

Acorn Silhouette Clay Pigeon Trap

Assembly instruction manual

Introduction

The Silhouette Range of Automatic Clay Traps, for those who have some basic skills using hand tools, should not present to difficult a project for self-assembly.

As with all work of this type, the secret lies in the realistic expectation that you will not build your Automatic Trap in 30 minutes. Allow plenty of time and take a steady run at the assembly. Do not attempt to rush, as that is when mistakes can be made.

Firstly, before any attempt is made to assemble the Trap, take time to lay out the contents and familiarise yourself with the component parts. Check that everything is there by reference to the Checklist (Page 2) in conjunction with the **Exploded view at the end of this manual.**

The tools you will need to build the unit are as follows:-

An assortment of good quality screwdrivers.
Medium sized adjustable wrench (spanner).
8mm, 10mm and 13mm open wrenches.
18mm Ring or socket wrench (Use a Torque Wrench if available).
Soft faced mallet.

Also: -

A small amount of grease, some cleaning solvent and a cleaning rag.
Loctite Screwloc (recommended for permanent retention of fastners).

We would suggest that the assembly be carried out on a small table or workbench.

To identify individual screws etc. please refer to the Fastener Code Sheet (Page 3).

Part numbers enclosed in brackets () refer to the checklist.

Once the various parts have been sorted proceed with assembly: -

Checklist (In order of packing)

- a) Guard Rods and support Arm.
- b) Electronic Bag
Electronic Loom
Reed switch & Grey Plastic mounting plate.
2 off M5 x 16mm Bolts.
- c) Transmission Bag
Chain wheel with clutch and seals fitted
Main Shaft
Drive Chain
Crank arm fitted with Reed Magnet
'Top Hat' with M6 x 25mm Hex Bolt
Brass Shim washer
4 off M6 Penny Washers (Shims)
- d) Fastener Bag
10 off M5 x 16mm Counter Sunk Bolts
5 off M5 Rubber Washers
10 off M5 Nyloc Nuts
3 off M5 Washers
3 off M6 x 16mm Hex Bolts
2 off M6 x 16mm Counter Sunk Bolts
7 off M6 Low Profile Nyloc Nuts
14 off M6 Washers
2 off M6 'Mud Guard' Washers
2 off 'Push on' Star Washers
1 off 'R' Clip
1 off Clay Stop
- e) Throwing Arm
- f) Main Spring
- g) Top Plate Assembly
- h) Motor
- i) Hopper Rods
- j) Hopper 'Horseshoe'
- k) Main Frame
- l) Base Plate, Support Strut and
Elevation Strut
- m) Motor Guard
- n) Soft Fall Plate
- o) Extension Rods and Support Strut and Fixings (Silhouette 100 only)
- p) Release Cable and Foot Switch
- q) Spring Adjustment Hand Knob
- r) Angle Adjustment Hand Knob
- s) Staking Pegs

Options and Extra's

- t) Radio Release
- u) Walk up Sensor

Fastener Code

A	M3 x12mm	Pan Head
B		Self Tapping Screw
C	M4 x 8mm	Pan Head
D	M5 x 10mm	Counter Sunk
E	M5 x 16mm	Counter Sunk
F	M5	Rubber Washers
G	M5 x 16mm	Pan Head
H	M6 x 16mm	Hex Head
J	M6 x 25mm	Hex Head
K	M6 x 65mm	Hex Head
L	M6x 16mm	Cheese Head
M	M6 x 16mm	Counter Sunk
N	M5	Nyloc Nut
P	M6	Nyloc Nut
Q	M4	Washer
R	M5	Washer
S	M6	Washer
T	M6	'Penny' Shim Washer (Large Diameter)
U		Bass Shim Washer
V		Push-on Retainer Clips
W		Nylon Washer
X	M5	Wing Nuts
Y	M6	Wing Nuts
Z		'R' Clips

Assembly Details

Main Frame (5).

Place frame on a workbench the correct way up. (See exploded view)

Main Shaft (28).

Lightly smear small end of shaft with a little grease and fit into the Brass Bearing on the Main Frame. Push through up to the shoulder on the shaft with a turning action. Then, turn the Main Frame over and thoroughly clean the protruding end of the Main Shaft with some solvent to remove all traces of grease on the exposed shaft.

Crank Arm (9).

Clean the fixing hole as above and fit to the underside of the Main Shaft with the recess facing the main frame. Push the crank fully up to the underside of the bearing. Driving a wedge (or screwdriver) into the split at the end of the crank to open the hole a little can ease the fitting of this component! Tighten pinch bolt firmly (60Ft/Lbs)

Base (1).

Turn Main Frame over and fit to the Base by inserting one side of the pivot support into the hole at the top of the base and springing the base side to accept the opposite Pivot. (Fig 1 page 8).

Elevation Struts (3) and Knob/Nut (4).

Connect this to the base with fixing supplied. Fit push on star washers on the pivot ends.

Support Strut.

Fit Strut to the inside of the Base as shown in the exploded view.

Sprocket (16)

The centre of the sprocket contains a bearing/one-way clutch. Fit to the top of the Main Shaft with "Top" uppermost.

Note: The rollers inside the bearing are easily dislodged. Exercise the greatest care in fitting this item. Gently rotate the Assembly clockwise to ease into position. (See Fig 2 Page 8).

Fastener Code
2 each - H, S

Motor Plate, Motor and Chain (20, 21 & 18)

Fit as per exploded view and lock into position. Do not over tighten the chain, which should have a little free movement to work correctly. Check that the chain sprockets line up and that the chain tensioner springs into the chain. Adjust with washers if required.

Fit motor cables with the RED cable on the inside termination and the BLACK on the outside. Feed the free ends through the hole in the frame behind the motor and pull out to the rear of the frame.

3 each – E, R, N.

Motor Guard (24)

Fit to frame with the fixings supplied. (See exploded view).

