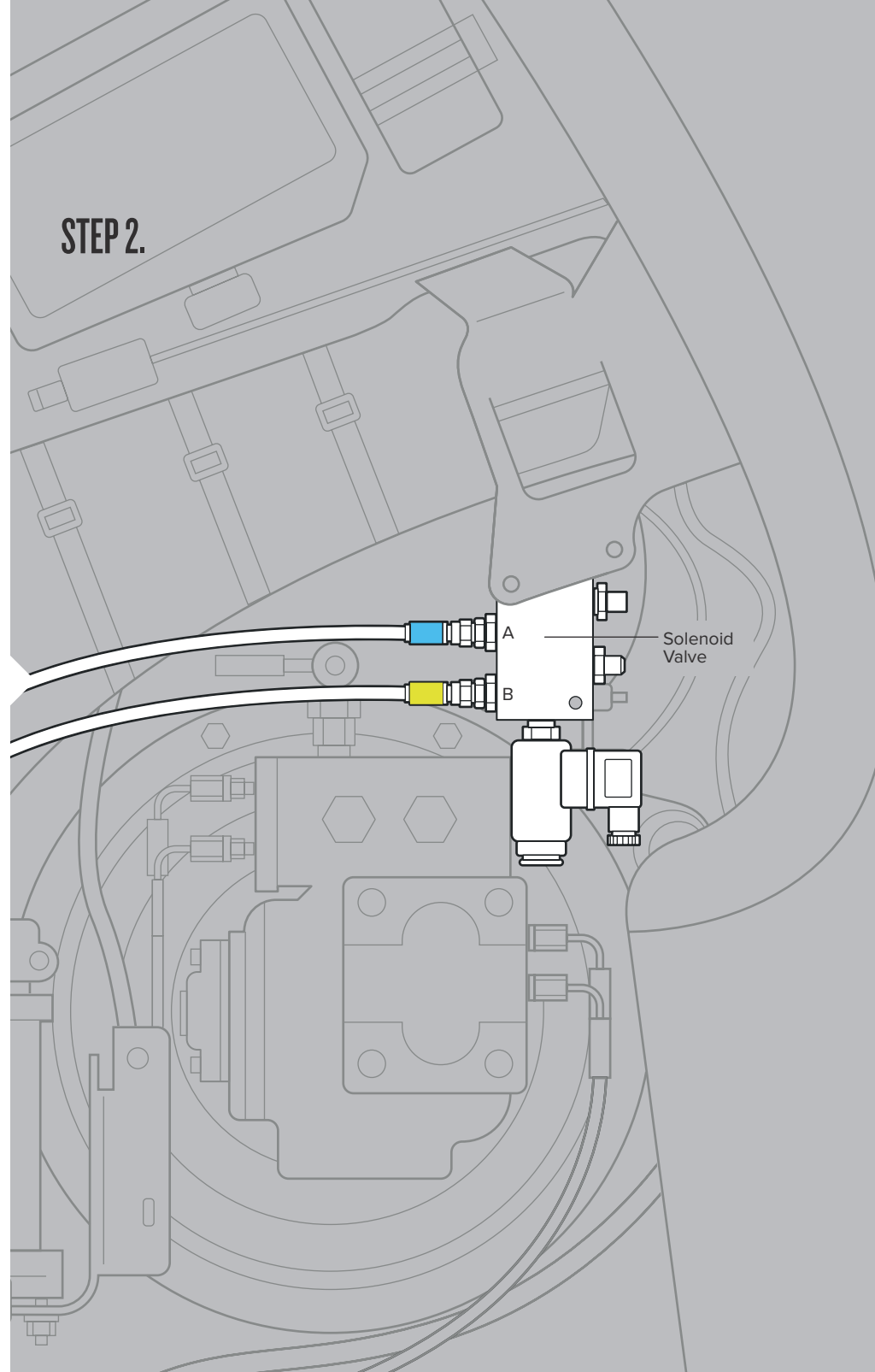
2. Securely fit the solenoid valve to a suitable location - a mounting bracket has been included in the installation kit if needed. We would advise to tap and drill the solenoid bracket to the machine. Please avoid welding.

Note: The location of the solenoid valve may vary from OEM. For compact machines (1-5t) a suitable alternative would be to locate the valve under the cab floor under the driver's seat.

3. Once secure, feed the hoses up to the valve ensuring there is adequate length on each hose to securely connect them to the A & B ports on the solenoid valve.

4. Connect pressure line (red) to the A side on the bucket crowd service located on the main control valve. For further assistance please refer to the machine schematics located in the OEM maintenance/ operator manual.

STEP 2.



7.1. INSTALLATION OF HYDRAULICS

5. Fit and secure the non-return valve to the T port located on the solenoid valve as shown in the image opposite.

Note: Additional fittings are provided in the installation kit to assist with this phase of the install.

