# Hayfeeder on Wheels

This hayfeeder was designed to be used with our ATV Quad Bike. The ATV is equipped with a standard 50 mm trailer coupling, which is approximately 310 mm above ground (centre of the 50 mm ball). For other ATV's, where the trailer coupling is at different height, modifications to the design might be required.

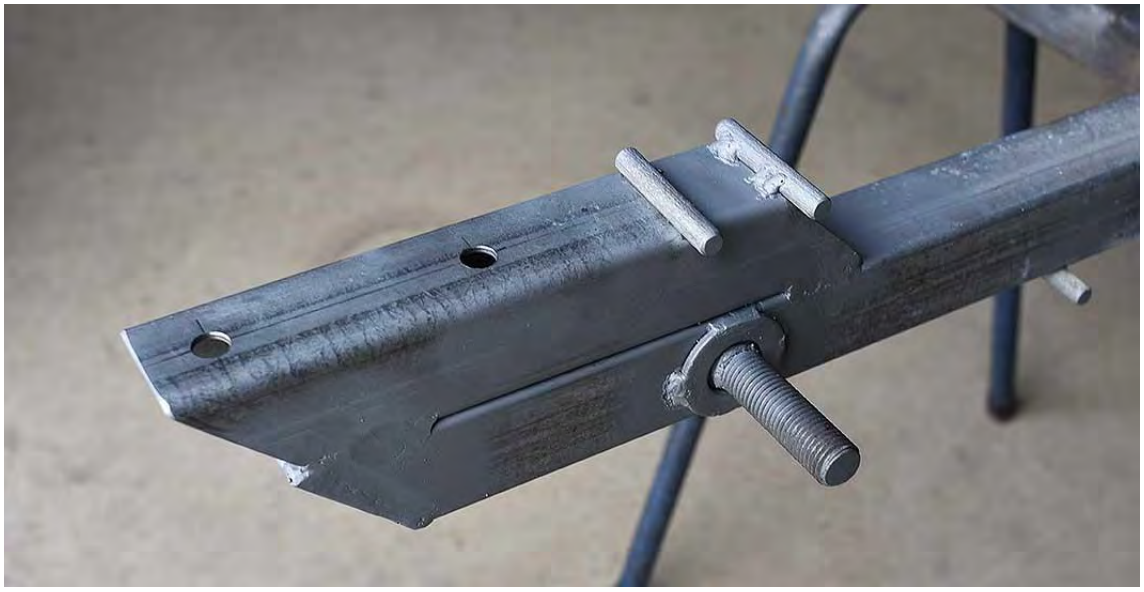
The feeder presented here is the result of improvement on several earlier versions. This final version is safe, also for goats with horns, robust against tipping over, and well balanced.

The feeder consists of a trailer with two standard wheelbarrow wheels (size 4.00 - 8), and a crate, which is bolted onto the trailer. The wheel base is approximately 1100 mm wide, similar to the wheel base width of the ATV.

The crate is 2000 mm long, 680 mm high, and 430mm wide at the bottom and 700 mm wide at the top. It is equipped with a roof to protect the hay against rain, and also to prevent goats from climbing or jumping into the crate.

The hay feeder carries approximately 40 kg of hay, and can be used to feed up to around a dozen goats.

Picture 1: Side of the crossbeam with endplate and axle.



Picture 2: Front end of the drawbar with 20 mm threaded rod for the jockey stand and two 13mm holes for bolts to fix the trailer coupling.

