SIMTRACK

WORLD'S MOST ADVANCED RACING EQUIPMENT

MECHANICAL GATE | TECHNICAL MANUAL

www.simtrack.com.au

Dear customer,

I want to personally thank you for choosing to enhance your on-track operations - not to mention the safety and satisfaction of jockeys, handlers and horses - with a Simtrack mechanical starting gate.

My family has been building gates for three generations and is considered a world leader in this technology. So I'm confident its performance will meet, if not exceed your expectations.

This manual provides you with the detailed information you'll need to conduct the gate's routine maintenance, and will help you correctly identify parts should you ever need to order replacements.

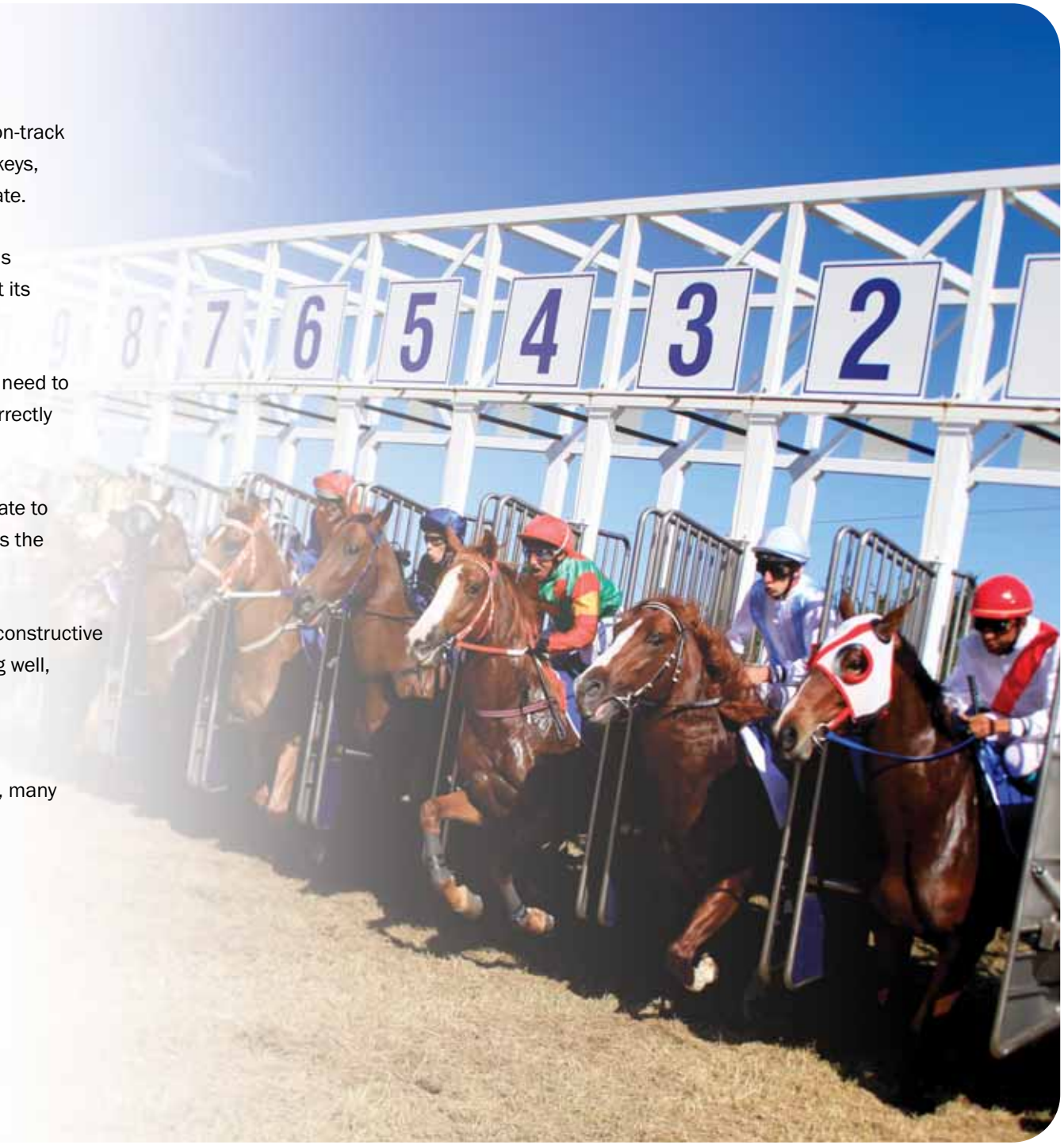
However, if there's ever anything you're unsure of, don't hesitate to contact us immediately. We'll do everything we can to address the issue promptly and to your satisfaction.

We would also be delighted to hear from you if you have any constructive feedback on the gate. Whether that's to tell us what's working well, or what you think we could do better, your thoughts would be greatly appreciated.

Again, thank you for your purchase. I hope it brings you many, many years of outstanding operation.

Regards,

Kieren Sims
Managing Director



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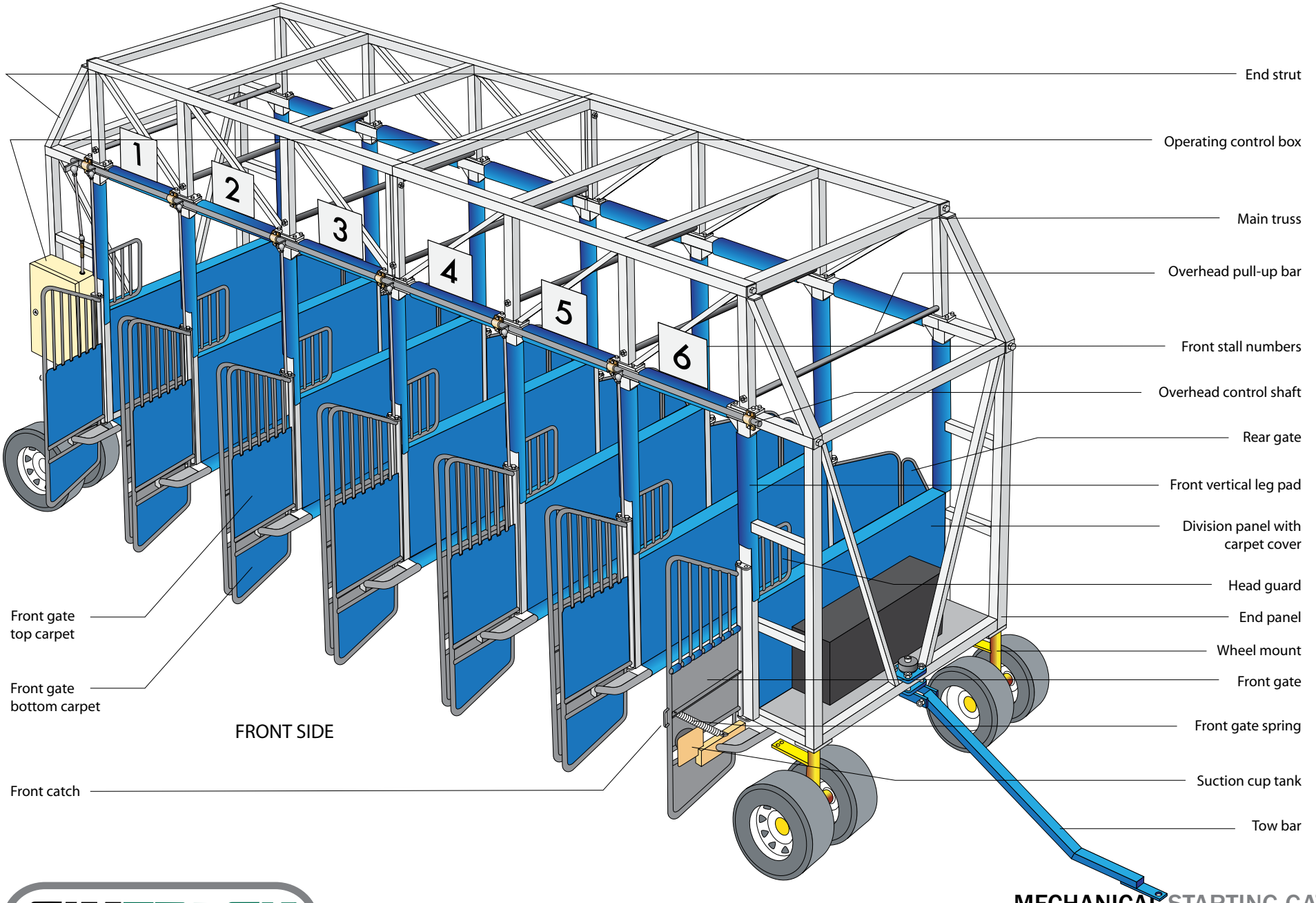

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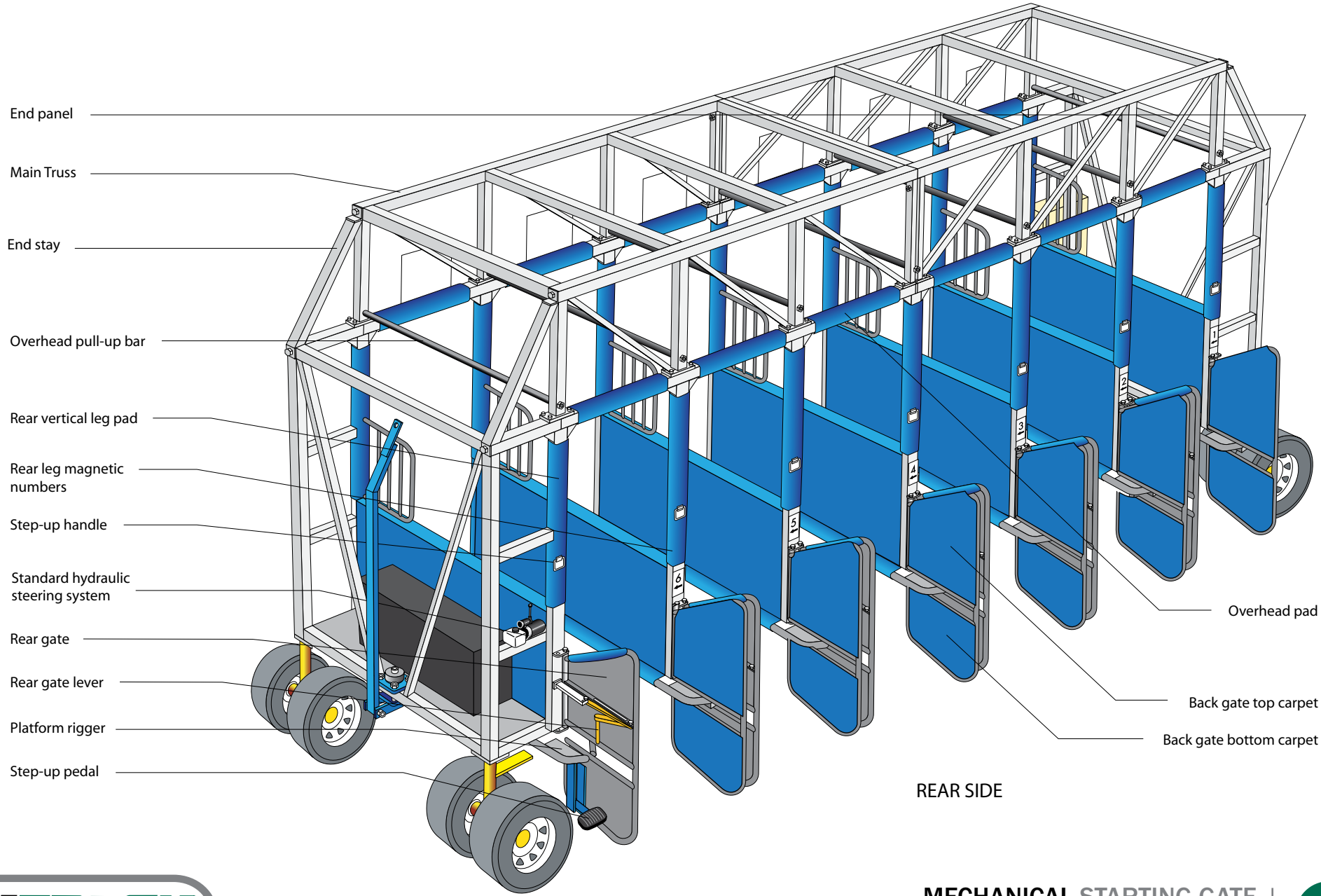
MECHANICAL STARTING GATE
Front view



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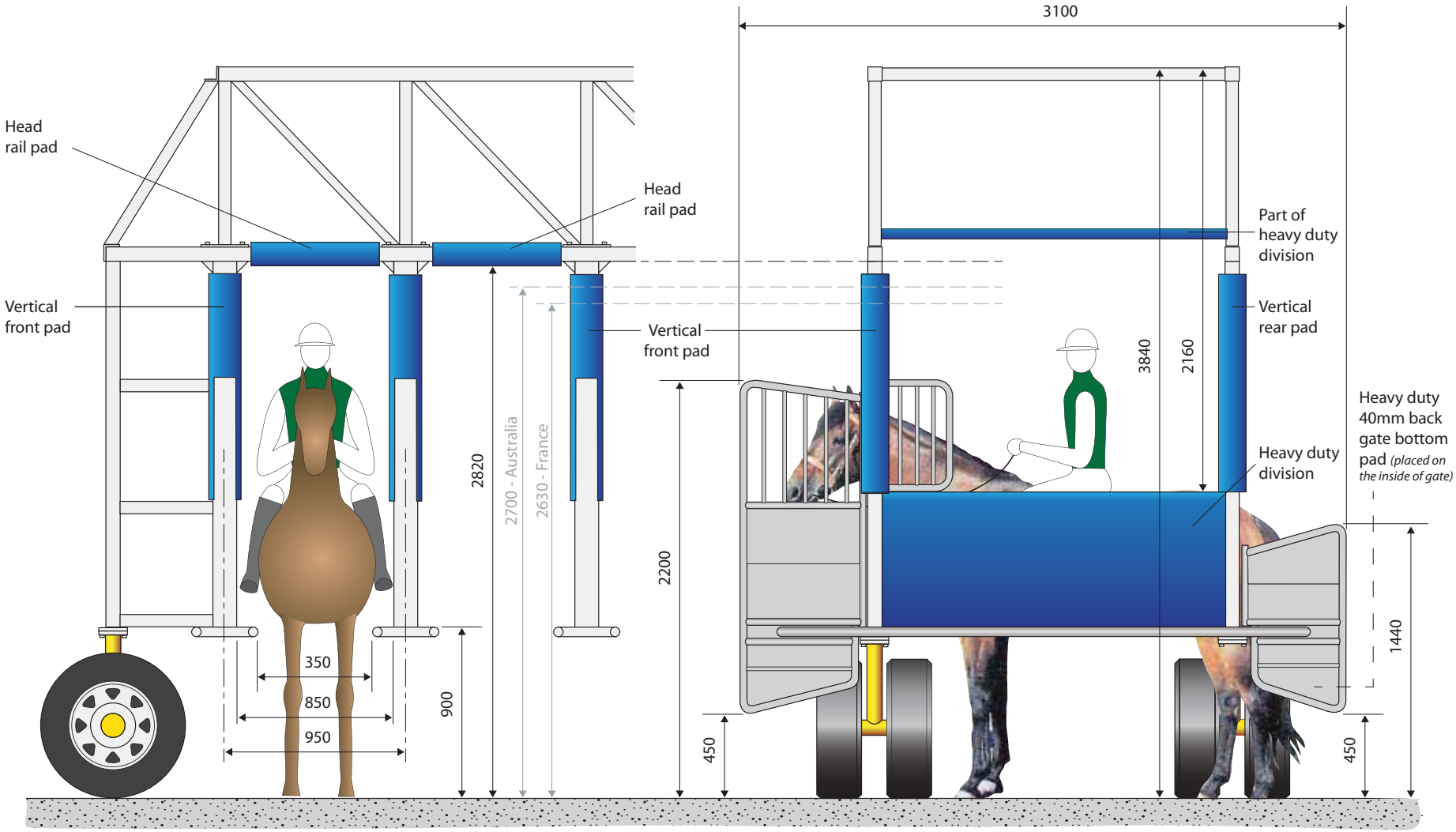
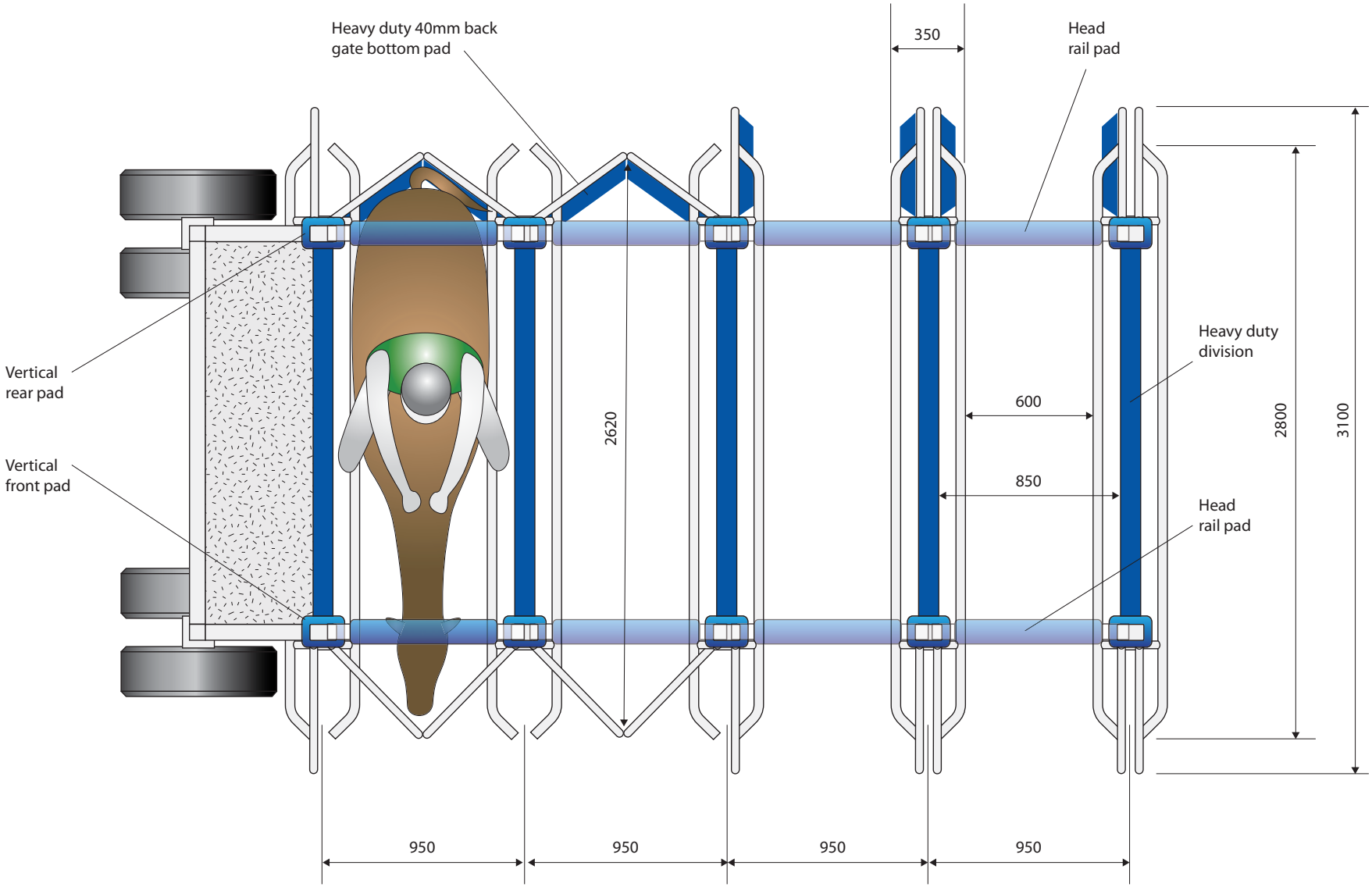
MECHANICAL STARTING GATE
Rear view

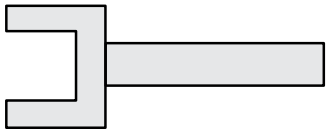

3100
Head
rail pad
Head
rail pad
Vertical
front pad
Vertical
front pad
Part of
heavy duty
division
Vertical
rear pad
Heavy duty
40mm back
gate bottom
pad (placed on
the inside of gate)
Heavy duty
division
2820
2700 - Australia
2630 - France
2200
3840
2160
1440
900
450
450
350
850
950


