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leaders in attachment safety

TEFRA

JCB 3CX Supplementary Installation Manual

This manual must be kept within the cab of the machine to which the coupler is fitted at all times and be available to all personnel who require this manual.

This manual is to be used to install the dedicated 3CX fitting kit and is supplementary to the standard manual.

The information in this document can be subject to change without prior notice and should not be regarded as an undertaking from Hill Engineering Limited. Hill Engineering Limited assumes no responsibility for errors that can appear in this document.

Hill Engineering Limited cannot anticipate all dangers and hazards that may arise in the fitting and use of the coupler. Therefore the warnings and safety information included within this document and on any labels provided is not inclusive. Any item or method not specifically recommended by Hill Engineering Limited may be unsafe to yourself or others. It is therefore the responsibility of the customer or his representative to assess the risk and ascertain that it is safe before proceeding.

The customer or his representative must also ensure that the safety of the product is not damaged or made unsafe by the operation, maintenance or repair of the coupler.

Hill Engineering Limited is not responsible for damage incurred by the use of this document or the quick coupler described in this document.

Further copies of this document can be obtained from Hill Engineering Limited.

Document TEF – CX2

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IMPORTANT INFORMATION

The Tefra coupler must only be fitted, used or maintained by personnel who have undertaken the correct and appropriate training and have attained the necessary skill level to safely perform that specific function.

Operators must undergo instruction on the correct use of the coupler before using the Tefra coupler.

Hill Engineering Limited cannot be held responsible for hazards, damage or injuries caused through the fitting, maintenance, or use of the Tefra coupler by personnel who have not undergone the required training and reached a skill level appropriate for safely carrying out their appointed task.

It is the responsibility of the customer to ensure that correct and adequate training has been given to all personnel and that they can perform their appointed tasks in a safe and competent manner.

Any personnel working installing, using or maintaining the Tefra coupler must fully read and understand this manual before commencing.

Hydraulic Hose Installation

VALVE BLOCK

- Port P fit ¼" BSP male with bonded seal to ¼" BSP male.
- Port T fit ¼" BSP male with bonded seal to ¼" BSP male.
- Port A fit ¼" BSP male with bonded seal to ¼" BSP male.
- Port B fit $^{7}/_{16}$" SAE male with O-Ring seal to $^{7}/_{16}$" JIC male.

HOSES

- Pipe P from Bucket Cylinder Extend to port P(E) on valve – ¼" BSP colour RED.
- Pipe T from Bucket Cylinder Retract to port T(R) on valve – ¼" BSP colour GREEN.
- Pipe A from port A to steel pipe (coupler A) – ¼" BSP colour BLUE.
- Pipe B from port B to steel pipe (coupler B) – $^{7}/_{16}$" JIC colour YELLOW.

STEEL PIPE

- Pipe from hose A to manifold block port A
- Pipe from hose B to manifold block port B

Position the manifold close to the bottom of the dipper stick. This dimension is 245 mm for a 3CX machine from the underside of the block to the end of the dipper arm (see Figure 1).

It is recommended that the block is temporarily fastened in position and the coupler moved through its full range of travel with the pipes connected to verify the block position. The A and B lines to the coupler connect to the outside ports of the block. The ports on the block should point up the dipper arm away from the coupler.

Ensure the correct fittings are used in the manifold block.

- Outer A ¼" BSP Male/Male with dowty seal
- Inner A ¼" BSP – 8 mm Steel Pipe
- Outer B $^{7}/_{16}$" SAE Male with O Ring / $^{7}/_{16}$"JIC Male
- Inner B $^{7}/_{16}$" SAE Male with O Ring – 8 mm Steel Pipe

Ensure that the A and B ports on the outside of the block are on the same side as the A and B ports on the cylinder within the coupler (See Figure 1 – 5).

In this position, the spring-guarded hoses should be in a neat position with minimal slack around bottom of dipper arm (stick) when in the fully crowded position. Once the position for the block has been checked then weld the manifold block into position as shown. When tightening the hose fittings bias the hoses outwards so they sit in the corners of the link assembly (see Figure 2).

Once the block is welded in position then fit all adaptors into the block.