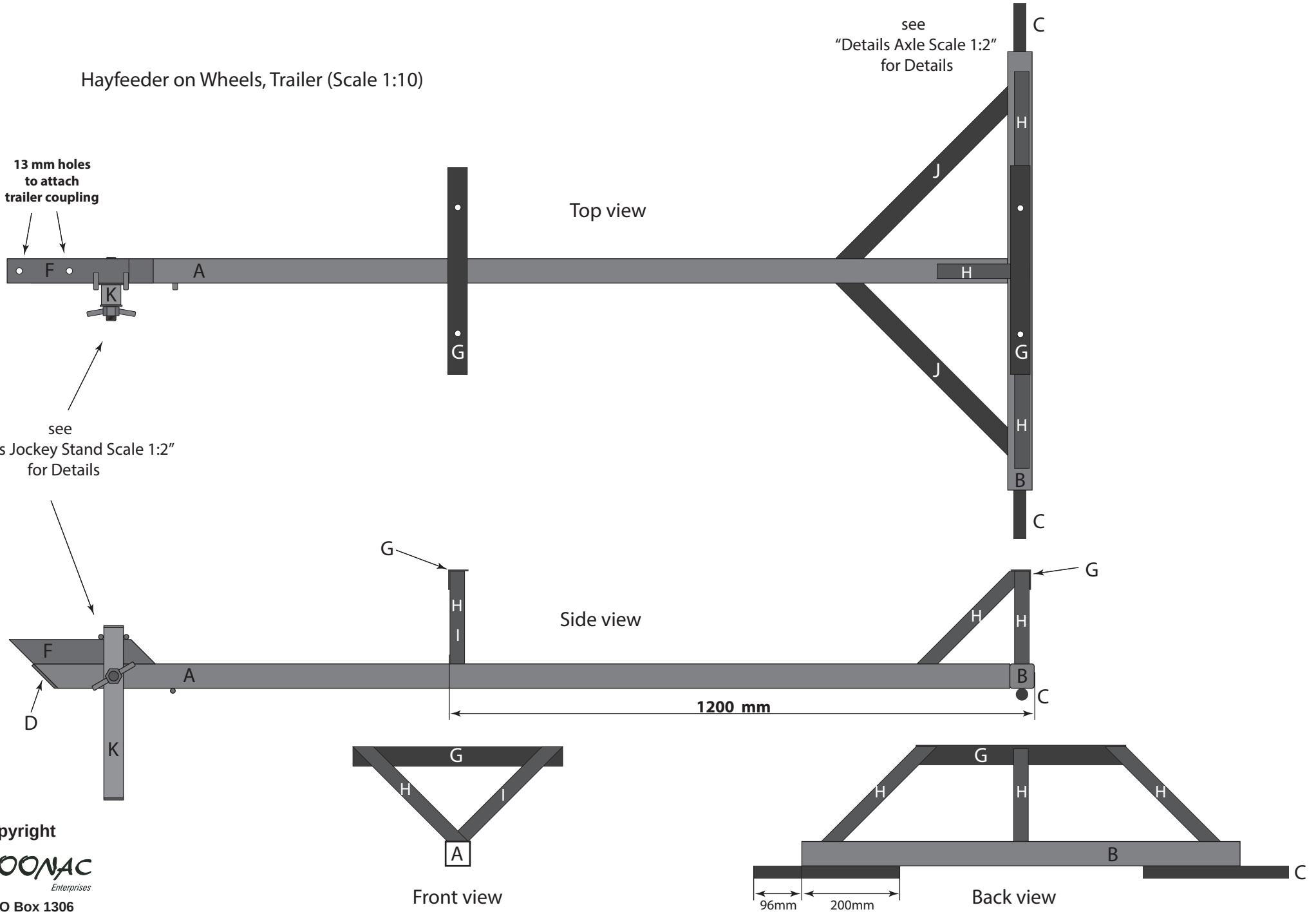
Picture 3: The trailer.

Picture 4: Crate bolted onto the trailer, roof closed

Picture 5: Crate with open roof.

