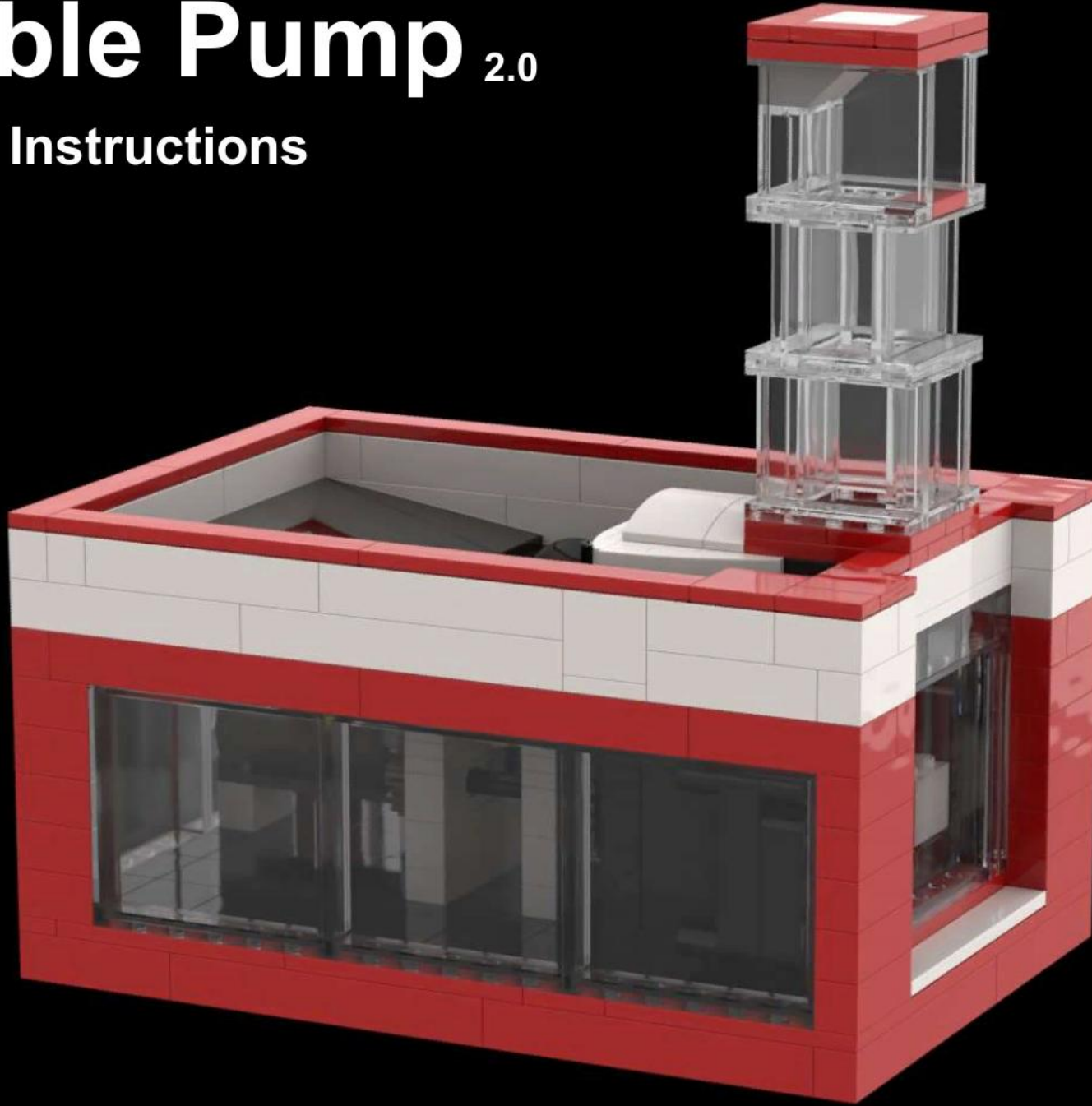


Double Pump 2.0

Building Instructions



original design

05/2021 by mickthebricker

This module was originally designed 05/2021 by mickthebricker.

Double Pump 2.0

The Double Pump 2.0 originally designed 2021 by mickthebricker is an improved version of his previous module (1.0).

It is two studs smaller, has an improved inbox (>30 balls) and shows both the new, more compact Double Pump 2.0 mechanism and the ball flow inside the pump thanks to its pure architectural design and ribbon window elements.

While single pumps only use the slide's forward moving, the Double Pump 2.0 utilizes additionally its backward moving. Running two pistons, the Double Pump 2.0 is fed by two inputs. The big advance consists in doubling the capacity at one travel.

The innovative, compact Double Pump 2.0 mechanism is particularly suitable for high loads or to merge flows and can be used as a single module as well as an integrated mechanism.

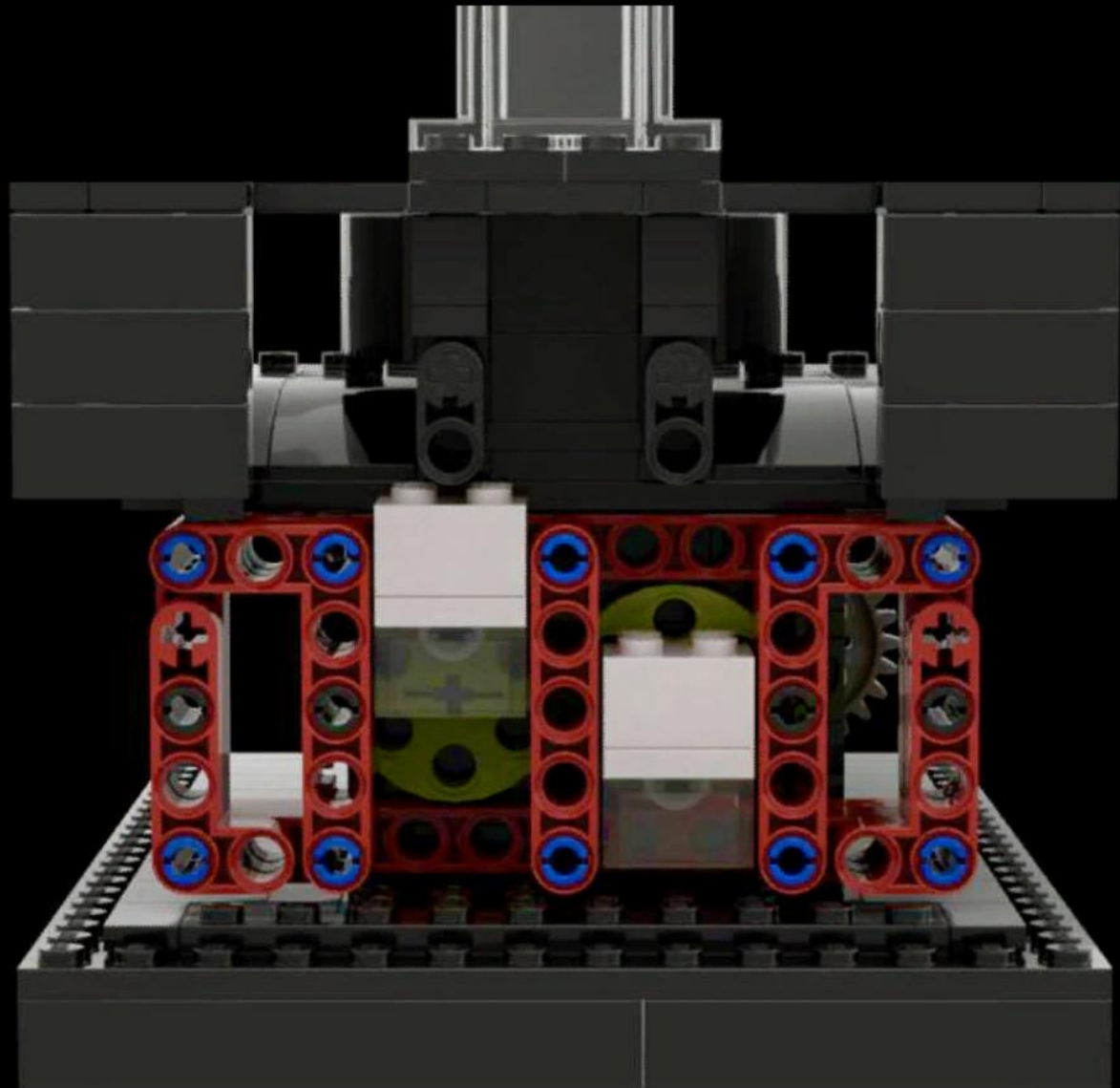
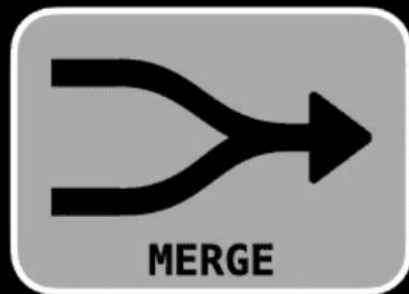
Unit	stud	inch	cm	

Width	21,0	6,6	16,8	
Length	14,0	4,4	11,2	
Height	23,6	7,4	18,9	

Total Number of Parts:			470	

This building instructions ist not for commercial but private use only. It is not for sale. You can use it for free to rebuild. If you publish or show your rebuilt and/or improved module, please be so nice to refer to me like: "Originally designed 05/2021 by mickthebricker". Thanks!

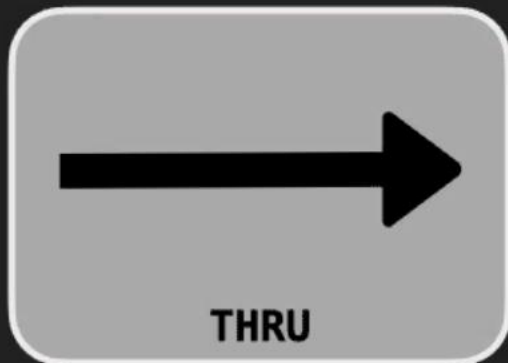
Double Pump Mechanism



idea & original design 2020/2021 by mickthebricker (based on single pump mechanism)

Single Pump

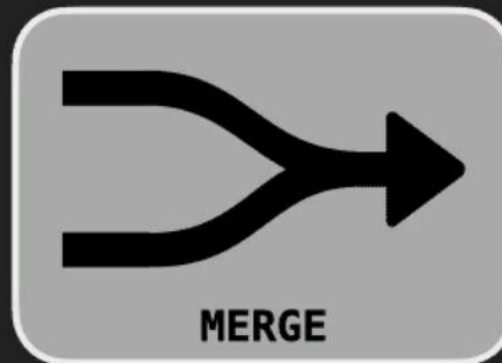
- in line with other modules
- upward movement
- very **reliable**



Double Pump

by mickthebricker

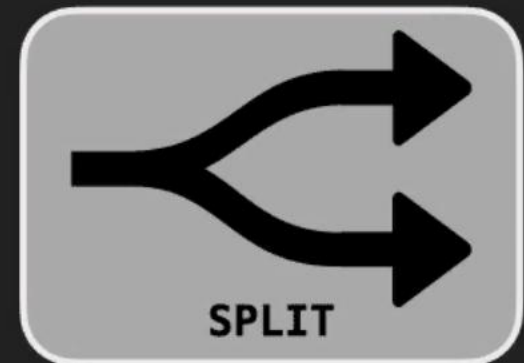
- mechanism has **nearly the same size** as the single pump mechanism
- **capacity doubled** at one travel
- manages **high loads**
- useful to **merge ball flows**



Split Pump

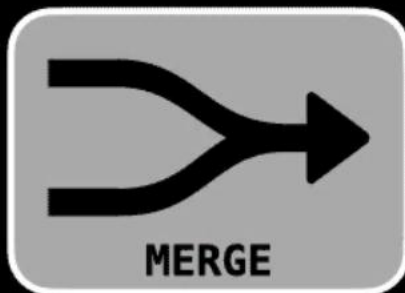
by mickthebricker

- same **size & capacity** as **double pump**
- useful to **split ball flows**
- in an **upward movement**
- into **submodules** or
- **divergent directions**



idea & original design 2020/2021 by mickthebricker (based on single pump mechanism)

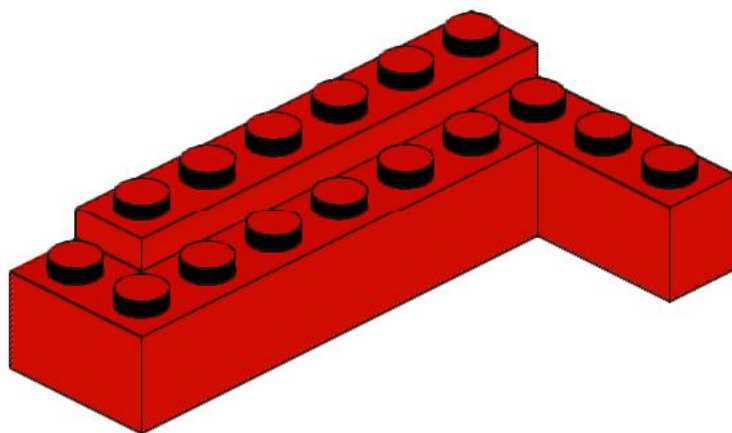
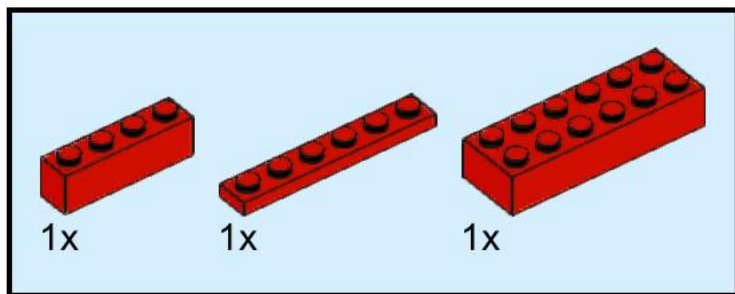
Double Pump 2.0



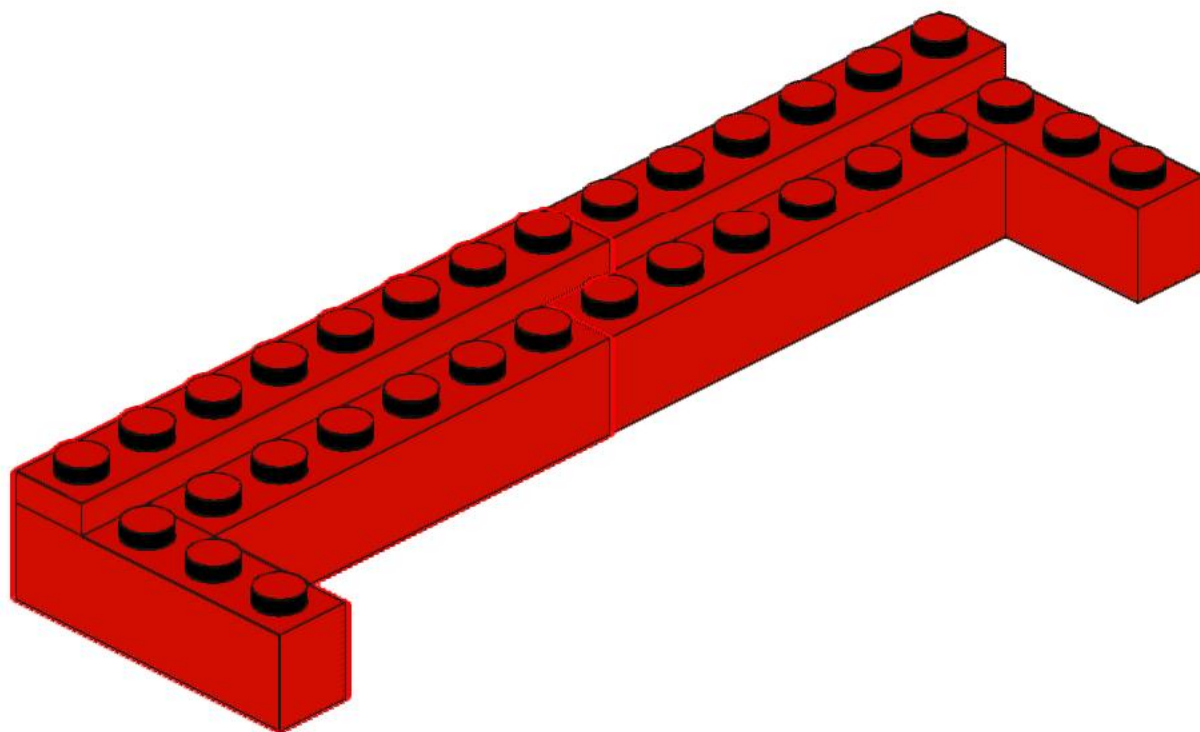
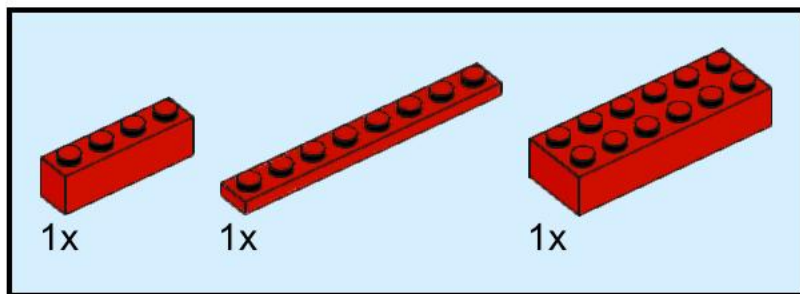
- based on the single pump mechanism (shifting slide with one piston)
- mechanism has **nearly** the **same size** as the single pump mechanism
- compact double pump mechanism
- two inputs and one output
- **two pistons** (instead of one)
- single pumps use only the slide's forward movement, the double pump **additionally utilizes the backward movement** of the slide
- the **capacity is doubled** at one travel and at the same space requirements
- manages **high loads**
- useful to **merge ball flows within a module**
- or to **merge ball flows** of two modules e.g. in a great ball contraption
- creates **higher ball density** (output flow)

idea & original design 2020/2021 by mickthebricker (based on single pump mechanism)