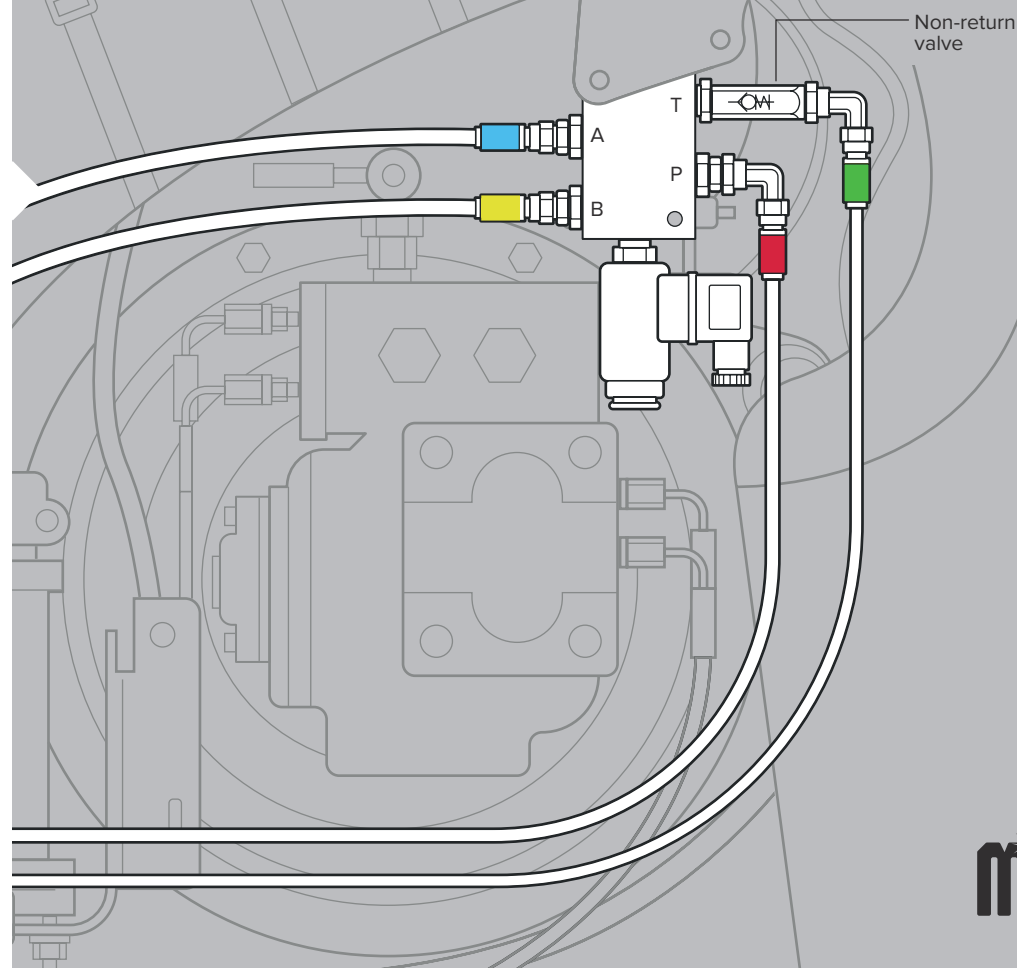
Important: To remove fluid (pressure) build up ensure the excavator arm is straight and positioned on the floor.

6. Connect the tank line (green) to B side on the bucket crowd service.

7. Once the pressure and tank lines have been connected to the bucket RAM service feed both lines through the machine internals and connect them to the P & T ports on the solenoid valve.

Note On the solenoid valve A = P (red) and B = T (green).

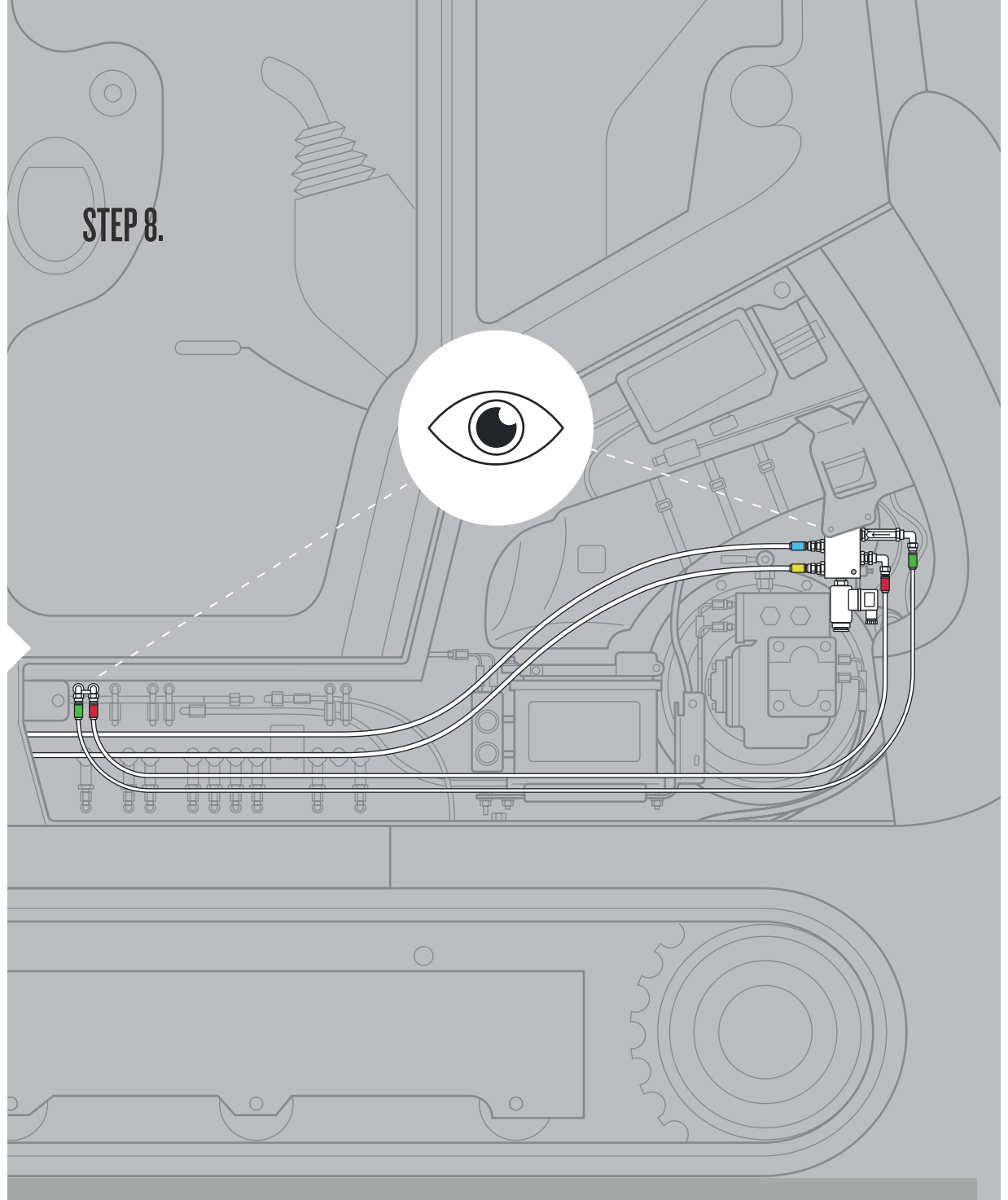
STEP 7.



7.1. INSTALLATION OF HYDRAULICS

8. Please allocate time to walk through all connections points to ensure all fittings are secure prior to the next stage of the install.

STEP 8.



HYDRAULIC INSTALL

ELECTRICAL INSTALL

ELECTRICAL INSTALL



8. PREPARATION & SAFETY NOTES

Before you commence installation work, identify cab electrical access points. This can be located directly under the hand controls at either side of the driver seat where you will feed the electrical harness through as part of the switch and buzzer installation process.

