Introduction

“This Longjohn was born from the idea of leaving the car for short distances, also due to the family growth. Kita, shopping and also for cycling tours with the offspring, who initially do not make it and later only manage short distances. ”
André Frieboese

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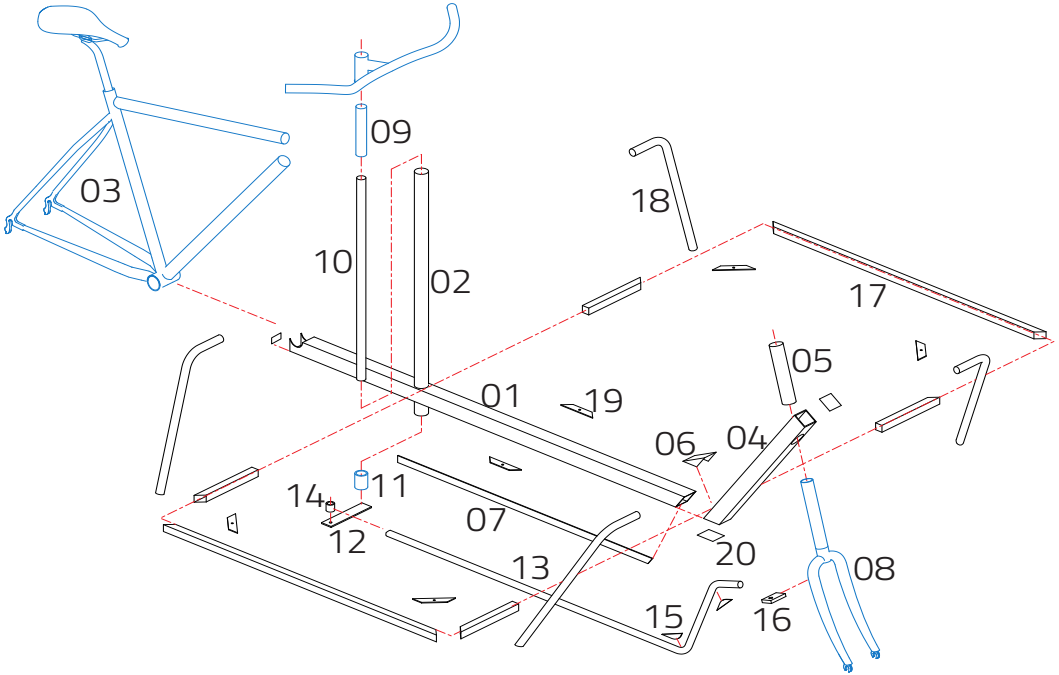
The Longjohn cargo bike type dates from the 1920s and has been varied in various designs since then. This variant "Long-André" was developed by André Frieboese in 2011 and built in summer 2012 by a workshop, organized by anstiftung & ertomis in the Open Design City in Berlin with three teams, and documented on the wiki "Workshop cargo bike" for replication. A large number of long andres have been built since then. Send us photos of your bikes to keep the common knowledge growing.
Further information:
www.werkstatt-lastenrad.de

Index

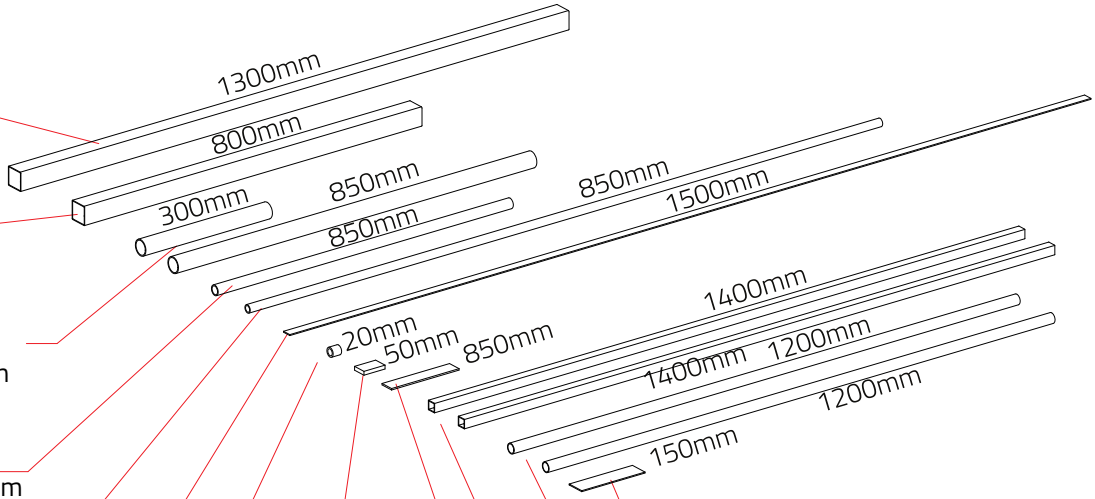
Steel and bike parts

01-20



01 lower down tube
02 long head tube
03 frame
04 lower down tube kink
05 short head tube
06 stiffening bracket
07 support bar
08 fork 20"
09 steerer tube 1"
10 steerer tube extension
11 bearing seat cone-shaped
12 long steering lever
13 steerer rod
14 sintered bearing housing
15 stiffening brackets
16 short steering lever
17 frame load area
18 strap load area
19 mounting brackets
20 cover plates

Steel: pre-blank



lower down tube
ST 40 x 40 x 1,5mm
EN 10219

lower down tube kink,
stiffening bracket
ST 40 x 40 x 1,5mm
EN 10219

long and short head tube
handrail tube 1" Ø33,7 x 2,0mm
EN 10219

steerer tube extension
hreaded pipe 1/2" Ø21,3 x 2mm
:N 10255

steerer rod
threaded pipe 3/8" Ø17 x 2mm
EN 10255

support bar, mounting brackets,
stiffening bracket
steel strip 20 x 3mm
EN 10025

sintered bearing housing
precision tube Ø20 x 3mm

short steering lever
steel strip 30 x 8mm

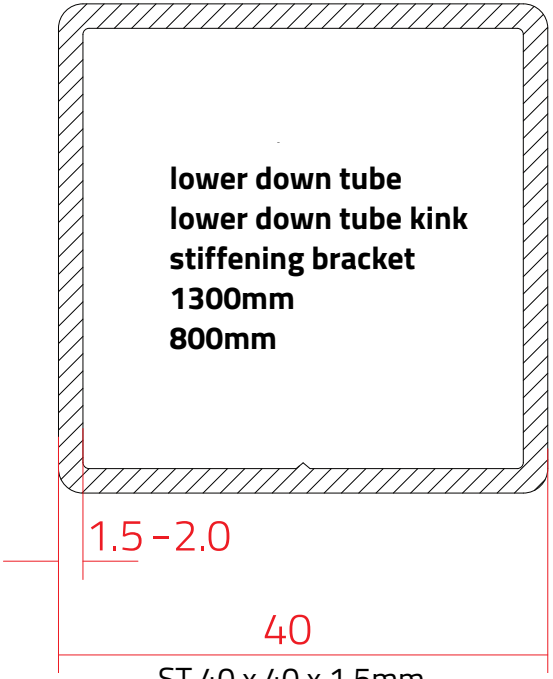
cover plates
metal sheet 2mm or rests

straps for load ares
handrail tube 1/2" Ø21,3 x 1,75mm
EN 10219

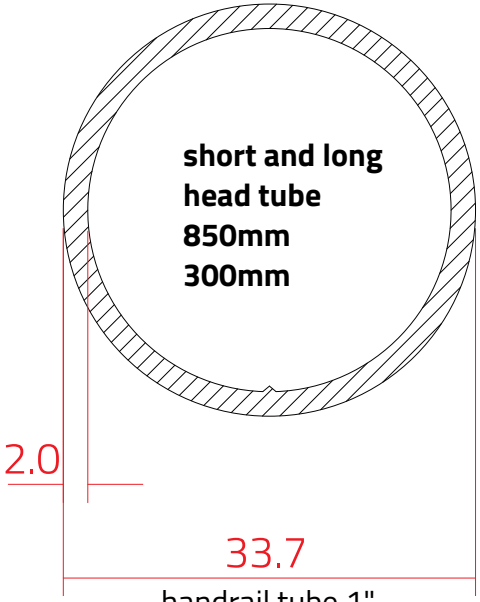
frame load area
ST 20 x 20 x 1,5mm
EN 10219

long steering lever
steel strip 30 x 3mm

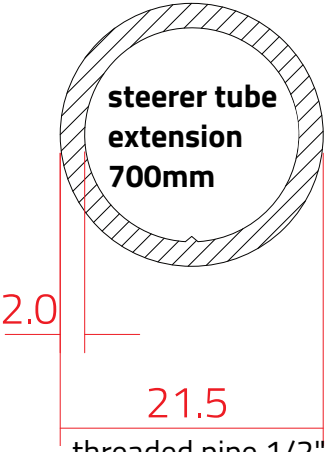
Steel: cross sections



ST 40 x 40 x 1,5mm
EN 10219



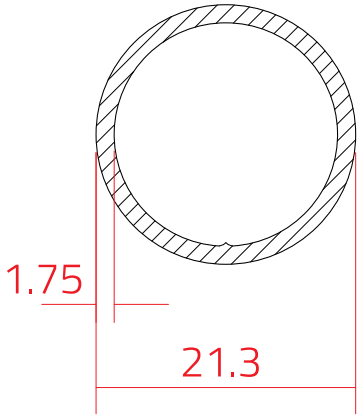
handrail tube 1"
Ø33,7 x 2,0mm
EN 10219



threaded pipe 1/2"
Ø21,3 x 2mm
EN 10255

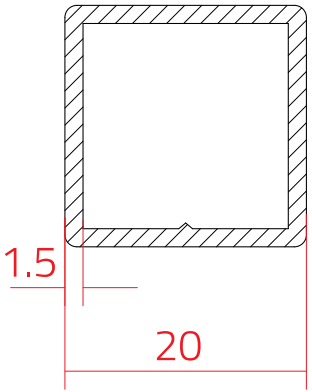
Steel: cross sections

strap load area
1200mm
1200mm



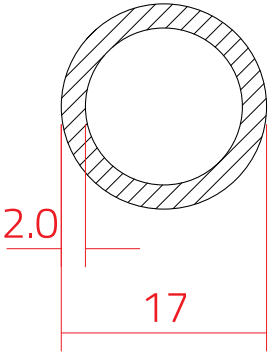
handrail tube 1/2"
21,3 x 1,75mm
EN 10219