2 off – G

Reed Switch and Adjusting Plate. (11 & 12)

From the Electronics Bag locate the Reed Switch (with wire attached) mounted on a grey plastic plate. This assembly should be fitted to the front underside of the frame. Feed the free ends of the wires into the hole adjacent to the switch. (See Fig 3 Page 8). Tuck the connecting wires well away from the crank arm. With a stiff piece of wire (or similar) hook the two blue wires to the rear of the frame.

2 off – C

Electronic Loom (6).

You should now have four wires protruding from the rear of the frame. Red, Black and two Blue. Connect these to the white in-line Plug. (See Fig 5 Page 9). Plug this into the Electronic Loom and then push the module into the frame and secure the control panel in place with the switch on the right hand side.

1 off – D

7 off – E

8 off – N

5 off - F

Launch Plate and Soft Fall Plate. (25 & 27)

Fit the Launch Plate together with the Soft Fall Plate to the frame as indicated in the exploded view. Note that the Soft Fall Plate has a short screw and a half nut fitted which should be used adjacent to the drive chain. Note: - The Soft Fall Plate must lay flat and must be free from bends and kinks. Tap with a soft faced mallet to flatten.

(See Fig 6, Page 9) for correct location of screws.

Sandwich between the underside of the Launch Plate and the Main Frame the Rubber Washers supplied (F). These are to allow for adjustment to the plate on final set up procedure. Do not over-tighten at this stage.

1 each – E, N

Clay Stop (26)

Fit to rear of Launch Plate (25)

1 off – U.

Brass Shim Washer

Fit over the top of the Main Shaft (if necessary).

Throwing Arm (34)

Clean the protruding end of the main shaft and the arm clamp with solvent to remove any trace of grease. Position the Arm on the Shaft with the friction strip downwards. Check clearances with the aid of a clay by gently pushing it under the friction strip (32) ensuring that the strip does not nip the clay in any position on the launch plate. If the arm is too high and is riding over the clay you can shim the launch plate either up or down and with a slight flexing of the arm a 1mm (approx.) clearance can be achieved. (See fig 7a Page 9).

Connect the Red and Black clip leads to a 12-Volt Battery and move the switch on the control panel downwards. The crank arm and shaft will rotate and stop. Disconnect the battery and hold the Crank in position, then set the throwing Arm to a 'Seven O Clock' position (Fig 7 Page 9). Tighten pinch bolt slightly and check clearance under the arm.

1 off – J.
1-4 off T.

Top Hat (37)

Fit inverted to the top of the main shaft with Shim Washer/s (T) underneath (See Fig 4 Page 8). When fitting this check the clearance between the top plate and throwing arm and add sufficient (2-4) washers to adjust this clearance. Tighten firmly.

2 each K, P
4 off – S.

Top Plate Assembly (38 – 53)

Attach by inserting the Brass Support Plate at the front of the top plate into the top hat (37) now fitted on the main shaft. At the same time slip the support block (41) at the other end of the plate. Locate the securing bolts and loosely do up. Note: - Fit bolts with their heads underneath and nuts on top. Shim with washers if necessary to provide suitable clearance for the throwing arm. (See Fig 9 Page 11).

Setting up Iris Action: - (Before Main Spring is fitted)

Rotate the arm by hand (anti clockwise) and check that the ballrace has clearance underneath the Top Plate and that it sits squarely on the arm. Adjust the clearance with extra washers under the 'Top Hat' if required. Set the arm forward so that the ballrace on the arm is at 'top dead centre'. This will cause the Iris to open. Adjust the position of the Top Plate so that the Iris is **just** fully open and lock the nuts at the rear of the plate. **DO NOT overdo this setting which will bottom out the Iris and cause undue strain on the mechanism.** (Fig 8 Page 10).

Test the action by rotating the arm by hand several times. The Iris should open fully then close. When set very lightly grease ballrace outer.

2 off – M
3 off – H
2 off – S

Hopper Assembly (55-56)

Find two open-ended rods with no cross drillings. Fit Rod Adjusting Arms to the ends of these rods with countersunk screws. The cross-drilled rod should be fitted to the front hole in the Horseshoe Plate (56) (See Fig 9 Page 11) Finally attach the rear rods to the Horseshoe by the Adjusting Arms with the screws provided. This assembly can be used as it is for 50-clay capacity. It is unnecessary to use the support bracket for this. To increase the capacity to 100 clays (approx.) unclip the 50-clay hopper and add three extension rods to raise the height and brace the centre with the support bracket. Check that the 'R' clip holes are in-line crosswise.

Set Hopper Spigots for Clay Size

Slide the hopper spigots forward in their slots until the clay has about 3mm clearance from the plunger. Check that the clay is central on the Iris and tighten the bolts. Set pressure on compression springs (see above) and test action by operating by hand. The bottom clay should fall on to the launch plate whilst the stack is held up by the plunger mechanism. Tighten compression on the plunger spring if double loading occurs.

Final Assembly.

When the preliminary checks are satisfactory fit the Hopper to the Top Plate.

50 Clays Stack.

The top section of the Hopper Assembly can be simply 'plugged' onto the top plate spigots and secured with an 'R' clip (Z) through the base of the front rod.

100 Clay Stack.

For 100 Clay operation the extension rods (54) will be required and supported in the centre by the Hopper Support Bracket (57) (Fig. 9).

Guards

Fit guardrail to the front of the Trap (as per Fig. 10 Page 12) with M6 nuts and screws. Spring Plastic Rods into place as indicated. The guardrails are made to be rapidly removed for ease of transportation. We recommend that they be fitted at all times when the trap is operated in an exposed position.

Main Spring, (58)

Hook the Main Spring (58) onto the Crank Arm (9) and feed the screw end through the hole in the rear of the frame. Fit adjustment Knob or Nut to the outside and tension spring to required rate.

Release Cable

Plug into Black socket at rear of machine.

NOW PLEASE READ THE OPERATING MANUAL FOR FURTHER INFORMATION!

Please operate safely and observe the instructions on the Trap Top Plate.

Good Shooting!

