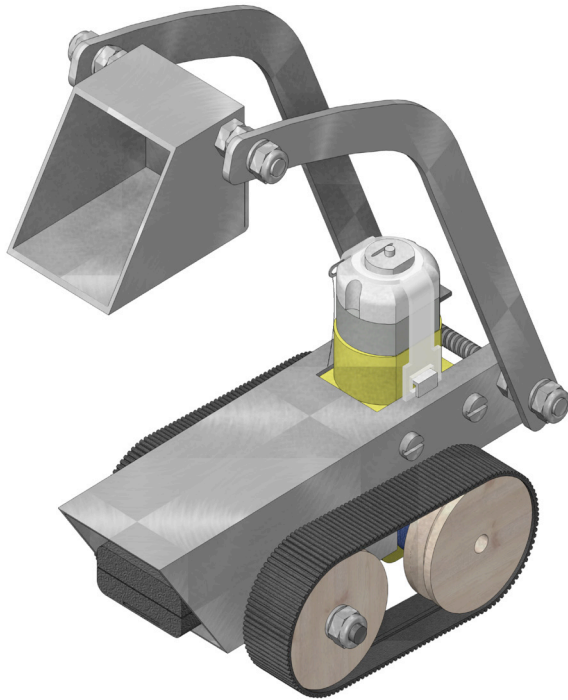
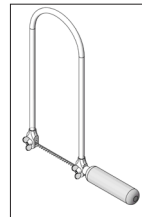


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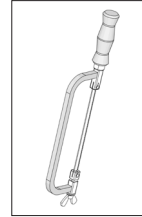
Metal Bulldozer



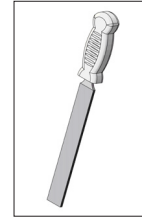
Tools Required:



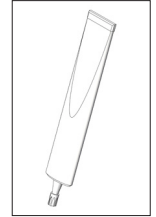
Fretsaw or Scroll Saw



PUK Saw



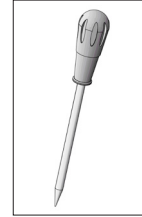
Engineer's File



All Purpose Glue



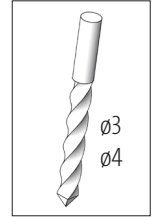
Screwdriver



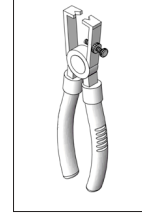
Pricking Awl



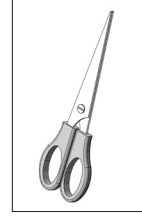
Spanner



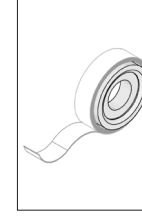
Metal Drill



Wire Stripper



Scissors



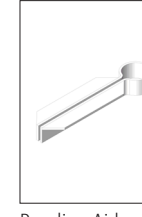
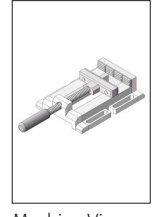
Adhesive Tape