frame load area
1400mm
1400mm



ST 20 x 20 x 1,5mm
EN 10219

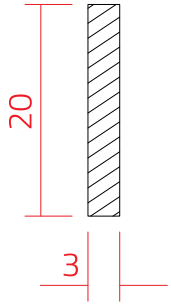
steerer rod
1900mm



threaded pipe 3/8"
17 x 2mm
EN10255

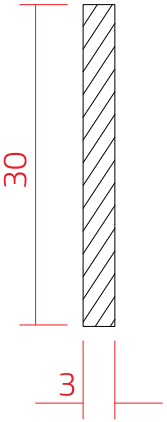
Steel: cross sections

support bar
mounting brackets
1900mm



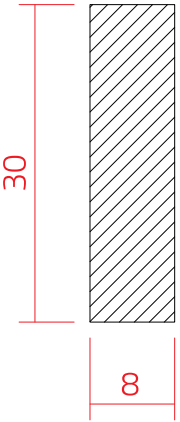
steel strip
20 x 3mm
EN 10025

steering lever
long
160mm



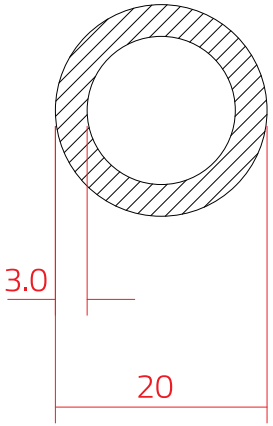
steel strip
20 x 3mm
EN 10025

steering lever
short
50mm



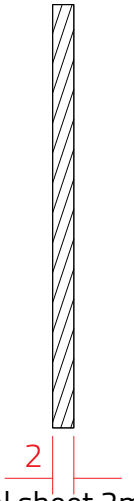
steel strip
30 x 8mm
EN 10025

sintered bearing housing
20mm



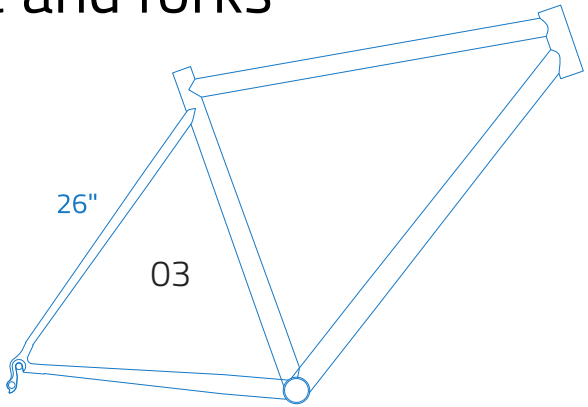
precision pipe
Ø20 x 3mm

cover plates
150mm

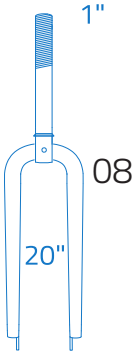


metal sheet 2mm
or rests of ST

Frame and forks



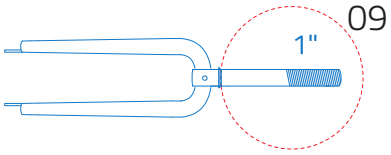
20" fork
front wheel

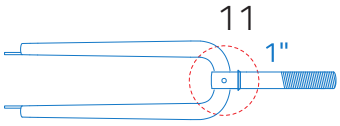


steelframe welced, not only fitted with pipe sockets,
mountain bike frame 26" is ideal, with appropriate chain gear set,
pay attention to the mounting width of the backwheel of the frame

8

1 or 2 forks to cut things out





Special parts and screws

Parts for long steering lever (rear):

- Sintered bushing, inner Ø10mm, outer Ø14mm, length 20mm
- Screw for sintered bushing: DIN 601, M10, 50mm long, hexagon
- Housing for sintered bushing (Ø14mm inside, 3mm wall thickness, 20mm long (precision tube, component 14)
- 2x M10 nuts (1x welding nut, 1x stainless steel nut)
- M10 nylon washers Ø30mm

Parts for short steering lever (front):

- M8 rod end KA 8-D with external thread (DIN ISO 12240-4 series K)
- M8 spacer sleeve / long nut. (Wrench size 14 or 10mm)
- M8 hexagon socket screw, stainless steel
- M8 nut self-locking, 3 x M8 washers

Loading area waterproof plywood board:

- 12mm multiplex coated, (L x W, e.g.: 850 x 600mm)
- M6 countersunk screws (6-8 pieces)
- M6 weld nuts (6-8 pieces)

Tools

Minimal equipment:

- Welding machine (TIG welding) with accessories
- 2x angle grinder (1x cutting disc, 1x fan grinder)
- File range
- Drilling machine
- Machine vice, clamp
- Spirit level and ruler

Optimal equipment:

- Assortment of thread cutters
- Pipe cutter
- Column box drill, crown drill or/and core drill (Ø33 and Ø40mm)
- Metal miter saw (hand operated)
- Bicycle frame gauge (-> Bike bench self-construction)
- Pipe bending machine and sand
- Bottom bracket tap (ask bike shop)
- Sliding t-bevel
- Device for angled drilling

Remarks

The order of the working steps

- the sequence shown is a suggestion, it can also be varied

Occupational safety

- pay attention to your health and occupational safety

Disclaimer of liability

- You are liable for your DIY project even if something goes wrong.
- Ask your network about experienced welders so that they pay attention to the result. The weld (08 +16) on the fork is critical.

Road safety

- Good brakes are the most important thing. Save on painting and invests in hydraulic brakes
- Make sure that your bike has everything the road traffic regulations require

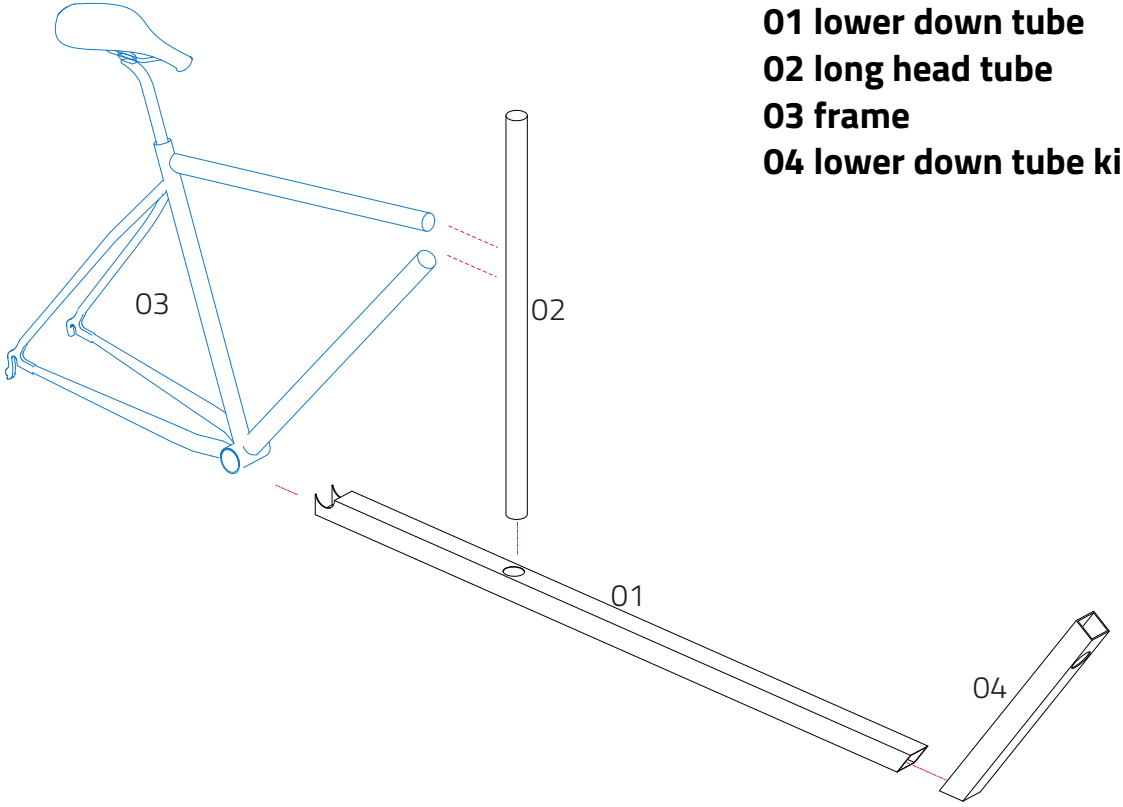
Errors, improvements, variants

- If you find any mistakes or have suggestions for improvement: write to us
- Develop your variants: share it with us, enrich the common knowledge

Basic frame structure

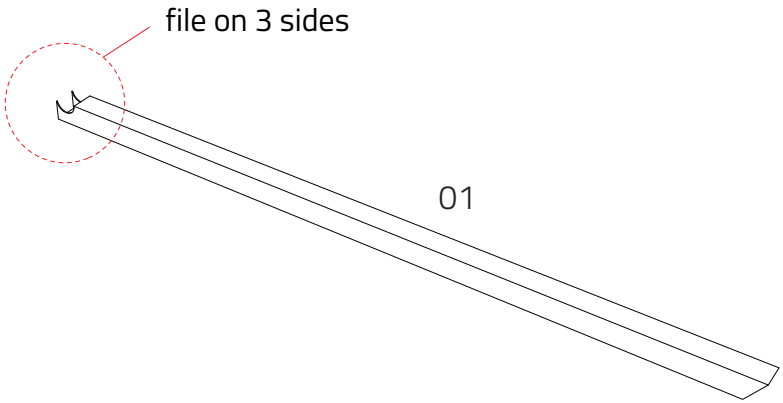
01-04

parts list
01 lower down tube
02 long head tube
03 frame
04 lower down tube kink



Adapt lower down tube to bottom bracket

01



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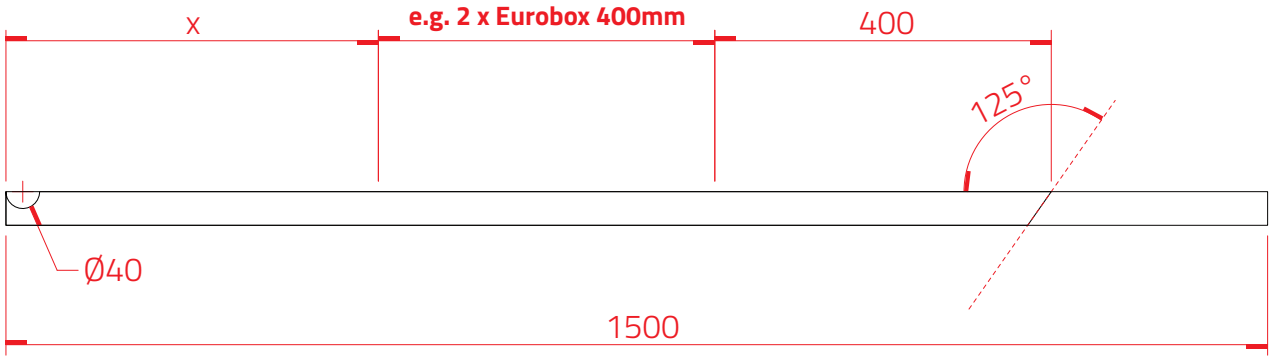
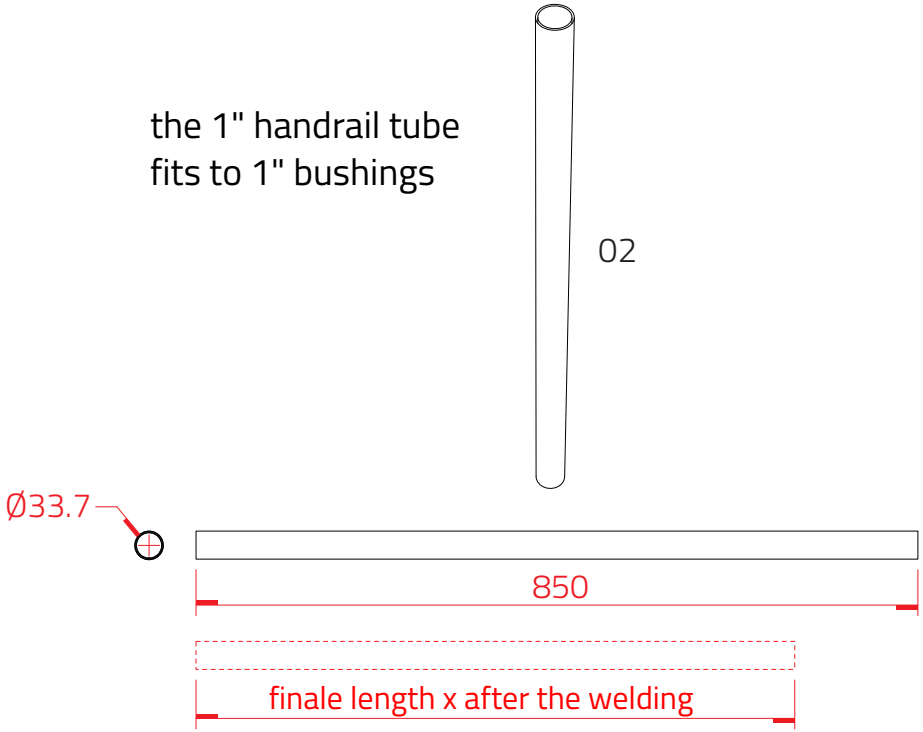