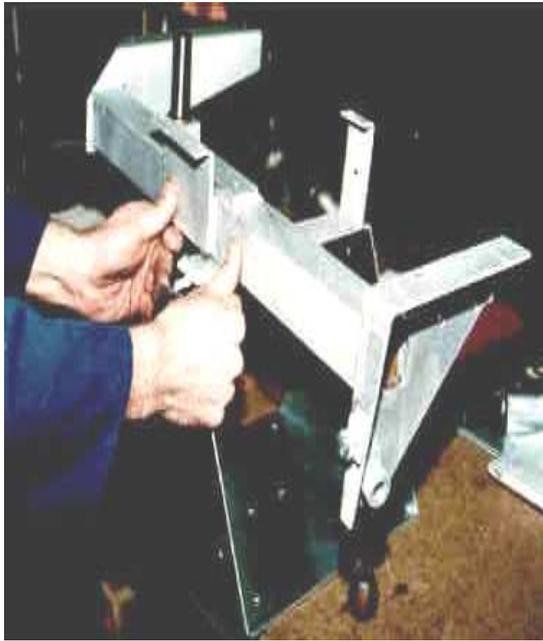


Fig 1

Reed Switch

Magnet



Fig 2

Top Hat

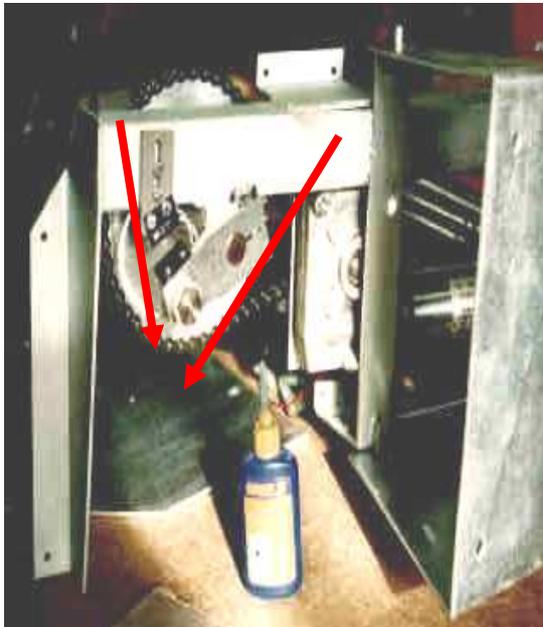


Fig 3

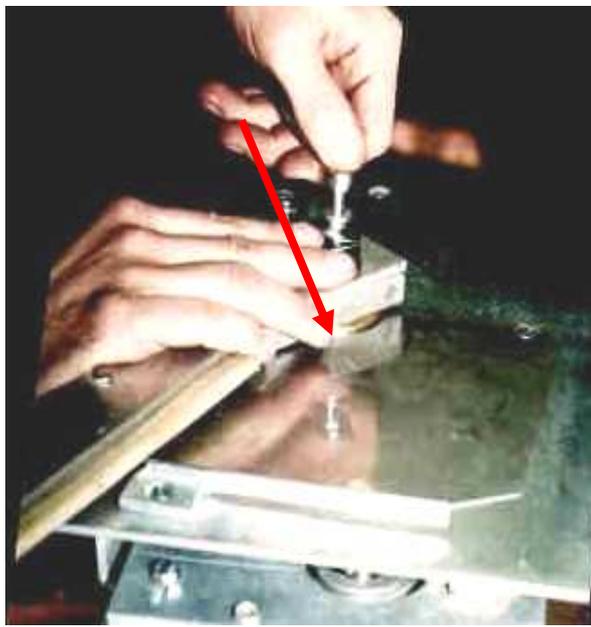


Fig 4

Wiring Diagram

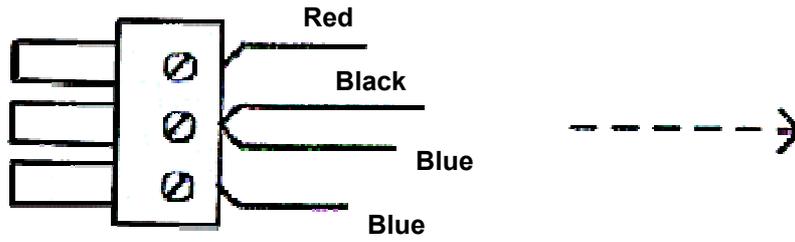


Fig 5

Launch Plate

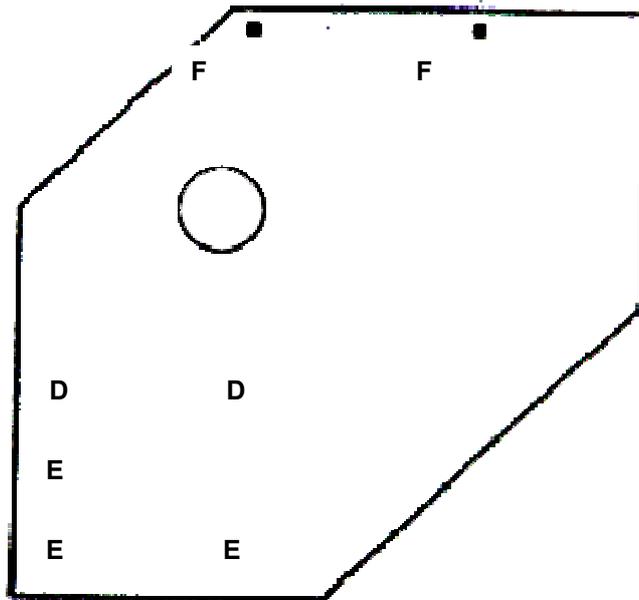


Fig 6

Throwing Arm

