

Notes on the Fitting of the Brücke Planter to an Excavator

The planter is supplied as

- The planting head
- A Dynaset air compressor
- A mounting arm
- An electric loom with fittings and integral terminal box
- An in cab display (Text Display Module – TDM)

The minimum requirements for the excavator are that it should be capable of delivering 115 bar pressure at an output of 100litres per minute. It is recommended that a base excavator of at least 13 tonnes is used.

Fitting of the planter falls into 5 sections:

1. Hydraulics supply
2. Air supply
3. Electrical wiring
4. Mounting Hitch
5. Plant Carrier.

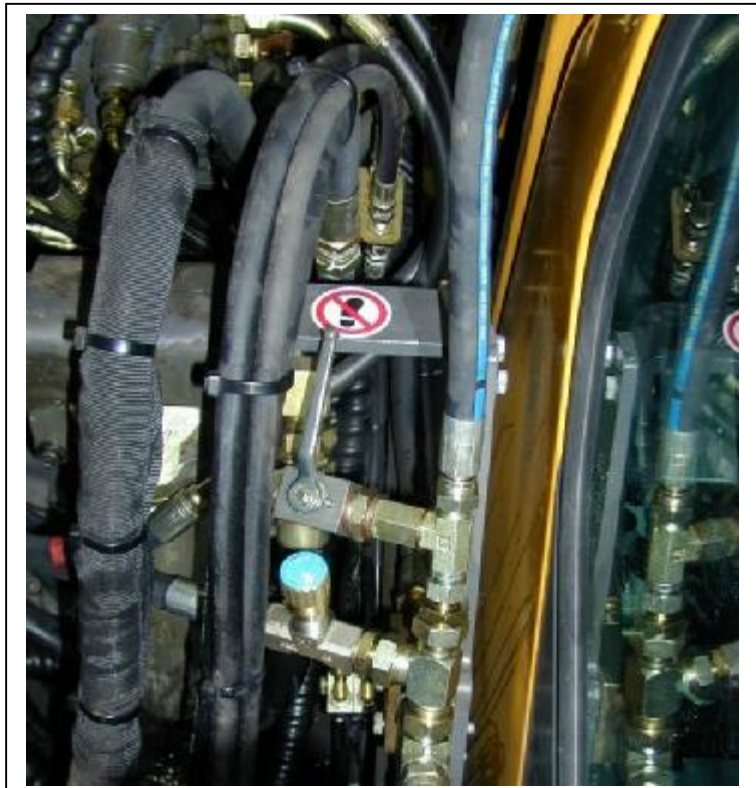
1. Hydraulic supply

Hydraulic feed

The hydraulic feed for the planter is generally taken from the hammer circuit. This needs to be T'd into close to the engine in order to fit the compressor, hydraulic accumulator and pressure sensor.

It is advisable to incorporate some form of pressure relief in the hydraulic circuit. This can be in the form of a bypass line fitted with a tap (lever tap shown in picture) that connects the high-pressure line back to the tank

The compressor feed should be regulated to around 23 litres per minute. This can be done by incorporating a variable screw tap (blue top in picture) into the feed line to the compressor's hydraulic motor.



As an alternative to the pressure relief tap, it may be possible to fit drain screws next to the boom fittings. The former method is more work to install but provides a cleaner solution and avoids oil runs around the boom fittings.

Hydraulic Accumulator

The accumulator should be T'd into the hydraulic circuit. The accumulator can be mounted anywhere along the hydraulic system between the pump and the planter. If room on the body of the excavator is at a premium it could be mounted on the boom. However, it is probably preferable to have it mounted on the body usually behind the cab. Depending upon the size of the accumulator and the available space it may be possible to mount it on the same base plate as the compressor.



Hydraulic Pressure Control Sensor

The pressure control valve should be T'd into the hydraulic circuit. To minimise wiring runs it is advisable to fit it as close to the hammer solenoid as possible. Depending upon the location of the accumulator, a convenient fitting is directly onto the accumulator feed as shown in the adjacent picture where the accumulator has been mounted separately. (The pressure sensor is the black rectangular box with the brass end in front of the accumulator).



Hammer Solenoid

The hammer solenoid should be wired up in series with the hydraulic pressure sensor switch. Any existing wiring for the hammer solenoid should be insulated and retained for future use. (See separate schematic diagram).

