



# FOLDING WORK BENCH



I built this bench in 2000 to facilitate a workspace under our carport , therefore the work bench needed to be stored against the wall when cars were under the carport. It has so far seen me through many home projects, many craft projects, a baby shower, BBQ's and parties and it is still going strong!

These PDF Plans show step by step instructions on how to build a folding work bench which folds off of the wall to be 100% mobile and accessible from all sides.

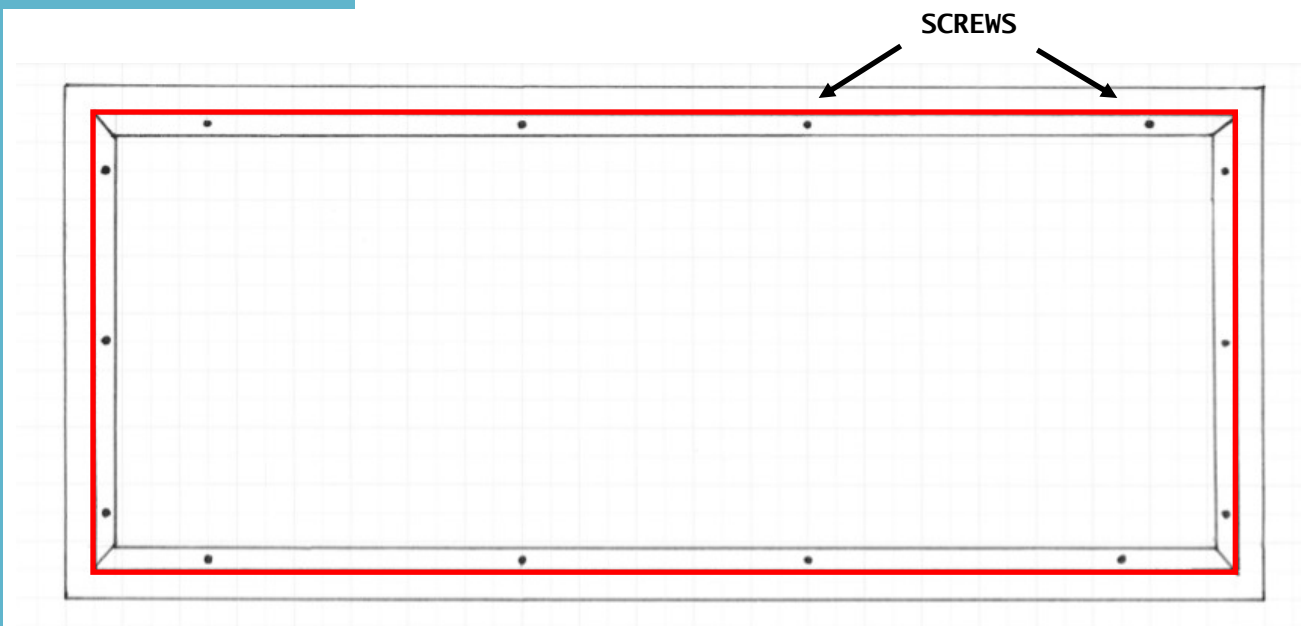
Great for someone short on space, who enjoys DIY, home building or craft projects.

## CUTTING LIST

PARTS	NO.	LUMBER (")	ACTUAL SIZES (")	LENGTH
BENCH TOP	1	-		83"(L) x 36"(W) x 1 1/2"(T) *SEE NOTES
LEGS	4	3x3	2 1/2 X 2 1/2	29 1/2" LONG *SEE NOTES
APRON	2	2x4	1 1/2 X 3 1/2	77 1/2"
	2	2x4	1 1/2 X 3 1/2	30 9/16"
LEG RAILS	4	1x4	3/4 X 3 1/2	27 3/8"
SPREADER BAR HOUSING	2	1x4	3/4 X 3 1/2	22 3/8"
SPREADER BAR	1	2x3	1 1/2 X 3 1/2	73"
SUPPORT RAIL	1	3X4	2 1/2 X 3 1/2	16"
	1	1X4	3/4 X 3 1/2	16"
LOCKING MECHANISM	1	2X4	1 1/2 X 3 1/2	8"
	1	2X4	1 1/2 X 3 1/2	10"
HARDWARE	4			3/8 5" Cuphead bolts
	1			3/8 3" Cuphead bolt
	9			Washers
	14			4" screws
	20			2 1/2" screws
	12			1 1/2" screws
	8			2" screws
	16			1" Tek screws
	4			Breaking castor wheels with base less than 2 1/2"

When constructing my bench I used all DAR Pine.