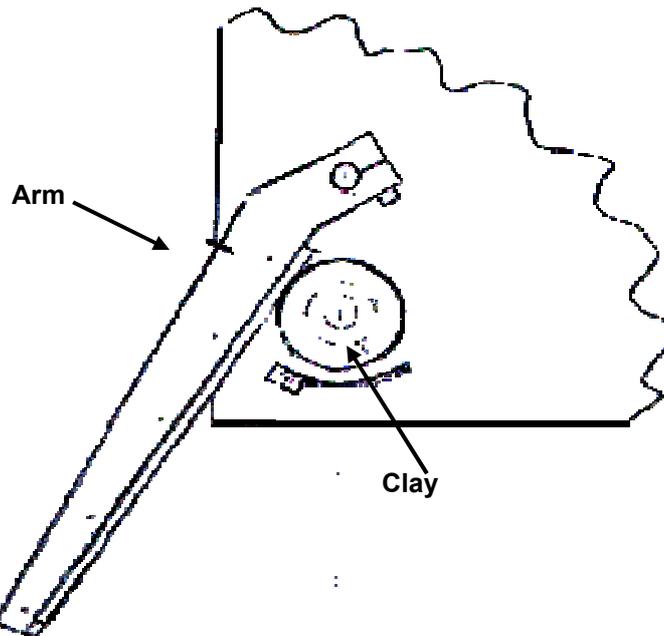
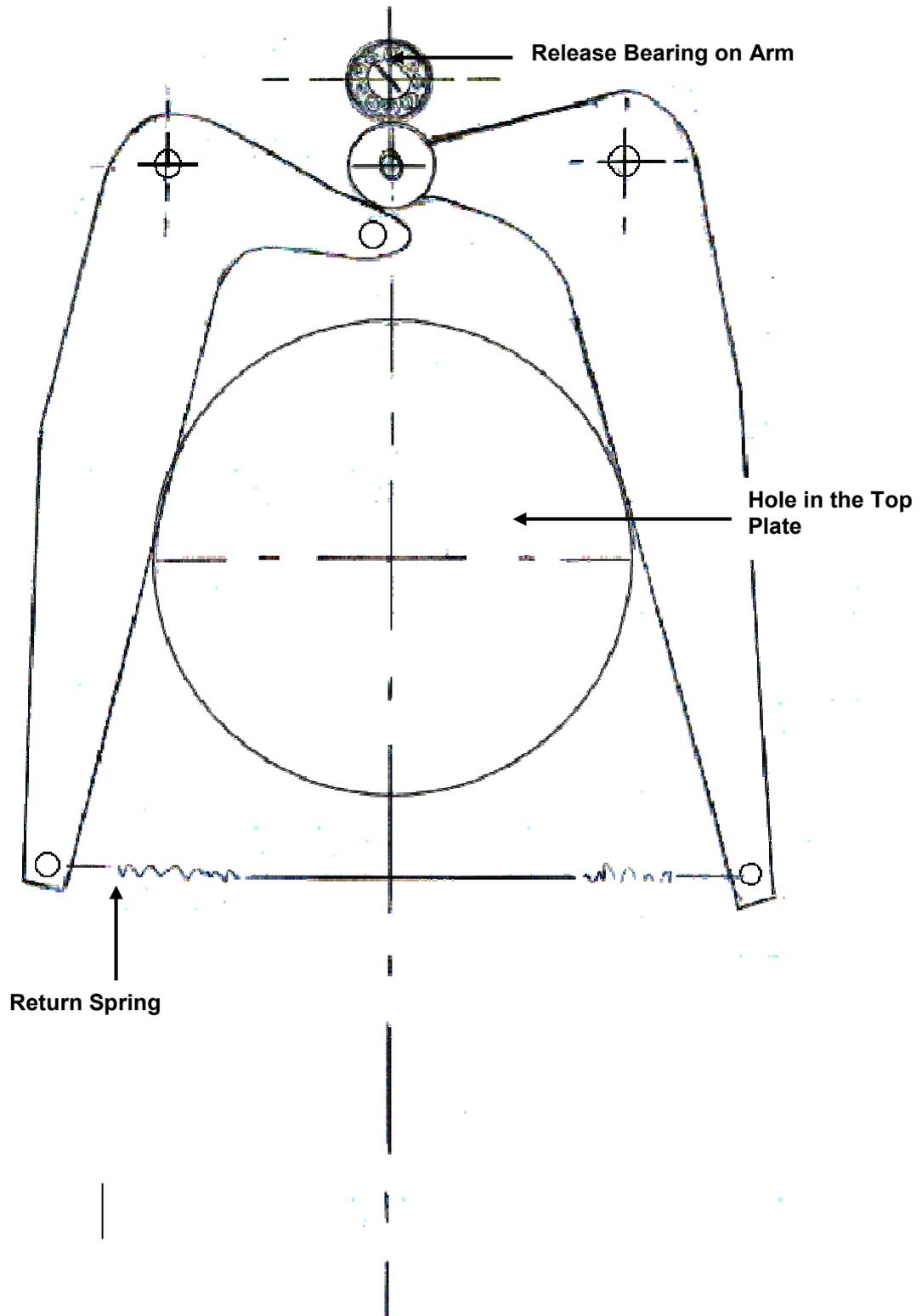


Fig 7

Arm Cam Set at T. D.C



Move Top Plate forward or back so that the Iris Arms just clear the hole to allow the clay to fall through. **DO NOT** over adjust! This will cause excessive movement of the Iris Arms and damage the mechanism. Lock in place when set up is correct.