ST 40 x 40 x 1,5mm, file or drill bit/box drill Ø40mm, scriber

Long head tube

02

the 1" handrail tube
fits to 1" bushings



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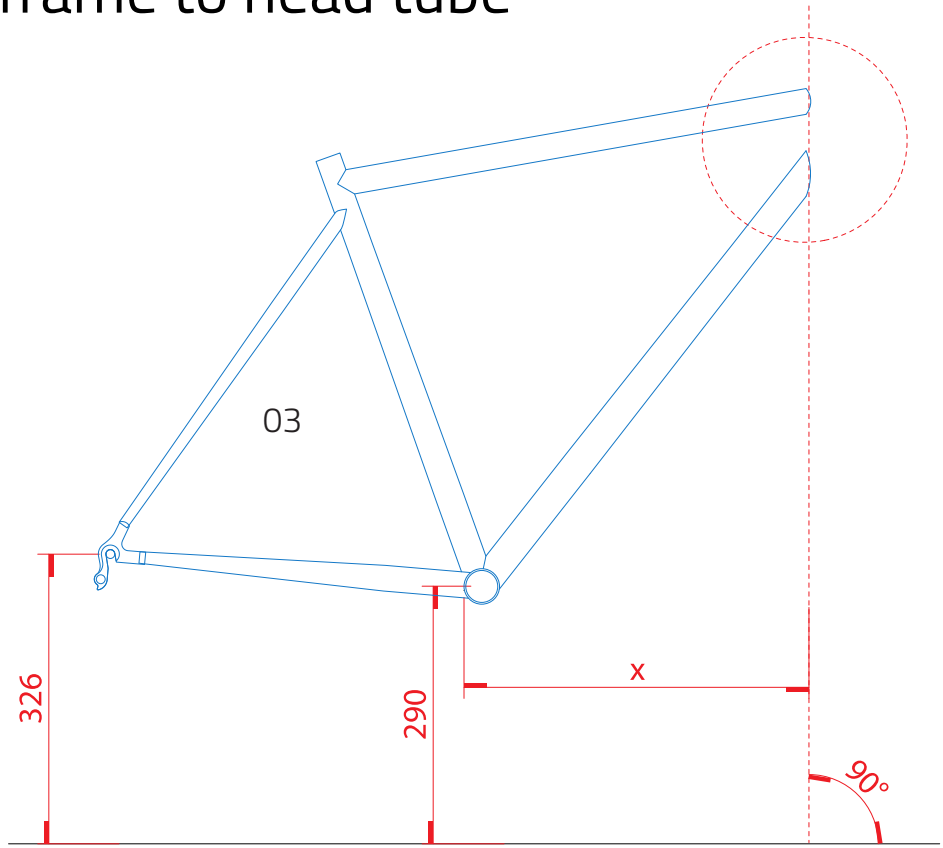
handrail tube 1" Ø33,7 x 2mm, pipe cutter, file for inside of the tube

Adapt frame to head tube

03



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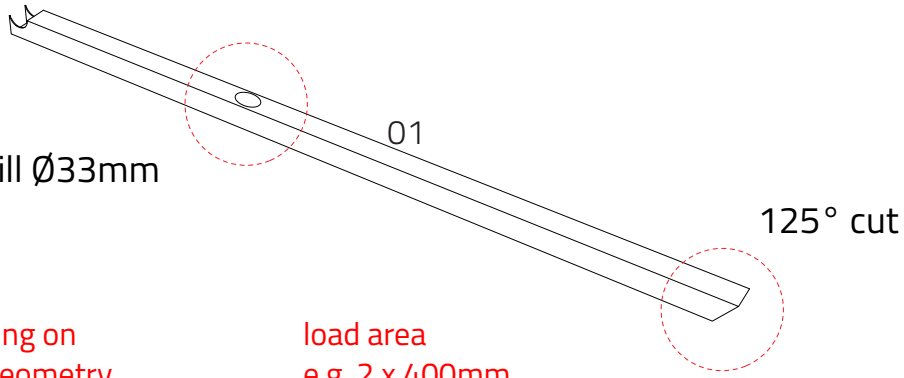
File, patience, bikebench, large 90° - square, long hed tube, lower down tube

Lower down tube: drilling, angle cut

01



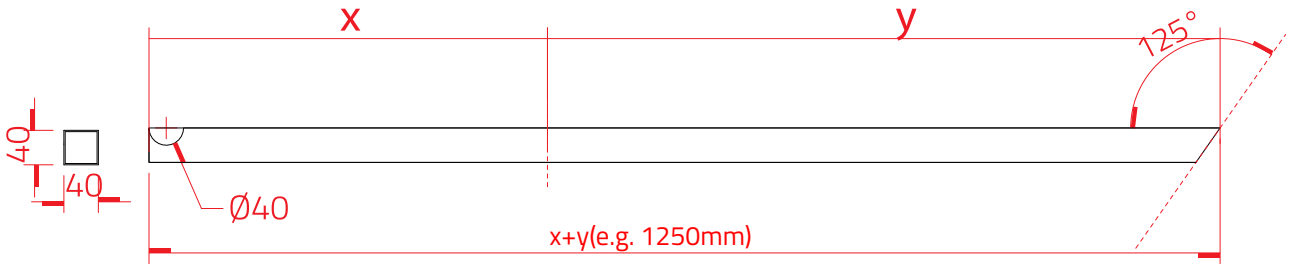
Drilling with
crown/core drill Ø33mm
for Ø33,7mm

125° cut

depending on
frame geometry

load area
e.g. 2 x 400mm

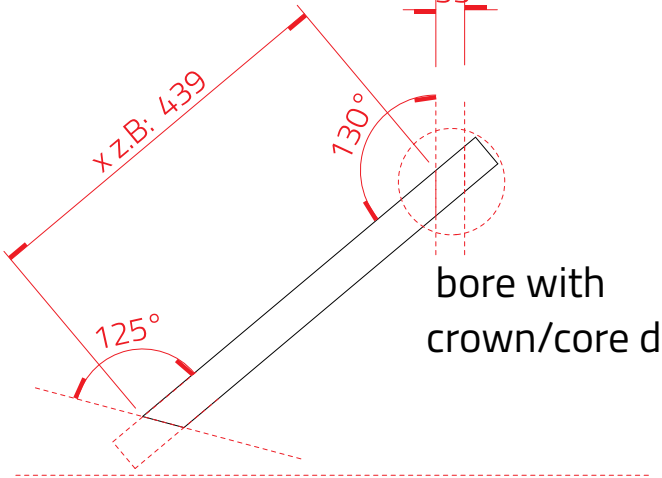
16

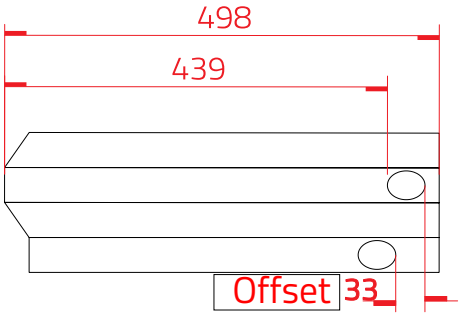


column box drill, crown/core drill Ø33mm, file, miter saw

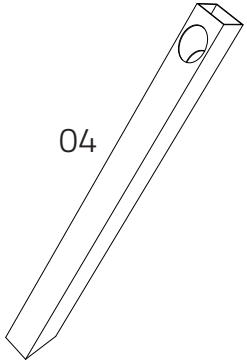
Lower down tube kink: angular drill & cut

04





bore with
crown/core drill Ø33mm



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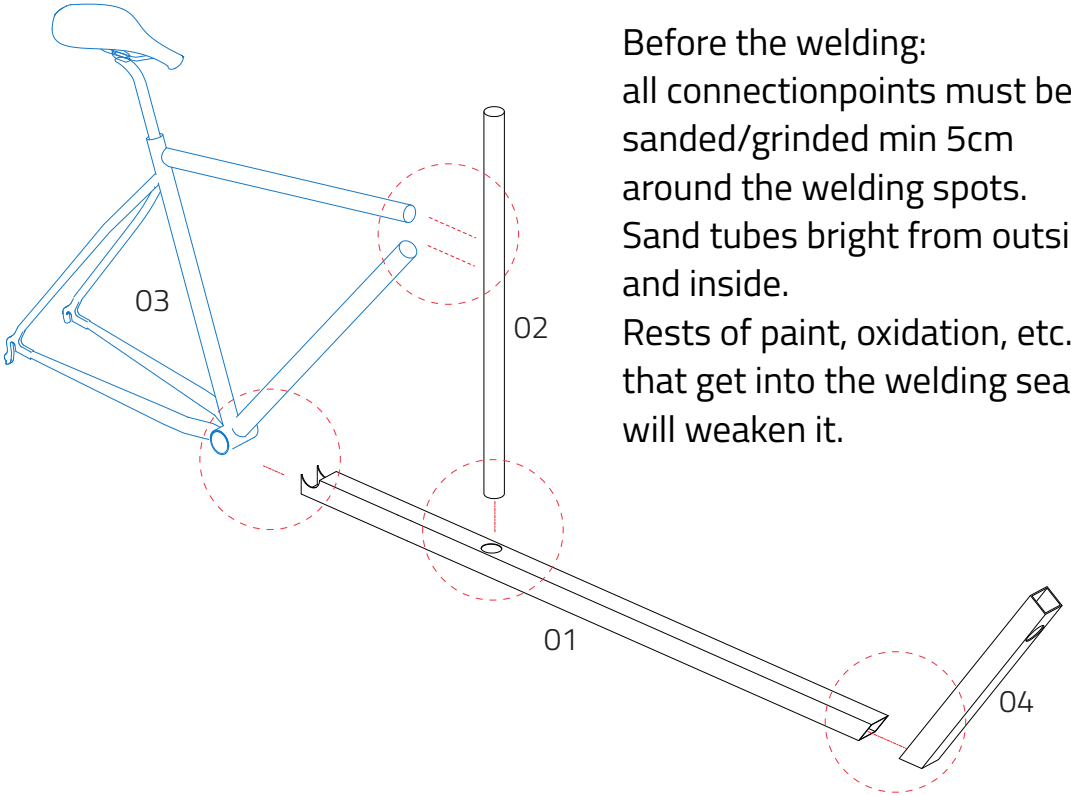
ST 40 x 40mm, Ø33mm crown/core drill, column box drill, angle device