## STAGE ONE - Bench Top



Starting with the bench top (83"(L) x 36"(W) x 1 1/2"(T)) laying face down, mark a 2 11/16" border around all edges. This marks the outside of the apron.

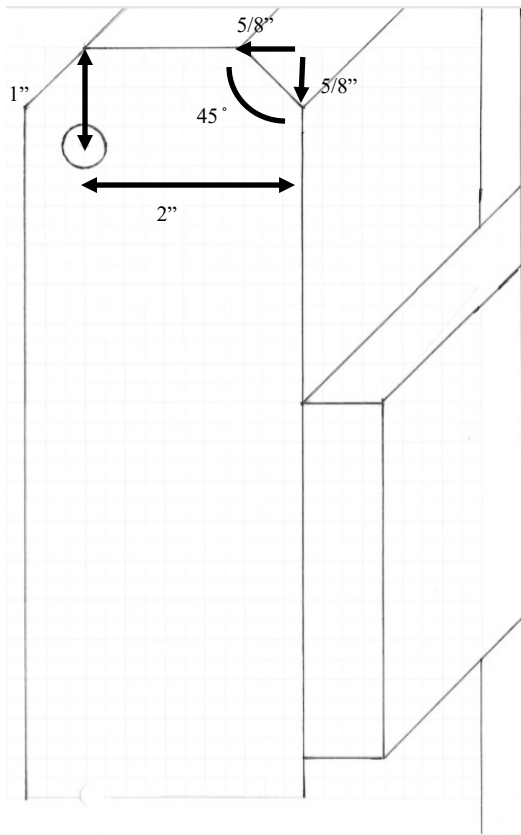
In order to assemble apron, you can either use butt joins or 45° mitres depending on your confidence level with mitres or access to the correct tools.

If using butt joins, your 30 9/16" measurement will become 27 9/16" to sit flush in between your 77 1/2" lengths.

If using mitres, measure and cut 45° mitres, 77 1/2" long point to long point and 30 9/16" long point to long point to create the apron. Once the apron is complete, pre-drill mitres and fix with 2 1/2" screws to strengthen join.

Position apron on bench top with the outer edge in line with the previous 2 11/16" border. Pre-drill and screw off with 4" screws where indicated in the diagram above, being careful not to drive the screws through the top of the bench.

## STAGE TWO - Legs



Take 2 leg lengths (2 1/2 x 2 1/2 x 29 1/2)

To allow the legs to fold, the top of the legs need to be reshaped as per the diagram.

To do this measure 5/8" down and 5/8" across to create the 45° angle as shown and make the cut.

Measure and mark 2" in and 1" down for positioning of cup head bolt.

Drill 3/8" hole at mark. Be sure to drill square so as not to later affect the folding action of the legs.

Measure from the bottom of each leg on the furthest face from hole drilled in the step above and notch out a 3 1/2" by 3/4" housing for the leg rails.

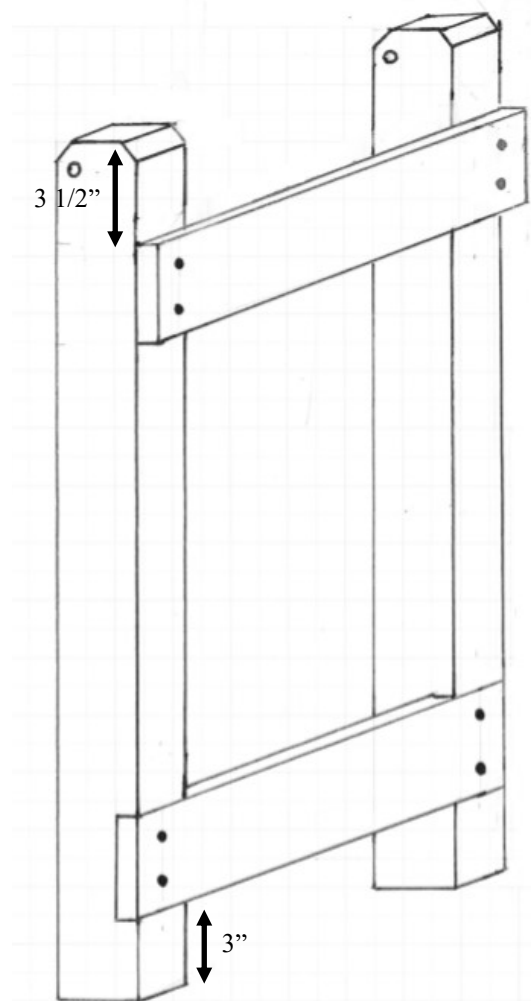
Slot leg rail (3 1/2" x 3/4" x 27 3/8") into notched housing, pre-drill and screw off using 4 x 2 1/2" screws as shown.