Heavy duty 40mm back gate bottom pad
350
Head rail pad
Vertical rear pad
Vertical front pad
2620
600
850
Heavy duty division
2800
3100
Head rail pad
950
950
950
950

Starting gate weights

Stalls	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Mobile Gate (tons)	1.2	1.5	1.8	2.1	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.75	6.10	6.45	6.80	7.15	7.5
Fixed Gate (tons)	0.75	1.0	1.25	1.5	1.75	2.0	2.25	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-

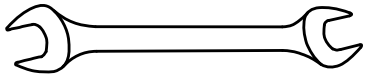
Tools Supplied



Truss joint spanner
(Supplied for mobile gates with truss joint)

Allen keys

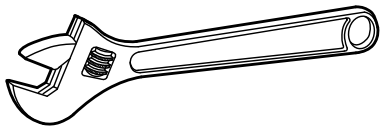
1 x M10 1 x M6
1 x M14 1 x M5
1 x M8 1 x M2



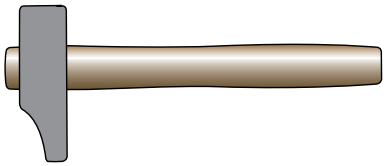
Open end spanner

1 x 16mm
2 x 17mm

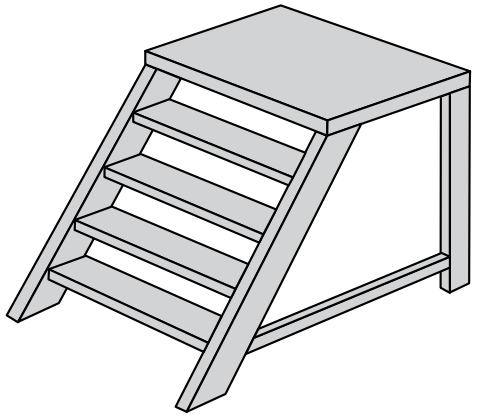
Tools Required



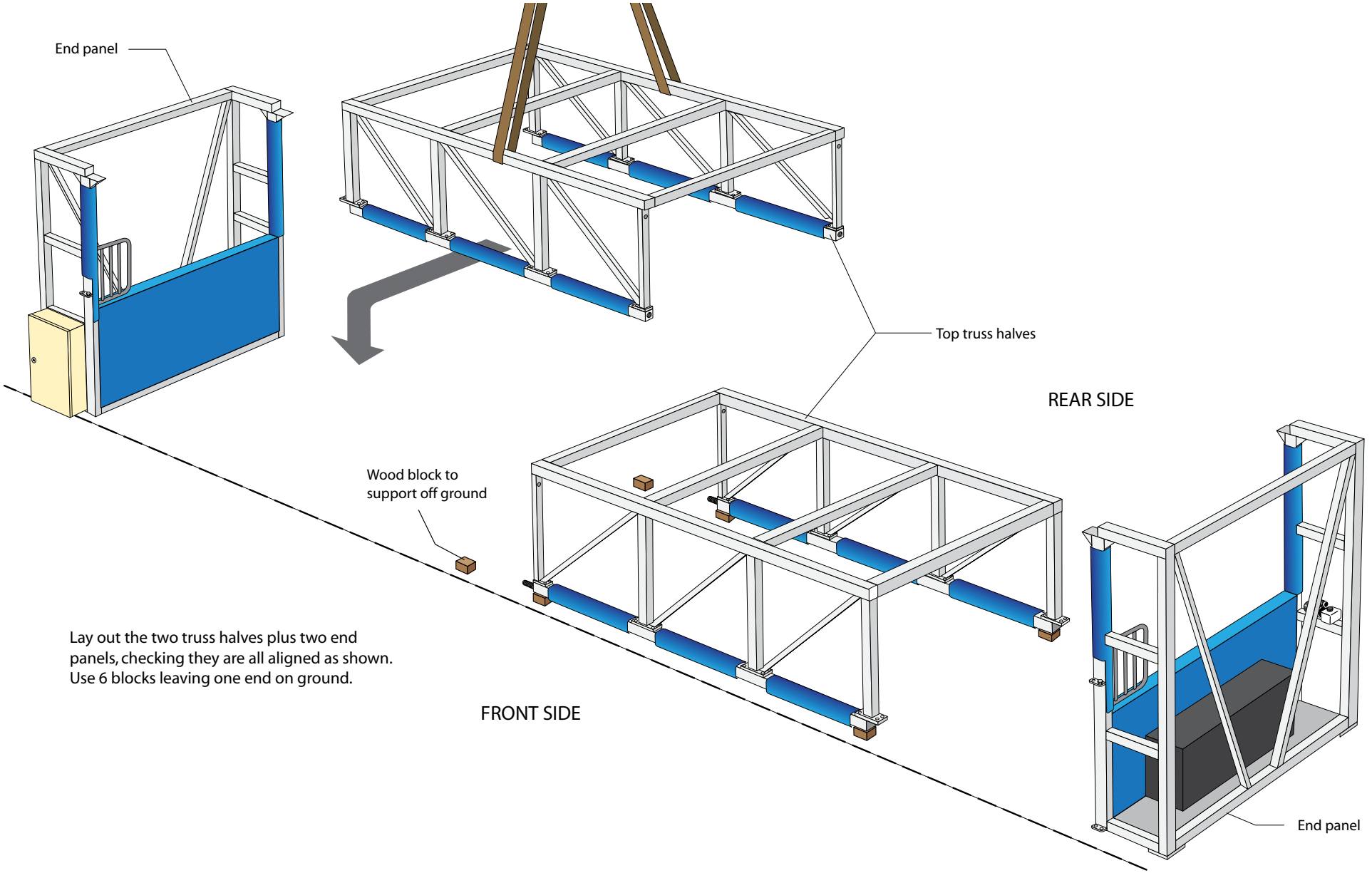
Adjustable spanner



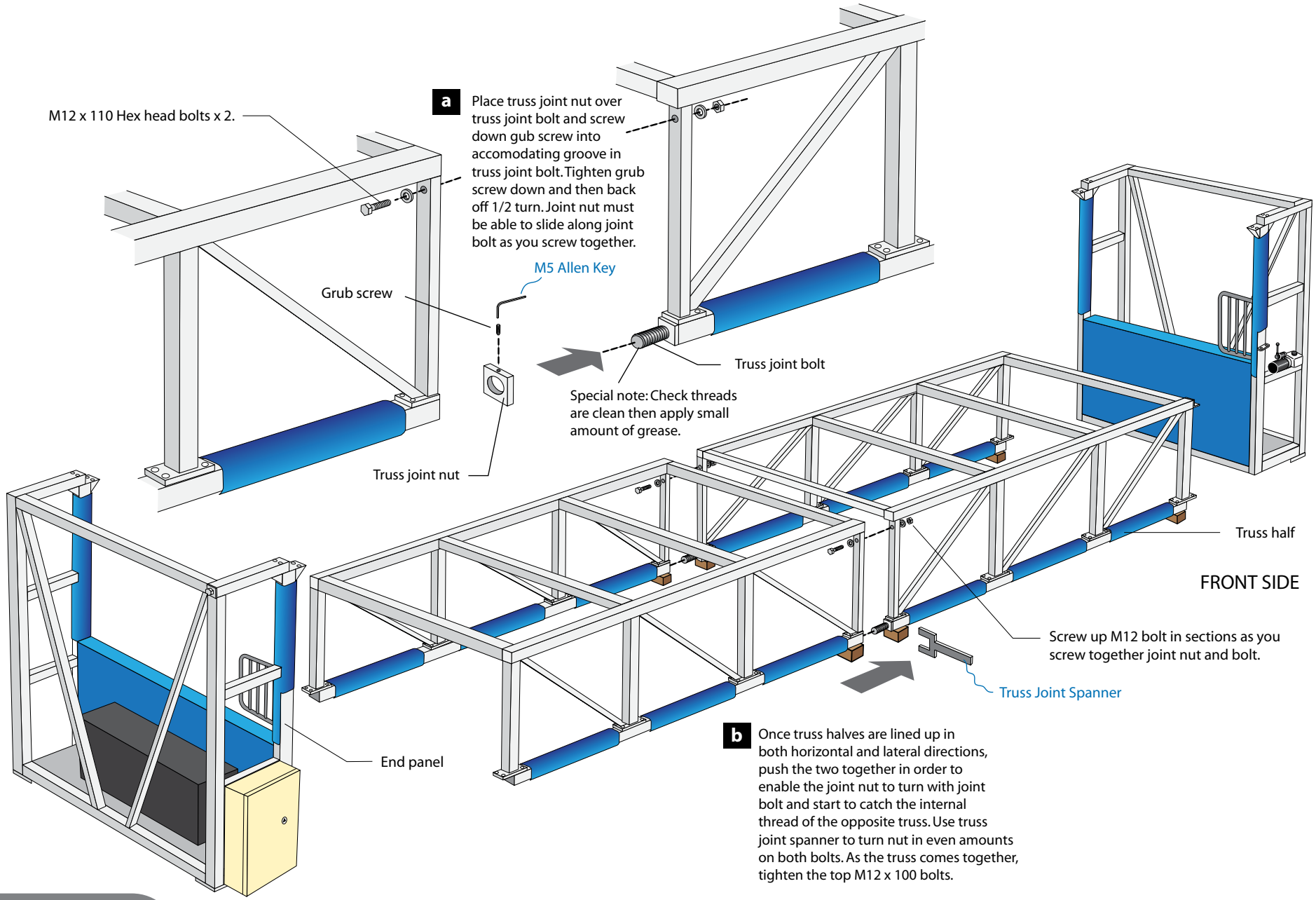
Hammer



Step ladder



Lay out the two truss halves plus two end panels, checking they are all aligned as shown. Use 6 blocks leaving one end on ground.


M12 x 110 Hex head bolts x 2.
a
Place truss joint nut over truss joint bolt and screw down gub screw into accomodating groove in truss joint bolt. Tighten grub screw down and then back off 1/2 turn. Joint nut must be able to slide along joint bolt as you screw together.
M5 Allen Key
Grub screw
Truss joint bolt
Special note: Check threads are clean then apply small amount of grease.
Truss joint nut
Truss half
FRONT SIDE
Screw up M12 bolt in sections as you screw together joint nut and bolt.
Truss Joint Spanner
End panel
b
Once truss halves are lined up in both horizontal and lateral directions, push the two together in order to enable the joint nut to turn with joint bolt and start to catch the internal thread of the opposite truss. Use truss joint spanner to turn nut in even amounts on both bolts. As the truss comes together, tighten the top M12 x 100 bolts.

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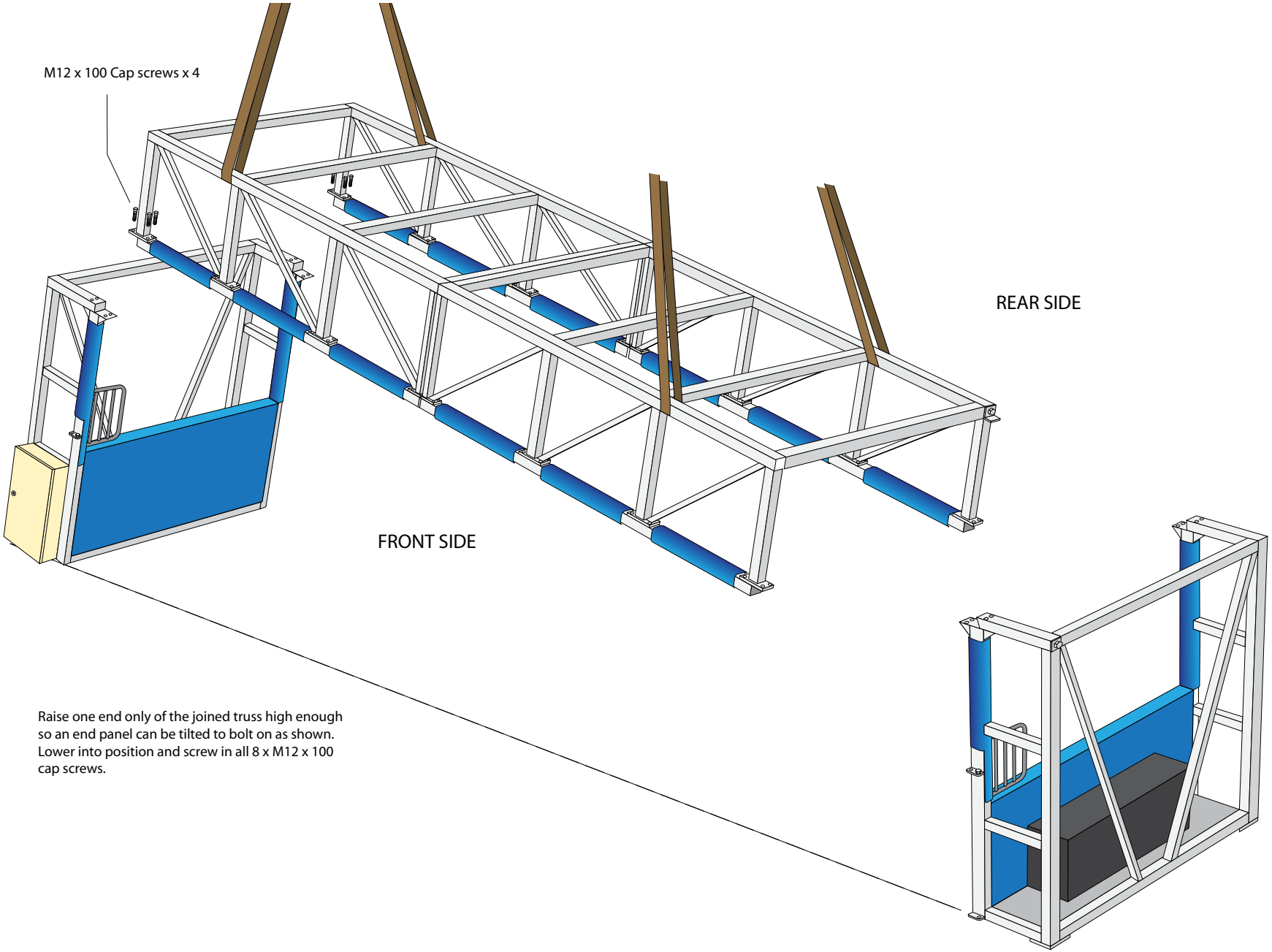
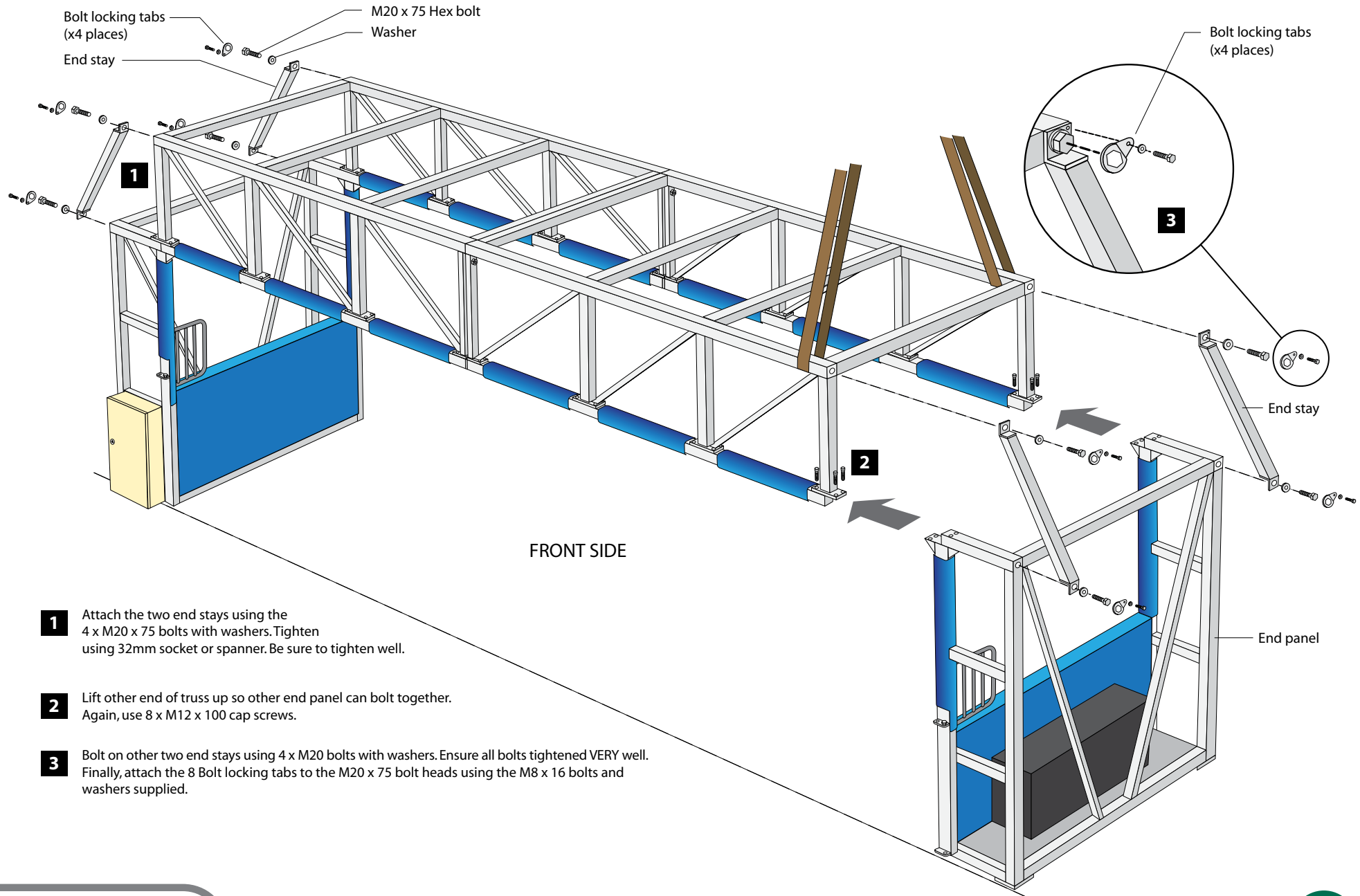


Raise one end only of the joined truss high enough so an end panel can be tilted to bolt on as shown. Lower into position and screw in all 8 x M12 x 100 cap screws.



1 Attach the two end stays using the 4 x M20 x 75 bolts with washers. Tighten using 32mm socket or spanner. Be sure to tighten well.

2 Lift other end of truss up so other end panel can bolt together. Again, use 8 x M12 x 100 cap screws.

3 Bolt on other two end stays using 4 x M20 bolts with washers. Ensure all bolts tightened VERY well. Finally, attach the 8 Bolt locking tabs to the M20 x 75 bolt heads using the M8 x 16 bolts and washers supplied.