Connect the two steel pipes to the central connectors positioned so that they curve around the arm locking pin (see Figure 3 and 4). Once the pipes are positioned weld the pipe clamp onto the dipper above the arm locking pin (see Figure 5).

Attach the two long hydraulic hoses suitable for running up to the valve position at the top of the sliding dipper arm. The hoses are colour coded and a blue hose is intended to supply the 'A' cylinder port the yellow hose is intended to supply the 'B' cylinder port. Ensure the correct fittings are used on the steel pipes so the blue hose is connected to the pipe from the 'A' port on the manifold block and the yellow hose is connected to the pipe from the 'B' port on the manifold block.

Figure 1
Block position

Figure 2
Hose position

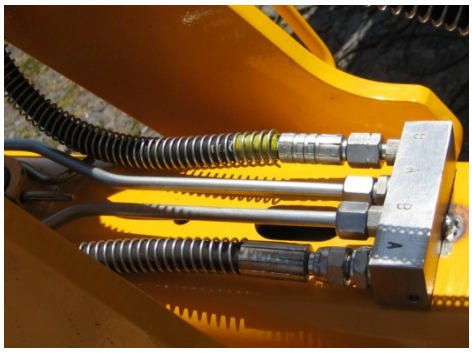

Figure 3
Steel pipe and hoses

Figure 4
Steel pipe position

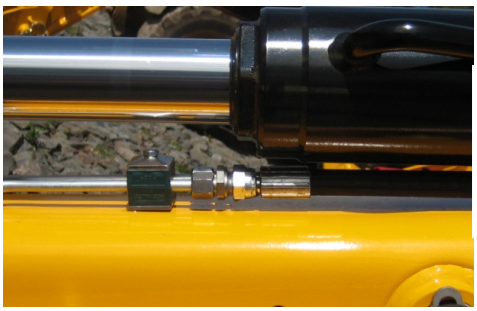

Figure 5
Steel pipe clamp position

Solenoid Valve mounted on the rear of the 'Extra Dig' or extending dipper.

WARNING

Lock off excavator using plant procedure before commencing work.
Before connecting any hoses always flush with clean hydraulic oil to prevent contamination of the hydraulic system.
Do not allow hydraulic oil to come into contact with the eyes or skin. Wear safety glasses and gloves at all times.
Take steps to minimise oil leakage and prevent spills. Do not pollute drains, waterways, or the environment

DANGER

The hydraulic system MUST be depressurised before commencing installation, safety equipment must be worn while carrying out this operation

WARNING

Before proceeding with any welding, battery leads must be removed from the battery. Always check with the excavator dealer to take appropriate measures when welding on the machine.
Welding may cause fires.
Always remove combustible materials from the vicinity. Protect all hoses and wiring from weld spatter. Keep a fire extinguisher available in case of fire. Always use the correct personal protective equipment.

WARNING

Lock off excavator using plant procedure before commencing work.
Before connecting any hoses always flush with clean hydraulic oil to prevent contamination of the hydraulic system.
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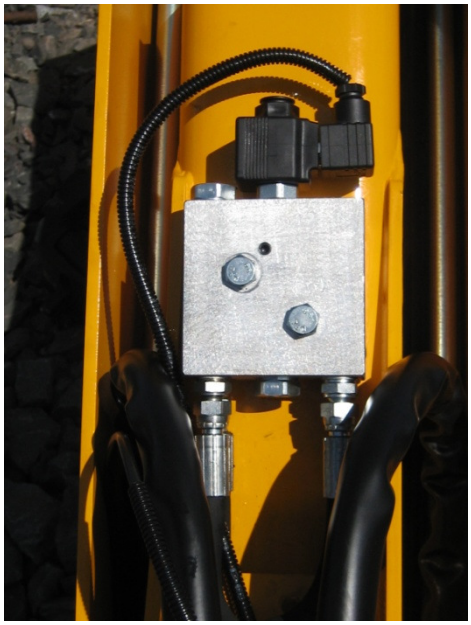


Mount the solenoid valve at the top of the dipper arm using the two existing holes in the dipper arm and the two holes within the valve body with the 10 mm x 70 mm long bolts and Nyloc nuts provided. Use plain washers top and bottom of both bolts.

