

TRAILER MOUNTED DEEP SOIL SAMPLER

USER MANUAL



Incitec Pivot Fertilisers is Australia's reliable leader in soil and plant nutrition, investing locally in agronomic solutions to help Australian farmers remain globally competitive. [incitecpivotfertilisers.com.au](https://www.incitecpivotfertilisers.com.au)



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ABOUT THE SAMPLER

The trailer mounted deep soil sampler is designed for use in most soil types with the exception of ground known to be containing rock or impenetrable material.

The sampler is powered by a 9 horse power Honda motor which is fitted with a hydraulic pump. This pump produces high pressure oil flow to service the hydraulic ram and jackhammer.

The sampler is designed to extract soil samples to a depth of 60 cm with the ability to sample up to 1 metre.

If a problem arises with the sampler which is not explained in this manual, please contact your Incitec Pivot Fertilisers trailer manager and the problem will be rectified.

Please do not attempt to modify the unit in any way without consulting your Incitec Pivot Fertilisers trailer manager.



BEFORE YOU BEGIN

Items contained on unit

The equipment checklist is contained under the lid of the tool box. Be sure to run through this checklist regularly to make sure that consumables (silicon spray, oils and fuel) are replaced and that other items have not been lost.

The equipment checklist should read as follows. Additional items may be added to the kit as required, e.g. tools, rags, etc.