To attach top rail, measure 3 1/2" down from top of leg, position, pre-drill and screw off using 4 x 2 1/2" screws as shown.

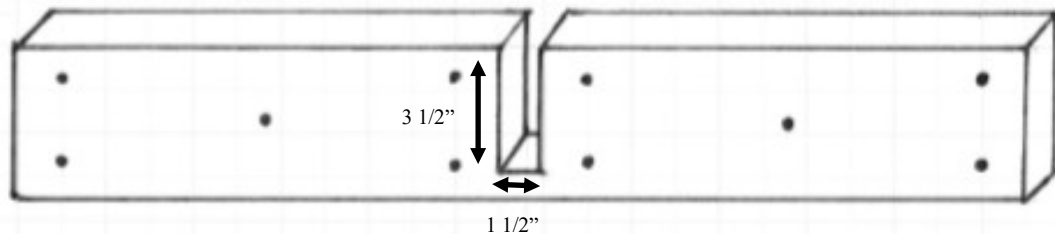
The top rail is face mounted not housed in legs. This will stop legs from over extending once the bench is assembled.

**Note:** when screwing off rails make sure the leg frame remains square.

**Repeat Stage Two to create second leg frame.**



### STAGE THREE - Spreader Bar Housing Rail

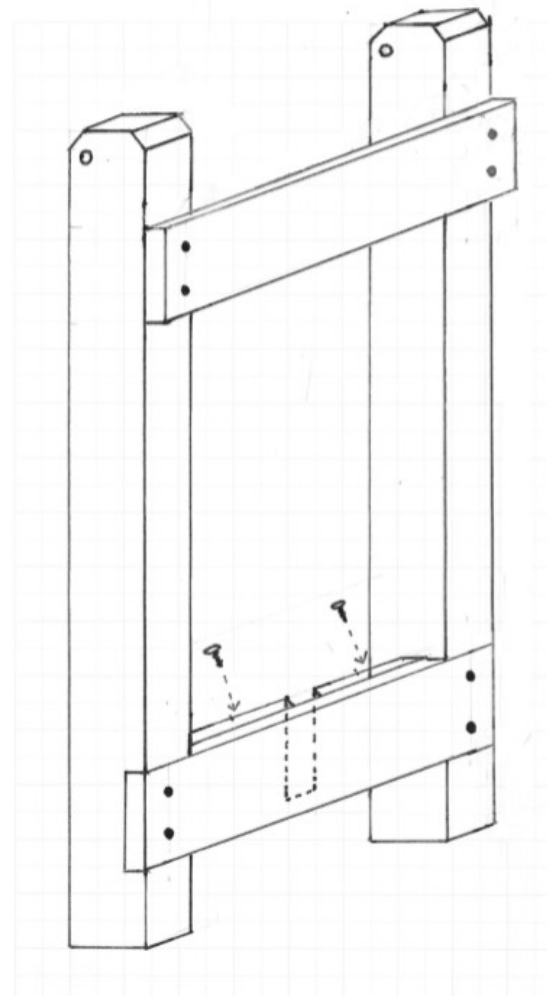


Take spreader bar housing rail ( $3\frac{1}{2} \times \frac{3}{4} \times 22\frac{3}{8}$ ") measure and mark centre. Centring over this point mark  $1\frac{1}{2} \times 3\frac{1}{2}$ " housing to take spreader bar.

