

Making a manual hay baler



This is a manual hay baler made using some draft instructions from Caring for God's Acre.

www.caringforgodsacre.co.uk

but with adaptations.

The side supports for the bin are new 3x2 and 4x2 timber, the bin lining is new plywood. I bought some new screws and nuts and bolts. The rest is recycled, mainly from pallets.

You can find a video of how to use the machine at:

www.caringforgodsacre.org.uk/our-work/films/

All measurements in cm unless it says inches.

Caring for God's Acre is grateful to John Langran of Llanfyllin for his work in producing these instructions



FIRST MAKE THE BASE

You need:

3x2: 2 lengths @ 150 cm

2 lengths @ 31 cm

Pallet wood strong enough to stand on. 39.5cm lengths.

Screws and nails.

4 pieces of hose with longways cut to hold strings. Position 12 cm from edges of base but easiest to wait until you have made the box so that you can see exactly where they will be. Other designs use different ways of holding the strings in position inside the box. The important thing is that the string is held in place but can pop out of its holders easily when the bale is complete.

1 x bolt, nut and washer to hold the front of the compression box in place. Wait until you have made the box or you won't be able to position it correctly. See page 7.

You want this bolt to stay sticking out of the base when you dismantle. To achieve this drill a hole for it with a slightly narrower radius and screw it into the base from the underneath. Then pull it into the wood by tightening the nut.

2 x right angle brackets, nuts and bolts. These hold the rear of the compression box in place. Wait until you have made the box or you won't be able to position correctly. See page 7.



Closeup of
business end
of base

THEN MAKE THE BOX

Materials:

Side supports: 6 lengths 4x2 x 108cm

Rear guides for lever system:

Top

3x2: 2 x 30cm

4x2: 2 x 22.5cm

Bottom

3x2: 2 x 25cm

4x2: 2 x 22.5cm

Half inch smooth ply for box lining

1 of 100 x 39.5 cm for back

2 of 100 x 30.5 cm for sides

(if ply is smooth then the finished bale will slide out more easily)

Rear retainers for lever mechanism. 4 large eyelets, 2 bolts to fit.

Top and bottom front braces: 2 lengths 3 x 1 (pallet wood) x 49 cm

Hooks for strings

Method:

First make rear vertical box supports by screwing 2 lengths of 4x2 together longways.

Fix these supports to your base with temporary screws. The supports overlap the sides of the base and touch the ground. See the picture on page 1.



Fix the box back and side plywood lining by screwing to the rear supports. The plywood butts down to fit on the top of the base.

Fix the front braces.

Fix the rear guides and the horizontal strengtheners that hold the lever vertical support in place. The lever support is normally 2 inches thick. You need to allow a little more space so that it can slide in easily.



The inside top of the door is chamfered so that the compressor board doesn't catch on it.

The vertical board of the door that is hinged is also chamfered so that the corner does not get in the way of the bale coming out of the box.

The slits are positioned to match the holders for the strings on the base. The top cross piece is 8 cm from the top of the door. The bottom cross piece is 11 cm from the bottom of the door.

MAKE THE DOOR

2 strong cross pieces both 37cm.

Top piece: 4x1.5cm. Bottom piece: 8 x 1.5cm

4 uprights. I used pallet wood 8x2cm x 72cm

Stop and catch 2 of 10 x 3 x 1cm.

Hinges x 2.

My hinges started bending so I replaced them and added 2 large eyelets, iron bar and wedge as in the picture, to take the strain when the bale is compressed.



MAKE THE LEVER ARM AND MECHANISM FOR THE COMPRESSOR.

Plywood. 1 piece 36 x 27 cm.

2 strong bolts with self-locking nuts.

At least 12 x 3 inch screws.

1 long bolt with end sawn off and 2 nuts to take the vertical strain.

3x2:

1 of 120cm

2 of 51cm

4x2:

2 of 27cm

1 of 132 cm

1 of 60cm

The arm here is 3x2. The plunger, the vertical support and the supports for the plywood are 4x2. It might have been better to use stronger plywood here, I will probably replace it.

Vital measurements:

A Distance between bolts 18cm

B Plunger bolt hole to plywood compressor plate 54cm

C Top bolt to bolt in vertical shaft 35cm

D Bolt must be far enough away from the bottom end of the handle to allow rotation

Mark the back of the vertical support. It is sometimes difficult to see quickly which way it slides into place when assembling.

FIT IT ALL TOGETHER

You have the front view on page 1.

REAR VIEW

The rear vertical shaft fits between the supports on the rear of the box and is held in place by the two bolts A that pass through eyelets on the supports. Eyelets are slanted so that the bolts don't slip out.

The strain bolt B in the vertical shaft slips underneath the cross pieces at the top of the back of the box. It stops the shaft moving up when you compress a bale. Best to fit this when you assemble.

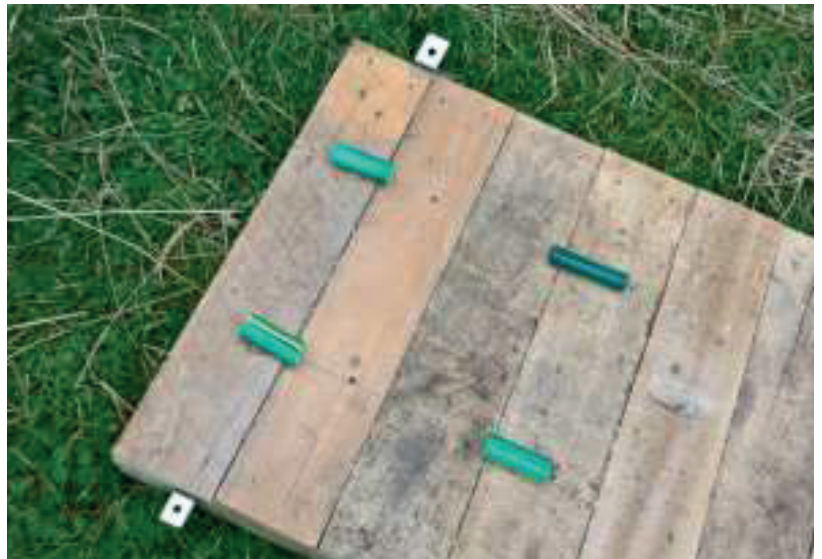
The hooks C are to take loops that you tie in the ends of the strings to hold them in place.



FRONT VIEW OF BOX

This shows the bracket in the centre of the front of the bottom brace that fits over a bolt in the base.

It also shows the strings in position ready for baling.



This shows one of the two brackets at the bottom of the box side supports which fit over brackets on the sides of the base and are then fixed together with a nut and bolt. Best to fit these when you have finished everything else, to get them in exactly the right places.

A better way of attaching these rear supports may be to drill a hole through each support for a 4.5 inch bolt which can then go through a hole in a bracket on the base and be secured with a wing nut.

EXTRAS

It is possible to fit a string to the front brace and an eyelet to the lever arm to hold down the compressed bale when tying up.

It is useful to fix a catch or a string to hold the door open while you are fitting the strings or removing a bale.