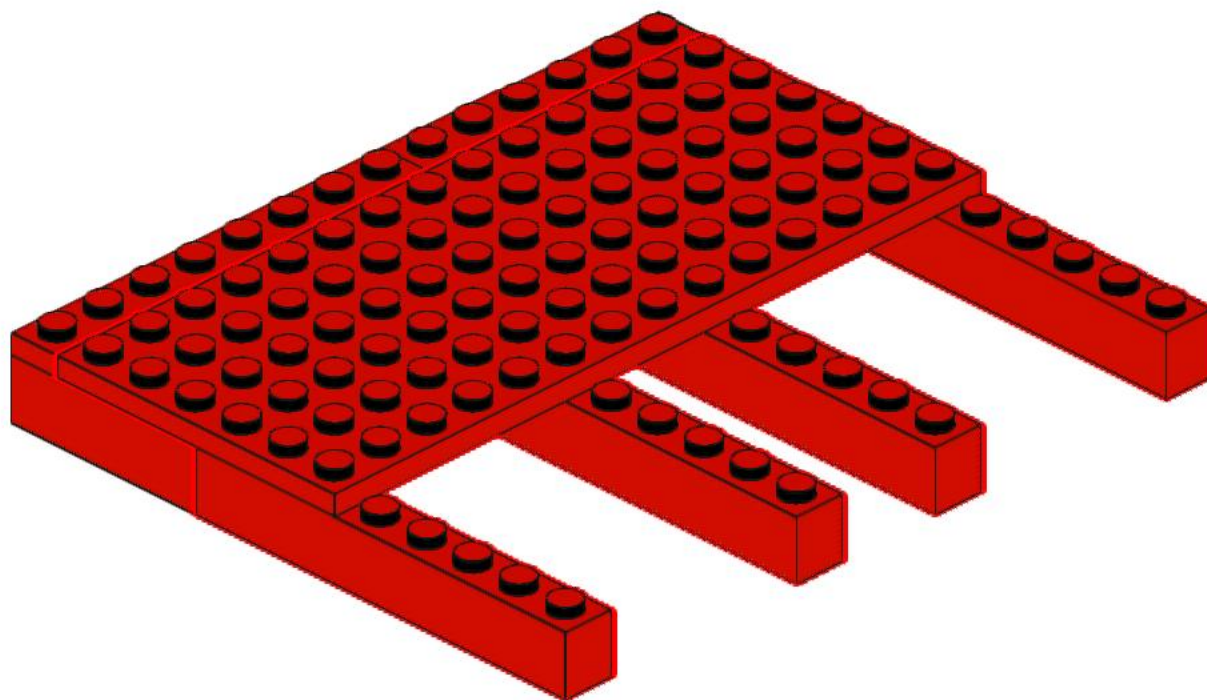
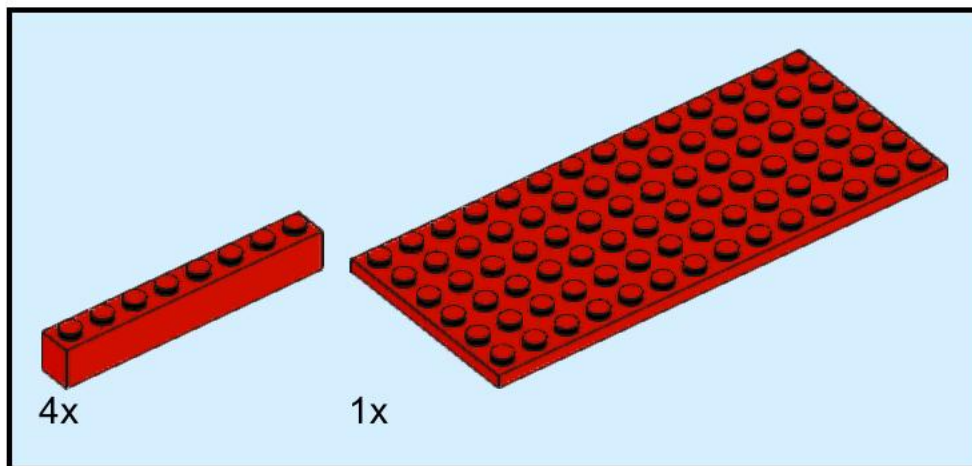
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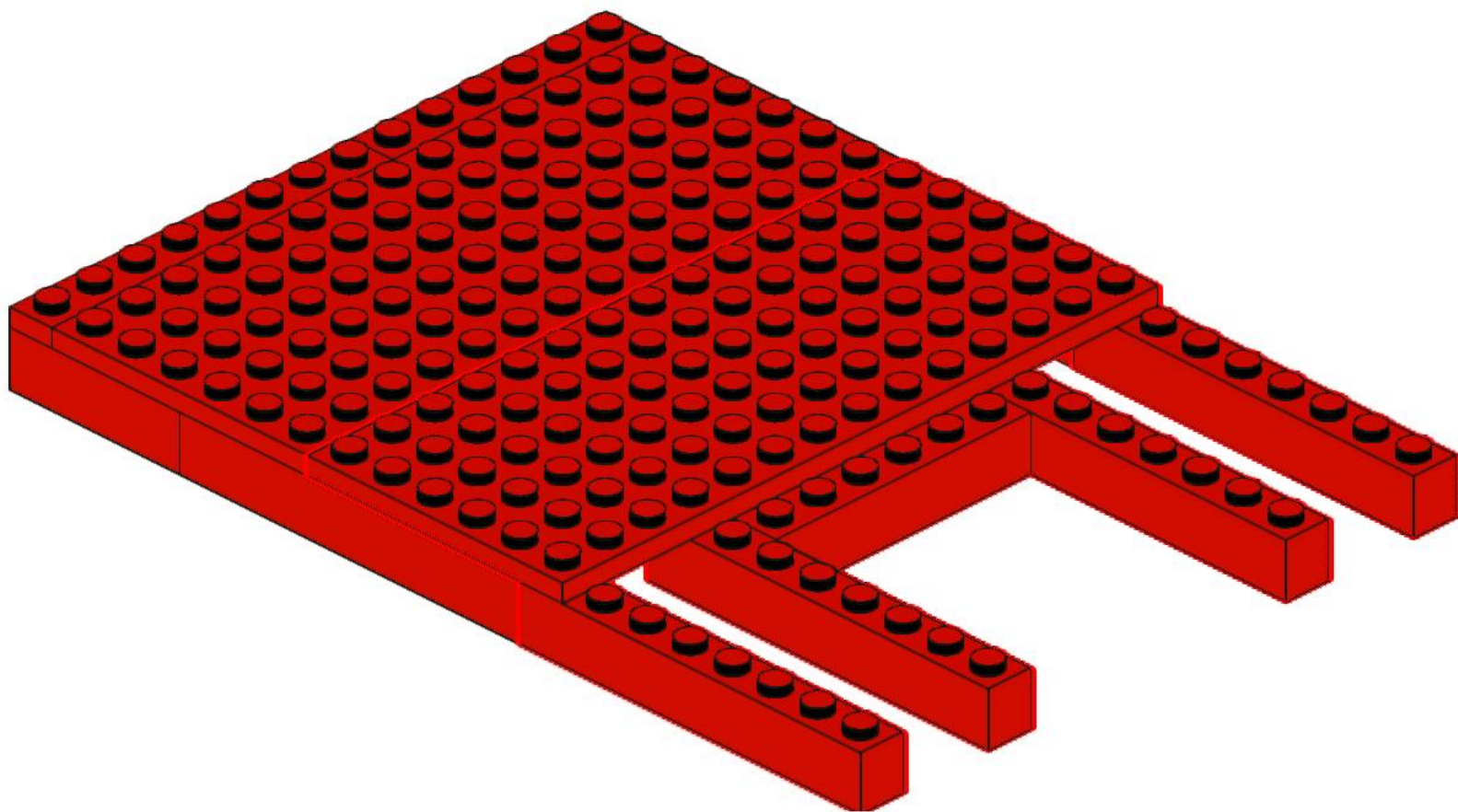
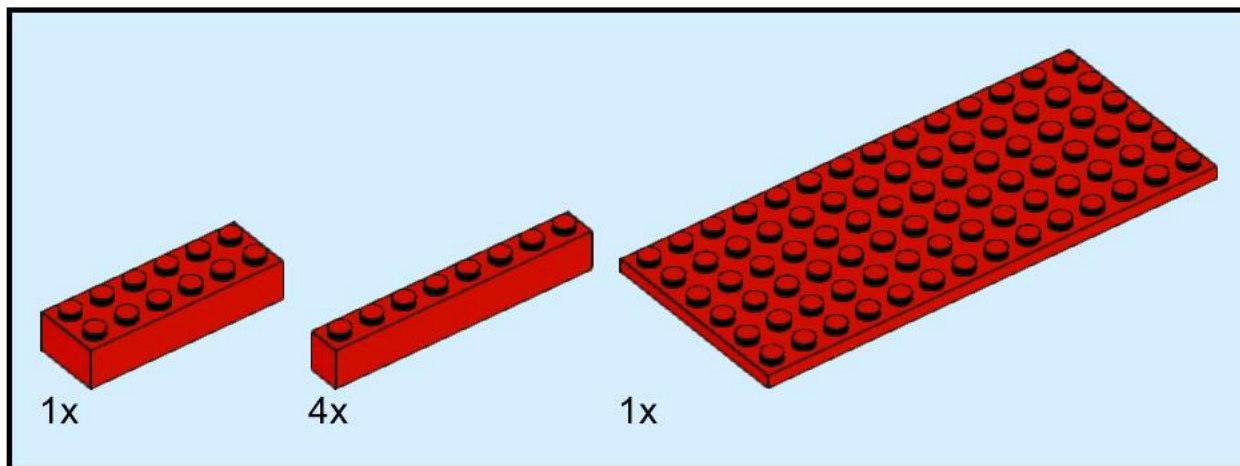
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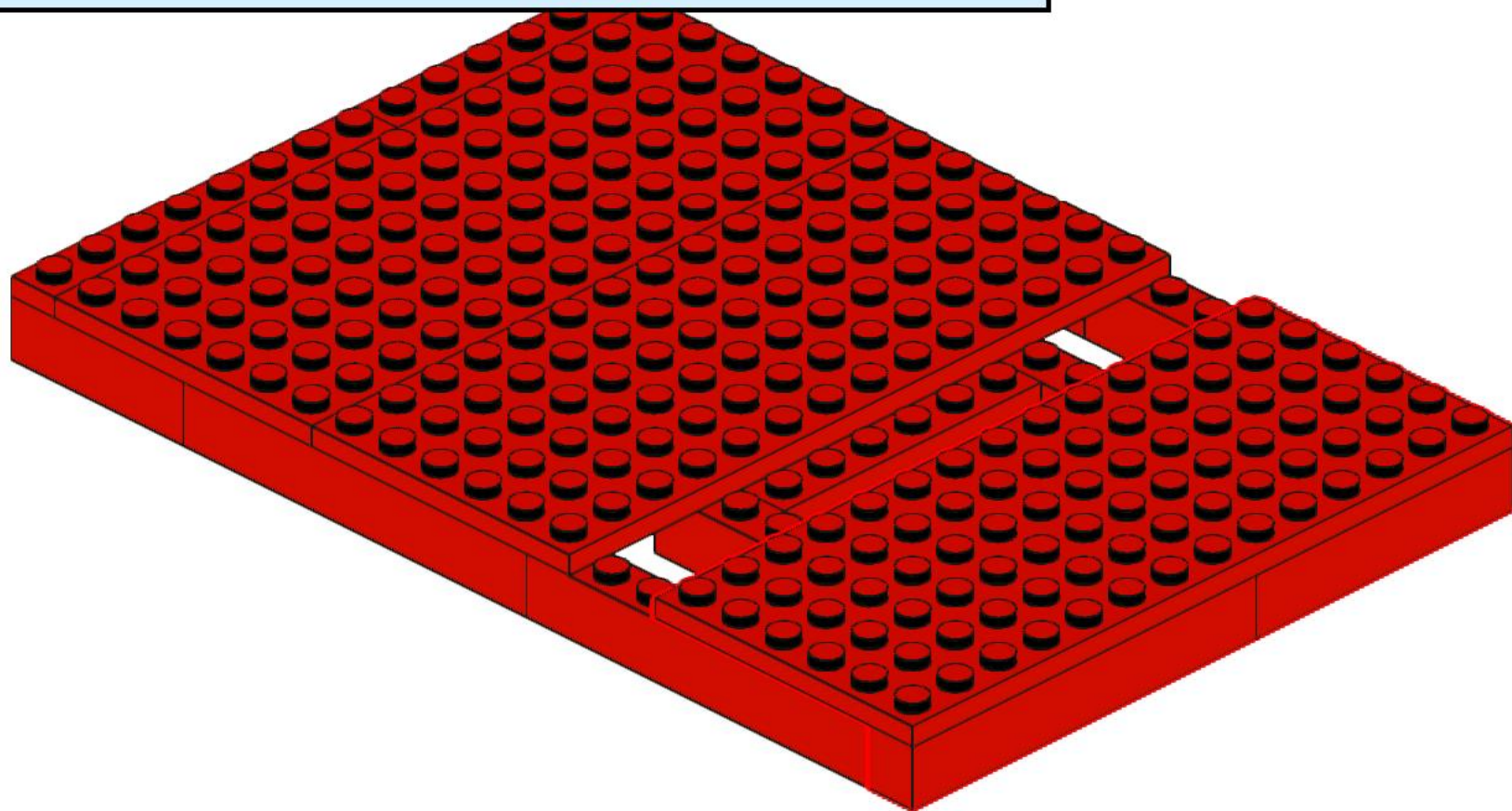
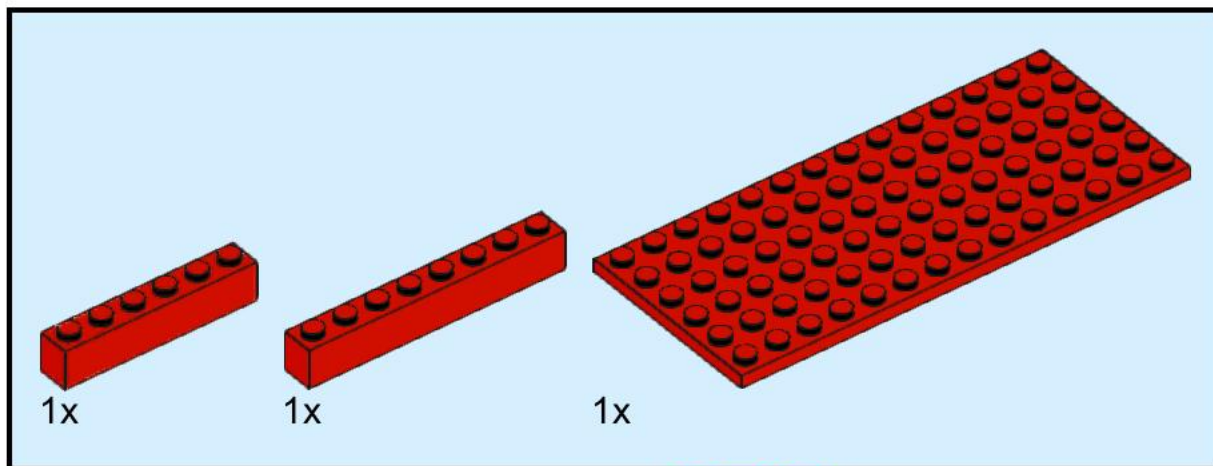
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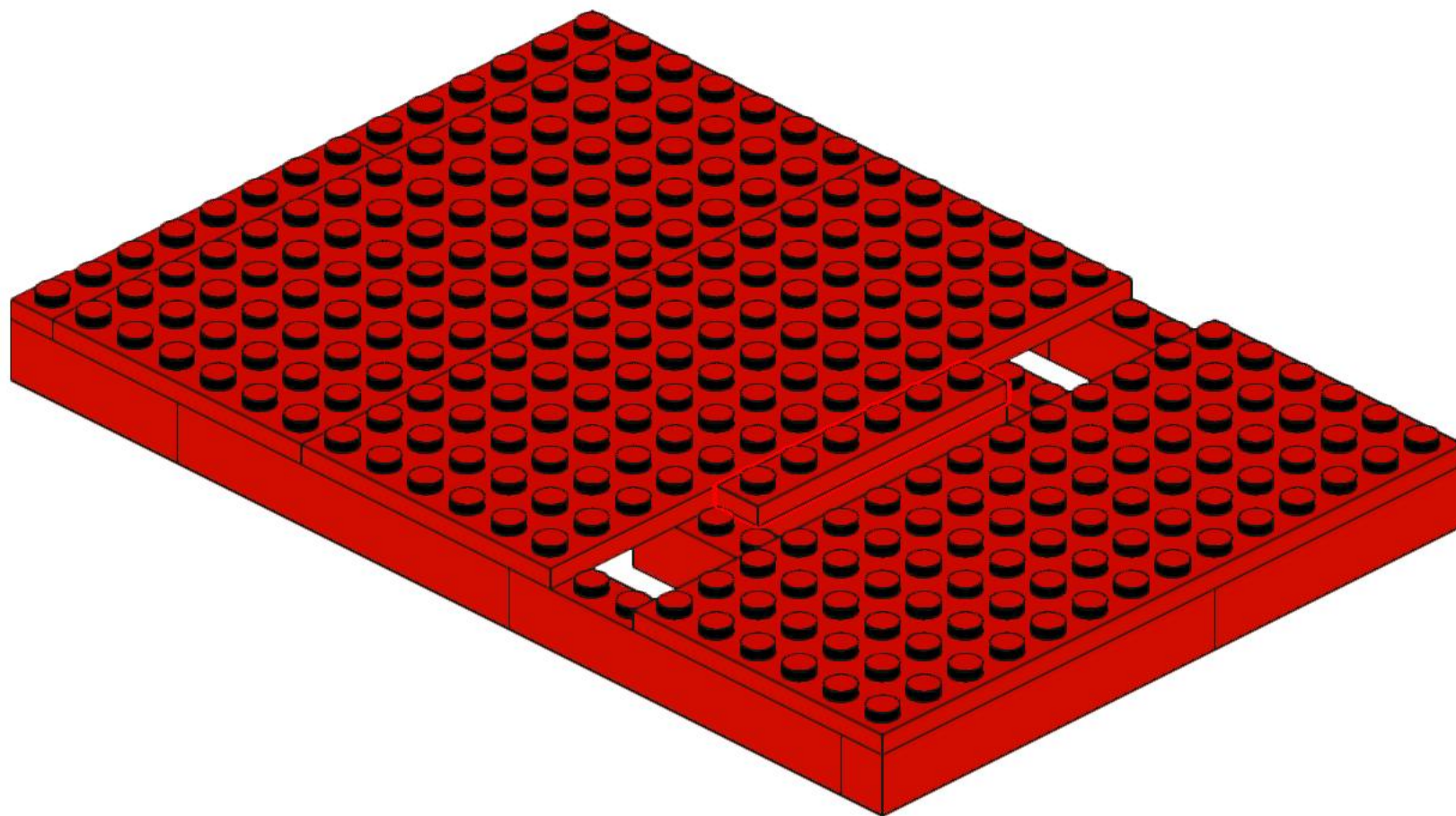
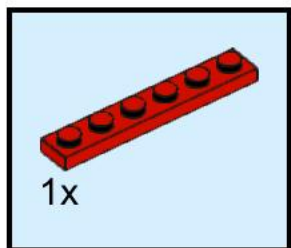
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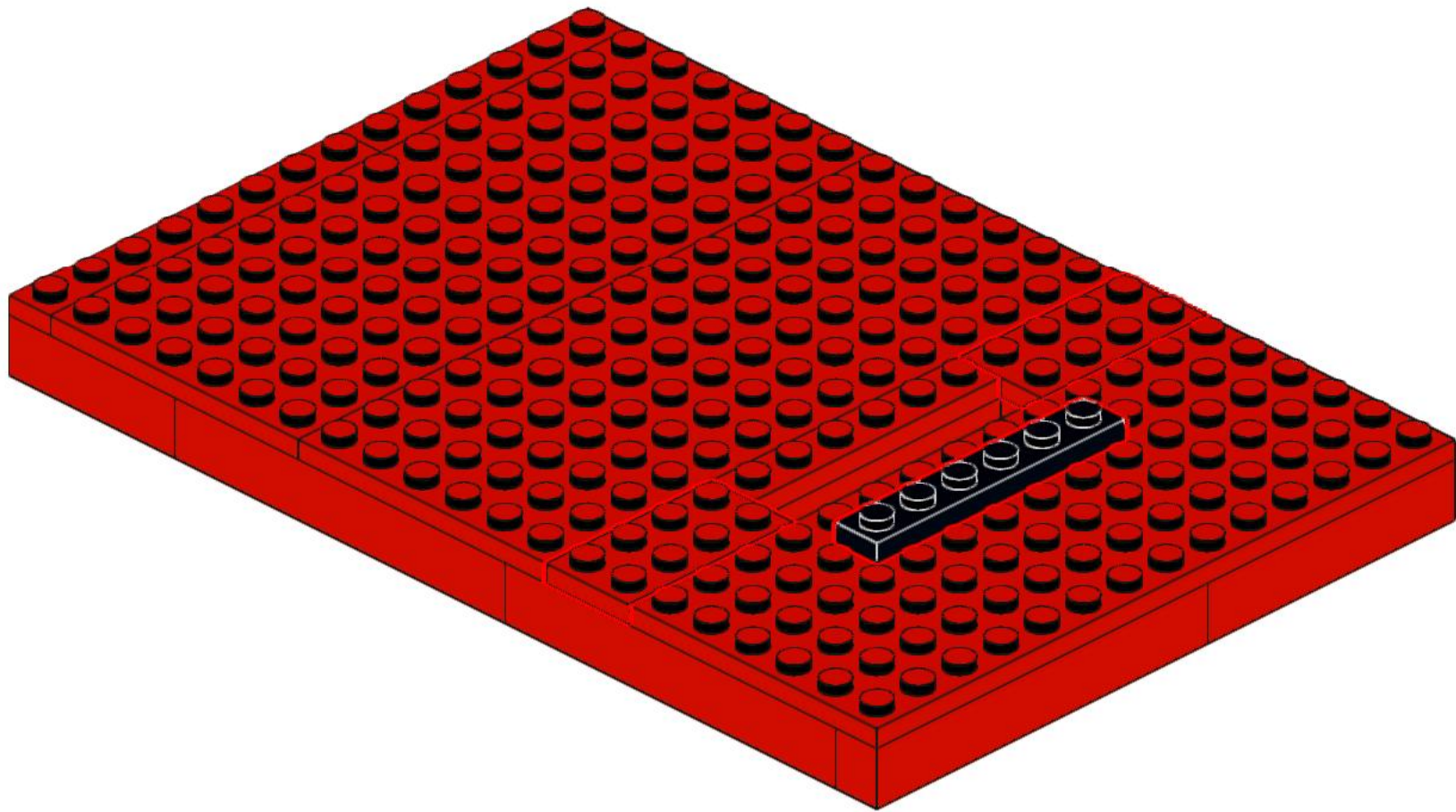
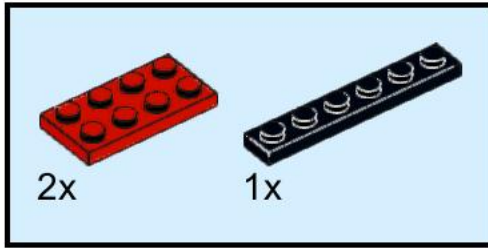
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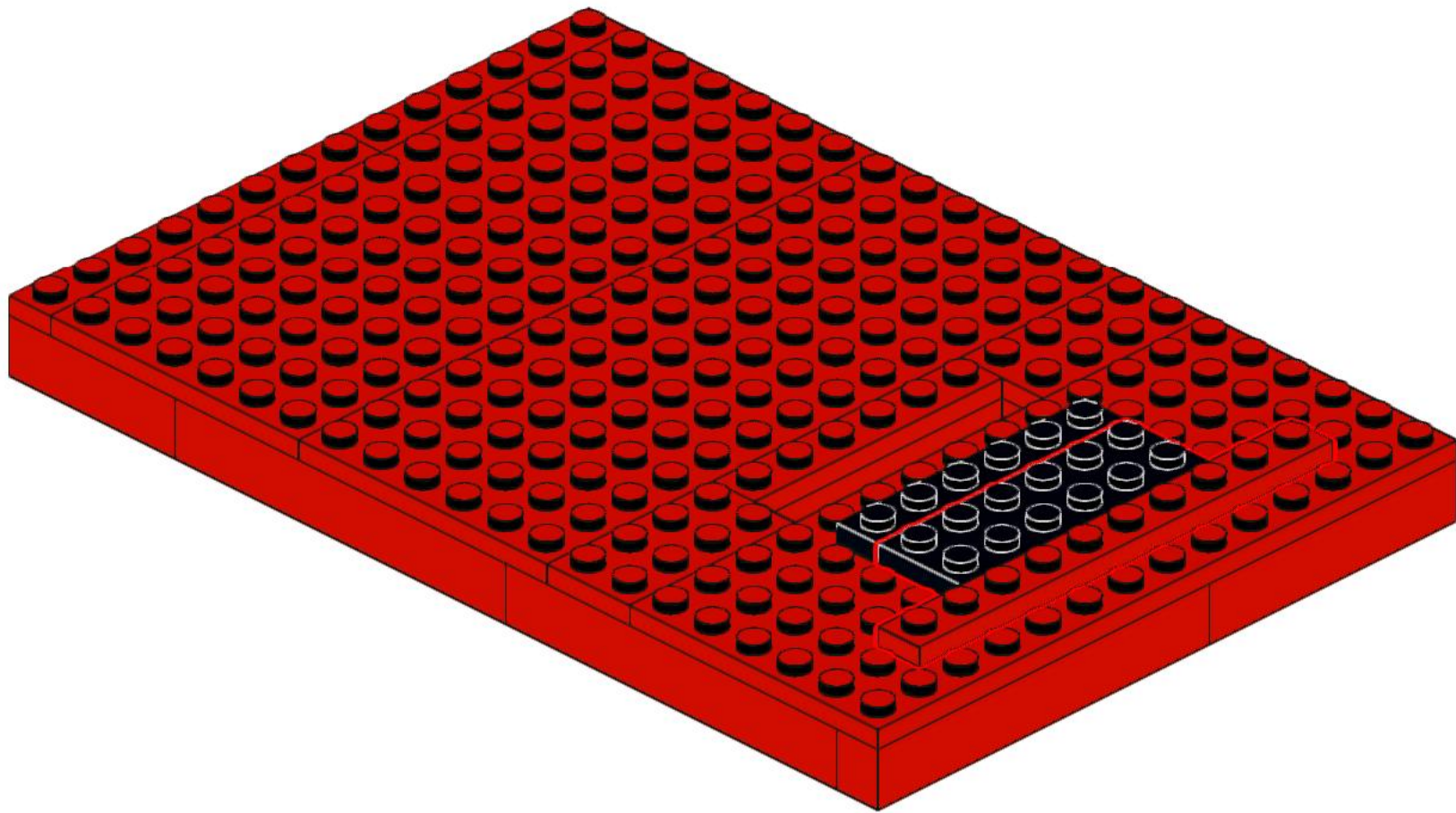
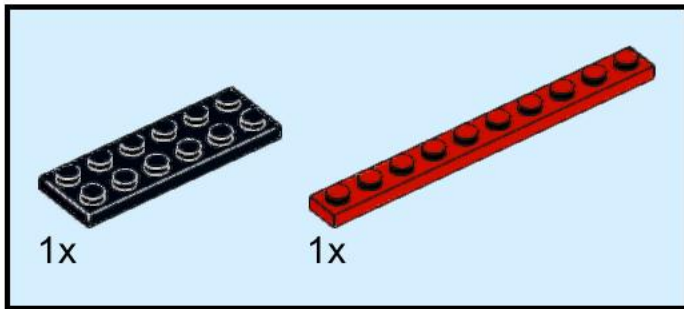
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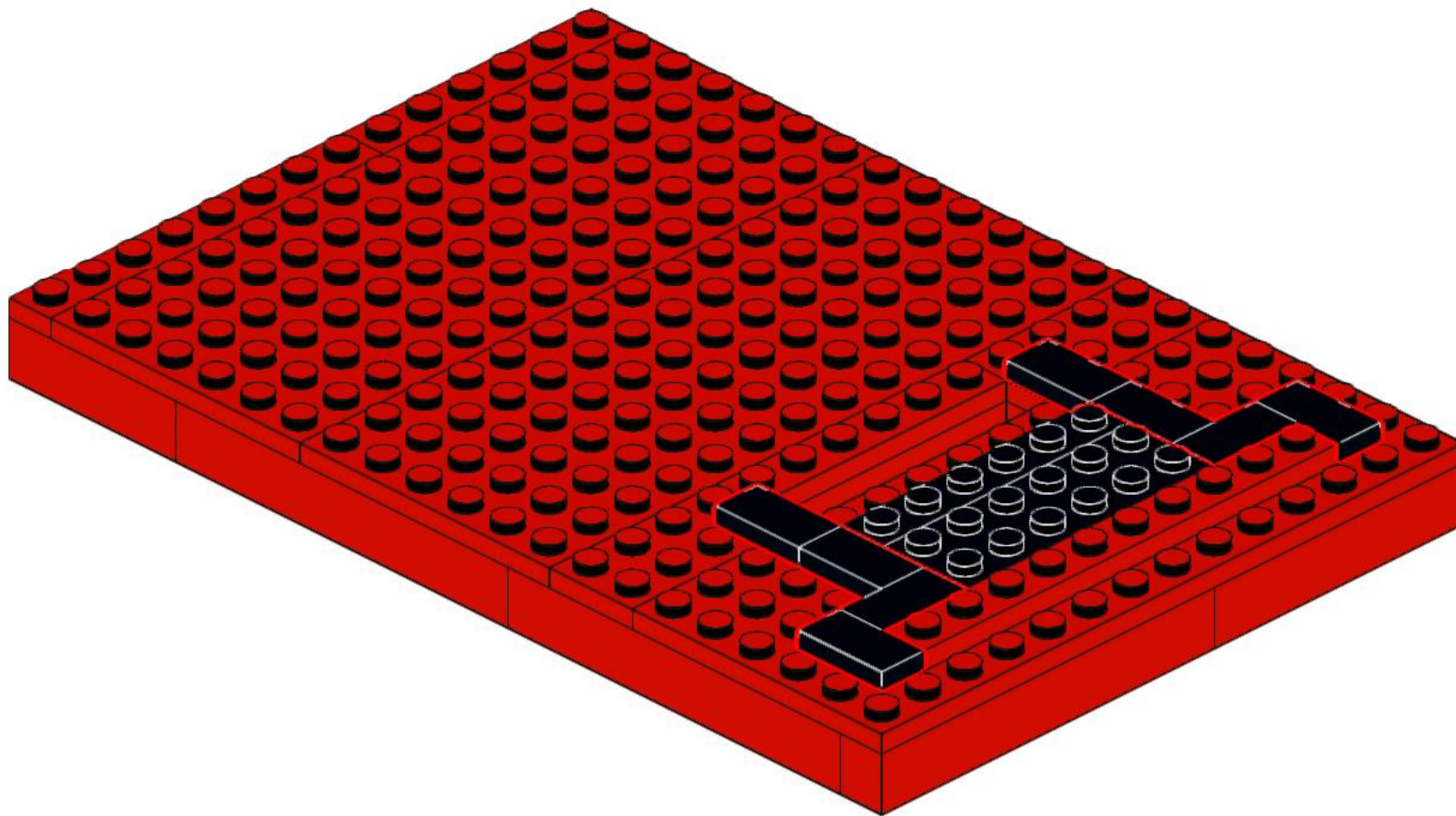
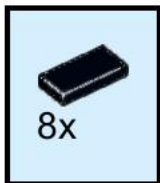
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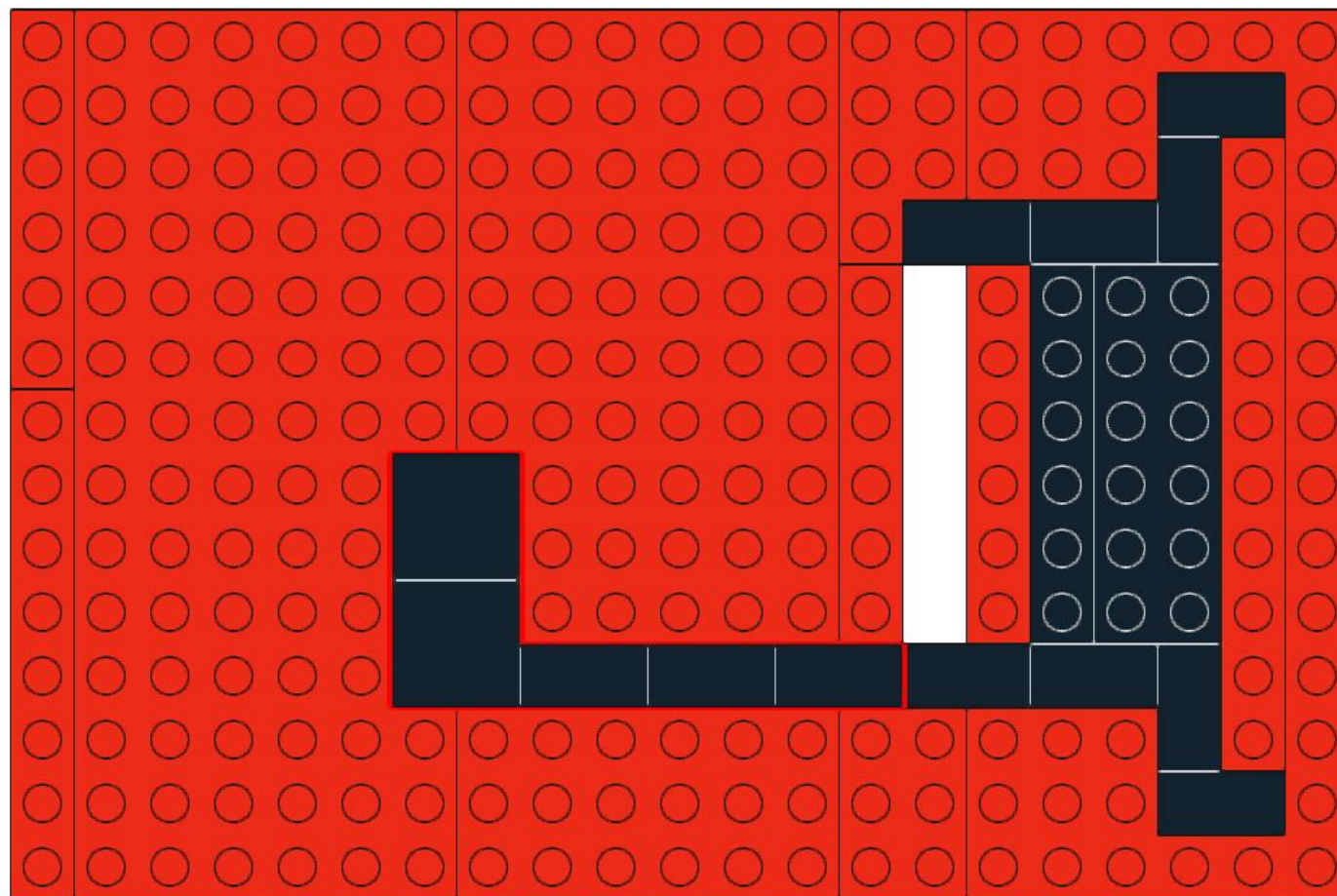
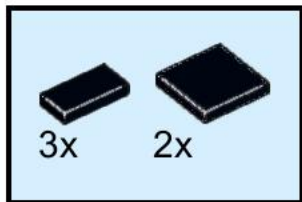
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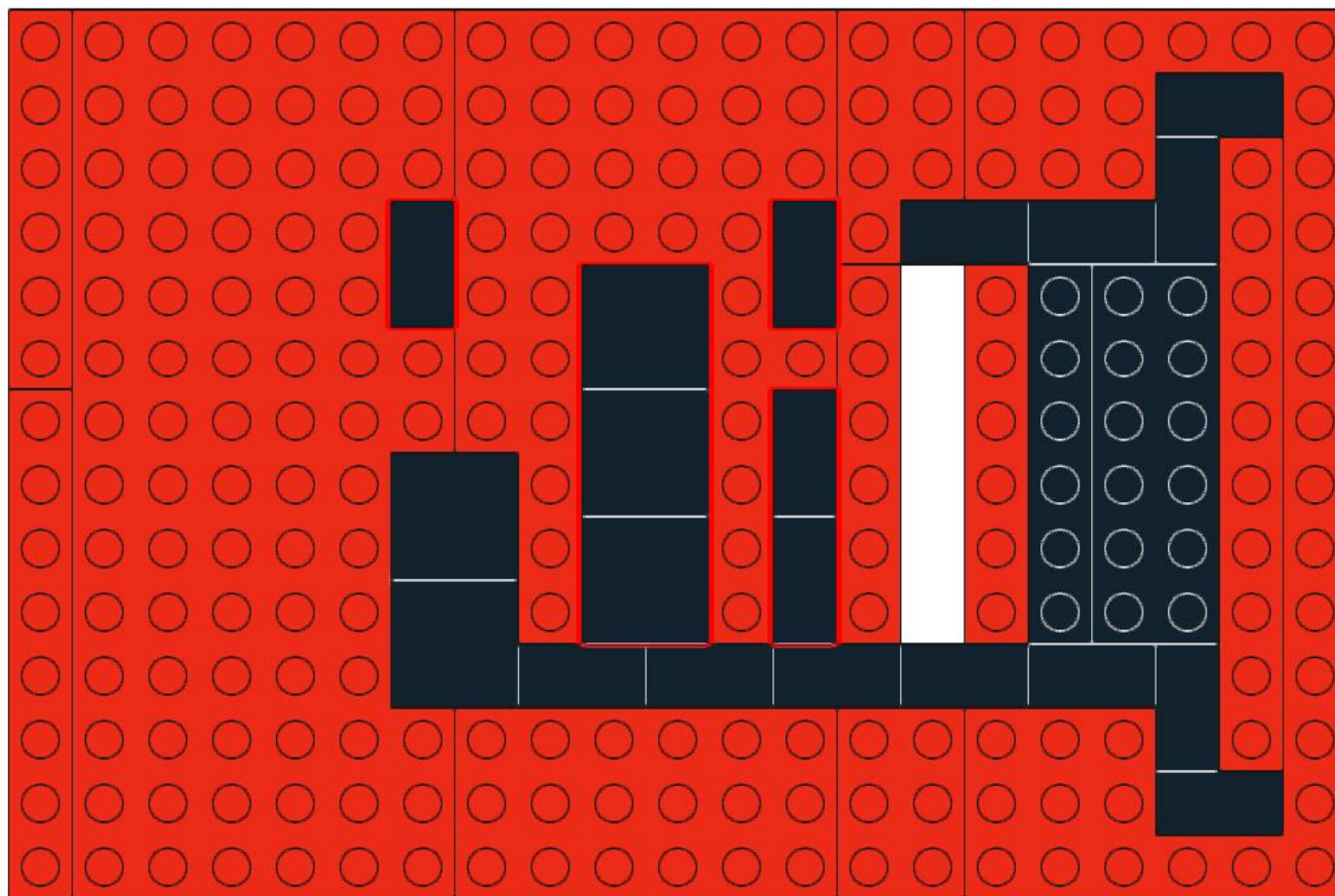
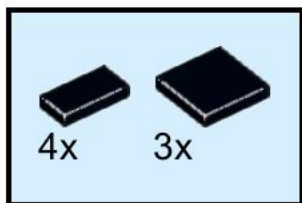
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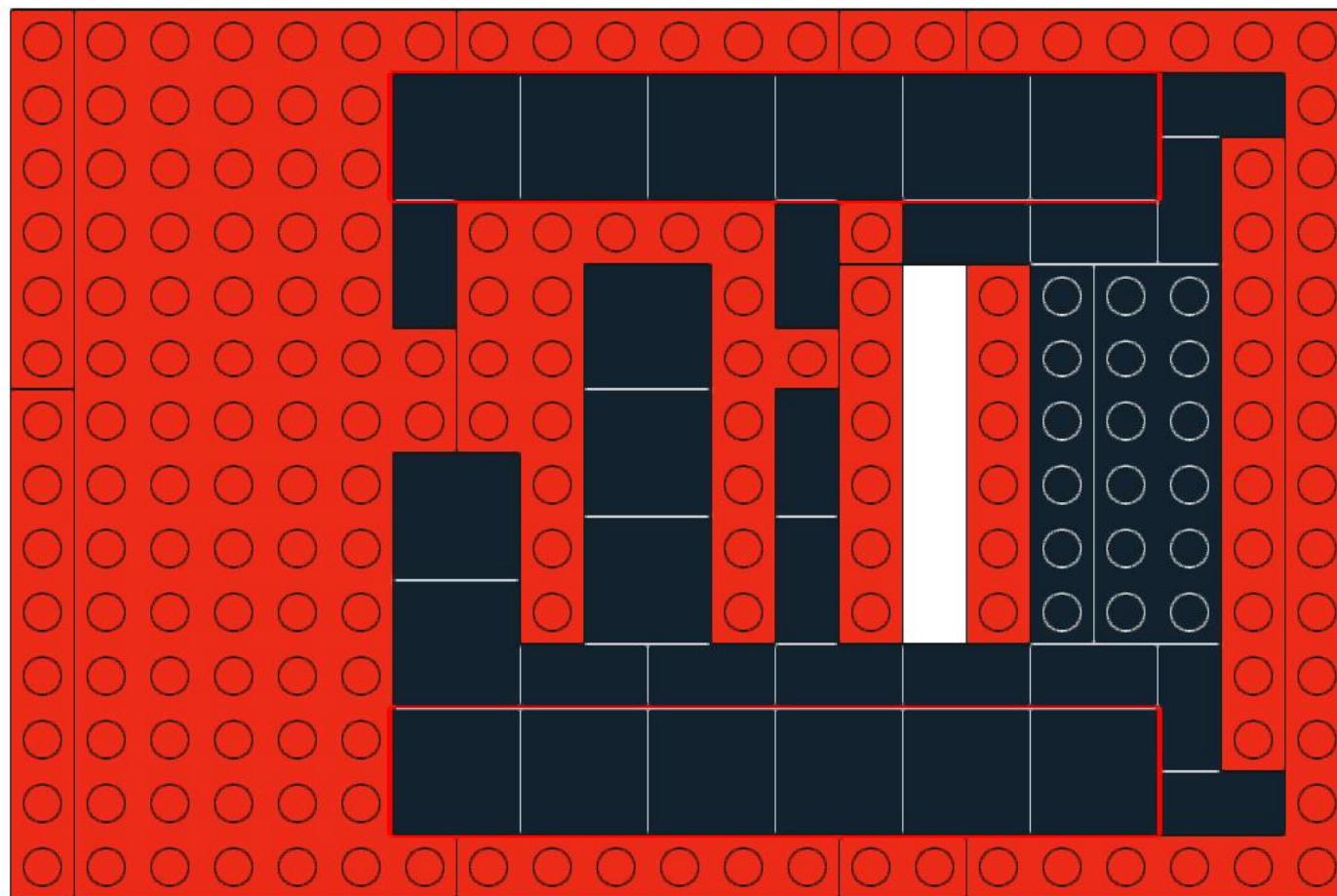
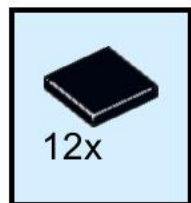
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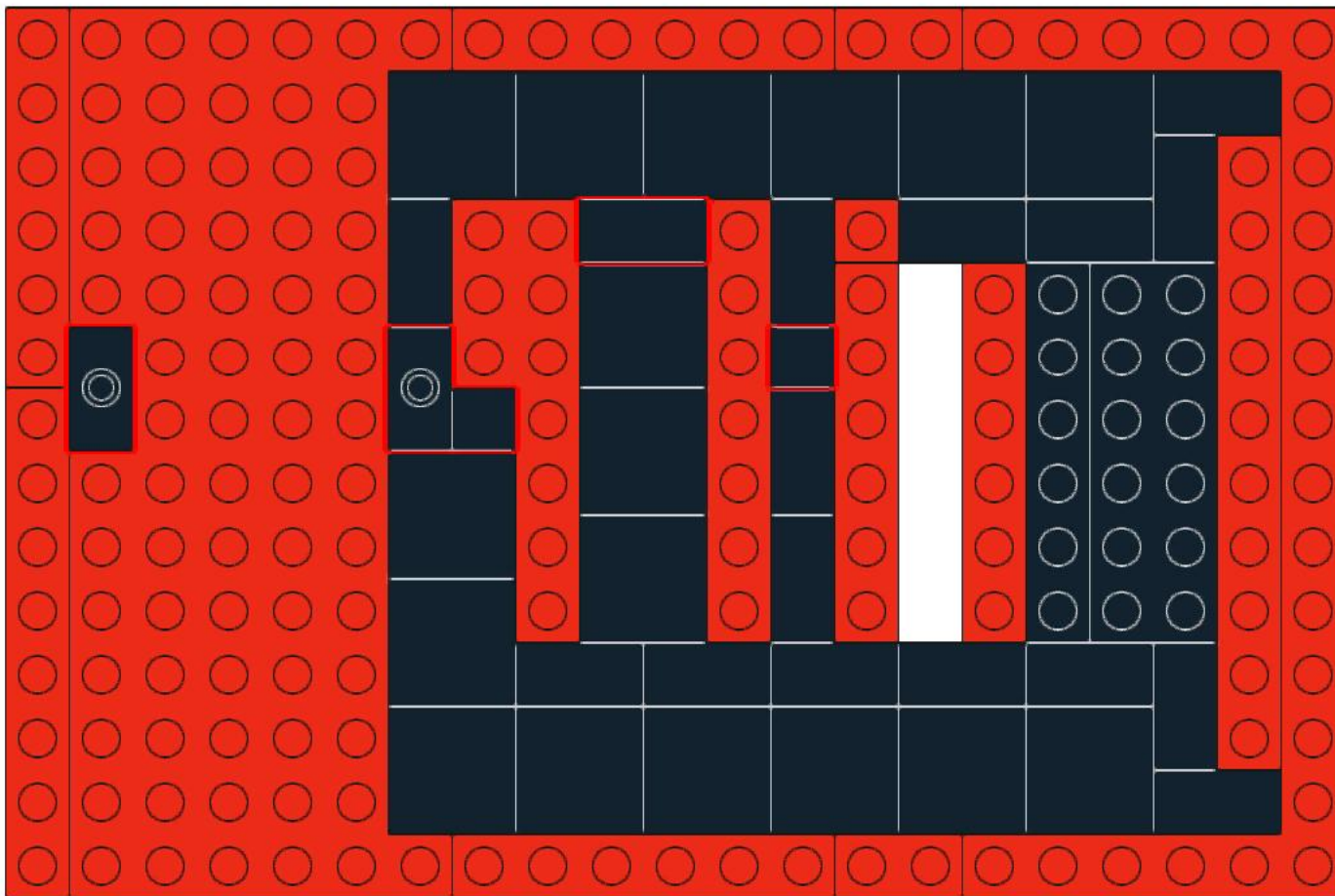
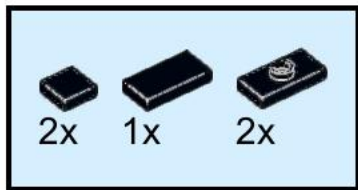
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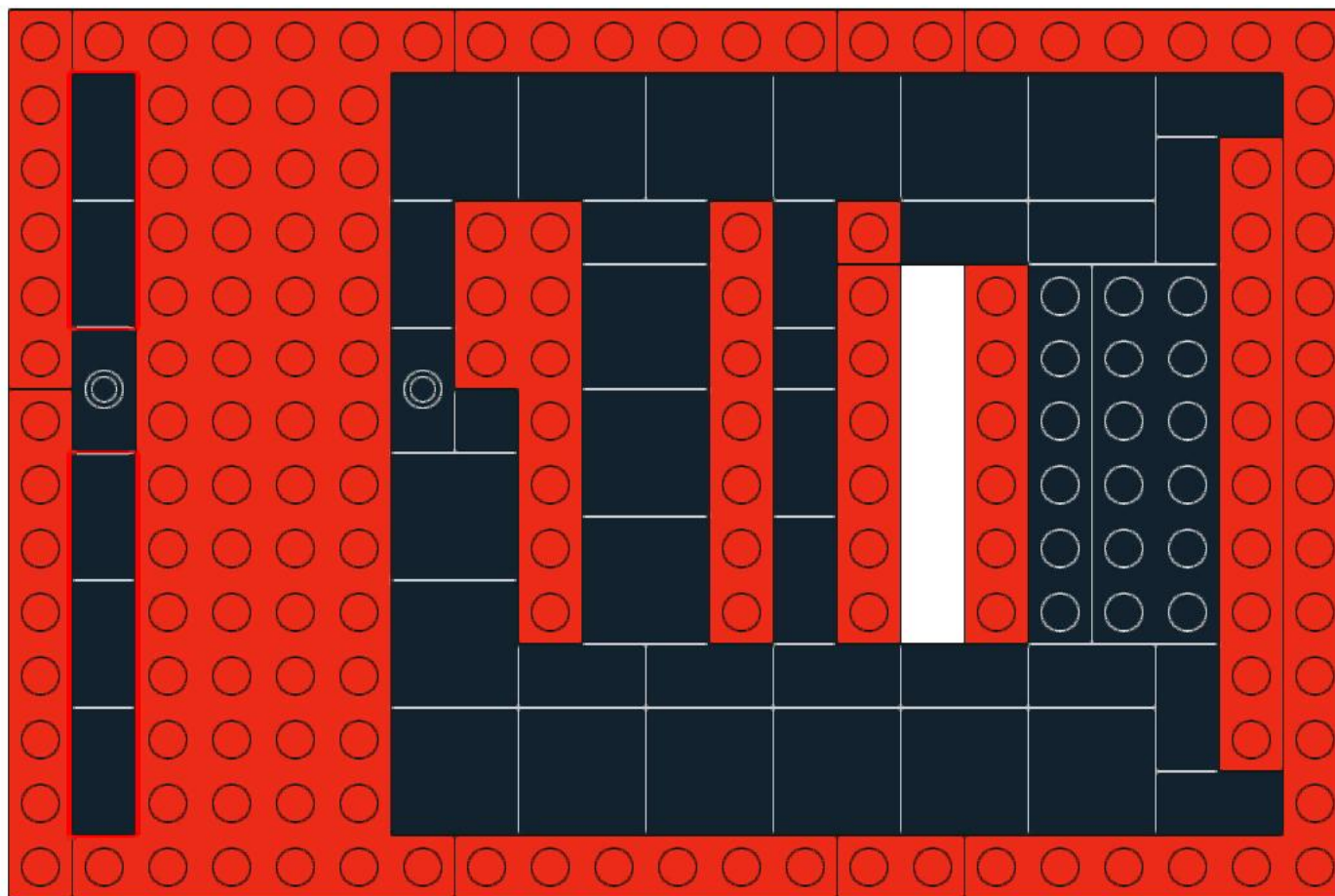
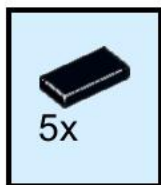
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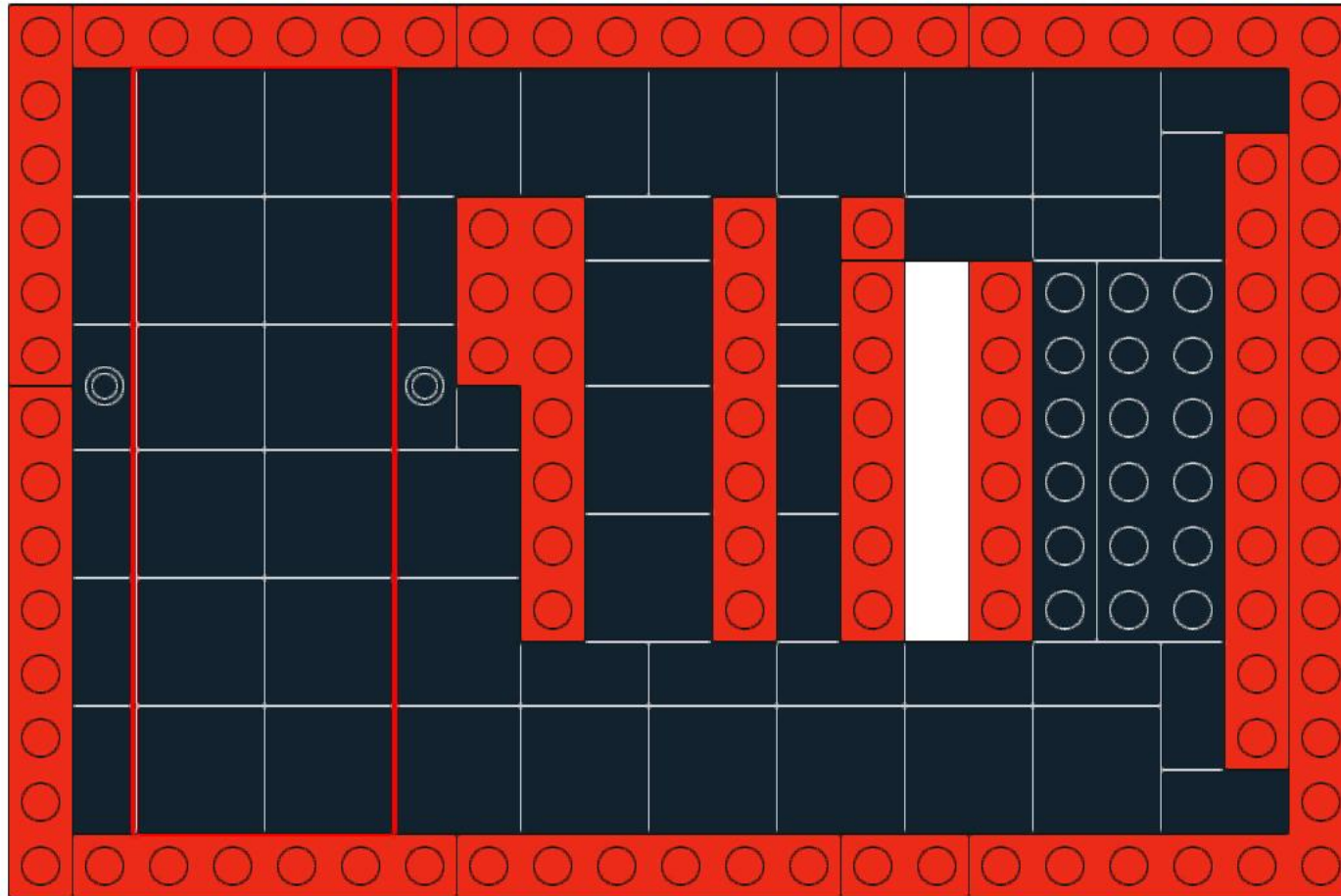
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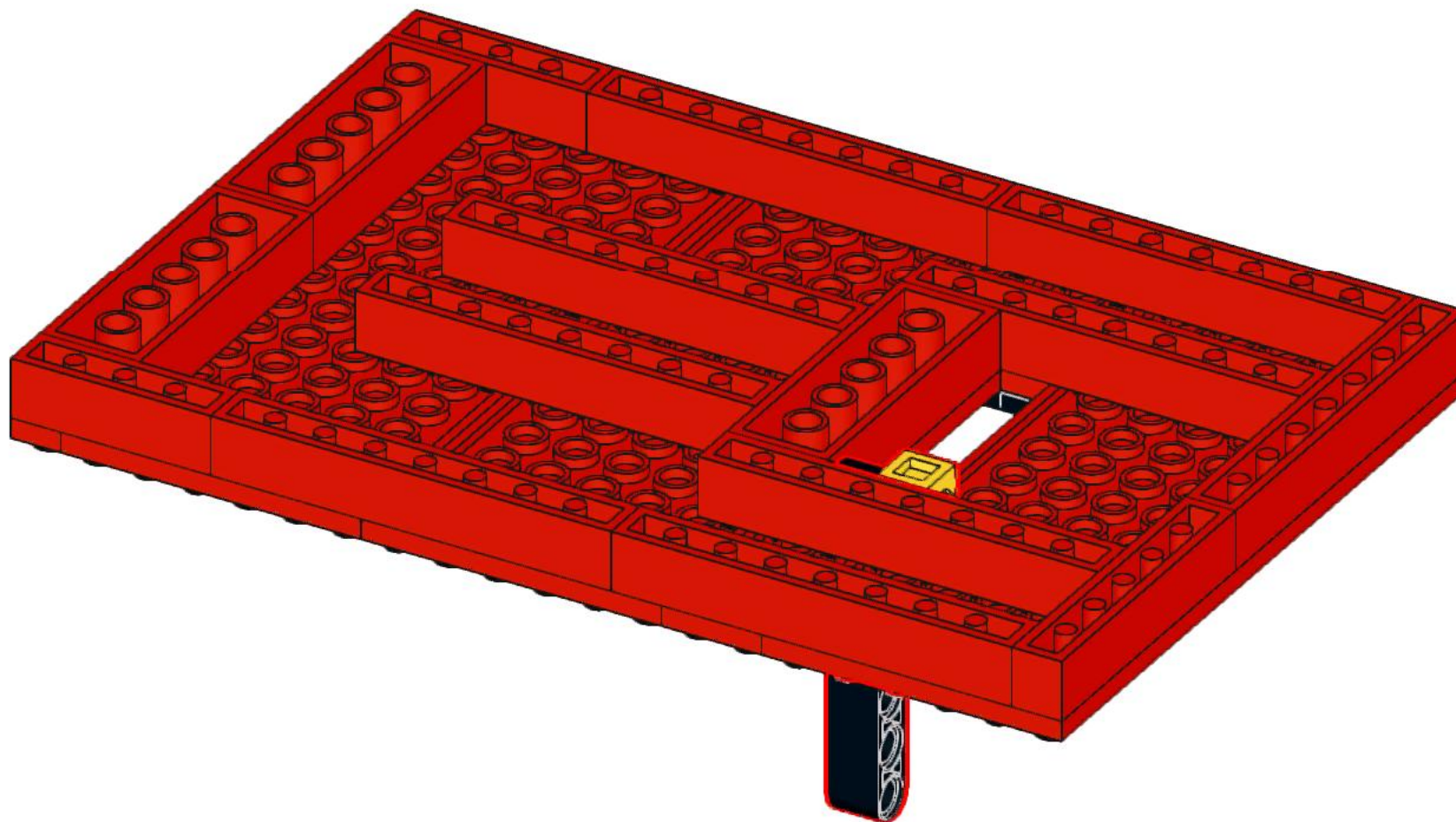
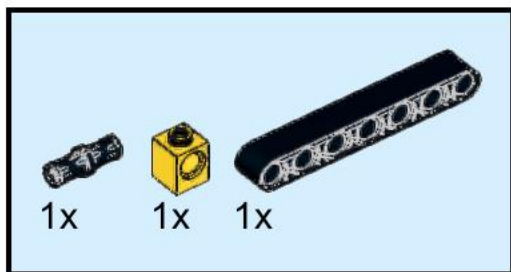
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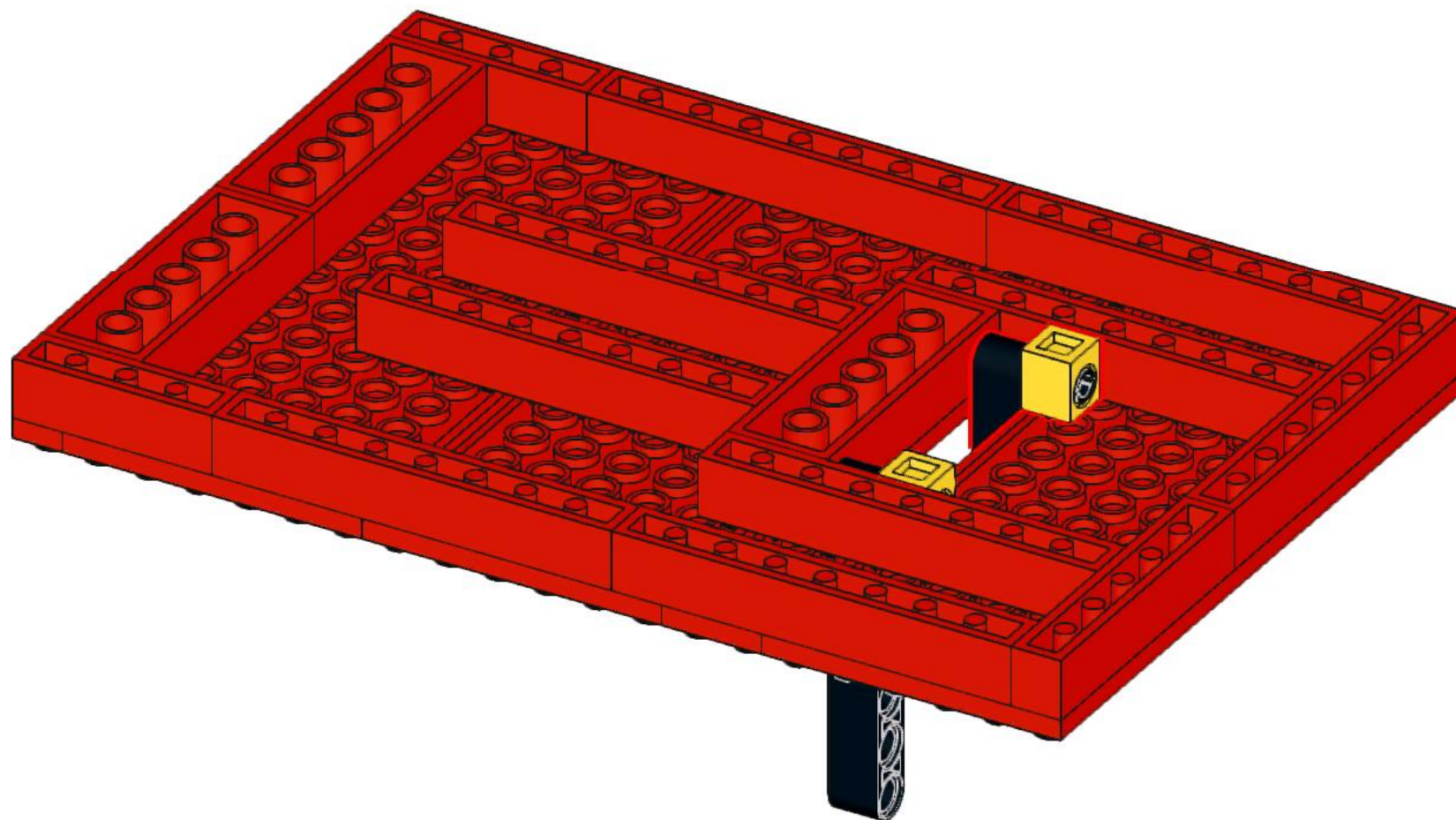
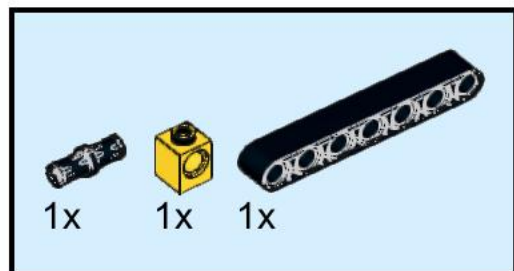
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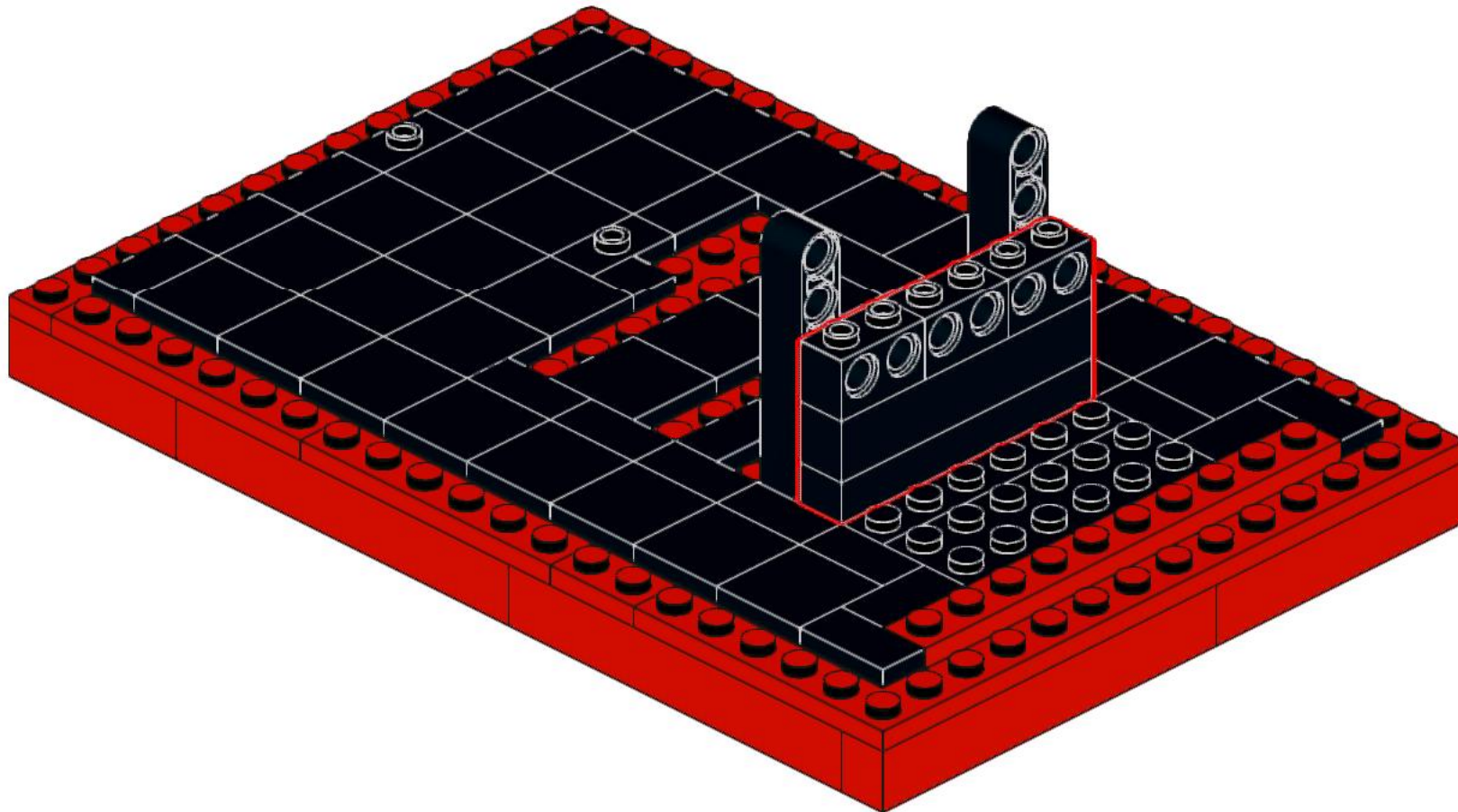
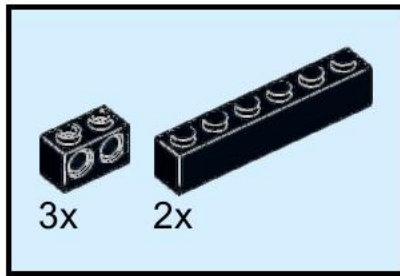
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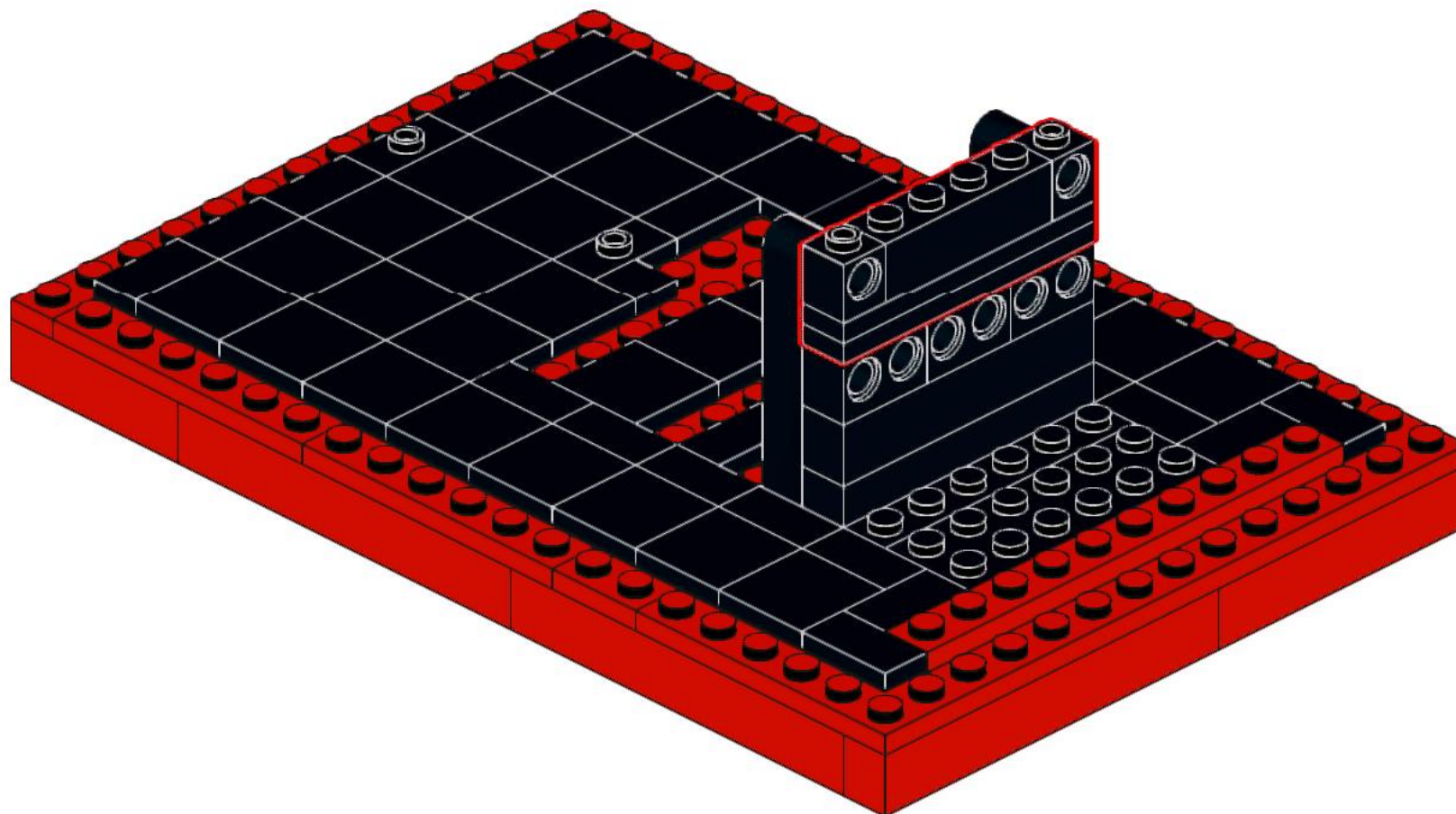
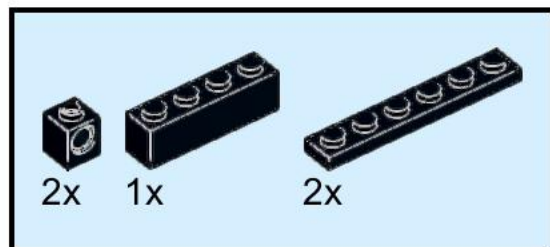
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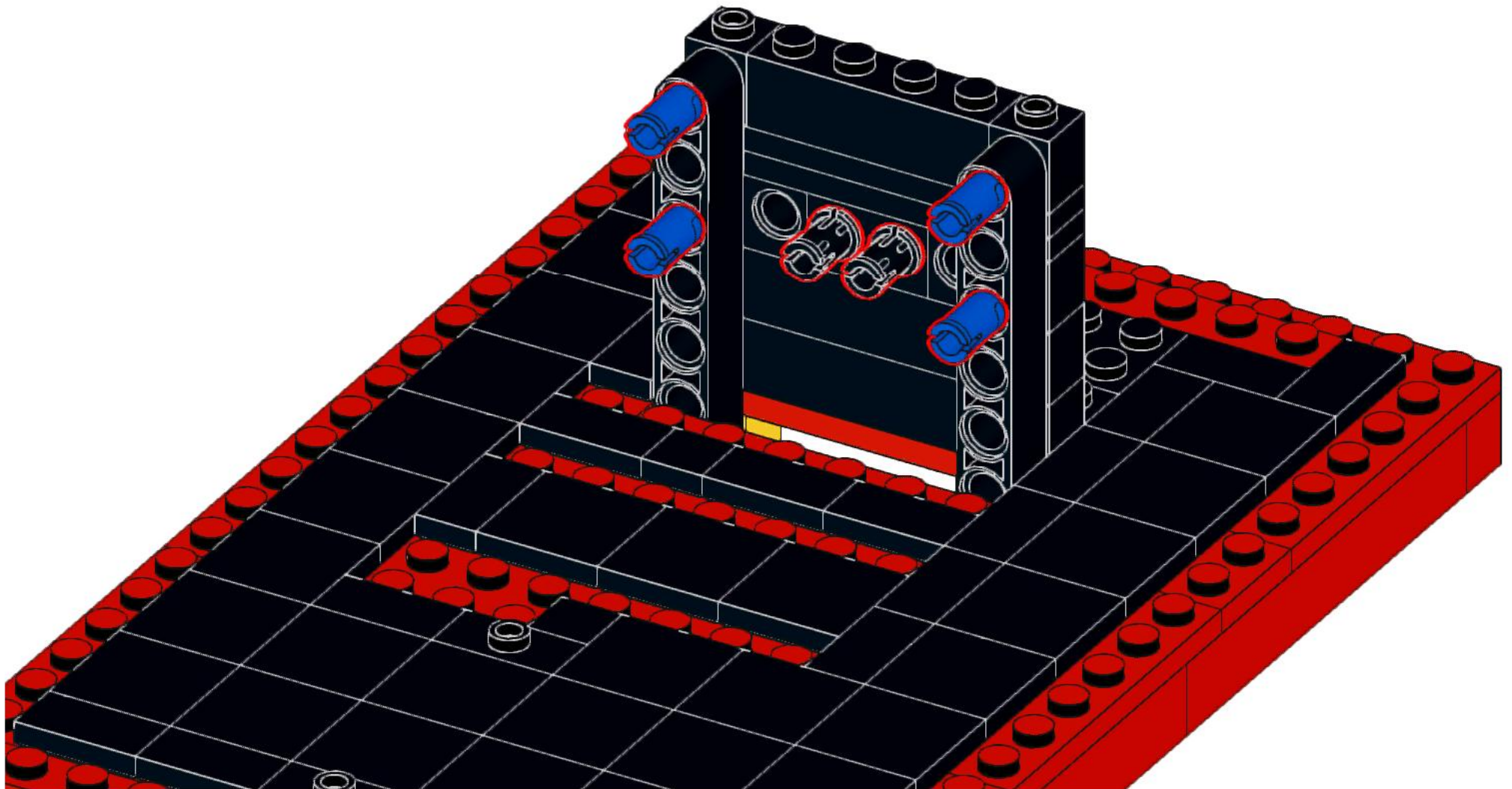
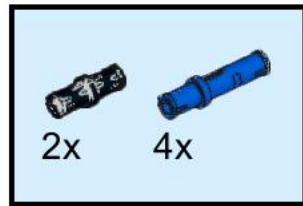
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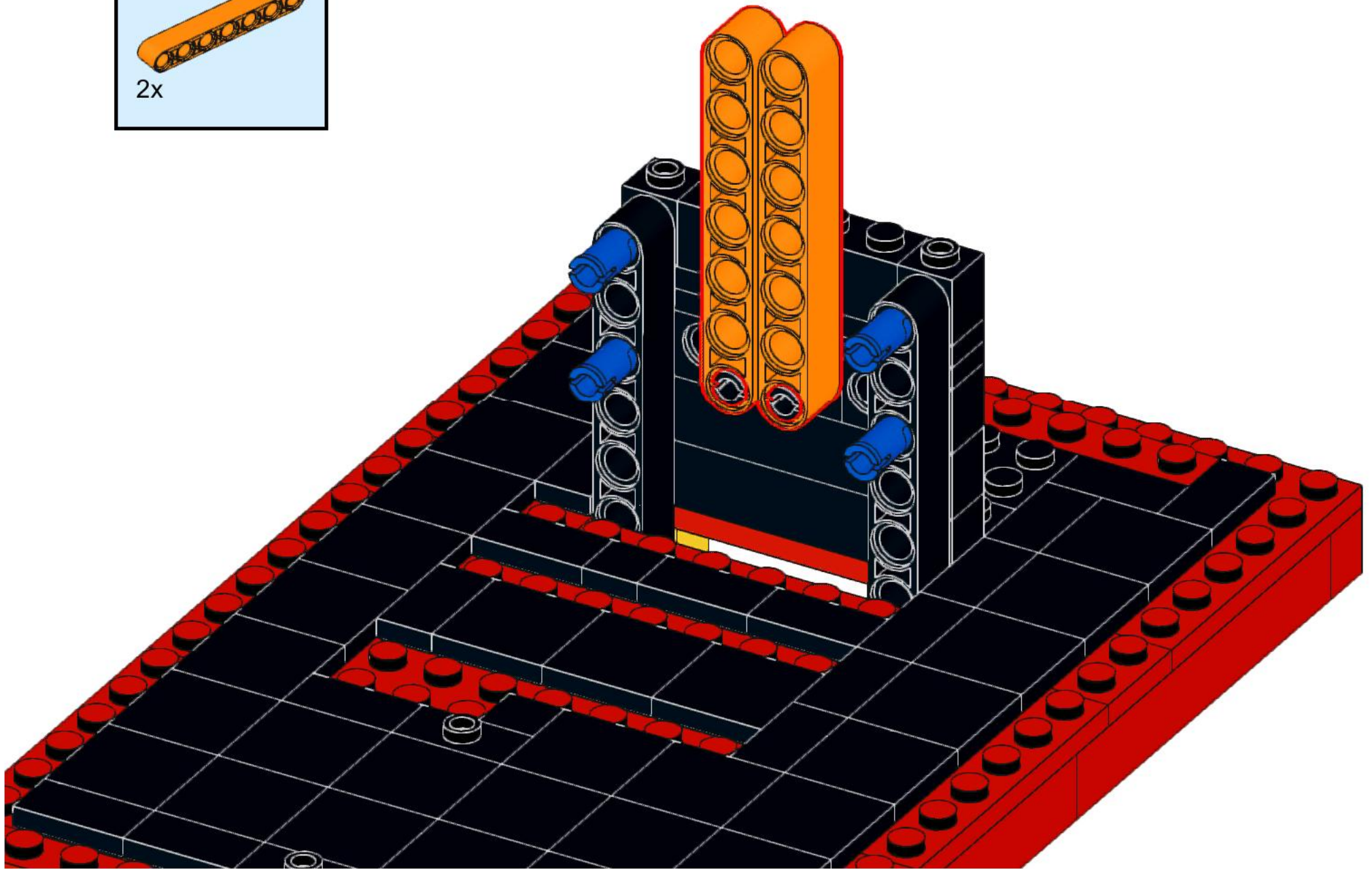
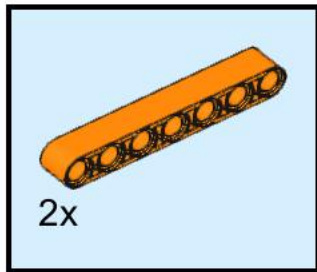
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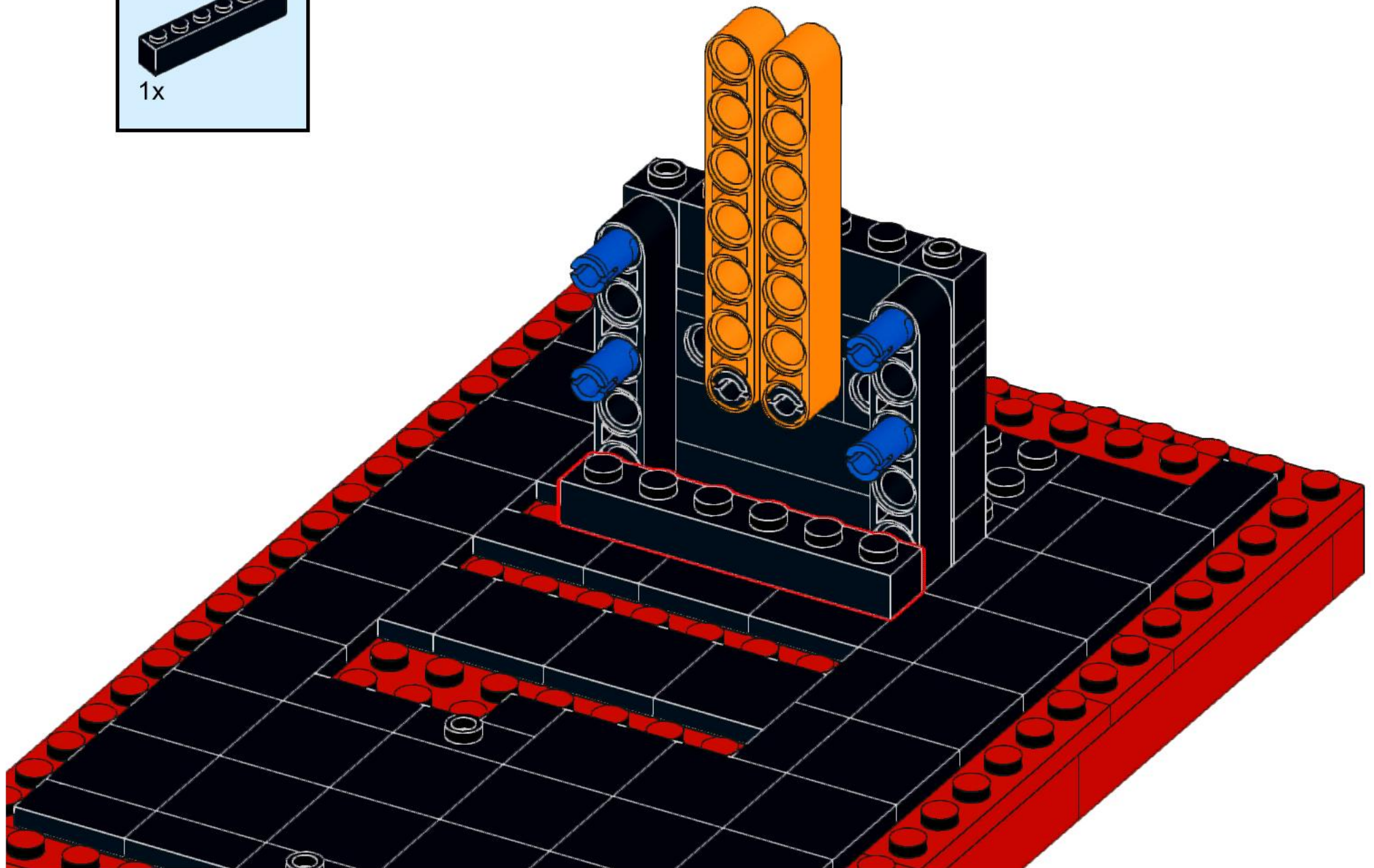
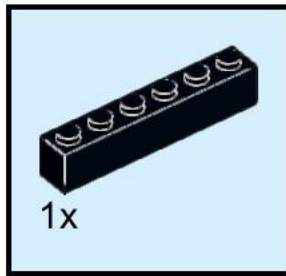
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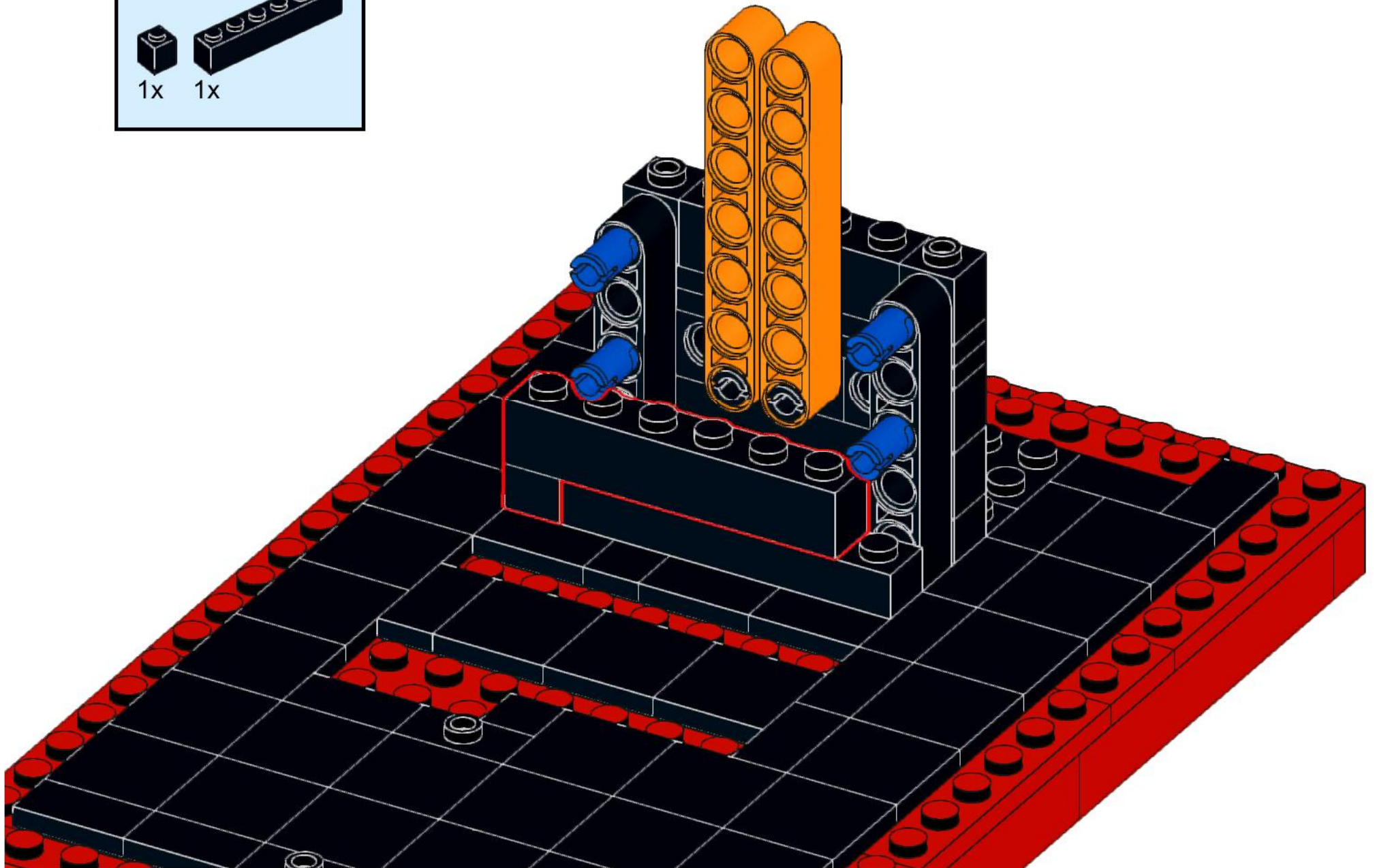
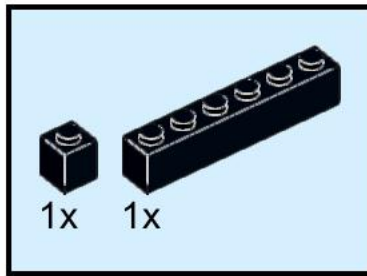
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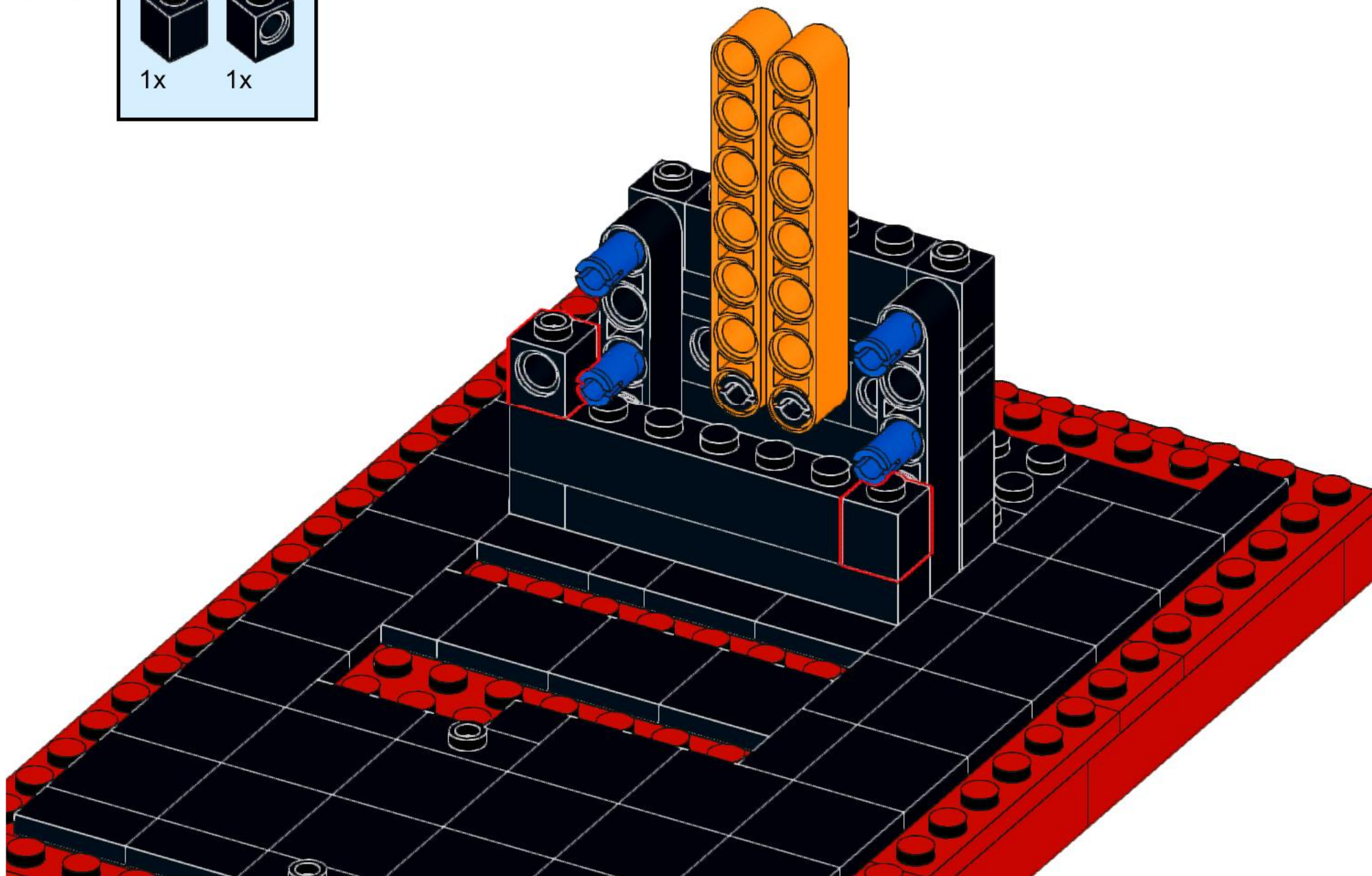
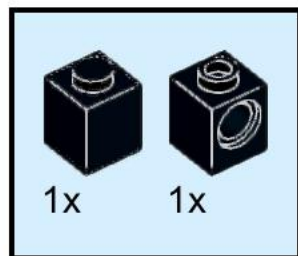
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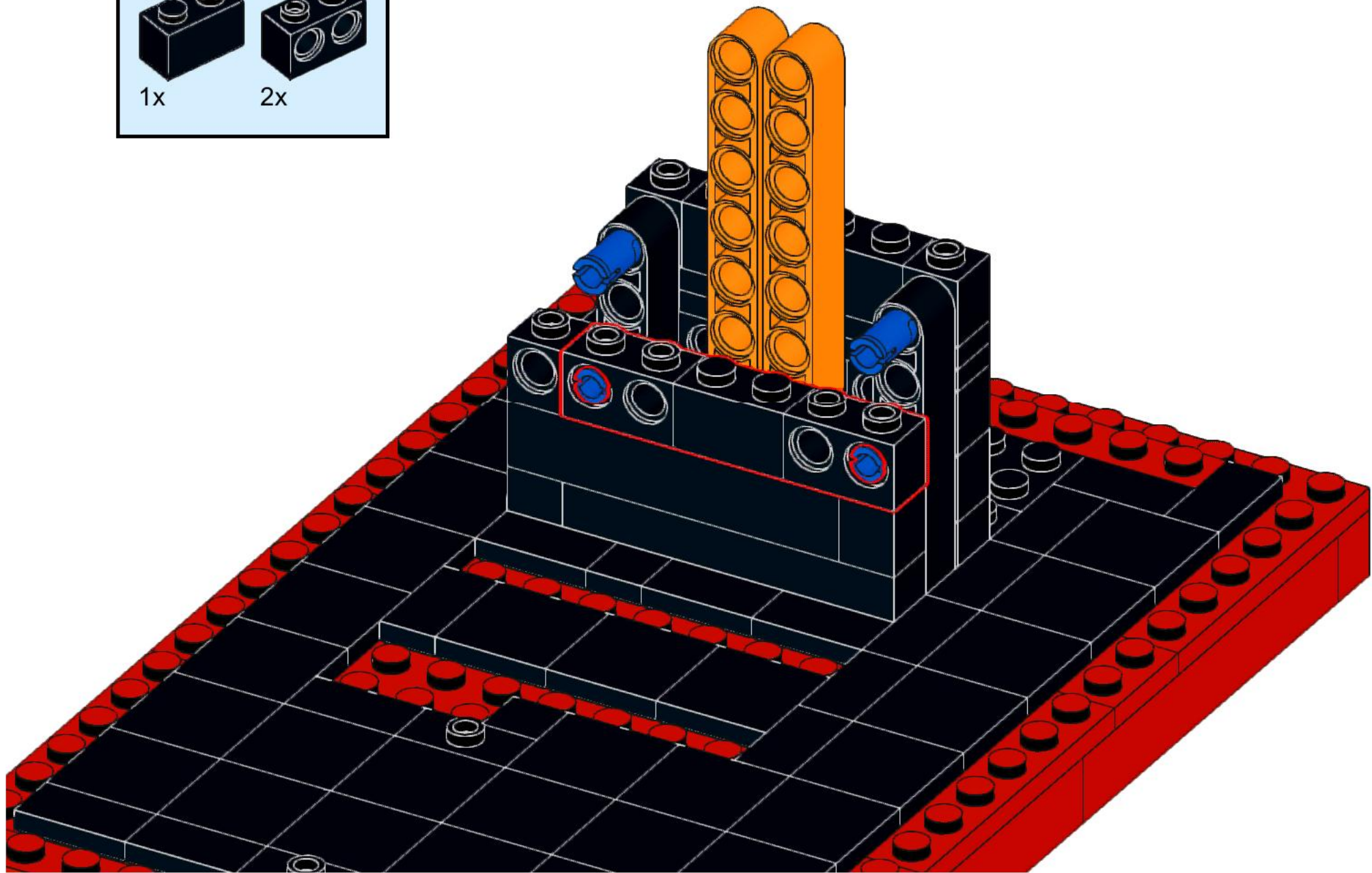
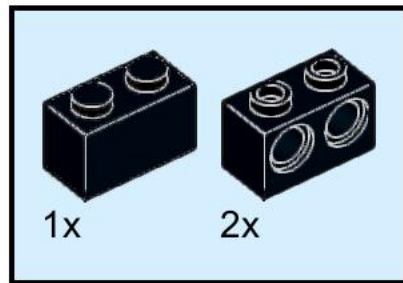
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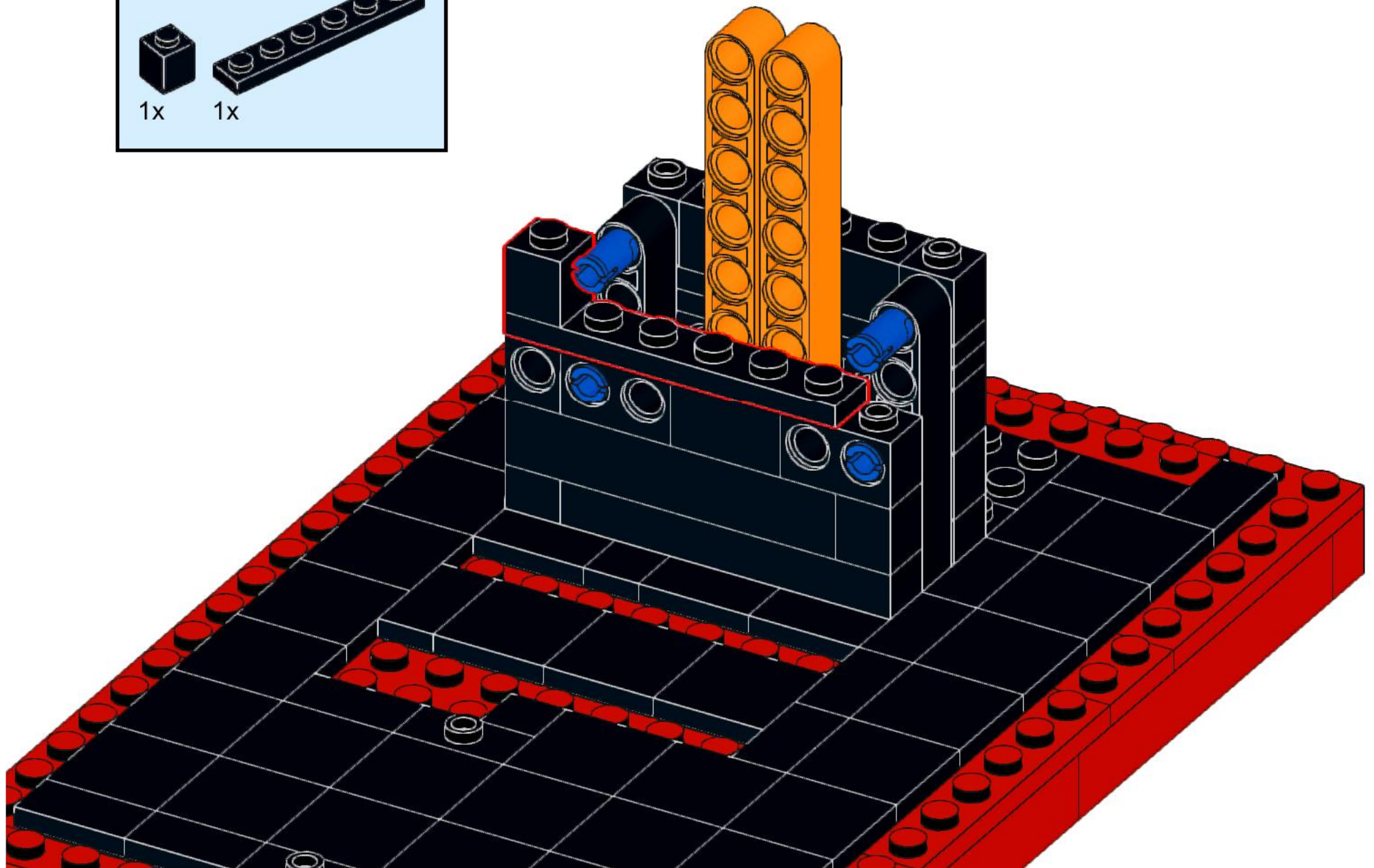
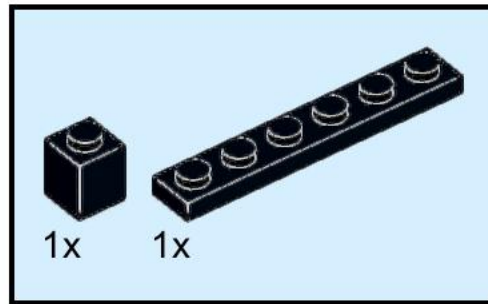
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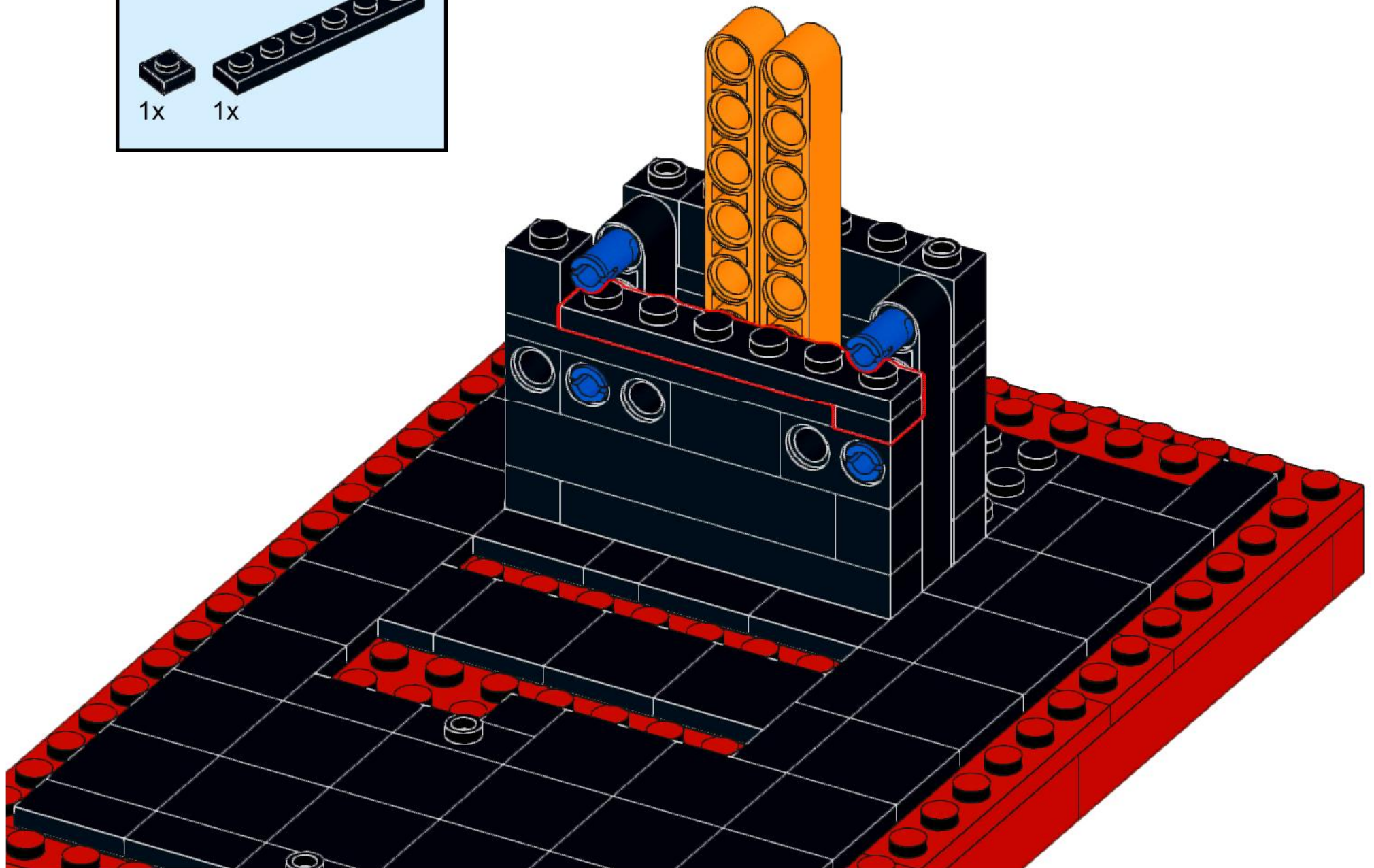
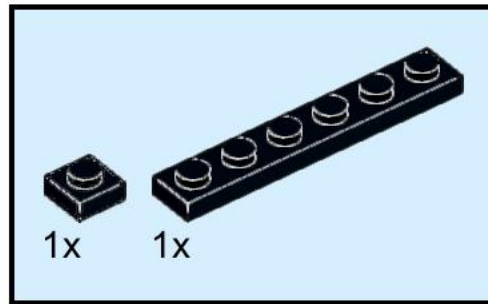
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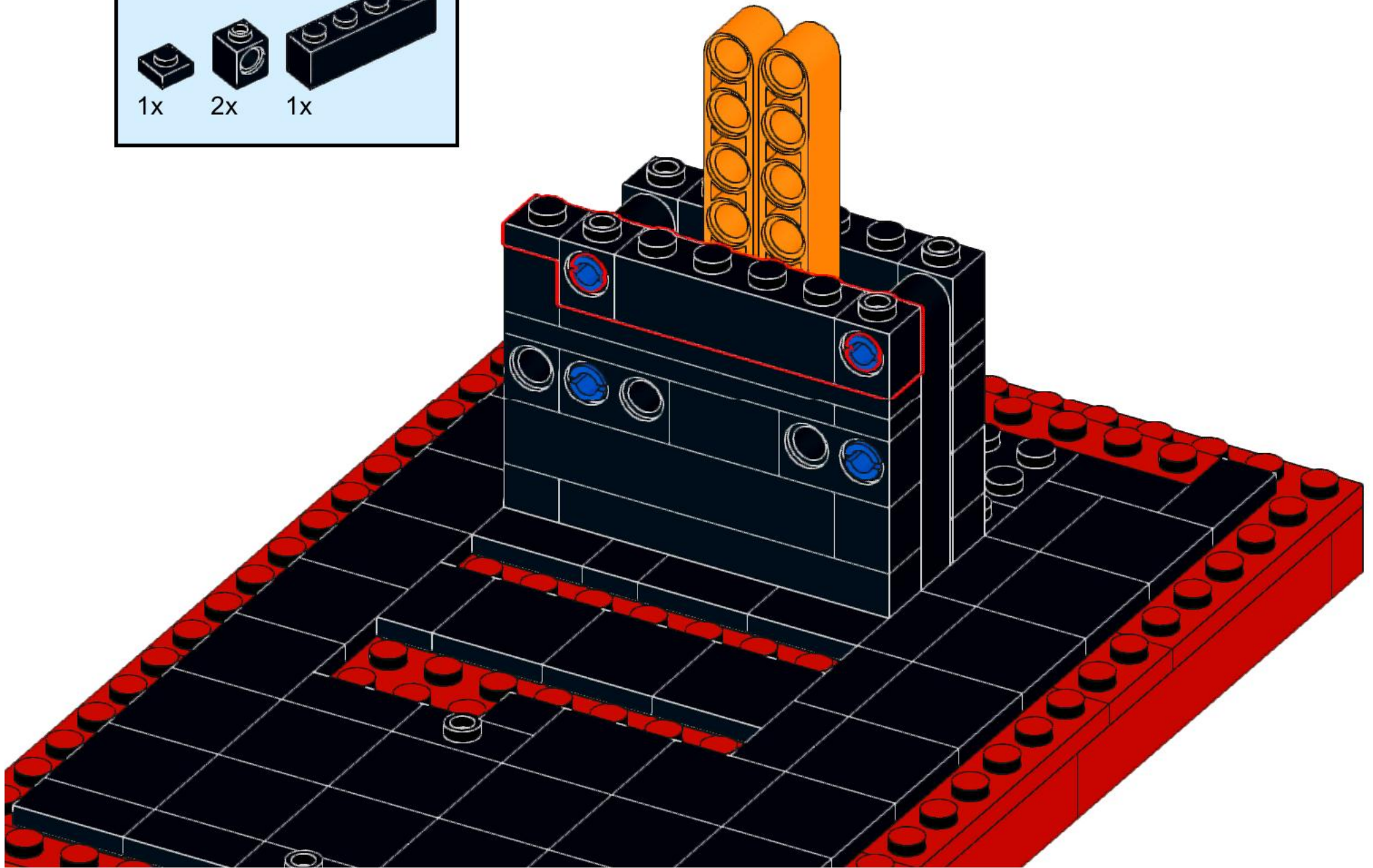
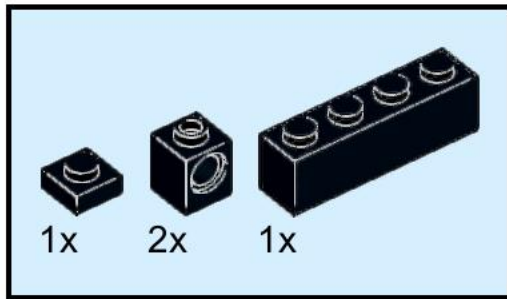
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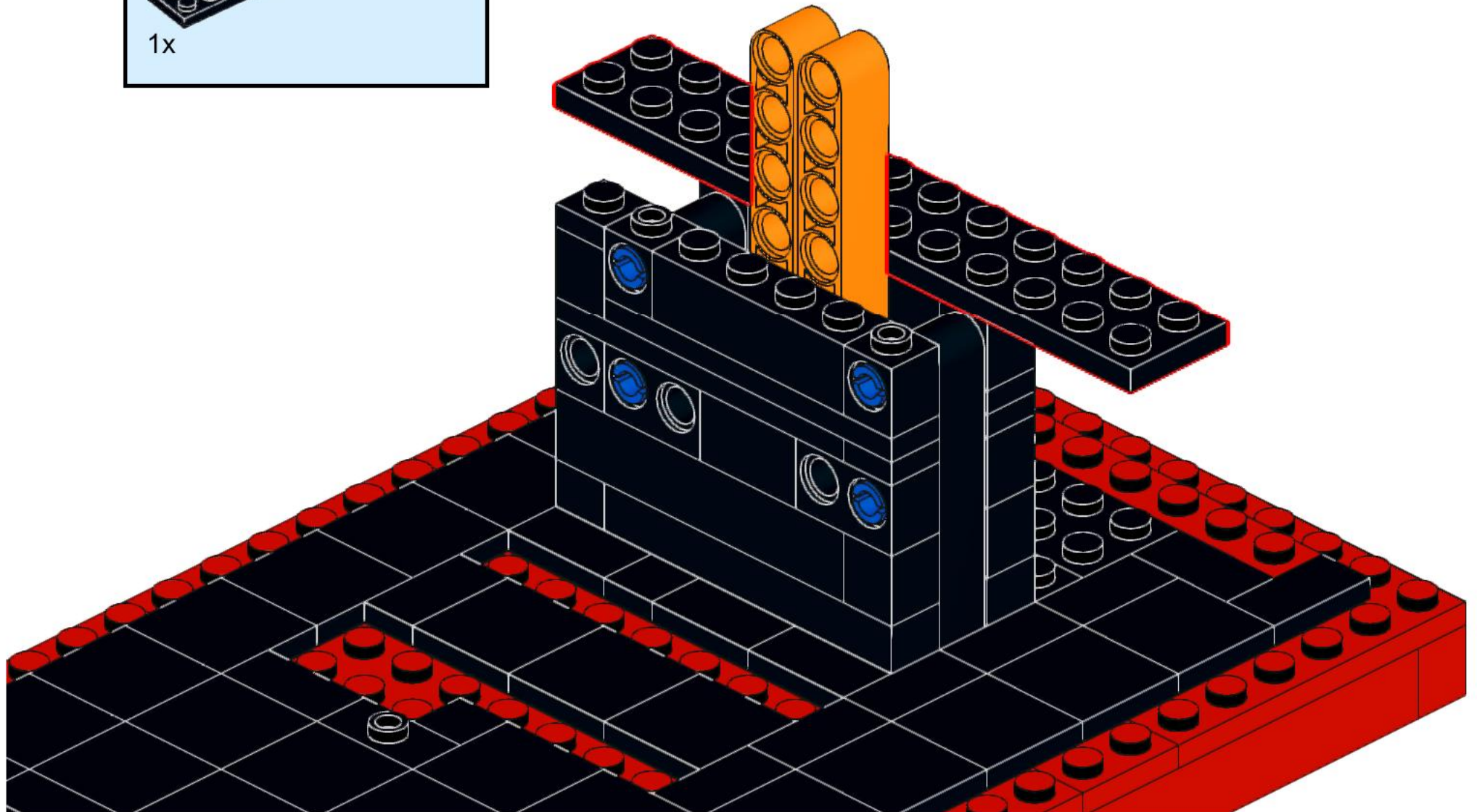
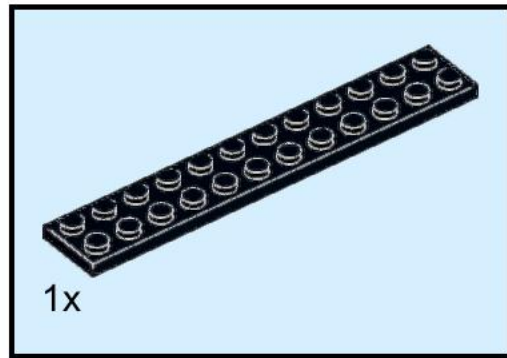
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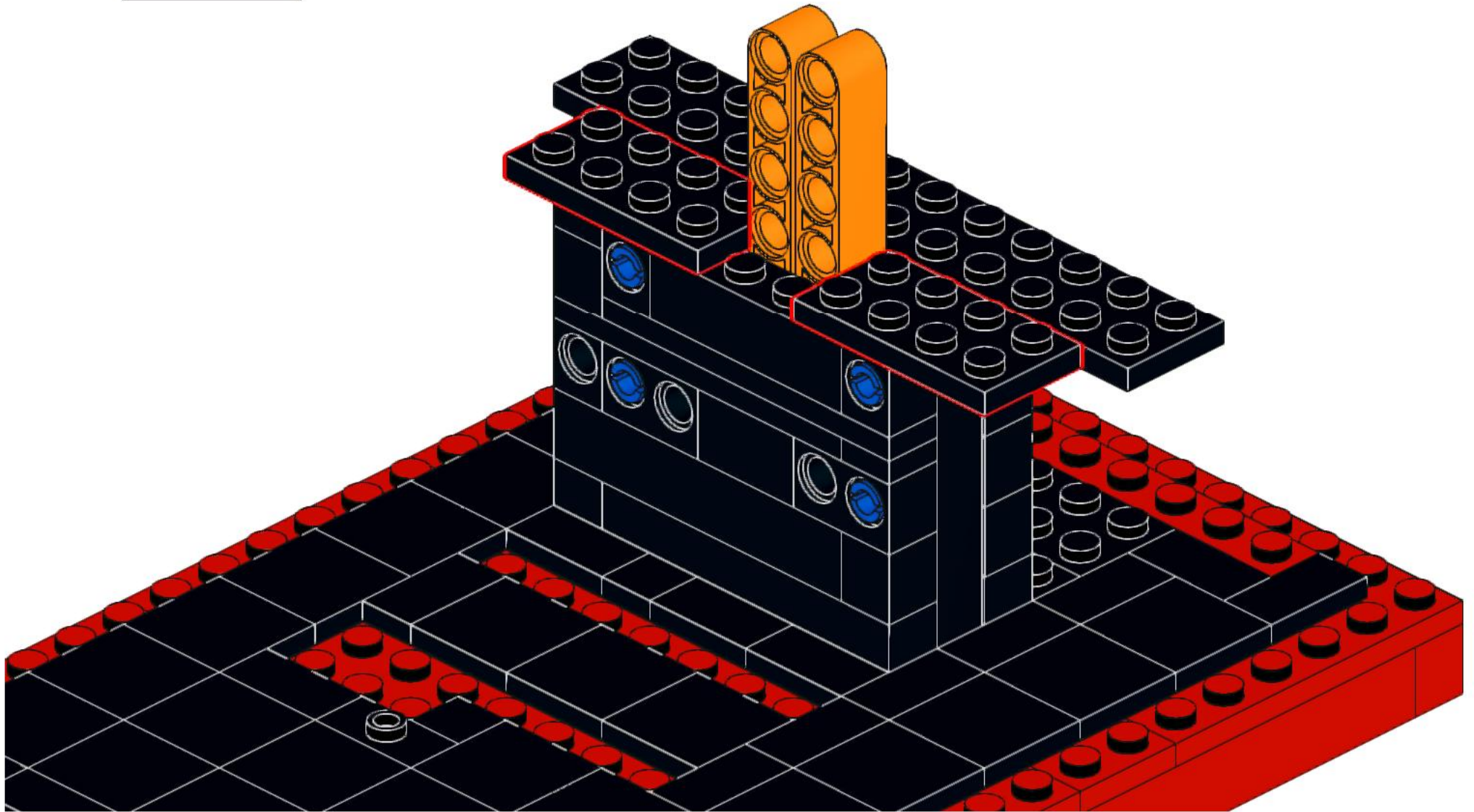