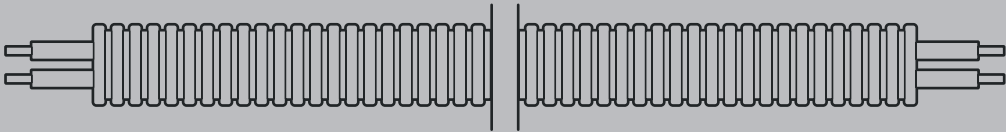
Note: Please refer to the GTT drawing pack to help guide you through the electrical installation process.

Important: Do not connect a 12-volt solenoid to a 24-volt supply, or vice versa as damage to the solenoid will result.

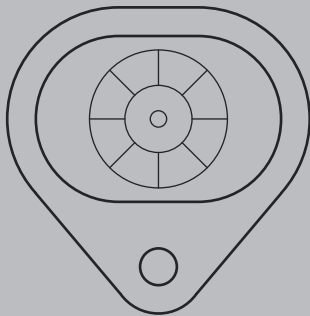
Caution: Ensure the switch is installed in an area where it cannot be accidentally activated.

Important: Ensure the battery is disconnected and machine is locked off.

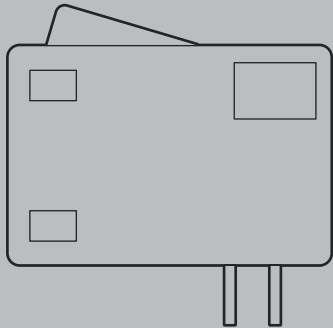
PARTS REQUIRED



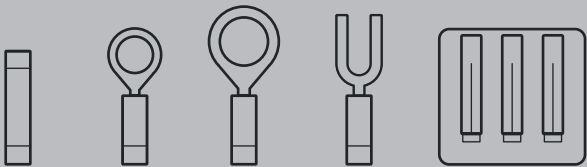
(1) Wiring Harness



(2) 12v Buzzer



(3) Hold to Run Switch



(4) 1 x Electric Connector Pack



(5) 1 x Pack of Cable Ties

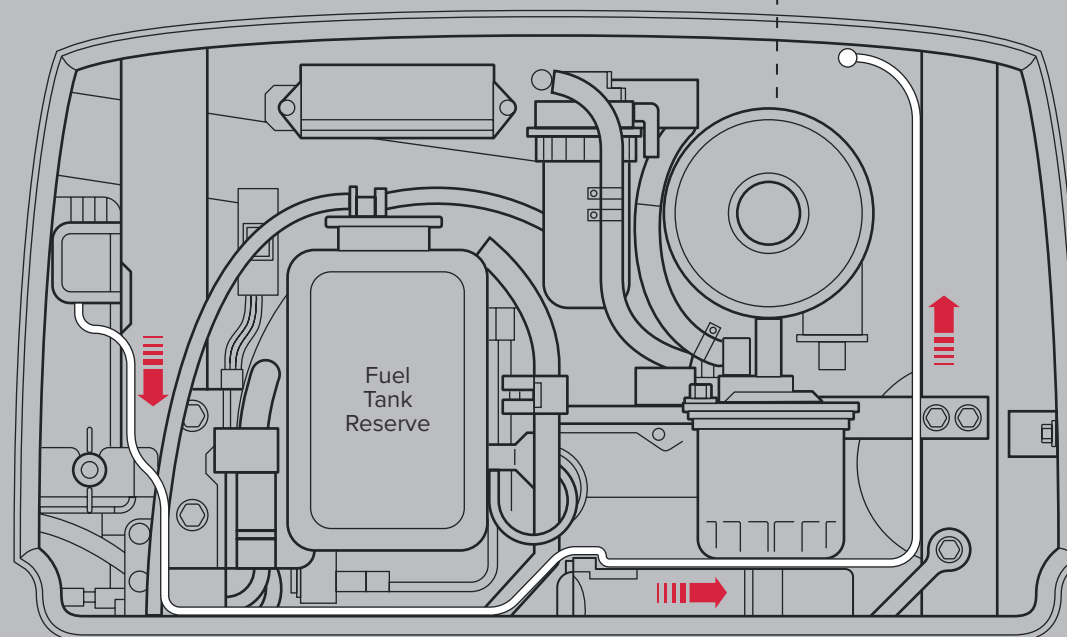
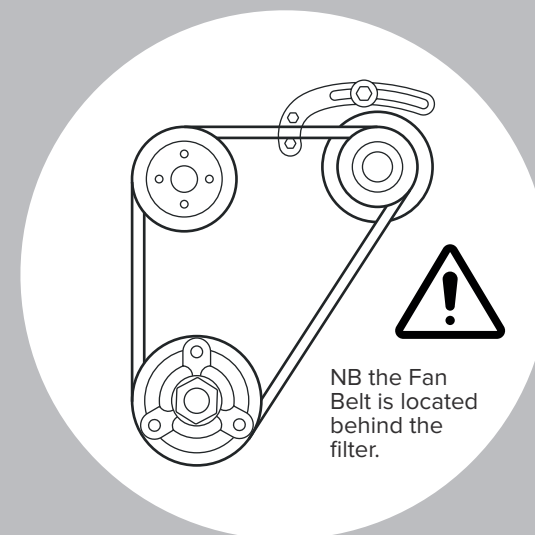
8.1. INSTALLATION OF ELECTRICAL HARNESS

1. Attach the supplied Hirschman plug onto the solenoid valve via the solenoid pins and screw into place and tighten securely.

2. Take the wiring harness supplied in the installation kit and trace from the solenoid valve to the entry access point to the cab by tracing any pre-existing electronic routing. (This will ensure that the harness is refrained from touching any hot surfaces within the engine bay). Carefully move the wiring harness through the cab access point and into the cab.

Note: please refer to the illustration to determine a suitable wiring route for the harness.

2.