Set out and pre-drill for  $1\frac{1}{2}$ " timber screws where indicated above.

Take spreader bar housing rail and screw to the back of the housed leg rail as shown in diagram.

**Repeat Stage Three on the other leg frame.**



## STAGE FOUR - Attaching Leg Frames to Bench Top

Measure and mark 3 1/2" in and 1" up on the apron as below.

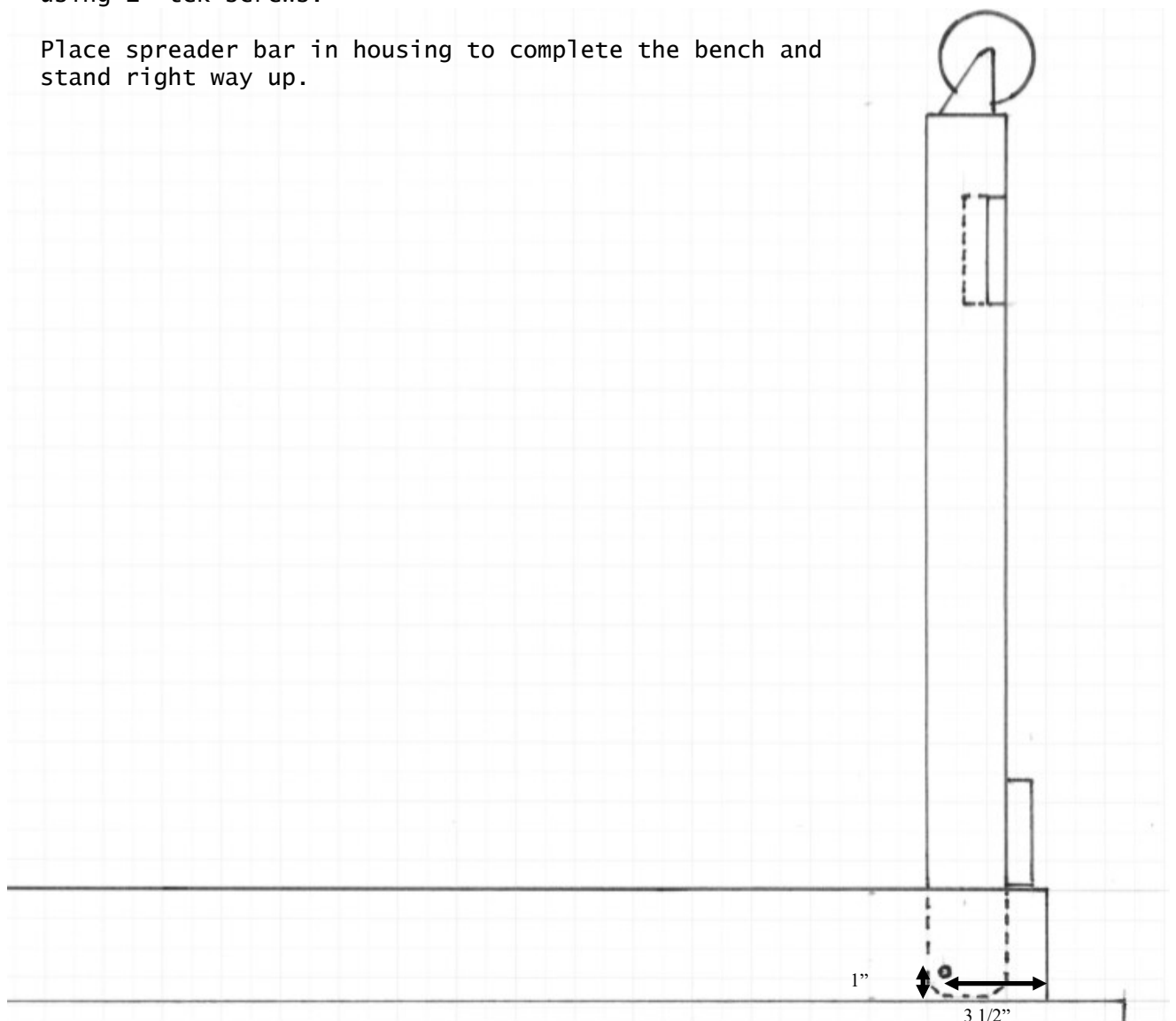
Drill 3/8" hole to house 3/8" 5" cuphead bolt.