Soldering Iron



Hammer

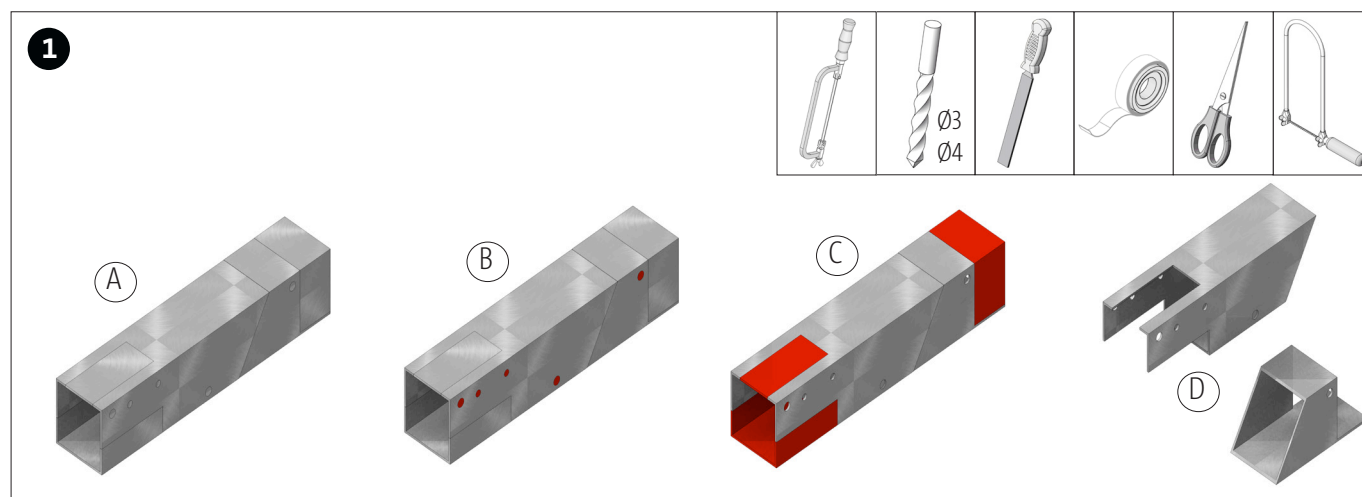
Bending Aid
(protective jaws)

Machine Vice

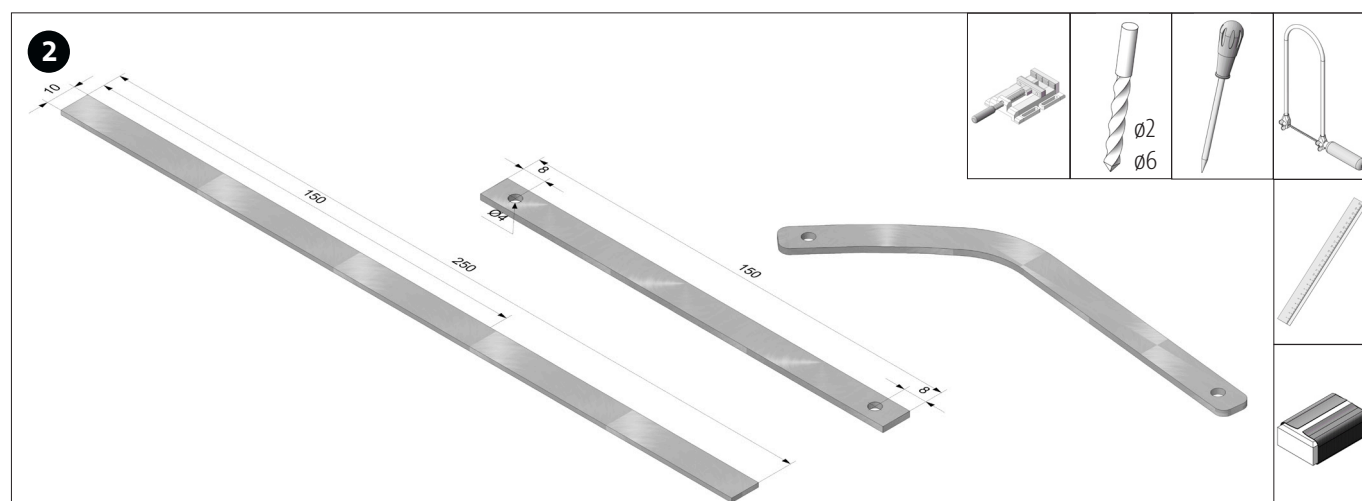
Please Note:

Finished projects of OPITEC handcraft kits are not play toy articles in the same sense as general commercially available ones, but rather are intended as teaching and learning material supporting educational objectives. The content of this construction kit may only be built and used by children and adolescents under the guidance and supervision of qualified adults. Not suitable for children under 36 months. Risk of suffocation!