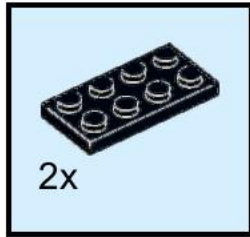
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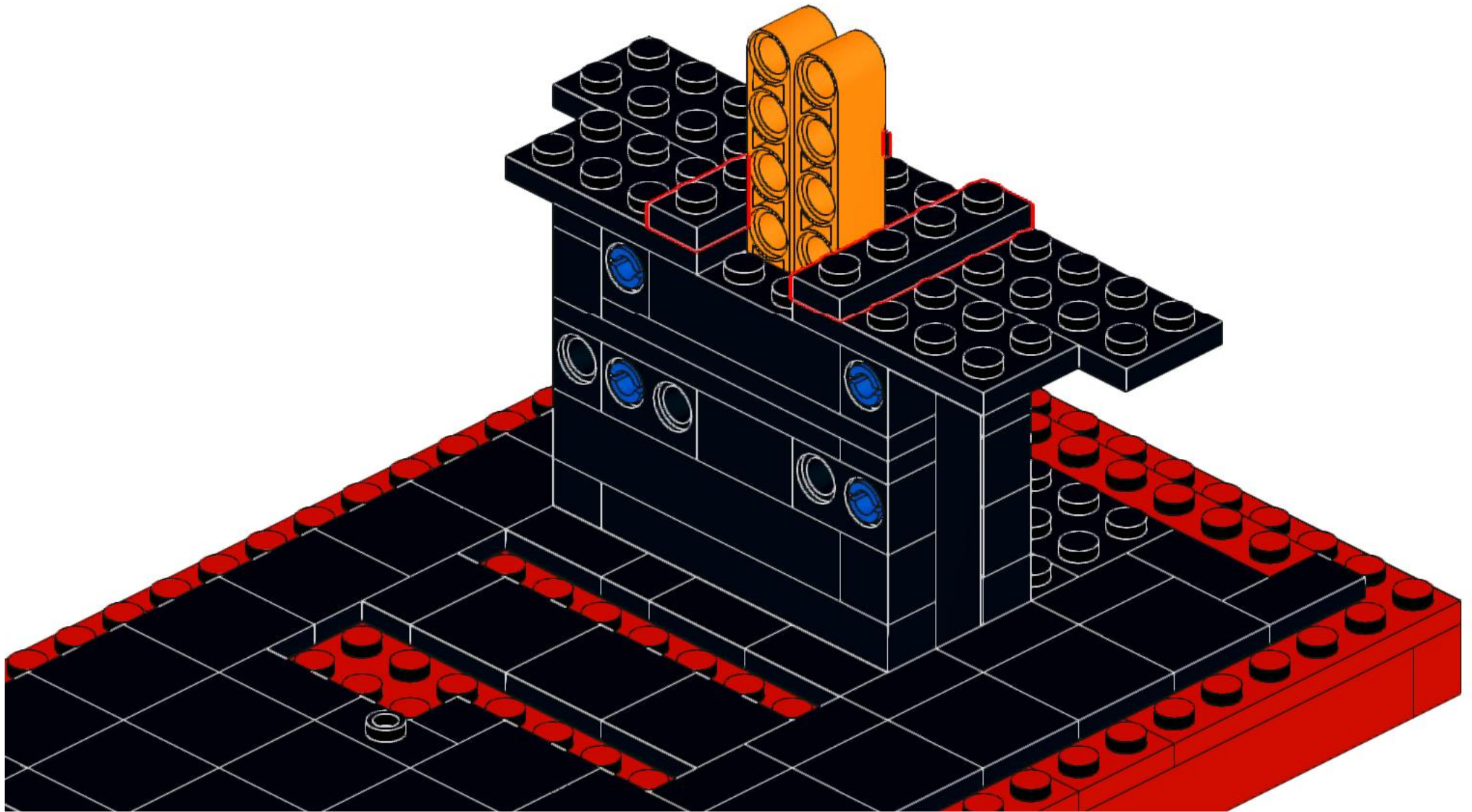
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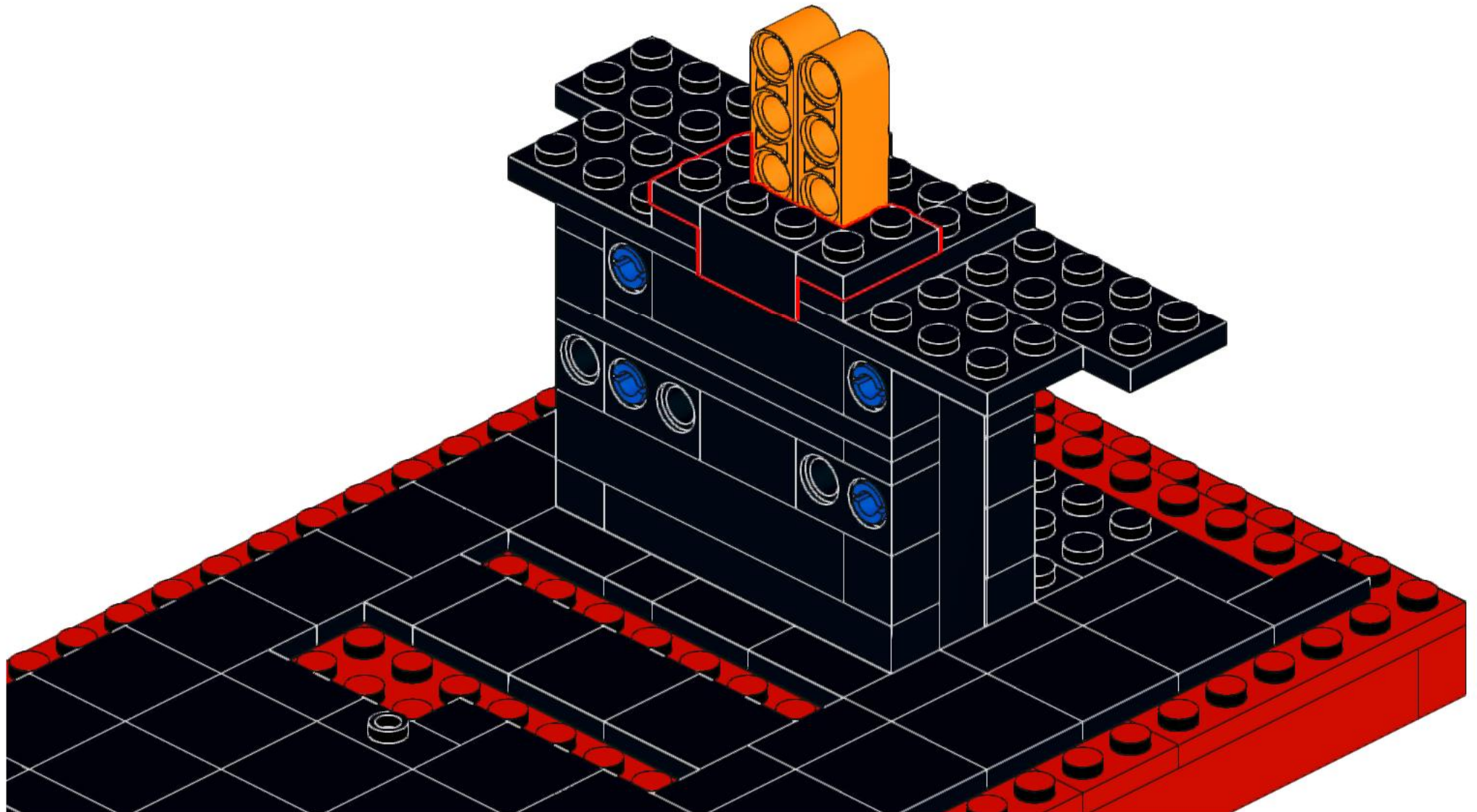
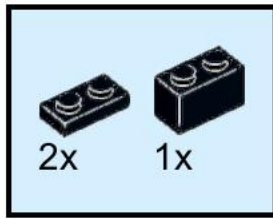
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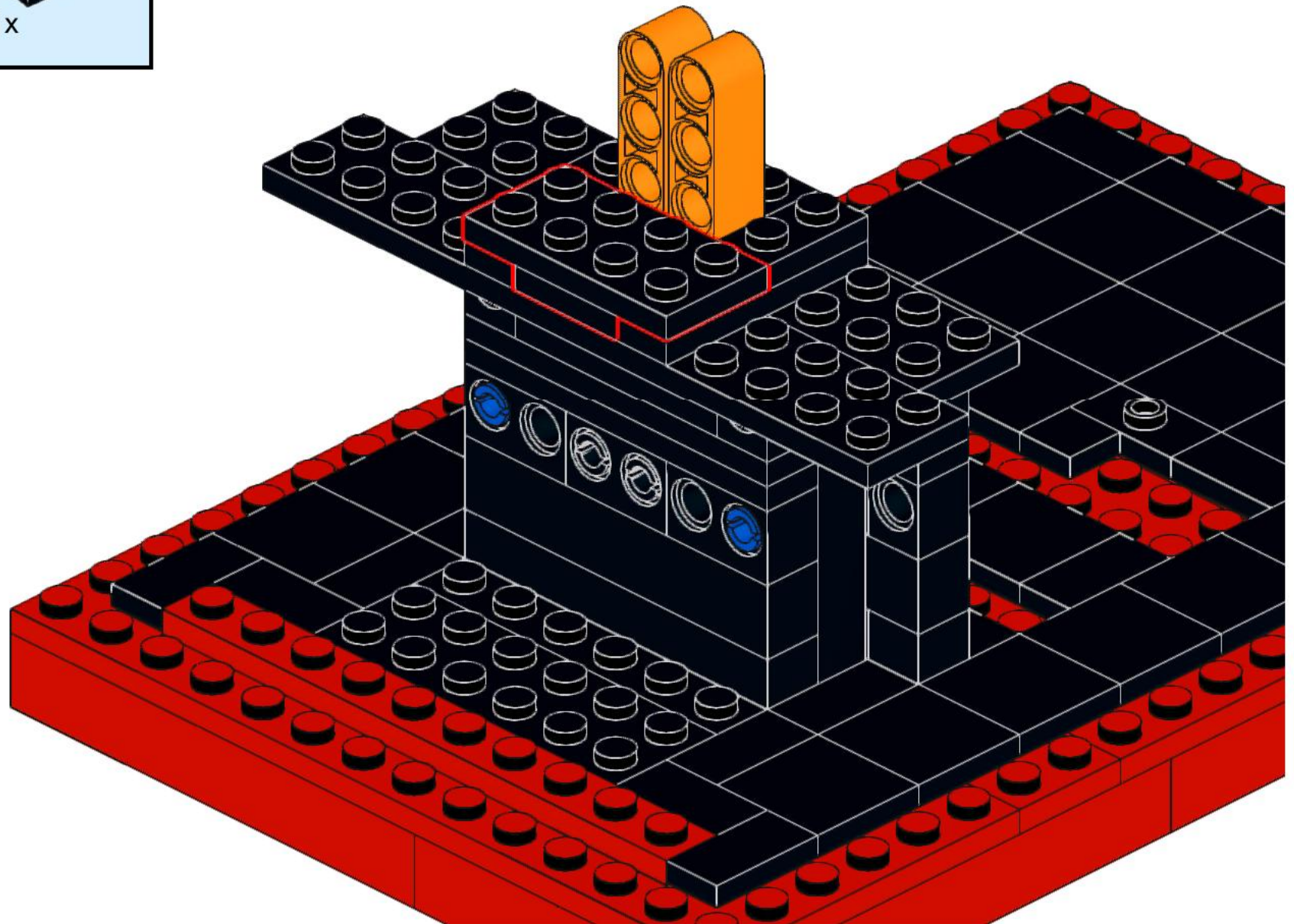
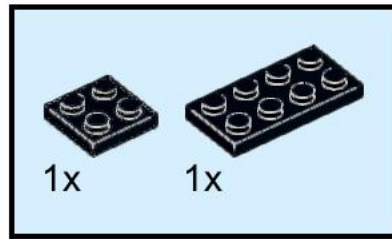
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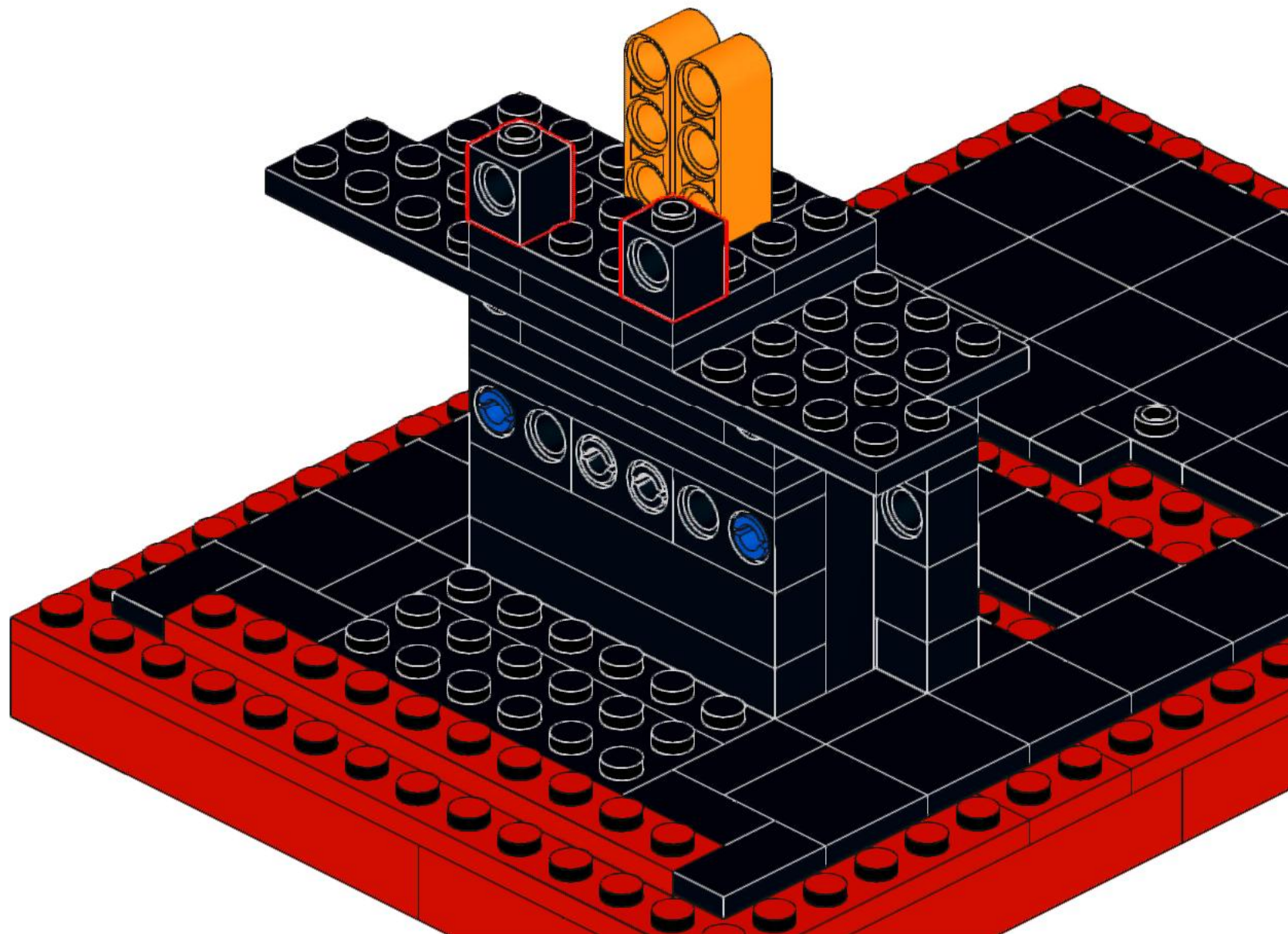
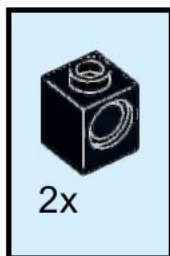
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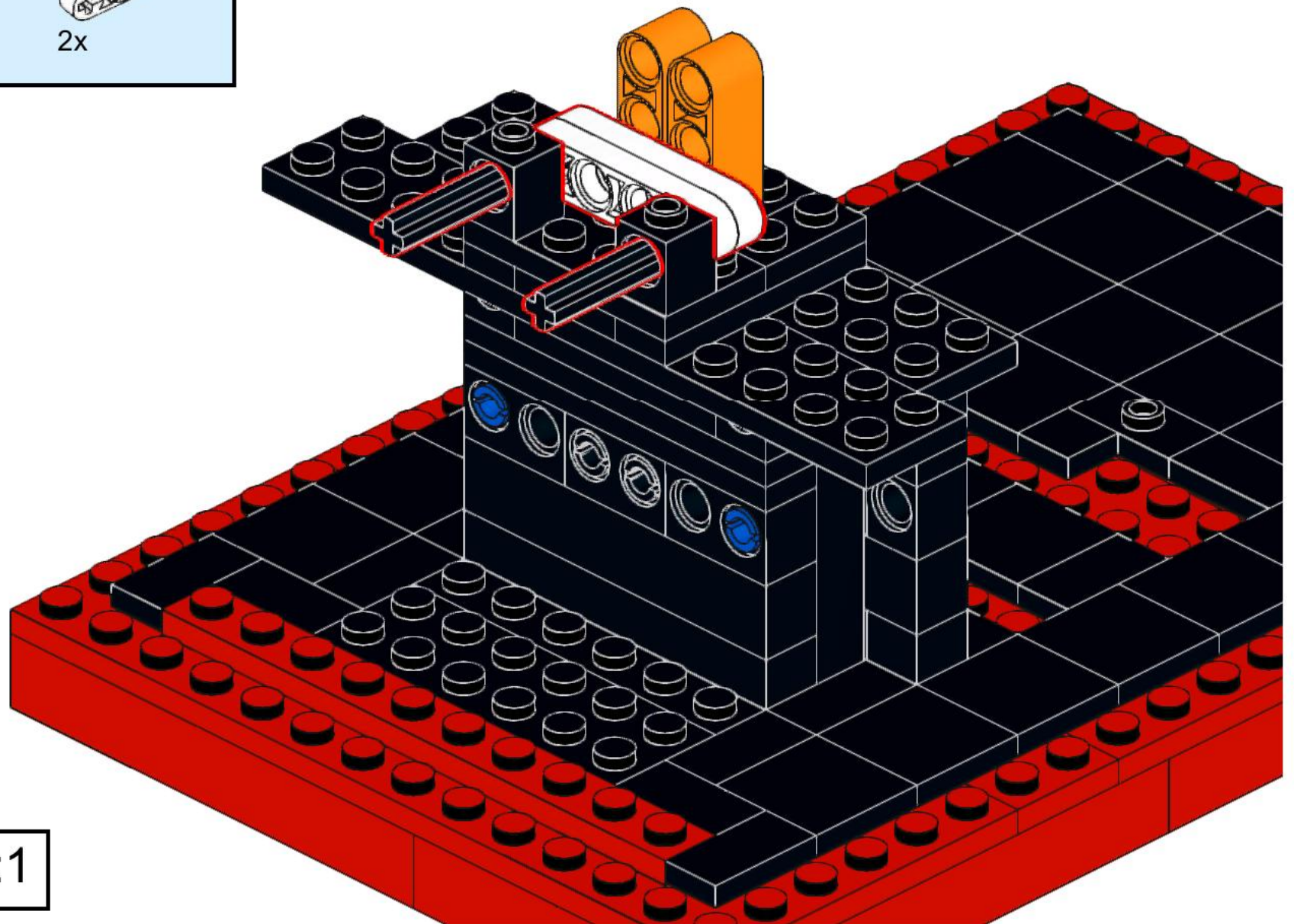
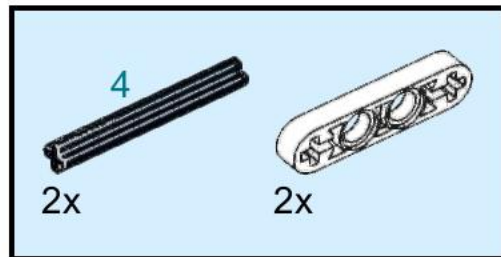
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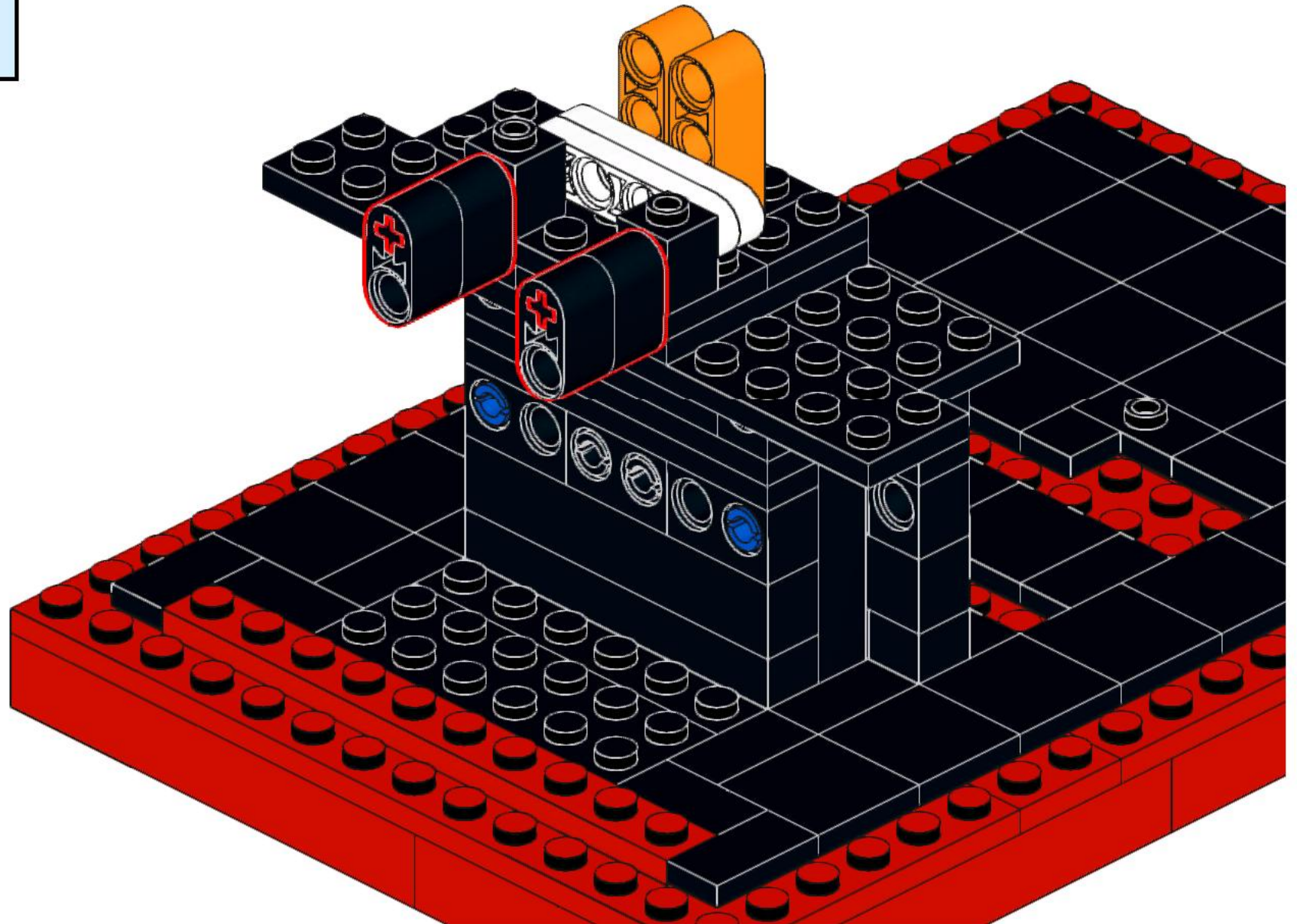
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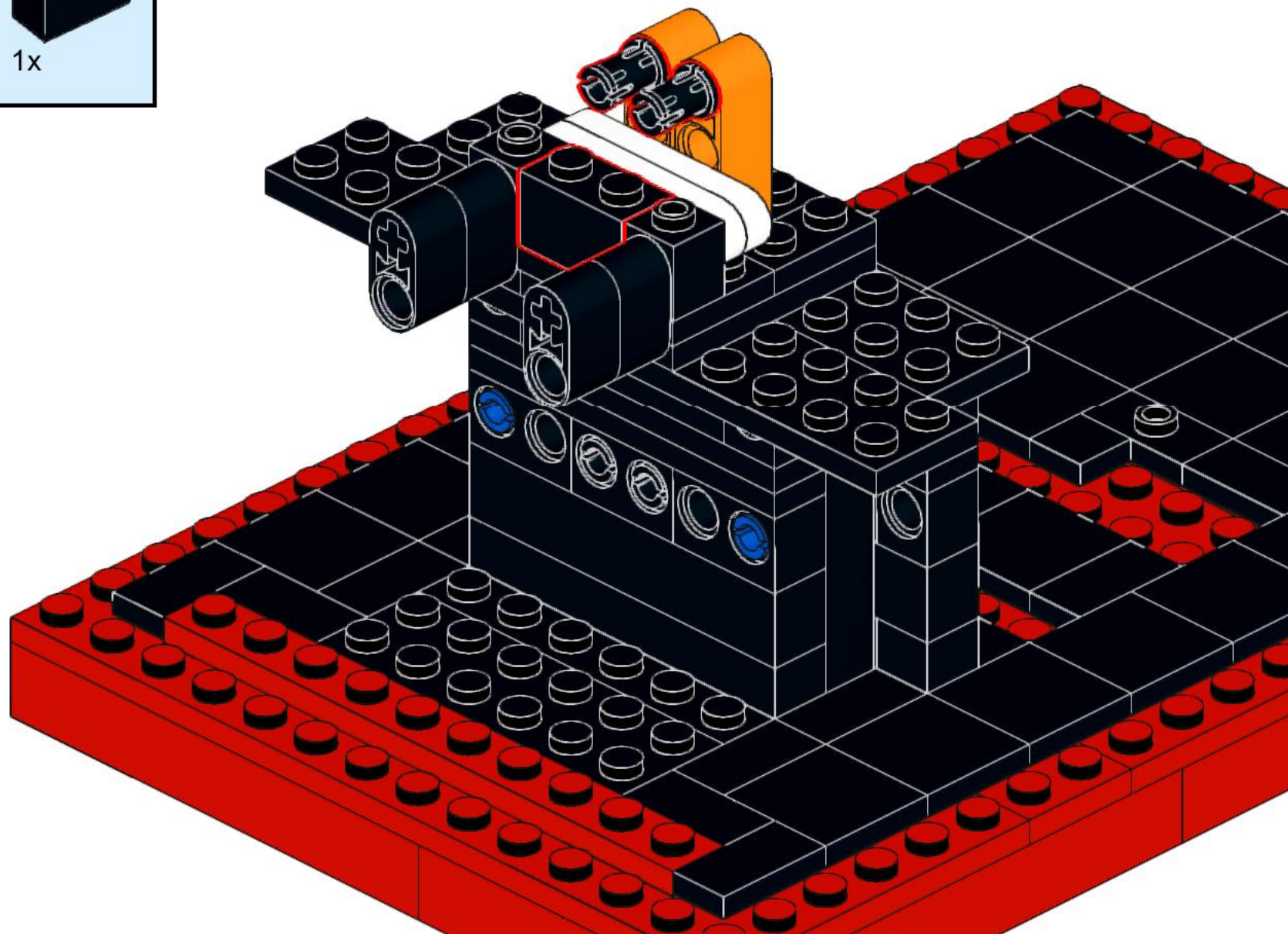
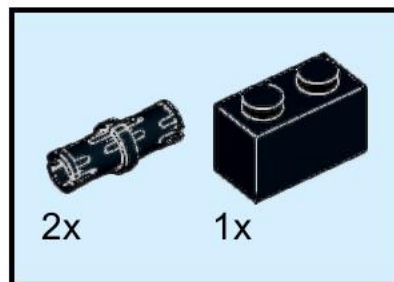
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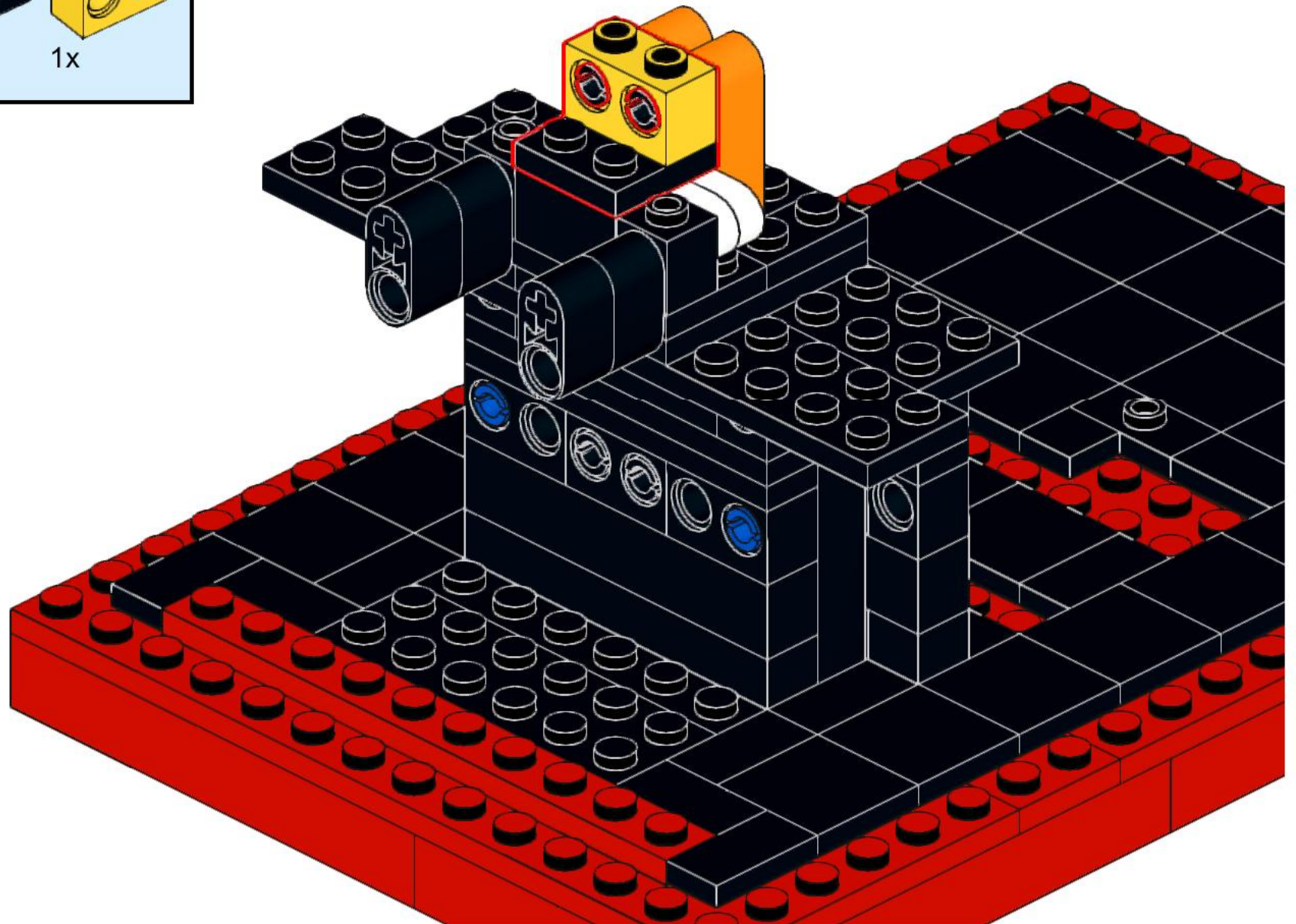
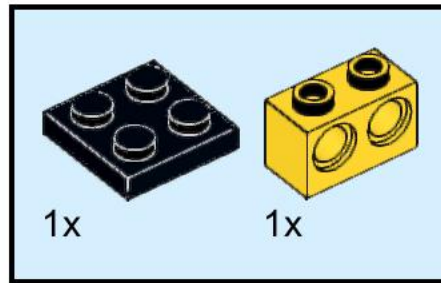
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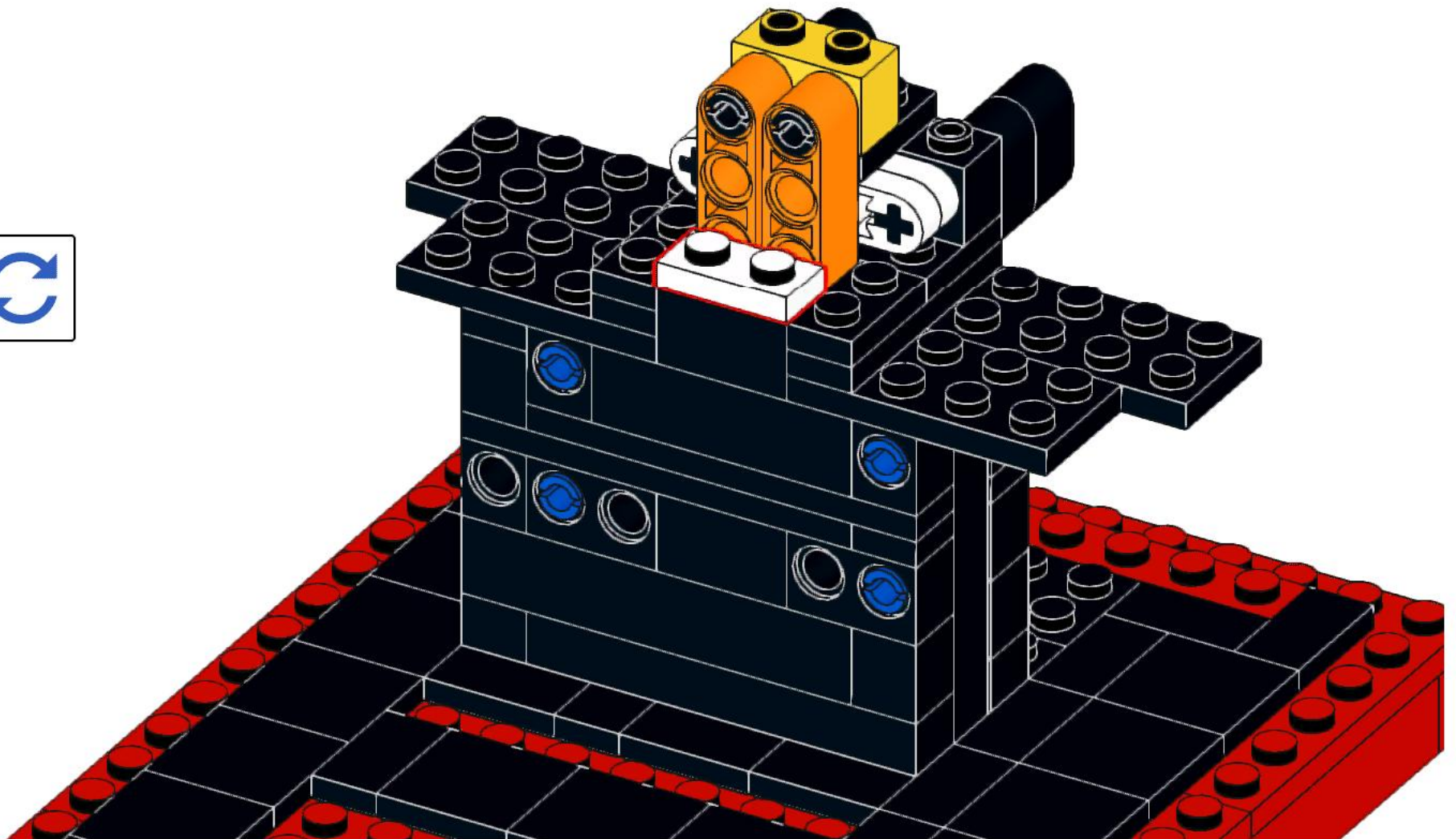
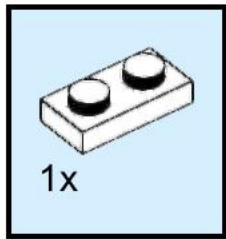
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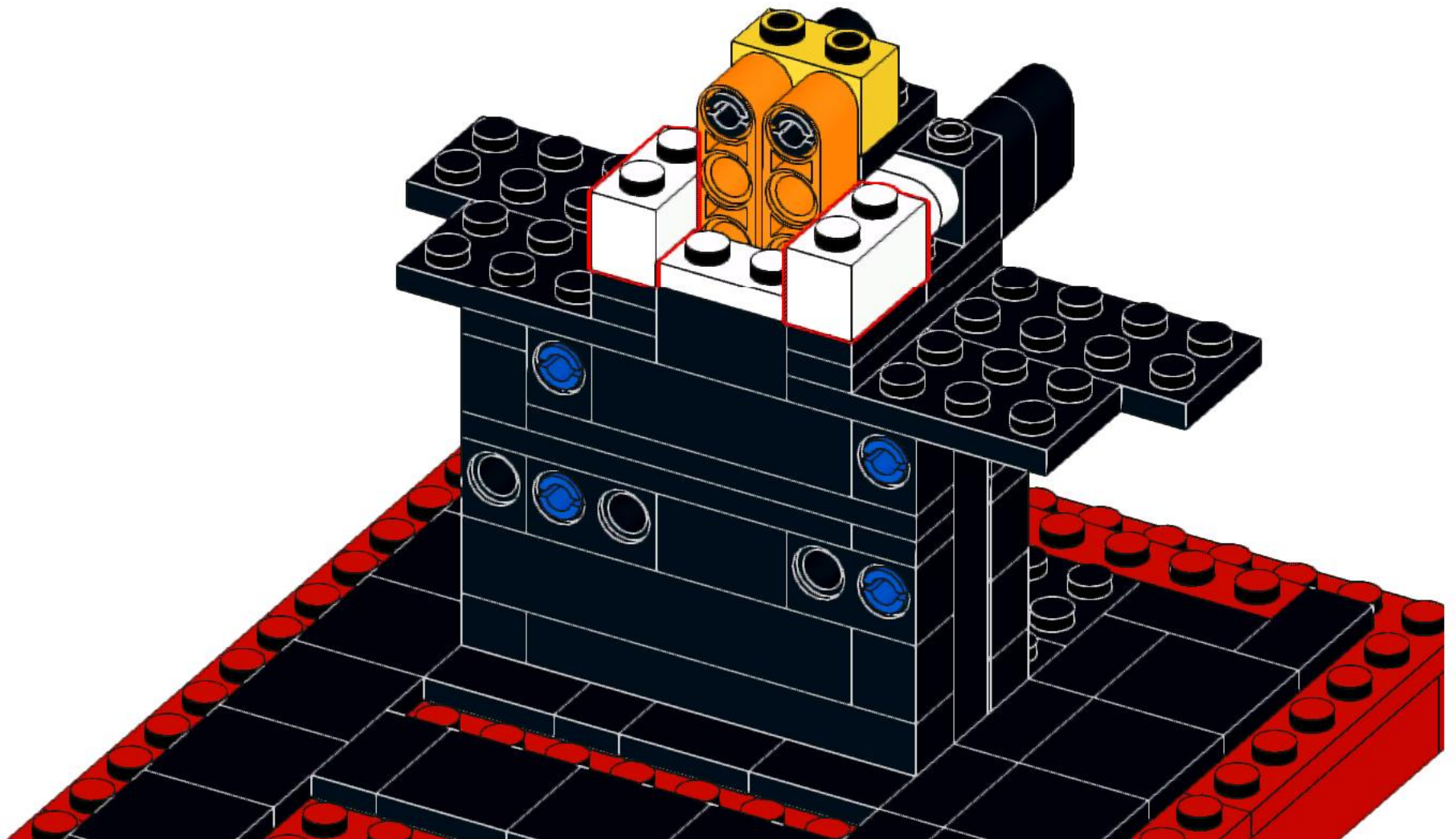
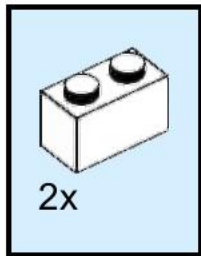
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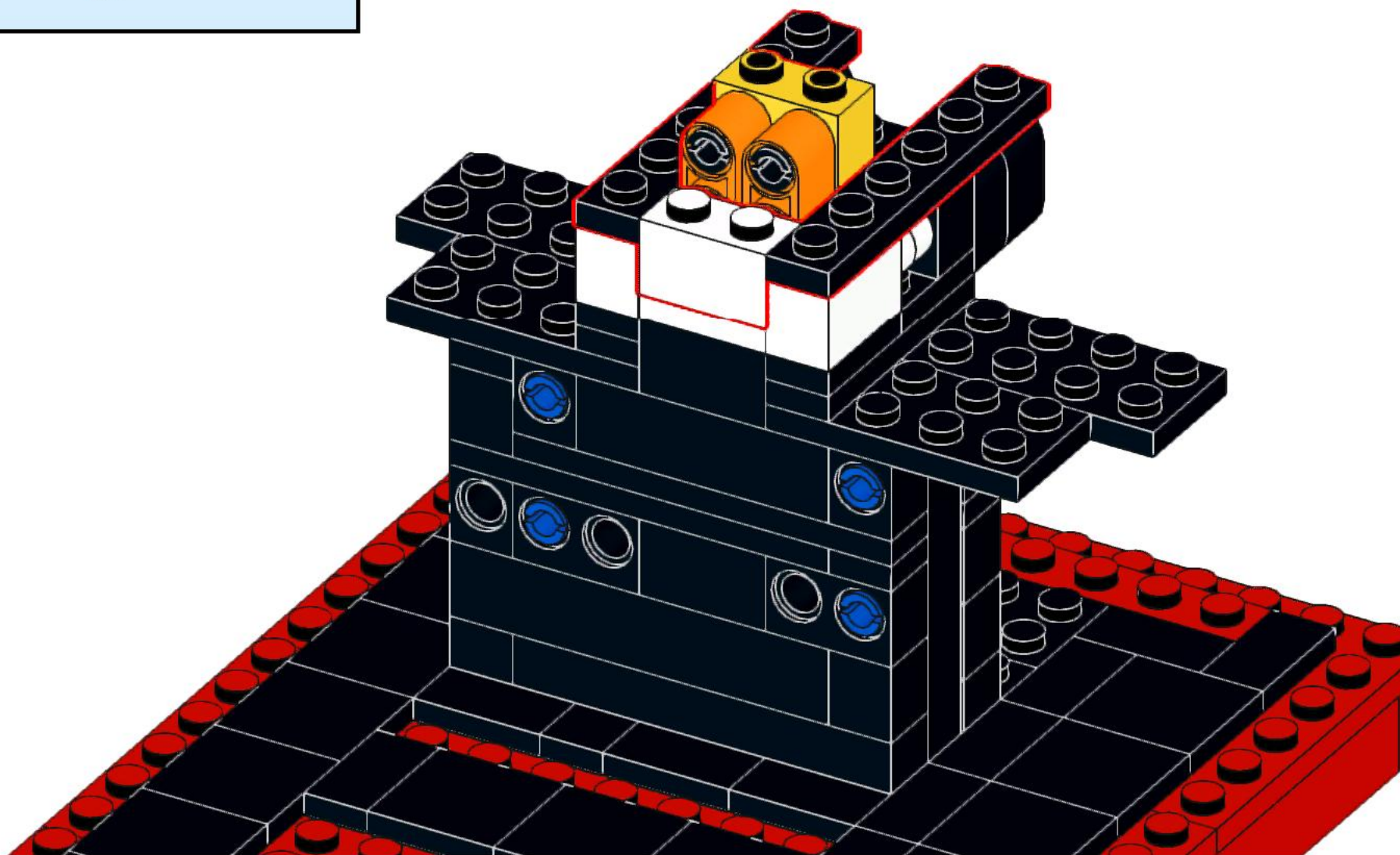
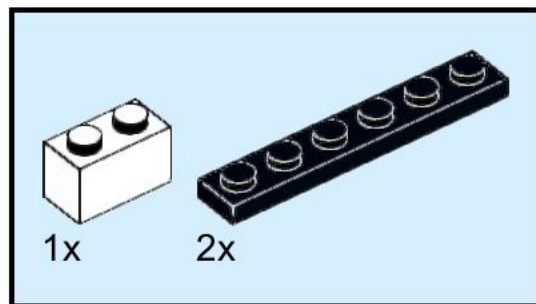
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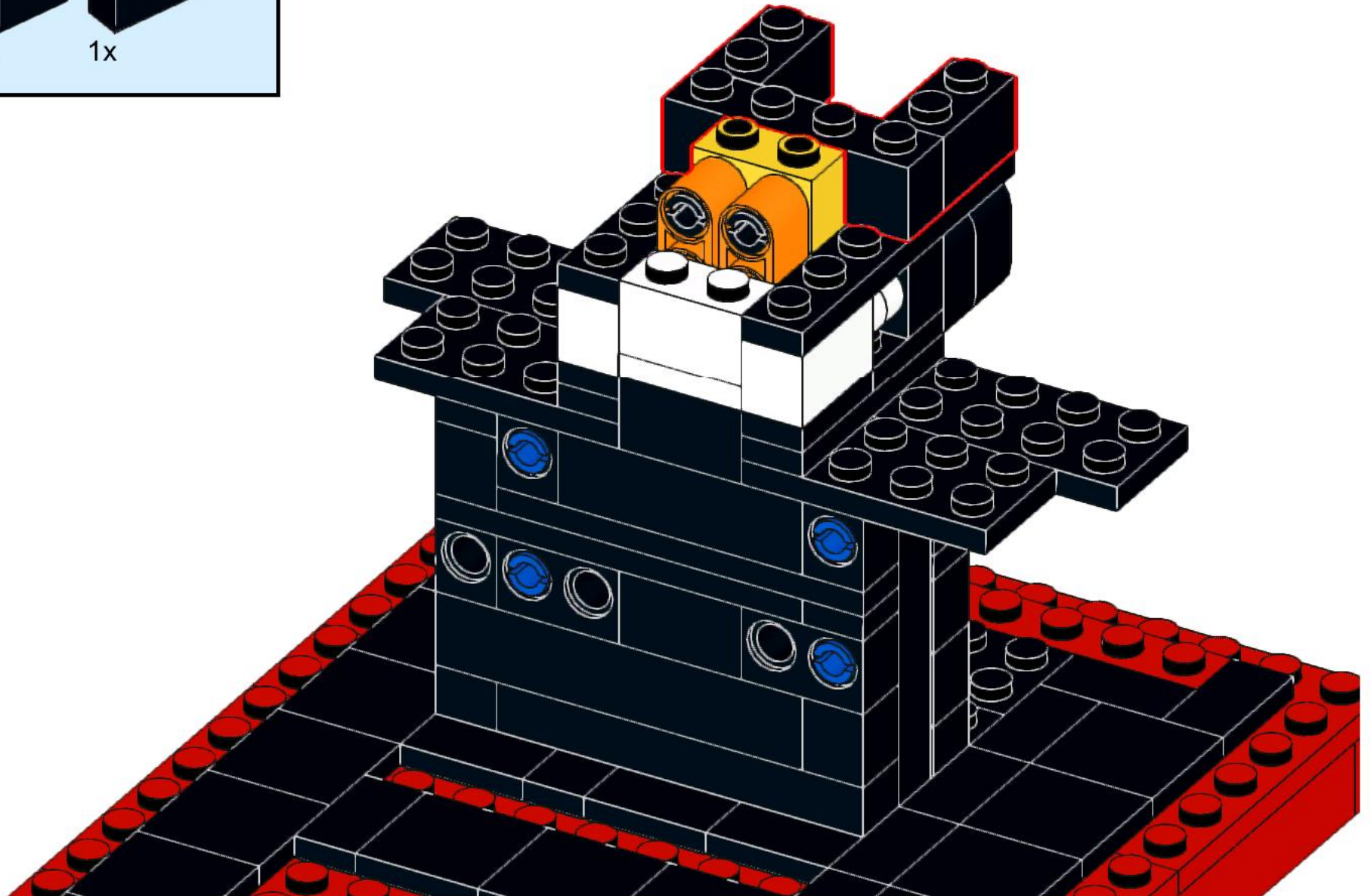
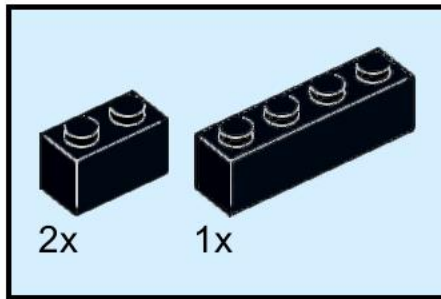
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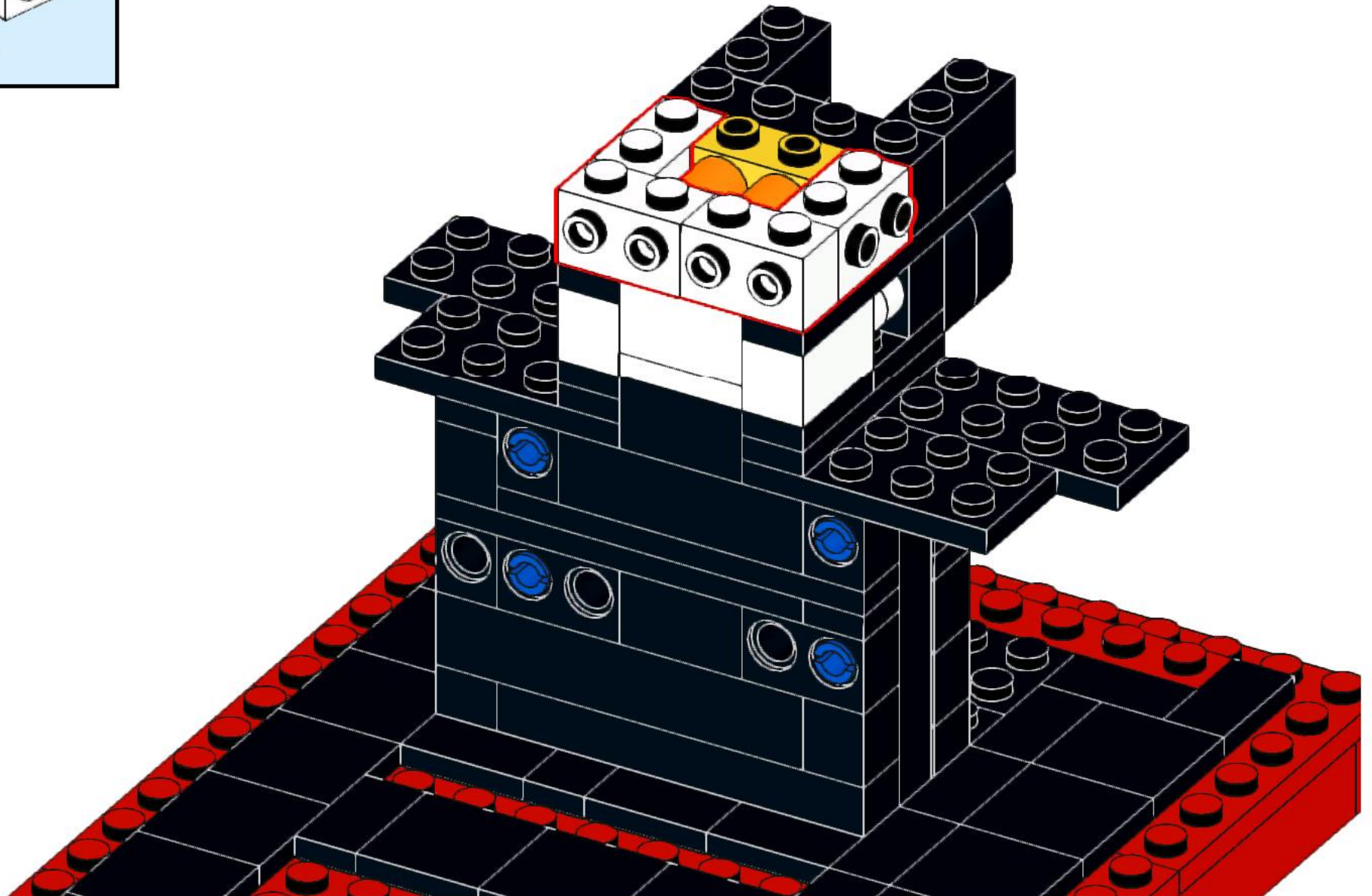
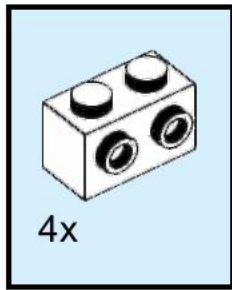
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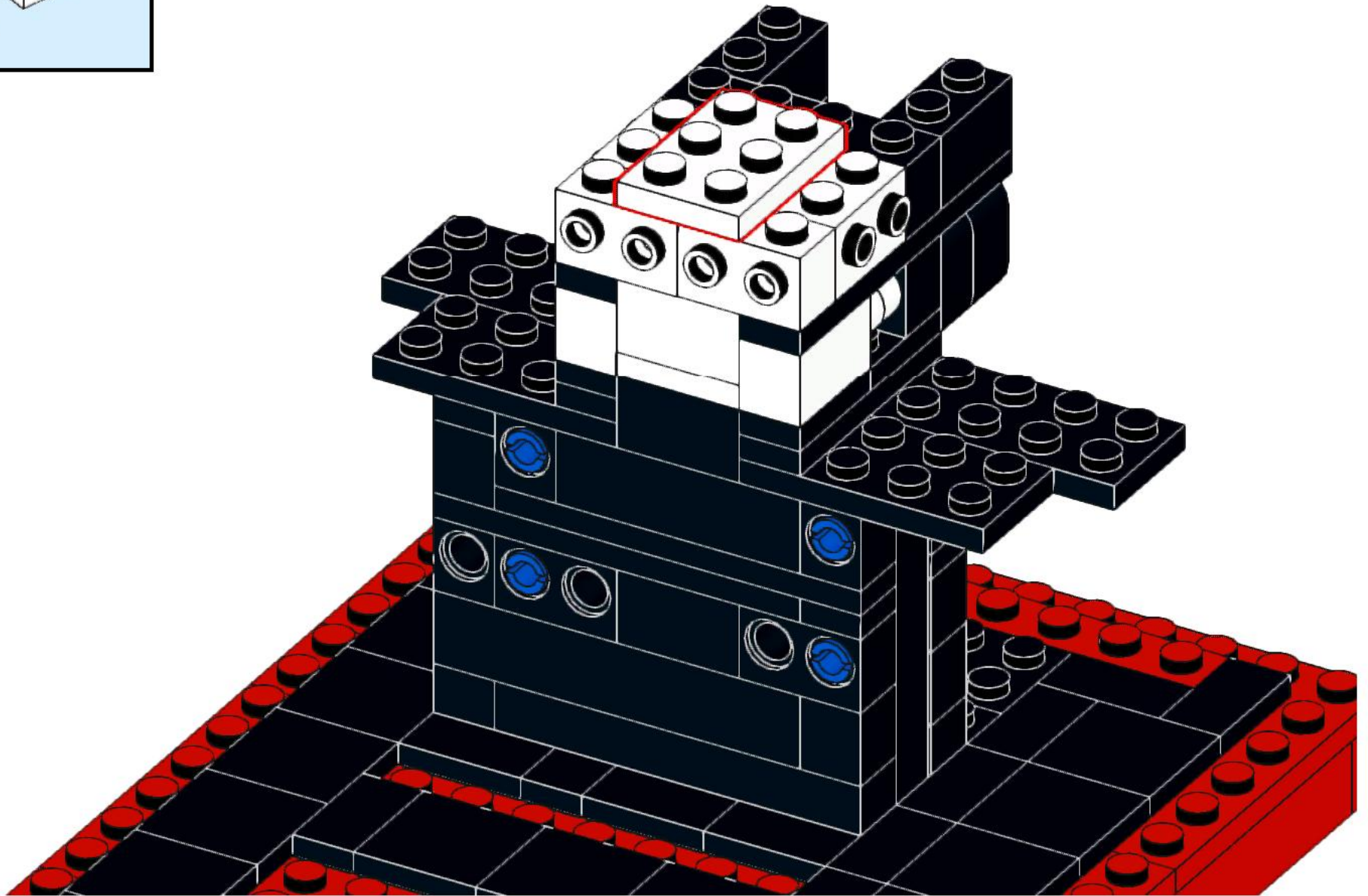
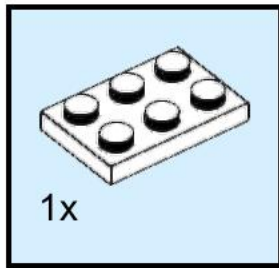
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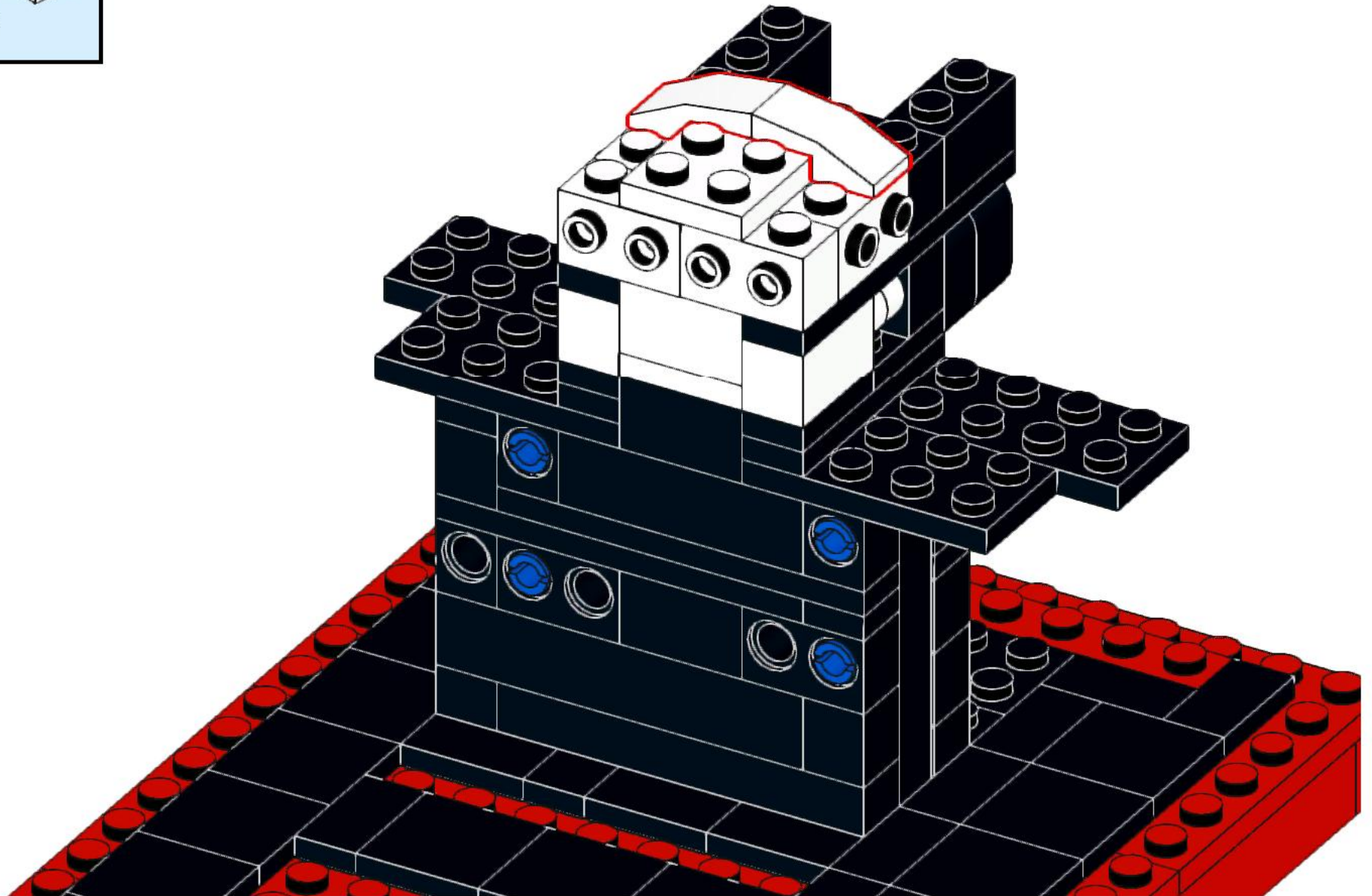
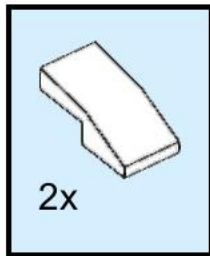
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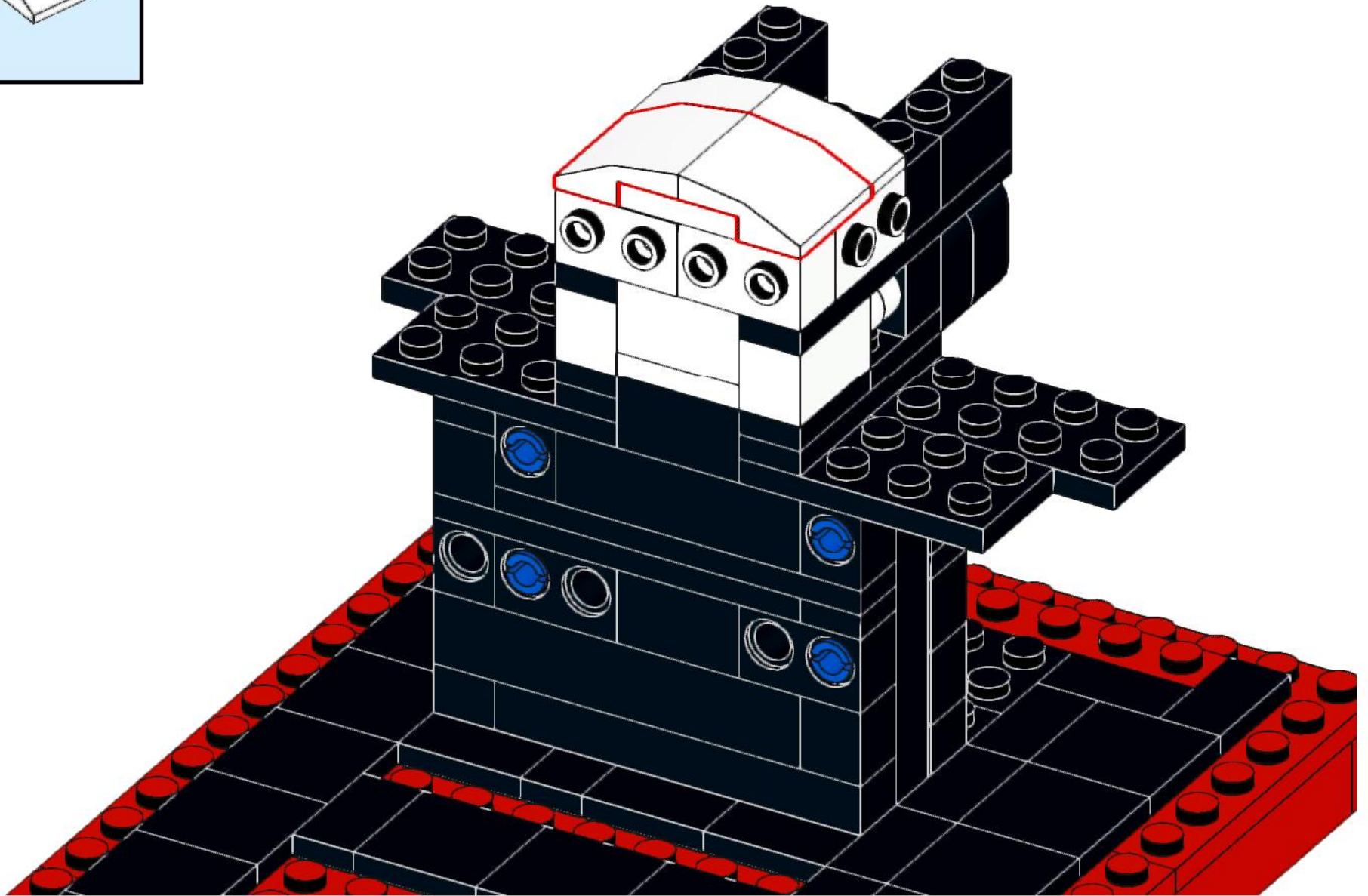
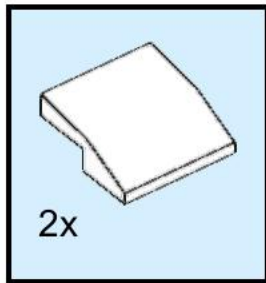
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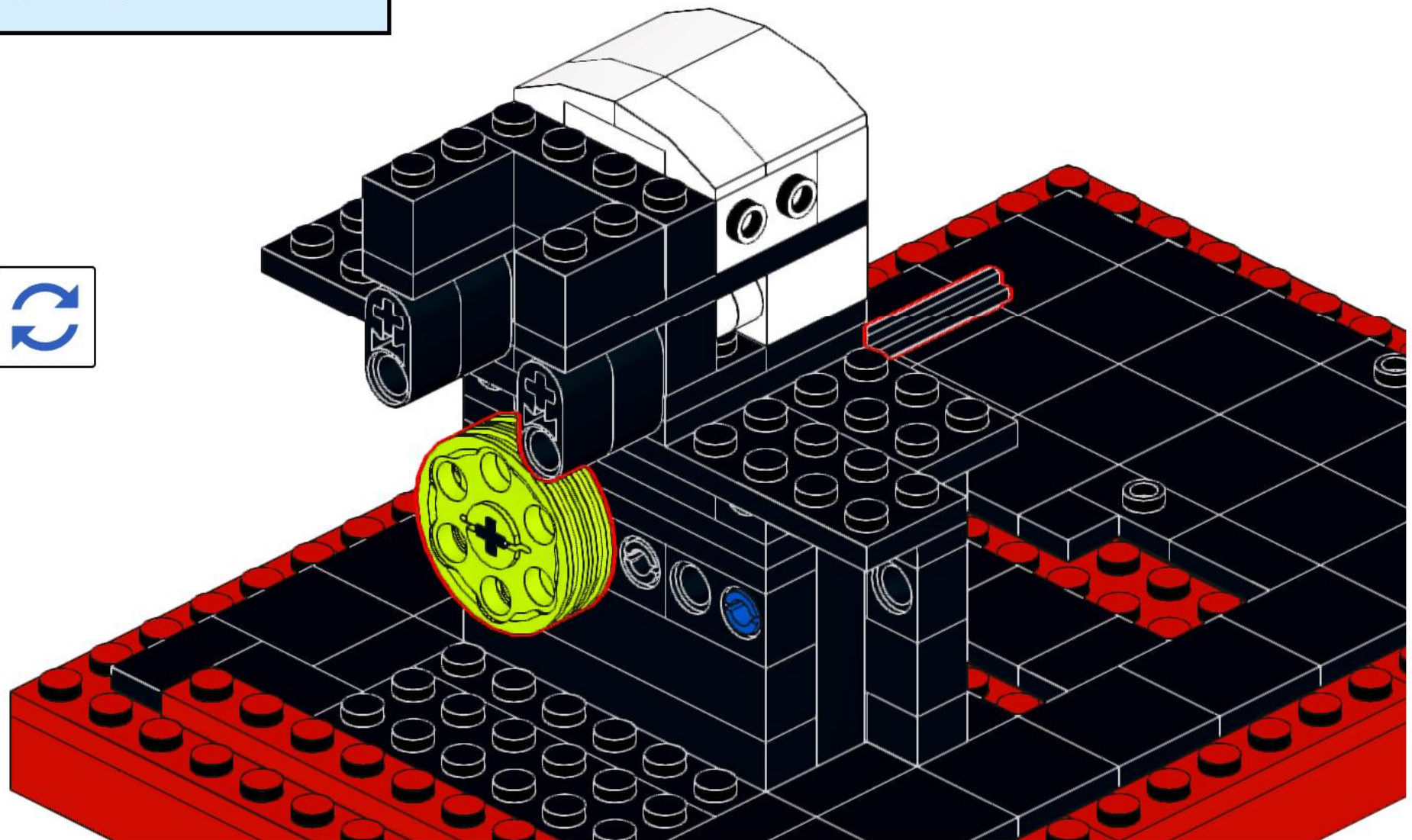
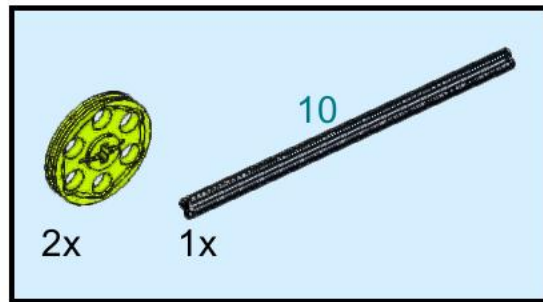
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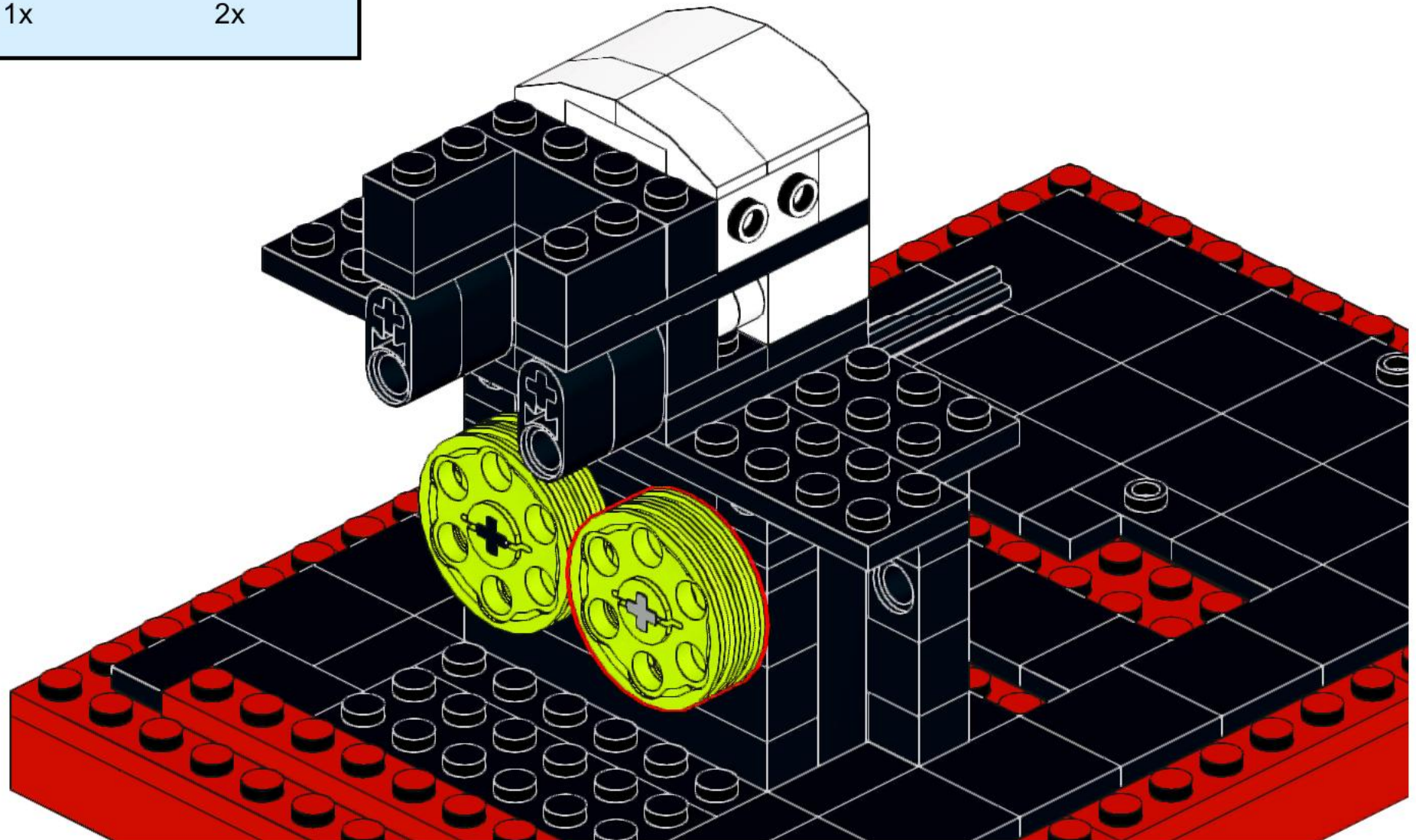
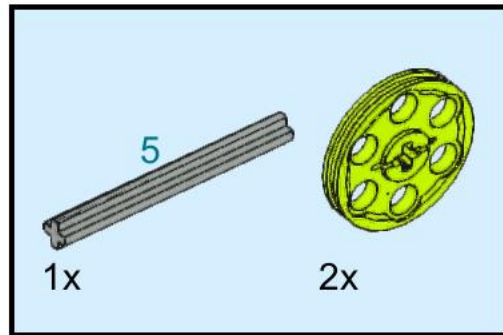
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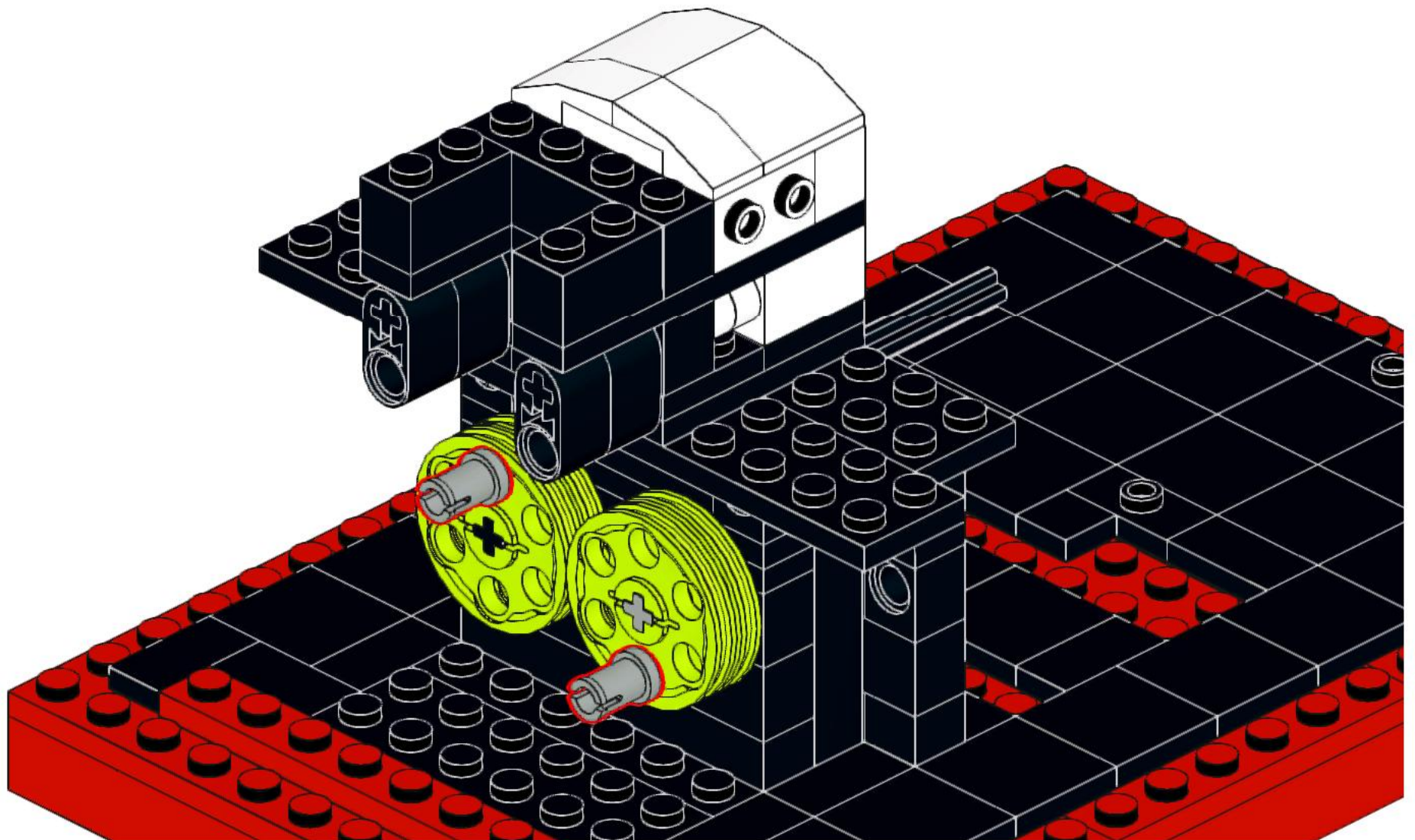
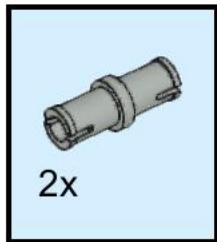
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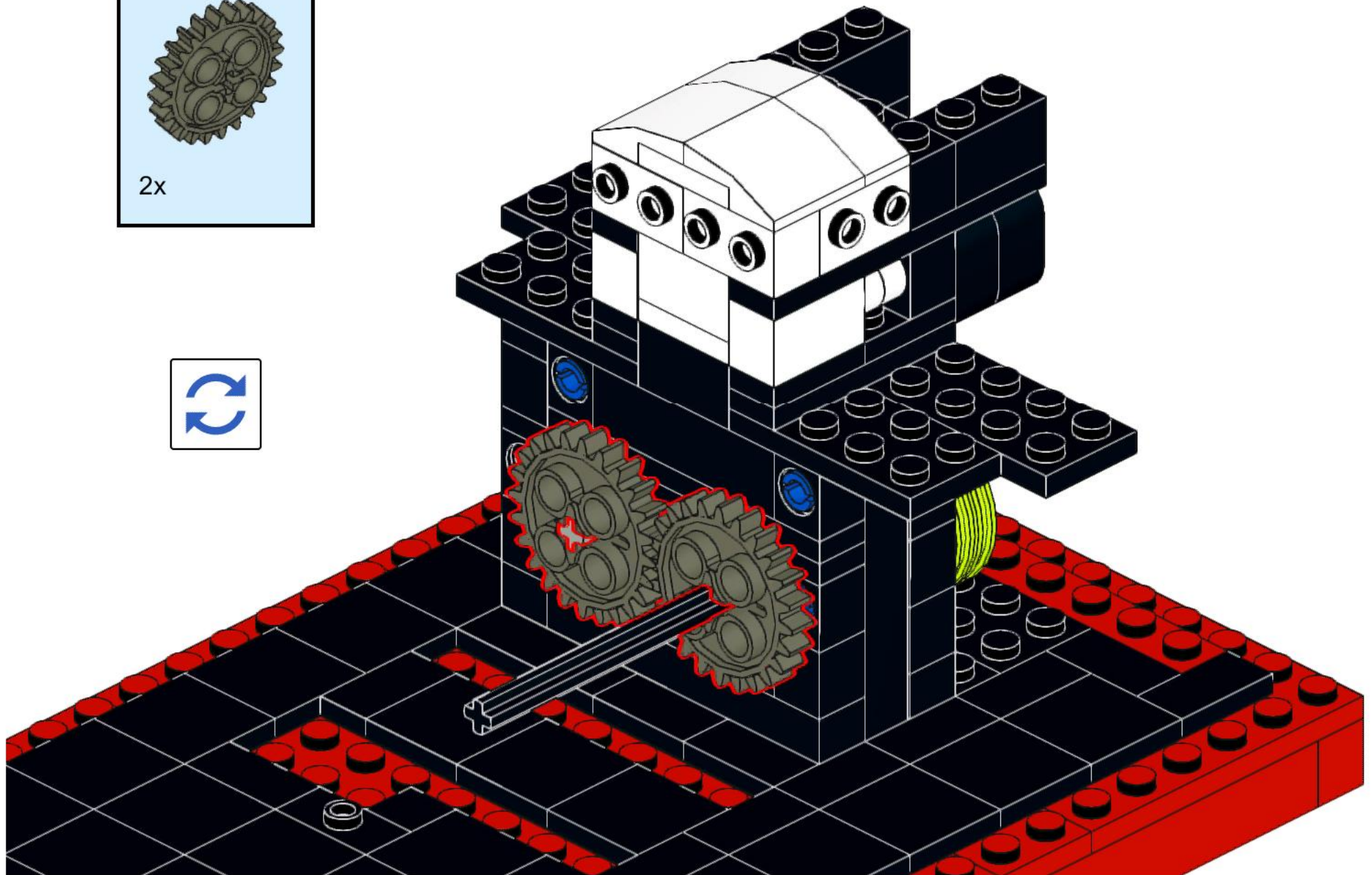
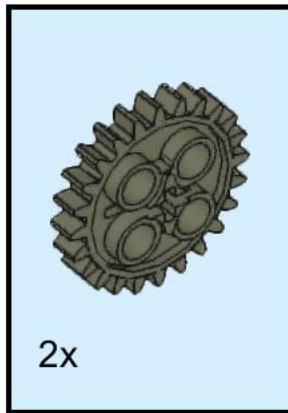
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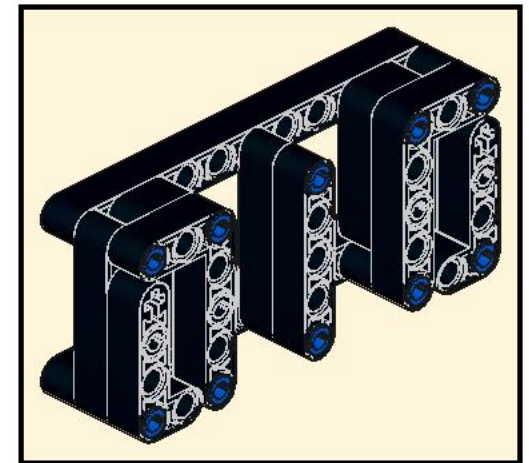
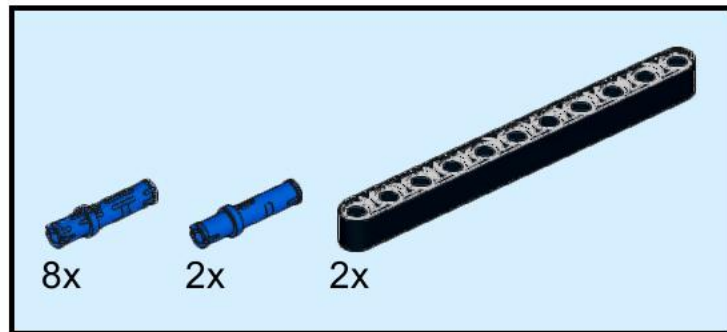
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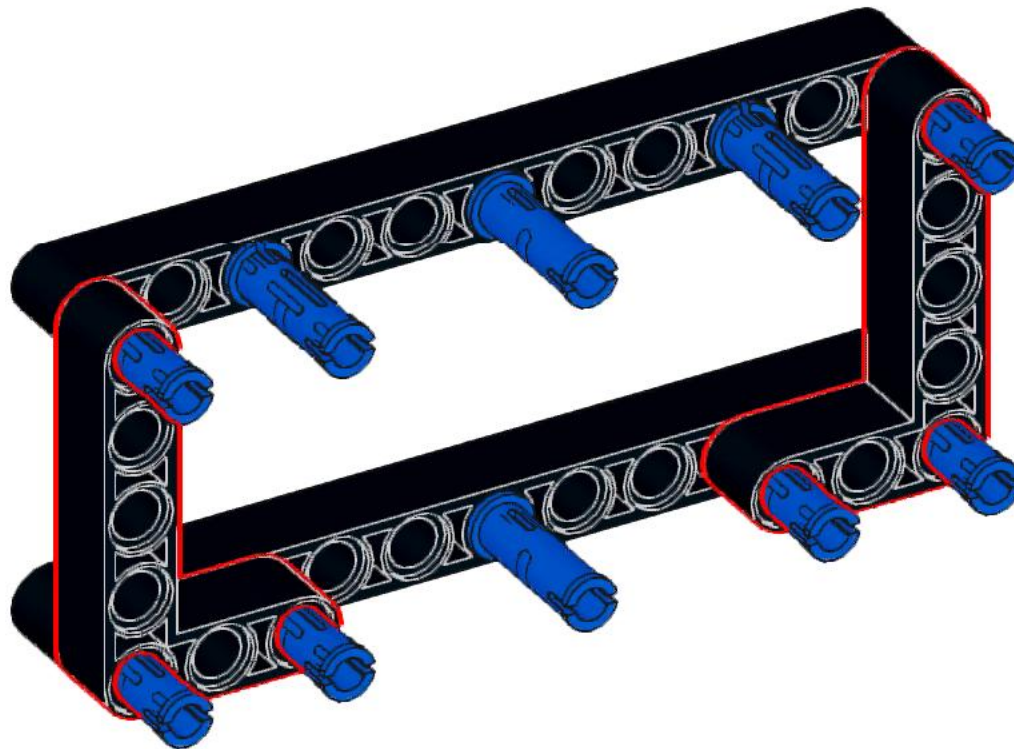
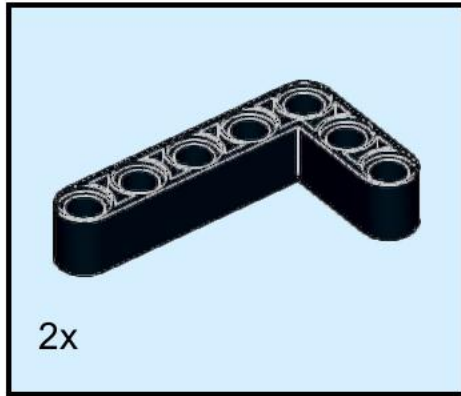
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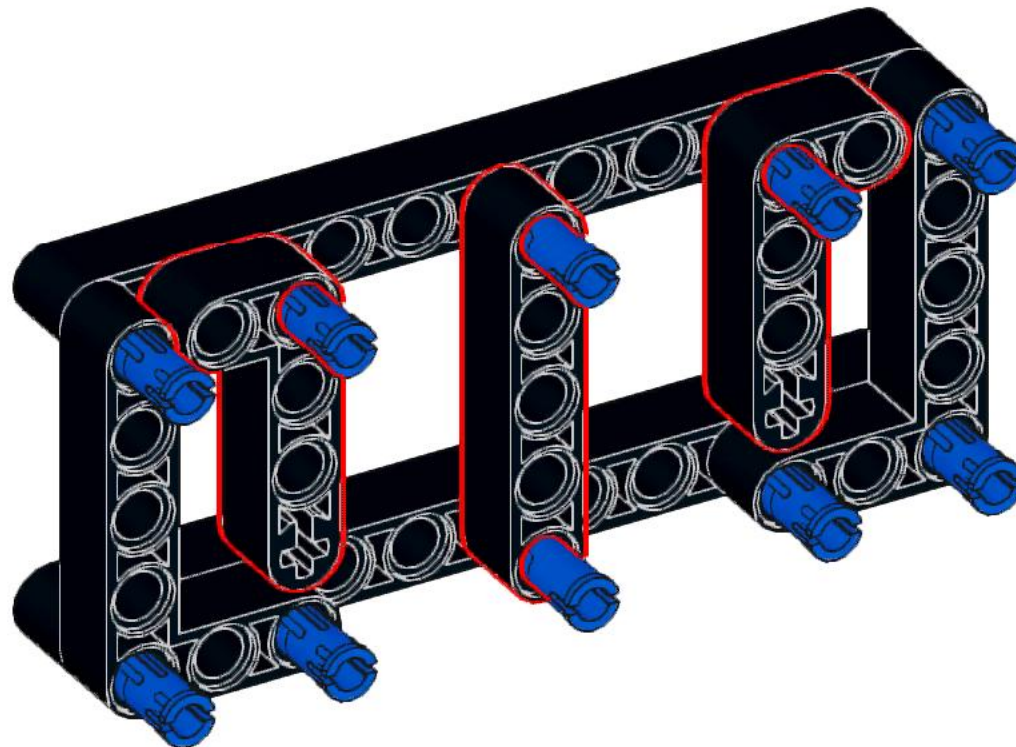
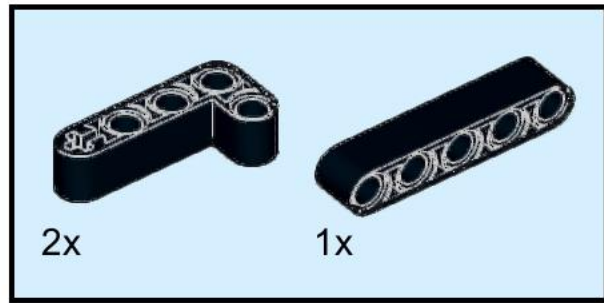
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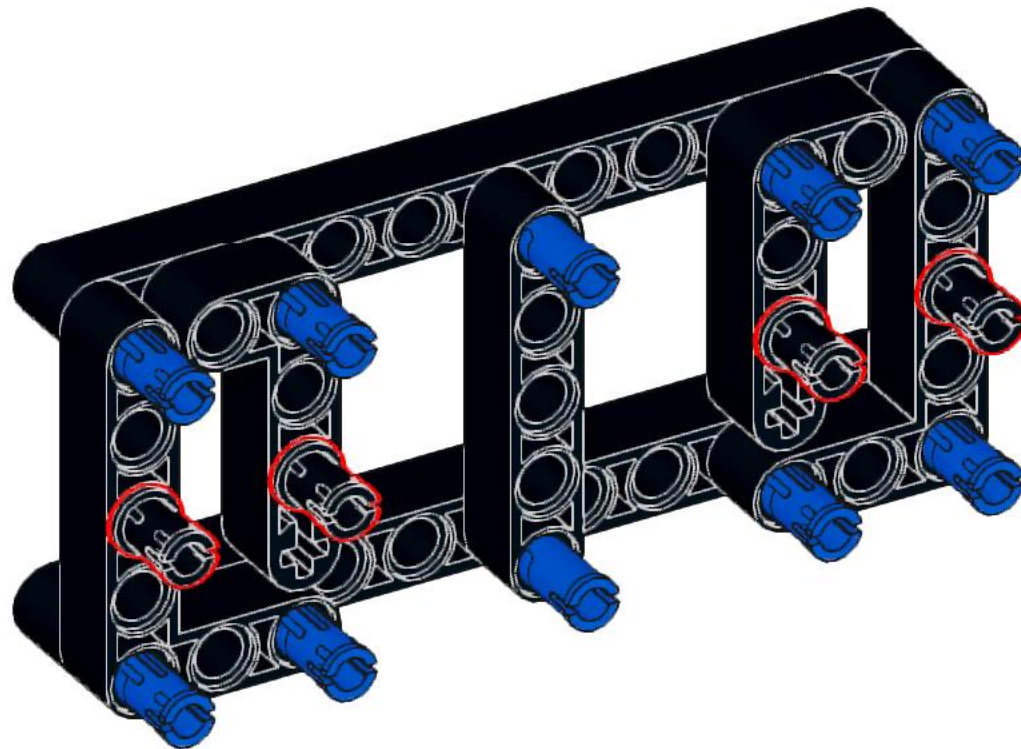
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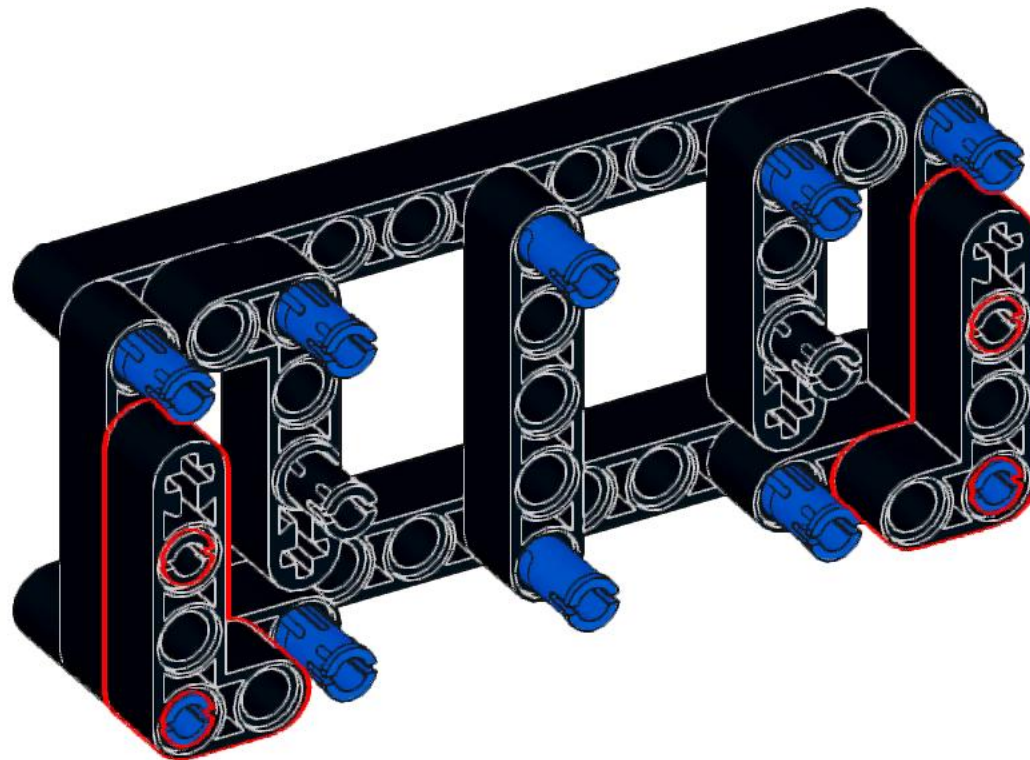
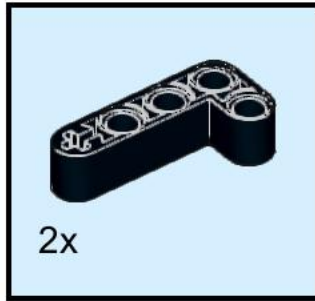
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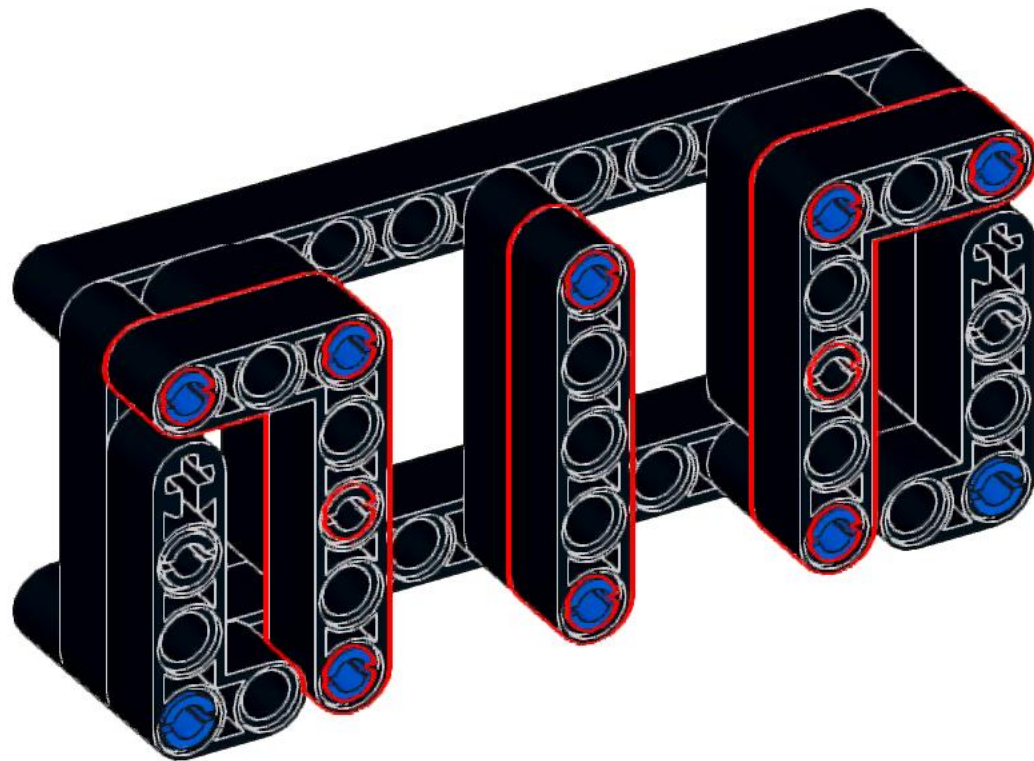
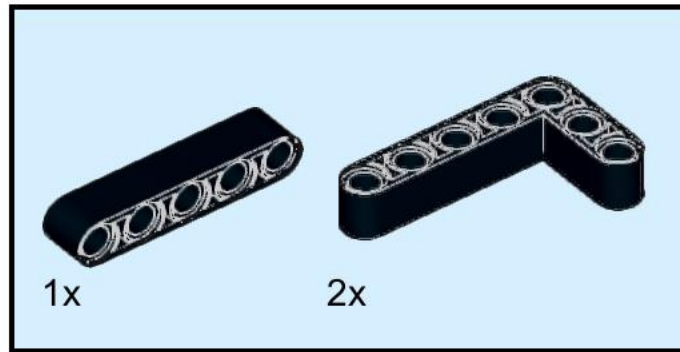
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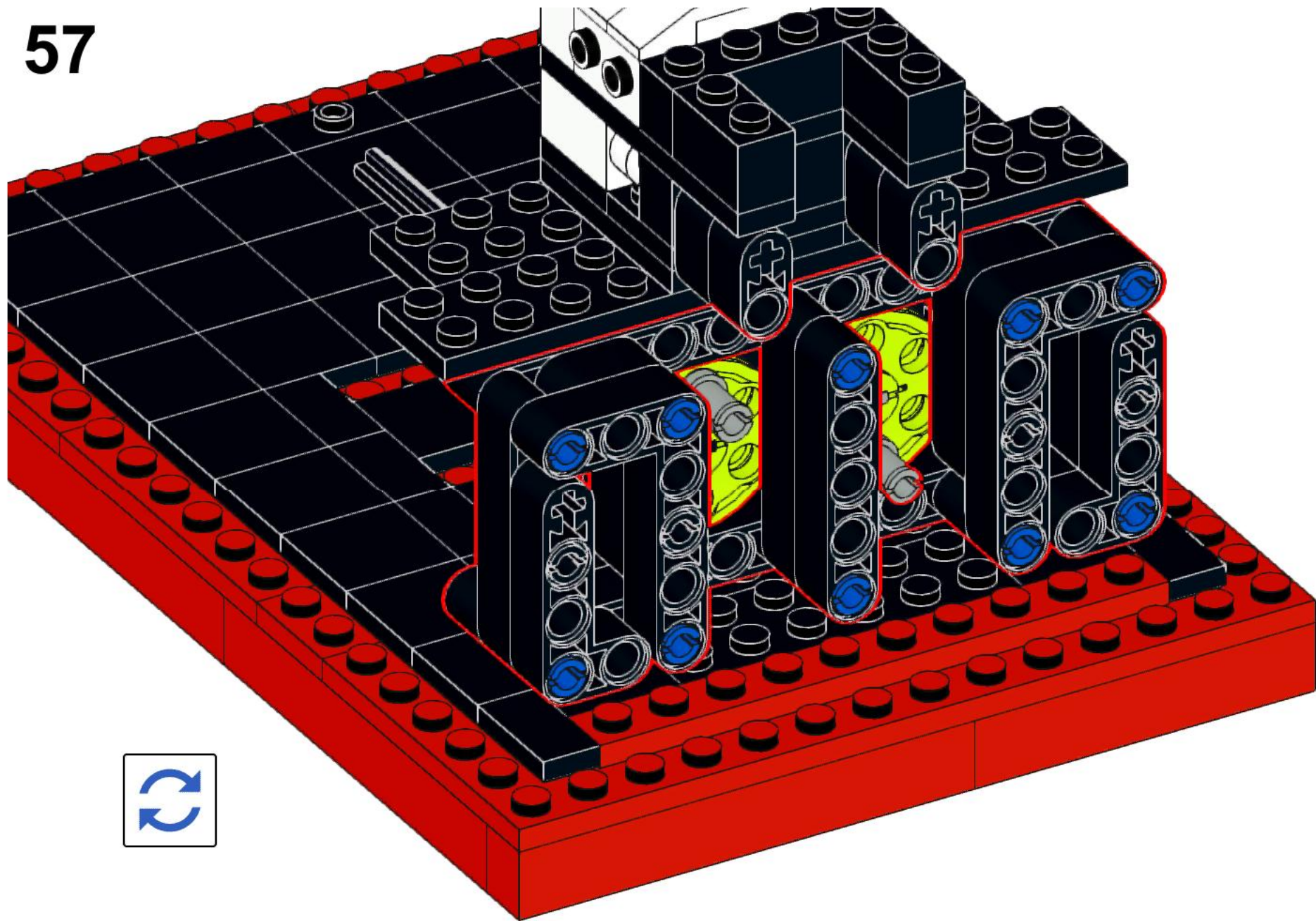
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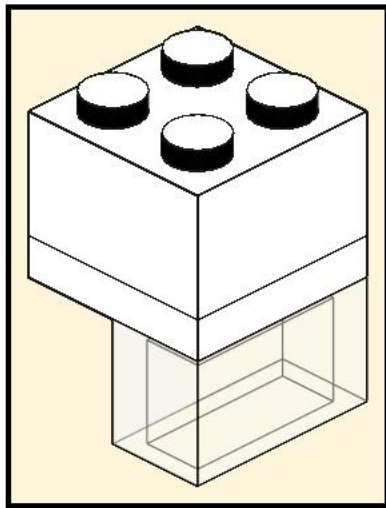