Picture 6: Floor of crate

# Hayfeeder on Wheels, Trailer (Scale 1:10)



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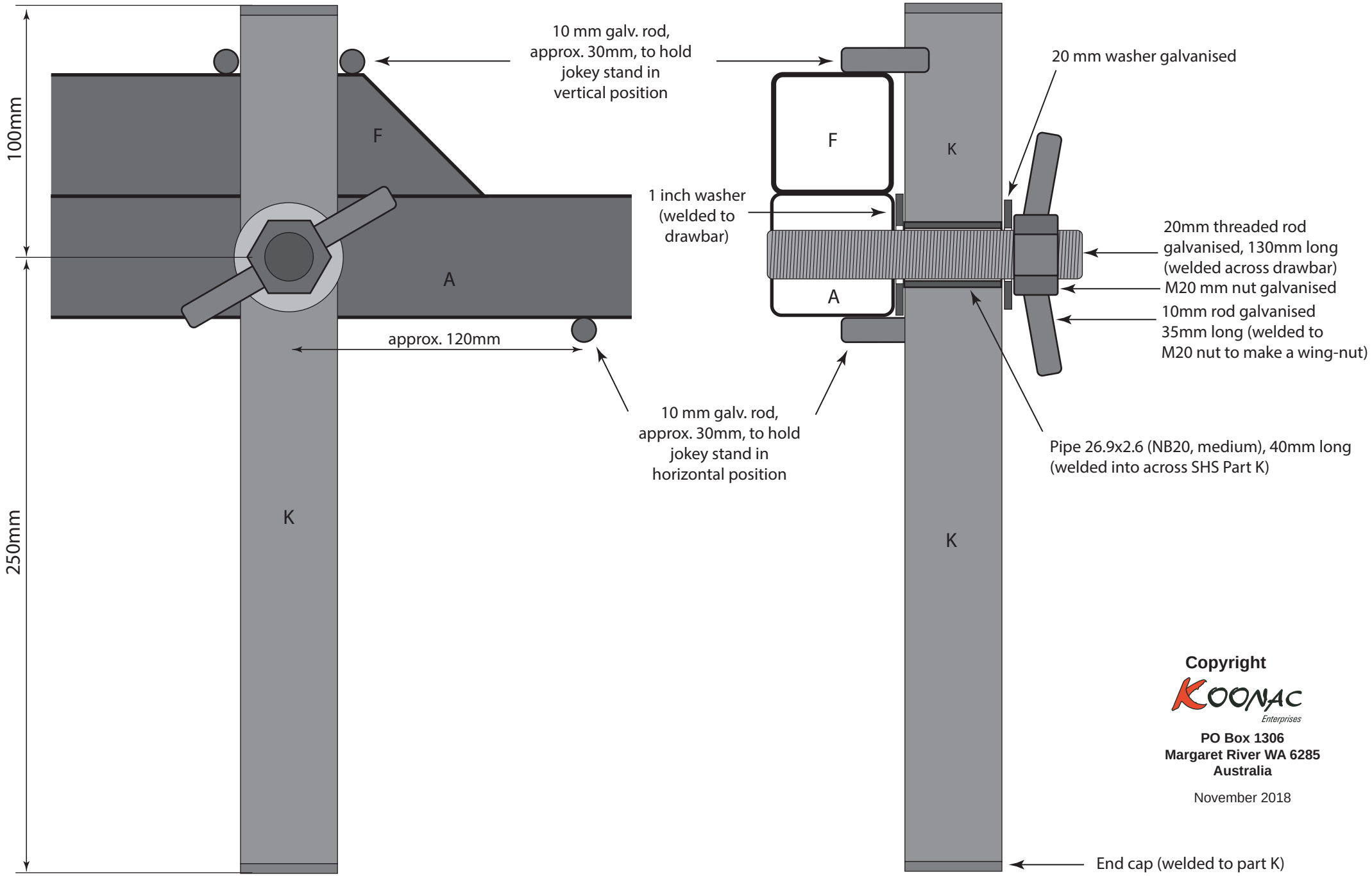
# Details "Jockey Stand", Scale 1:2