Fig 8

Hopper Extension

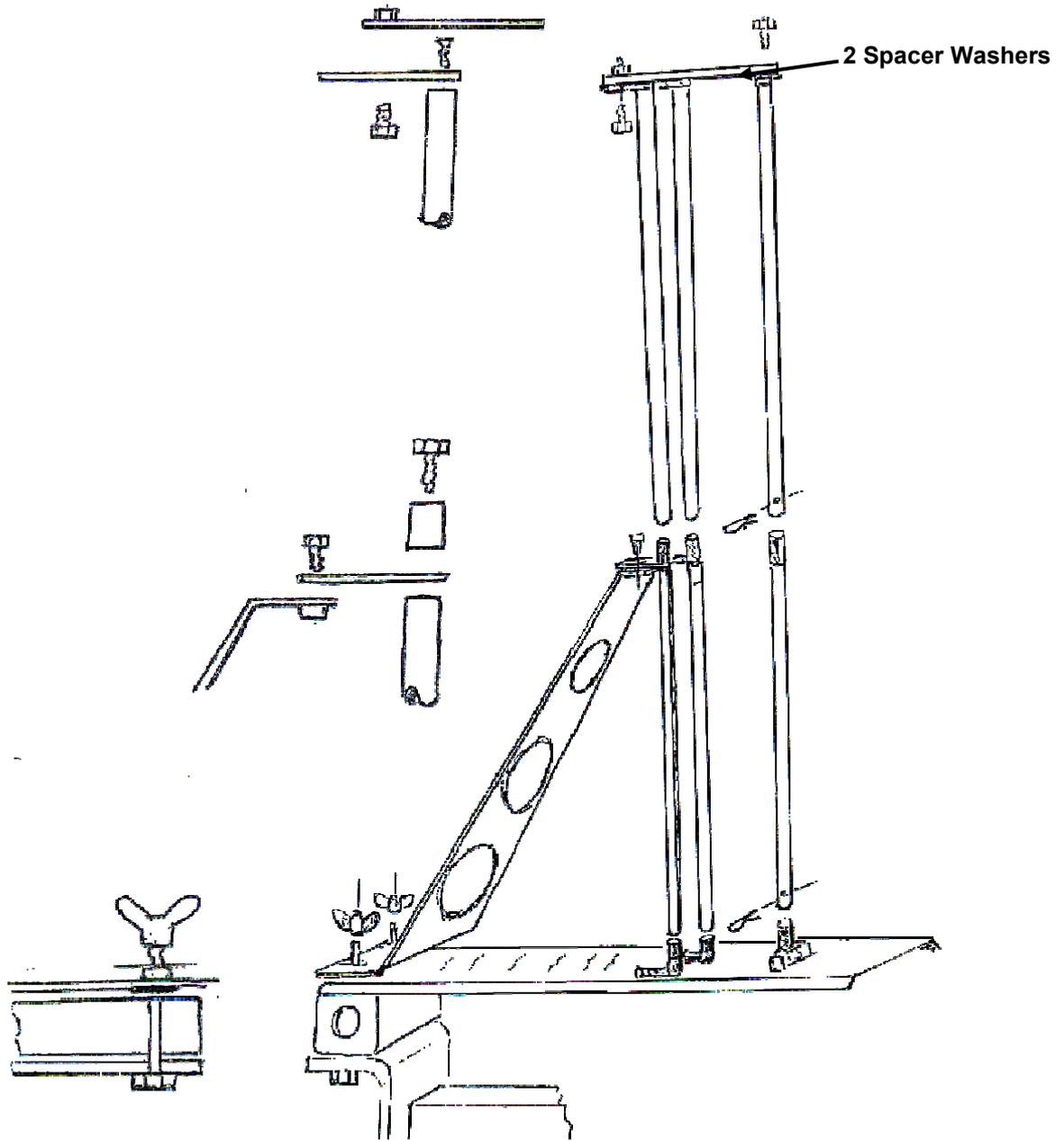


Fig 9

Guard Detail for Silhouette Clay Trap

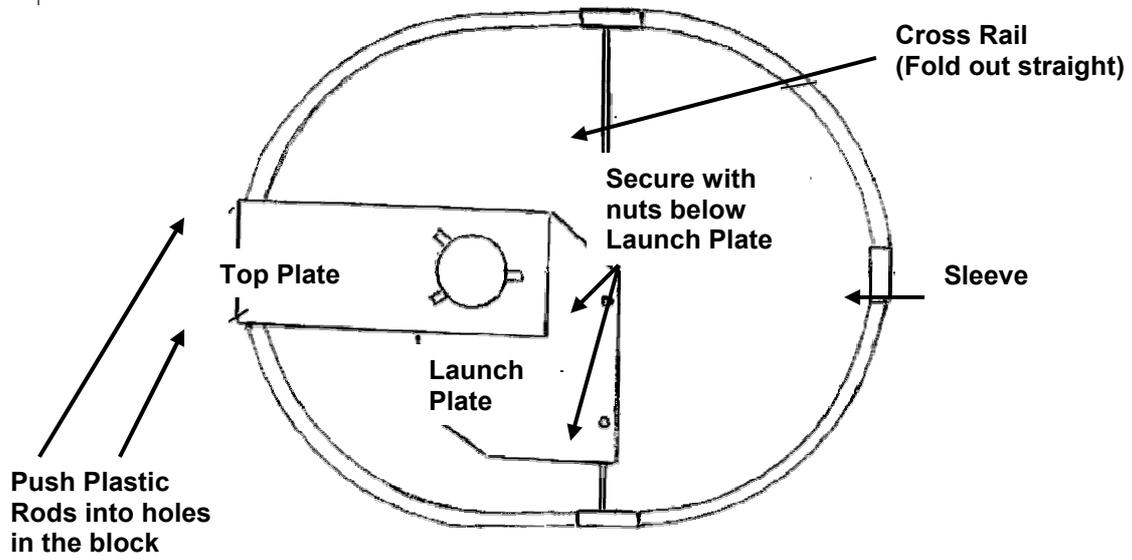


Fig 10

Circuit Drawing

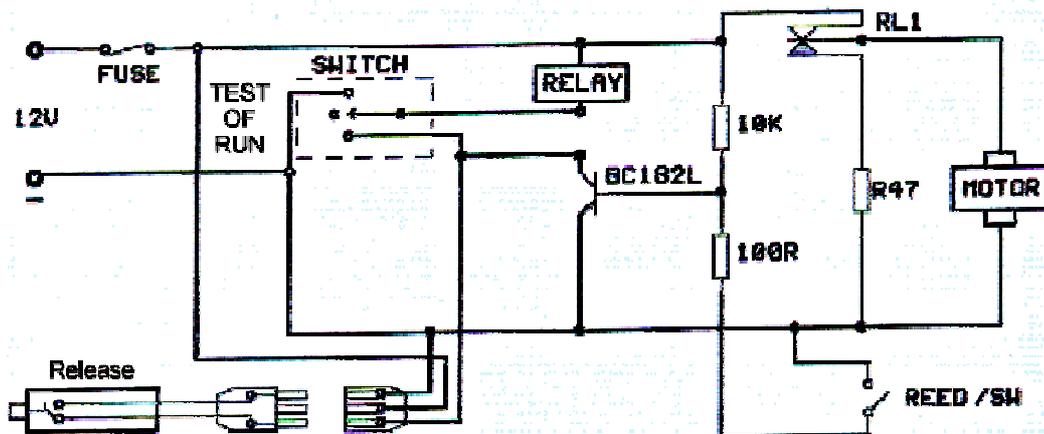


Fig 11

Operation and Maintenance.