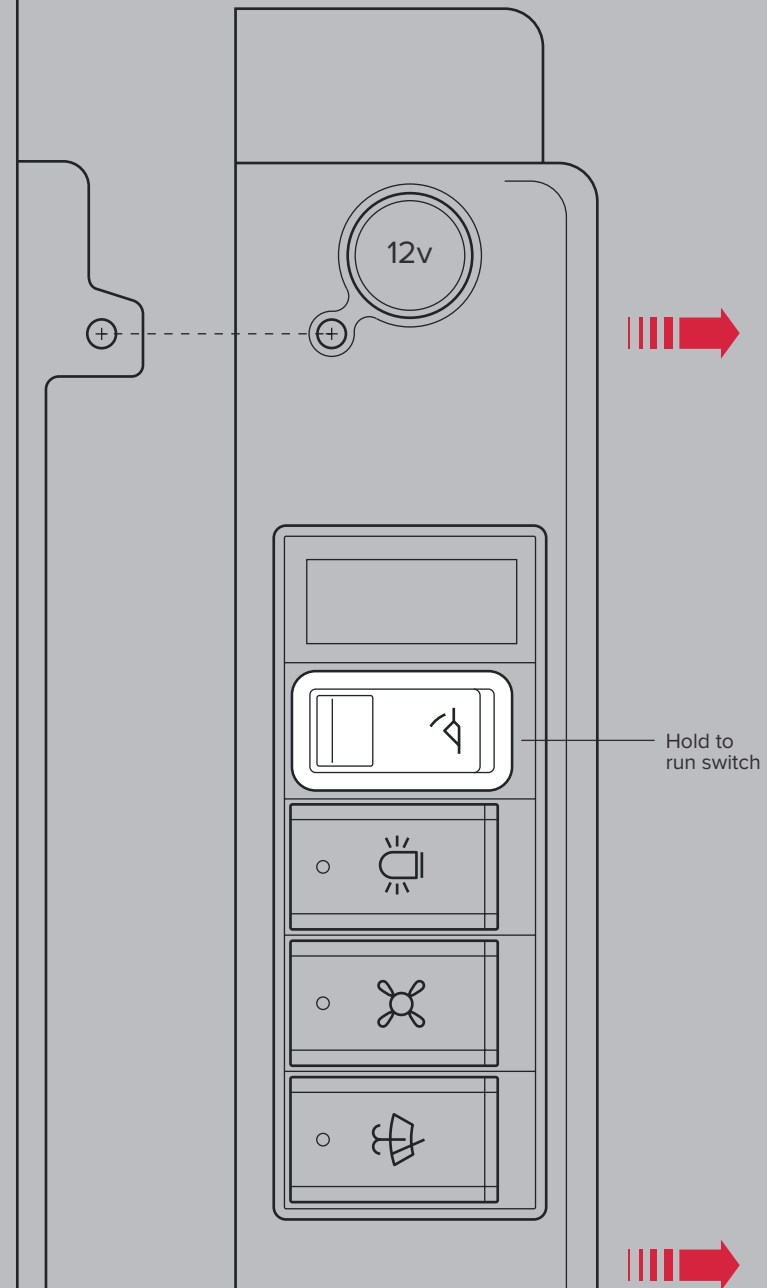
8.1. INSTALLATION OF ELECTRICAL HARNESS

3. Moving into the cab area identify your ignition live point followed by your location for the switch and buzzer to be installed. Typically, your switch location will utilize one of the dummy switch points on the drivers control panel. Run the wiring harness between your ignition live and switch location to ensure that you have enough wiring length to complete the install.

Note: When identifying your live location point some coupler manufacturers recommend using the lighter socket. Many operators use this socket to charge up mobile phones and run USB cables. This increases the risk of damaging this socket which if it was to happen would lead to your coupler switch out of service until socket connection where restored. Therefore, Miller recommend that you locate your source point from the ignition live.

Note: Ensure the switch is installed in an area where it cannot be accidentally activated.

3.