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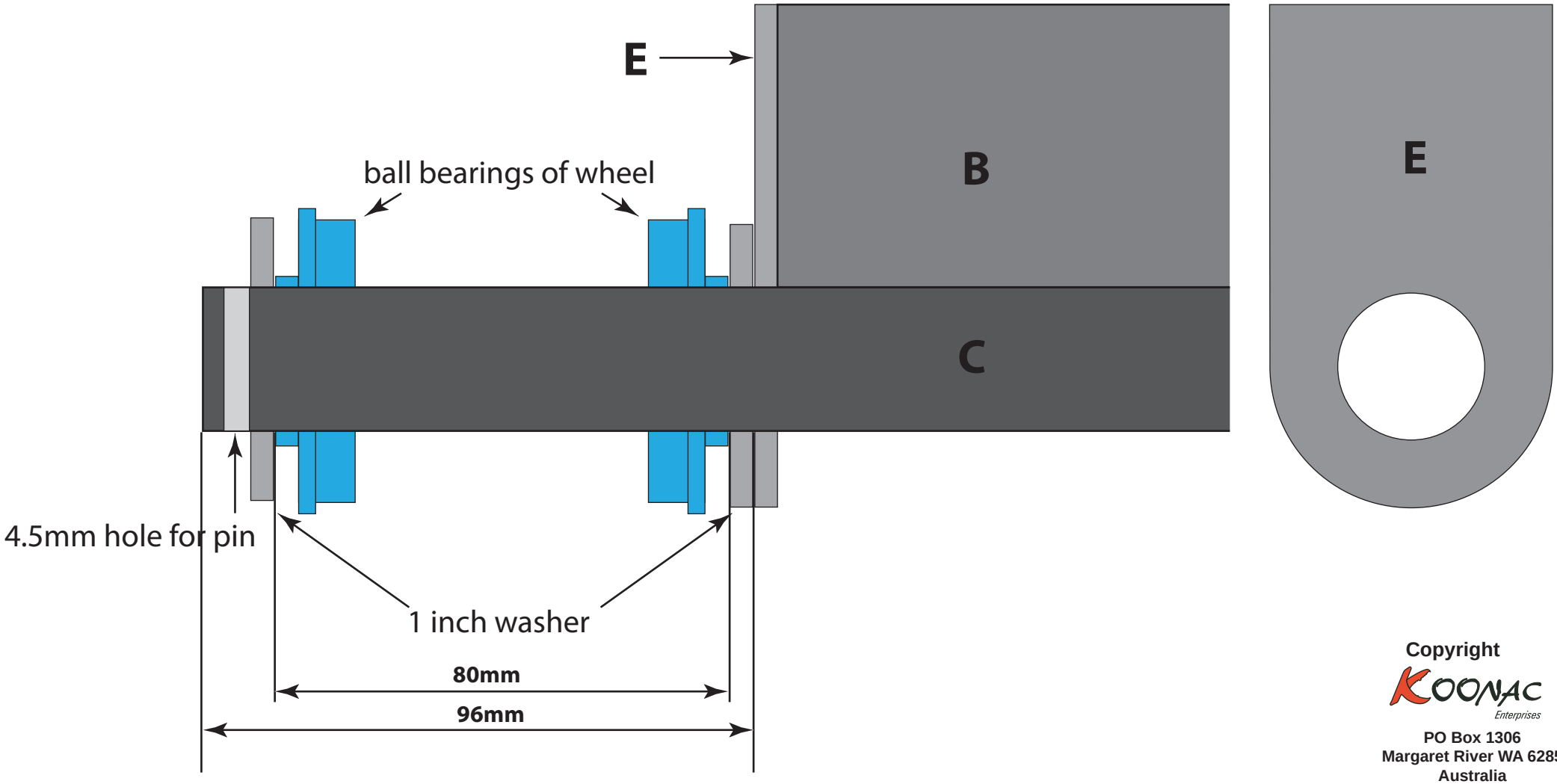
# Details "Axle" (to scale)



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Hayfeeder on Wheels, Crate (Scale 1:10)