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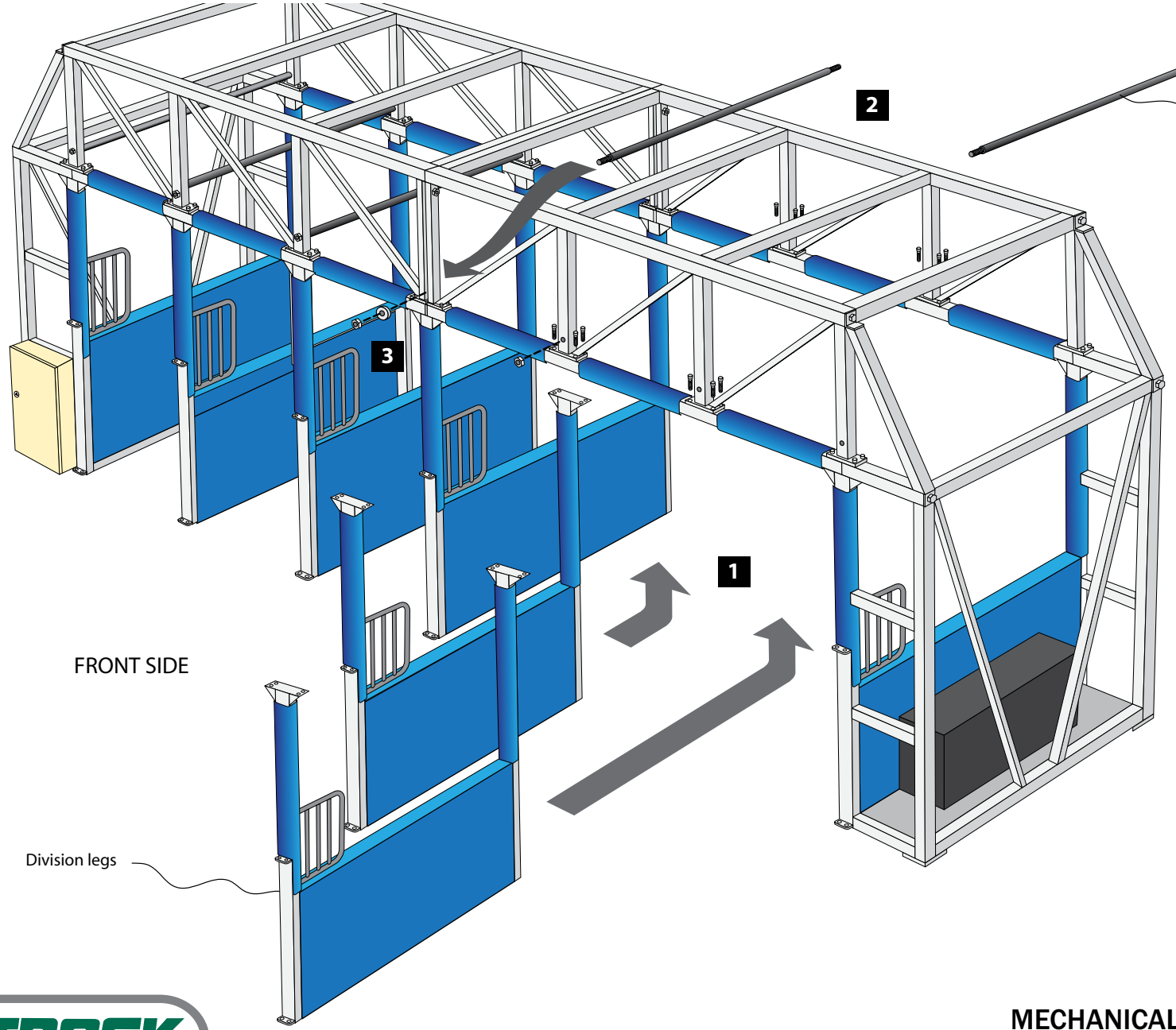

1 Insert all division panels under truss and use M12 x 100 cap screws to secure.*

NB: Use only 7 screws per panel, saving the front left screw of each divison panel, as it will be used to secure the operating shaft.
See next page.

2 Insert all pull-up bars through holes in truss and tighten.

3 Fix centre joint pull-up bar using center truss attachment spigots - 2 off.

*Go over ALL M12 x 100 cap screws with M10 Allen key and double check all are tight.

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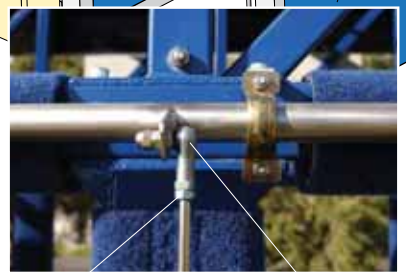
M12 x 100 Cap Screw
(Saved from division panel installation on previous page)

Operating rod

Operating shaft lug

Operating shaft



Operating tie rod end lock nut

Operating rod tie rod end

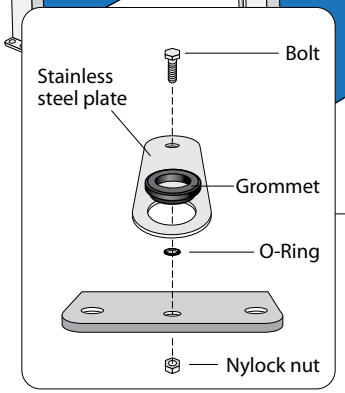


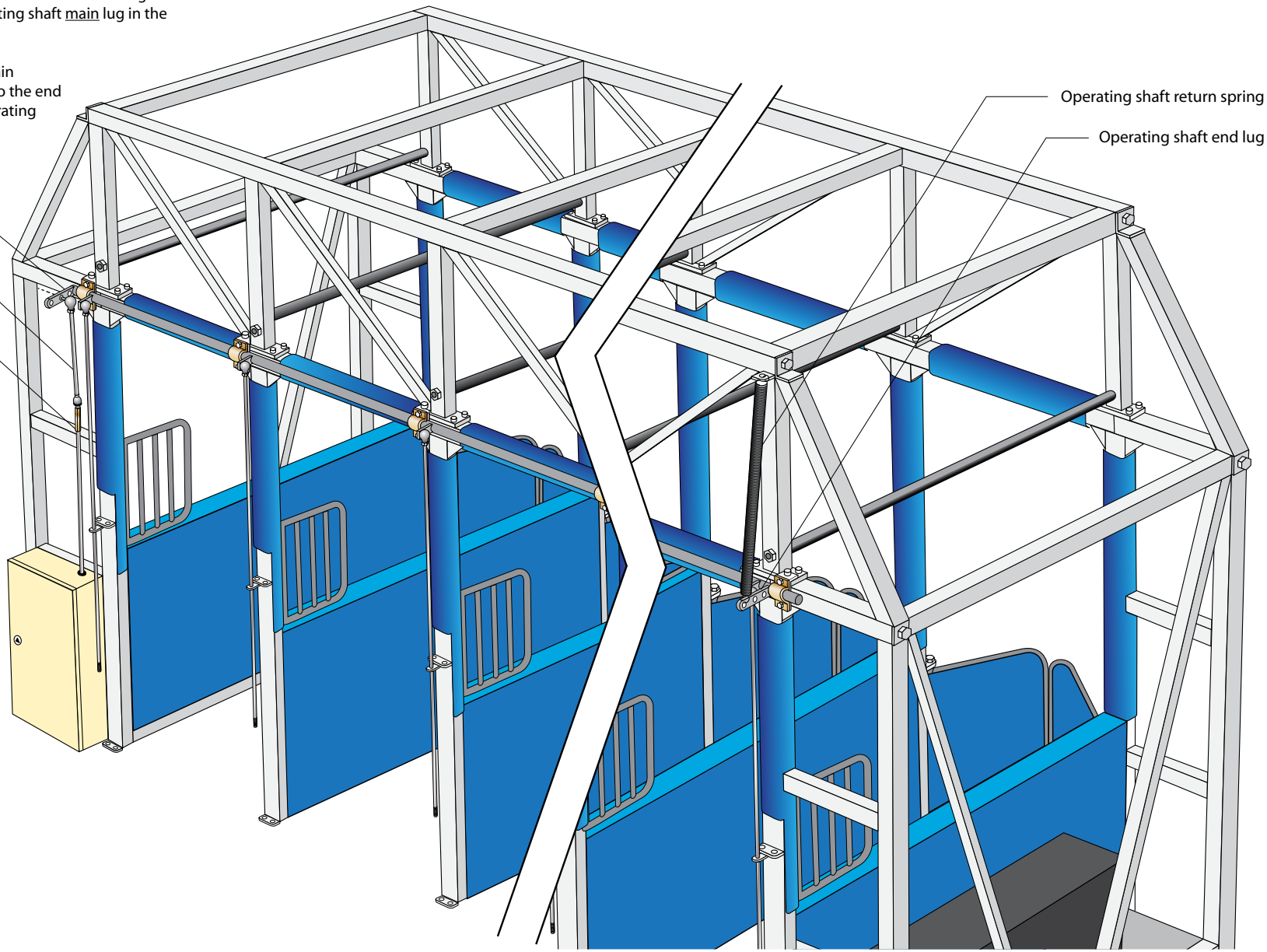
Diagram A

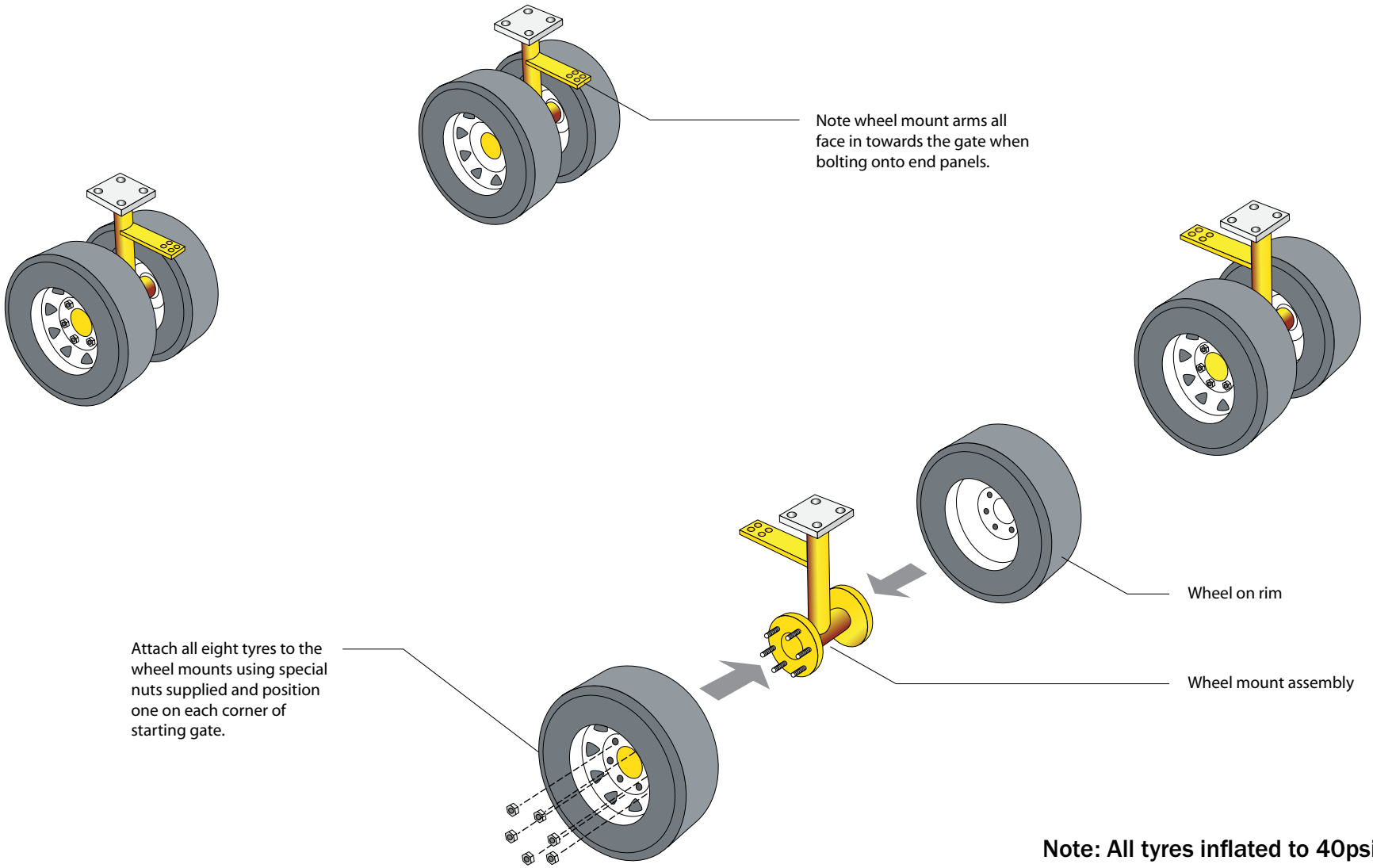
1 On front side of gate, bolt on the operating shaft with one of the four M12 x 100 cap screws used to bolt division panels.

2 Attach all operating rods to the operating shaft and tighten. See Diagram 'A' for bolting detail of operating support lug.

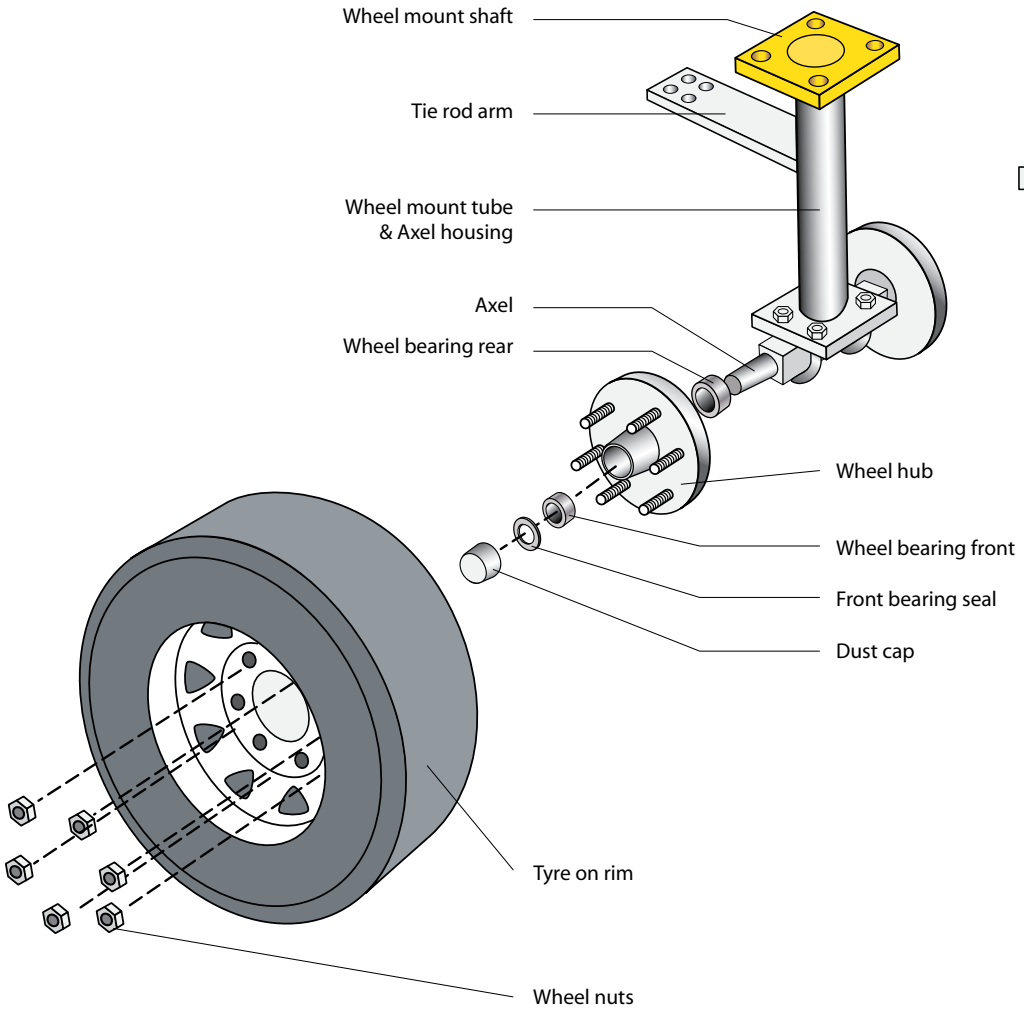
1 Connect control box mechnical linkage to the overhead operating shaft main lug in the middle hole.