Fit the two ½" BSP to ¼" BSP Tee to both the RED and GREEN hoses by screwing the compact elbow on the end of the hose to the ¼" BSP branch on the Tee.

Fit the two ½" BSP to ¼" BSP Tee pieces between the flexible hose and steel pipe to both the retract and extend connections at the bucket cylinder as shown. The red hose must go to the extend (shortest) pipe and the green hose must go to the retract (longest) cylinder pipes.

- Connect up the BLUE hose from the coupler to the A port on the valve.
- Connect up the YELLOW hose from the coupler to the B port on the valve.
- Connect the RED hose to the Extend/Pressure port (EP) on the valve.
- Connect the GREEN hose to the Retract/Tank port (TR) on the valve.

WARNING

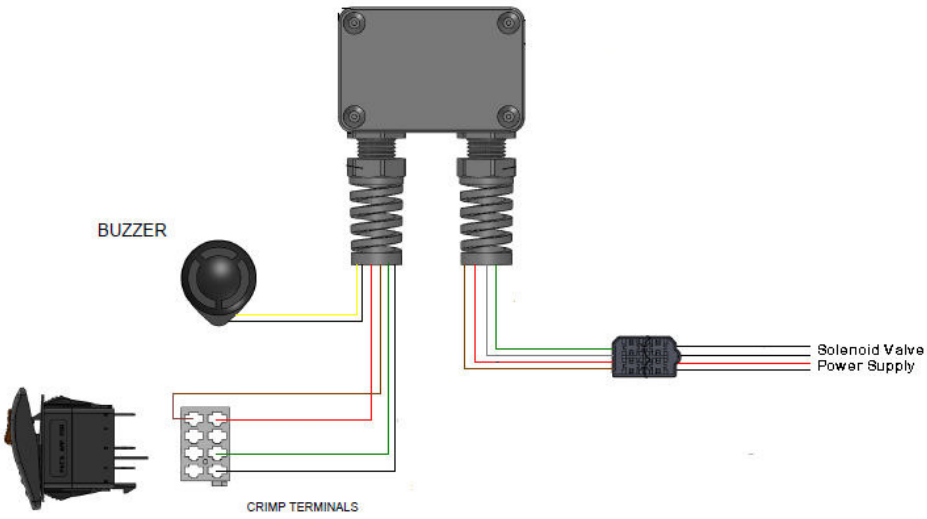
Before proceeding with the installation, the battery leads must be removed from the battery. Always disconnect the ground lead first.

- Working inside the cab remove the switch panel indicated.
- Pass the solenoid valve wiring loom through the switch panel hole and route the cable through the floor of the cab using a grommet if necessary, and following the hydraulic hoses, thread the end of the cable through the flexible chain up to the bottom of the kingpost, through the kingpost and along the boom following one of the bucket ram hydraulic pipes.
- Thread the wire through the protective sheath on the extending dipper up to the solenoid valve position – it may be necessary to make a small cut at the base of the sleeve to get the cable into the sleeve. Use the protective conduit supplied as necessary to protect the cable along its run.
- Use cable ties to secure the cable as required. Fit the din plug to the cable and plug onto the solenoid coil and affix using the central screw (See main manual).

⚠ CAUTION

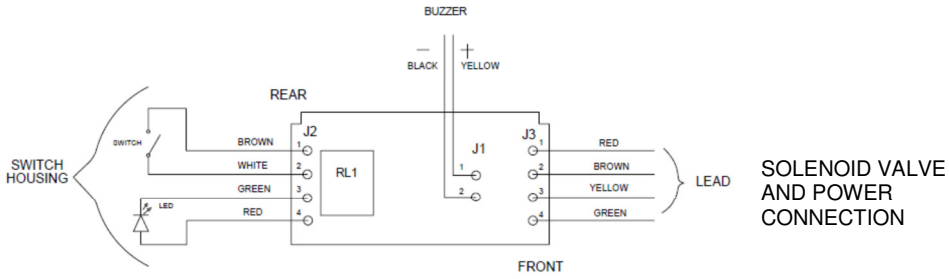
Do not attempt to service the switch or buzzer.
In case of a fault the faulty item must be replaced as a complete unit