Clean the welding points

01-04

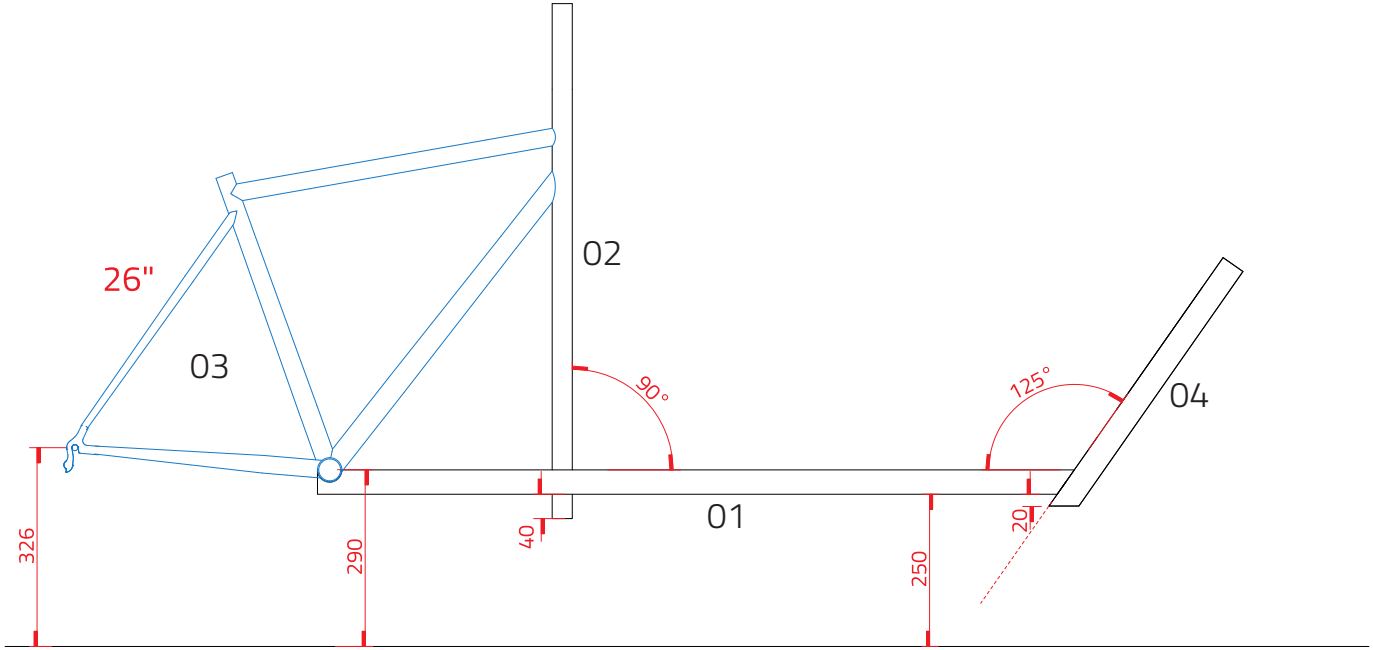


Before the welding:
all connectionpoints must be sanded/grinded min 5cm around the welding spots.
Sand tubes bright from outside and inside.
Rests of paint, oxidation, etc. that get into the welding seam will weaken it.

outside: anglegrinder with fan grinder disc, inside: file (round , half-round), sandpaper

Frame: alignment dimensions

01-04



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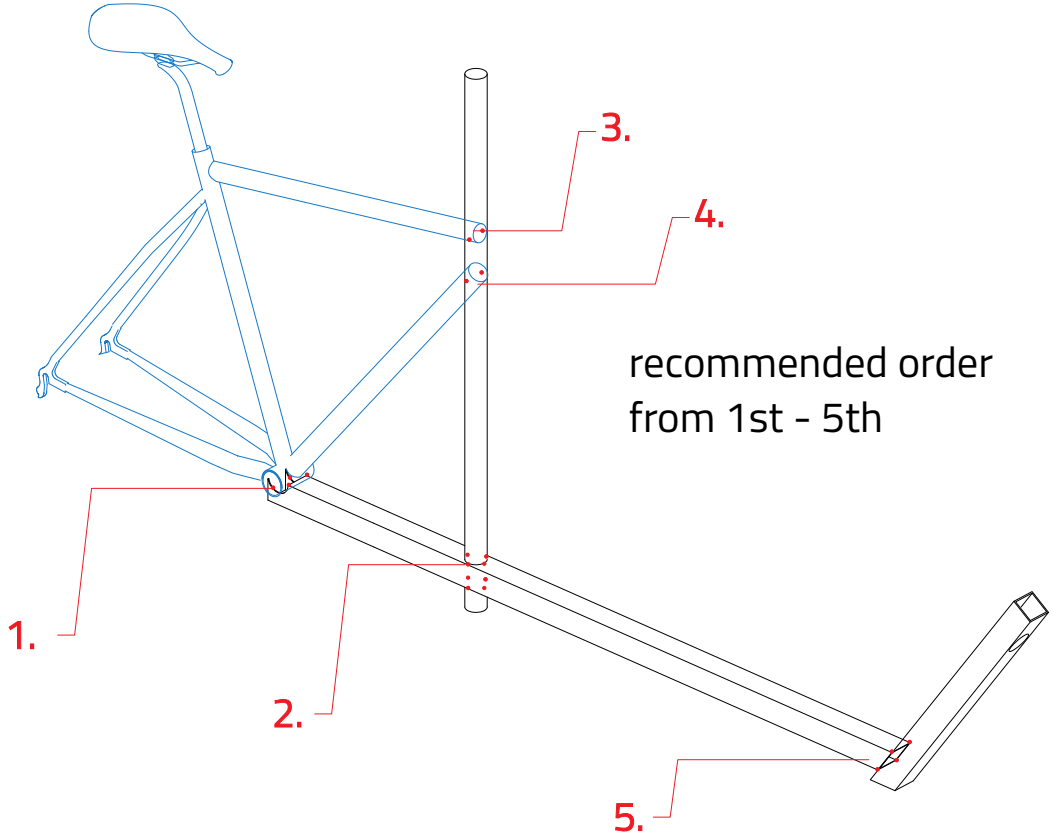
bike-bench, level, big 90°-square, sliding t-bevel

Set welding spots

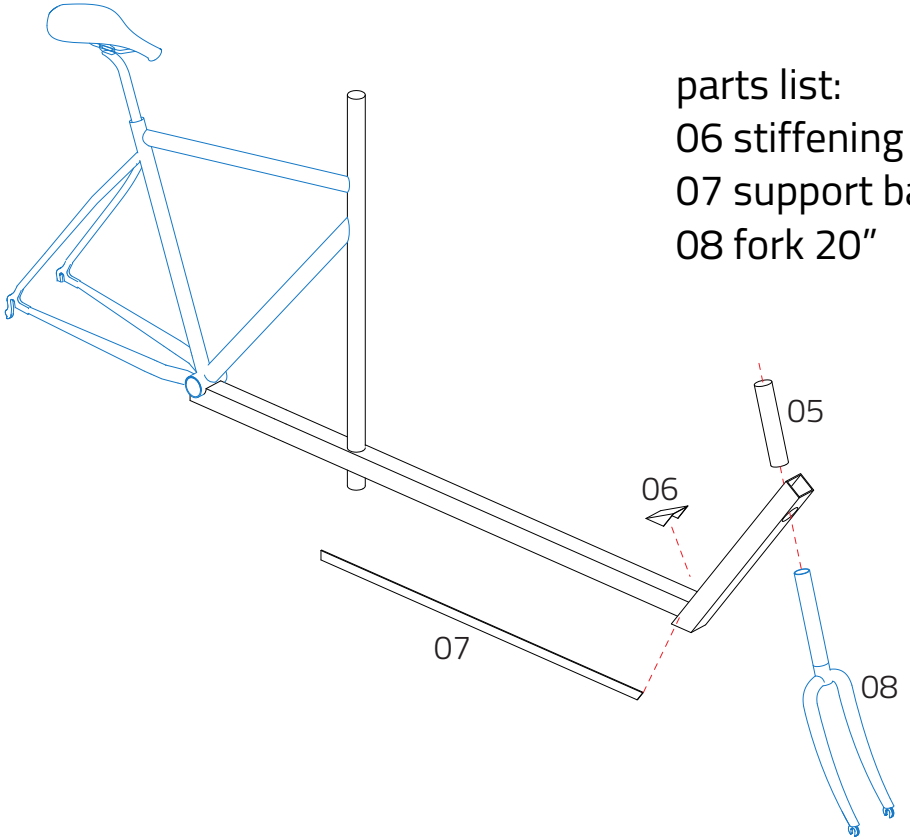
01-04



bike-bench, level, big square, welding machine

Basic frame structure

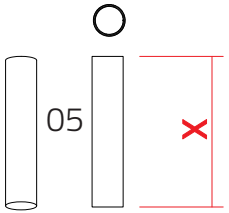
05-08

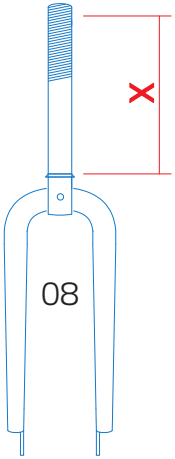


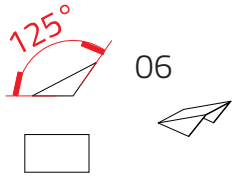
parts list:
06 stiffening bracket
07 support bar
08 fork 20”

Short head tube, stiffening bracket, support bar

05-07







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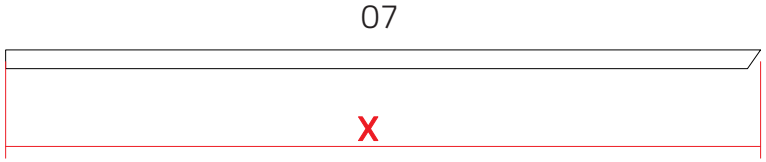
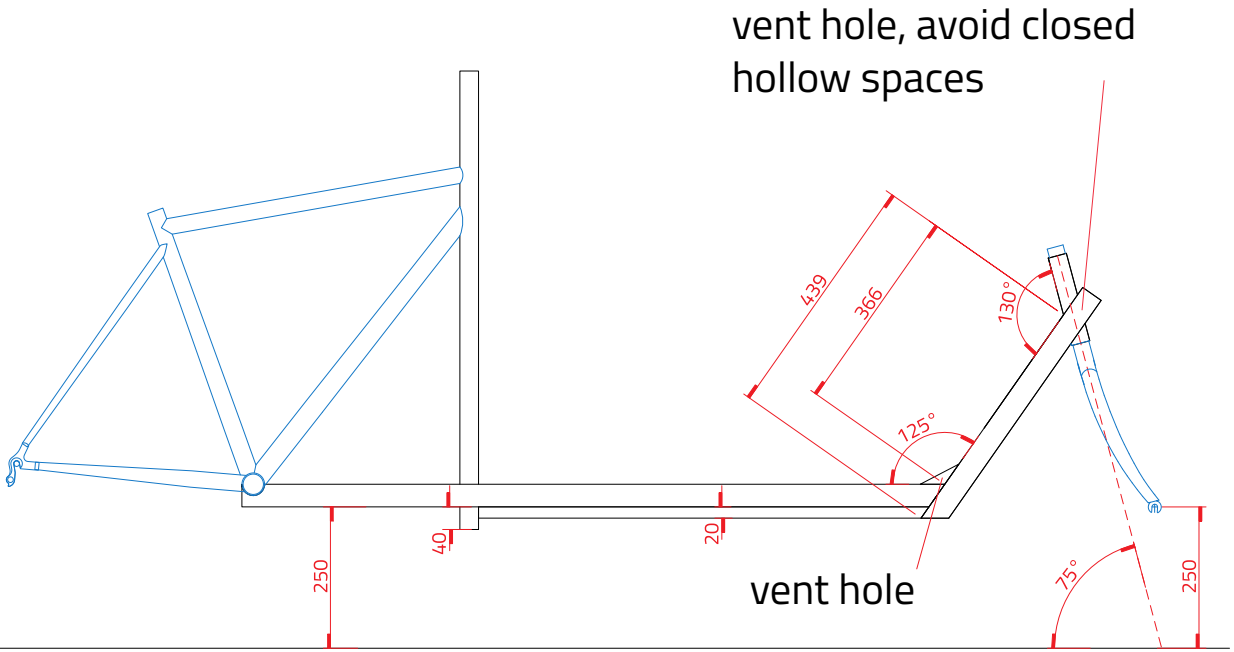