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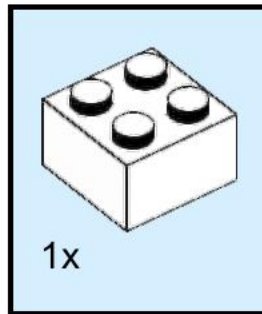
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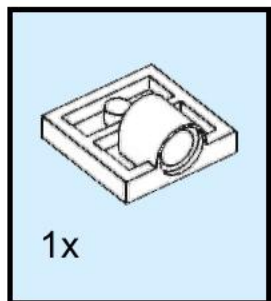
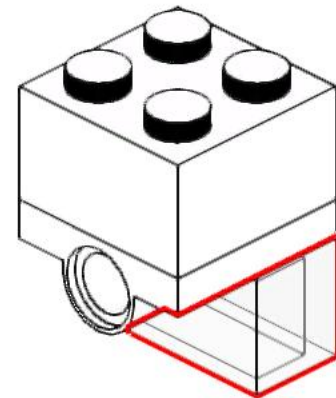
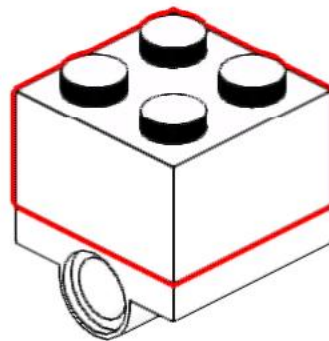
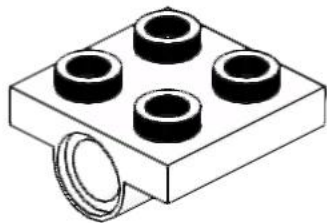
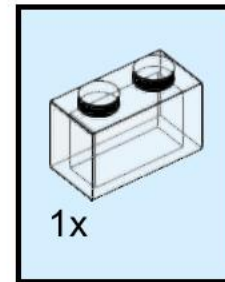
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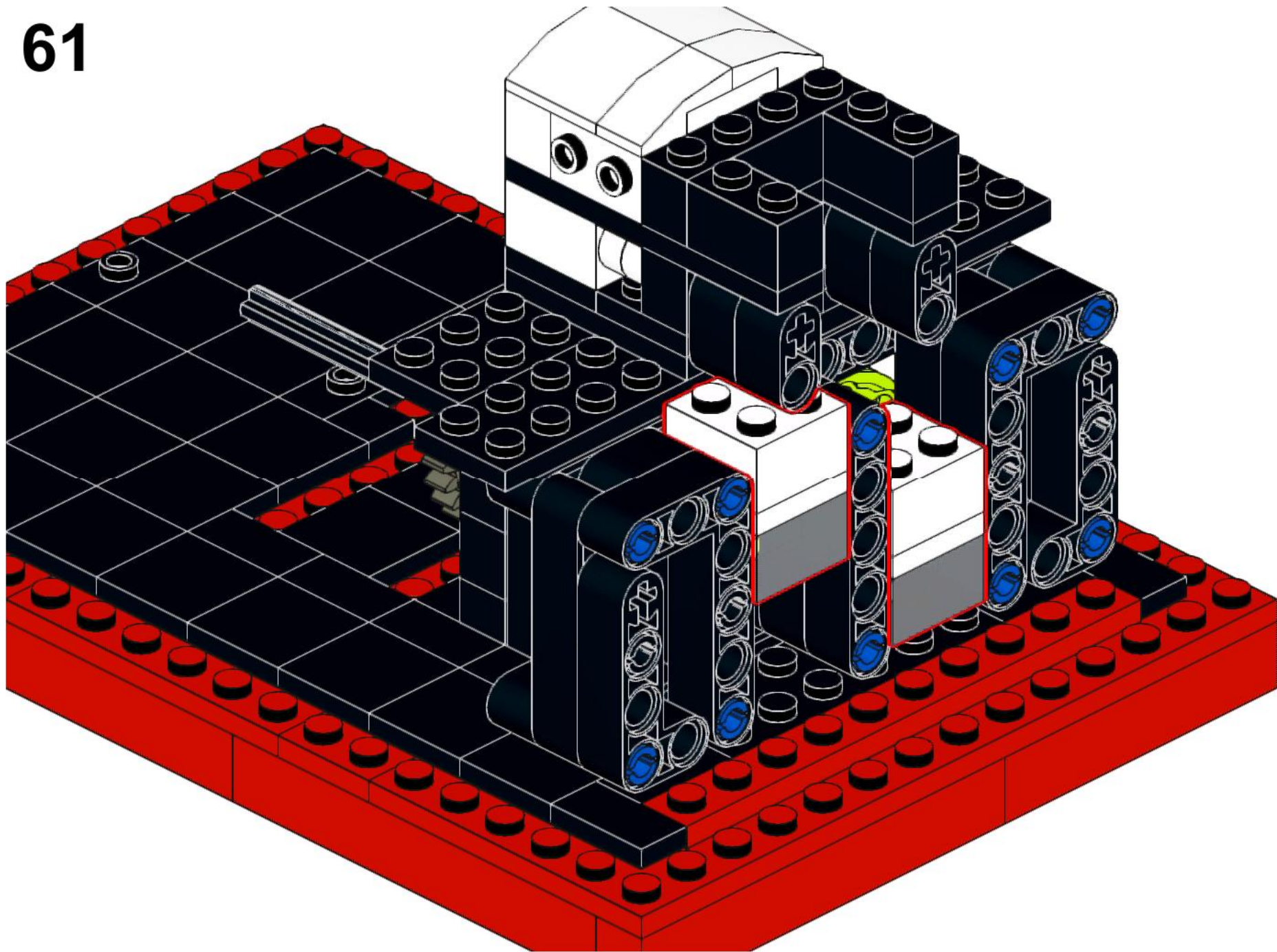