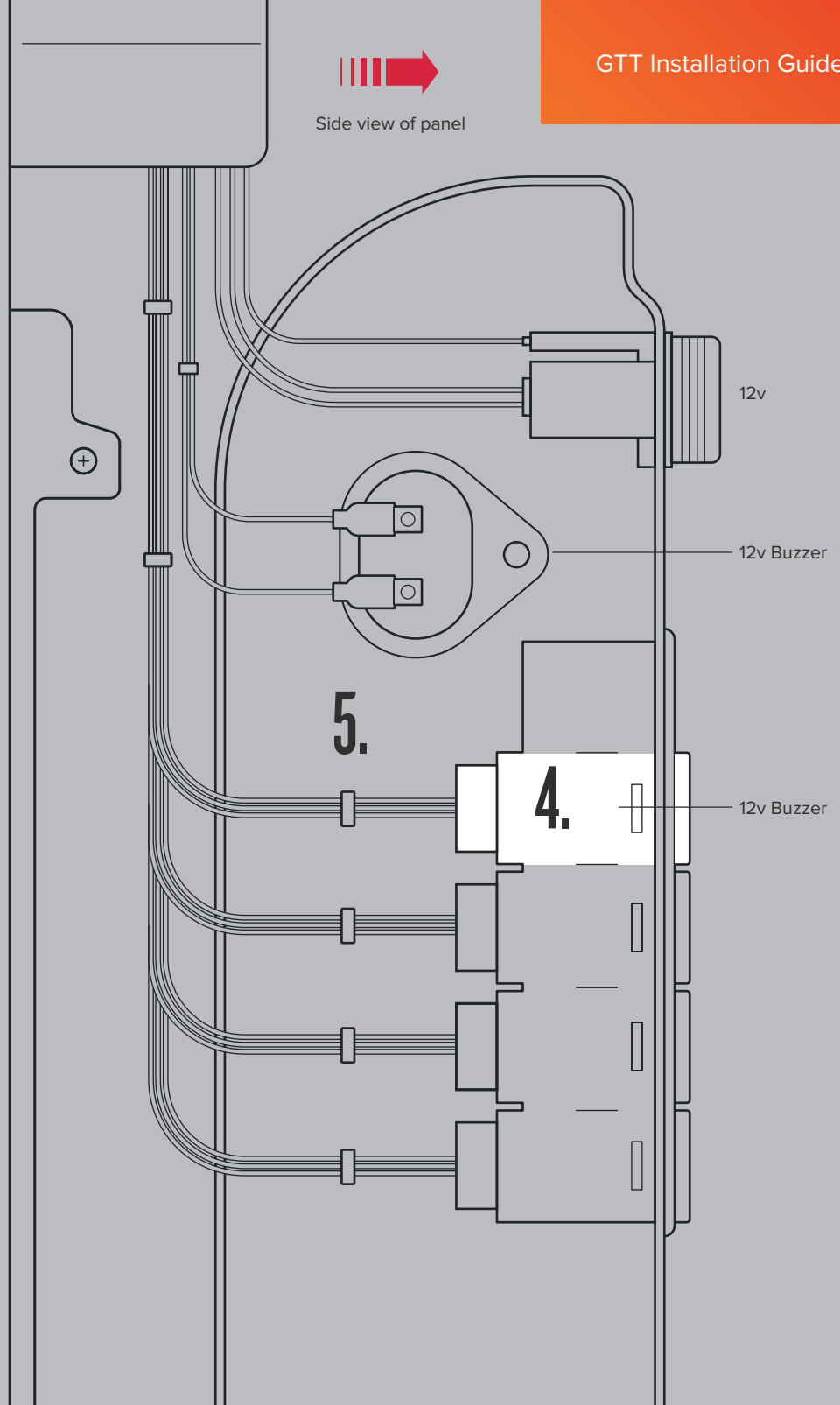


8.1. INSTALLATION OF ELECTRICAL HARNESS

4. To install your switch, remove one of the control panel dummy switches (depending upon machine make and model you may have to manually cut or adjust the space where you wish to insert the new switch). Connect the switch to the wiring harness using the shovel connection points on the back of the switch and then fix your switch into the control panel slot.

5. Secure wiring harness and all loose cables inside the cab with cable ties provided.

6. Using scotch clips provided in the installation kit connect the wiring harness to the ignition live and earth points.



8.1. INSTALLATION OF ELECTRICAL HARNESS

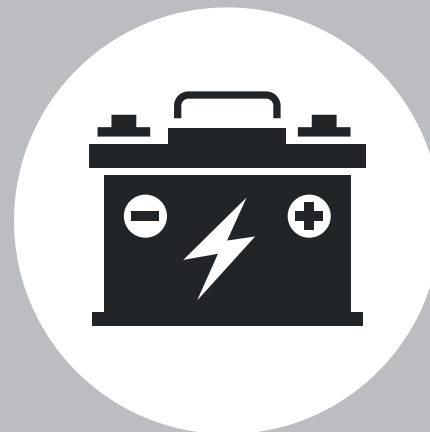
Note: The solenoid is energised when the switch is in the release or off position. In normal working conditions, the solenoid should be electrically disconnected and the switch in attach or on position. The buzzer should only sound when the switch is in the release or off position. Install the buzzer 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.

7. Finally, carry out the following system tests:

1. Reconnect the battery.
2. Switch the Ignition ON.
3. Activate coupler switch – buzzer should sound in the cab.
4. Locate solenoid valve and check that the Hirschman plug has a glowing amber light.

Warning: Please make sure the wiring harness is not loose inside the engine bay and is tucked away from any moving parts.

7.



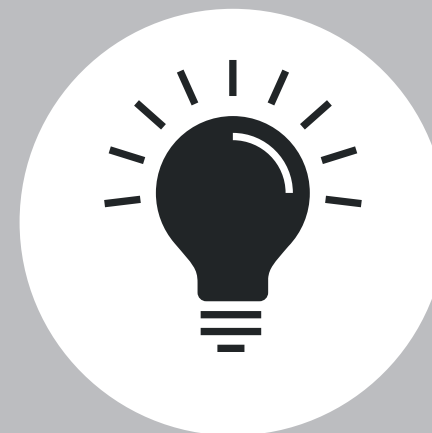
1. Reconnect the battery.



2. Switch the Ignition ON.



3. Activate coupler switch – buzzer should sound in the cab.



1. Locate solenoid valve and check that the Hirschman plug has a glowing amber light.

COMMISSIONING



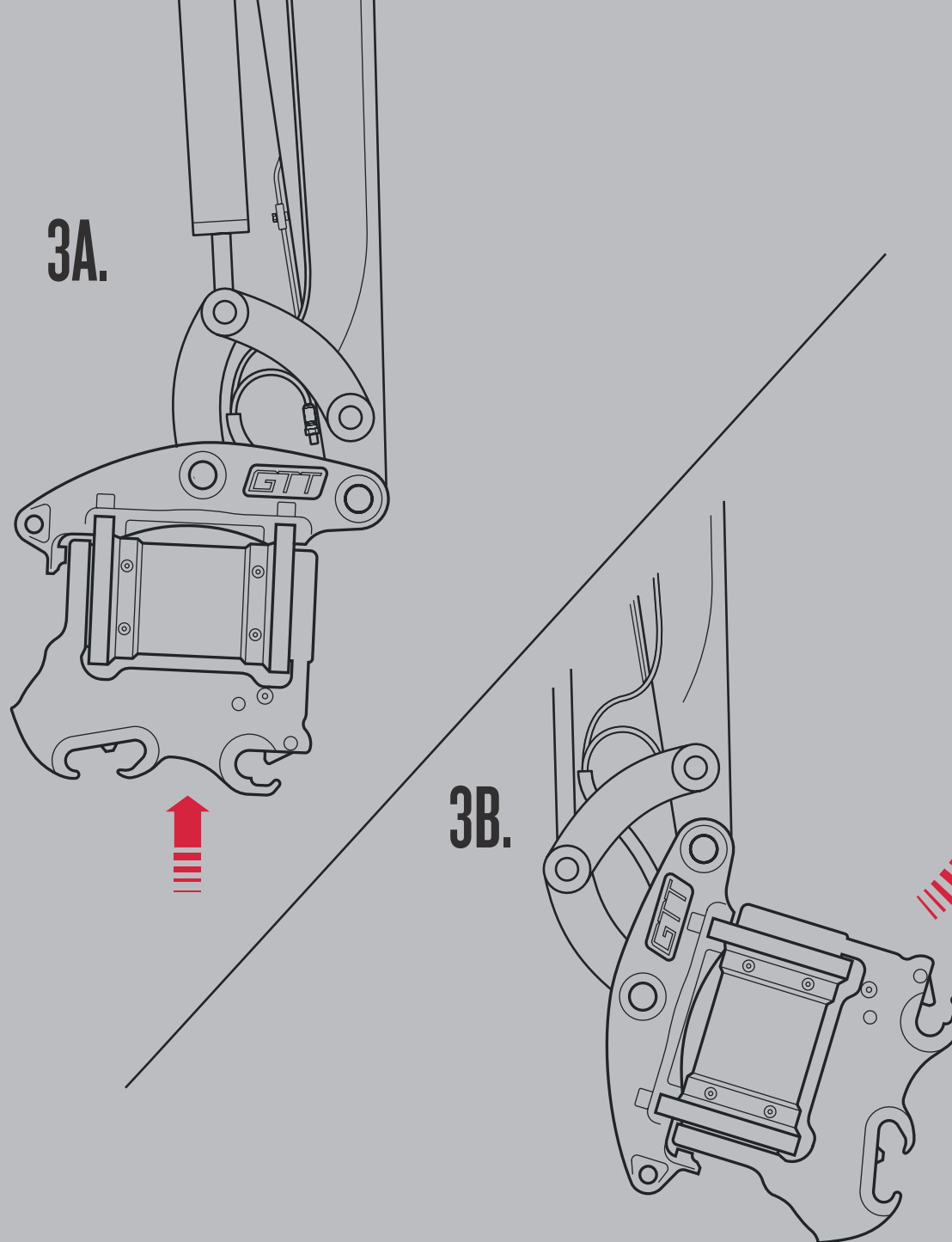
9. COMMISSIONING

1. Turn on the machine and activate the switch to see if the Hirschman plug is connected and functioning correctly. Note the buzzer should sound when the switch is turned on.