2 Connect the main control spring to the end hole of the operating shaft end lug.

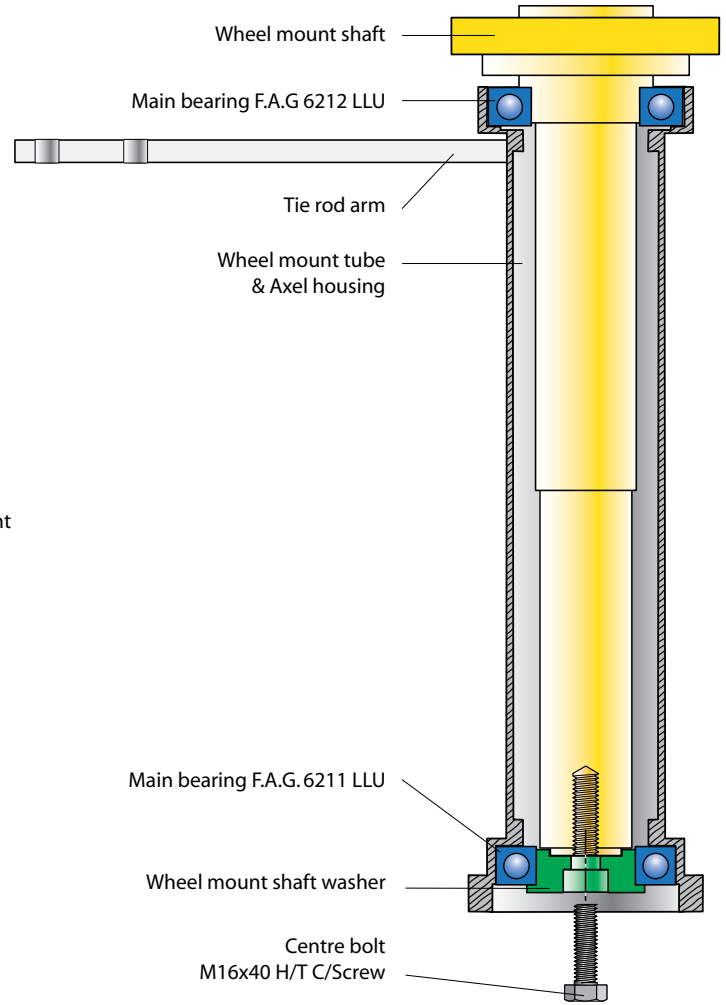


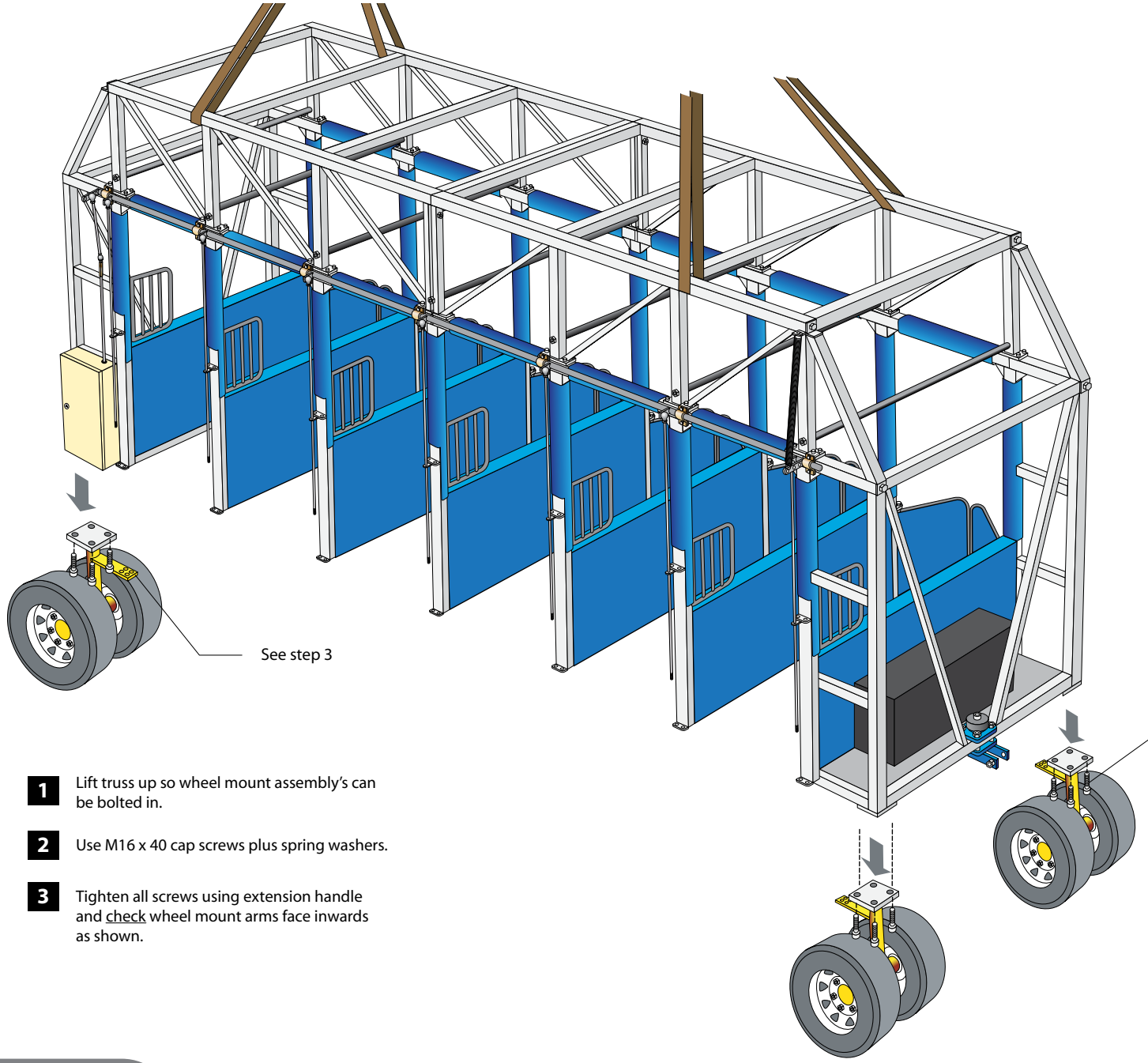


Note: All tyres inflated to 40psi



CUT AWAY - WHEEL MOUNT ASSEMBLY





1 Lift truss up so wheel mount assembly's can be bolted in.

2 Use M16 x 40 cap screws plus spring washers.

3 Tighten all screws using extension handle and check wheel mount arms face inwards as shown.

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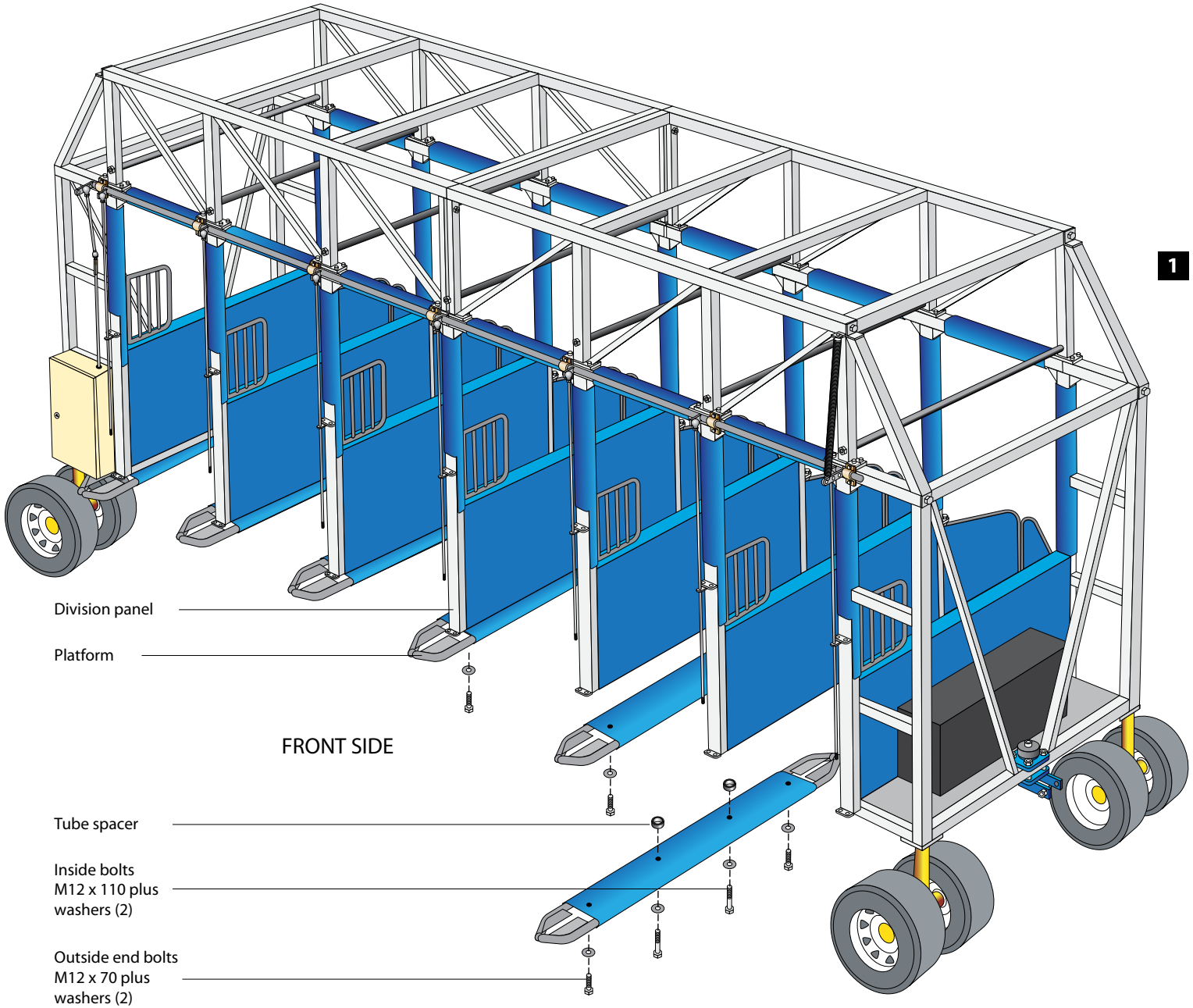
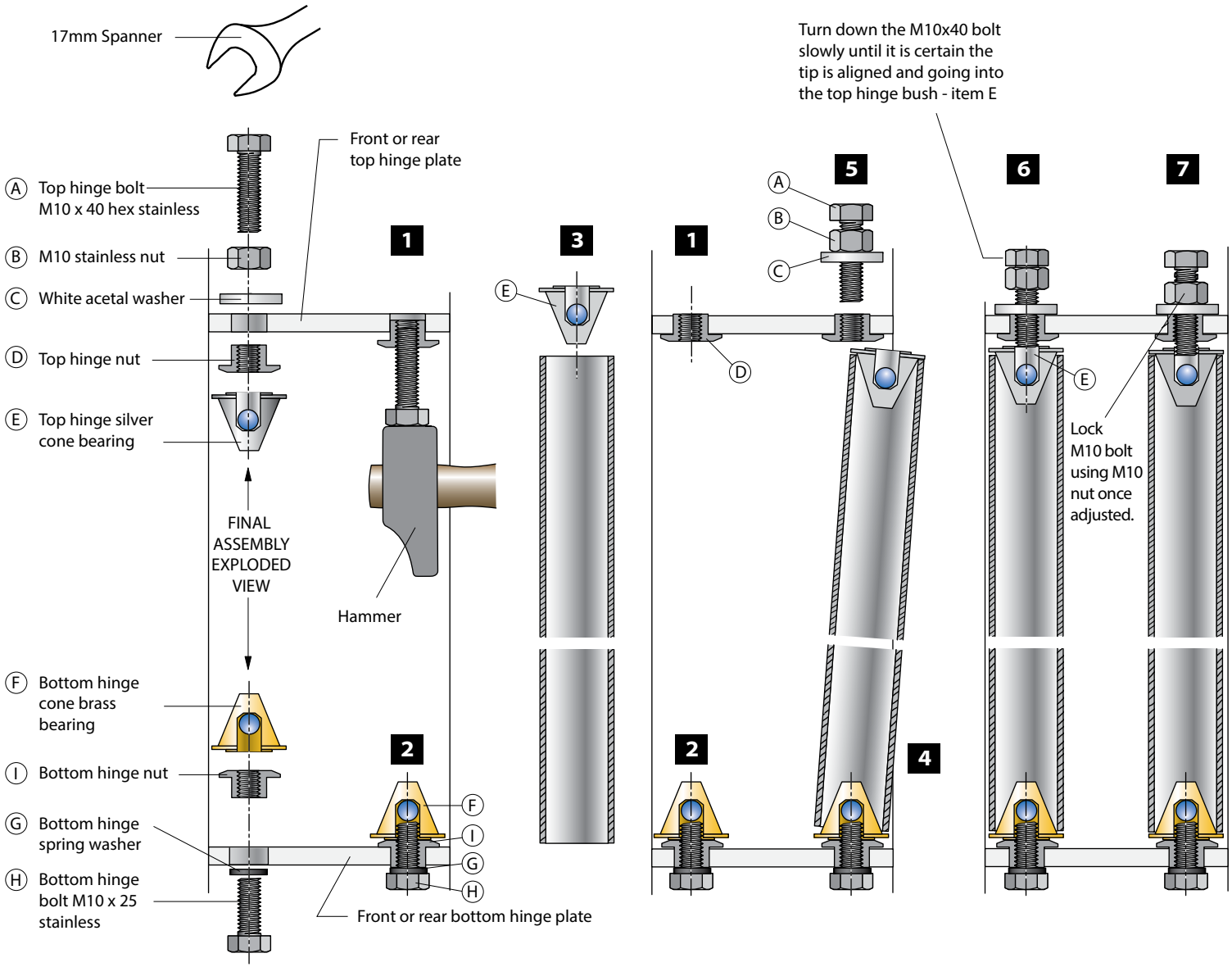


1 Bolt up all platforms using two M12 x 70 hex bolts with washers plus two M12 x 110 hex bolts with washers plus tube spacers.

Place the two tube spacers between the top of the platform and the underside of the division panel.



PROCEDURE

1. Screw M10 x 40 bolts into top hinge nut 'D' as shown in figure 1. Using a hammer tap in top hinge nuts (item D) hard against top hinge plate using hammer. Repeat to all top hinges except outer most holes on each end of barrier where gates are not used.

   Now repeat this procedure for all the bottom hinge nuts (item I) into the bottom hinge plates.

2. Screw item H - bottom hinge bolt up through bottom hinge plate ensuring item G spring washer in place. Tighten bottom hinge bolt firmly. Place item F bottom brass bearing (ensure ball bearing is inside as shown) over exposed thread of bottom hinge bolt.

3. Drop item E top cone bearing into the hinge tube of the gate you are installing (again checking the ball bearing is Inside item E as shown) and lightly tap down so sitting down flush with top of gate tube.

4. Place the gate hinge bar over the bottom hinge first - pushing down to ensure it is hard against the bearing.

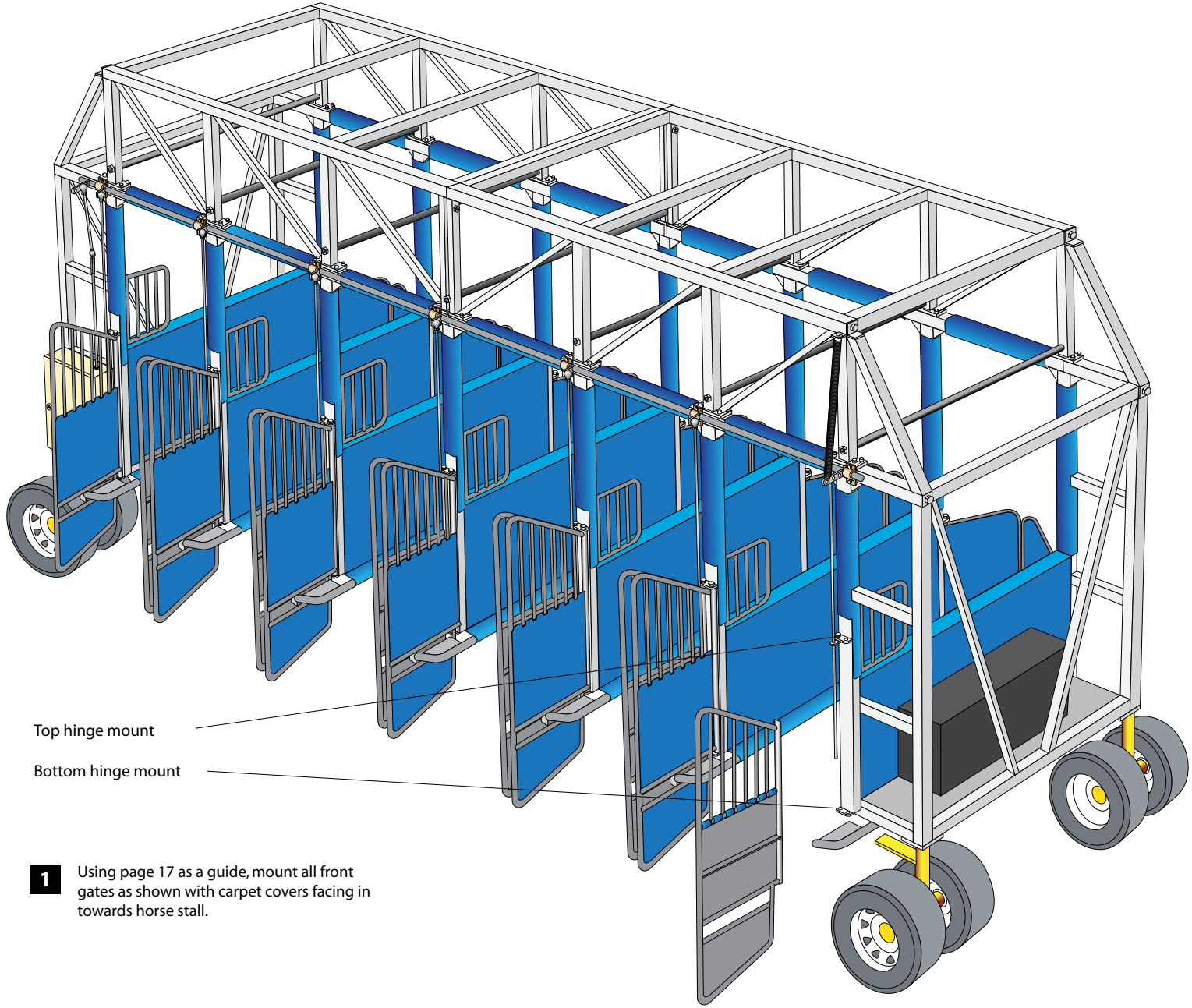
5. Then swing the gate top under the top hinge nut as shown. Gentle hammer persuasion may be required.

6. With the nut screwed up against the bolt head on the M10 x 40 and white acetal washer behind it - screw the bolt down through the hinge nut and continue to screw down by hand until it hits the bottom of the recess in the hinge bush. - i.e. against the ball bearing.

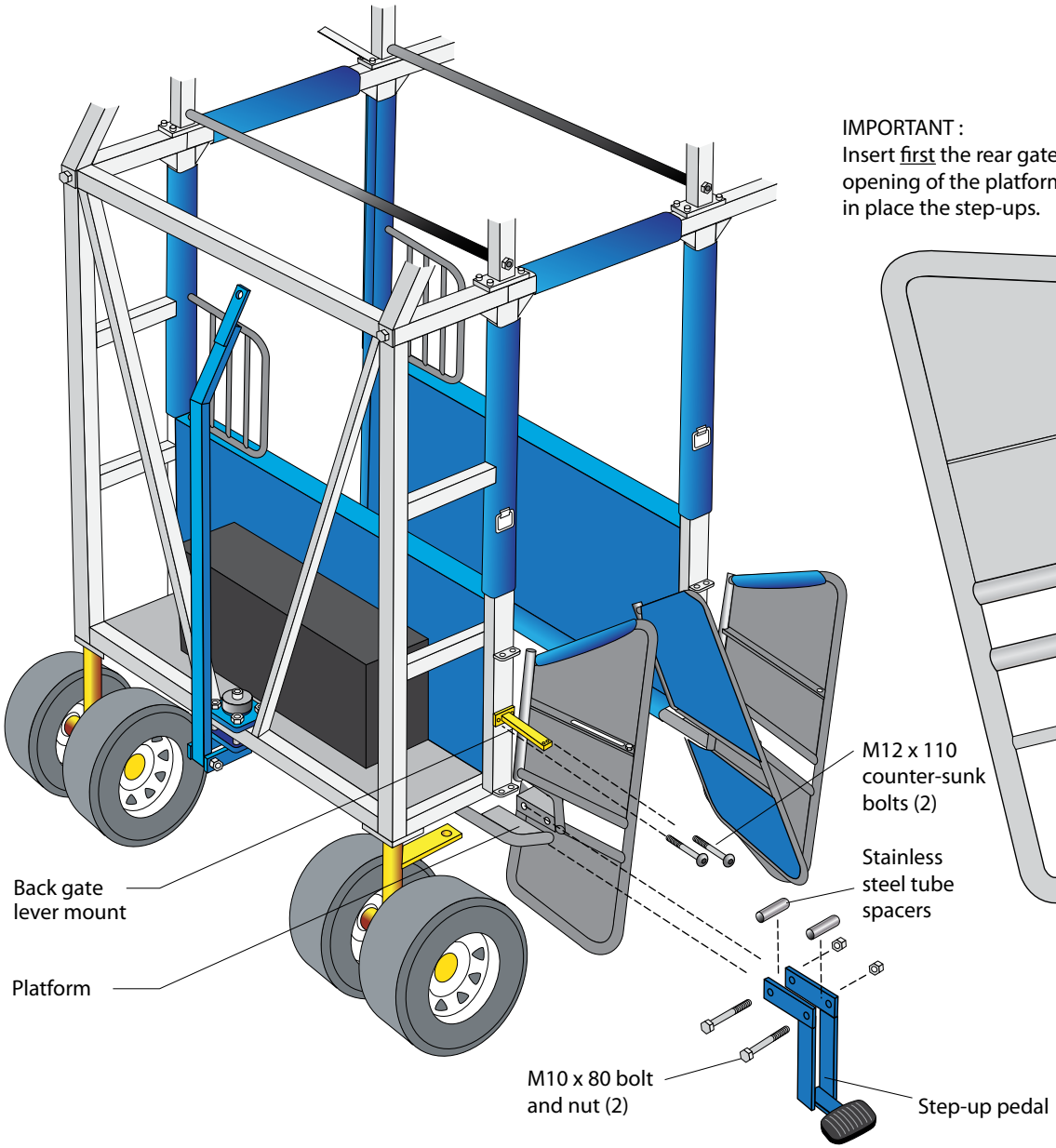
7. Once pressing against the hinge bush ball beaing tighten the M10 x 40 bolt an additional 1/2 turn using the 17mm spanner. Now screw down and tighten the M10 nut to lock bolt into position.

Adjustments

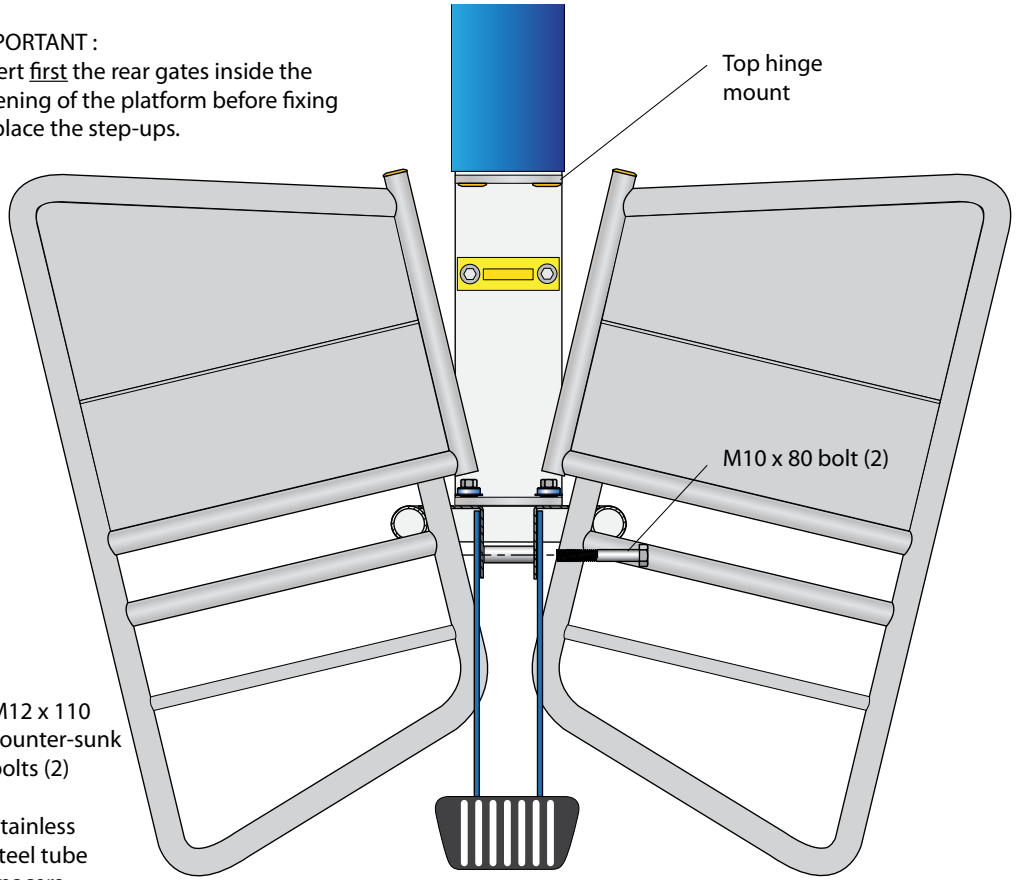
If over time some movement develops in the gate hinge, undo M10 nut - screw down bolt until no movement is felt, then retighten M10 nut



1 Using page 17 as a guide, mount all front gates as shown with carpet covers facing in towards horse stall.



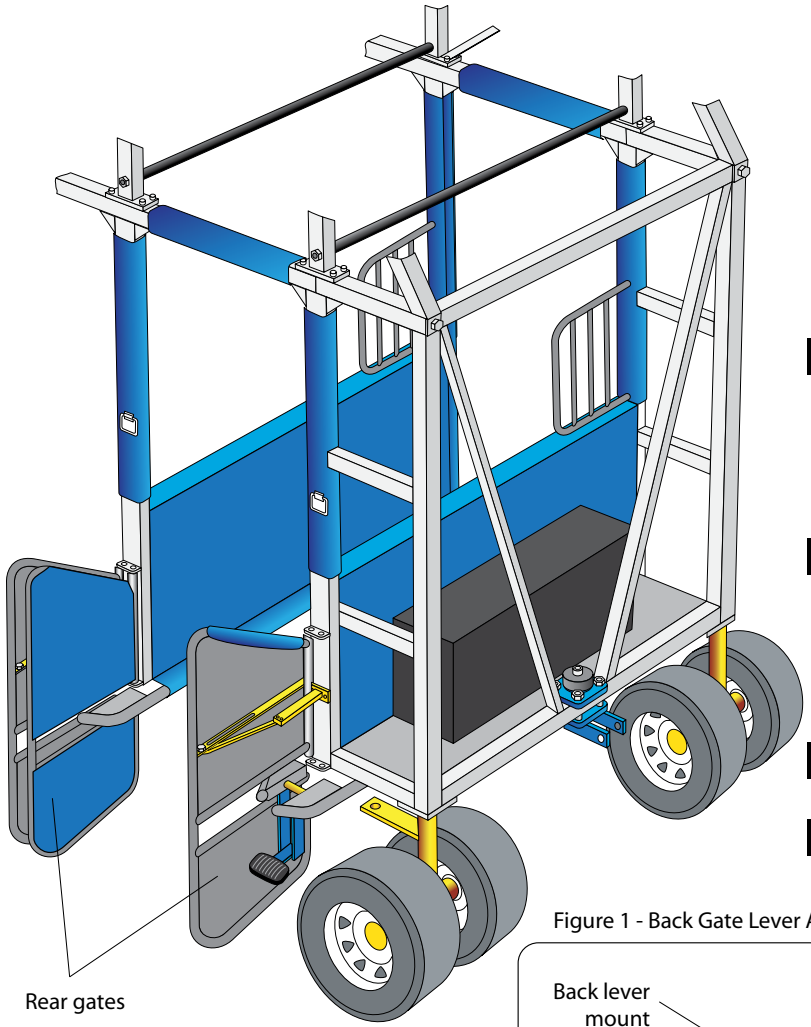
IMPORTANT :
Insert <u>first</u> the rear gates inside the opening of the platform before fixing in place the step-ups.