Align this with previous hole drilled in leg frame at stage two. Insert cuphead bolt, including a washer in between the leg frame and apron. You should also include another washer between leg frame and nut.

**Note:** Tighten nut firmly but not over tight to allow the folding of the leg frame.

You may also attach your 4 breaking castor wheels to the base of each leg using 1" tek screws.

Place spreader bar in housing to complete the bench and stand right way up.



## STAGE FIVE - Locking Mechanism

The key to mounting this work bench to the wall lays in the unique wall mount.

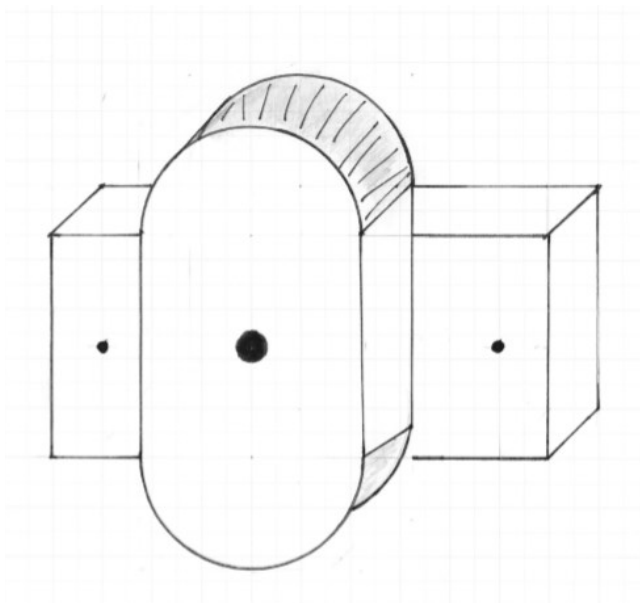
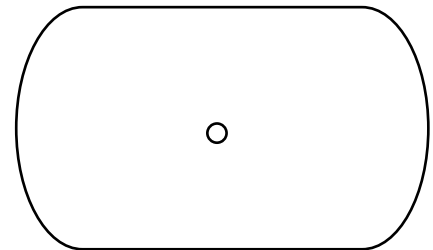
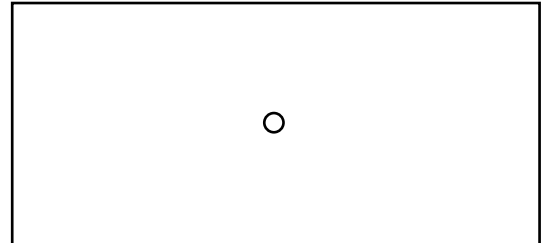
The bench sits on a support rail attached to the wall which allows it to fold away while remaining detached from the wall.

The bench is tilted to sit on the support rail and held in place by a pivoting lock mechanism.

Take the larger locking mechanism timber (3 1/2" x 1 1/2" x 10"), mark centre and drill a 3/8" hole.

On the reverse side, using a spade bit, drill out 1" hole to house the thickness of the 3/8 nut from the 3" cuphead bolt.

You will also need to pre-drill two holes as shown below to allow for wall mounting.