2. Activate and deactivate the coupler hydraulic system to ensure there is no air in the coupler hoses. To complete this step, flick the switch on and off.

3. Turn on the machine, raise the excavator arm so the coupler is at least 1m off the ground and rotate the couple in the fully crowded position. At this point, fully extend and retract the bucket RAM three times.

4. Rotate the actuator a full 90 degrees right to left. Repeat this process three times.



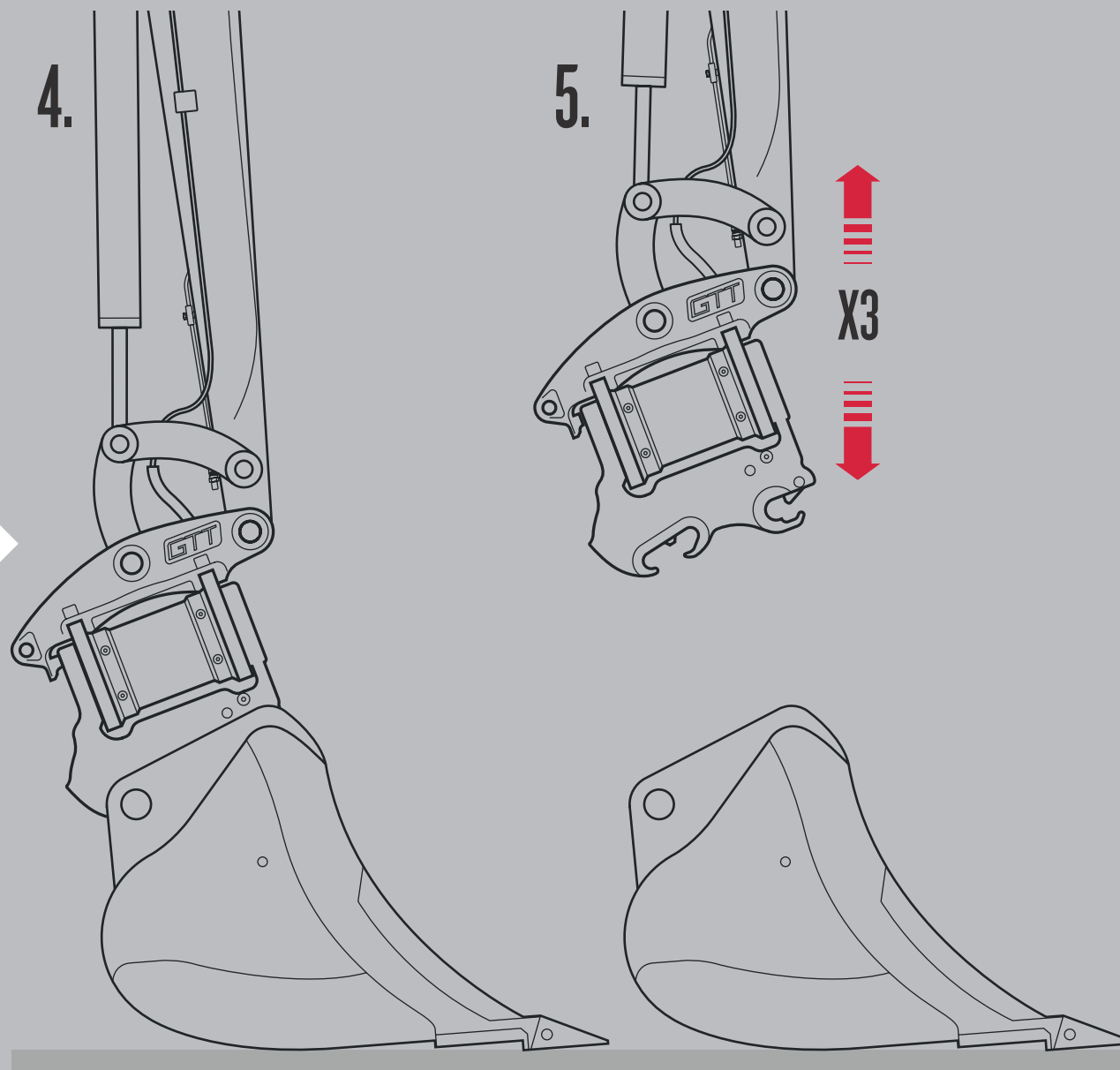
9. COMMISSIONING

4. Manoeuvre the machine into position to attach the coupler to the bucket. Once attached raise the excavator arm off the ground and rotate the actuator a full 90 degrees right to left.

Note: repeat this process three times - this releases excessive air in the system.

5. After the third attempt – remove bucket and raise excavator arm so the coupler is at least 1m off the ground. Fully retract bucket RAM and engage switch and slowly open bucket RAM.

Warning: Coupler RAM should only open if the bucket RAM is fully extended and begins too dead-end. If coupler RAM opens before this point this could be caused by excess air in the hydraulic hoses.



TROUBLESHOOTING

10. TROUBLESHOOTING

If the coupler begins to operate erratically or fails to work, please consider the following checks.



GENERAL

Check for:

- Snapped, bent or lost pins.
- Hydraulics leaks.
- Hose leaks, wear or damage to hoses.
- Damaged or bent cylinder.
- Loose or broken nuts and bolts.