1 Using the dome head M12 x 100 bolts, attach the back gate lever mount. Ensure bolts are very tight. *<u>This step must be completed first.</u>*

2 Attach the back gates using the same method as described for front gates on page 20.

3 Slide in the 'step-up pedal' between the end of the platform. Bolt into place using two M10 x 80 bolts as shown together with two stainless steel tube spacers to enable firm tightening.



1 Bolt on loosely back gate levers to the back gate slide with the M10 x 40 bolt ensuring the washer is sliding on top of the back gate slide (Refer Figure 1). Ensure all the long levers are bolted to the right side gates and short levers to the left side as indicated from the horses view walking in.

2 Making sure the lever to mount spacer goes underneath the back lever mount and on top of the back lever at the M10 x 50 end. Using this bolt, attach this end to the inside corresponding hole as shown and tighten so lever can turn easily but without excessive up and down movement (no rattles).

3 Now tighten the M10 x 40 nut until slight pressure is on the top washer (no rattles).

4 Once both left and right levers are on, open and close gates to ensure they do not foul each other.

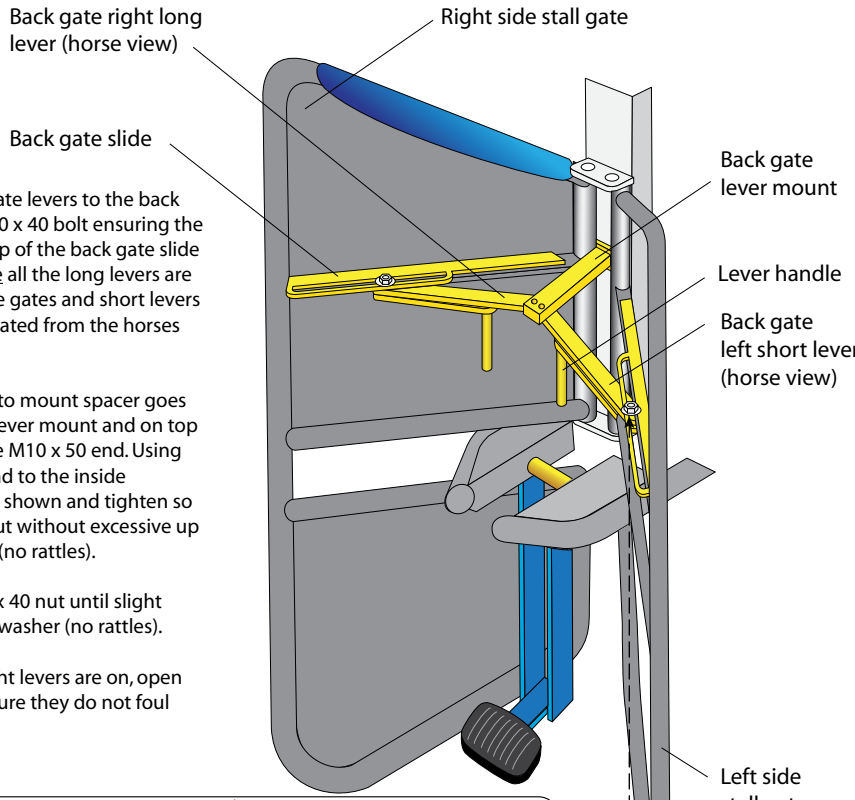
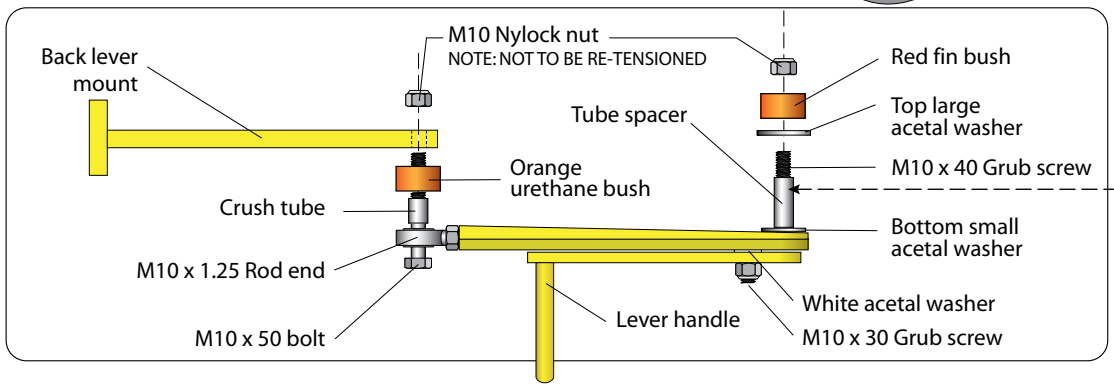
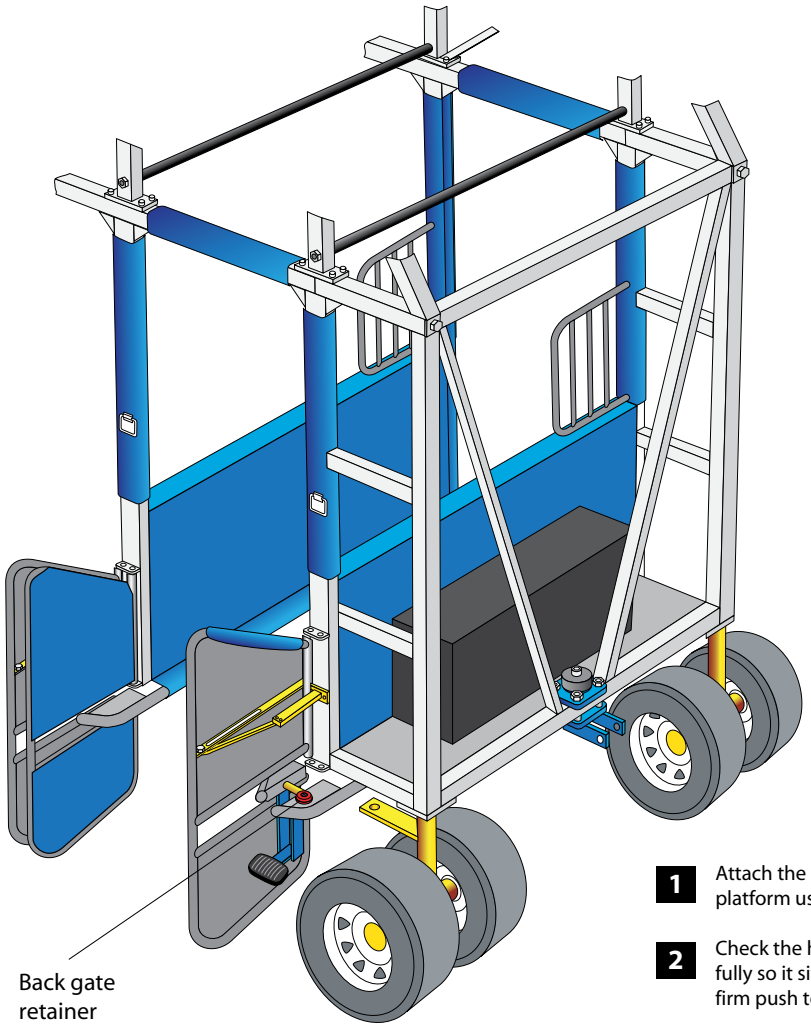
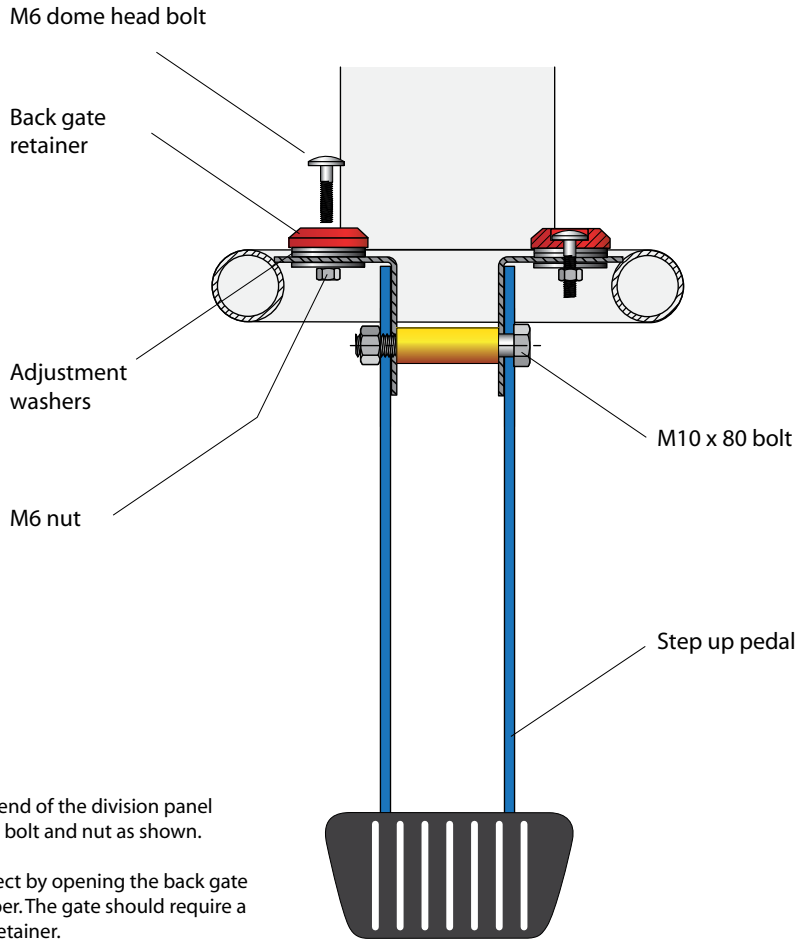


Figure 1 - Back Gate Lever Assembly



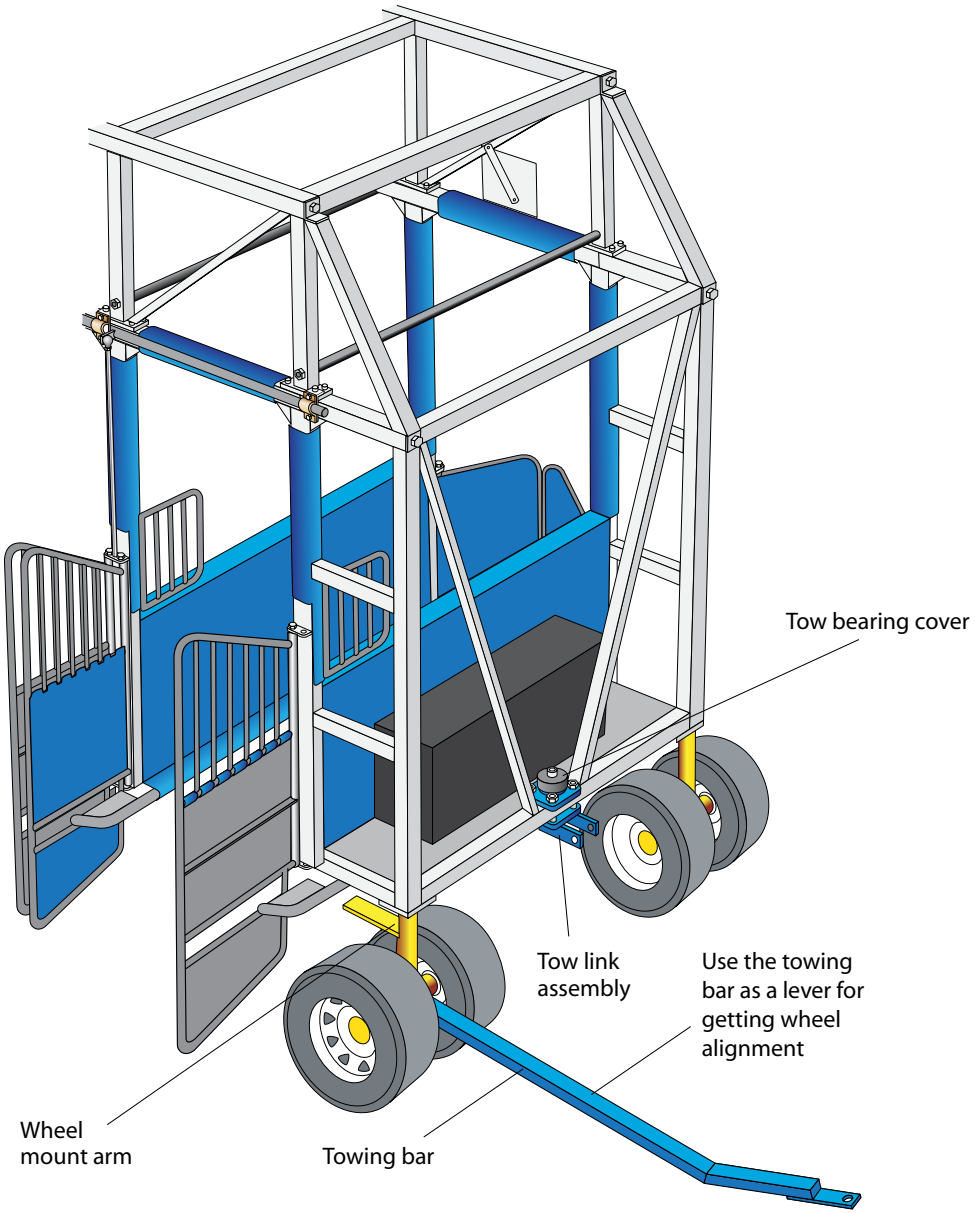


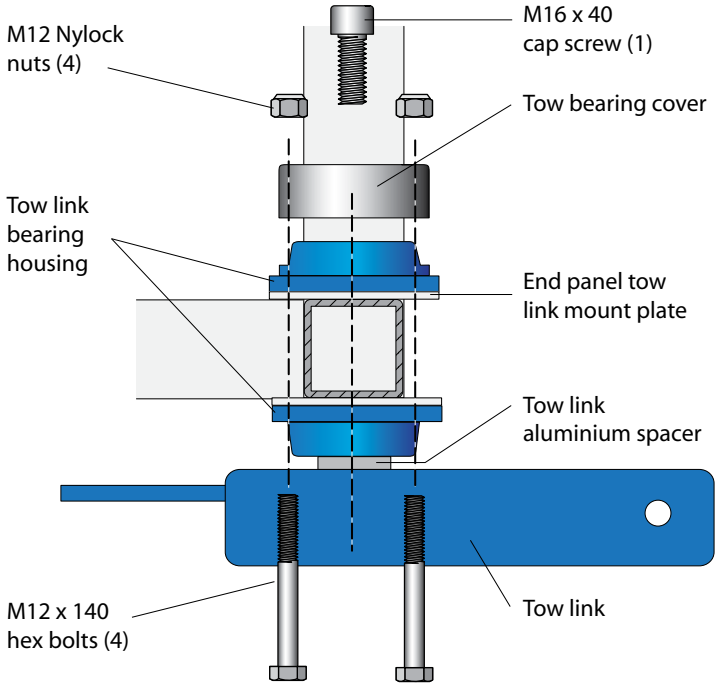


1. Attach the back gate retainer onto the end of the division panel platform using the 1/4 x 20 dome head bolt and nut as shown.

2. Check the height of the retainer is correct by opening the back gate fully so it sits up and over the red stopper. The gate should require a firm push to get it fully open over the retainer.

3. If the gate slips over too easily or is too difficult to push open, the retainer can be adjusted by adding or subtracting the adjustment washers provided.





1. Using the tow bar as a lever, straighten the wheels so they are perfectly in line with the starting gate (straight).
2. Loosely bolt together the tow link bearing housings as shown using four M12 x 140 hex head bolts with Nylock nuts.
3. Slide the tow link ali spacer over the tow link shaft. Now push the tow link up through both bearings. NOTE: Bearing alignment important to allow shaft of tow link to be pushed through.
4. Use the tow link ali washer together with the M16 x 40 cap screw as shown to now bolt up tight the tow link.
5. Check the tow link can turn easily.