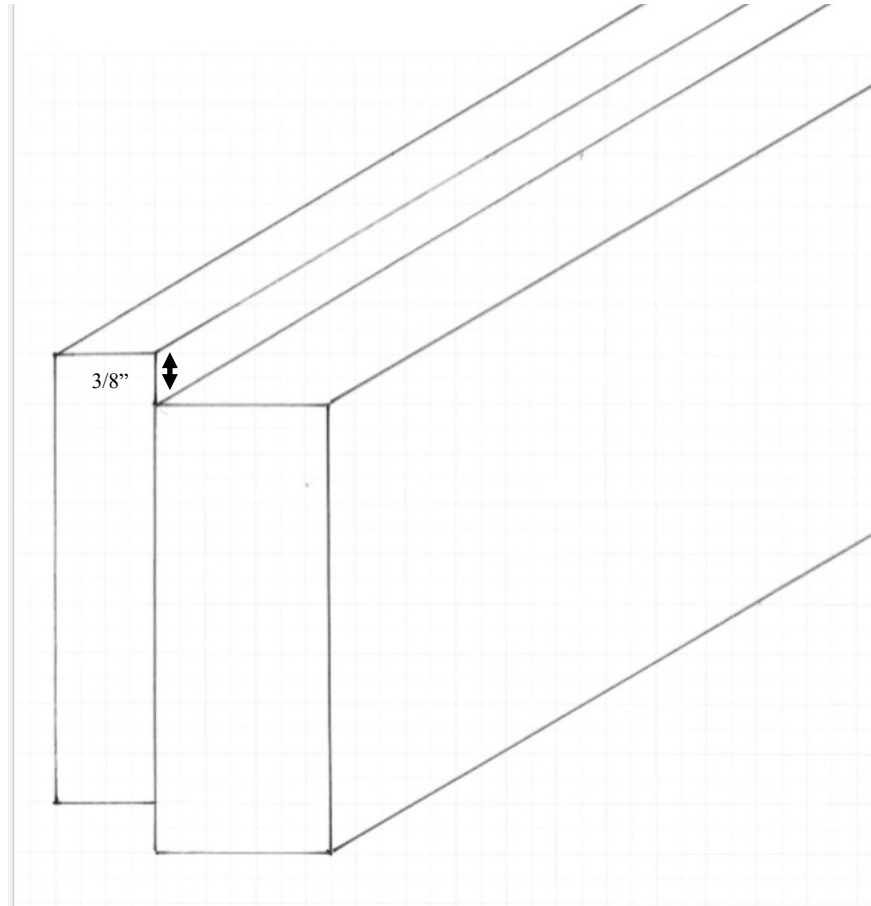


On the smaller locking mechanism timber (3 1/2" x 3 1/2" x 8"), mark centre and drill through with 3/8" hole.

Round off corners using a jigsaw or alternatively this can be cut roughly and sanded to achieve the same outcome.

The rounded locking mechanism can now be bolted to the front of the first timber with washer in-between.

## STAGE SIX - Support Rail



Take your 3 1/2" x 3/4" x 16" support rail timber and attach it to the 3 1/2" x 2 1/2" x 16" support rail timber leaving a 3/8" lip using 8 evenly spaced 2" timber screws.



## STAGE SEVEN - Positioning Wall Support and Locking Mechanism

In order to find the height of the support bracket, you will need to roll your bench flush against the wall you wish to mount it on.

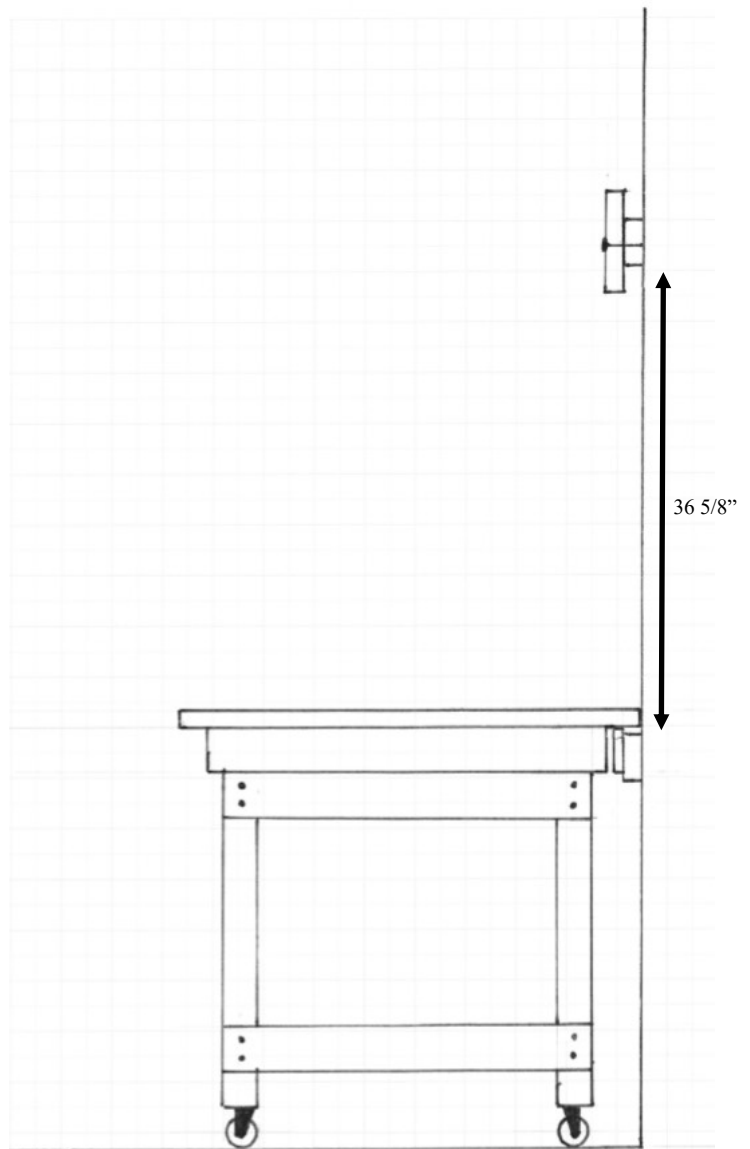
Position your support rail hard against the underside of the benchtop whilst it is flush against the wall. This will be the correct positioning for the support rail.