ELECTRICAL

Check for:

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



HYDRAULIC

Check for:

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 or attach erratically, or lock on or off. In this situation the following procedure needs to be applied:

Check the solenoid valve block assembly for contamination as follows:

1. **Switch off the machine and operate the controls to vent residual pressure in the hydraulic system.**
2. **Vent pressure from the hydraulic tank by releasing the hydraulic tank filler cap.**
3. **Remove the solenoid valve and dismantle and inspect it for blockages or damaged seals.**
4. **Clean and replace all seals if necessary.**
5. **Clean or change filter fittings.**
6. **Re-assemble solenoid unit and install to the machine. If in doubt, change solenoid valve unit.**

7. **Re-connect 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.**

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

9. **Switching the coupler to the release position and disengage the machine hydraulics.**
10. **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 non-return valve as there may be some residual pressure in the hydraulic cylinder. Unscrew the valve slowly to allow any trapped pressure to escape.

11. **Slowly unscrew the non-return valve in the hydraulic cylinder.**
12. **Inspect the non-return valve, clean or replace the O-ring seals.**
13. **Clean all cavities including the cylinder.**
14. **Reassemble the non-return valve into the cylinder.**
15. **If there is any damage to the cylinder replace the complete unit including the non-return valve.**



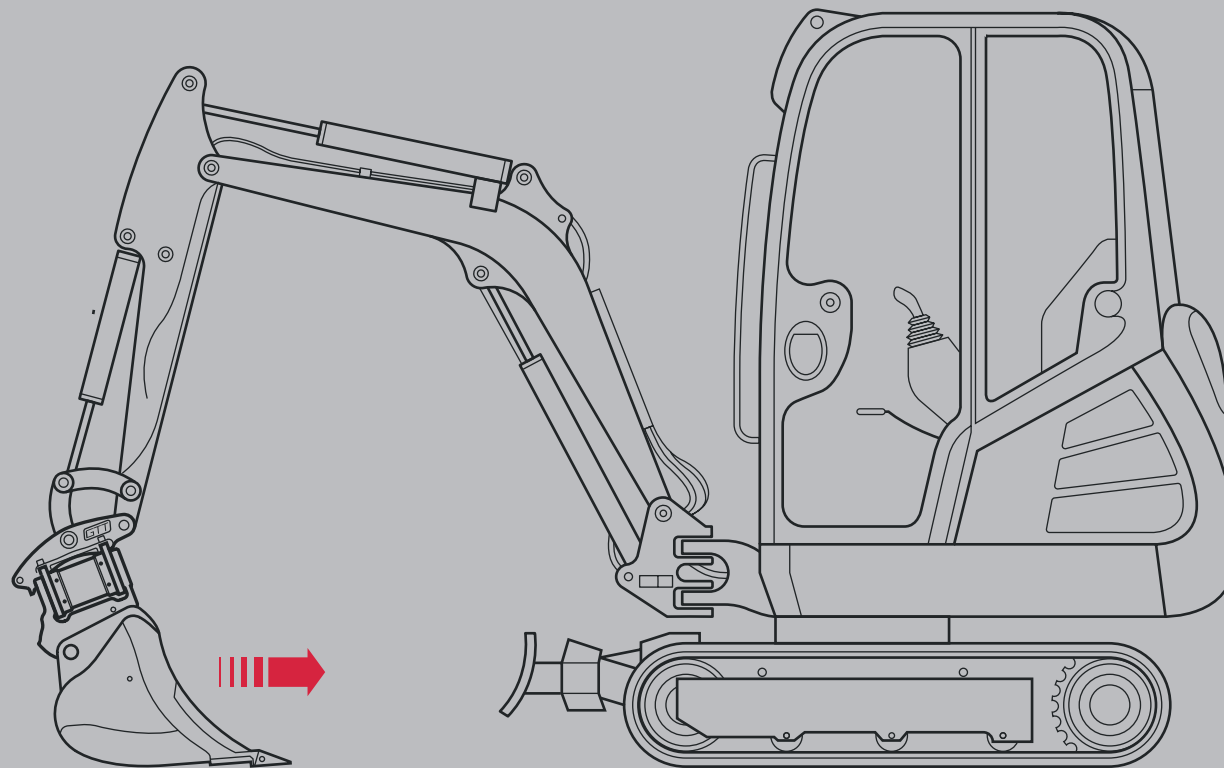
OPERATION

Check for:

If the coupler is switched to the attach mode or on position but the bucket can be powered off, then the cylinder or the cylinder non-return 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 non-return valve.

Important: Do not operate the coupler in this condition. Have repairs carried out immediately.



WARRANTY REGISTRATION

11. WARRANTY PERIOD

The warranty period is 36 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 chart 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:- 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.

APPENDIX A:

OEM FACTORY FIT - CONVERSION KIT

12. OEM FACTORY FIT - CONVERSION KIT

Note: An OEM factory fit consists of a preinstalled system onto the machine. This includes a coupler solenoid valve, steel pipes located on the stick and hosing running directly to the hydraulic pump and oil tank. A switch system generally found in the cab, in this instance Miller would provide the operator with a conversion kit.

The conversion kit consists of coupler hoses, pressure and tank lines to convert the pressure over from the pump to the bucket RAM (pressure). This is done by teeing into the existing A & B lines for the bucket RAM which run back to the main control valve. The kit will also include various adaptors, a non-return valve and coupler hoses to make the kit complete.

If the machine comes with an ISO compliant locking switch in the cab, then the pressure does not need to be converted as we deem this safe enough to operate of pump pressure.

Important: Please refer to section 3.1.1 and 3.1.2 in the guide for installing the coupler hoses to the coupler. This step should be completed prior to moving onto the install instructions opposite.

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.

INSTALLATION INSTRUCTIONS

1. Attach the coupler to the excavator and connect the A (blue) & B (yellow) hydraulic coupler hoses to existing OEM steel pipes located on the excavator stick.
2. Position the coupler on the ground.
3. Note – keep excavator stick as low as possible during this phase on the install to save as much oil as possible leaking from the lines.
4. Vent the tank on the machine to allow the flow of air out of the storage tank. If needed refer to machine manual for further assistance.
5. Ensure that the hydraulic pressure is set to a minimum 150 bar. Please use a pressure gauge to determine the pressure.
6. Remove existing pressure and tank hoses coming off the hydraulic pump and oil tank. These hoses will need to be blanked off. Blanking plugs will be supplied in the installation kits.
7. Install new pressure and tank lines into the OEM factory fitted solenoid and attach the other end of the hoses to the bucket RAM service on the main control valve.
8. Fit and secure the non-return valve to the T port located on the OEM factory fitted solenoid valve.
9. Prior to commissioning, please ensure all fittings are connect to the specific torque requirements.