Overhead View - Tie Rod Assembly

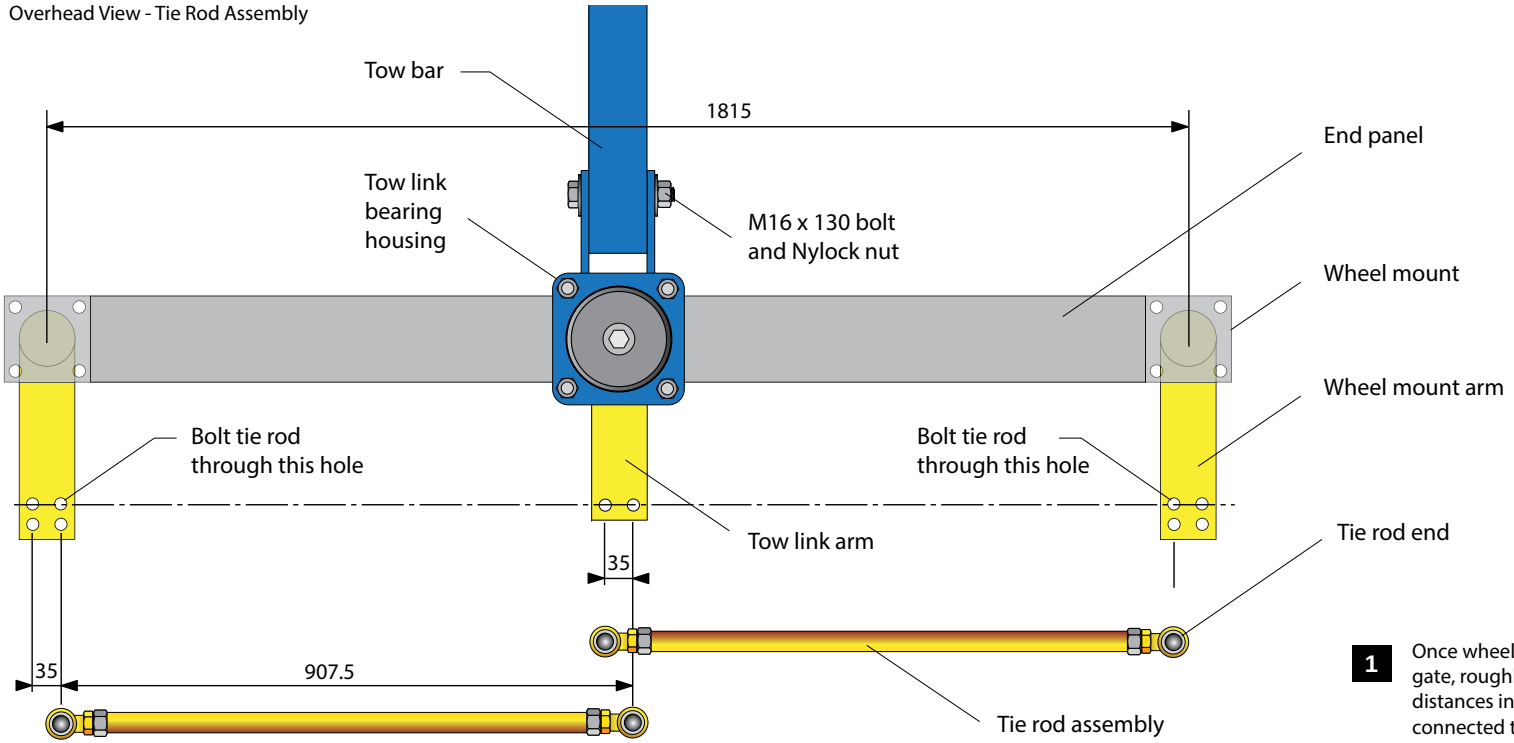
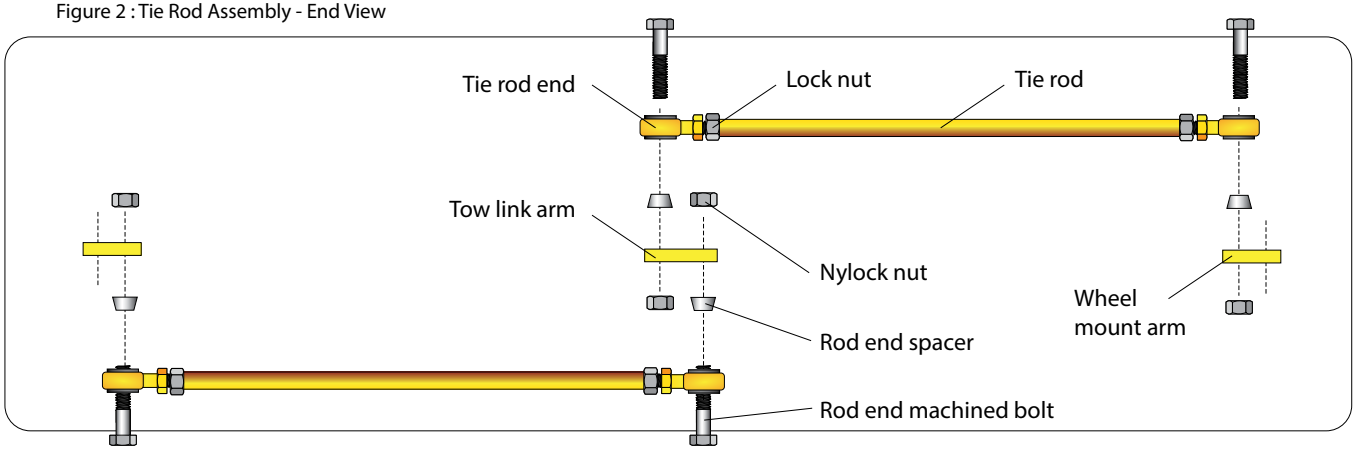


Figure 2 : Tie Rod Assembly - End View



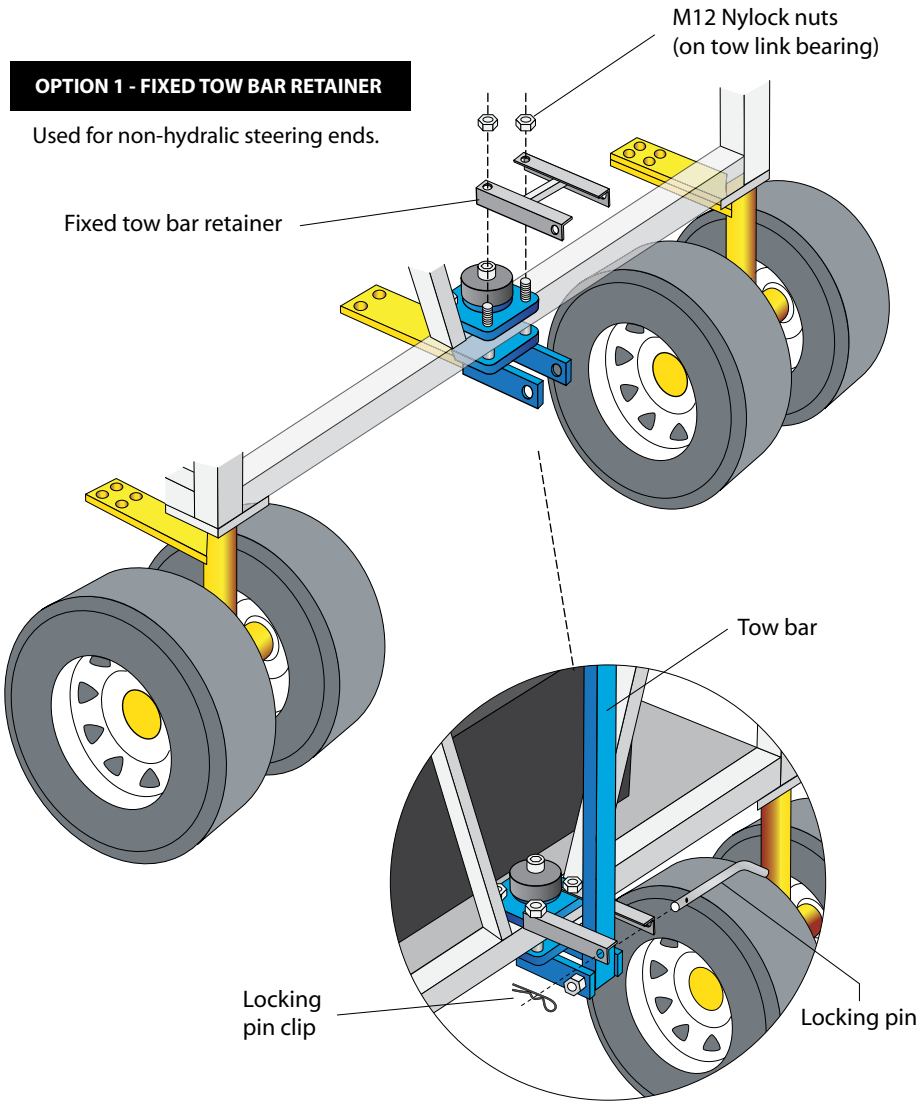
1 Once wheel mount arms are aligned with the gate, roughly set their distances apart with distances indicated making sure the tow bar is connected to the tow link and sitting out straight and perpendicular to the end panel.

2 Lower tie rods into holes as shown. If rods are too long or too short to fit easily, adjust the tie rod lengths evenly by undoing the lock nuts and screwing the tie rod ends to suit. Check Figure 2: "Tie Rod Assembly - End View" diagram for correct overlap and position of spacer bushes.

NOTE: If tie rod is found to hit top of tyres during testing, tie rod end should be unbolted from underneath the wheel mount arm and re-bolted on top of the wheel mount arm.

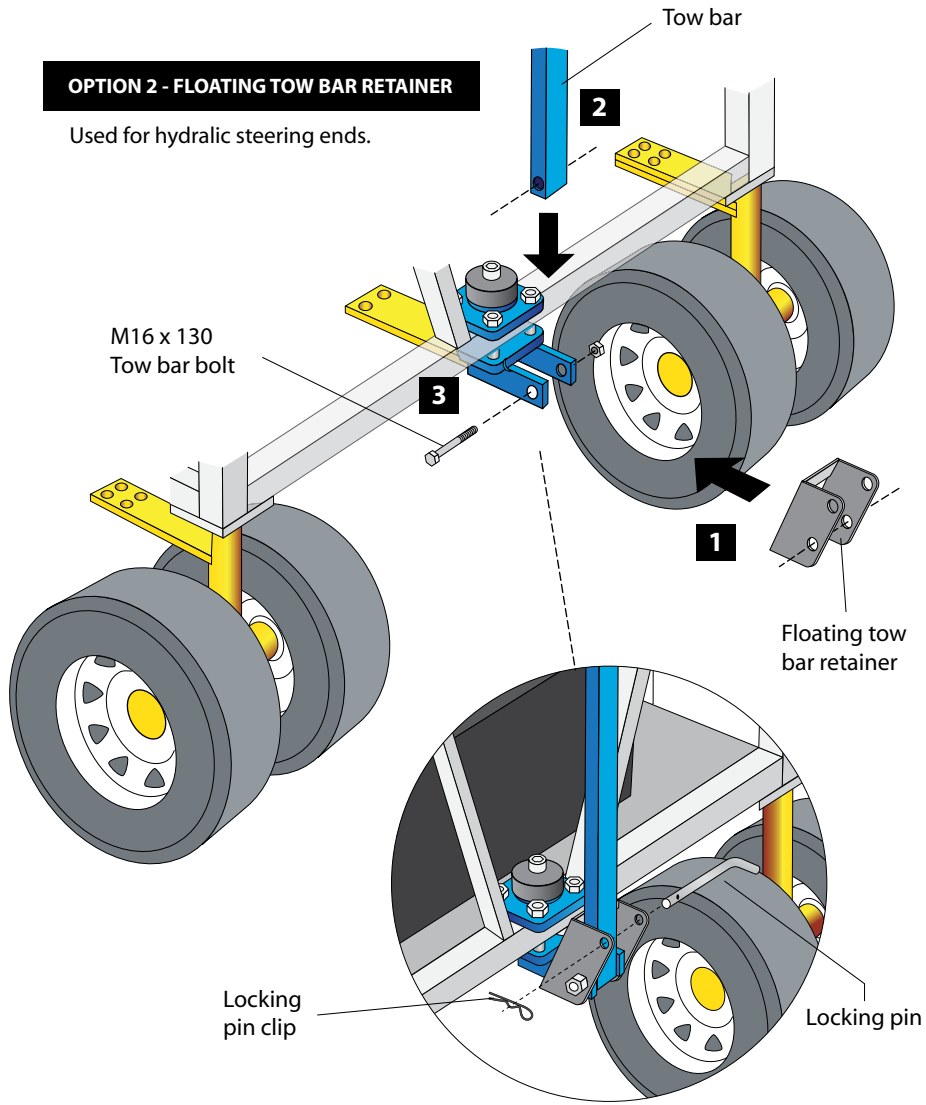
OPTION 1 - FIXED TOW BAR RETAINER

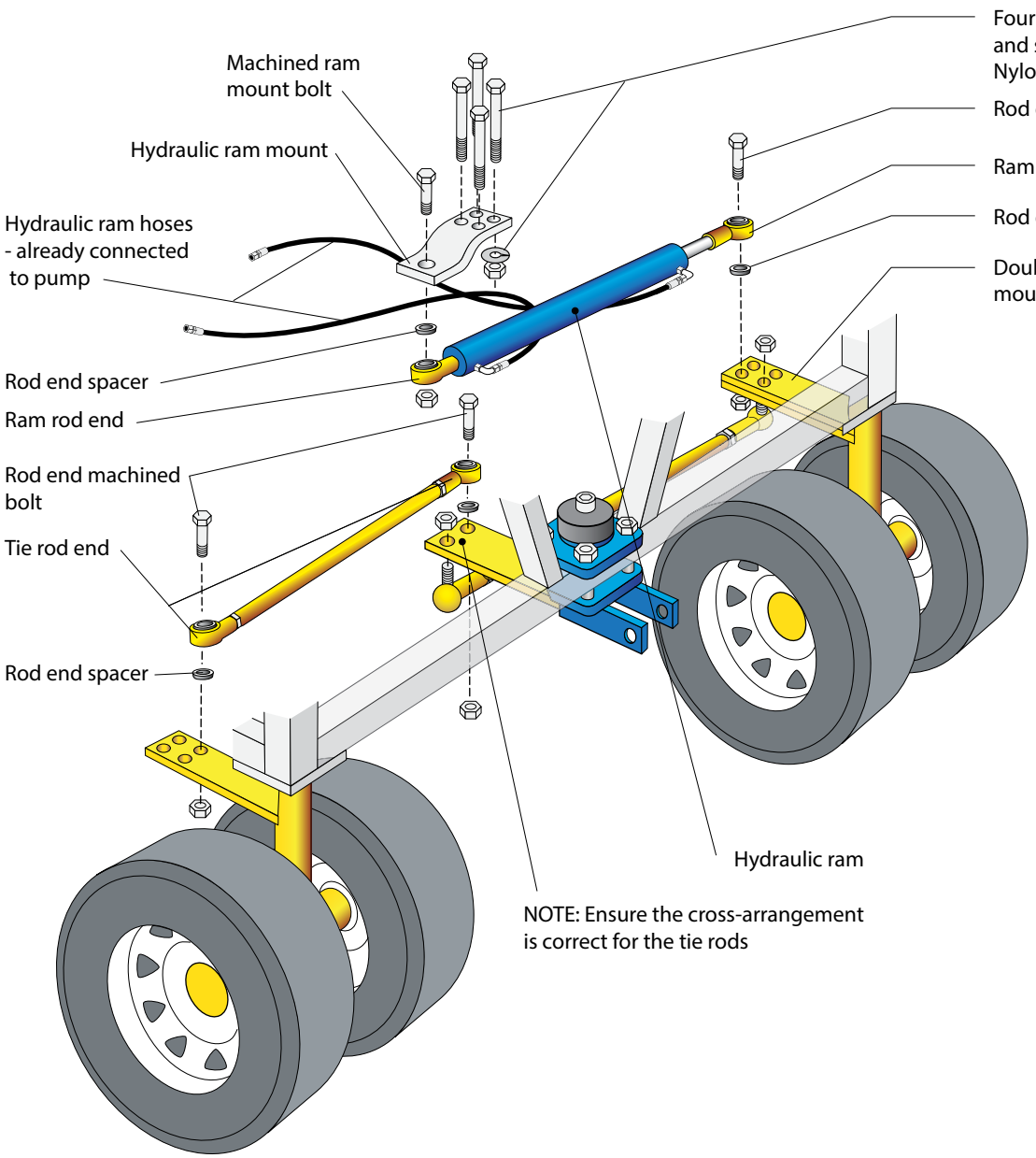
Used for non-hydralic steering ends.



OPTION 2 - FLOATING TOW BAR RETAINER

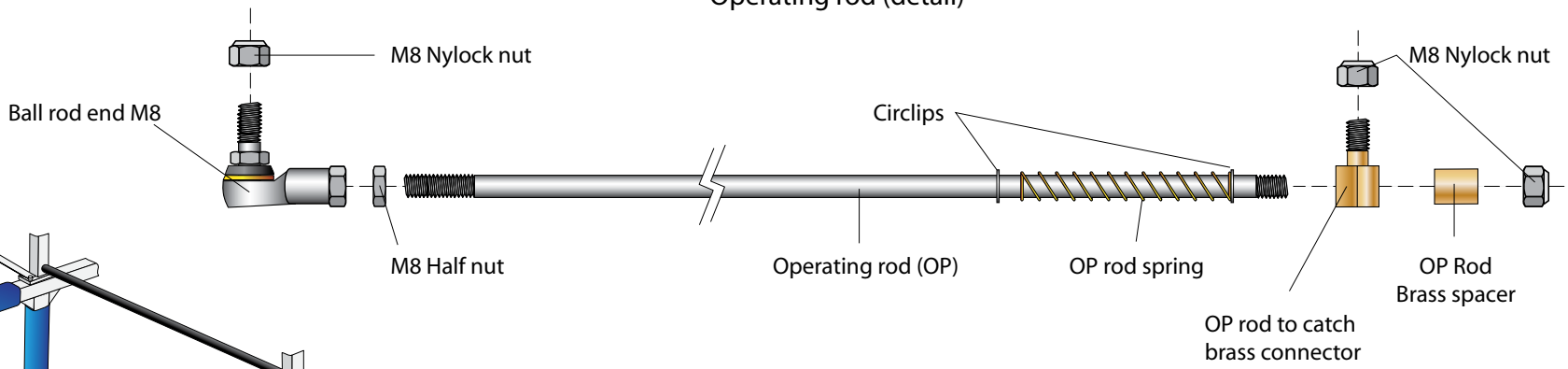
Used for hydralic steering ends.

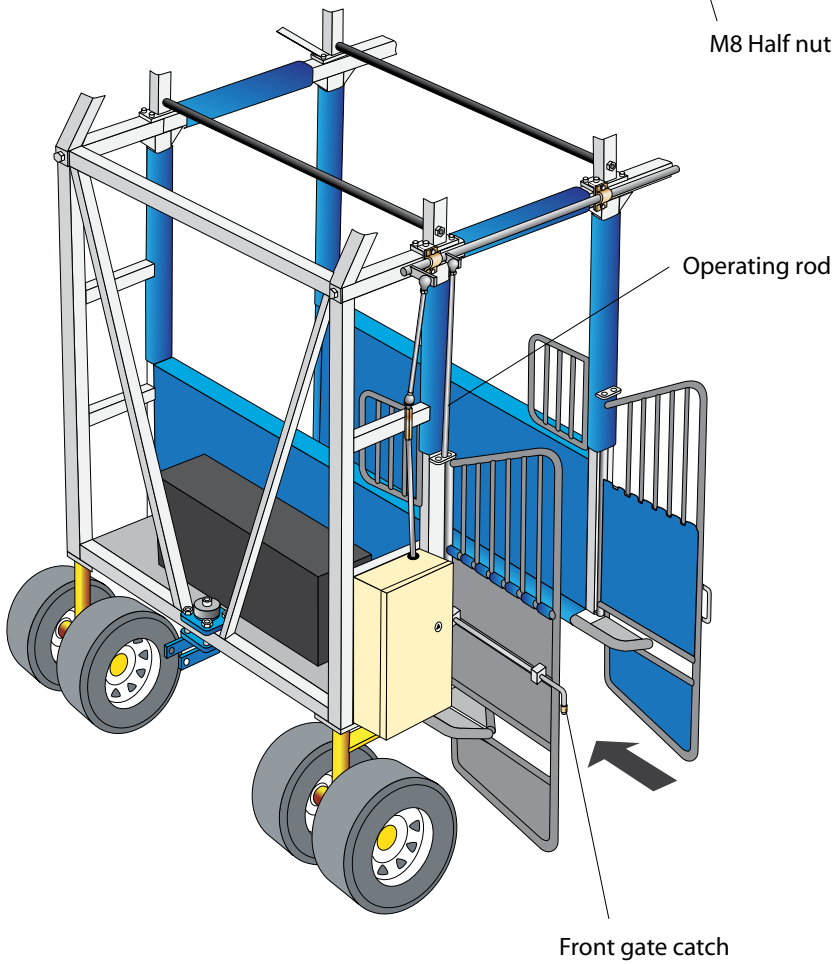




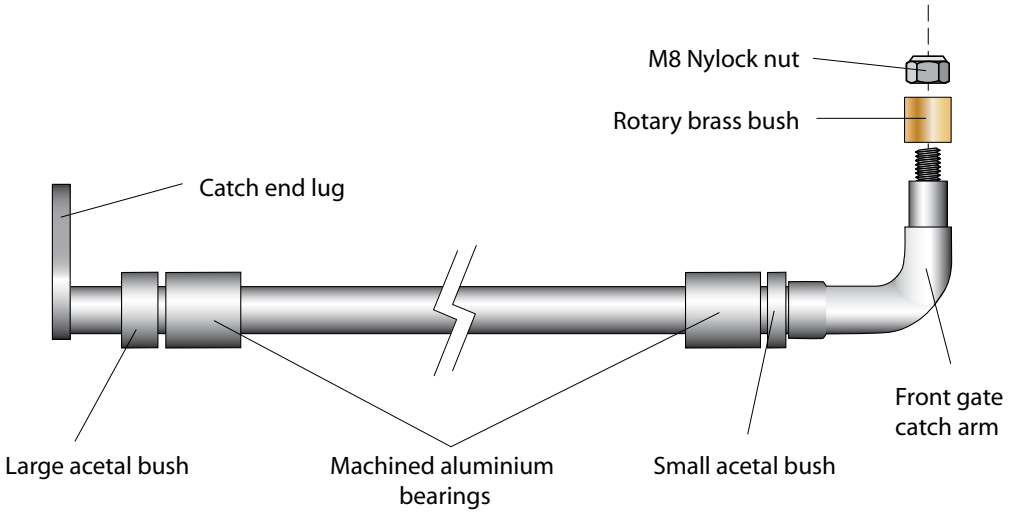
1. Attach the hydraulic ram mount to the end panel using the four M12 x 120 bolts and Nylock nuts.
2. Attach the hydraulic ram to the ram mount and the wheel mount arm as shown and tighten.
3. Connect the ram hoses to the hydraulic ram.
4. Fill the hydraulic pump reservoir.
5. Operate the ram using the hydraulic pump joy stick back and forth to bleed out air and to check for any tyre, tie rod, or hose interference with each other.