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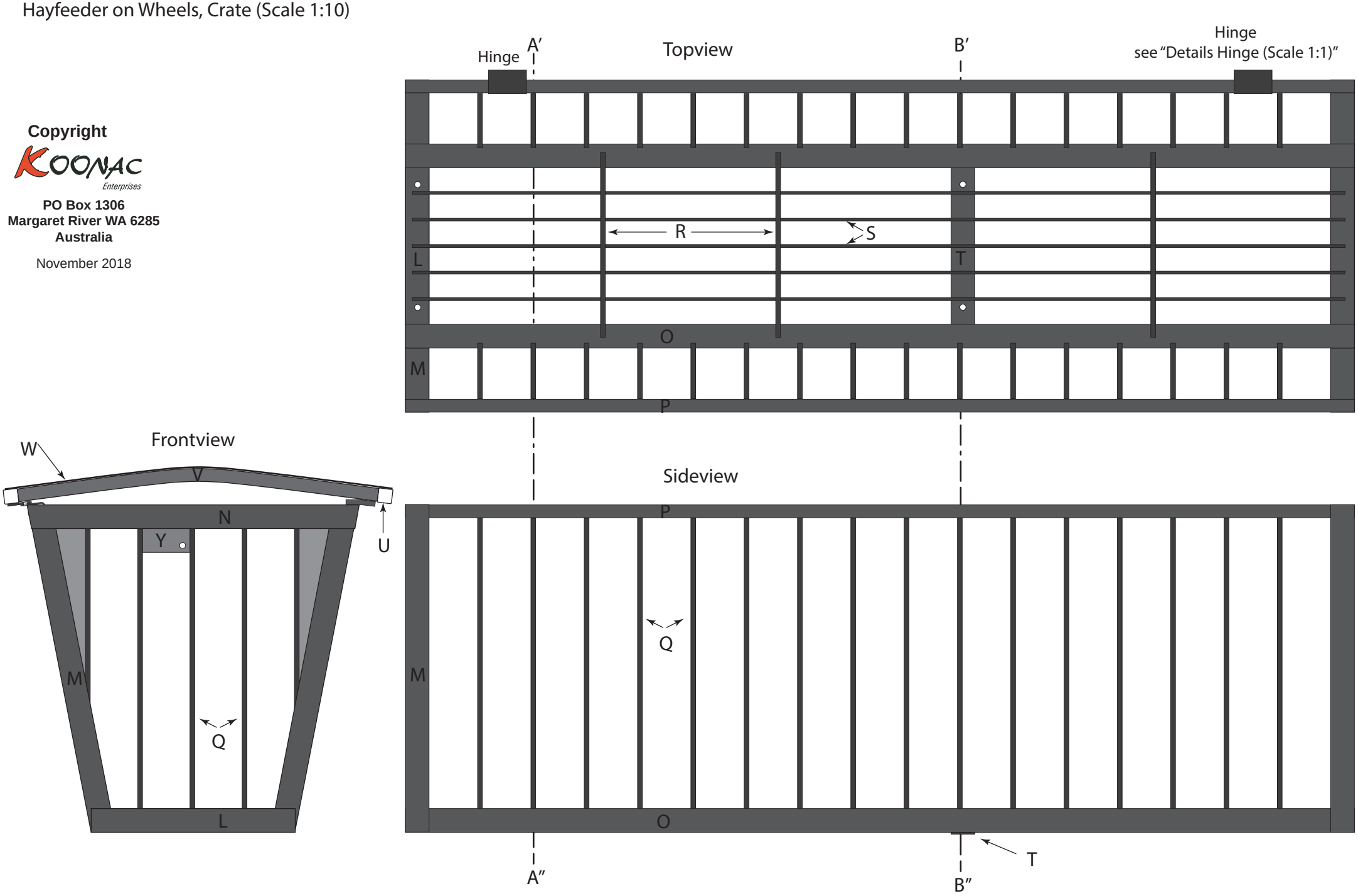
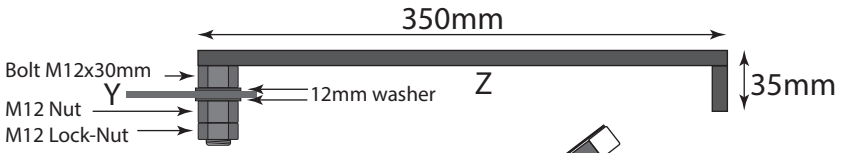
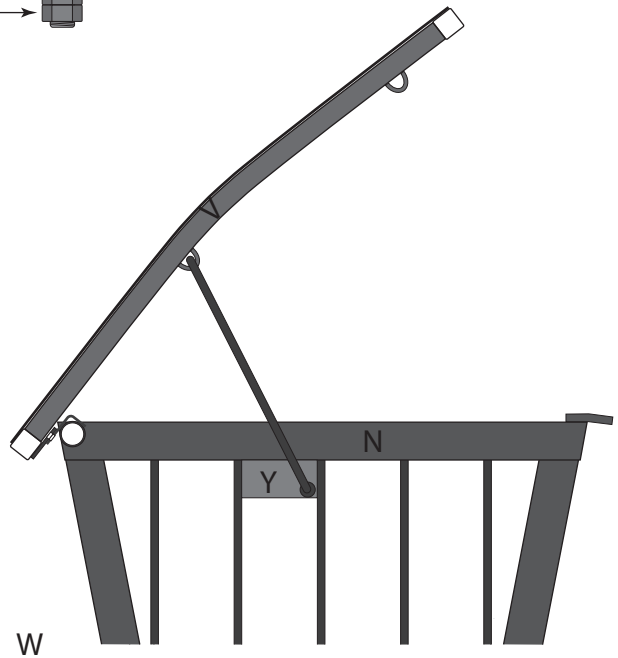
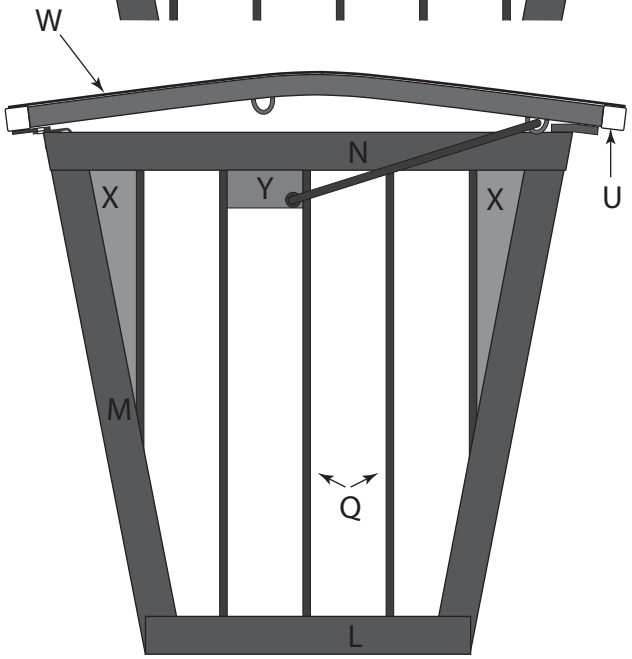