1”-tube, steel strip, ST 40mm, tube cutter, half-round file, anglegrinder, scriber

Basic frame: alignment dimensions

05-08



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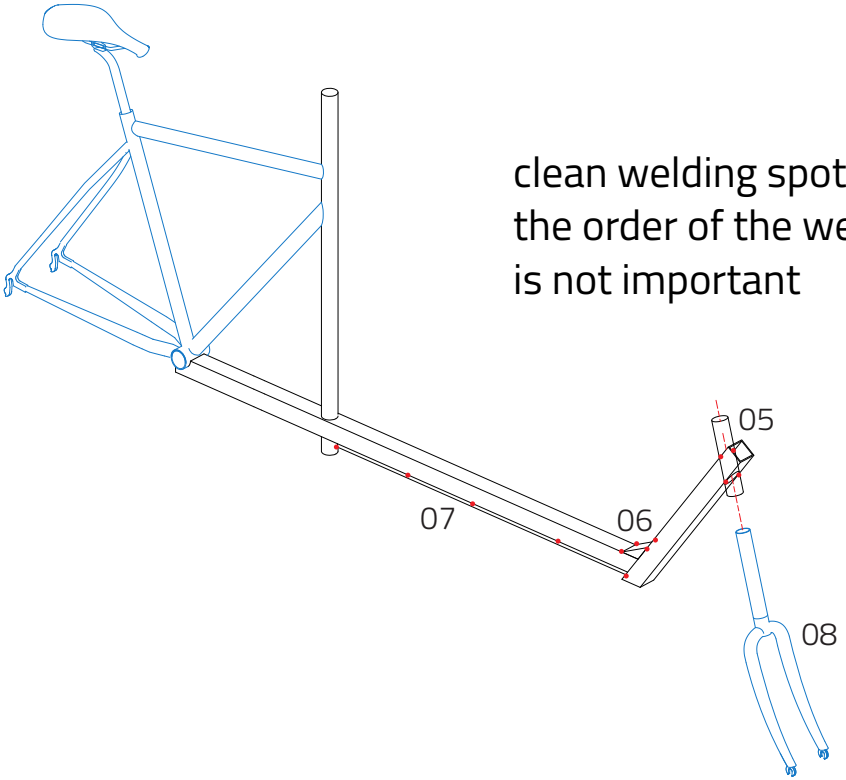
bike-bench, level, big 90°-square, sliding t-bevel

Fix with weld spots

05-07

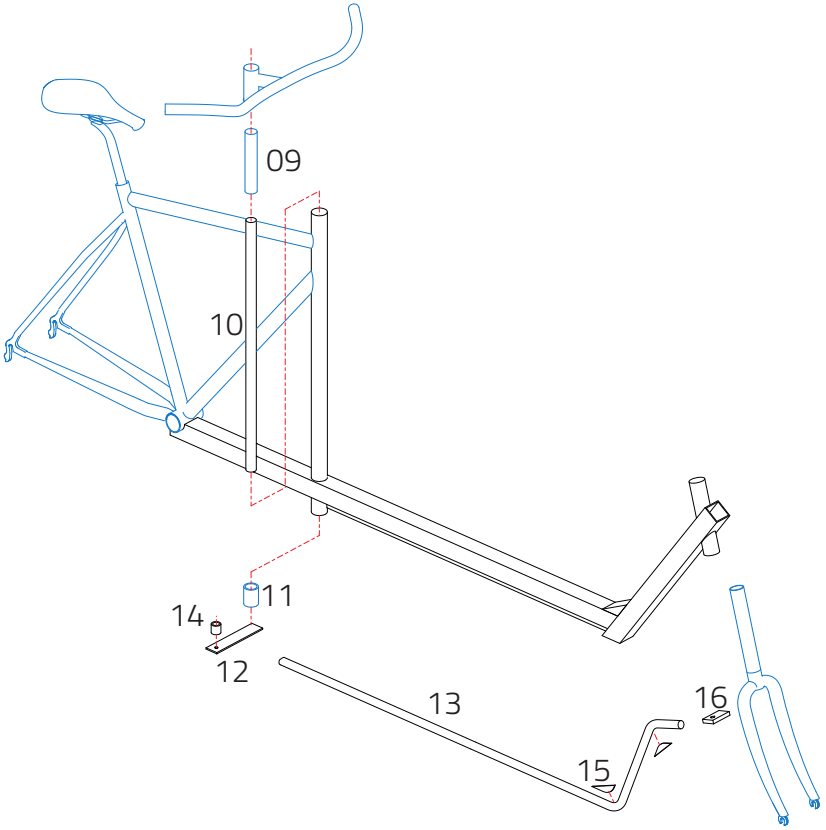


clean welding spots,
the order of the welding
is not important

bike-bench, sliding t-bevel, welding machine

Basic frame: steering

09-16

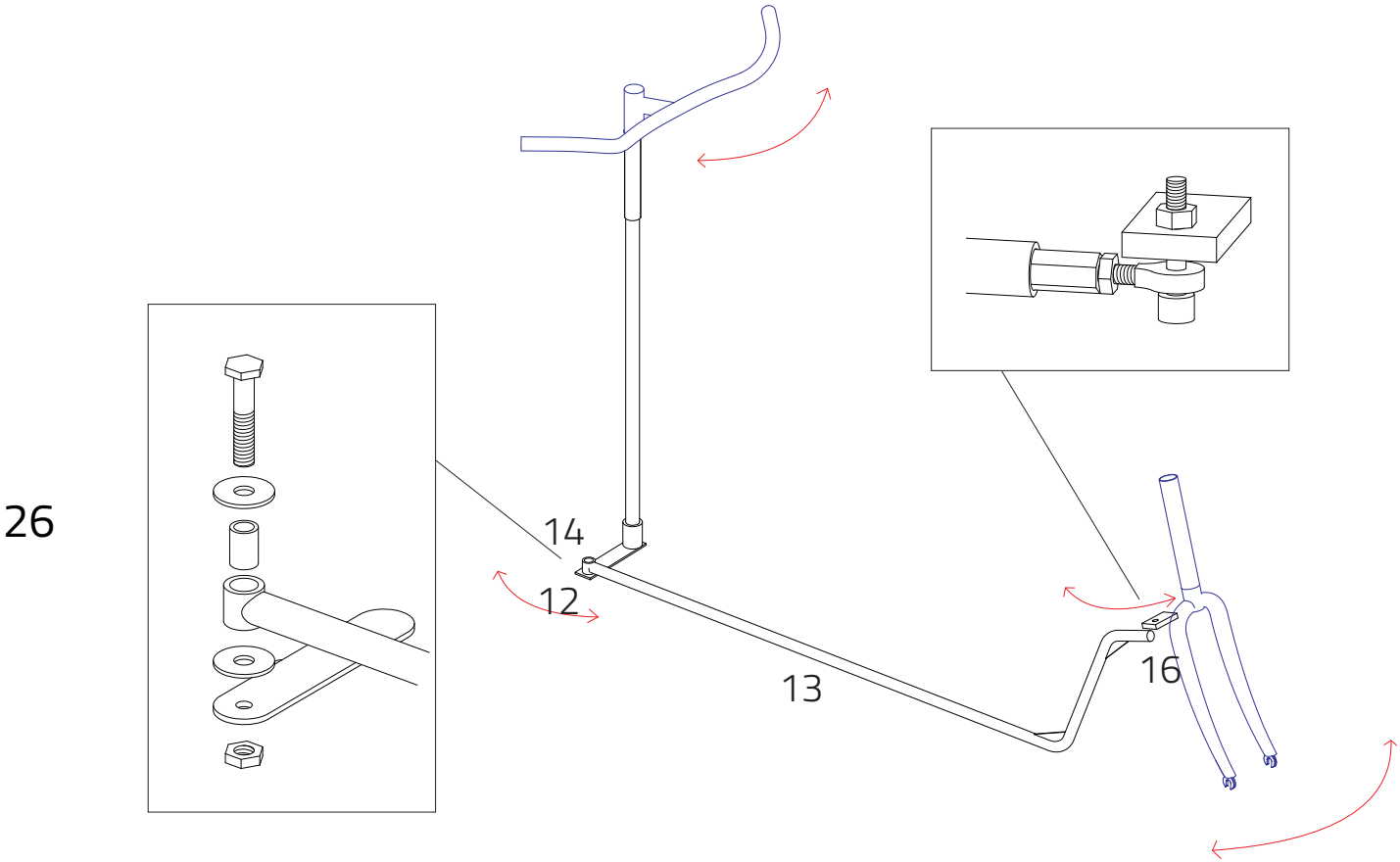


parts list:
09 steerer tube 1”
10 steerer tube extension
11 bearing seat cone-shaped
12 long steering lever
13 steerer rod
14 sintered bearing housing
15 stiffening brackets
16 short steering lever

special parts:
M8 joint head
M8 distance sleeve
sintered bushing
M10 nylon washers
M10 hexagon bolt
M10 weld-on nut

Principle of steering

09-16



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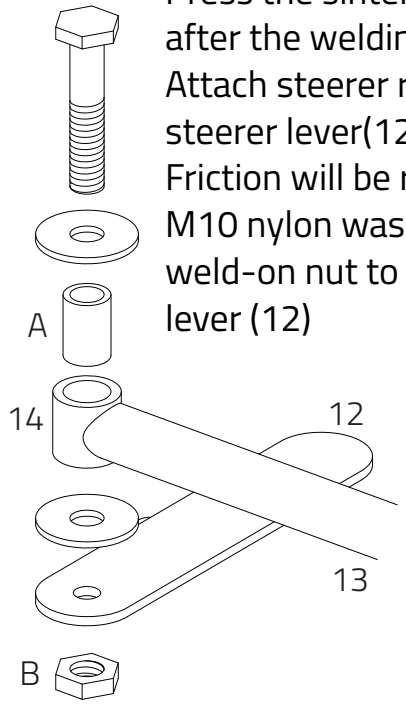
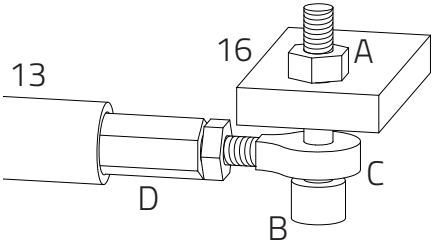
Special parts: description

09-16



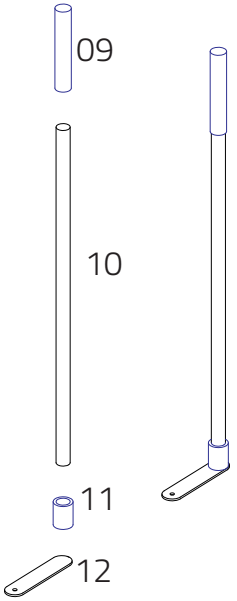
Press the sintered bushing(A) after the welding in the casing (14) Attach steerer rod (13) with the long steerer lever(12) using M10 bolt. Friction will be reduced by the M10 nylon washers. Weld the M10 weld-on nut to the long steering lever (12)

Attach to the short steering lever (16): M8 self-locking nut (A), M8 socket screw (B), joint head (C), in between washers.
Fit M8 long nut(D) in the tube(13), screw the joint head halfway into the long nut (D) and lock with the second nut - the unused area of the thread will be used for fine tuning of the steering.