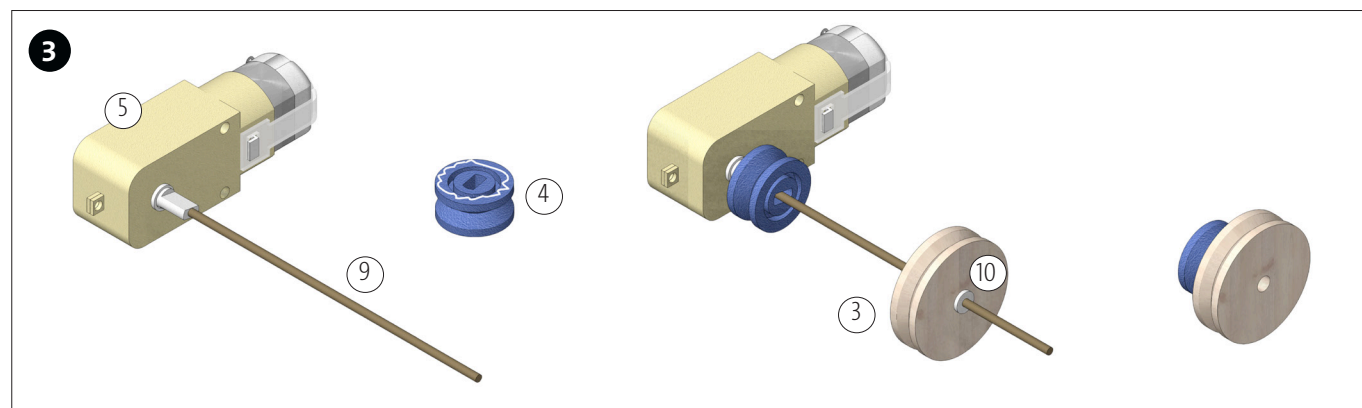
Parts List	Quantity	Size (mm)	Description	Part No.
Aluminium Square Tube	1	150x30x30	Body/Shovel	1
Aluminium Strips	2	250x10x2	Shovel Arm	2
Cord Wheel	4	ø30	Wheels	3
Cord wheel with oblong hole	2	ø18	Wheels	4
Gear Motor	1		Drive	5
Threaded Rod	1	ø4x300	Axles	6
Crawler Belt	2	55x58x12,5	Crawler Belt	7
Battery Holder 2xAAA	1		Power Source	8
Welding Rod	1	ø2x100	Centring Aid	9
Reducer	1	4/2	Centring Aid	10
Cylinder Head Screw	2	M3x35	Mounting Gear	11
Nut	2	M3	Mounting Gear	12
Nut	10	M4	Attachment	13
Washer	12	M4	Attachment	14
Stop Nut	6	M4	Mounting Wheels/Shovel	15