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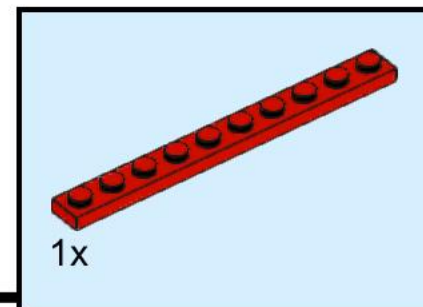
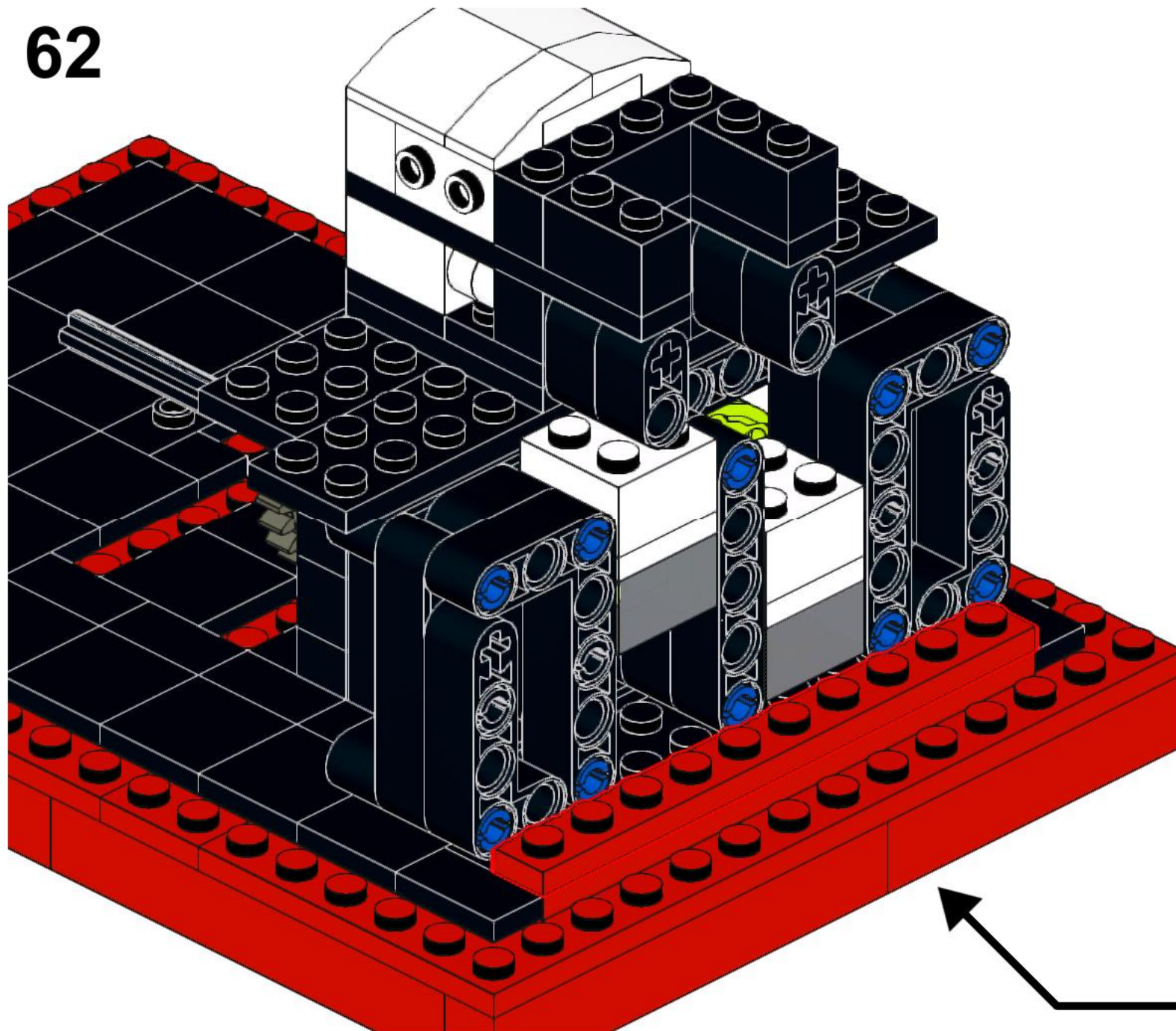
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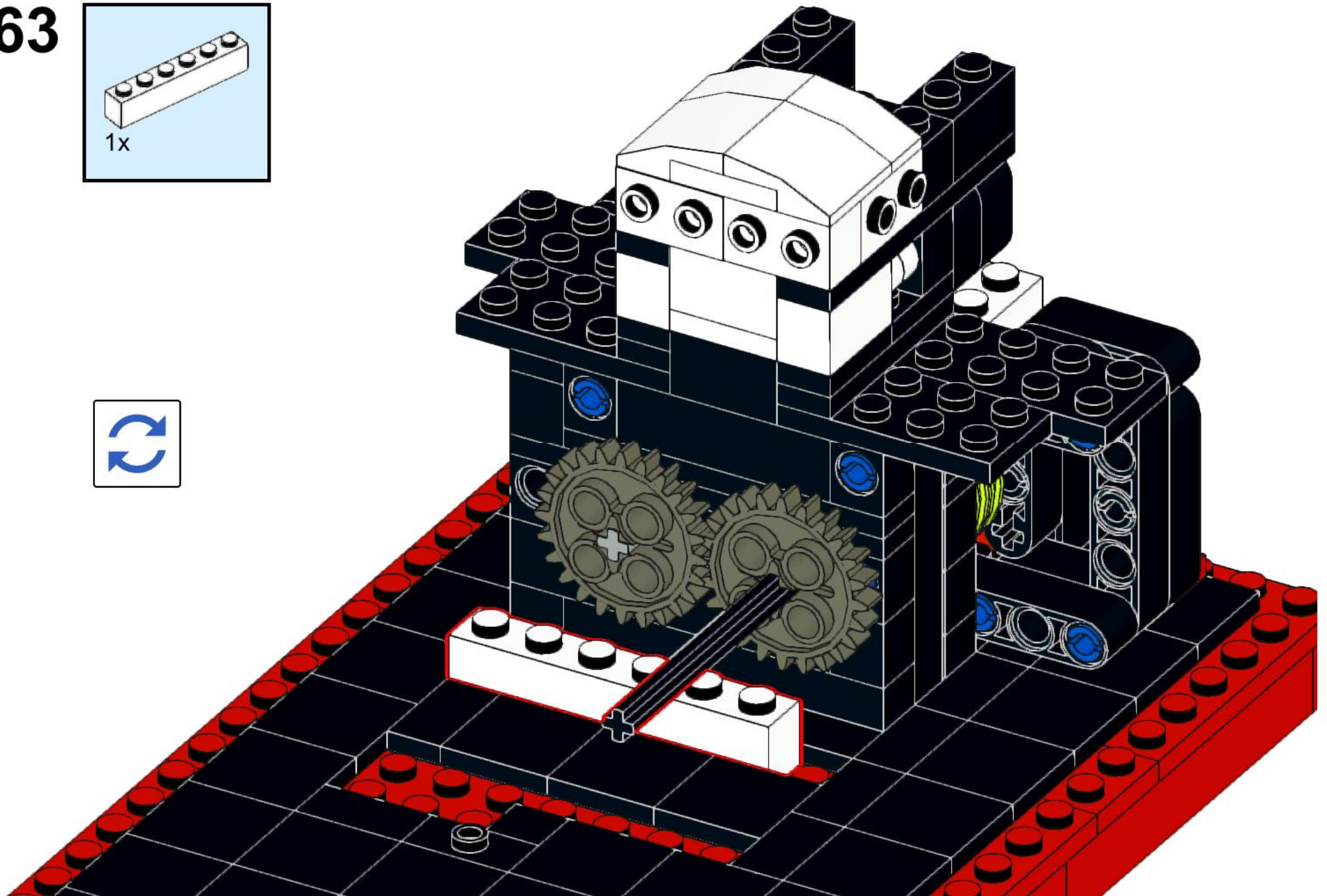
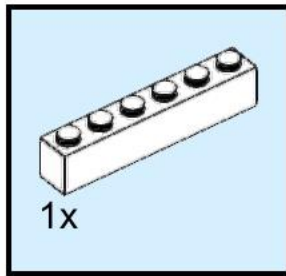
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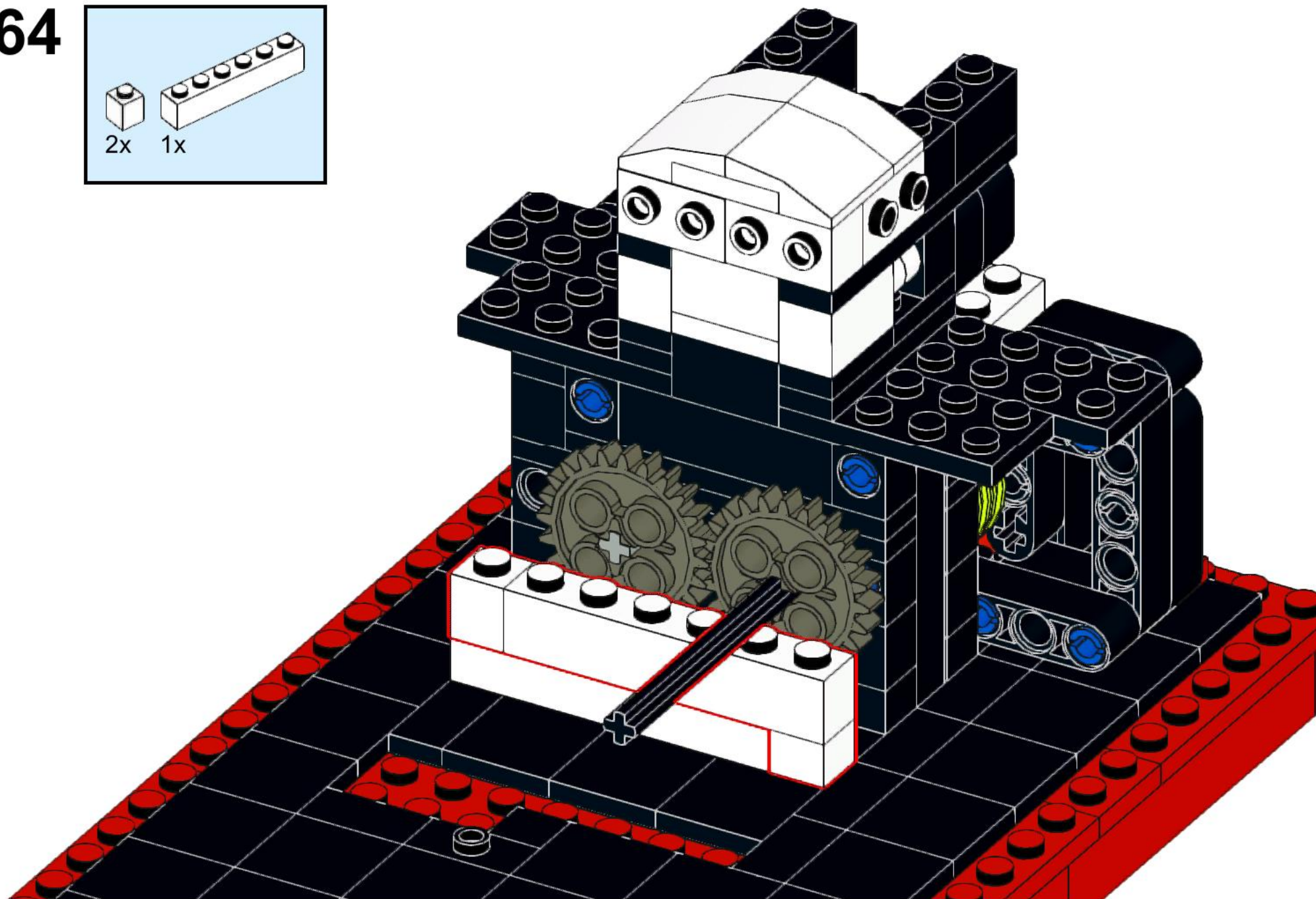
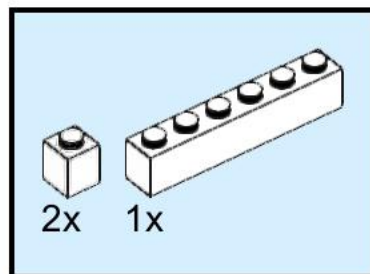
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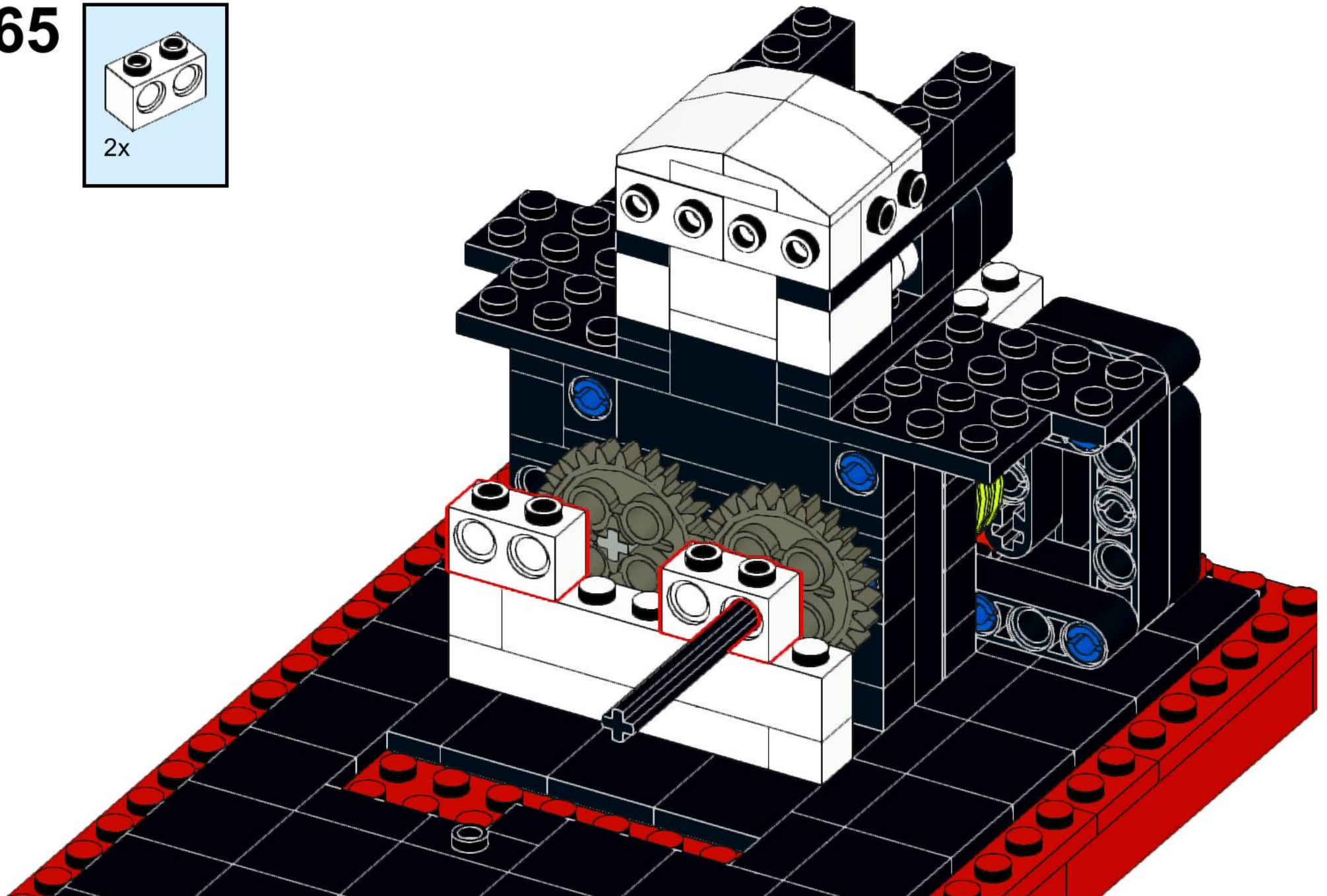
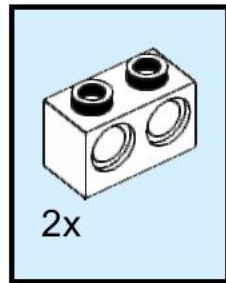
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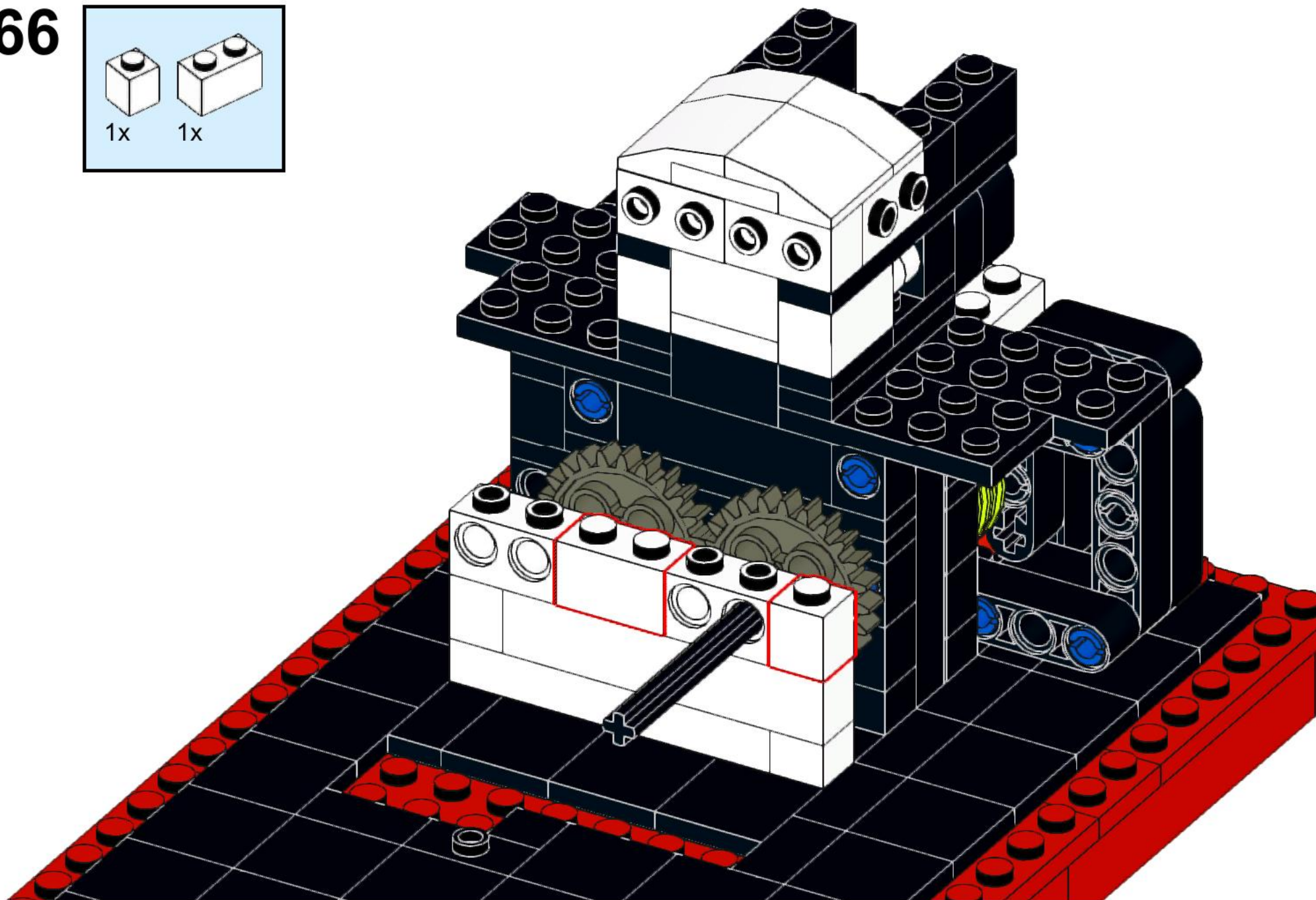
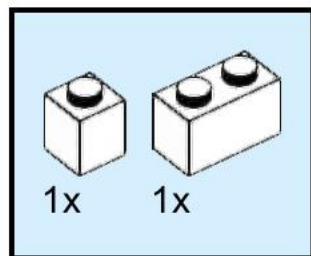
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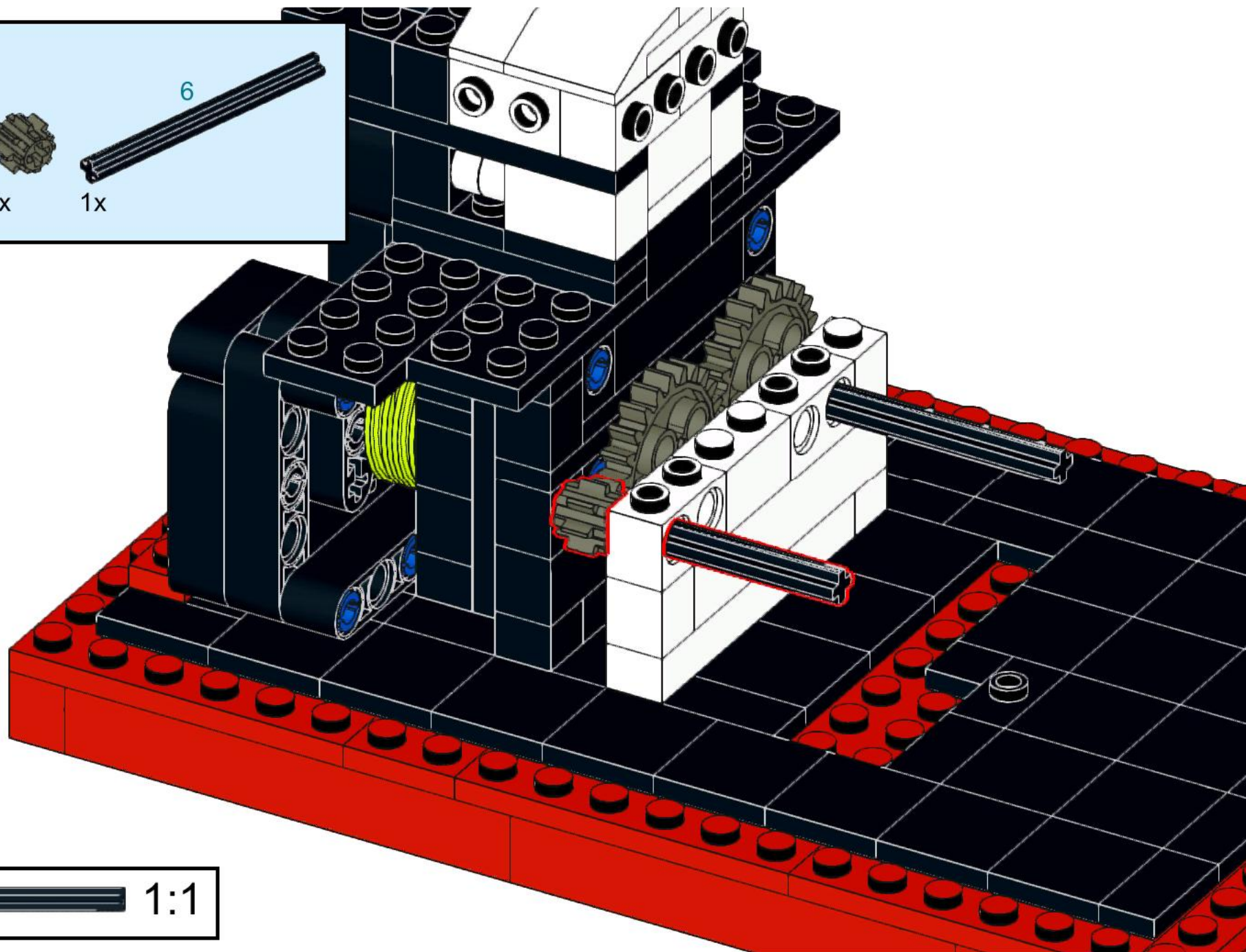
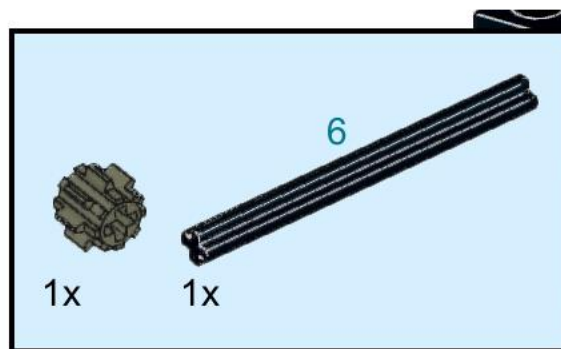
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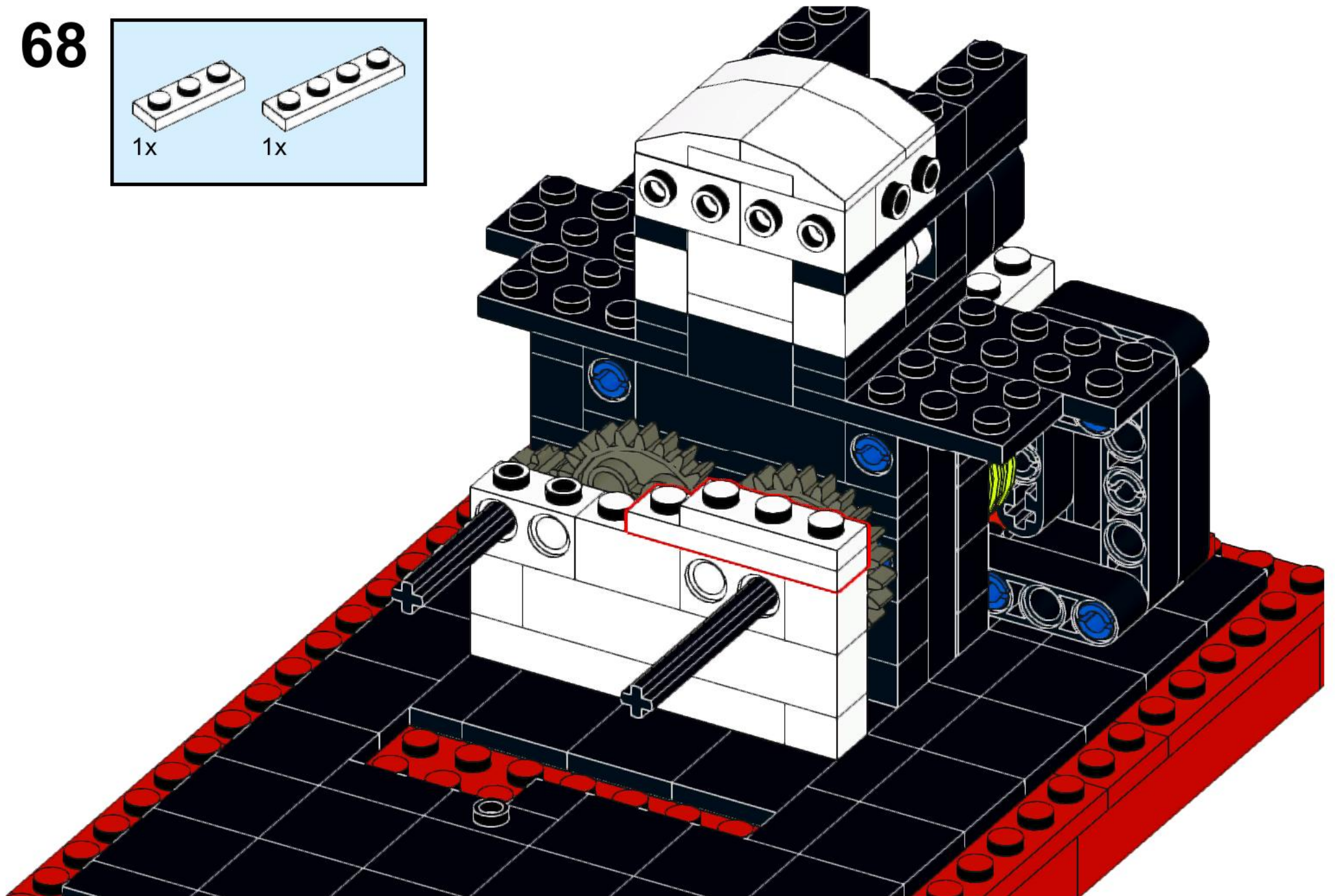
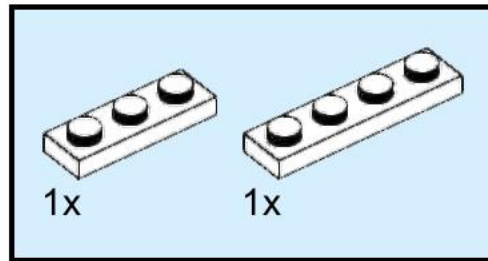
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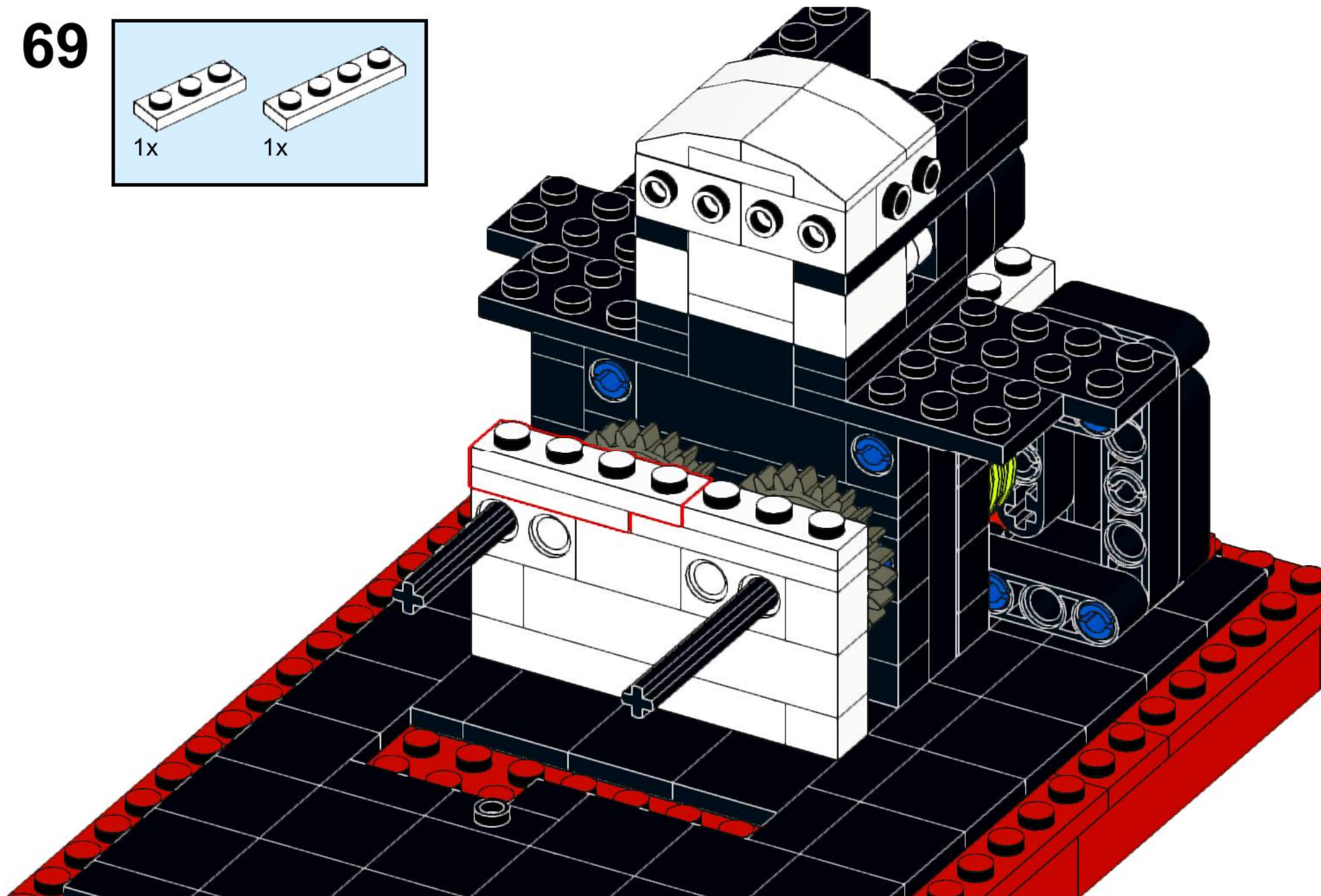
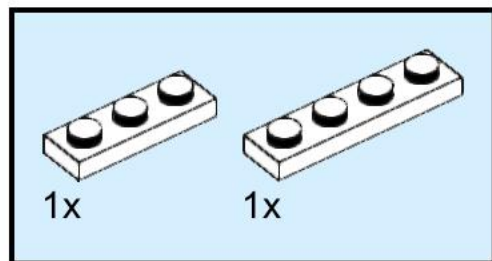
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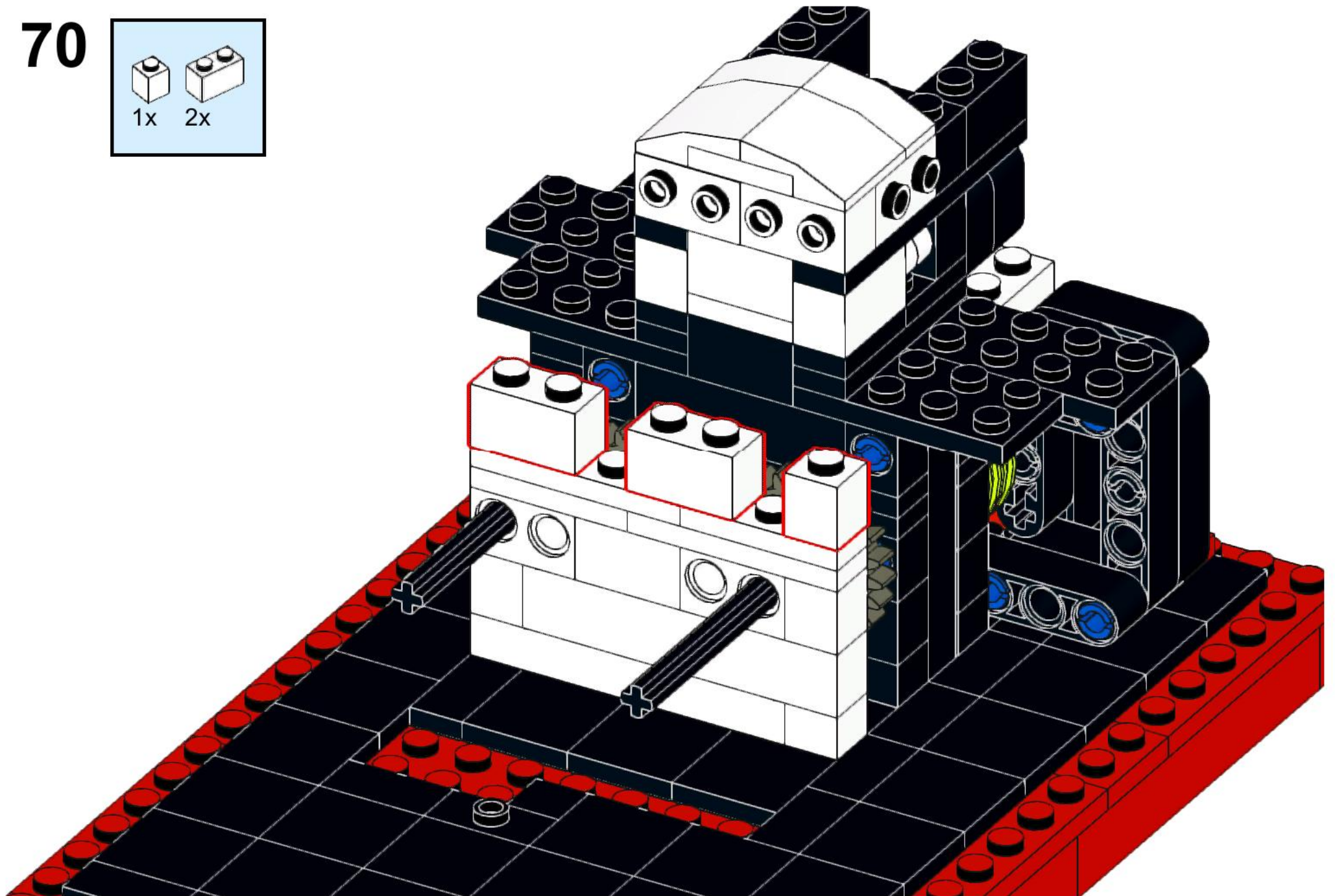
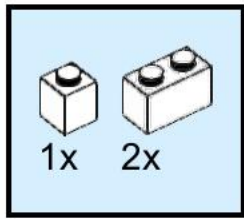
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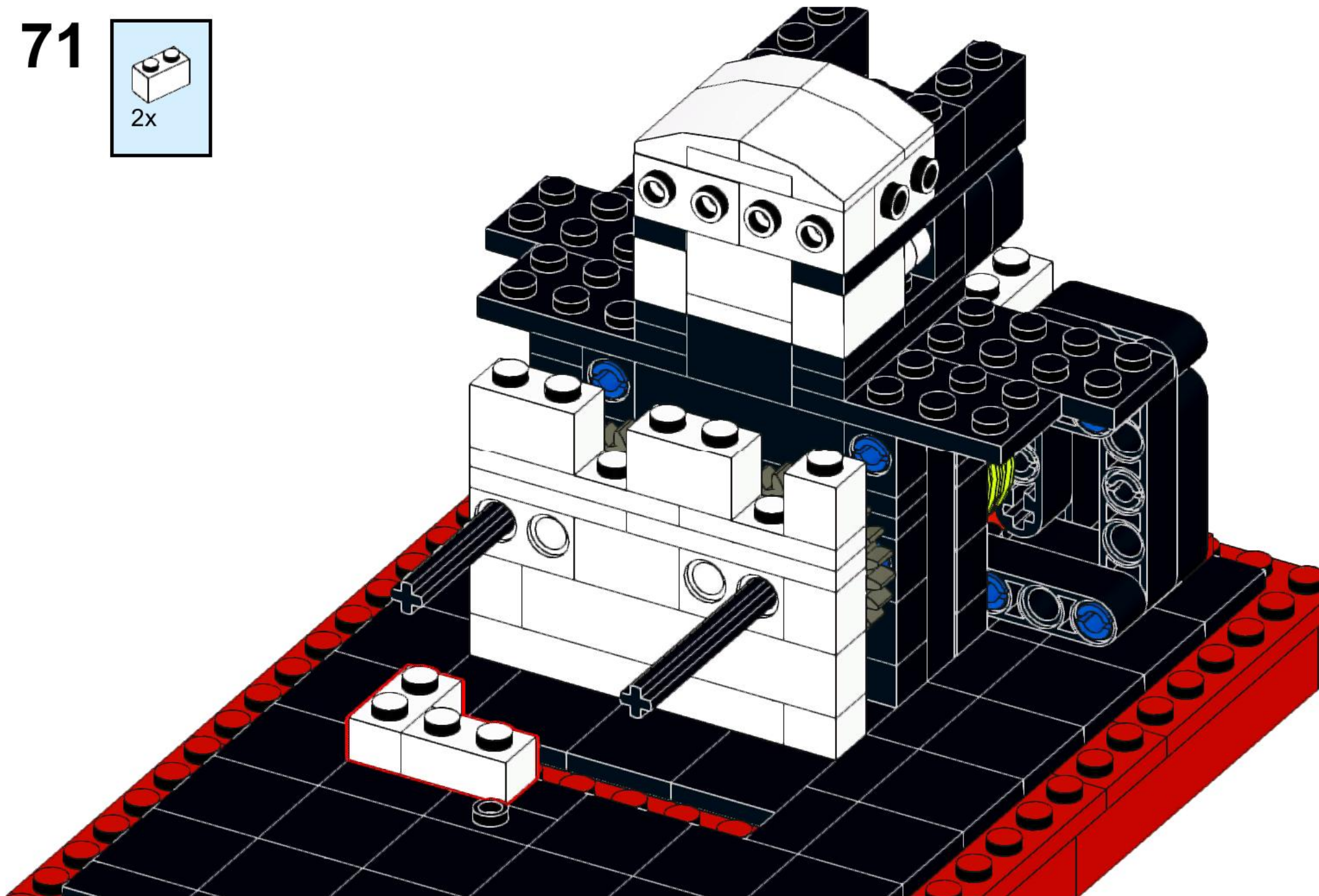
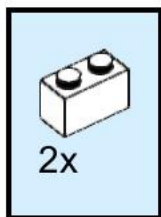
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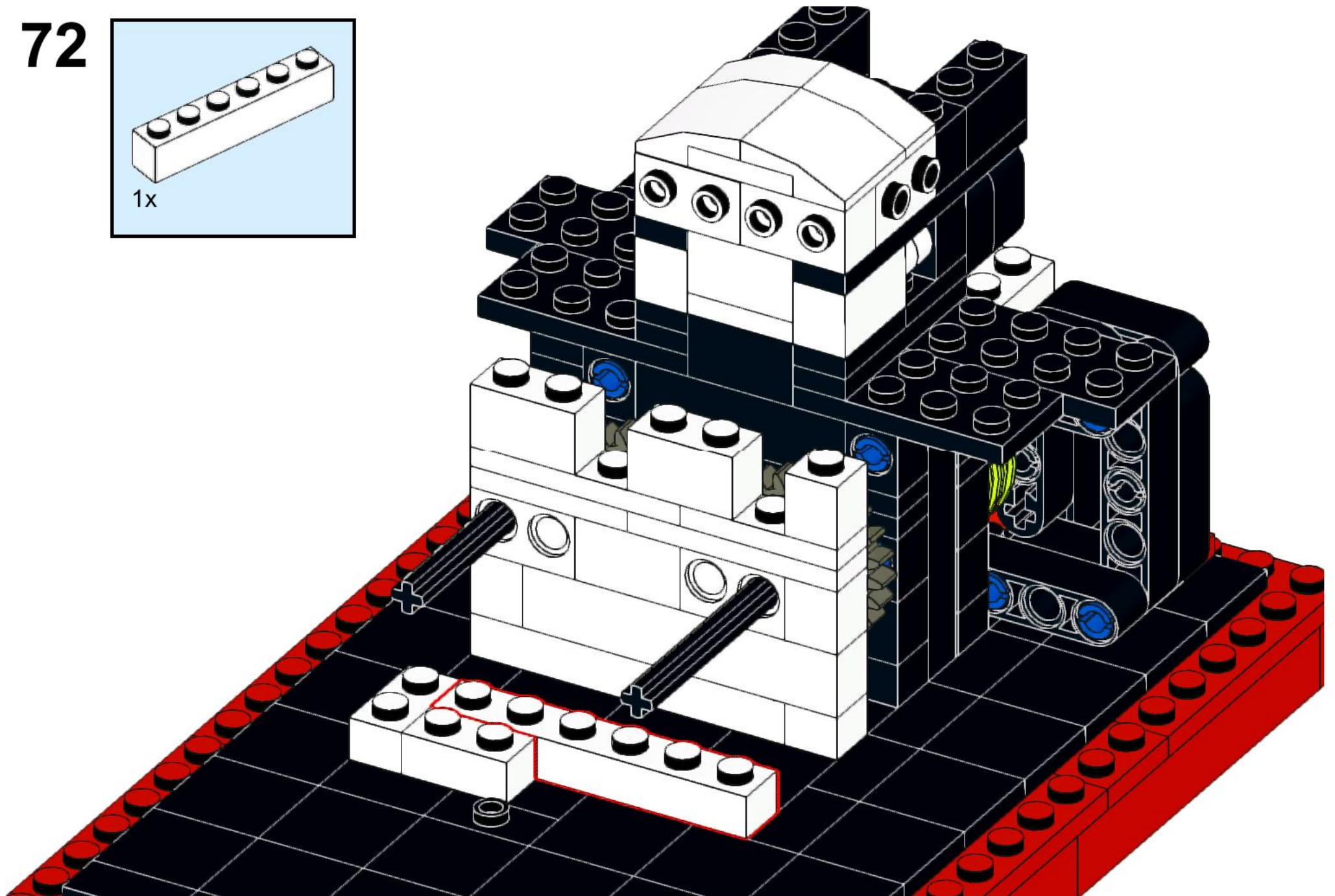
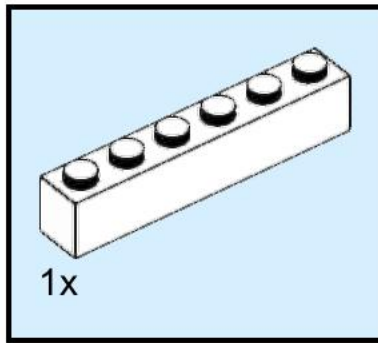
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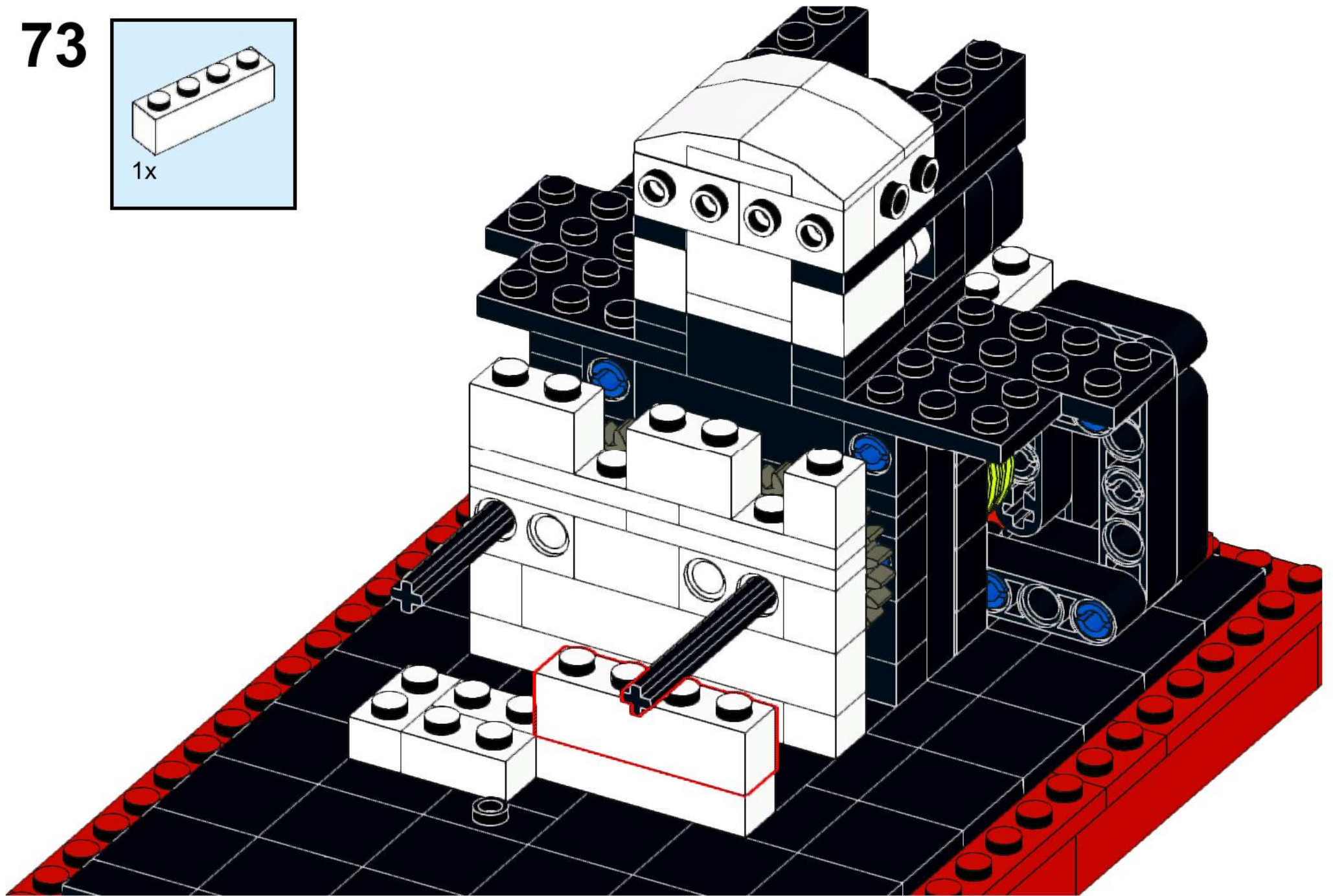
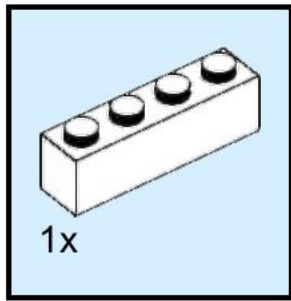
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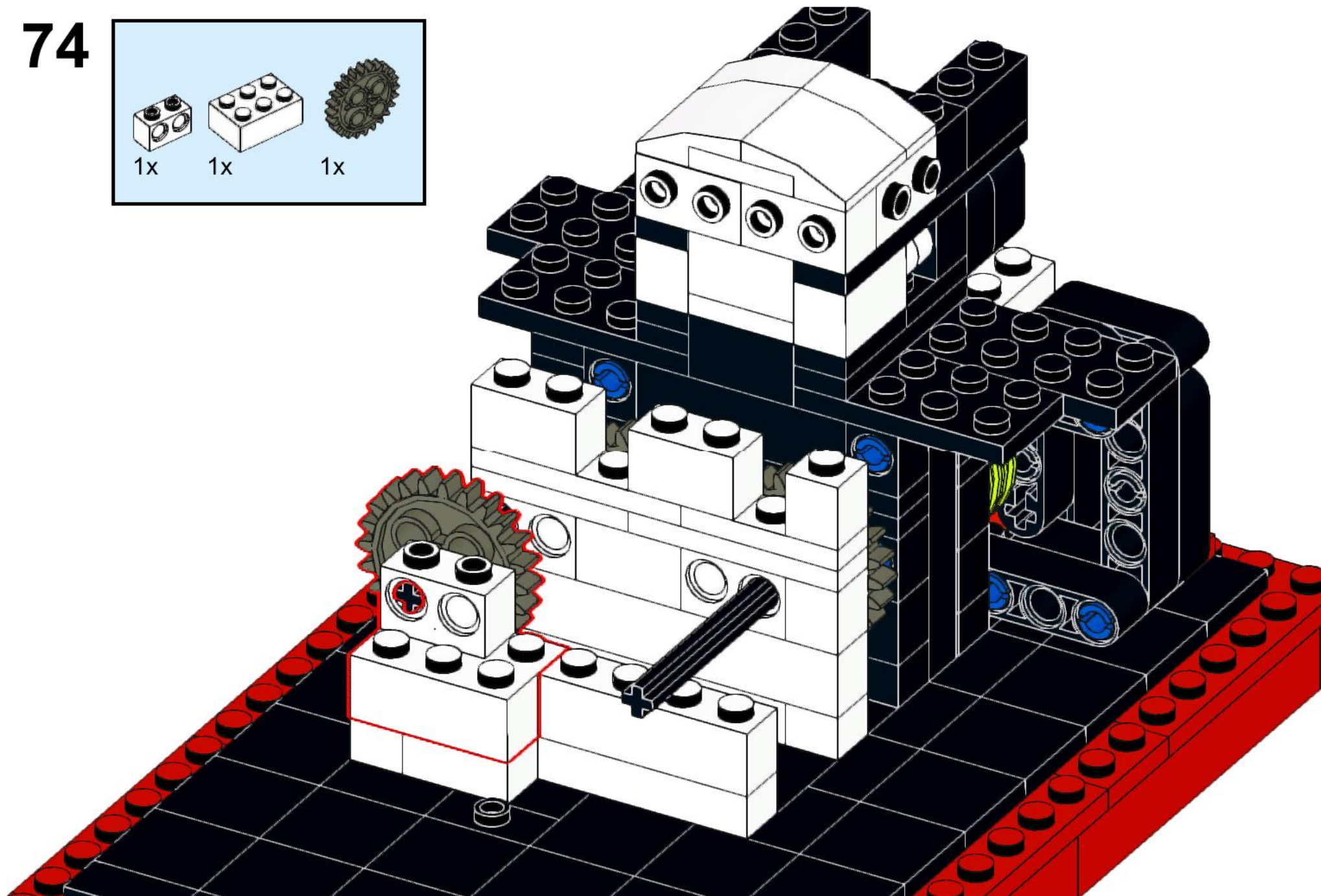
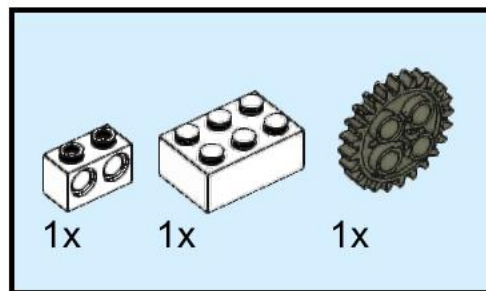
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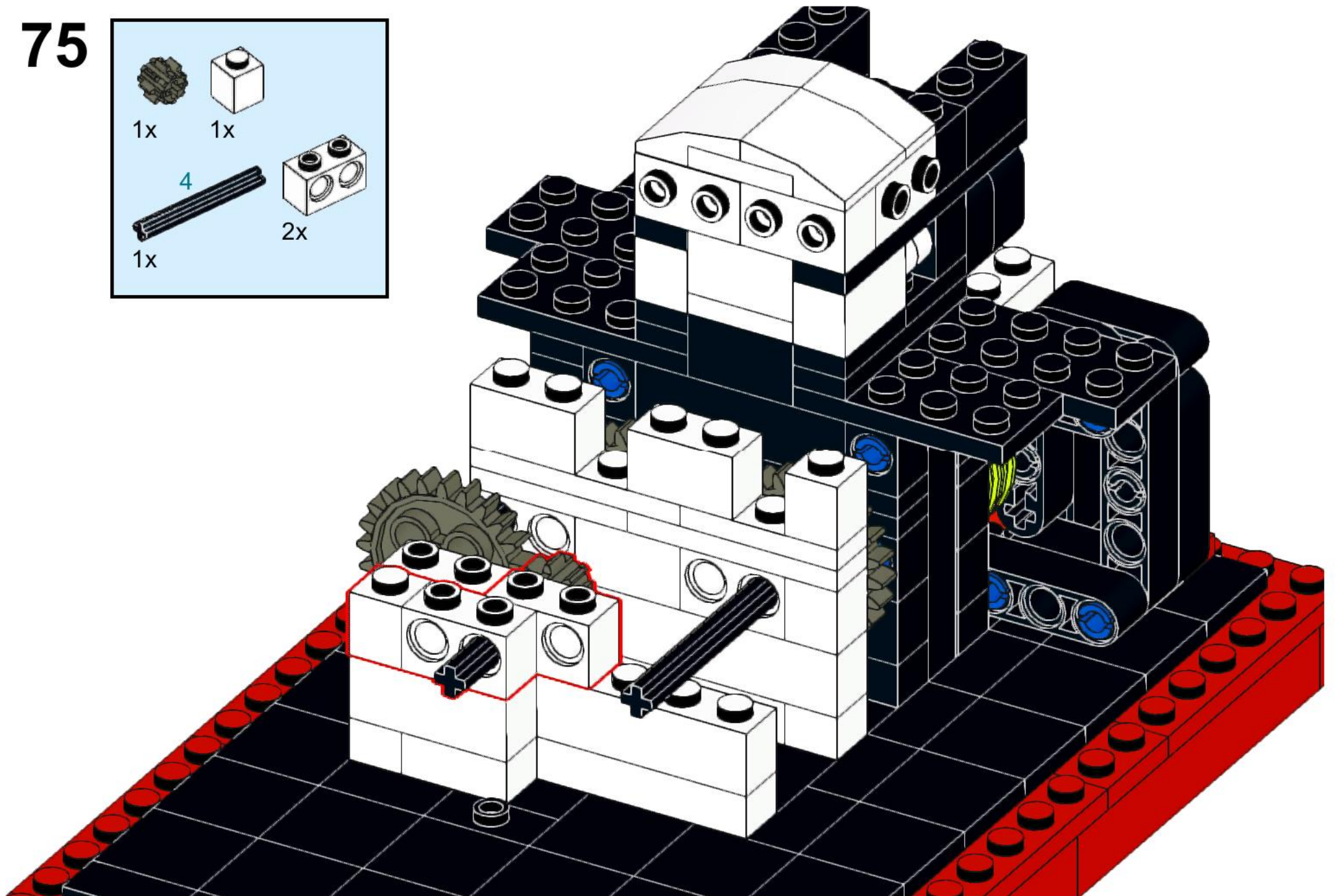
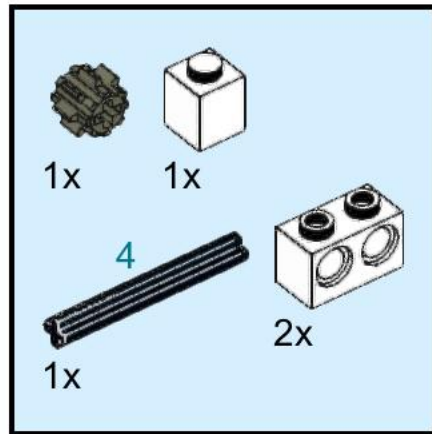
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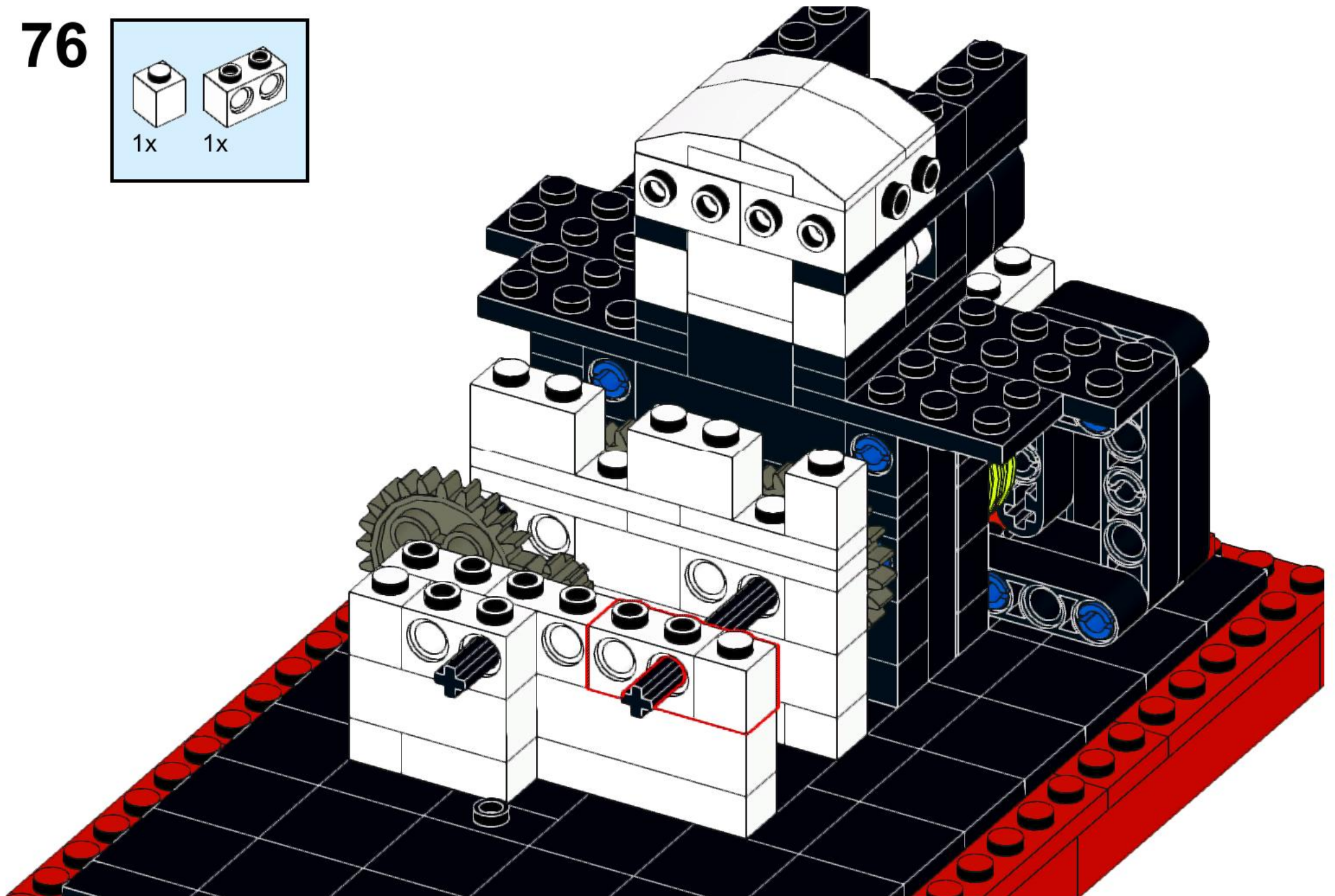
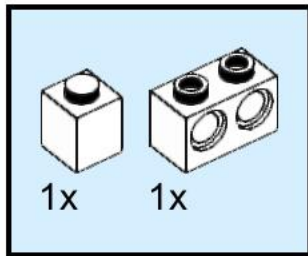
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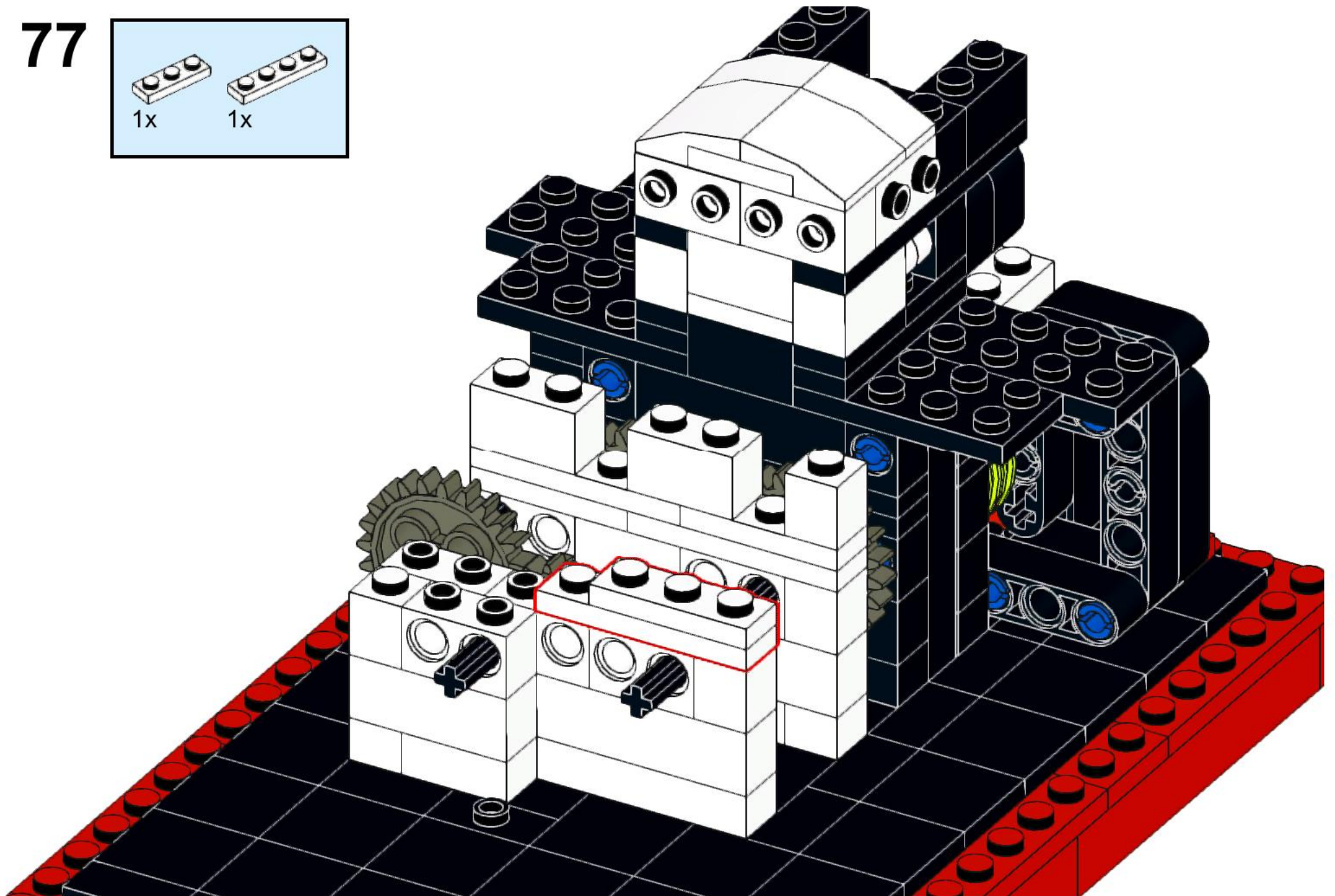
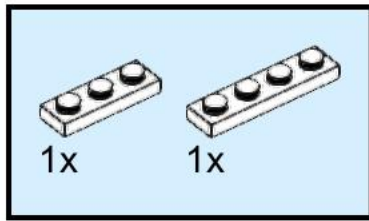
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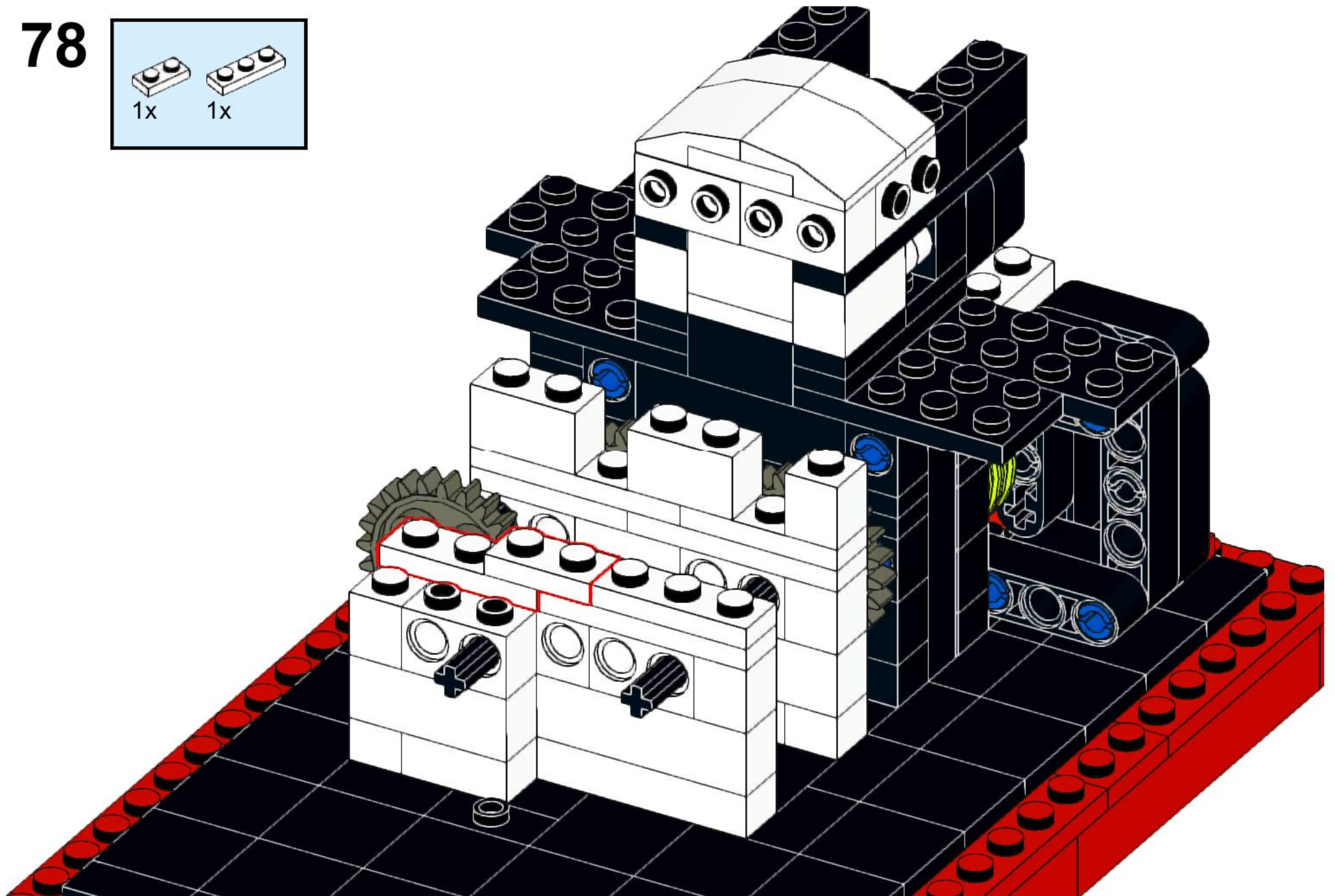
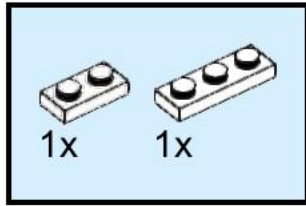
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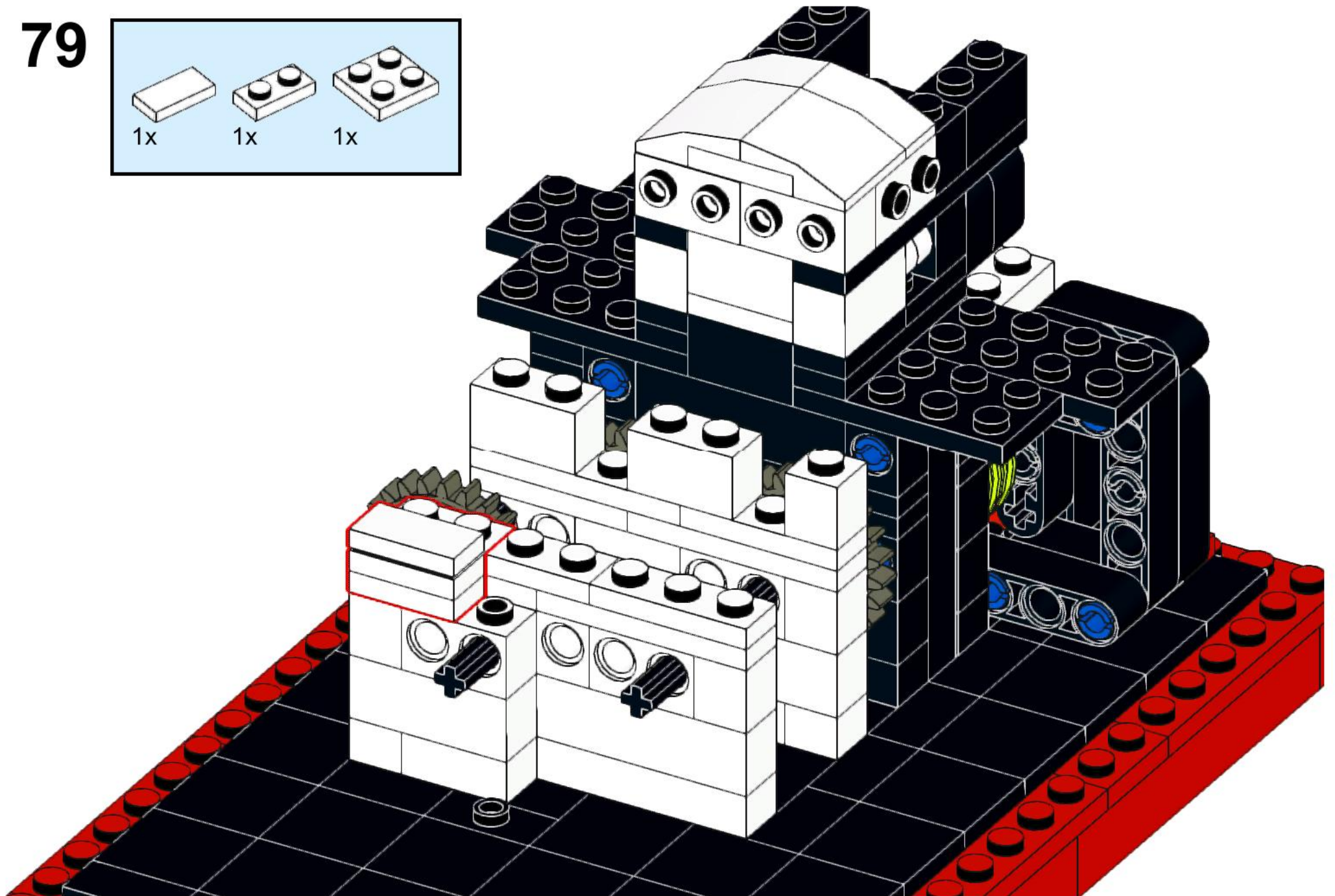
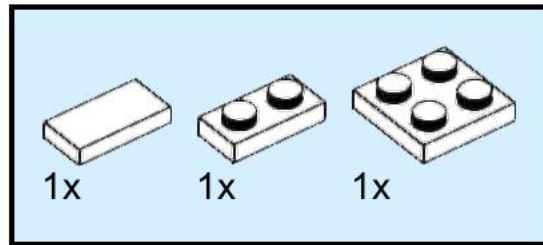
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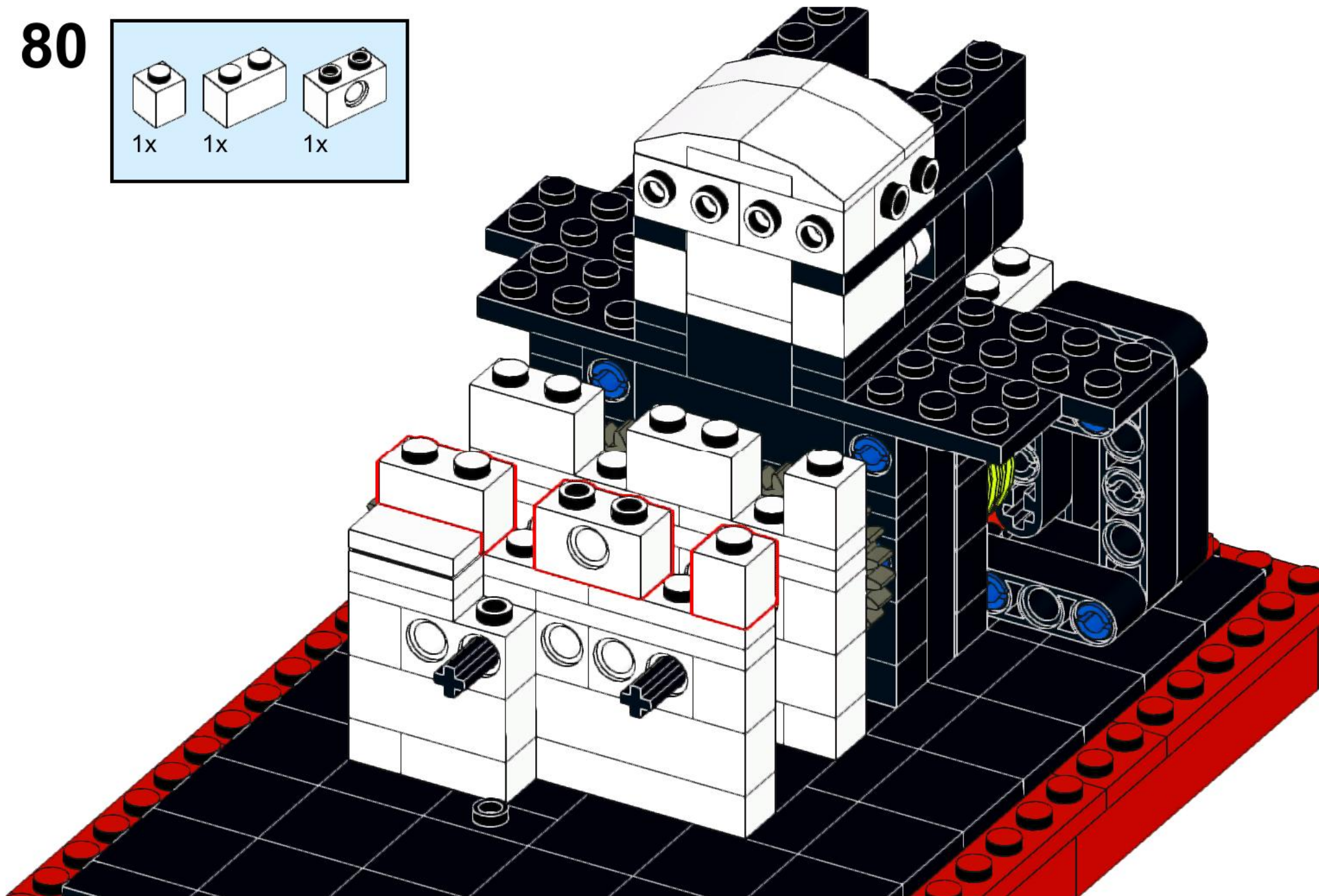
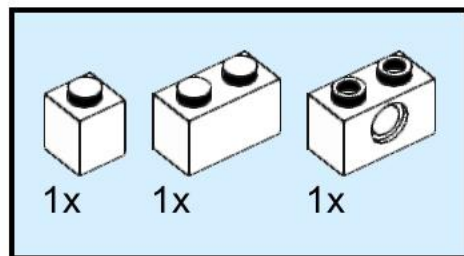
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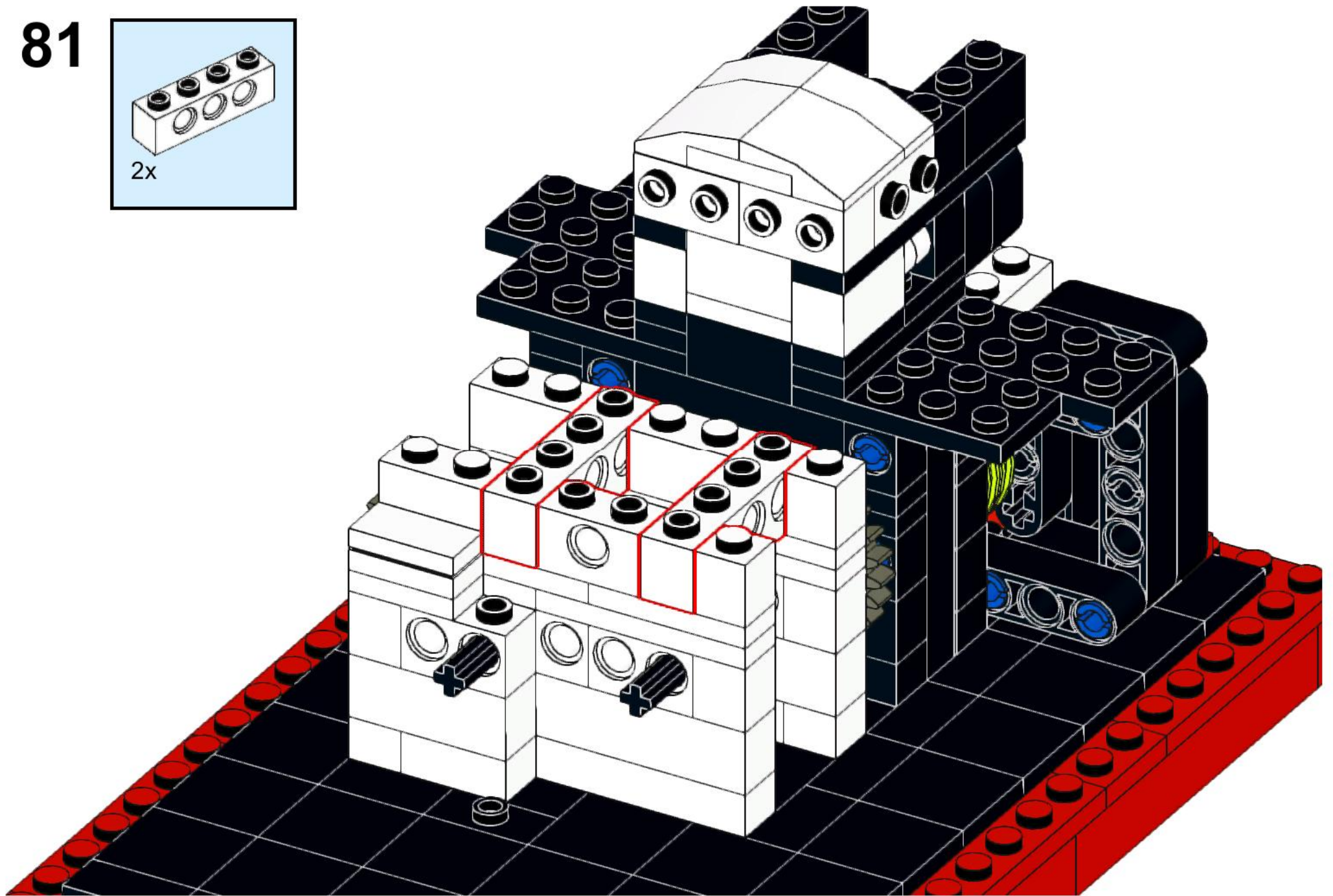
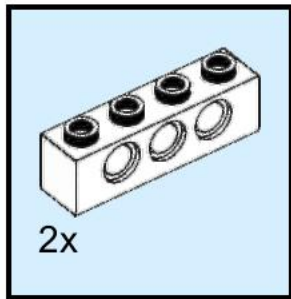
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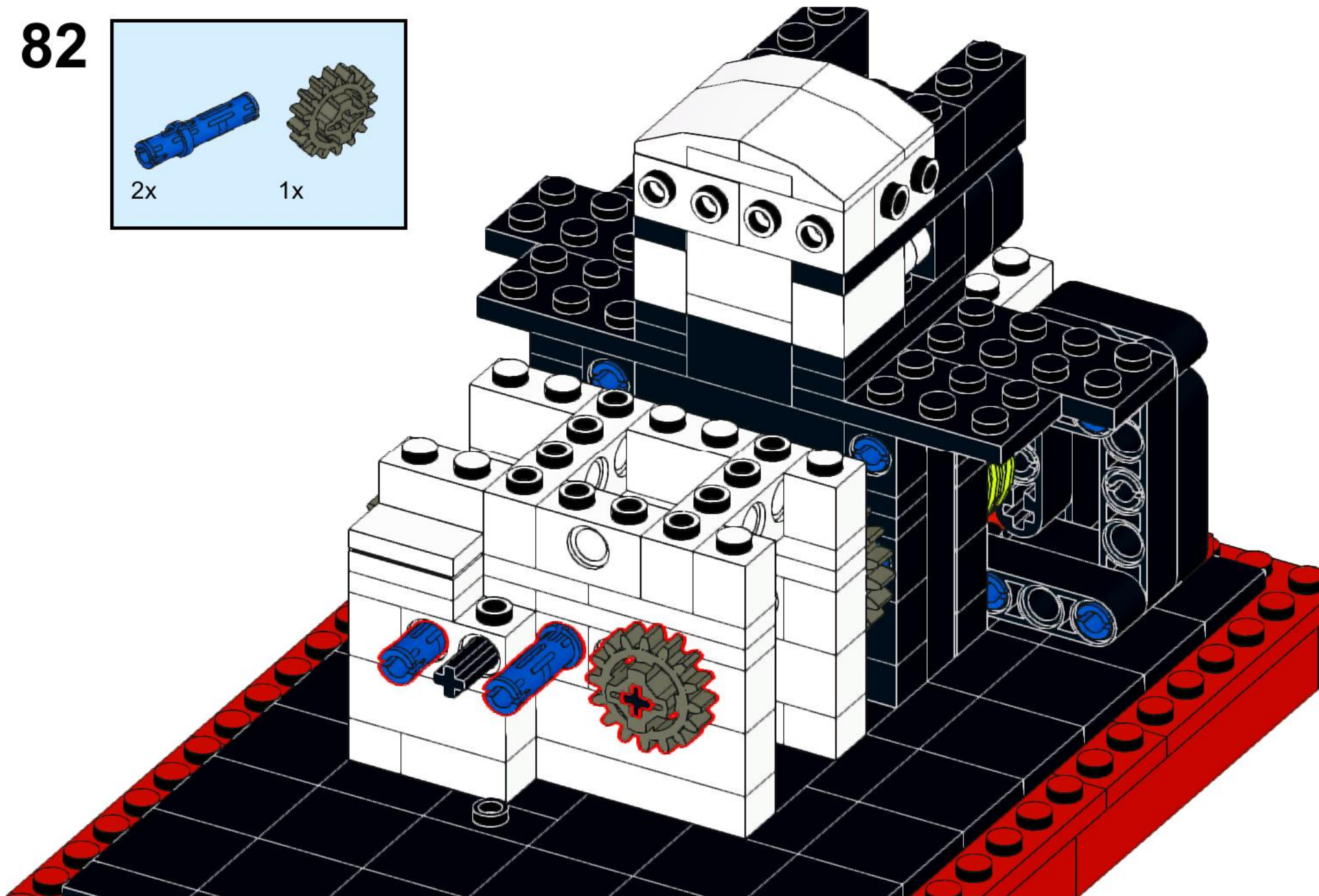
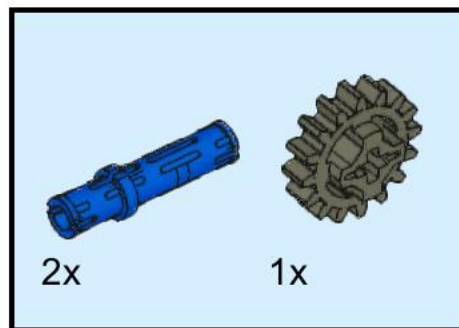
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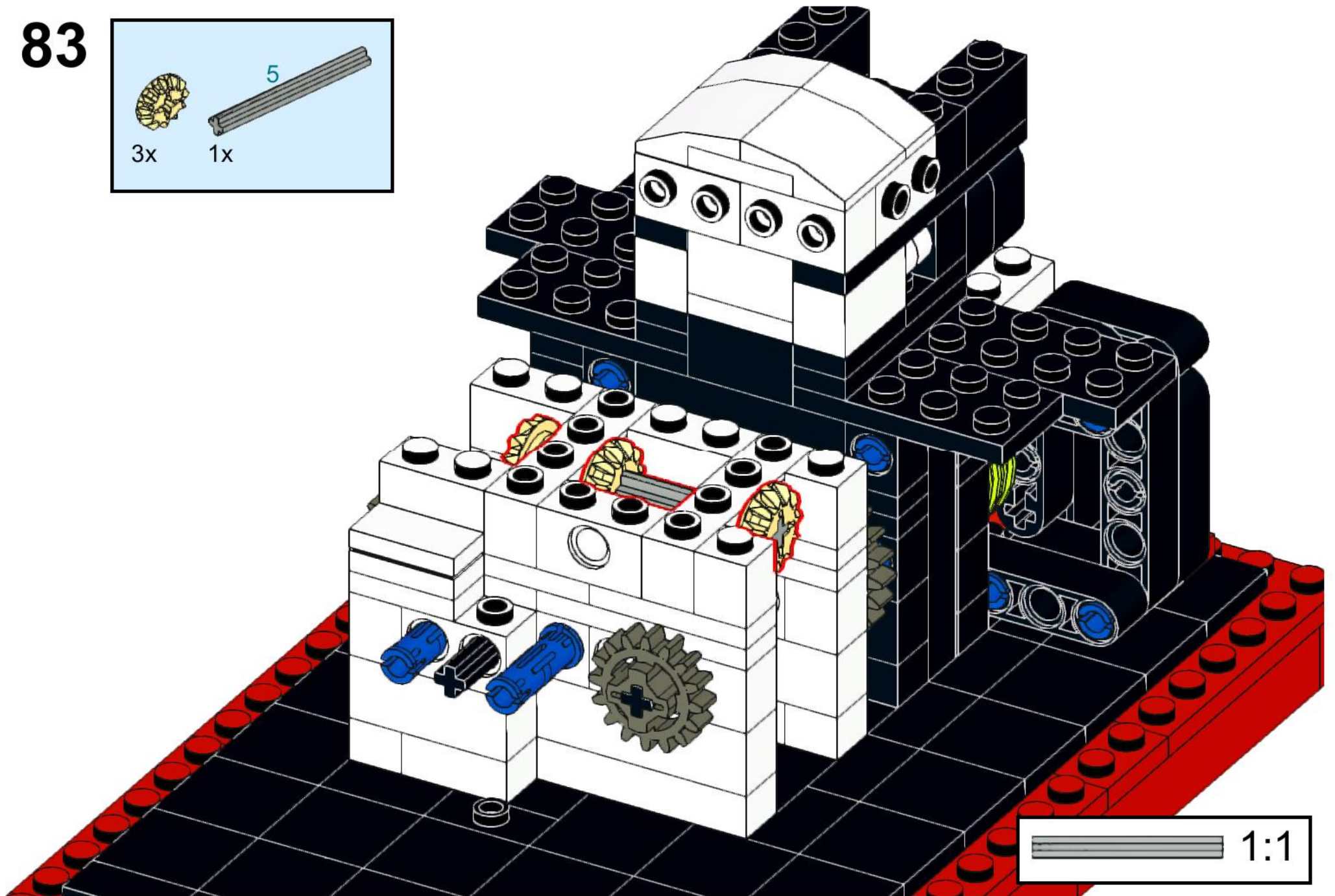
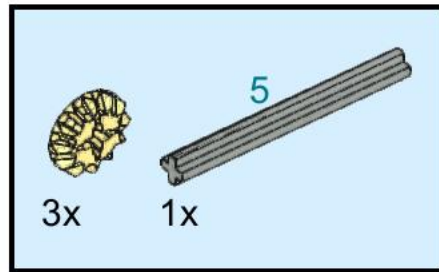
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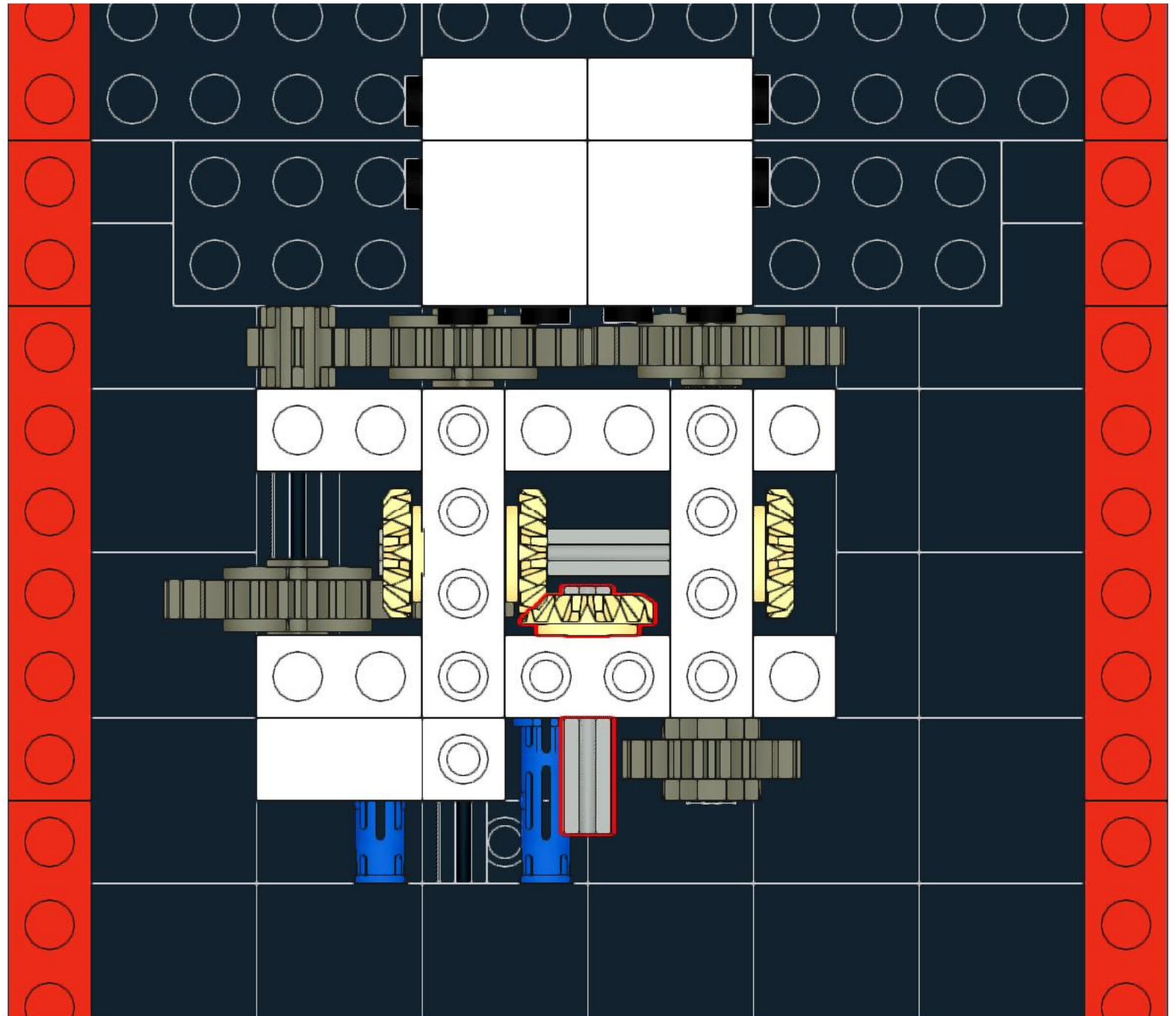
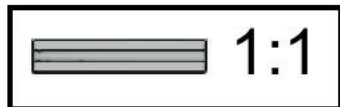
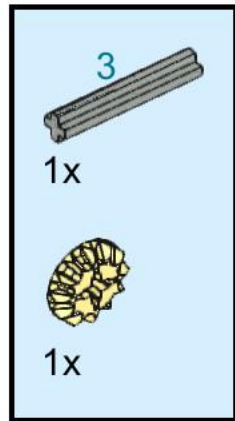
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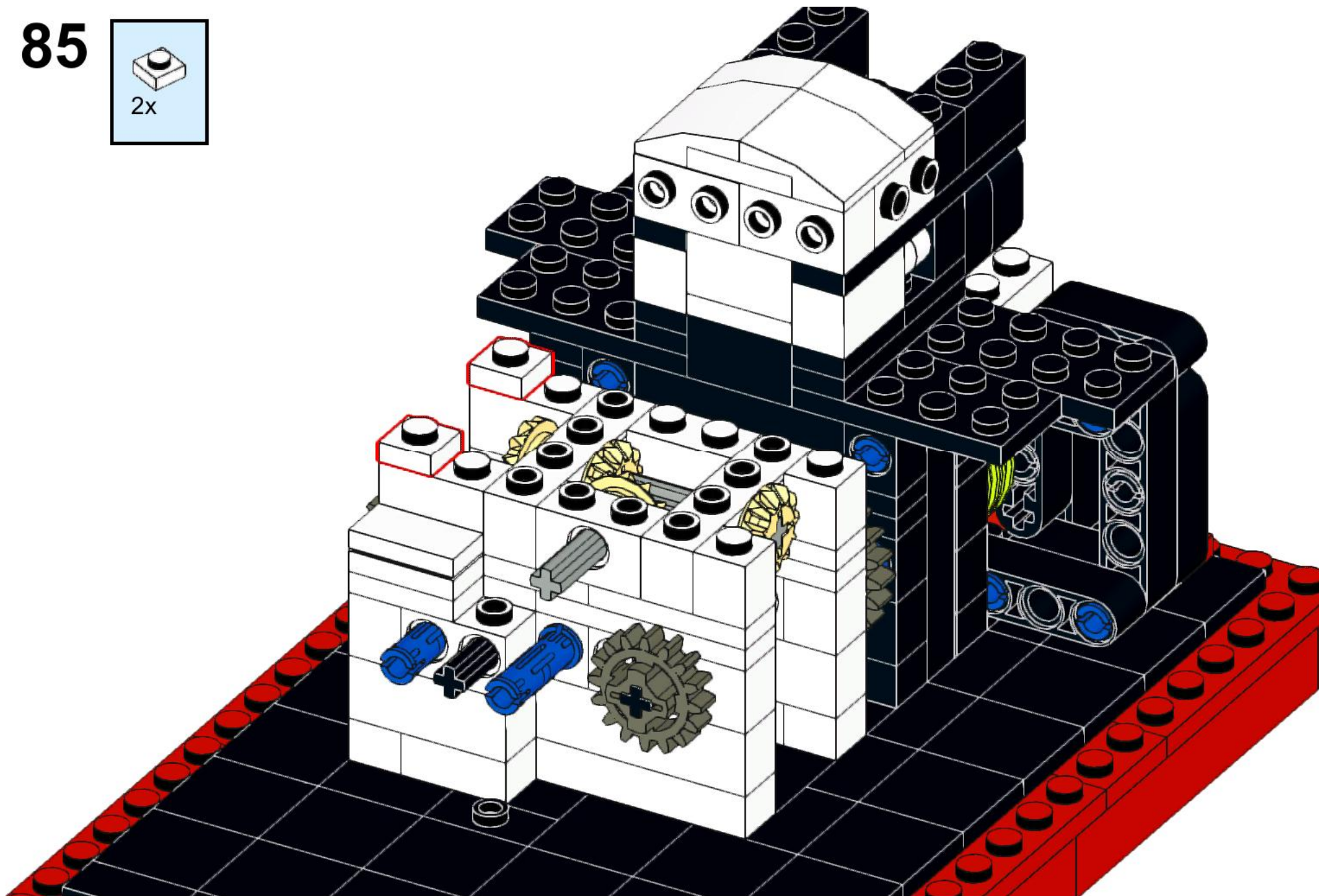
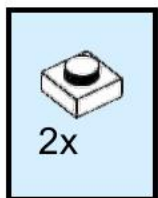
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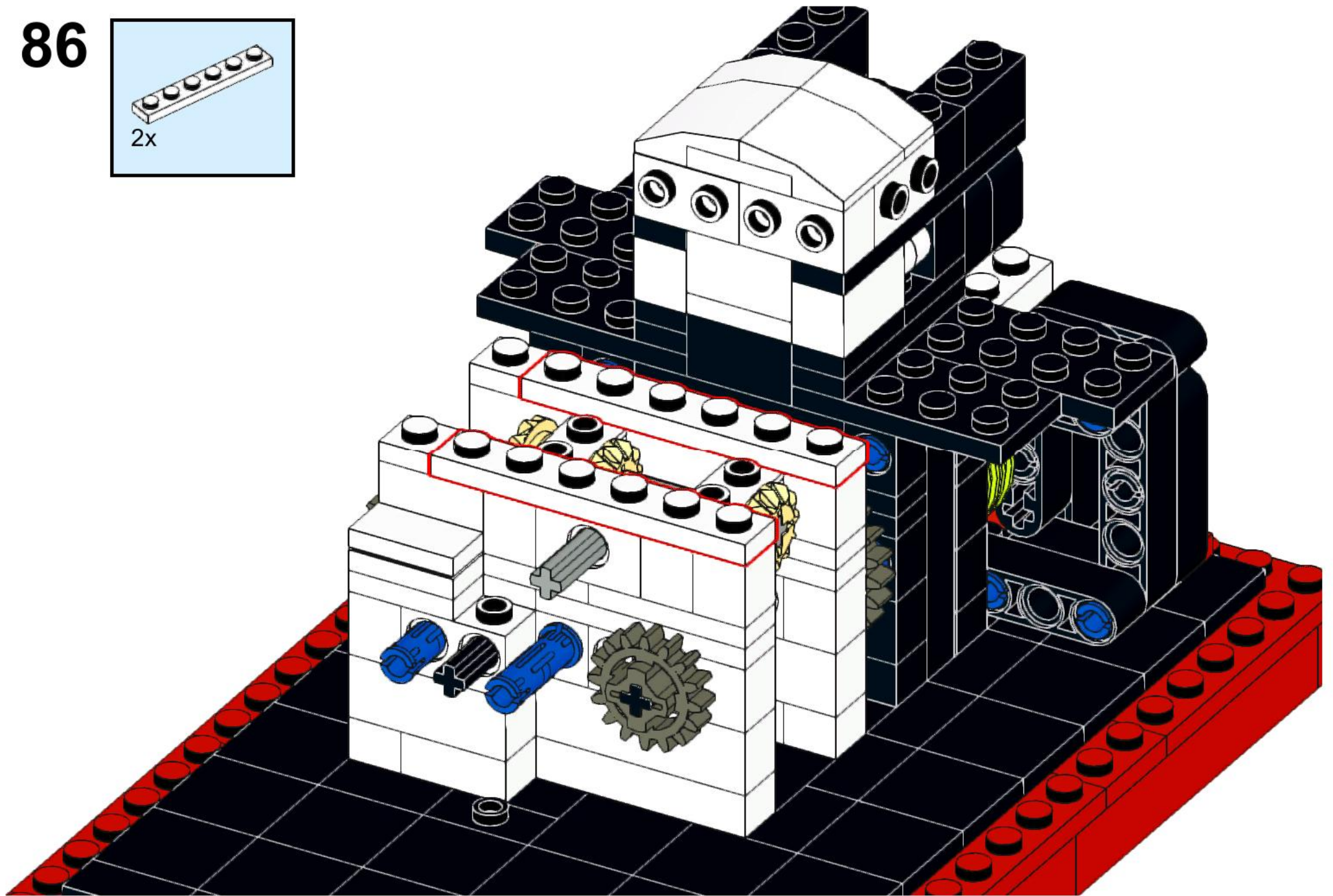
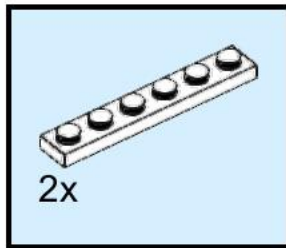
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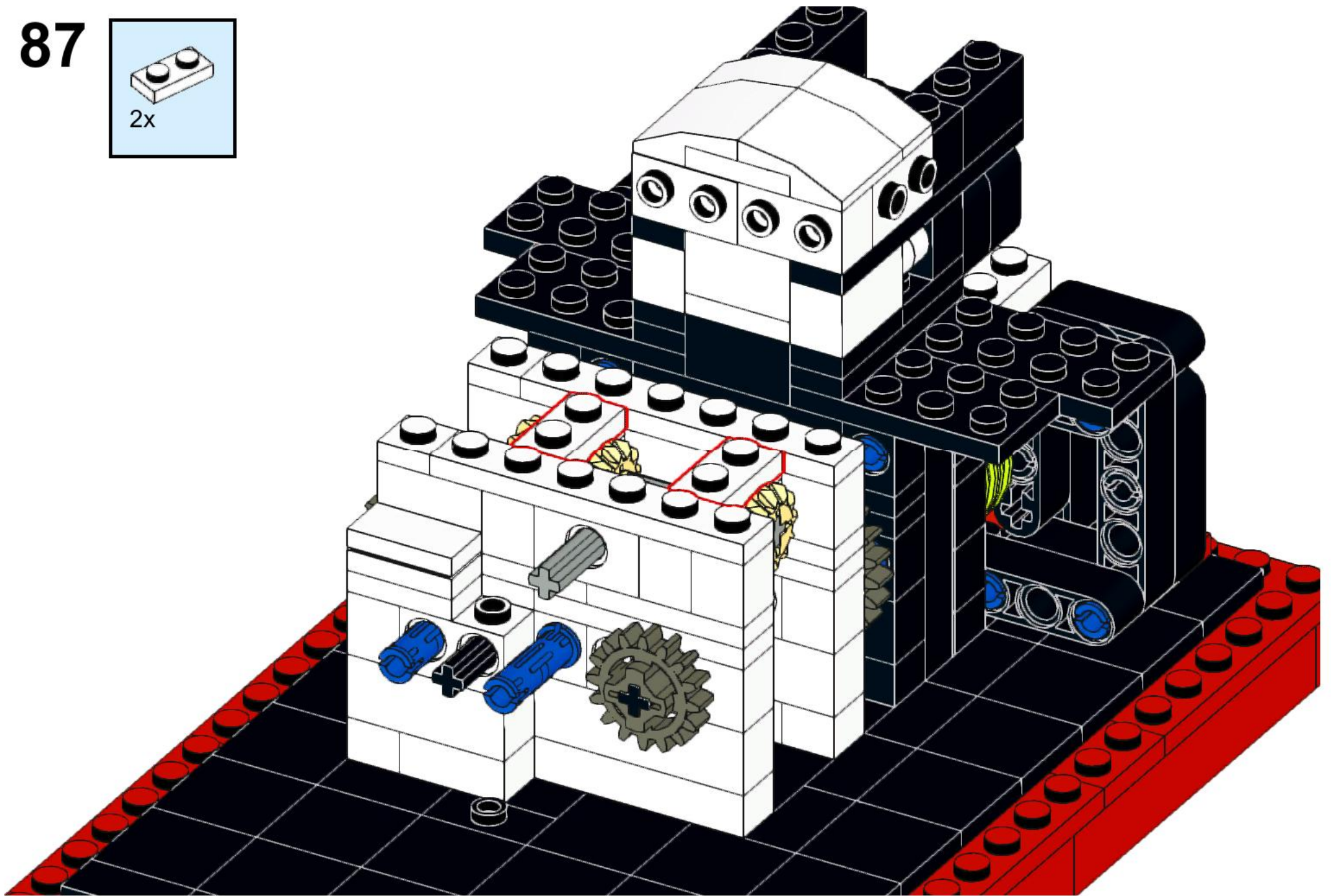
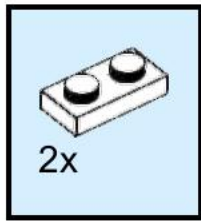
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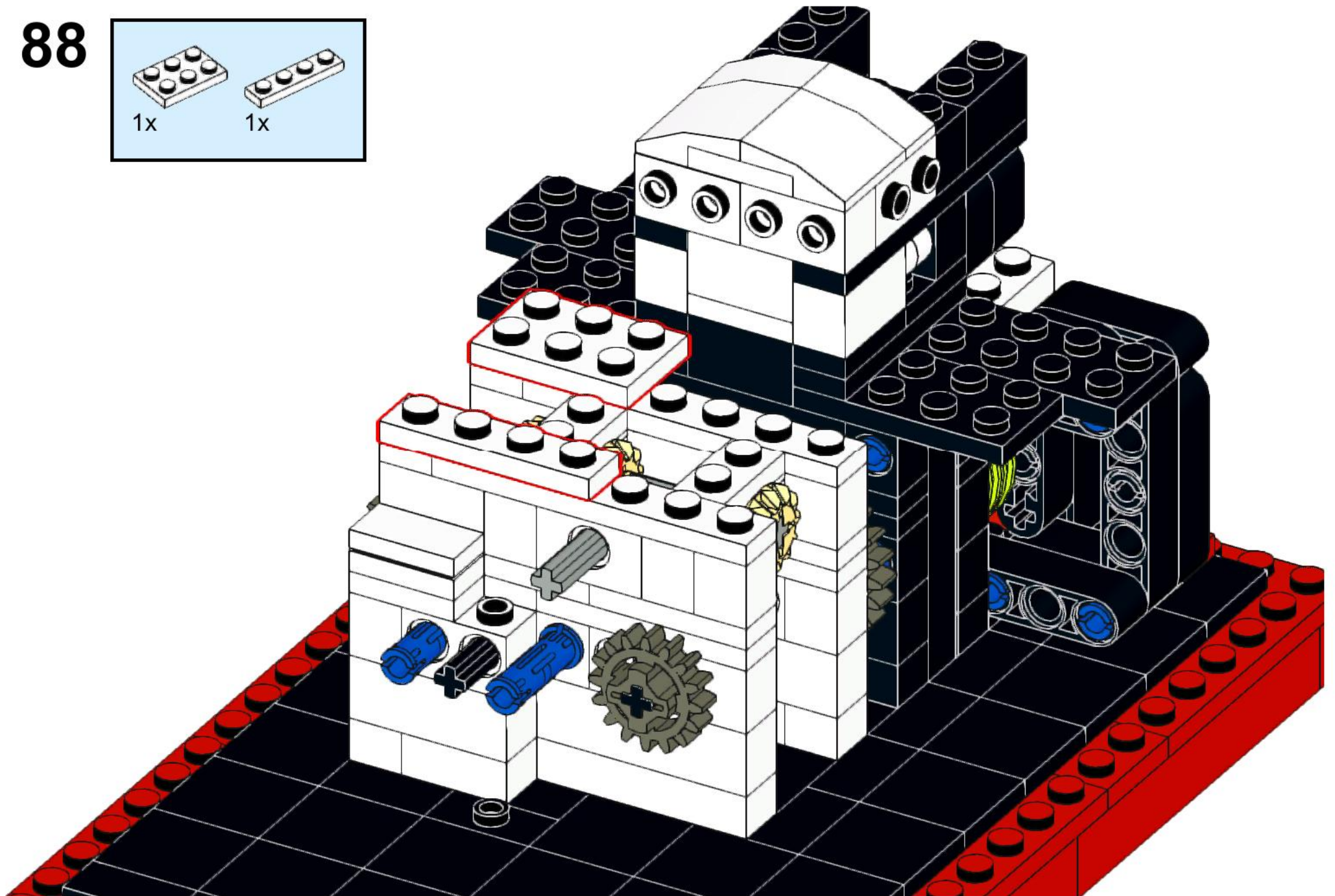
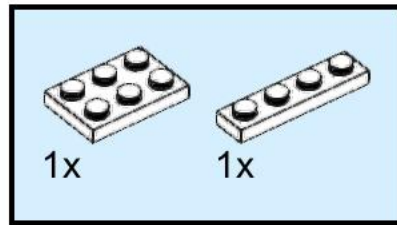
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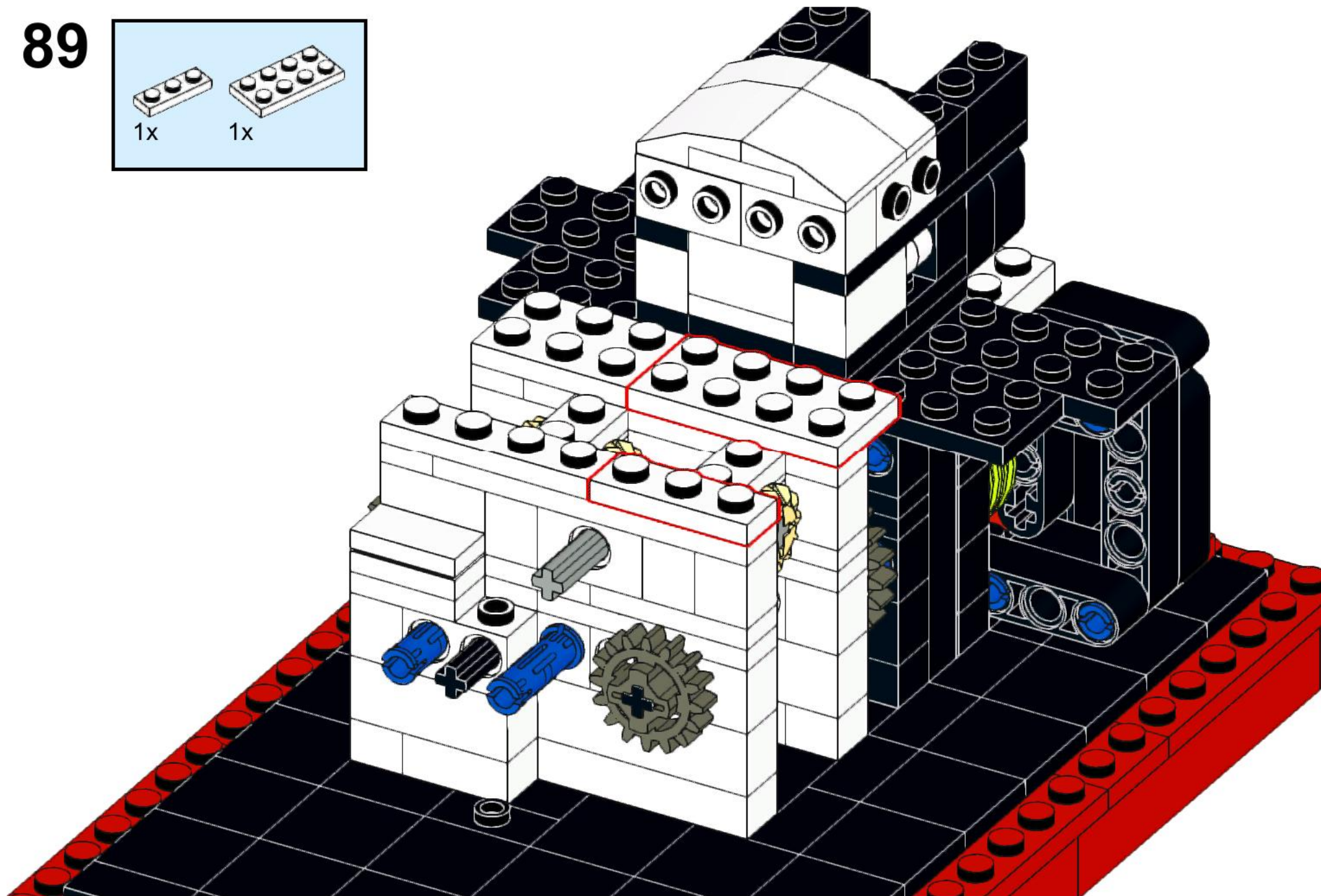
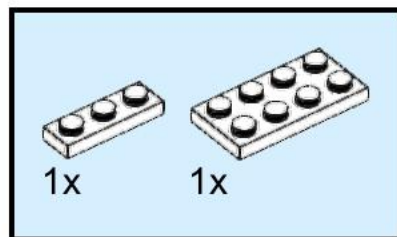
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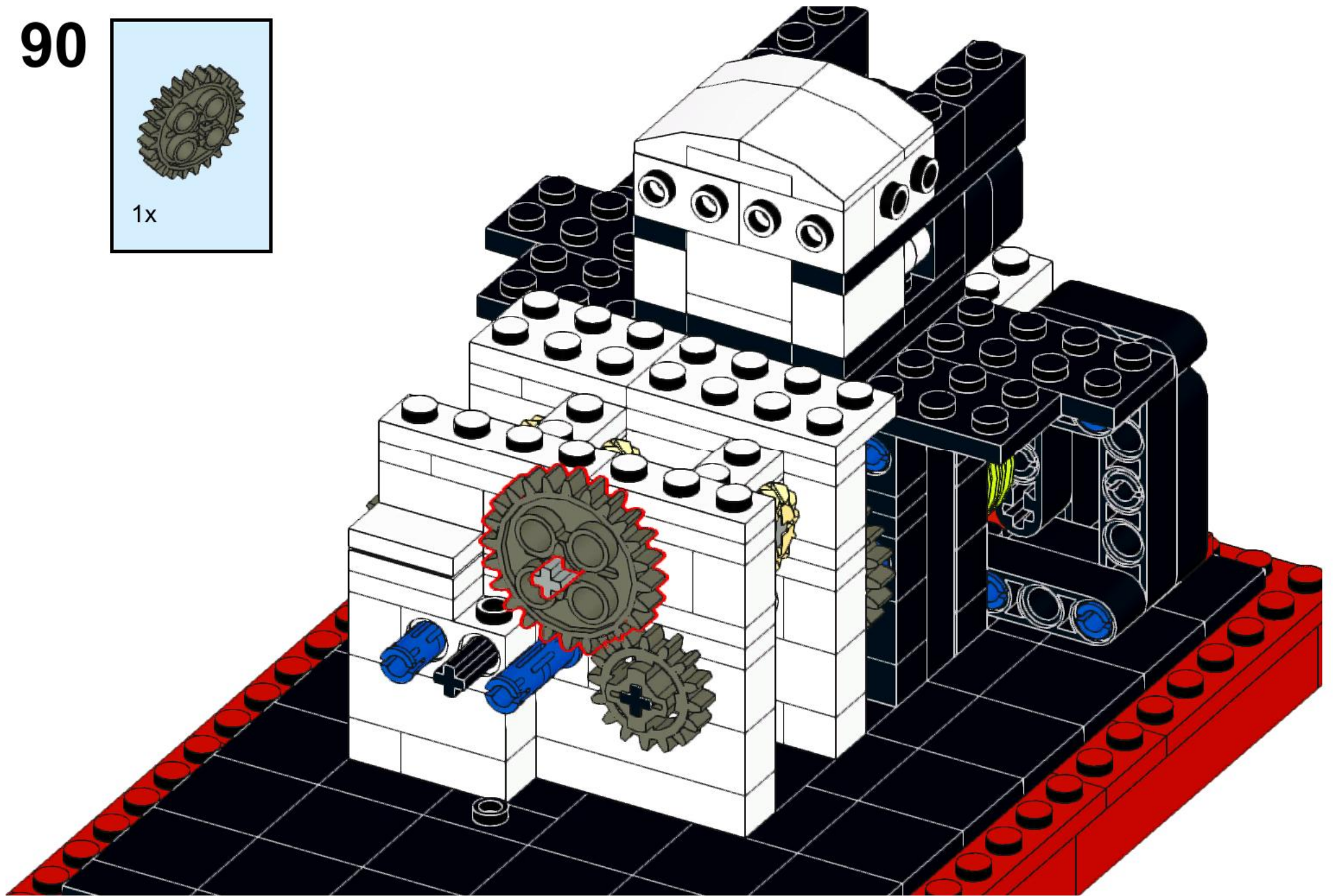
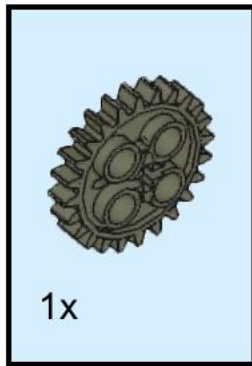
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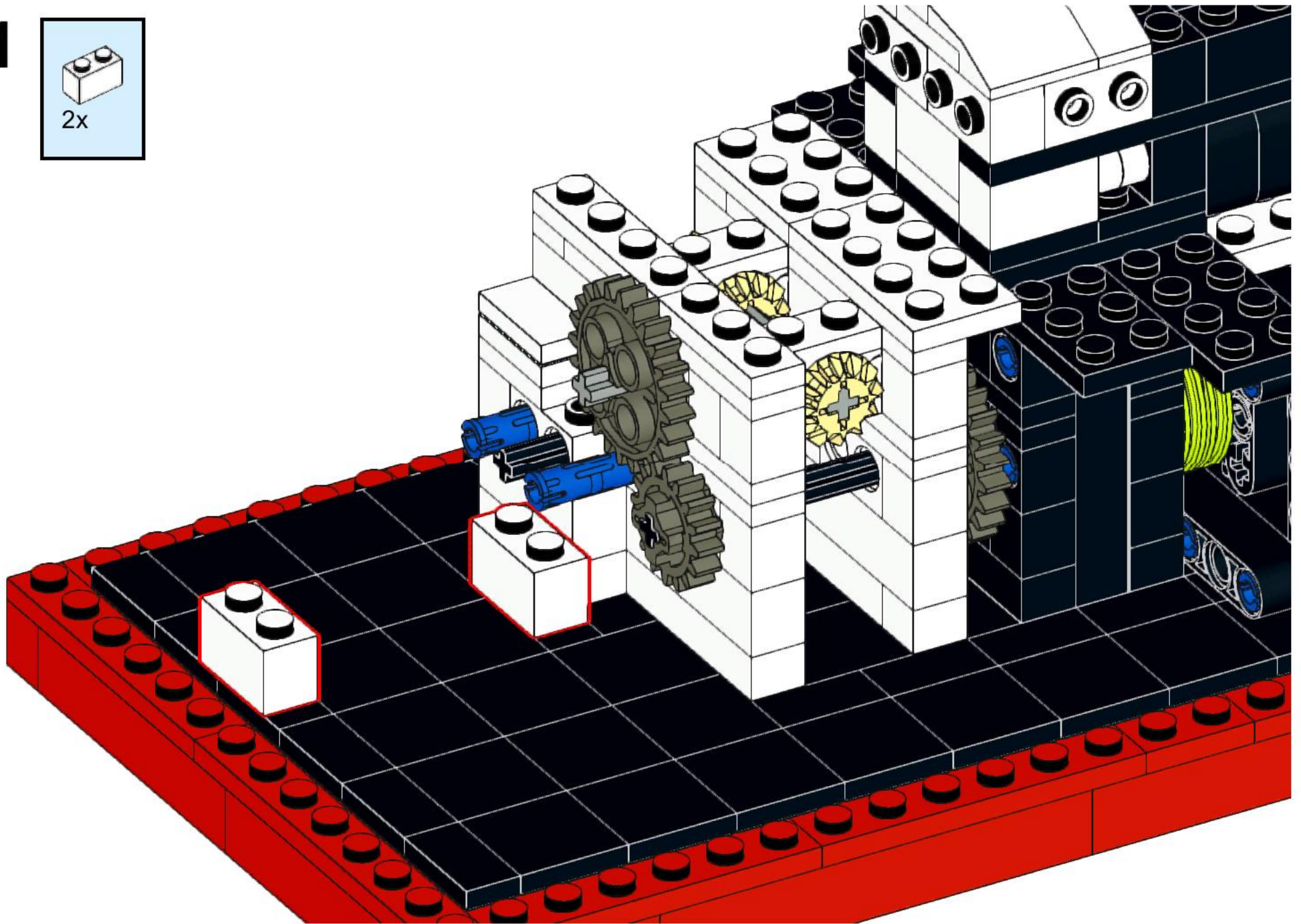
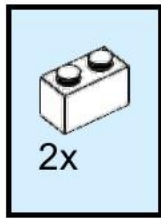
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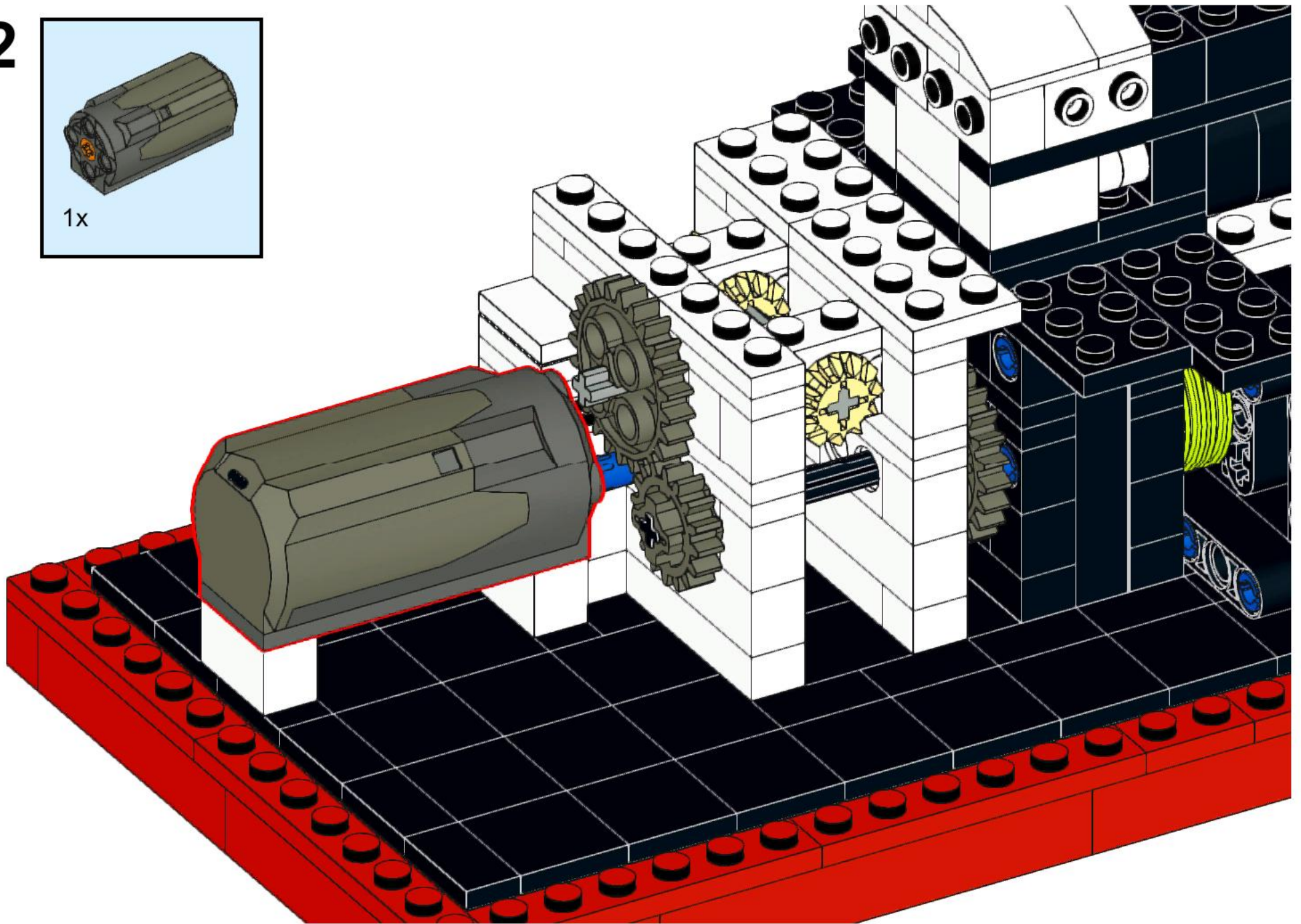
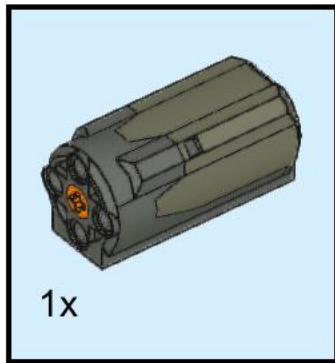
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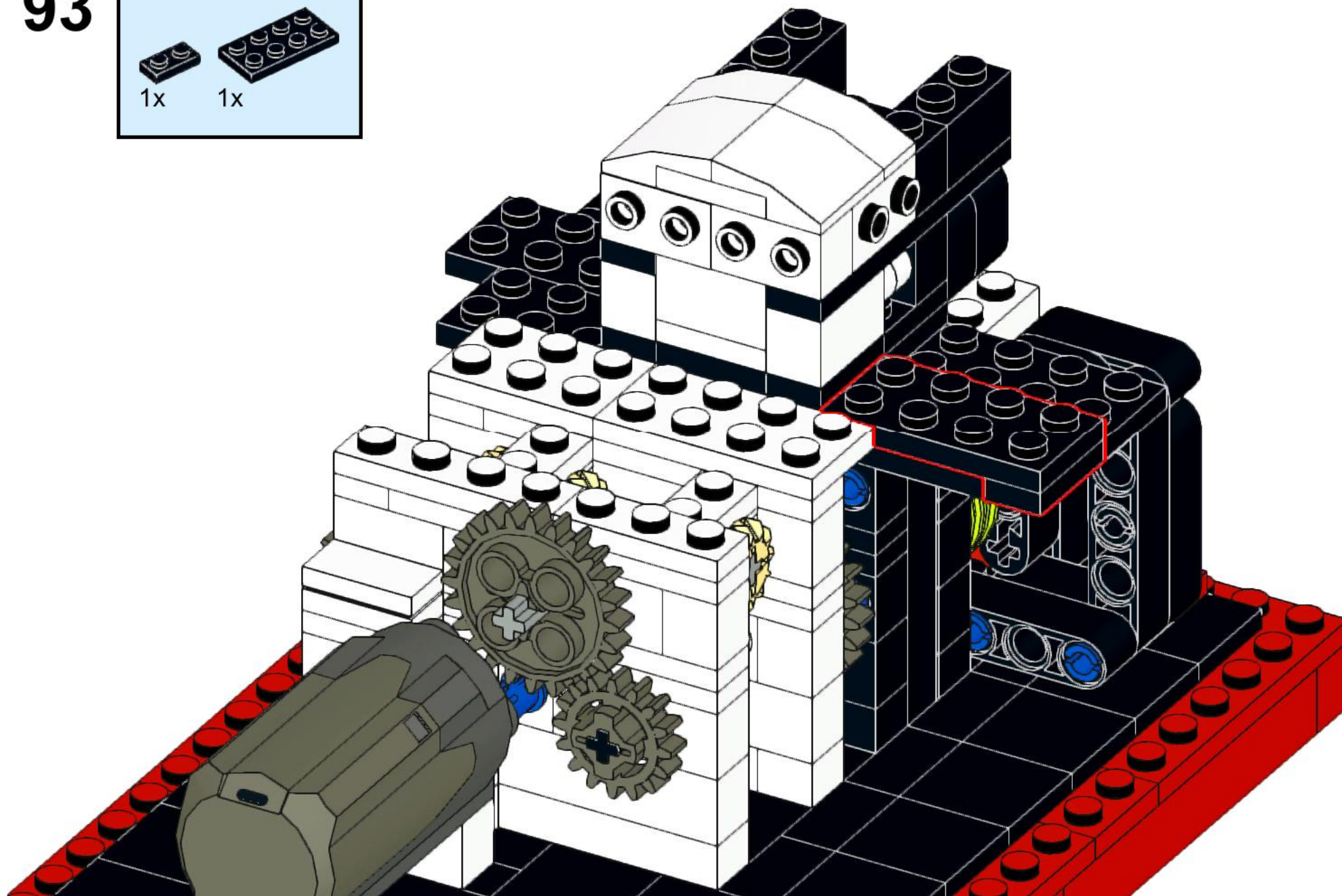
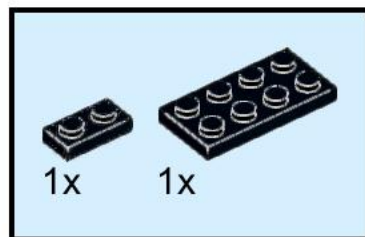
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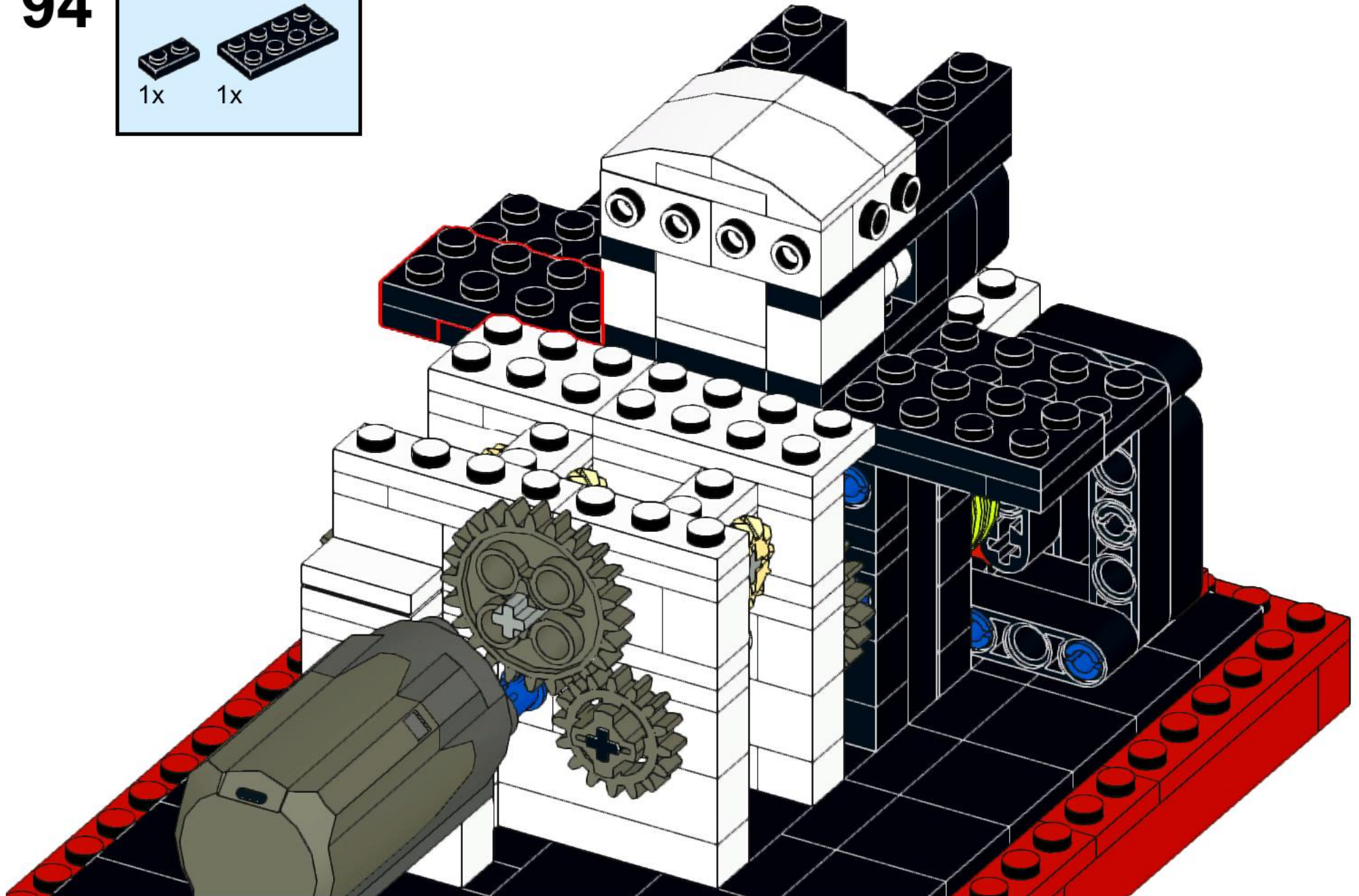
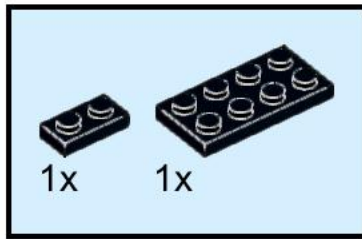
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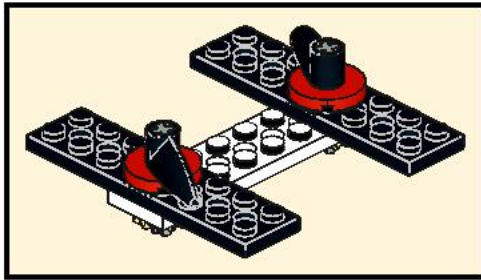
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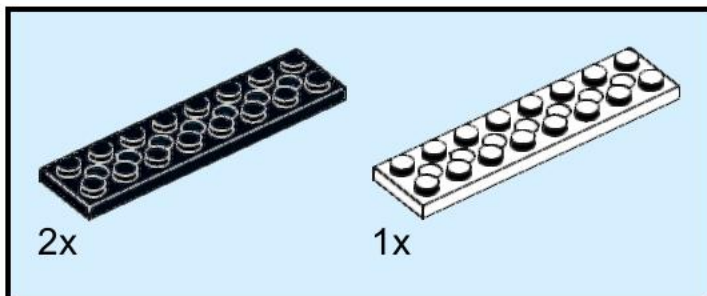
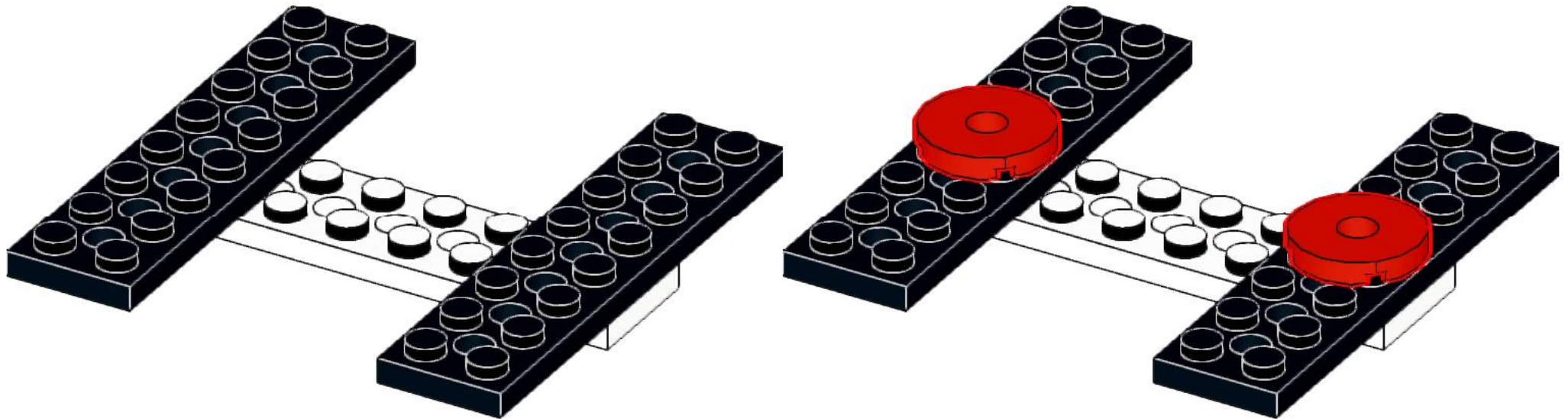
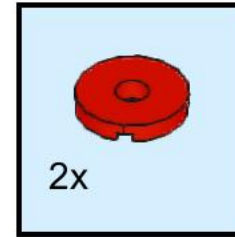
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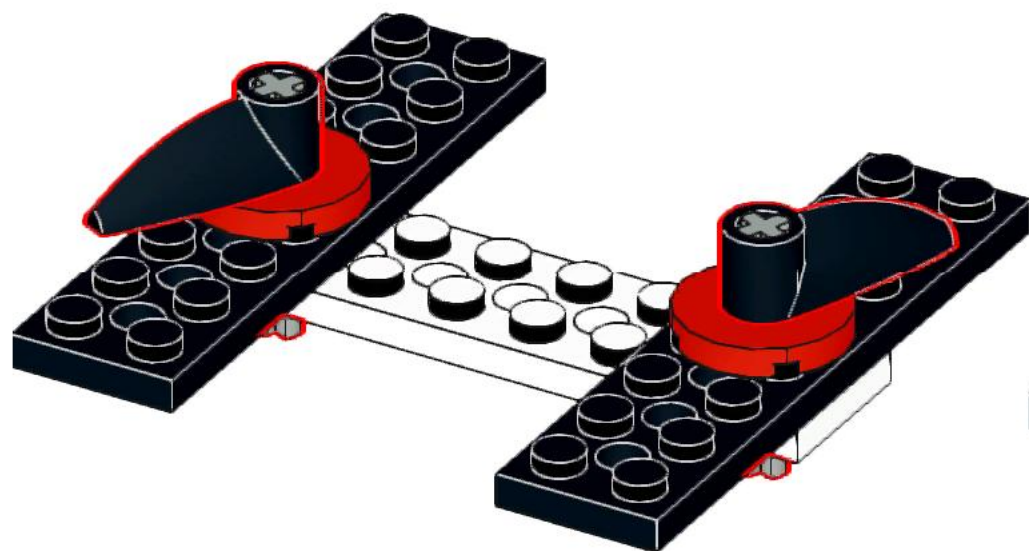
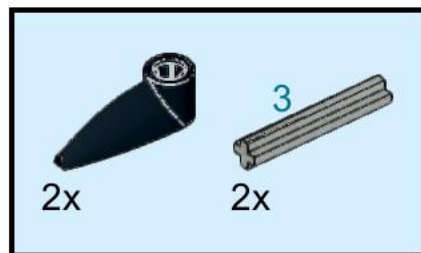
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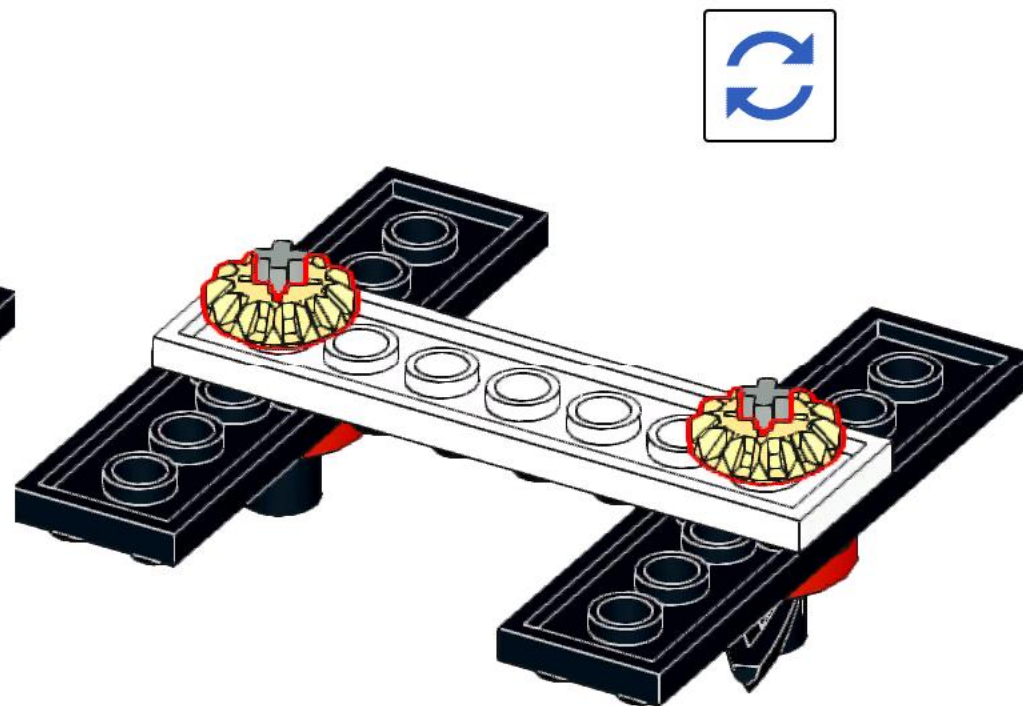
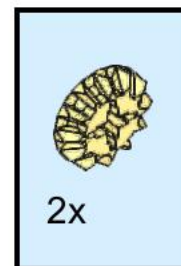
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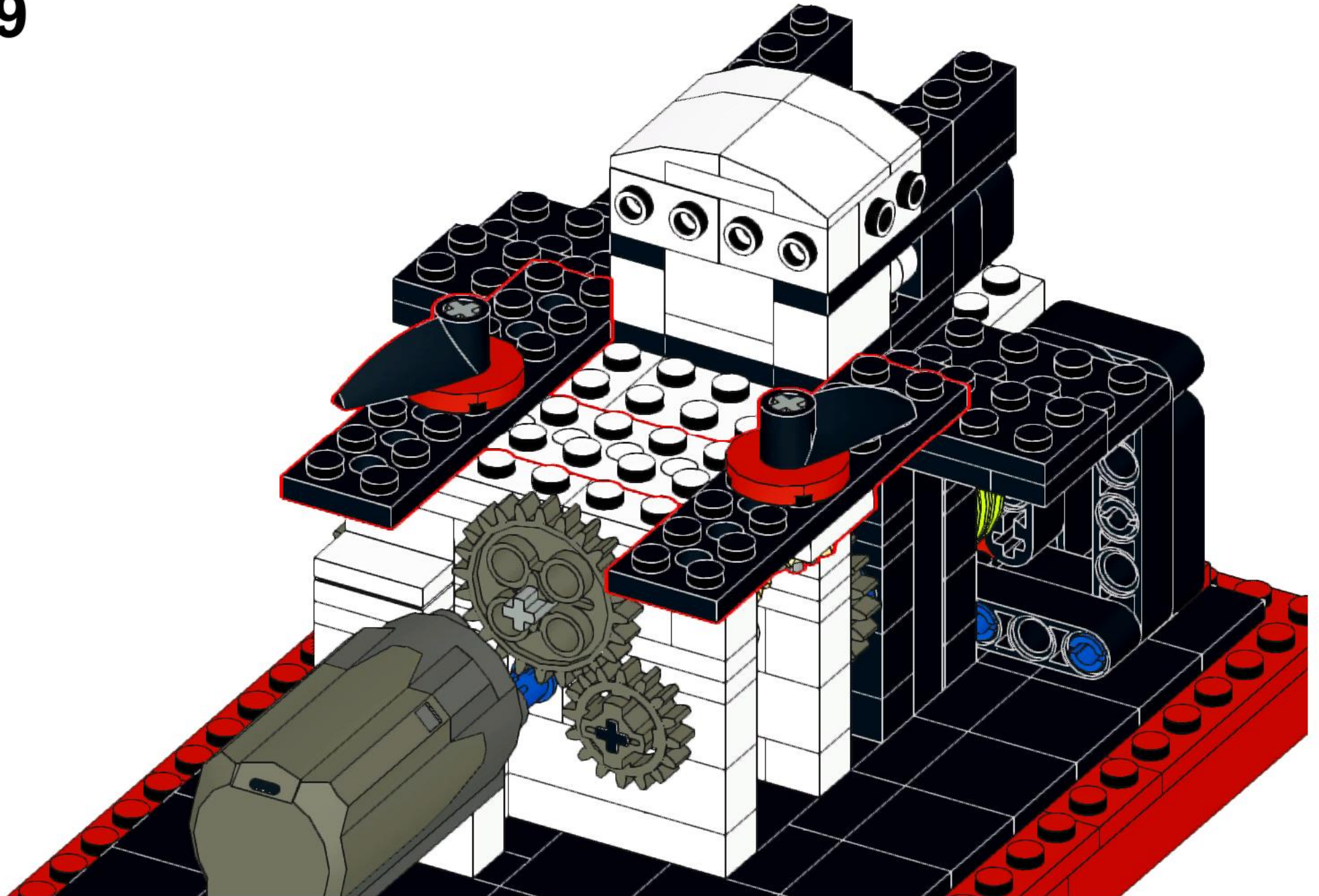