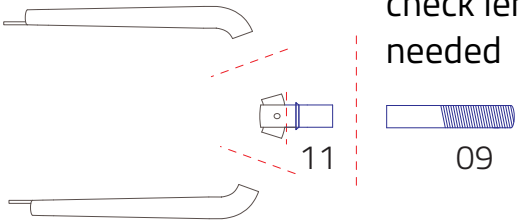


Steerer tube extension

09-12



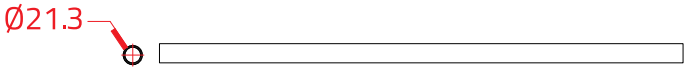
handrail tube 1/2”
Ø21,3 x 2mm



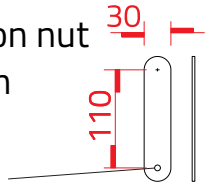
check length
needed

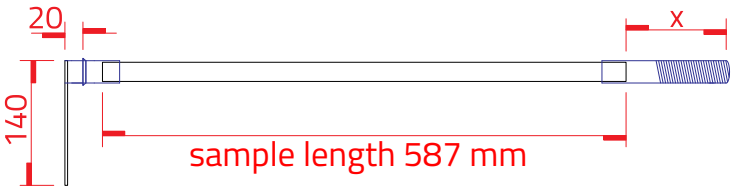
1-2 used forks
to cut

28



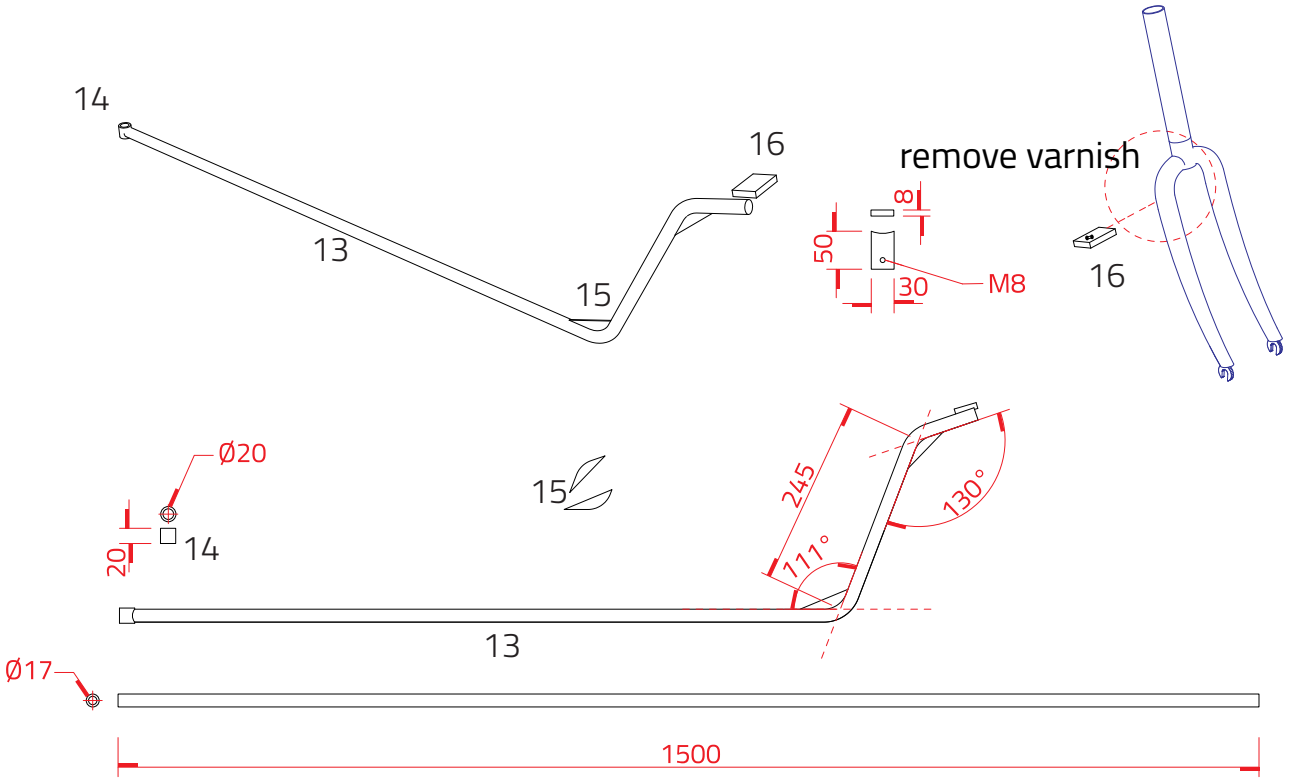
thread or weld-on nut
for M10 hexagon
bolt
50mm DIN 601





Steerer rod: structure and bending

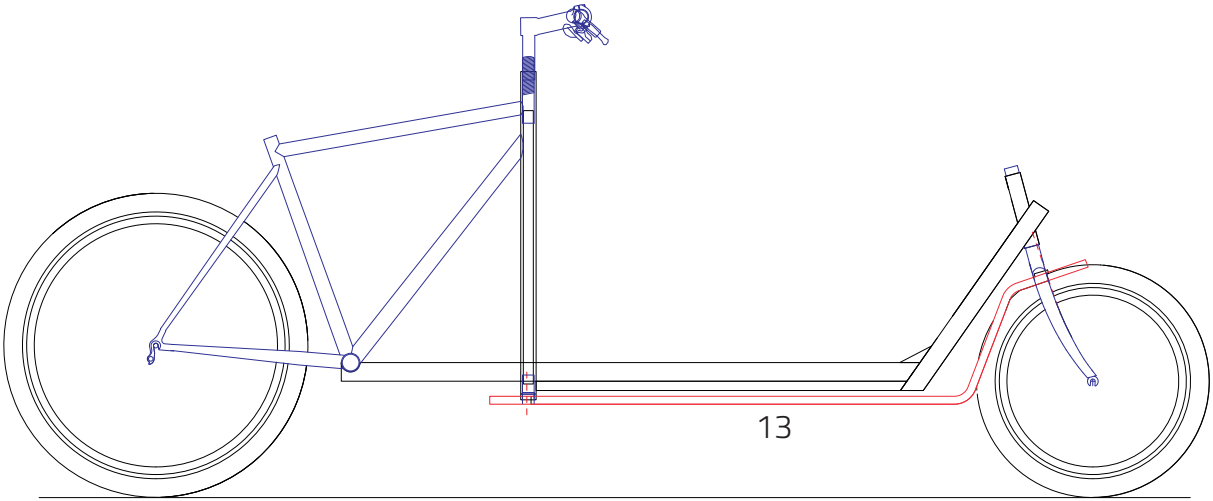
13-16



29

bending machine for 13, thread cutter for M8 and file for 16

Adaption steerer rod



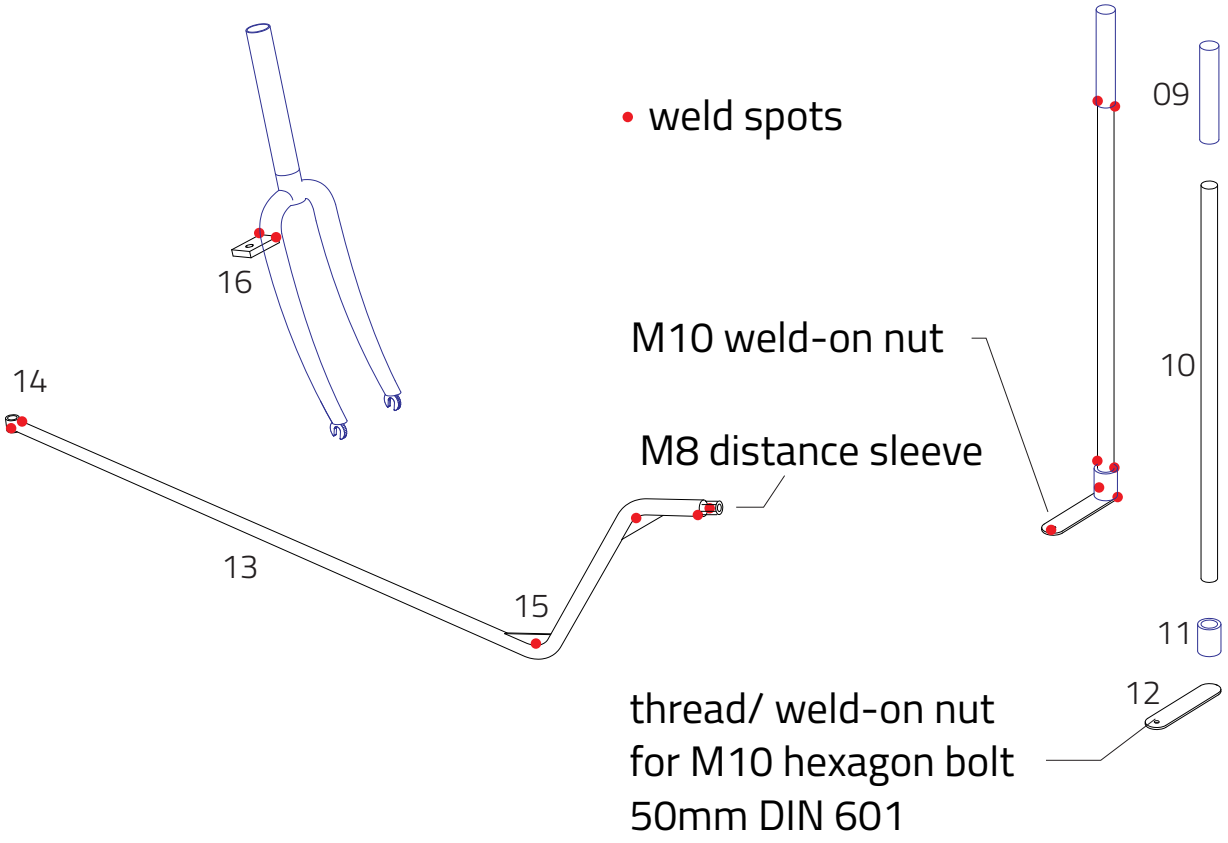
30

bend steerer rod, simulate the steering at the bike with mounted wheels.
the front wheel and the steerer rod should not touch each other.
only when everything fits well cut the steerer rod to the correct length.