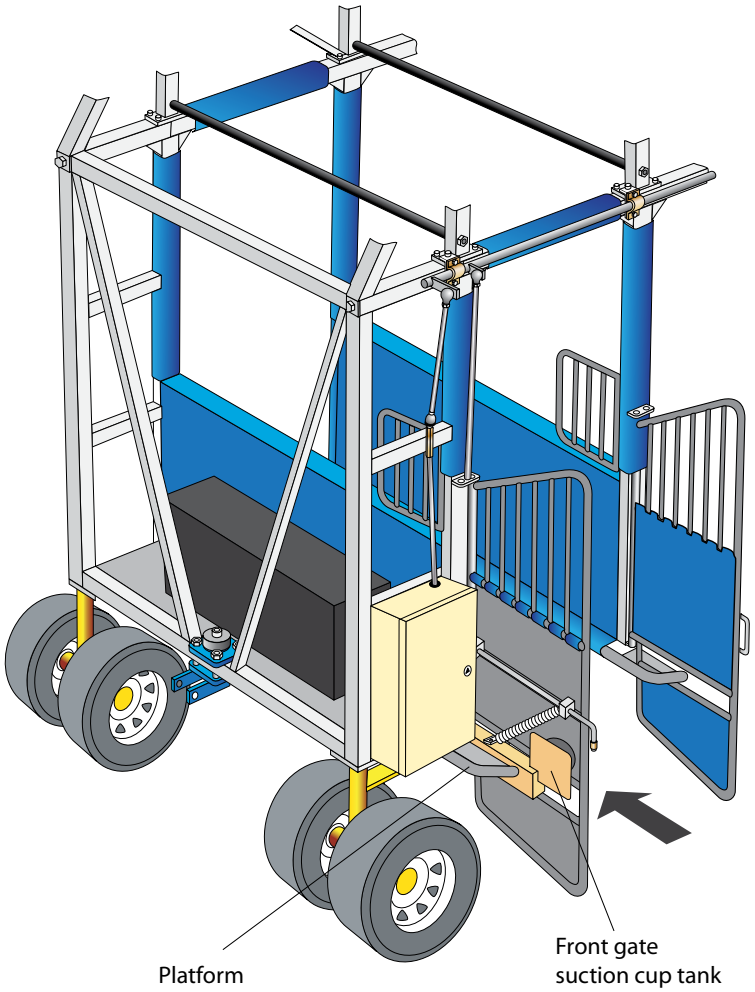
Operating rod (detail)

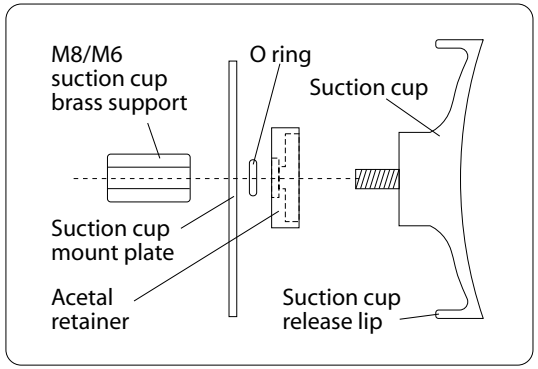




Front gate catch (detail)







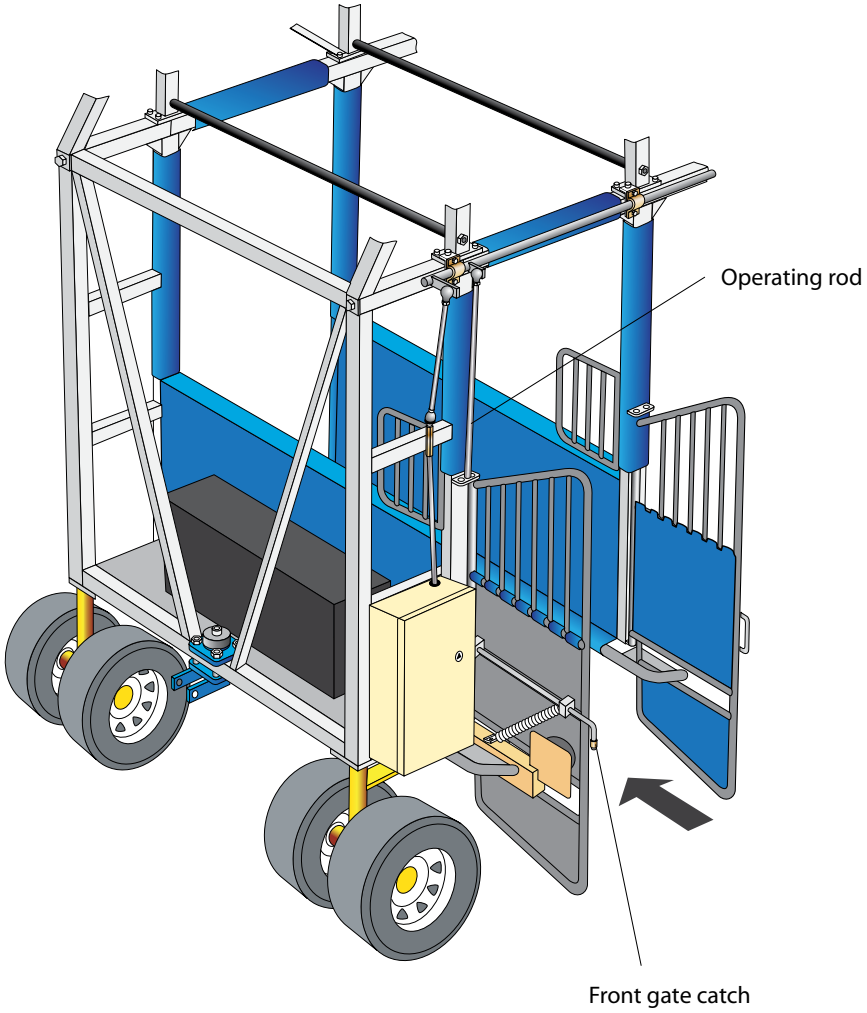
Suction Cup Assembly

1. Attach suction cups as shown in diagram to the front gate suction cup mount plates.
NB: DO NOT over tighten.

2. Using the M10 x 80 hex head bolt and nut (2 off) position the front gate suction cup tank between the front of the platform and bolt tightly into position.

3. Check the suction cups line up correctly making full contact on the suction cup tank plate.
NOTE: To easily release the suction cups from sticking, push the suction cup release lip.

4. Hook the front gate spring onto the front gate spring lug and the other end to the front gate suction cup tank as shown in the photo.
NOTE: Be careful not to over stretch the springs when attaching.



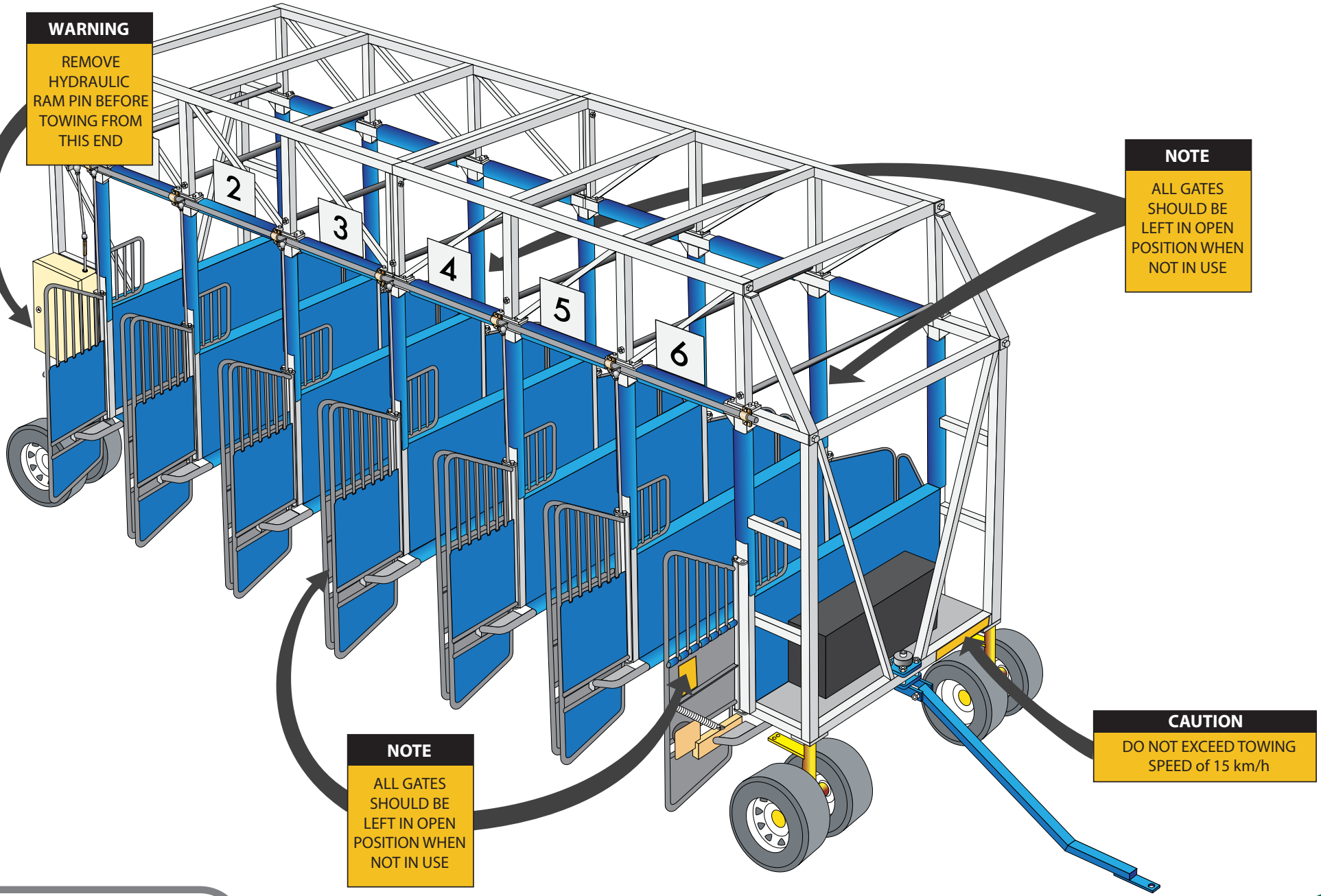
1 All front gate catches on the ends should point vertically down when gates are in released position. Most important is that they rotate around enough when in the locked position as show in the photo.

2 To adjust catch position, undo the locking nut on the operating rod above as shown in the photo, then twist the rod into or out of the operating rod end. This will adjust the rotated position of the catch. Once adjusted, re-lock the nut on the operating rod.

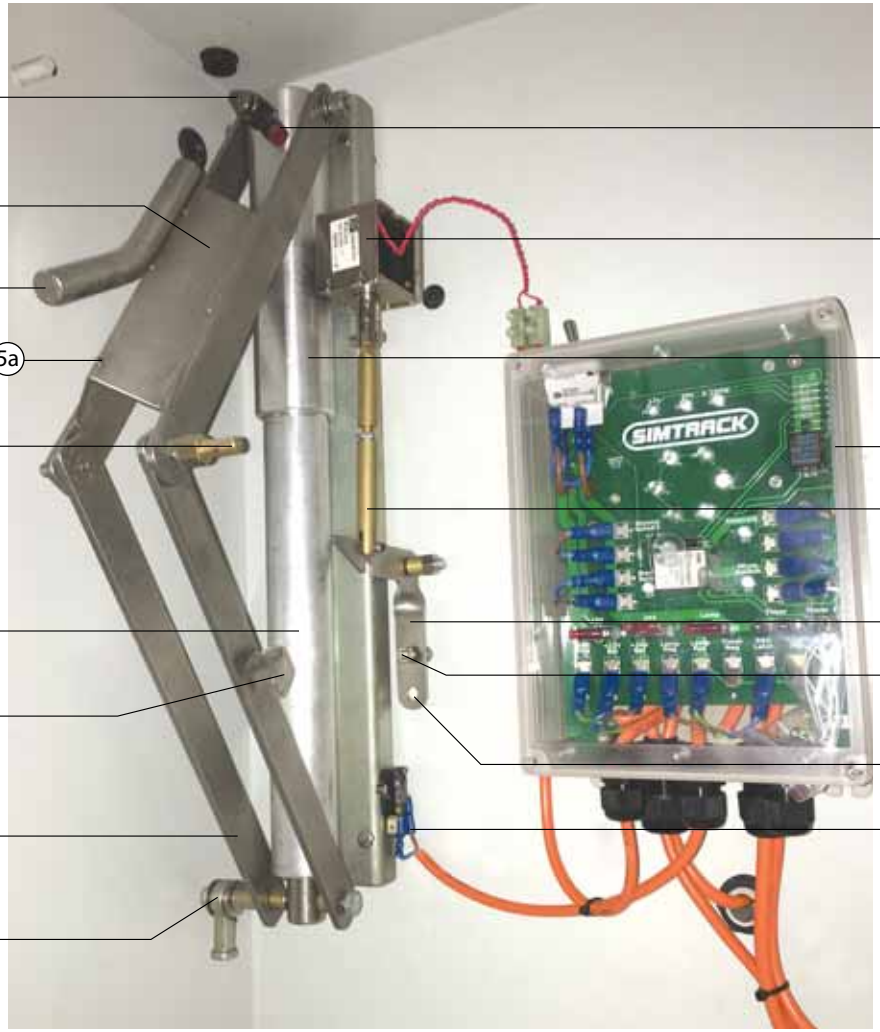
End of catch should rotate around and touch plate

Operating rod end

Locking nut Operating rod


WARNING
REMOVE HYDRAULIC RAM PIN BEFORE TOWING FROM THIS END
NOTE
ALL GATES SHOULD BE LEFT IN OPEN POSITION WHEN NOT IN USE
2
3
4
5
6
NOTE
ALL GATES SHOULD BE LEFT IN OPEN POSITION WHEN NOT IN USE
CAUTION
DO NOT EXCEED TOWING SPEED of 15 km/h


Emergency start pull handle
Main power on/off switch
Main control box
Control circuit board
Orange LED indicator lights
Accumulator
setting handle
Flashing light switch
Starters lead plug



Accumulator relief valve (2)

Accumulator frame (5)

Accumulator setting rod (8)

Accumulator frame adjustment bolt (5a)

Accumulator latch (7)

Accumulator cylinder (3)

Micro switch contact lug (16)

Accumulator frame arm (6)

Accumulator linkage to operating shaft (9)

(1) Accumulator main body valve

(10) Magnet

(4) Accumulator clevis

(19) Control circuit board

(15) Magnet to catch - link adjustment

(11) Magnet catch

(12) Magnet catch adjustment screw

(13) Manual release - attachment point

(14) Micro switch

CONTROL FUSE BOX DETAIL

(17) Main power switch

Built in Relay (18)

(20) Fuse (10A) Power In 12V

(21) Fuse (10A) Magnet 24V

(22) Fuse (10A) Light 12V

(23) Fuse (1A) Timer 12V

A Turn on Main power switch (17)

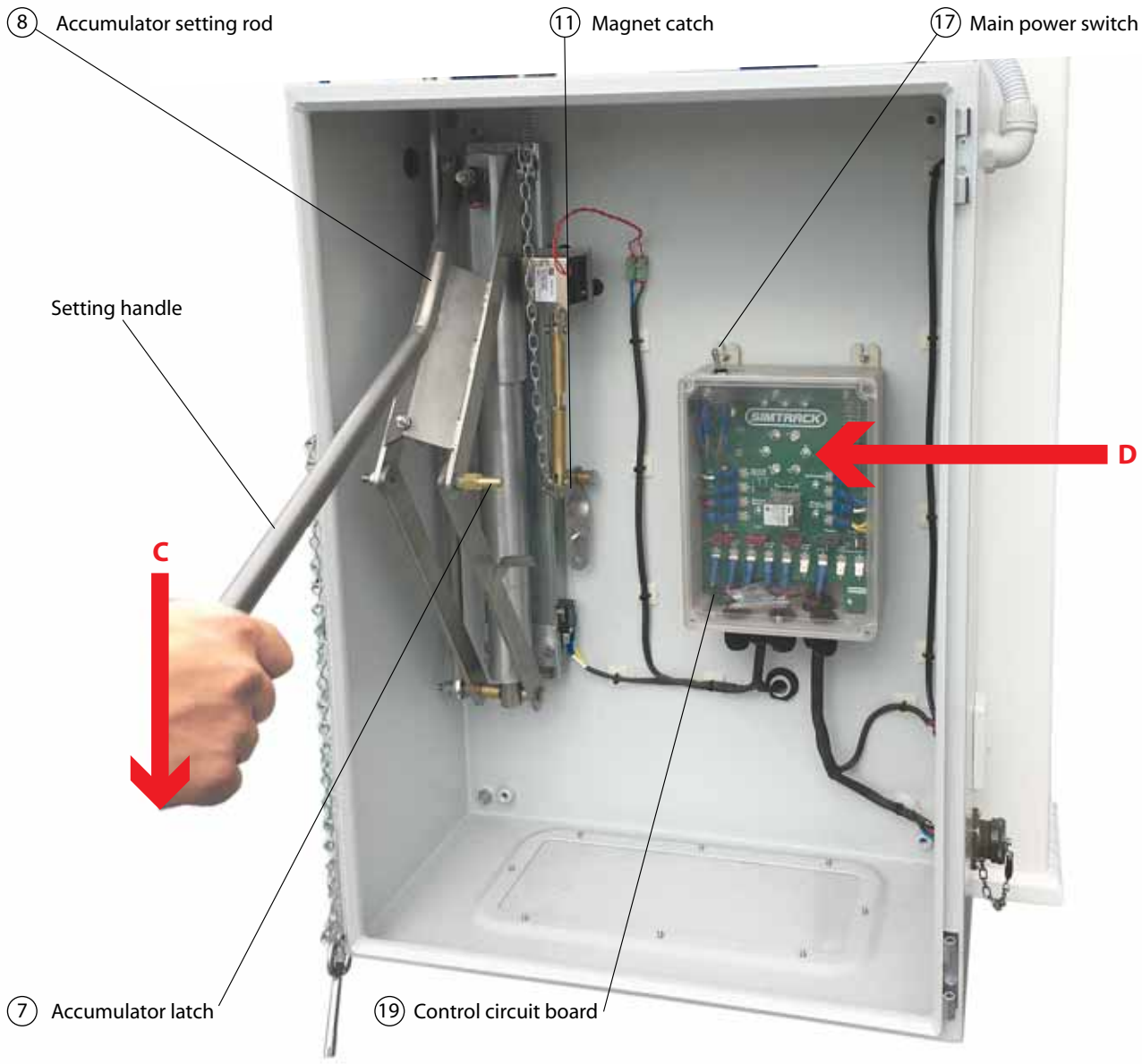
B Check three top green LEDs are glowing for 12v - 24v - LAMP on control curcuit board (19)

C Place setting handle over Accumulator setting rod (8), and push down on handle until the Accumulator latch (7) is positively hooked by the Magnet catch (11)

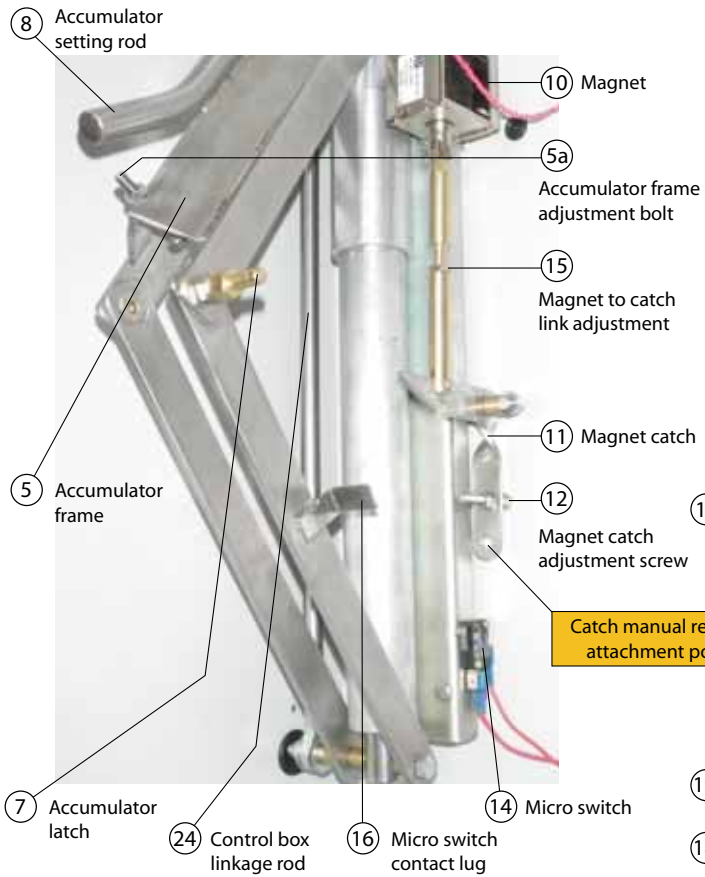
D Check the six orange LED lights are glowing to reflect the mechanism set (D4 to D9) PLUS the green LED for 'Micro Switch' (D10)

E Press the starter's button when ready to open the starting gates.