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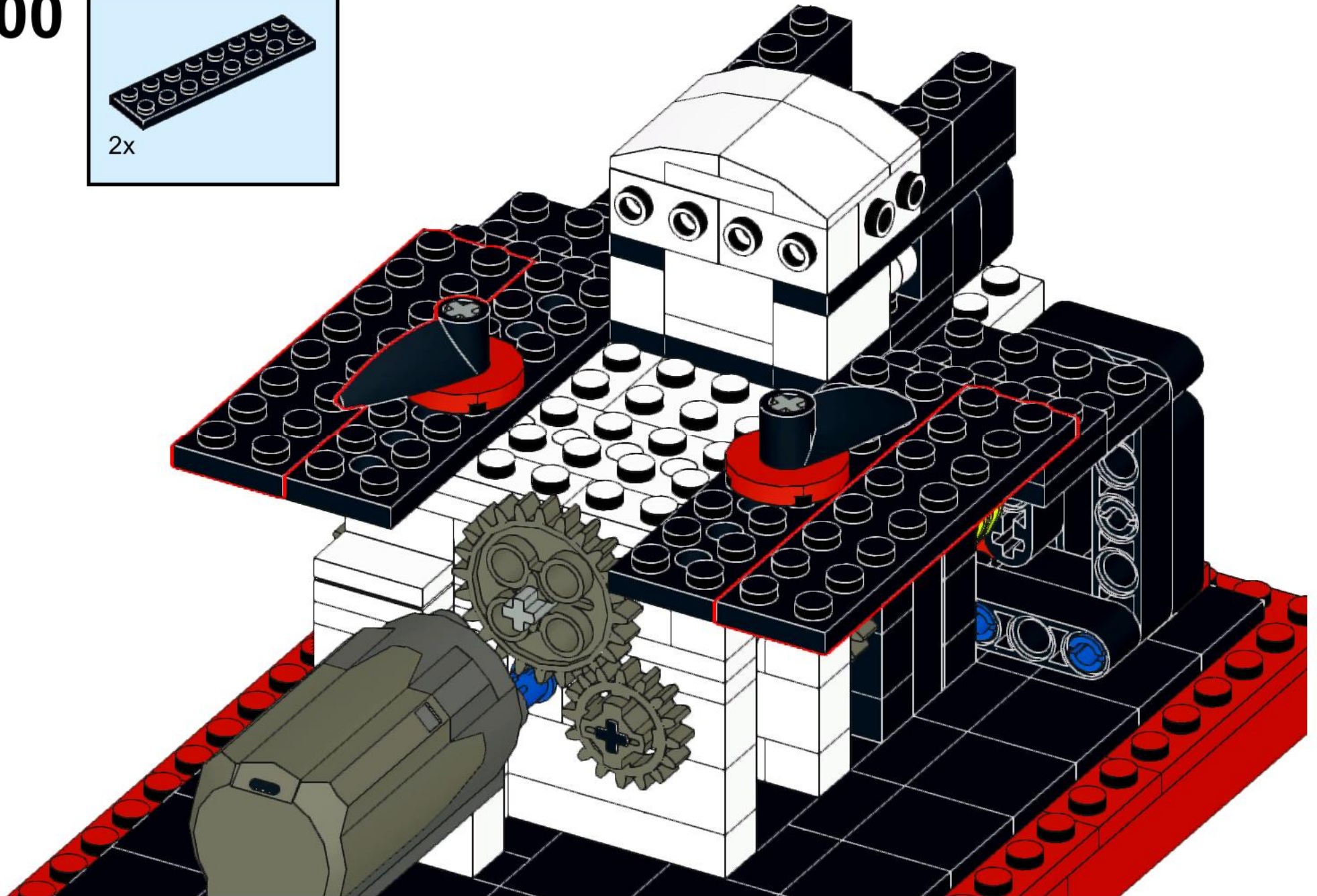
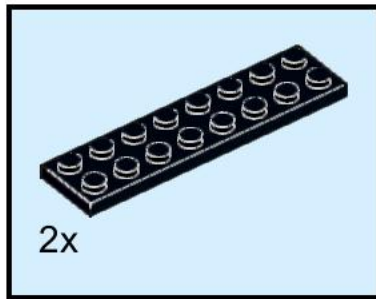