bending machine, sand, folding rule, sliding t-bevel, thread cutter

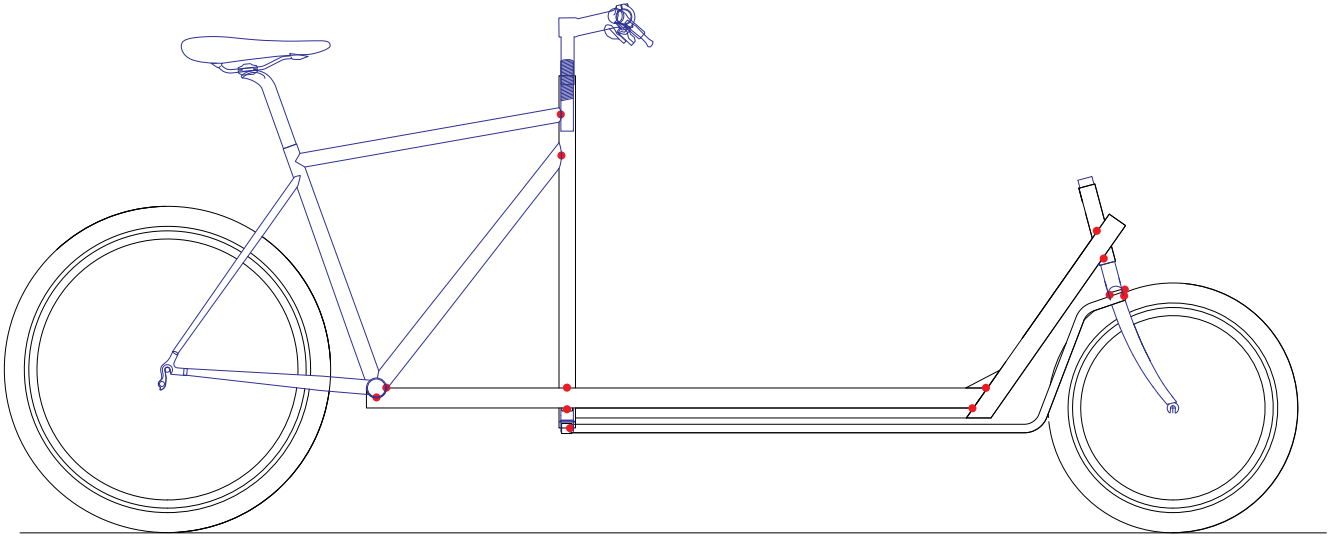
Fix with weld spots

09-16



Milestone test drive

01-16



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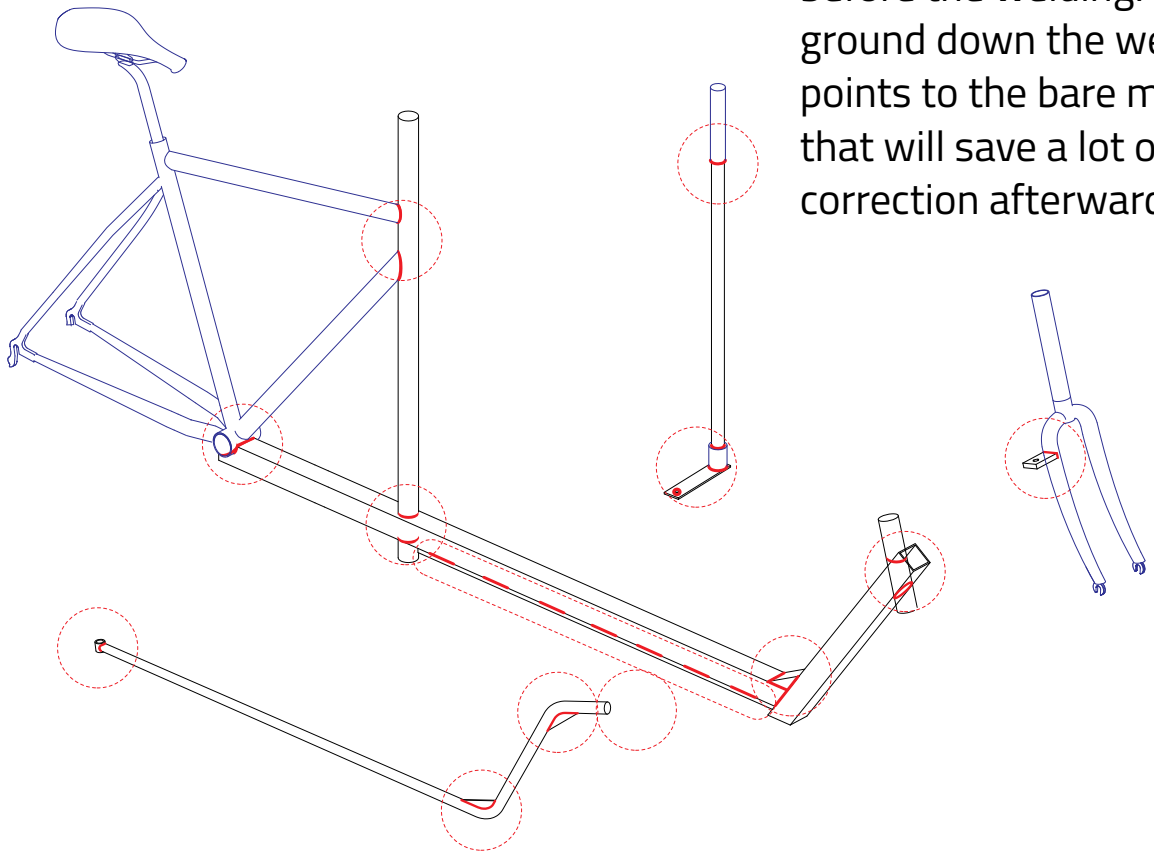
With spot-welded frame and steering go for a testride.
Check the driving quality and make corrections if necessary.
Afterwards set the weldseams.

Set weldseams

01-16

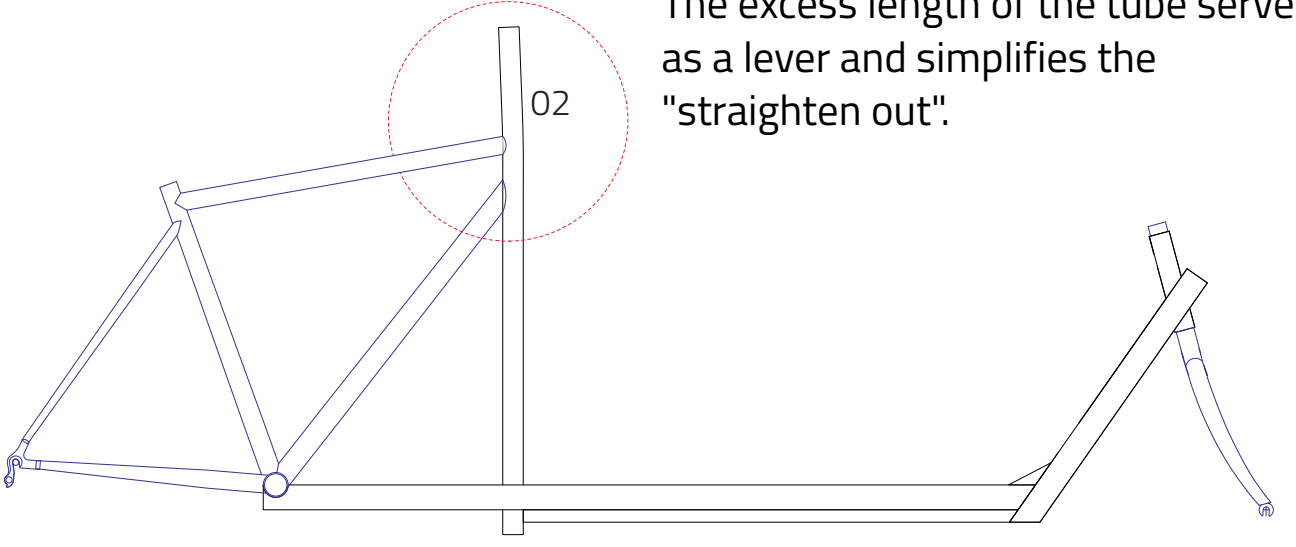


before the welding:
ground down the welding points to the bare metal.
that will save a lot of correction afterwards.

Straighten out warped parts

01-16

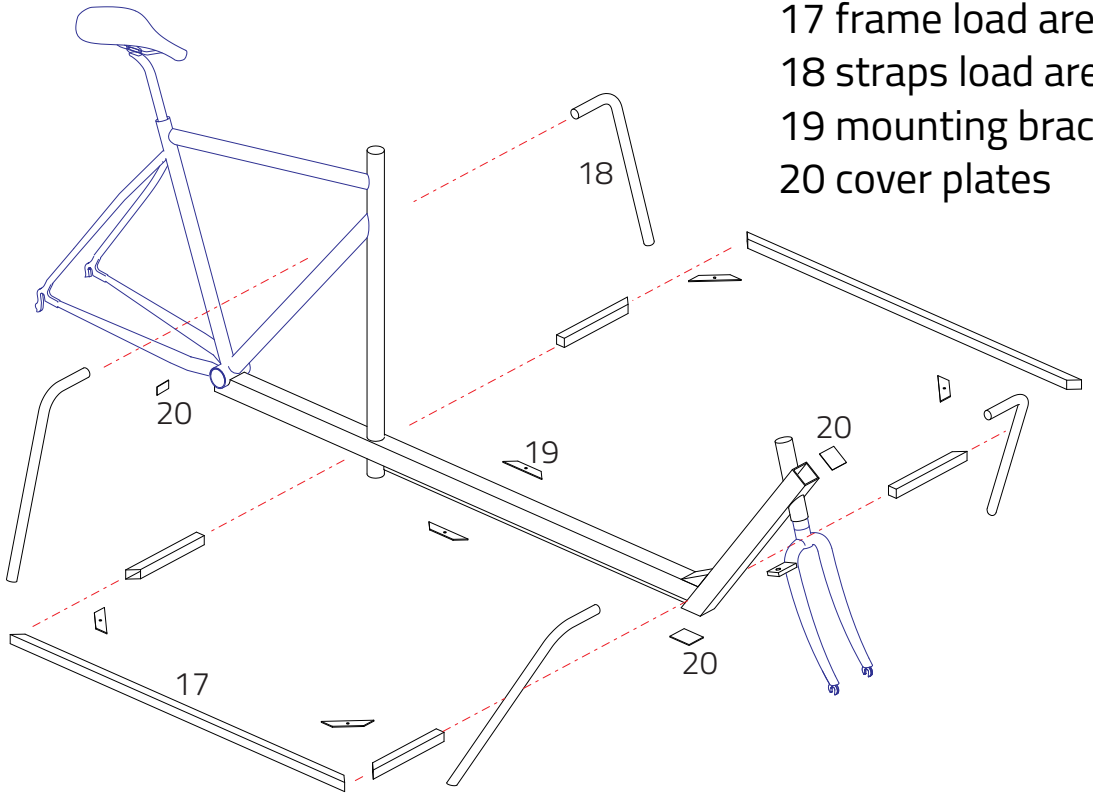
The long head tube will bend while welding and has to be put back straight.
The excess length of the tube serves as a lever and simplifies the "straighten out".