Mount to wall using fixings to suit your wall material.

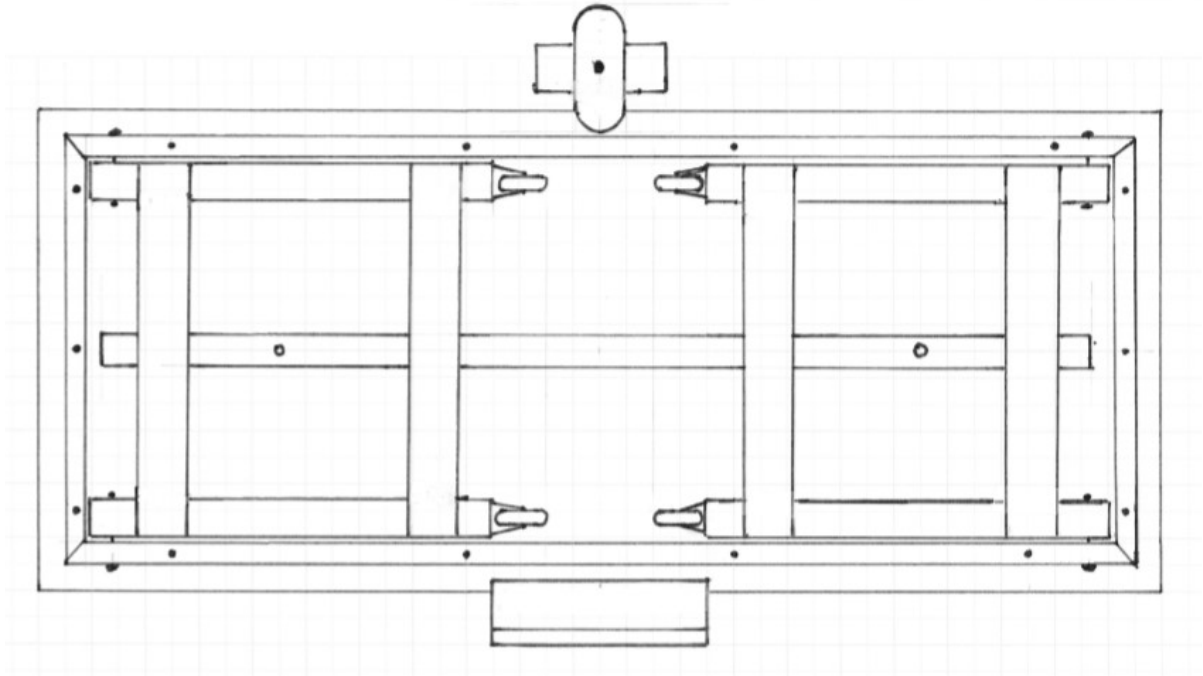
To determine correct positioning of your locking mechanism, measure 36 5/8" up from the top of the back support rail. This will mark the base of your locking mechanism.

Mount your locking mechanism to the wall using fixings to suit your wall material.

**Note:** To protect the bench, some form of matting for example thin pin board material can be mounted on the wall between the bench top and the wall.