Checking clearances.

BEFORE fitting the main spring (58) on the trap move the launch arm (34) anticlockwise under the top plate (40). Check with the aid of a clay that when you gently push the clay under the friction strip (32) that it does not nip the clay in any position on the launch plate. If the clay is nipped tightly then it will break on launching. If it is tight simply take hold of the arm at its tip and gently flex it upwards just enough to ease the clay. DO NOT over bend. Similarly if the clay is unduly loose under the friction strip, flex it downwards. A clearance of approximately 1mm is the correct setting. (See Page 9 Fig 7).

Guards.

Please use the Safety Guards provided for your safety and the safety of others. Attach the Safety Cross-Member to the front of the launch plate with the nuts and bolts provided. Couple two of the Red plastic Rods together with the connecting sleeve attached and insert into the lugs on the cross member (bending them into a semicircle) around the front of the trap. Fit the other two rods to the cross member and complete the circle by springing the ends into the two holes in the ends of the block supporting the top assembly. This provides a safety barrier to remind the user of the path of the high powered throwing arm! (See sketch at end of manual).

(See Fig 10 Page 12).

Clay Sizes.

To change the feed to Midis, Minis or non-standard clays, loosen the Spigot Clamps (33) and with the aid of a clay placed **centrally** on the Iris Plate adjust the hopper to suit the diameter required. Allow a small amount of clearance between the clay and the plunger (50), to ensure an easy feed for the clays, and lock in position. Adjust the top and centre of the hopper similarly. Check that the clays slide through the hopper to smoothly without sticking anywhere and without undue looseness. Lock all screws when satisfied with the settings. (See Fig 15 Page 20).

Connecting the Battery

Check that the switch on the control panel at the rear is in the central position. Plug the release cable into the line plug on the trap. Connect the large clip leads to a fully charged 12-Volt battery. The RED LEAD should be connected to the + terminal and the BLACK LEAD to the terminal.

Operating the Trap.

Place the trap on a firm surface and point it in the direction that you wish the clay to travel. Place a supply of clays in the hopper, making sure that the bottom clay sits straight and level on the Iris support plates (38/39). Switch to 'Run' by depressing the switch at the rear of the trap. The arm will rotate anti-clockwise loading the first clay onto the launch plate and come to rest at a "Seven O Clock" position.

Move the main switch upward momentarily to launch a clay. Continual pressure on the switch will launch a string of clays until it is released or the hopper empties.

When you are satisfied with the trajectory of the clay it is a good idea to prevent the trap from moving. De-cock the Trap by operating the switch upward to fire off the arm. Then either peg to the ground by pushing the pegging stakes provided through the holes in the base or fastening to a pallet, trailer etc. with bolts or "G" cramps. Vertical angles are adjusted by loosening the side brace and rocking the trap on its base. The Trap is now ready to be operated remotely.

During use.

Before refilling the Hopper with a fresh supply of clays or making any adjustments to the trap, ensure that it is first de-cocked by moving the switch at the rear of the machine briefly upwards. This will fire off the loaded clay and leave the throwing arm forward and in a safe position. You can then safely move the trap or make adjustments without fear of injury. Re-cock the trap by depressing the switch.

When you are finished with the trap.

Fire off the loaded clay, as above, disconnect the battery leads and reconnect the reverse way round (i.e.: Red to - Black to +). Move the switch upwards and the arm will rotate clockwise to point forward. Do not reverse without first firing off the clay loaded on the launch plate. If you do then double loading will result! Loosen the main spring to park the throwing arm under the top plate. Take any remaining clays from the stack and remove the hopper. Store in a dry place. See general maintenance.

General maintenance.

Occasionally smear a little light grease on the iris ballrace attached to the throwing arm. Lightly grease the brass Top Plate Pivot (36). Do not over lubricate, as this will impair the action of the mechanism.

Clean the launch plate to remove any build up of debris after each session.

A wipe over with a solvent cleaner and a little light oil (Duck Oil) will prolong the plate's surface and improve performance. We do not recommend the use of WD40 or other penetrating type oils that could effect the working of the clutch.

There is little else that requires attention except for any obvious loose screws etc. that may appear after prolonged usage.

The Nyloc nuts (44) on the top plate have been preset. If any adjustment is necessary do not over tighten such as to inhibit the free movement of the clay release mechanism.

The Plunger Block (52) can be set to accept a variety of clay thickness' by adjustment of the clamping nuts.

Problem Solving.

1: Clays not feeding.

a). Clays wet or sticky.

Check that the clay separator is reaching and parting the clays.

b). Iris is not fully opening.

Check that the Iris (38/39) is opening fully. If it is not, remove the main spring and rotate the arm into the forward position. Slacken the screws at the rear of the top plate holding the top plate to the main frame. Check that the Iris Ballrace fitted to the launch arm engages the release mechanism. Carefully move the top plate assembly forward or backward so that the Iris clears the hole through which the clays feed. When correct tighten screws to secure plate.

c). Plunger sticking.

Keep the plunger (50) clean and check setting.

d). Excessive lubrication.

DO NOT over lubricate the trap. Covering the trap with excessive amounts of oil or spray will inhibit the normal working. Only lubricate as per instructions in this manual.

2: Clays not falling in correct position on plate.

Possible cause: Uneven ground causing trap to tilt to one side. Remedy, straighten to level position. **Iris not set centrally:** See setting clay size.