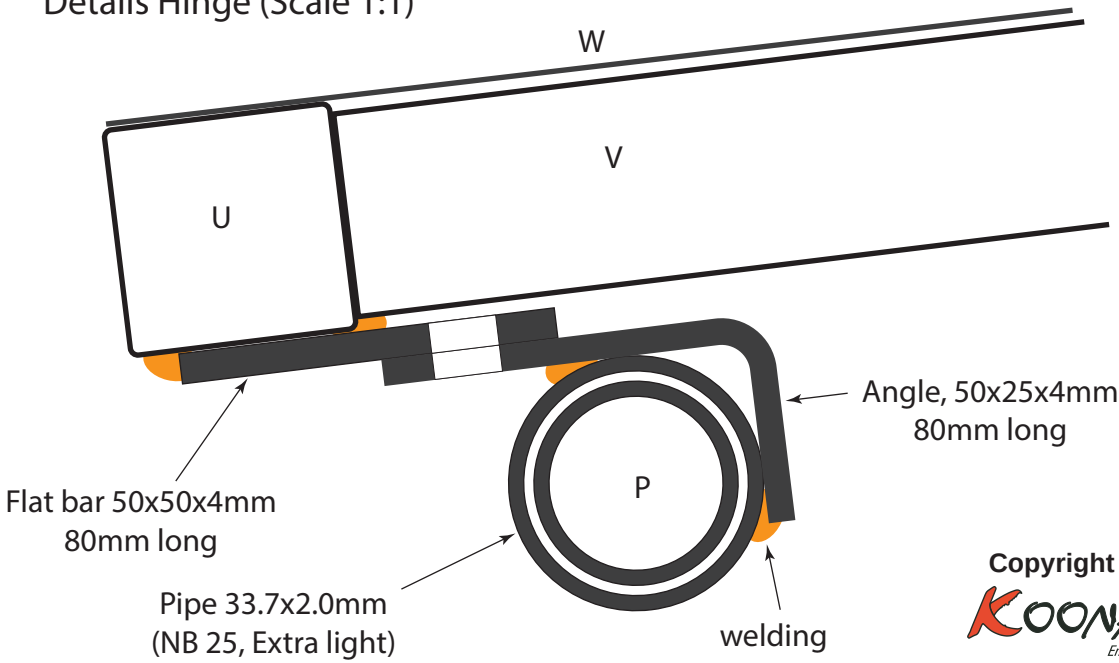
## Roof Lock (Scale 1:5)