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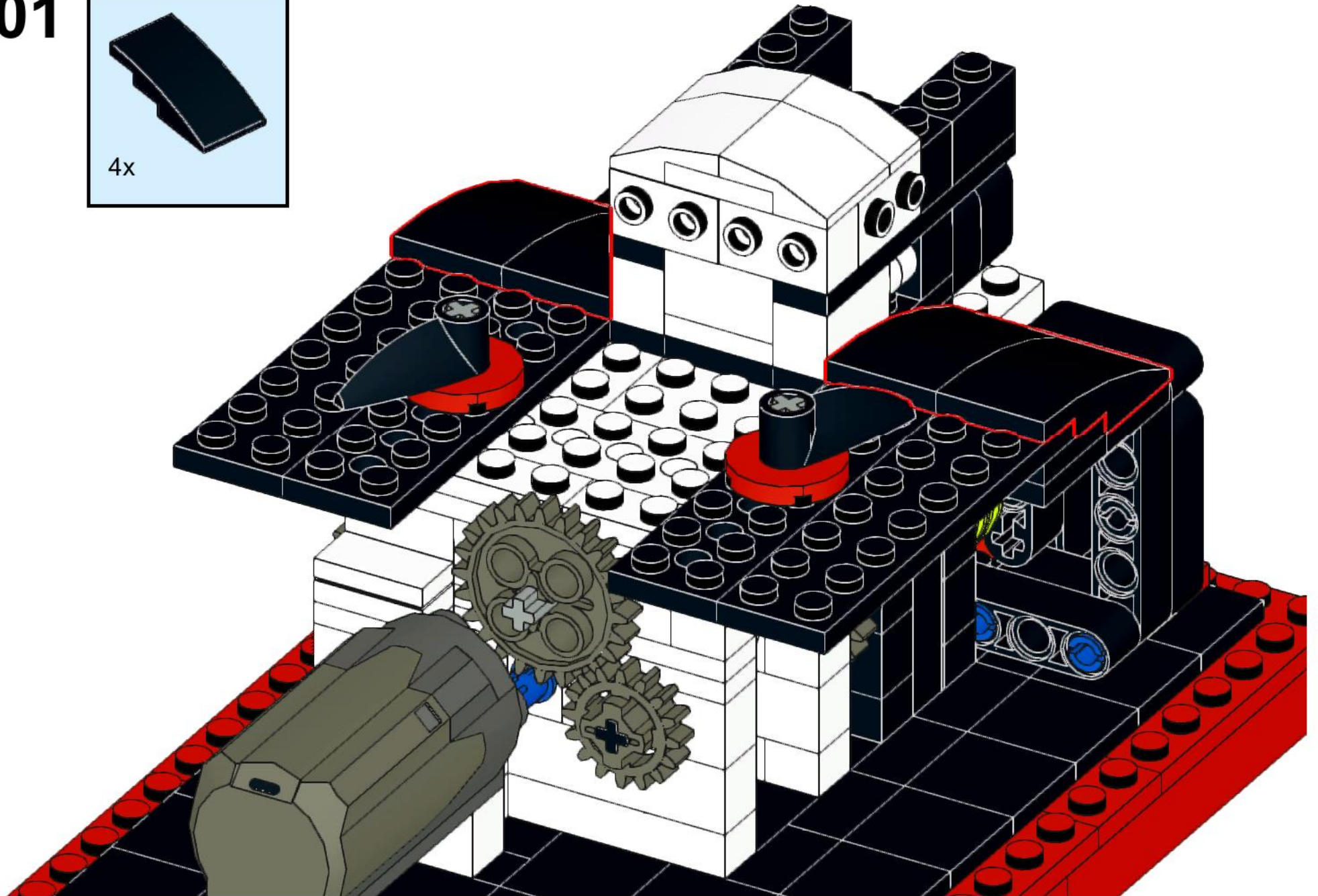
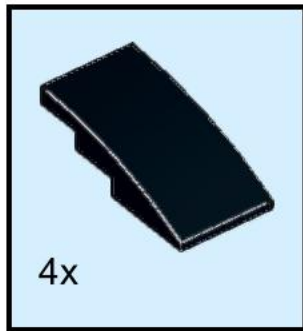