3: Clays breaking on launch.

Possible cause: -

a). Pick ups: Check before use for chips or cracks before re-using clays.

b). Clay being nipped by arm: Remove the main spring (58) and rotate the arm to allow it to push a clay up its length. Stop half way and check that there is free movement between the clay shoulder and the friction strip. If there is not it is probably nipping the clay on to the launch plate. To remedy this, very slightly bend the arm upward to produce a clearance of approximately 1mm along the arm length. ('See check clearances'). (Fig 7 Page 9).

c). Arm over-riding clay: Proceed as above bending arm downward to produce correct clearance.

d). Arm moved from correct setting: If arm is too far out when fired it will strike the clay with force causing it to shatter. To check if the arm is set correctly, remove the main spring (58) and connect the battery, switch on and allow the arm to rotate until it stops. It should then be at a Seven 'O' clock position. If it is not, reset the throwing arm by loosening the pinch Bolt (30a) and holding the arm to the spindle. (Use only a good quality spanner). Hold the crank arm (9) in the position that it stopped and move the throwing arm to the correct position and re-tighten. Check settings by repeating the rotation test. The friction strip should be in contact with the clay at rest. (Fig 7 Page 9).

e). Dirty launch plate: This can increase friction and cause breakage. Simply clean the plate with a suitable solvent cleaner.

f). A build up of dirt underneath the soft landing plate: Clean out any residue from underneath this plate.

g). Friction Strip worn or damaged: Check and replace if necessary.

4: Failure to fire clays

Flat Battery. Make sure battery is fully charged.

Poor Connection. Check for proper connections to battery.

Fuse Blown. Replace fuse on power lead (15amp).

Faulty Release Button. Check release button is making contact. Short OUTER contacts on socket to verify. (DO NOT make contact with the centre pin, which is used, for an optional radio release)

Motor Leads Disconnected. Check connection to motor.

Trap fires without stopping

1). Release button is stuck in the on position. Disconnect from the plug to verify. Check that the plug/socket are not full of water.

2). Stop switch not working. Check reed switch (12) and magnet (13) are in position (not missing).

3). Crank arm is over 'Top Dead Centre'. Advance reed switch by slackening mounting plate (11) and moving towards rotation of crank. If set too finely this effect can sometimes appear after prolonged use or during hot weather when the mechanism has loosened up. **Warning!** De-cock the trap before handling as any movement of the stop switch will instantly fire the trap.

Customising

Setting response time. The triggering response time can be varied by adjustment of the reed switch (12). Note; Too fine an adjustment will result in continuous firing (see problem solving above).

High angle targets

In order to angle the trap for a high rising target it is necessary to stand the trap on a block, pallet or something that raises it above ground level. This allows the rear of the trap to be lowered to produce the required elevation.

Additional Features

Foot Switch Operation

The release can be operated either by hand or by foot pressure for solo use. We recommend that for foot operation that the release switch is secured to a flat piece of board or similar material. It is a good idea to place the switch in a polythene bag in very wet or dirty conditions.

Radio Release

The line socket on the rear of the trap is wired to provide a 12V supply for most proprietary radio release systems. (See circuit diagram). (See Fig 11 Page 12).

Cable Release Extension

The extension cable for release can be as long as you require. Energising current requirements are less than 50Ma.

Main Springs

Springs fitted are a medium power for general use. Two alternative springs are available at extra cost; Light and Heavy.

Oscillating Turner Base

For a variation in horizontal target angles for DTL, Sporting etc the trap can be mounted on our Oscillating Turner Base. The standard trap base is pre-drilled to secure the trap to the Turner Base. The trap and turner are connected together electrically and operate from the release switch. On firing the trap the turner will rotate through an arc over a predetermined range. The amount of turn is completely random and is 'unreadable' by the shooter. Having moved (or not) the turner remains stationary until the next clay is launched. In this way the turner make almost no demands on the battery thereby conserving battery charge. Alternatively the turner can be operated by a three button hand set or radio release that will give complete control over the trap, turner and random action shooting position. (See Fig 12 Page 19).