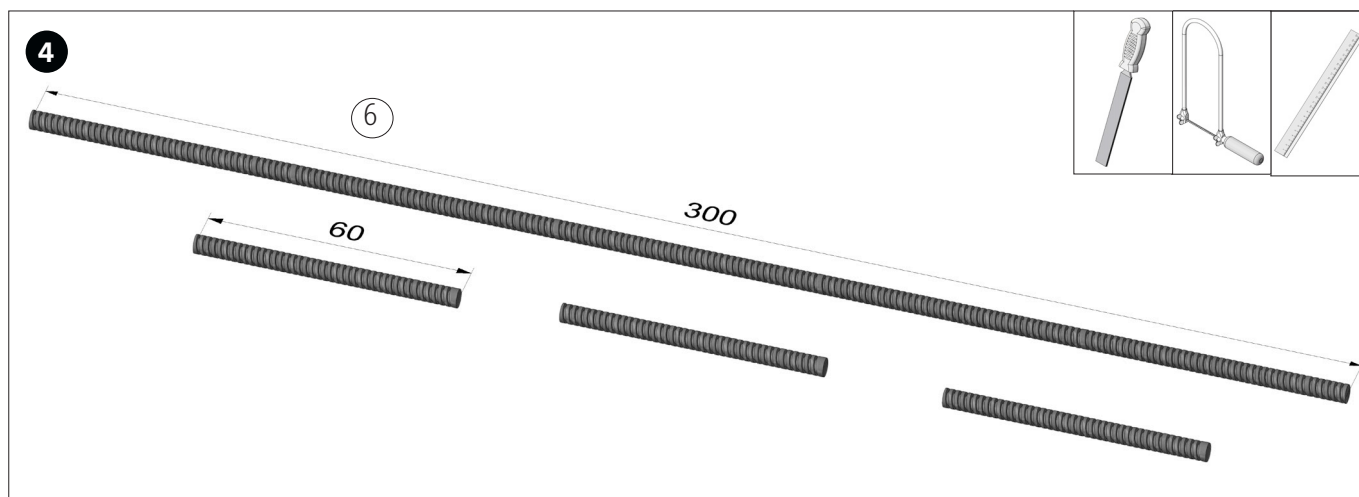
A) Transfer the template (page 5) onto the aluminium square tube (1). B) Drill the holes (ø3, ø4). C) Saw out and deburr the recesses. Then in step D) Separate body and blade and cleanly deburr all saw cuts.



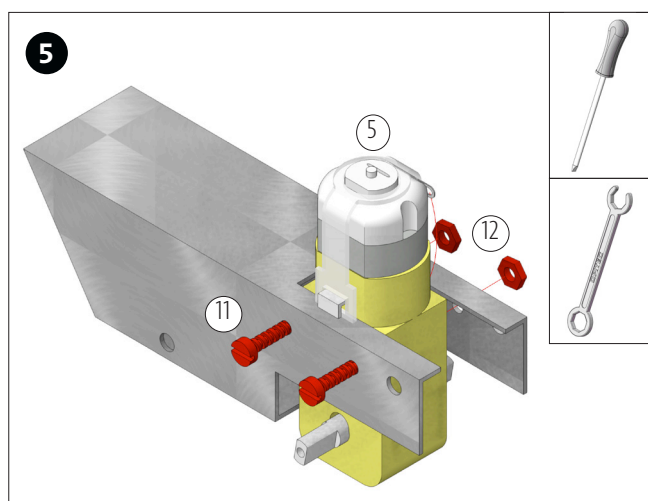
Shorten both aluminium strips (2) to 150mm. Measure the position of the holes and mark them with the pricker. Then drill through and deburr the saw cuts. Round off the corners at the outer edges. Bend both aluminium strips according to the bending template (page 5) in a vice with protective jaws.



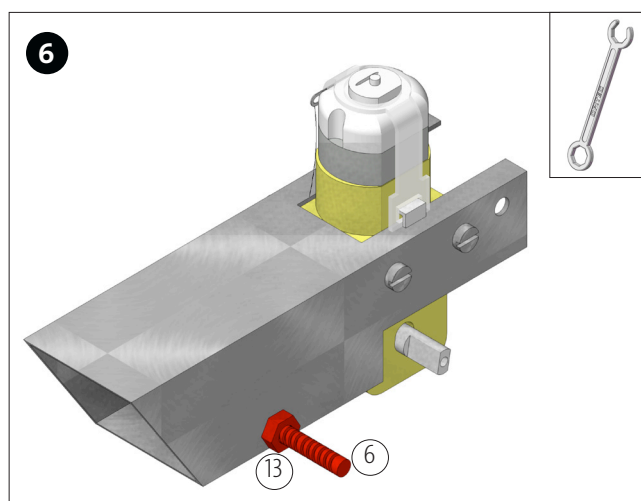
A) Insert the welding rod (9) into the drive shaft of the gearbox (5).
 B) Apply all-purpose adhesive to one side of the cord wheel (4) and put half of it on the output shaft of the gearbox.
 C) Insert the reducer (10) into the hole of the cord wheel (3) and place the cord wheel on the welding rod. Now insert the wooden wheel towards the plastic wheel and press on.
 D) Before the glue has dried, remove the wheels from the output shaft and let them dry.
 Note: no adhesive must get into the slotted hole!
 Repeat this procedure with another cord wheel (3)!