## Details Hinge (Scale 1:1)



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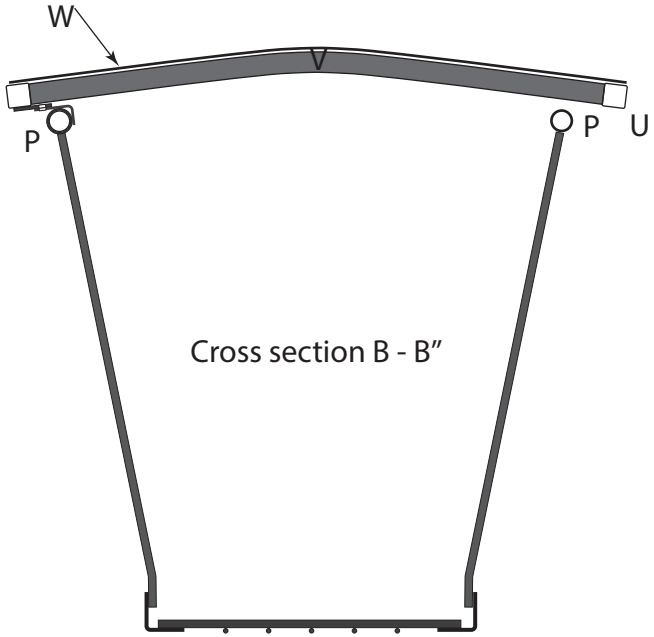