Silhouette and Oscillating Turner Base

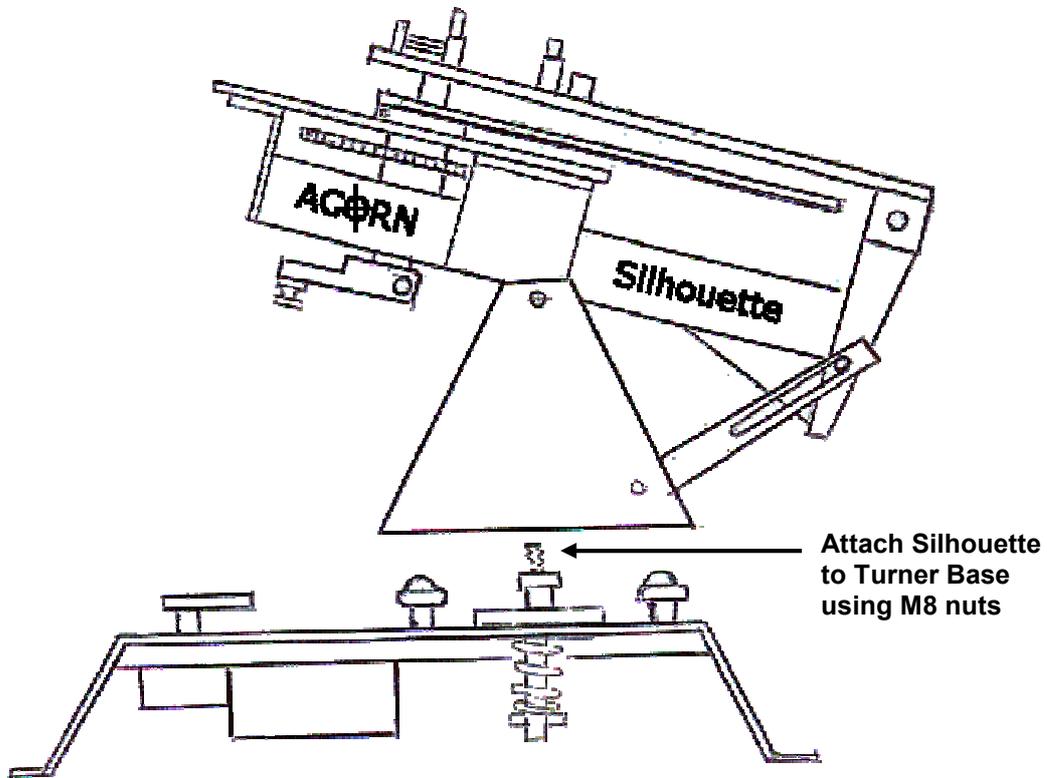


Fig 12

Silhouette and Trolley

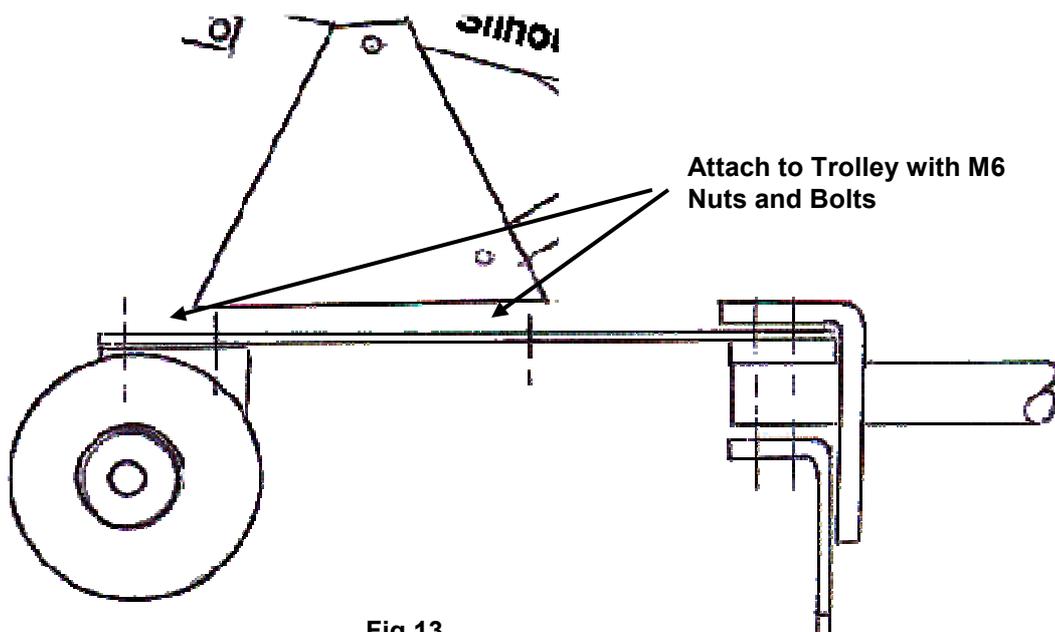
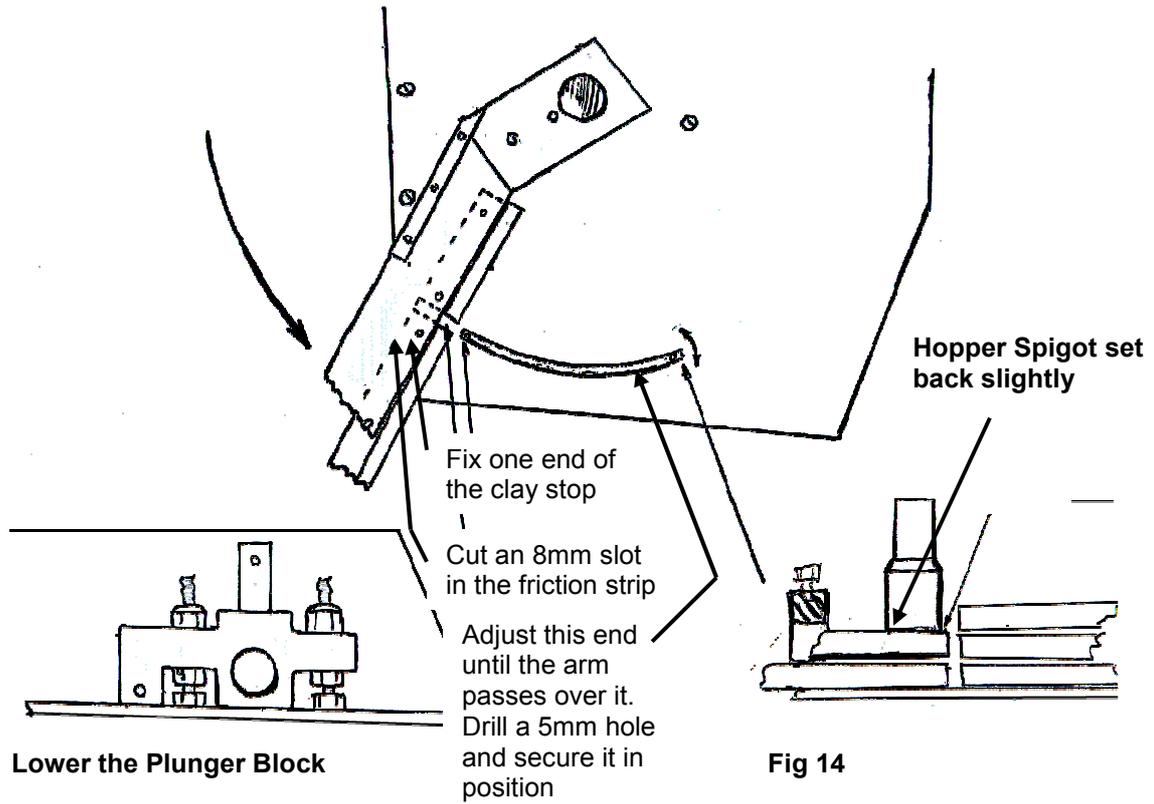


Fig 13

Battue Conversion



Mini Conversion