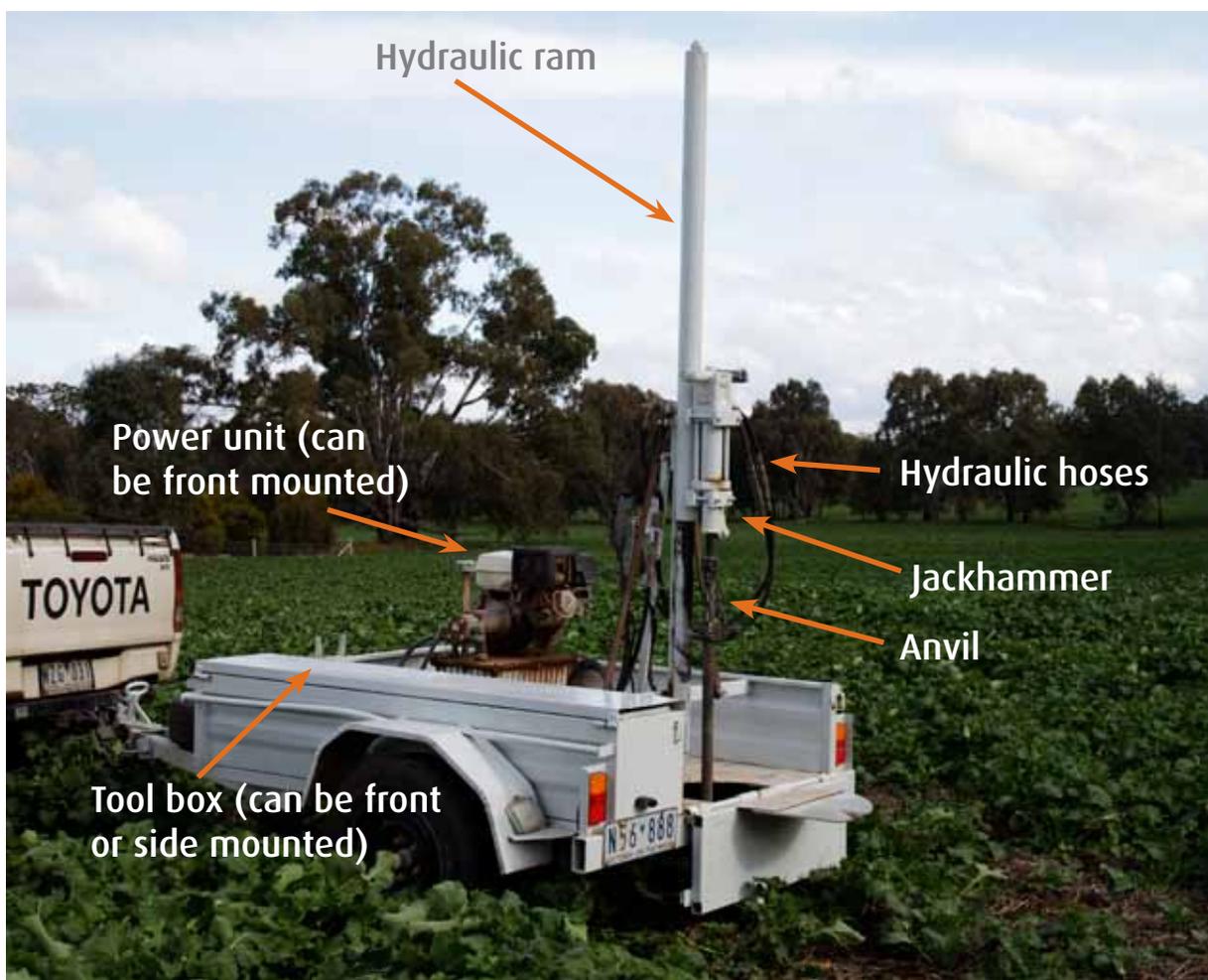
Standard equipment checklist

- 1 kit box
- 2 sample probes
- 1 SPRAG foot
- 2 Chocker rings connected to anvil
- 1 half poly pipe (1 metre)
- 1 mixing bucket
- 1 first aid kit
- 1 bolt pin (holds mast in place)
- 1 petrol can (unleaded petrol)
- 2 pairs of ear muffs
- 1 silicon spray
- 1 pair of pliers
- 1 drill cleaner
- 1 cleaning brush
- 1 pair of gloves
- fire extinguisher
- tyre gauge
- tyre pump
- 2 safety glasses



PARTS OF SAMPLER

The diagram below highlights the parts of the sampler.



Trailer Managers please note :

The specification for hydraulic oil is 'hydraulic 68 oil'. For new probes, contact Christie Engineering on 02 9620 1208. These items should only be sourced by Incitec Pivot Fertilisers.

SAFETY

Safety with this type of equipment is extremely important.
Please read the safety directions very carefully.

The engine

- Always wear hearing protection.
- Always make a pre-operation inspection (oils, fuels, leaks, etc) and ensure guards are in place before you start the engine.
- Know how to stop the engine quickly, and understand the operation of all the controls.
- Do not overfill the fuel tank. There should be no fuel in the filler neck of the tank.
- Do not smoke or allow flames or sparks where engine is refuelled or where fuel is stored.
- The muffler becomes very hot during operation and for a while after stopping the engine. DO NOT TOUCH.

The hydraulic ram and jackhammer

- Always wear hearing protection.
- Always wear sturdy footwear.
- Never wear loose clothing that can get tangled up in the workings of the equipment.
- Do not inspect or clean the equipment while the engine is running. High pressure hot oil runs throughout the equipment and could cause serious injury.
- Make sure all hose fittings are tight before operating.
- Inspect all hoses regularly to make sure they are not cut or damaged.
- Do not carry out any modifications on this unit.
- Be very careful not to get feet in the way of probe when penetrating ground.
- To avoid personal injury or equipment damage, all repair, maintenance and servicing must be performed by authorised and properly trained personnel in consultation with an Incitec Pivot Fertilisers staff member.

GETTING STARTED

STEP 1 Maintenance check

Check the engine and hydraulic oil before starting the engine. Be sure to check all hydraulic hoses for damage before starting the engine.



STEP 2 Starting engine

Turn the fuel on and the choke on. Set engine revs to half way and pull the rip cord.



STEP 3 Setting engine speed

The engine speed is important when taking core samples. It can be adjusted with the throttle, which is the silver lever located near the fuel and choke switches. For operation, the engine speed should be set at three quarters to full.



STEP 4 Connecting foot

The foot must be fitted before a sample is taken. The foot can be found in the tool box and fits onto the base of the hydraulic ram as shown in the picture below. The foot should be adjusted so it sits 25-35 mm off the ground. The sampler can be towed short distances with the foot attached. **MAKE SURE YOU DO NOT REVERSE WITH FOOT ATTACHED AS IT ONLY SWINGS ONE WAY.**



STEP 5 Attaching choker rings

Choker rings are used to pull the probe out of the ground after it has been pushed in by the hydraulic ram and jackhammer. The choker rings consist of ring, short chain and two D-shackles. The chains should be attached to either side of the hydraulic ram as shown in the picture below. Some units have choker rings and chain bolted permanently to the anvil. Make sure they are attached behind the base of the jackhammer before the jackhammer is fitted. If not, they will cause too much stress on the bracket and cause it to bend or break.



STEP 6 Fitting anvil

Fitting the anvil is a fairly simple process. Simply pull the latch at the base of the jackhammer on the right hand side. Slide the anvil up through the base of the jackhammer narrow end up. Once the anvil is in, simply return the latch on the jackhammer to the original position. The anvil should now be locked in.



STEP 7 Preparing probe

The probe is one of the most important parts of this sampler. It is important that it is lubricated before being hammered into the soil. Some soil types will require constant lubrication before each sample is taken. Some soil types may only require an initial lubrication to begin sampling. Make sure the soil flows out of the probe with ease. If soil is moist, has poor structure, or is easily compacted, special care will be needed to ensure the sample does not become jammed in the probe.

Make sure the probe is lightly sprayed inside and out before being stored. This will prevent rust which causes problems when sampling next time.



STEP 8 Attaching probe

The probe must be fed up through the two choker rings and onto the anvil as shown in the picture below. It is a difficult process to begin with, but practice makes perfect. It may be necessary to hold the anvil up into the jackhammer to allow the probe to fit over with rings attached.



STEP 9 Inserting probe into soil

After following steps 1-8, restart engine if required and set revs at three quarters to full. Making sure that feet are away from probe, pull directional lever to downward position (or use remote) and allow probe to penetrate soil to the desired depth. Ensure the probe penetrates the soil vertically, not at an angle.