- Working back inside the cab mount the buzzer and control box in a suitable place behind the dashboard.
- Connect the multi-pin socket on the solenoid loom into the mating multi-pin plug on the control box.
- Connect the yellow wire and black wire to the buzzer, ensure that the yellow wire is connected to the positive terminal and the black wire is connected to the negative terminal on the buzzer. Connect the red wire in the loom from the plug to a fused ignition fed live and the black wire to a negative or earth terminal.
- Often it is possible to connect to the 12V auxiliary socket, which is mounted on the same switch panel if present, using piggyback spade connectors. Remove one of the plastic blanks from the spare switch holes and working from the rear pass the switch connector block through the hole and connect to the rear of the switch.
- Put the switch into the aperture and clip the switch into position within the switch panel. Refit the switch panel.
- Reconnect the battery.
- Ensure the switch lock is working correctly so that the switch cannot be operated accidentally and the buzzer can be heard by the operator whilst the machine is operating.

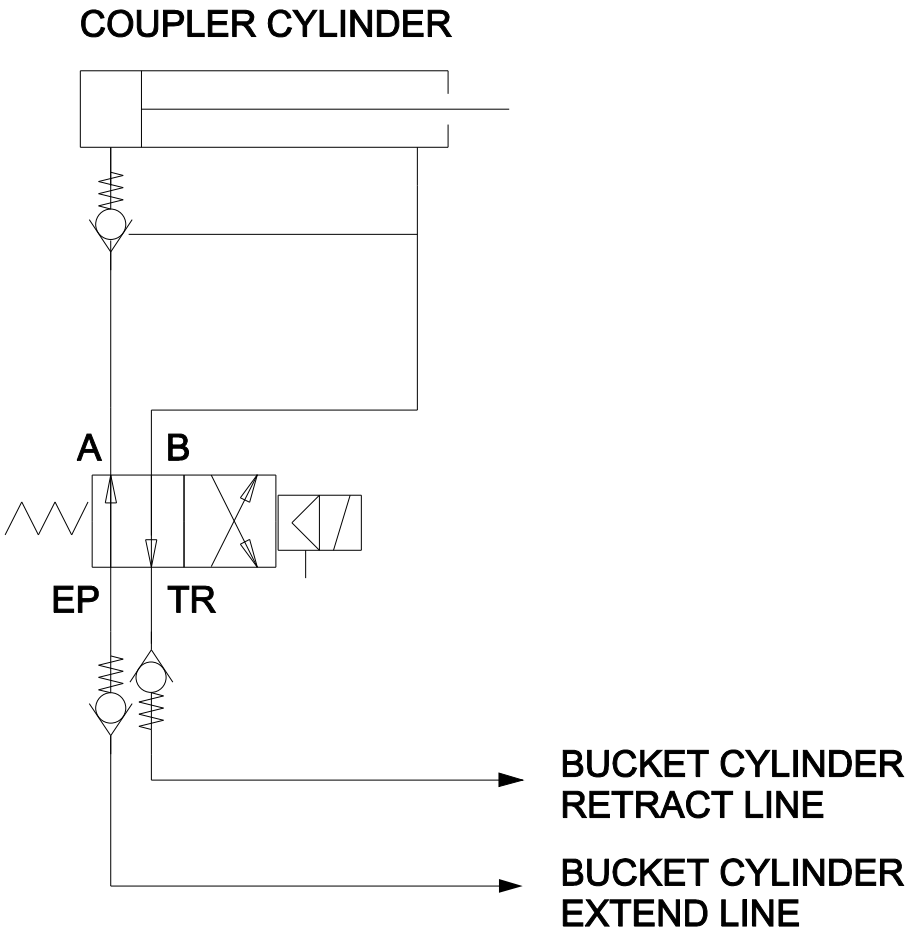


Finally mount the instruction decal to the inside of the cab window in a suitable place.

Refer back to the main manual for testing and fault finding procedures.



ELECTRICAL SCHEMATIC



HYDRAULIC SCHEMATIC