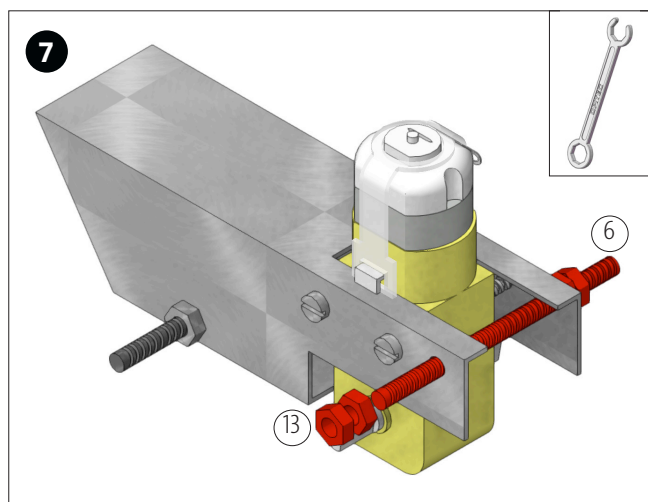
Cut three parts of the threaded rod (6) to length 60mm. Deburr saw cuts.



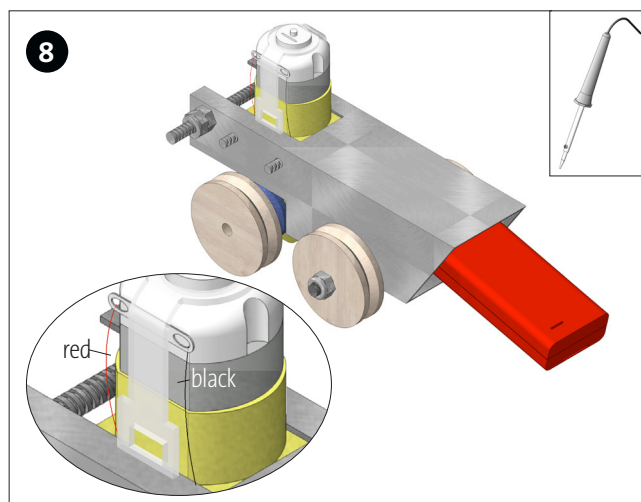
Insert the geared motor (5) in the body as shown and fix it with the two cylinder head screw (11) and the two nuts (12). Note: the connections are on the right hand side.



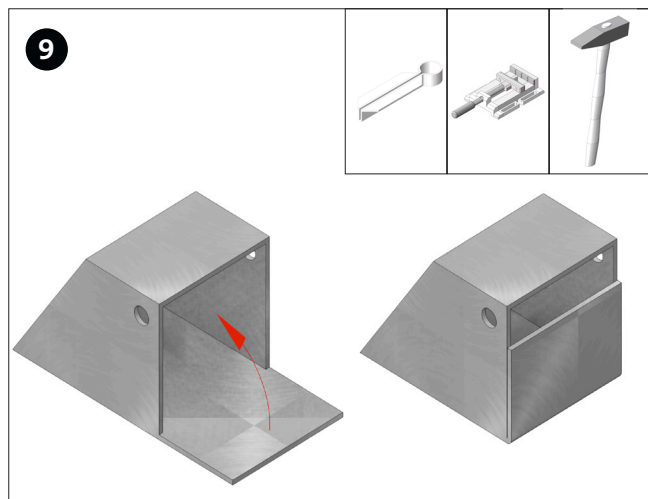
Insert one of the axles (6) through the front hole in the body as shown and center it. Then fasten each axle from both sides with a nut (13).