## STAGE EIGHT - Storing the Spreader Bar



Once the work bench is wall mounted the spreader bar can be stored on the underside of the bench, beneath the folded legs.

To do this you will need to screw two screws into the base of the bench top, leaving the heads protruding roughly  $1 \frac{3}{4}$ ". This gives you something to mount your spreader bar on.

Next, drill 2 holes large enough to clear the head of the screws through the spreader bar. The spreader bar may now be hooked onto the screws beneath the folded legs as illustrated above.

**CONGRATULATIONS!** You have now built yourself a foldable, wall mounted work bench!

I hope you enjoy using yours as much as I do mine.

## NOTES

### BENCH TOP

At my local hardware store I was able to purchase the bench top as one piece of laminated pine, however if you are unable to source this there are a couple of other options which I have detailed below.

#### Plywood

To achieve a similar bench top, you could use 2 x sheets of  $\frac{5}{8}$ " thick plywood cut to the dimensions of the bench top and fixed together using glue and screws.

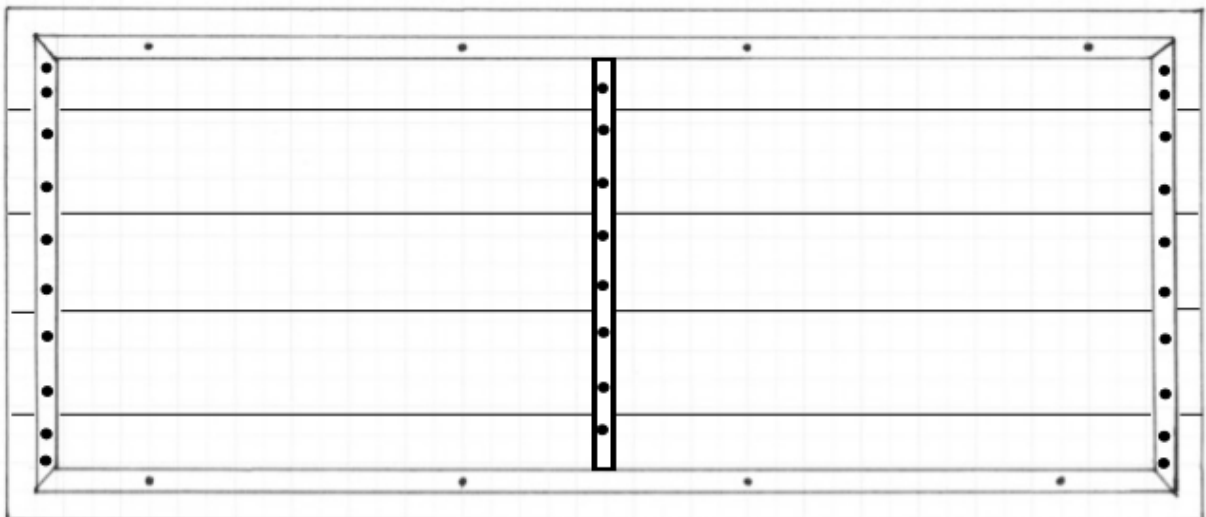
Using the plywood option does not change any of the steps that follow.

#### Joined Lumber

Another option is to use 4 lengths of 2x10" (actual  $1\frac{1}{2}$  x  $9\frac{1}{4}$ ") cut to 83" long, glued and biscuit joined together lengthways.

If you don't have access to a biscuit joiner, the lengths can be joined and strengthened by screwing an extra 2x4" rail at  $27\frac{9}{16}$ " long down the centre as shown below.

Completing the bench top by joining lumber will require a further 22 x 4" timber screws.



The original bench top in my plans is 36" wide, but if joining lumber you will end up with a bench top that is 37" wide.

Whilst you keep the apron measurements the same, the border will be  $3\frac{3}{16}$ " wide. So at stage one, you will need to mark the border at  $3\frac{3}{16}$ " rather than  $2\frac{11}{16}$ ".

## NOTES

### LEGS

If you are unable to source 3x3" legs, 4x4" (actual 3 1/2 x 3 1/2) can be used, but please note that this will create extra weight when lifting and folding.

If using 4x4" the position of the cuphead bolt changes at stages two and four. The changes required are shown below.