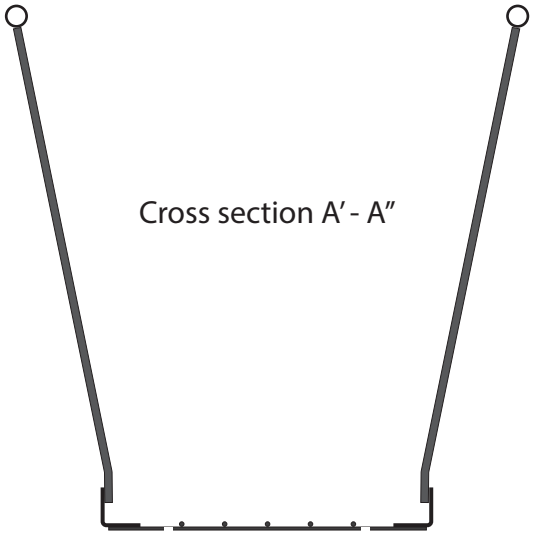

| Code | Part | n | Profile | Dimension (mm) | Length (mm) | Comment |
|---|---|---|---|---|---|---|
| A | Drawbar | 1x | SHS galv. | 50x50x1.6 | 2005 | cut at 45° at front end |
| B | Crossbeam | 1x | SHS galv. | 50x50x3.0 | 900 | |
| C | Axle | 2x | round bar | 2.54 (1 inch) | 296 | Common wheelbarrow wheels (4.00 - 8) have been used here. Wheel diameter is approximately 400 mm, distance between the 1 inch bearings is 80 mm (see "Details Axle"). If different wheels are used, axle length and diameter need to be modified accordingly. |
| D | Endcap drawbar | 1x | flat bar galv. | 50x4 | 70 | |
| E | Endcap crossbeam | 2x | flat bar galv. | 50x4 | 88 | round on one side, 26 mm hole for axle |
| F | Front of draw bar to fix trailer coupling | 1x | SHS galv. | 50x50x3.0 | 300 | ends cut to 45° (parallel); two 13 mm holes, 103 mm apart, for 12 mm bolts to fix trailer coupling (a *Trojan* coupling is used here, different couplings might require different location of holes) |
| G | Crate support | 2x | Angle | 40x40x4.0 | 420 | 2 x 11mm wholes 260 mm apart for 10 mm bolts to fix crate onto trailer |
| H | bracings (vertical) | 4x | SHS | 30x30x1.6 | 305 | both ends cut at 45° (parallel) |
| I | bracing (vertical) | 1x | SHS | 30x30x1.6 | 275 | one end cut at 45° (this part is used for the front base of the trailer) |
| J | bracing between draw bar and crossbeam | 2x | angle galv. | 40x40x4.0 | 500 | cut at 45° both ends. Ends are cut in such a way that the angle is "open" downwards and to the rear (to the side of the axle). |

| Code | Part | n | Profile | Dimension (mm) | Length (mm) | Comment |
|---|---|---|---|---|---|---|
| K | Jockey stand | 1x | SHS galv. | 40x40x1.6 | 350 | for further parts of jockey stand and details of construction see drawing "Details Jockey Stand" |
| L | Crate, front and end part | 1x | Angle galv. | 50x50x2.5 | 430 | bottom of front and end parts |
| M | Crate. front and end part | 4x | Angle galv. | 50x50x2.5 | 700 | sides of front and end parts, cut to 79° at one end |
| N | Crate, front and end part | 2x | Angle galv. | 50x50x2.5 | 700 | top of front and end part, cut both ends to 79° (not shown in top view drawing) |
| O | Crate side walls | 2x | Angle galv. | 50x50x2.5 | 2000 | bottom of side part; angle profile opened (bent) approx. 70mm at both ends to 101° to align with vertical angles M |
| P | Crate side walls | 2x | Pipe galv. | 26.9x2.0 (NB20, extra light) | 2000 | top of side parts (hinges must be placed on pipes P before pipes P are welded into frame!) |
| Q | Crate walls | 42x | Round bar galv. | 10 | 32 x 640<br>6 x 630<br>4 x 450 | rods for side of crate (640 mm long) are bent 40 mm at 11°at one end to align with vertical part of bottom angle; distance between rods of sides 102 mm, of front and end 100 mm |
| R | Crate, floor | 3x | Round bar galv. | 10 | 400 | welded to bottom angles O at even distance (approx. 55 mm) |
| S | Crate floor | 5x | Round bar galv. | 6 | 1950 | welded at even distance between bottom angles O |
| T | Crate floor | 1x | Flat bar galv. | 50x4.0 | 420 | 2 x 11 mm wholes 260 mm apart for 10mm bolts to fix crate to trailer |

| Code | Part | n | Profile | Dimension (mm) | Length (mm) | Comment |
|---|---|---|---|---|---|---|
| U | Roof frame, long sides | 2x | SHS galv. | 30x30x1.6 | 2100 | |
| V | Roof frame, short sides and middle | 3x | Pipe galv. | 26.9x2.6 (NB20, medium) | 760 | bent in the middle to an angle of approx. 166° |
| W | Roof sheet | 1x | Sheet metal, galv. | 1.0 | 800x2100 | for parts and details about the hinges see "Details Hinge (Scale 1:1) |
| X | Crate, side walls | 2x | Sheet metal, galv. | 1.0-2.0 | 400x100 (triangle) | to close V-shaped opening between rod and angle to avoid goats get caught |
| Y | Roof lock plate | 1x | flat bar galv. | 50x4 | 100 | 13 mm hole in one corner, approx. 20 mm from edge for bolt of roof lock |
| Z | Roof lock | 1x | Round bar galv. | 12 | 350 | for parts see "Details Roof Lock (Scale 1:5)" |