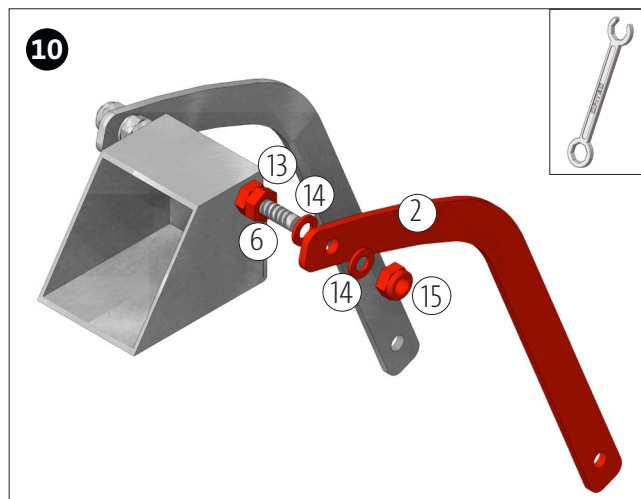
Push another axle (6) through the rear hole as shown and center it. Then fasten from both sides with 2 nuts (13) each. Lock the nuts.



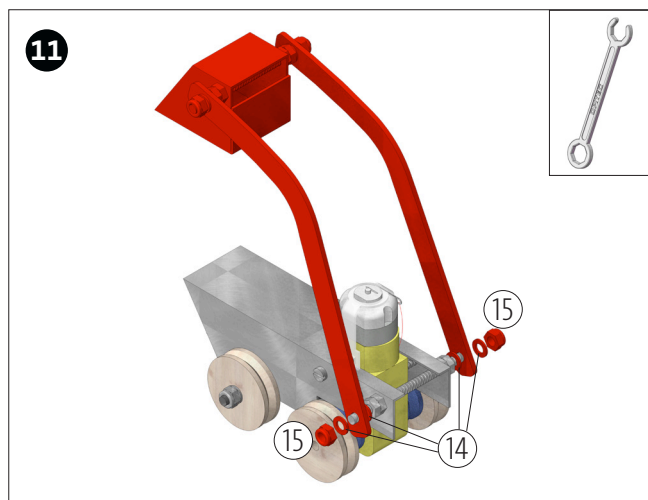
Feed the cables of the battery holder from the front through the opening of the square wire tube and pull them out on the connection side of the gear unit. Solder the coloured cables to the connections as shown in detail and check function.



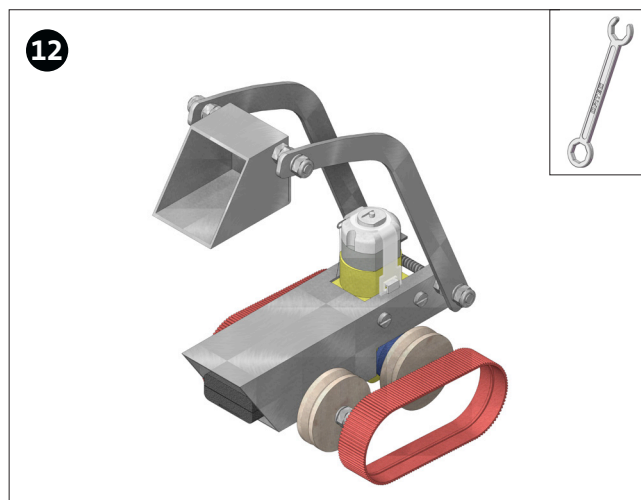
Bend the base plate of the shovel 90° upwards at the rear as shown.



Insert the remaining axle (6) through the hole in the bucket and centre it. First screw on two nuts (13) from both sides and lock them. Then screw on a washer (14), a shovel arm (2), another washer (14) and a lock nut (15).