Boom Fittings

The boom fittings should be terminated as far as possible up the boom allowing for any necessary movement in the planting head. The airline should be terminated in close proximity to the hydraulic fittings. On some machines the hydraulic fittings for the hammer circuit may pass down different sides of the boom. It is more convenient, but not vital, if the fittings are on the same side. The electrical coupling should be



mounted so that it is parallel to the face of the boom and not sticking out at right angles. This will require a small mounting plate to be constructed.

2. Air Supply

Air Line

It is necessary to supply and run an air-line over the boom – 3/8inch hydraulic hose is suggested. This should be terminated on the boom with a quick release coupling.

Compressor mounting

The compressor can be fitted directly onto the body of the excavator. Where space is limited it may be found more convenient to construct a separate plate capable of taking the compressor which should be mounted on rubber bushings to reduce vibration. Depending upon the size of the accumulator and the available space it may be possible to mount it on the same base plate as the compressor. The framework of the compressor acts as an air-accumulator. There is a



condensation bleed screw at the bottom corner of the framework and a plug for draining the lubricant oil at the base of the compressor body. Ensure that both of these are accessible once the compressor is in place. If possible, align the air-pressure gauge on the side of the compressor so that it can be seen from the operator's position in the cab. This may need the gauge to be exchanged with the air-pressure switch fitting on the opposite side.

3. Electrical Wiring

Whilst in-cab wiring should be neat and out of the way, it is not worthwhile spending a lot of time concealing it. Ease of access for any possible maintenance is more important.

Cab Terminal Box

The terminal box should be mounted in the cab in order to provide protection against the elements and to gain ready access to the master on/off switch, which is mounted on the side of the box. In order to pass the cabling through the cab bulkhead it will be necessary to disconnect the Hirschman couplings on the hydraulic pressure sensor and the air-pressure sensor and the multi-way connector on the main cable running over the boom. Take careful note of the wiring pattern in all these fittings prior to removal. *When refitting the multi-way connector to the boom cable take particular care to ensure that all wires are firmly secured into the terminal block.* Loose wires in the boom connector is the most common reason for computer/display problems.

Controls

The planter is operated by 2 buttons – one to activate the mounding blade and one to run the planting cycle (including the application of granular additives where used). The functionality is best obtained by using 2 spare buttons on existing joystick controls. Some operators may prefer to have the two functions split between the two joystick controls, whilst others may prefer to have them on the same joystick. The wiring for these controls comes from the terminal box fitted in the cab.

Display Console (Text Display Module - TDM)

The TDM provides the operator with a visual guide to the working of the planter, indicating for example, when the carousel is empty, when there is a sensor problem, when the water tank is empty, how many mounds have been created as well as providing a means of adjusting planting depth and the use of an applicator where fitted. The TDM should be mounted in the cab where it will not impede the driver's line of operational sight. It should be possible to angle the TDM to the required angle for the operator in order to eliminate reflections.



4. Mounting Hitch

The mounting arm supplied with the planter has a flat predrilled surface (see figure 1). It is possible to weld saddles and hitch pins directly onto the plate supplied. However, for future flexibility it is advisable to manufacture a matching plate onto which the saddle and hitch pins can be welded. The two plates can then be bolted together and later separated if transferring to a machine with a different hitch.

A useful addition to the mounting arm is a hose & cable guide hoop to control the movement of the cables and hoses as the planting head moves during operation.

(The Ripper and Safety Legs shown in the picture are not included with the planter).



5. Plant Carrier

Whilst not strictly part of the planter, it is vitally important that consideration is given to the provision of adequate and ergonomic plant carrying capabilities.

It is suggested that a plant carrier should be built to take at least 4 crates on a level, 2 levels providing 8 crates or 1920 plants approx. Design of the carrier is up to the individual contractor. Despite the poor visibility from the driver's position, it is probably best to be on the right hand side of the machine, fitted onto the main chassis member. It should be attached in at least 3 positions to give strength. Note that the crates used for holding the plants are tapered and allowance should be made for this when building the shelf in order that the crates do not foul the body of the excavator. Remember that someone will have to load and unload this shelf – it should be as accessible as possible.

If possible, the carrier should be attached in such a way that it can be folded up and held vertically when the machine is being transported.(See detail photo)



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Figure 1. Planter Mounting Plate for Quick Hitch or Pin Attachment