NOTE: Green LEDs will momentarily illuminate for D13 'Solenoid' and D15 'Starters Switch' to confirm both are working when the start button is pressed.



Should the starting gate fail to open, the following items should be checked to see they are set and working correctly:



Q. Is the magnet (10) working?
Check by turning main power switch on (17) and pressing the starters button while holding down the micro switch (14).

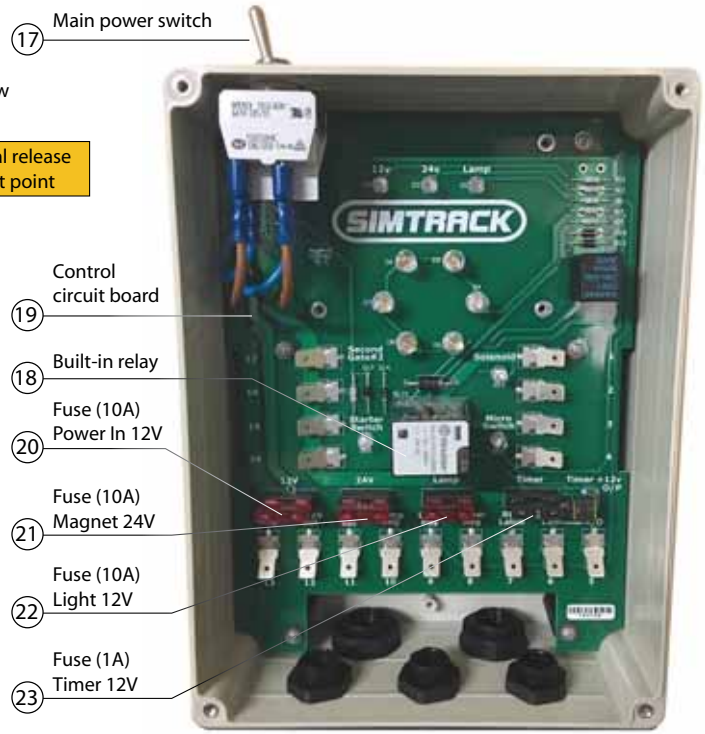
Solution if not working:
Get an electrician to check the magnet (10) is getting power and is okay - if not working or burnt out, go to emergency manual start procedure.

Q. Is the accumulator latch being hooked properly by magnet catch (11)?

Solution if not catching properly:
Check adjustment bolt (5a) is allowing accumulator frame (5) to go down far enough in order for catch to hook properly. If not, undo locking nut on (5a) and adjust to suit.

Q. Is the magnet catch (11) lifting and dropping enough to allow the accumulator latch (7) to catch and/or to be released completely?

Solution if not catching/releasing properly:
If not catching - Use screw adjustment on magnet catch adjustment (12).
If not releasing properly - Use screwable adjustment on magnet to catch link.



Q. Is the orange light on the control fuse box not turning on when the accumulator is set down and main power switch is on?

Solution if not working:
Check the micro switch (14) is being depressed correctly by the micro switch contacting lug (16). If not, adjust the lug position so it contacts and activates the micro switch with a click (lug should not be pushing hard on micro switch).

Remove cover of control circuit board (19) and check fuses (20 - 23) are not blown. If blown, replace and do a test start - if fuse blows again, an electrician will be required to diagnose problem and may need to start using emergency manual start procedure.

EMERGENCY MANUAL START PROCEDURE

1. Locate Emergency Pull-Start T-Handle (see top page 30).
2. When ready pull T-Handle and the gates will open.

BACK UP EMERGENCY MANUAL START PROCEEDURE

SHOULD PULLING THE EMERGENCY RELEASE T-HANDLE FAIL FOR ANY REASON

1. Gently connect a strap or rope to the catch manual release attachment hole. (see diagram left - item 12)
2. Set the accumulated down ready for start (if not already) as per normal using handle on the setting rod (8).

   NOTE: If magnet is burnt out and seized, you may need to remove the magnet to catch link adjustment (15) so the magnet catch (11) can move freely.
3. When ready to start, simply pull the manual operating strap to release the gates.

NB: Oil in tank should be approximately one inch below completely full.

Oil type: Automatic Transmission Fluid Dexron III or equivalent

Control box aerial

Control box
main power switch

Special steering
control box

Battery storage
and charge system

Pump solenoid

Valve

Electric valve

Electric motor

Pump hose

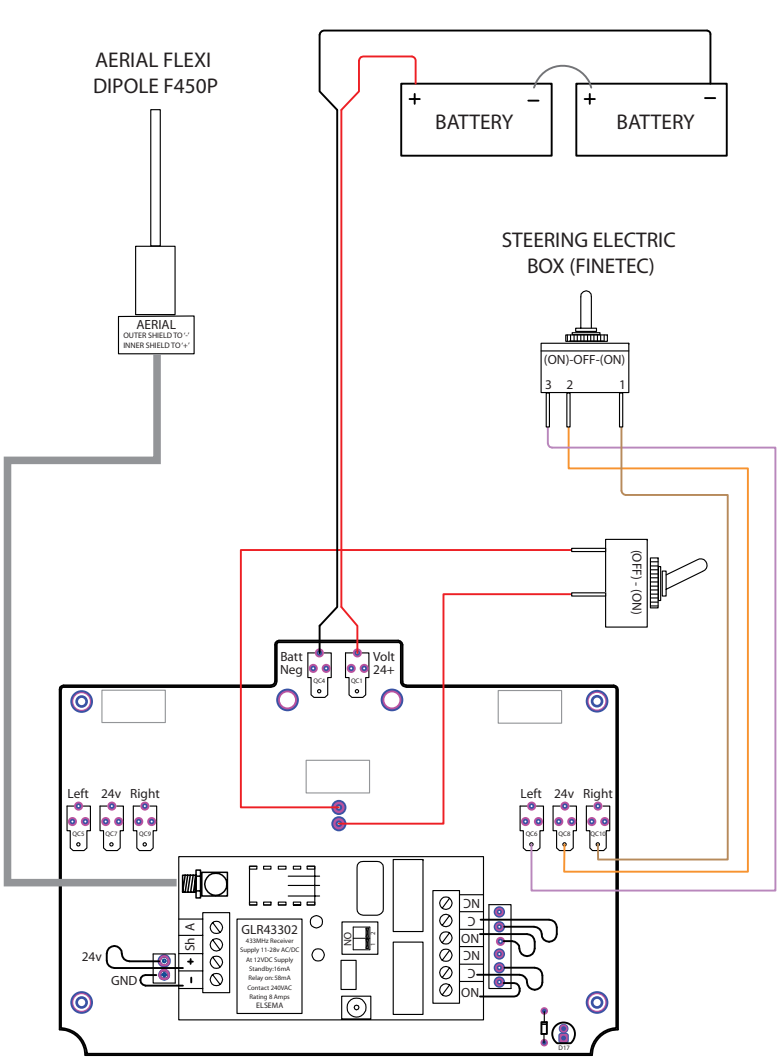
Oil tank

Tow bar
sensor switch

Steering limit light

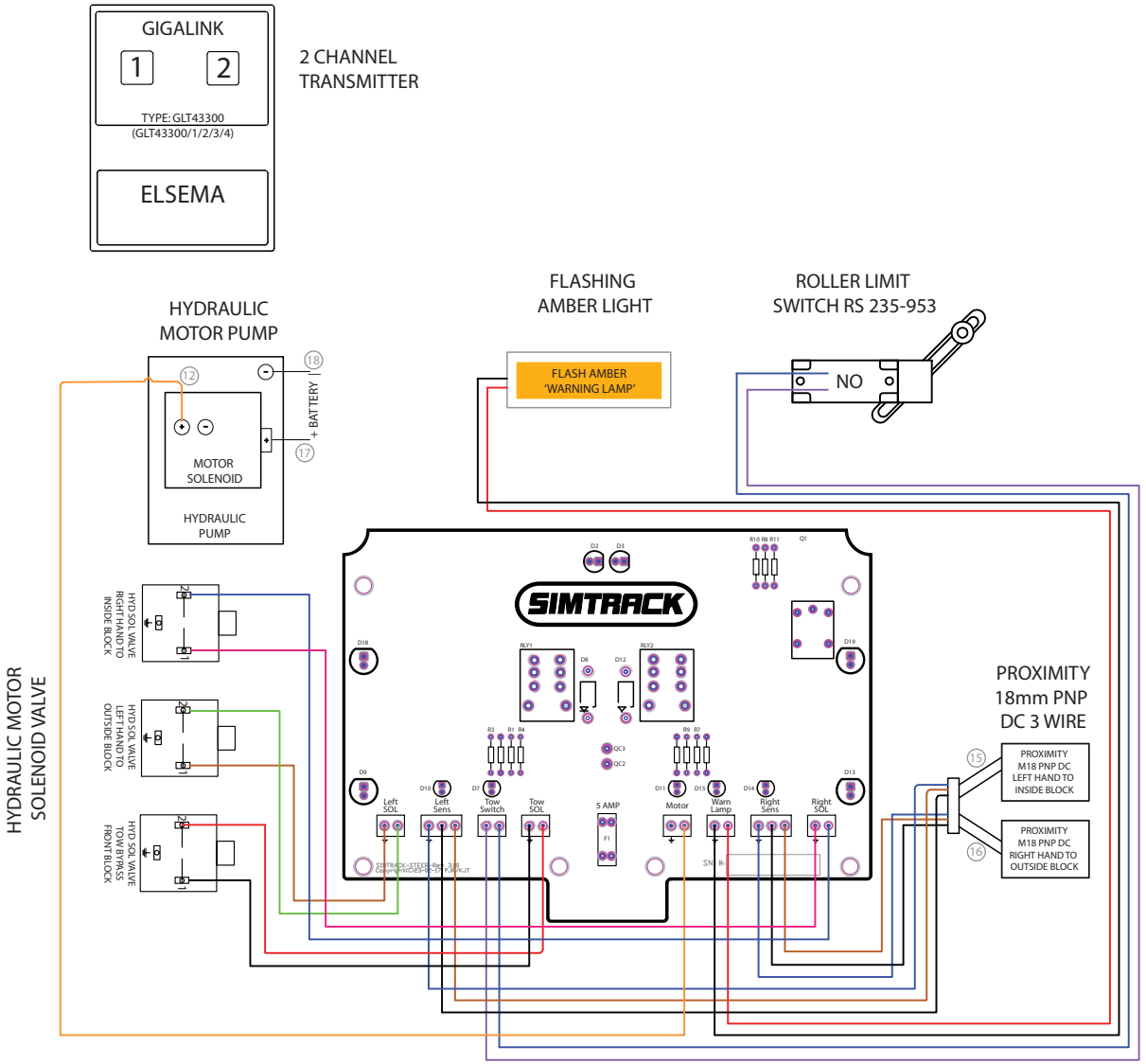
Proximity switch

Tow bar
proximity switch arm



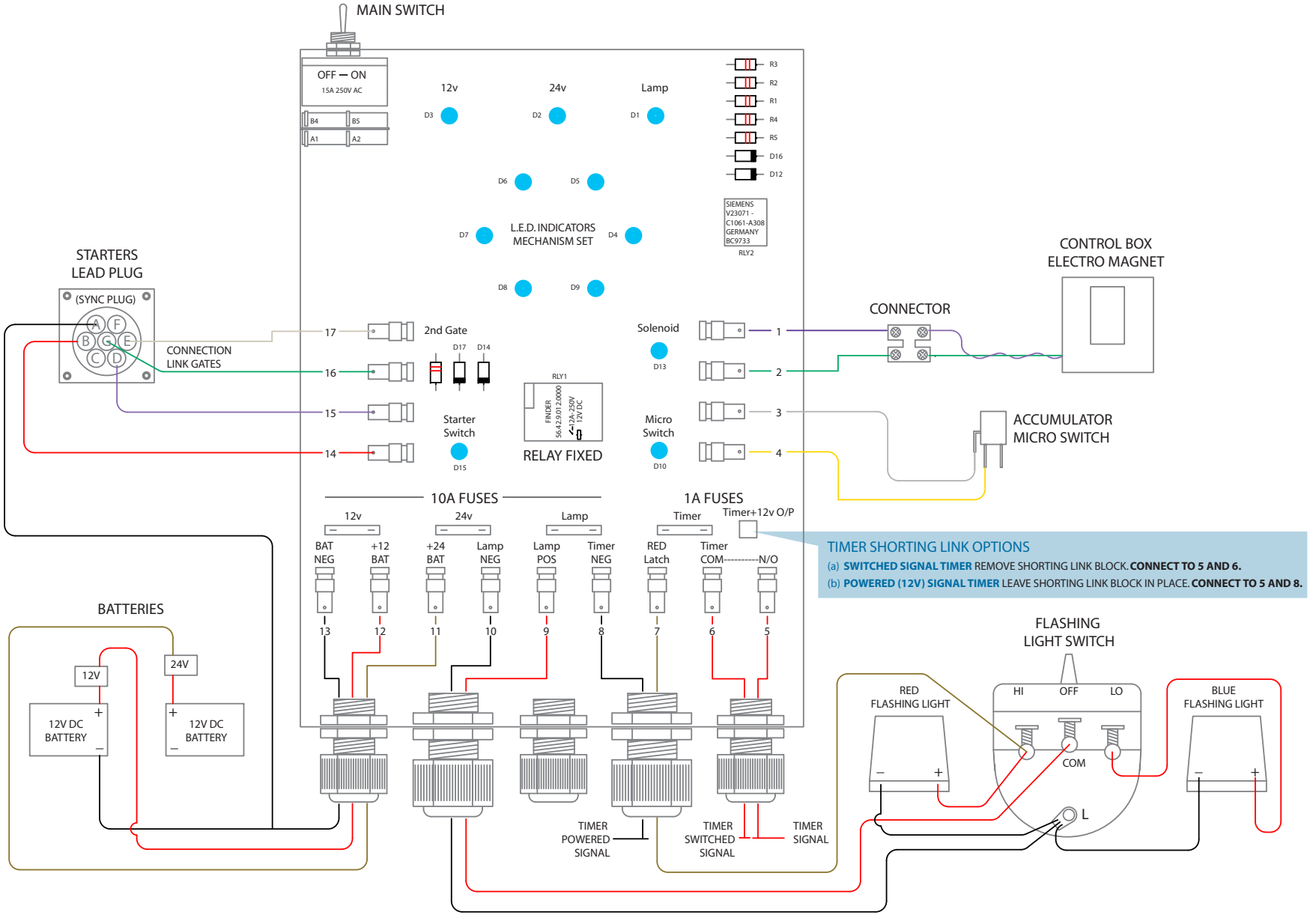
ELSEMA GLR43302 BOARD (MODIFIED)

BACK CIRCUIT BOARD VIEW



ELECTRIC BOX - FINETEC MADE

FRONT CIRCUIT BOARD VIEW


MAIN SWITCH
OFF — ON
15A 250V AC
B4
B5
A1
A2
12v
24v
Lamp
D3
D2
D1
D6
D5
D7
L.E.D. INDICATORS
MECHANISM SET
D4
D8
D9
R3
R2
R1
R4
R5
D16
D12
SIEMENS
V23071 -
C1061-A308
GERMANY
BC9733
RLY2
STARTERS
LEAD PLUG
(SYNC PLUG)
CONNECTION
LINK GATES
17
16
15
14
2nd Gate
D17
D14
Starter
Switch
D15
RLY1
FINDER
56.42.9.012.0000
12A 250V
12V DC
RELAY FIXED
Solenoid
D13
Micro
Switch
D10
1
2
3
4
CONNECTOR
CONTROL BOX
ELECTRO MAGNET
ACCUMULATOR
MICRO SWITCH
10A FUSES
1A FUSES
12v
24v
Lamp
Timer
Timer+12v O/P
BAT
NEG
+12
BAT
+24
BAT
Lamp
NEG
Lamp
POS
Timer
NEG
RED
Latch
Timer
COM
N/O
13
12
11
10
9
8
7
6
5
TIMER SHORTING LINK OPTIONS
(a) SWITCHED SIGNAL TIMER REMOVE SHORTING LINK BLOCK. CONNECT TO 5 AND 6.
(b) POWERED (12V) SIGNAL TIMER LEAVE SHORTING LINK BLOCK IN PLACE. CONNECT TO 5 AND 8.
BATTERIES
12V
24V
12V DC
BATTERY
12V DC
BATTERY
TIMER
POWERED
SIGNAL
TIMER
SWITCHED
SIGNAL
TIMER
SIGNAL
FLASHING
LIGHT SWITCH
RED
FLASHING LIGHT
HI
OFF
LO
COM
L
BLUE
FLASHING LIGHT
EXTERNAL LEADS
GATE LINK
CONNECTION LEAD
START BUTTON
NC
C
NO

OPERATING PROCEDURES

FRONT GATE OPERATION (ELECTRIC)

- Plug in starters lead (not required with remote control start).
- Set actuator down using handle, close front gates and load horses.
- To release gates, push starter button once (or remote control).
- When not in use, all gates should be left in their open positions and the actuator in its released position.

REAR GATE OPERATION

- Prior to loading horses ensure that all gates are fully open and behind red open retainers.
- When closing gates behind a horse, push gate fully closed then pull back to ensure positive locking.
- When not in use, gates should be left in their open positions.

TOWING AND POSITIONING

- When towing the starting gate, the maximum speed in 15 kph.
- When maneuvering out of or into start position, the maximum speed is 5 kph.
- Care should be taken when driving the towing tractor not to over steer the front wheels. At the maximum lock, the tow bar will engage the tyre. **TURNING FURTHER THAN THIS POINT WILL RESULT IN SEVERE DAMAGE TO THE STEERING MECHANISM.**
- If fitted, the hydro electric rear steering is operated by electric joystick. Care should be taken not to over steer when travelling at speed.

EMERGENCY MANUAL STARTING

- Should a fault occur with the Electric Start System, to quickly release the gates pull the EMERGENCY START PULL HANDLE, *shown on page 30.*

  If this DOES NOT release the gates, for whatever reason:

- Connect the manual operating strap to the main operating catch as shown below.
- When ready to start, simply pull the strap to release the gates.

FOR TECHNICAL SERVICE

Call Eddy, Kieren or Tony via one of the following numbers.

Office Hours: 08 8391 3555 **After Hours:** 08 8398 3181

Mobile: Eddy: 0417 829 908
Kieren: 0438 4038 912
Tony: 0422 4506 605

STARTING GATE CHECK LIST

ONE DAY PRIOR TO RACE DAY

- Shut and open each front and rear gate to check correct operation.
- Check steering gear and tyre inflation (40psi).
- Check that battery has been on charge.
- Check correct operation of flashing lights if fitted.
- Plug in and check operation of starter button.
- Shut all front gates and slow release operation lever to check for smooth and synchronous operation.
- Check operation and oil level of hydraulic steering if fitted.

AFTER RACE DAY

- **Plug in battery charger**

EACH SIX MONTH INTERVAL

- Check all frame bolts and tighten if necessary.
- Check gate overall for any bent or damaged items including all steering and towing components.
- Check front gate springs are not stretched.
- Check suction cups not perished.
- Check all electrical connections and leads for damage or wear.

EACH TWELVE MONTH INTERVAL

- Replace main batteries for steering and operating box.
- Replace batteries for any hand held remotes if supplied.
- Check padding for tears - repair or replace if necessary.
- Call SIMTRACK for your annual service.

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