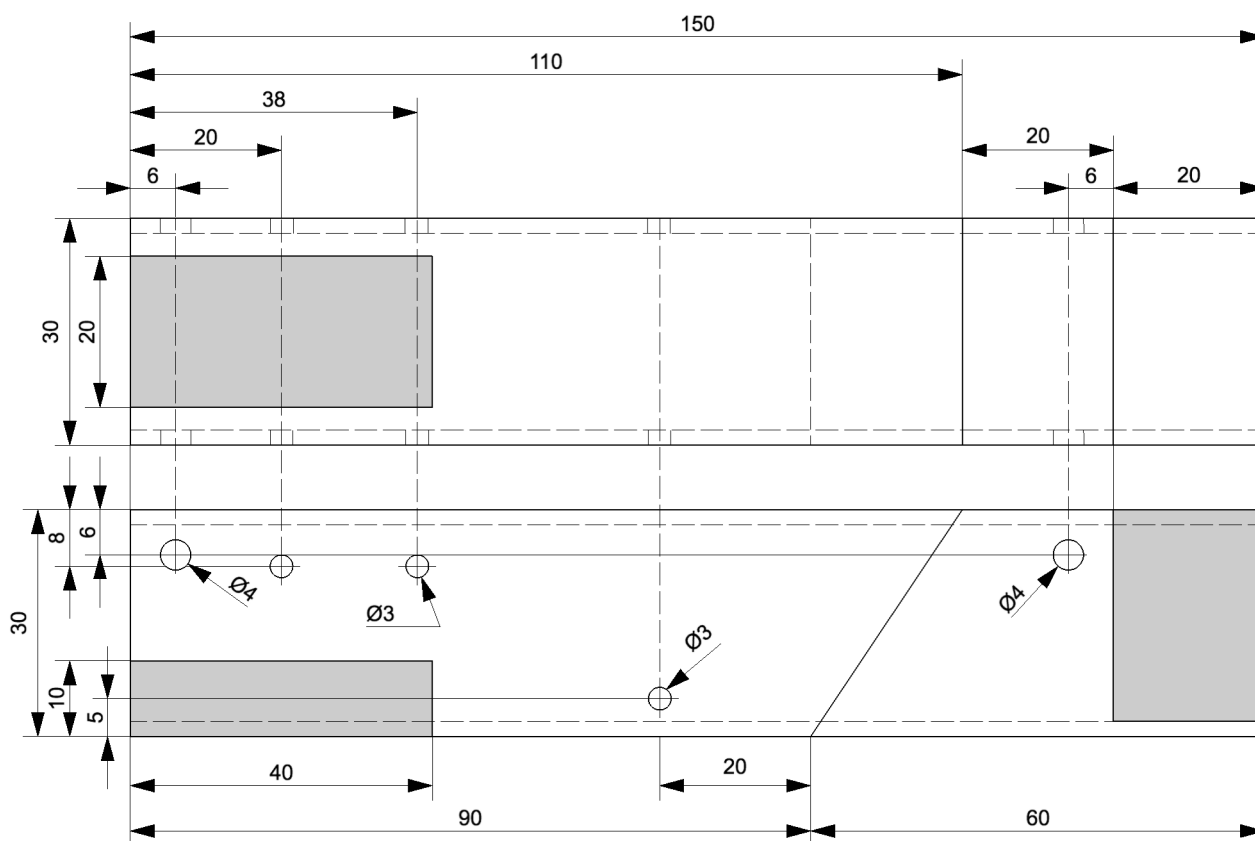
Place one washer (14) on the rear axle from each side. Then attach the shovel arm with the shovel to the axle as shown. Secure with one washer (14) and one stop nut (15).



Place the two crawler belts (7) on the wheels as shown.
 Done!

Building Instructions 121.940
Metal Bulldozer

Template Aluminium Square Tube
M 1:1



Bending Template Aluminium Strips
M 1:1