Load area

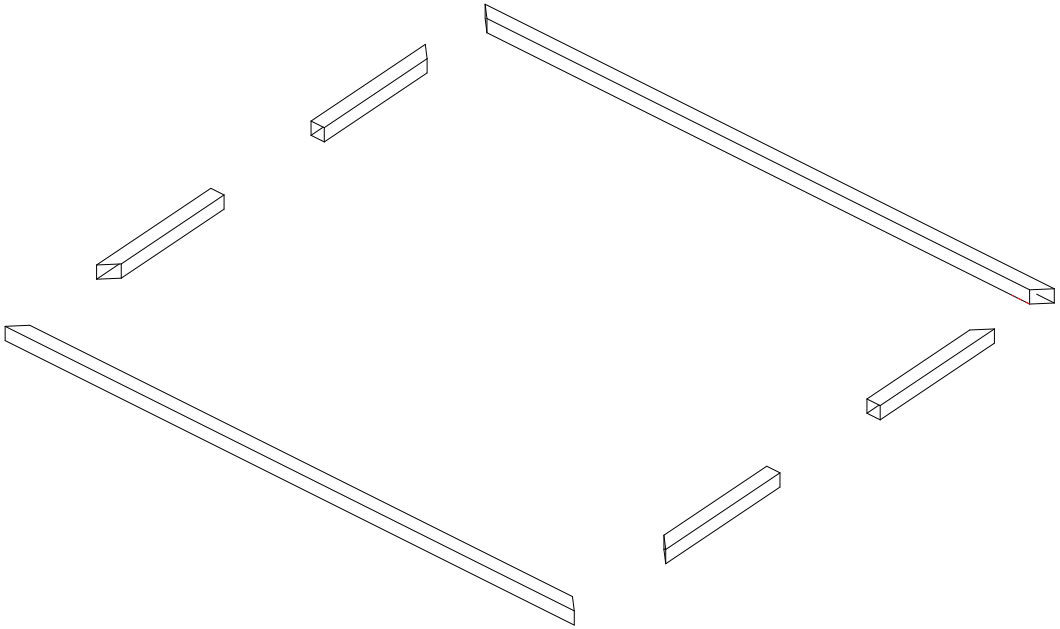
17-20

parts list:
17 frame load area
18 straps load area
19 mounting brackets
20 cover plates

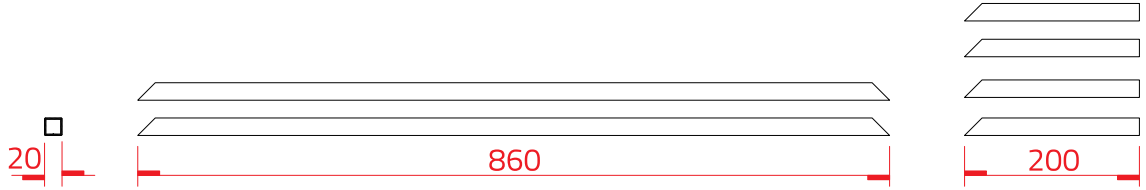


Frame load area

17-20



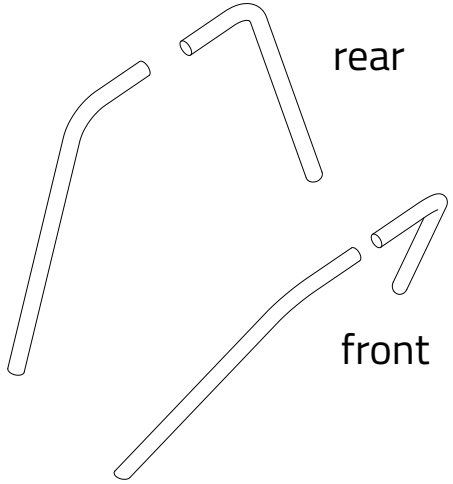
36

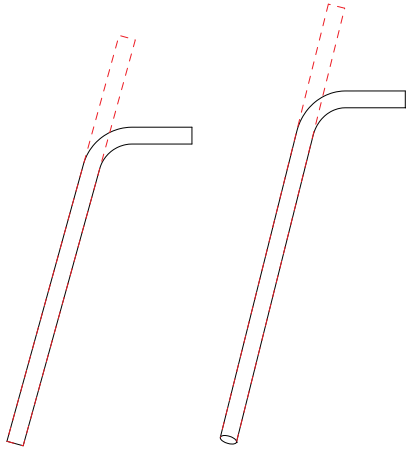


metal miter saw for the angle cuts

Straps load area

17-20





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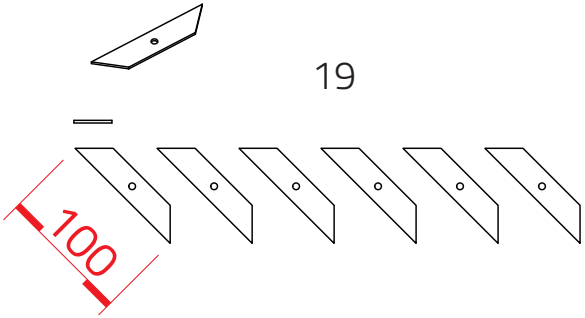
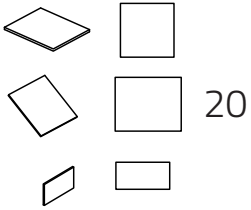
handrail tube 1/2” Ø21,7 x 1,5mm, bending machine, anglegrinder with cutting disc

Mounting brackets, cover plates

17-20





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weld the remaining parts(17-19) to the frame (01-16)

steel strip 20 x 3mm, thread cutter M6 or weld-on nut, ST 40 x 40mm

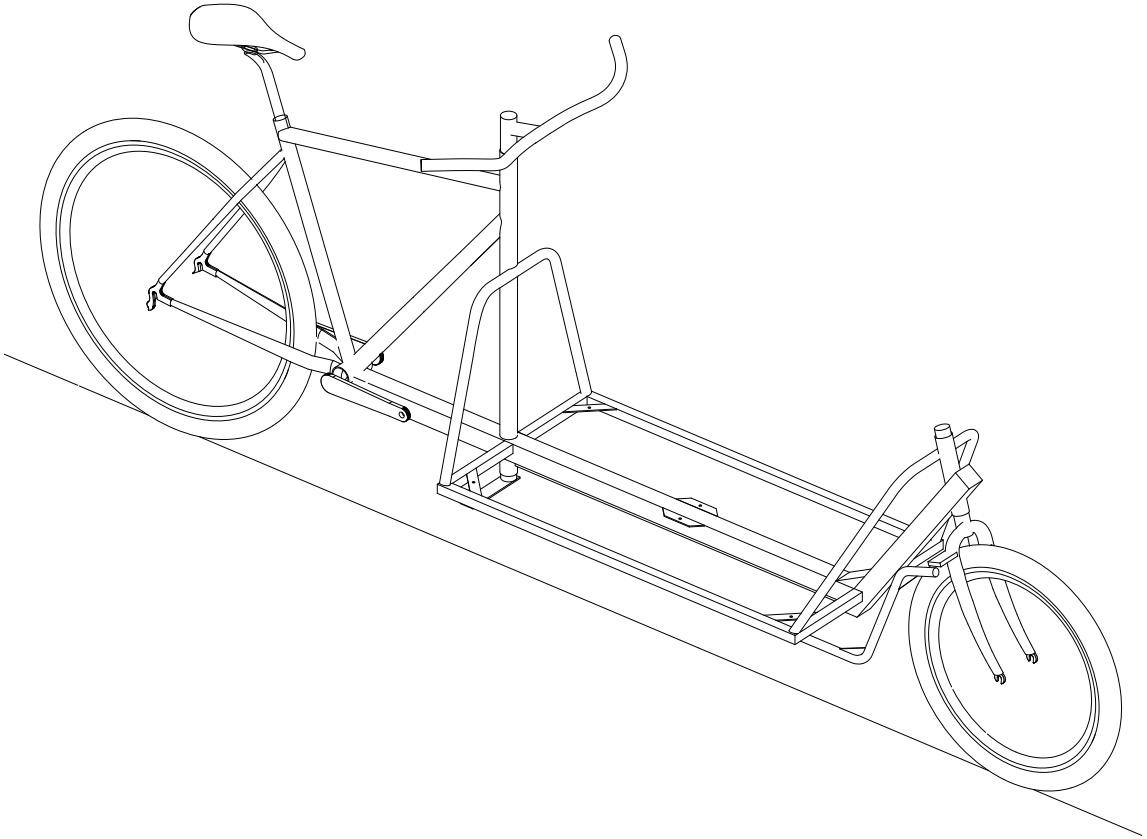
Almost finished...

Painting
- Powder coating is most durable but also expensive
- easiest: apply primer and metal paint with a roller
  (see also http://www.sheldonbrown.com/paint-prep.html)

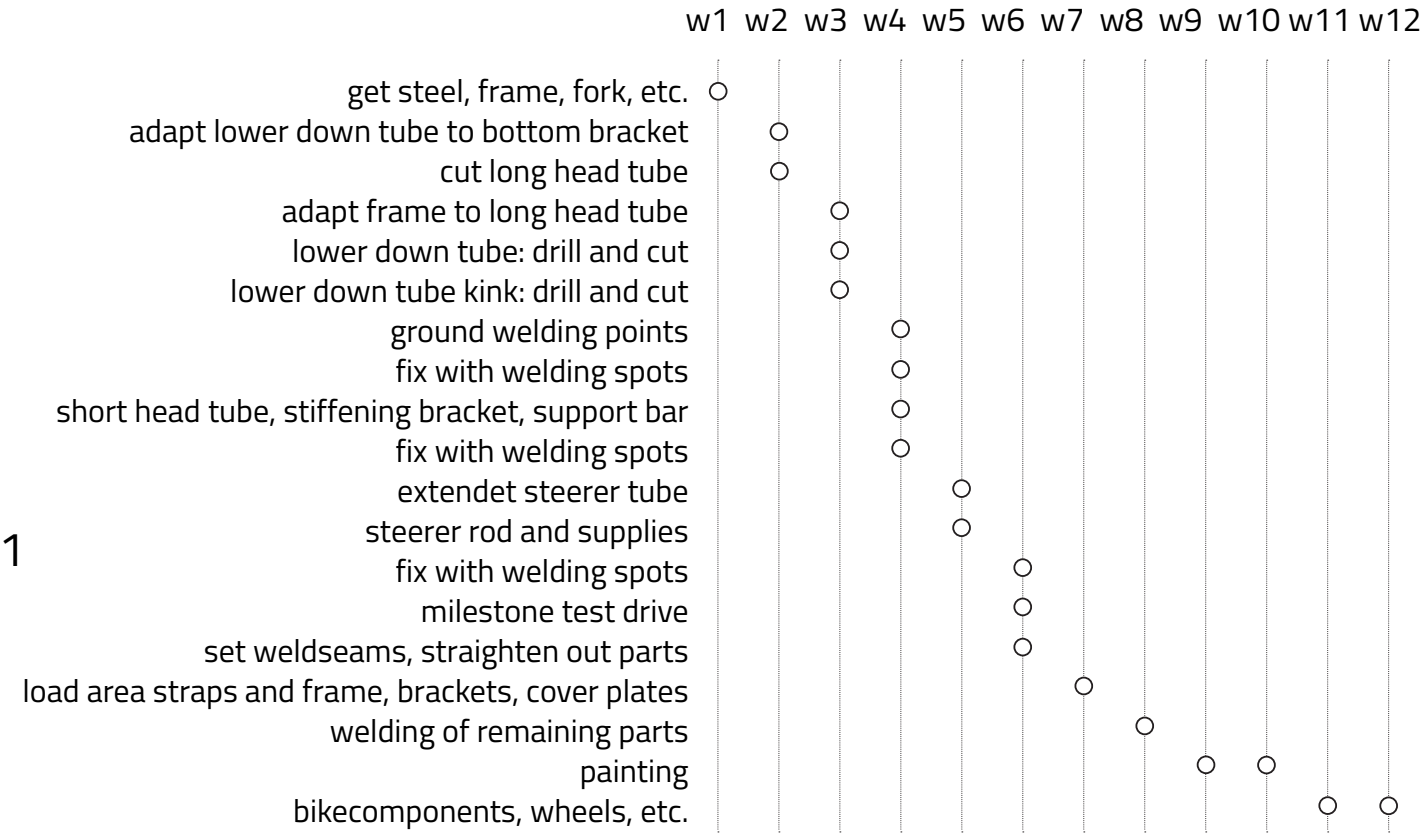
attachment parts
- Loading area coated in e.g. 12mm multiplex, (LxW, e.g.: 850 x 600mm)
- Bowden cable length for the front: approx.2.50m
- A bike stand is missing in the repertoire, who develops one and sends us drawings?

Bicycle technology
- Wheelset, 26 ”rear wheel, 20” front wheel, shifting systems, crankset, splashguards, brakes (v-brakes, magura brakes or disc brakes), hub dynamo, lights, etc.

Lots of fun riding your diy Long André!



Schedule example



*w -> 1 week -> 2 sessions -> 2x 3h / w

Glossary and notes