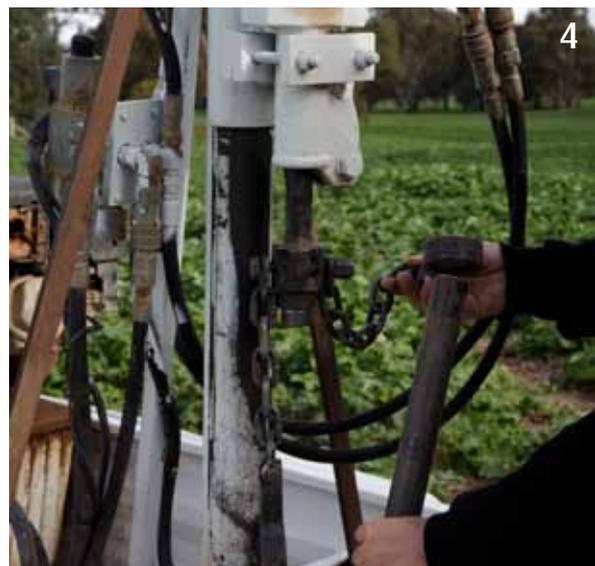
STEP 10 Removing probe from soil

Lower engine revs and slowly push directional lever to up position. Raise mast until probe can be removed from anvil. To release probe, hold chocker rings up and pull probe off anvil.



STEP 11 Releasing probe from anvil

To release probe, hold choker rings up and pull probe off anvil.



STEP 12 Extracting soil from probe

If the probe has been lubricated properly, the soil should slide out of end opposite to tip. Use your thumb or a piece of dowel to push the entire sample out. The sample can be either presented on PVC pipe or straight into the mixing bucket. Ensure the inside of the probe is completely free of soil before repeating the sampling process.



PREPARING SAMPLER FOR TRAVEL

STEP 13 Removing Chocker rings

The choker rings can be removed from the chain and stored in the kit box. The chains may remain on the end of the hydraulic ram if so desired. This saves time when setting up in the future. If chains are to be left on ram, make sure D-shackles are tight so they do not fall off during transport. You may also wish to leave choker rings attached to chains when travelling. This may be done, as long as the rings are not left hanging. A shackle will be supplied for each unit which will fix rings to the base of the jackhammer. If this shackle is not fitted to your unit and choker rings are attached to anvil then rings and anvil must be removed.



STEP 14 Removing anvil

The anvil must be removed before transport. This is done by simply pulling the latch on the right hand side of the jackhammer. The anvil should be stored in the tool box.



STEP 15 Lowering mast

When moving on roads, lower mast to one quarter height. Re fix tail gate. Check that all equipment is stored in tool box.



STEP 16 Turning off fuel

Make sure fuel is turned off before travelling. If this is not done, the engine will fill with fuel, causing a compression lock and damage to the engine.



STEP 17 Preparing probe for storage

The probe is not coated with any protective product. It therefore rusts very easily, which in turn produces soil jams when trying to sample. To help prevent this, lightly coat the probes inside and out with silicon spray before storing.



STEP 18 Cleaning unit

Ensure the unit is tidied or washed if necessary and the equipment is in good working order.



TROUBLE SHOOTING

Problem	Reason	Handy Hints
Engine won't start	<ul style="list-style-type: none"> • Low on fuel • Low oil level • Cut off switch is in off position • Petrol is turned off or choke is off 	The Honda motor is fitted with a low oil level cut-off switch. If the oil is below a safe level, the engine will not run. The oil must still be checked before starting engine.
Mast won't move up or down	<ul style="list-style-type: none"> • Engine must be running • Check hydraulic oil level • Check all quick release fittings • Hose may be kinked or blocked • Make sure safety chain is detached 	Make sure when diagnosing these problems that the engine is switched off or when testing movement the engine is running at low revs. If the safety chain remains attached when the ram is lifted, severe damage will be caused to the sampler and injury to the operator may result.
Jackhammer is not working	<ul style="list-style-type: none"> • Ram must be in down position • Check hydraulic oil level • Engine revs must be high • Lever on jackhammer is not down • Anvil is not in the jackhammer • Hose from hammer may be kinked 	The jackhammer is one of the most important parts of the sampler. If it is not working properly, a sample can not be taken. Make sure the anvil is fitted into the jackhammer before attempting to attach the probe. All units have a hose clamp holding the power valve down on the jackhammer. This clamp must not be removed.
Probe won't fit through chocker rings	<ul style="list-style-type: none"> • Check ring with longer chain is on bottom • Top of probe may be burred 	If the top of the probe is burred, simply trim the damaged section off and continue sampling.
Sample is sliding out the end of the probe when it is removed from soil	<ul style="list-style-type: none"> • Make sure probe is lubricated before sampling • Make sure probe is removed from the soil slowly 	This problem should only occur in soft damp soil. The reason this occurs is the build-up of air pressure within the probe during the downward motion. When lifting the probe from the soil, the sample is subsequently pushed out. This can be overcome by removing the probe slowly from the soil.