APPENDIX B:

DIRECT TO HYDRAULIC PUMP & TANK INSTALL

Preferred installation procedure for the below Countries:



Australia



New Zealand

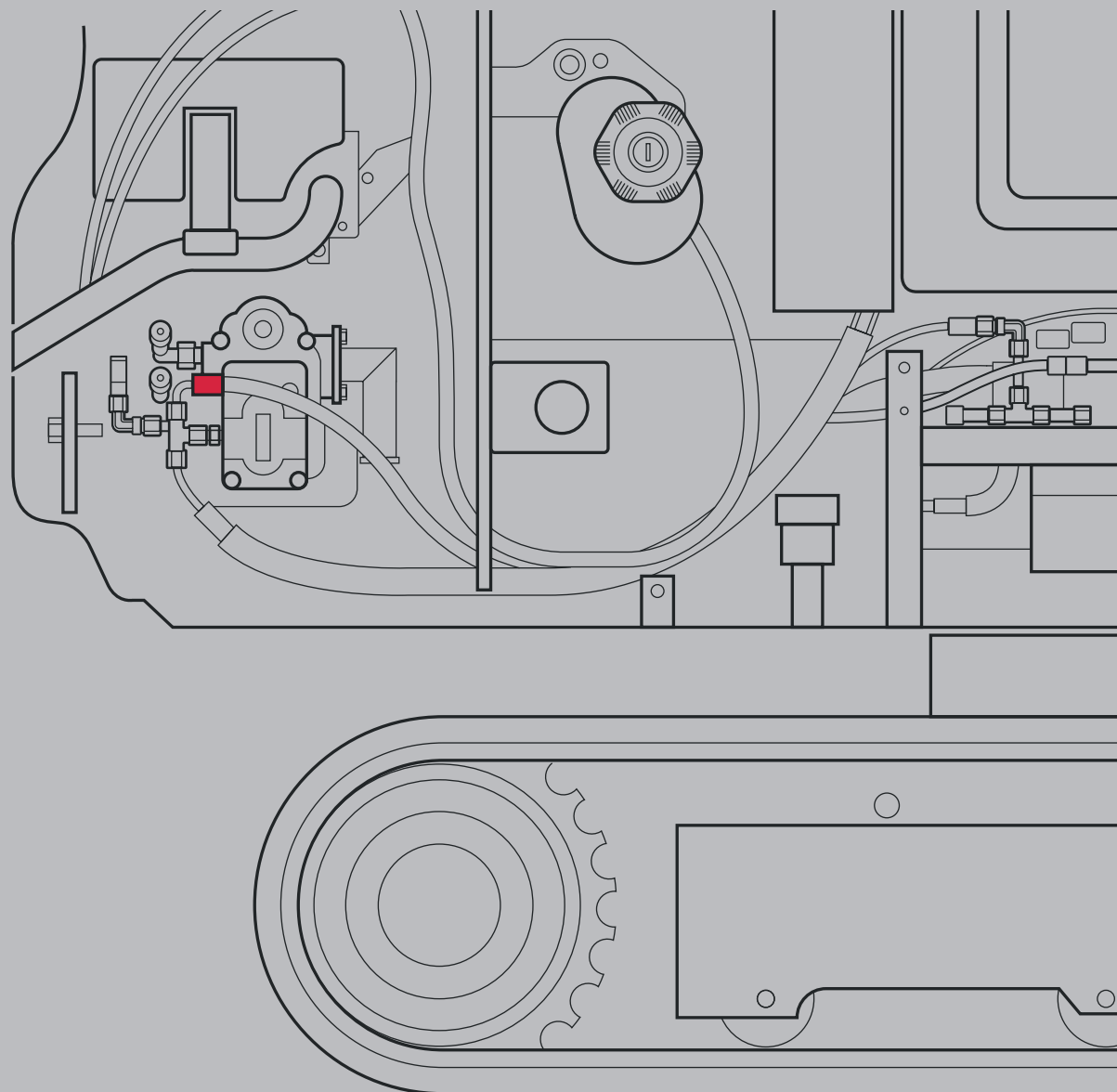
Important: Connecting the pressure (red) and tank (green) directly to the hydraulic pump and tank will alter the functionality of the GTT coupler.

All personnel who operate this coupler must be fully aware that when connecting directly to the hydraulic pump and tank, the additional safety step (bucket curl-to-release) will no longer be present. This alternative installation set-up will result in the coupler to open without being in the crowded position. Please note, if the switch is activated the buzzer will sound indicating that the ram will begin to release.

Important: When connecting directly to the hydraulic pump, please be aware that there are multiple ports located on the pump. Miller would recommend that the installer tests the working pressure on each port to determine which pressure is the correct one to run the coupler off. The operator must test each port by using a pressure gauge. The Operator must then use the bucket ram cylinder (dead end) to see if the gauge is achieving pressure to open the hydraulic ram in the coupler.

13. INSTALLATION INSTRUCTIONS

1. Position the compact coupler on the ground and vent the tank on the machine to allow the pressure build up in the storage tank to release. If needed refer to machine manual for further assistance.
2. Securely fit the solenoid valve to a suitable location - a mounting bracket has been included in the installation kit if needed. We would advise to tap and drill the solenoid bracket to the machine. Please avoid welding.
3. Once secure, feed the hoses up to the valve ensuring there is adequate length on each hose to securely connect them to the A & B ports on the solenoid valve. Pressure line (red) connects to P port and Tank line (green) to the T port.
4. Connect pressure line (red) directly to the pump as show in the illustration. Please note, there are four different ports. Please refer to the important note above.
5. Connect tank line (green) to the tank. The location of this may vary from OEM and machine size.



APPENDIX C:

TORQUE SPECIFICATIONS

14. TORQUE SPECIFICATIONS

FITTINGS

GTS 30lb.ft 40Nm (Fit Thread locking adhesive)

Non-return 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

FITTINGS

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

Non-return valve 33.8lb.ft 40.6Nm

Electro-magnetic lock nut 5.4lb.ft 8.1Nm

Plug 9.3lb.ft 13Nm



GTT

INSTALLATION GUIDE

Date / 01.09.2021

Revision / First issue

Checked / AS

Approved / BR

Miller Control Document

GTT Installation Guide First Issue

Document No.

GTT-INS-EXT-FI

Miller Internal Document Location

K:/Design/GT Installation Kit Procedure and Process/ Installation Manual