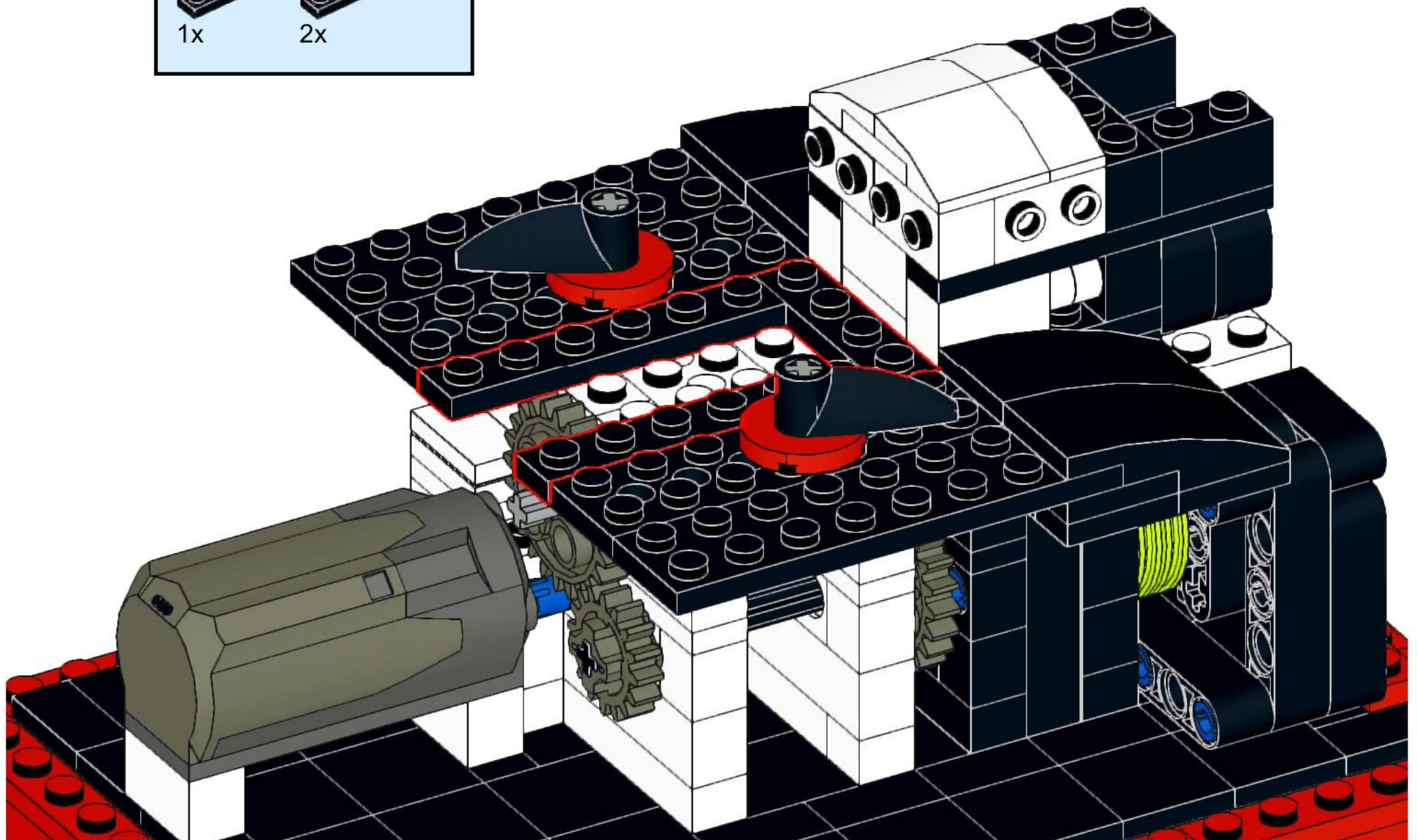
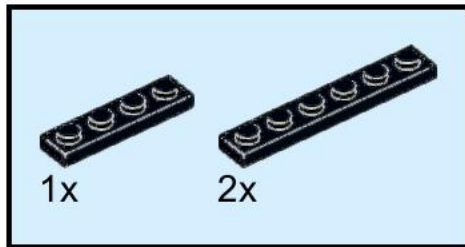
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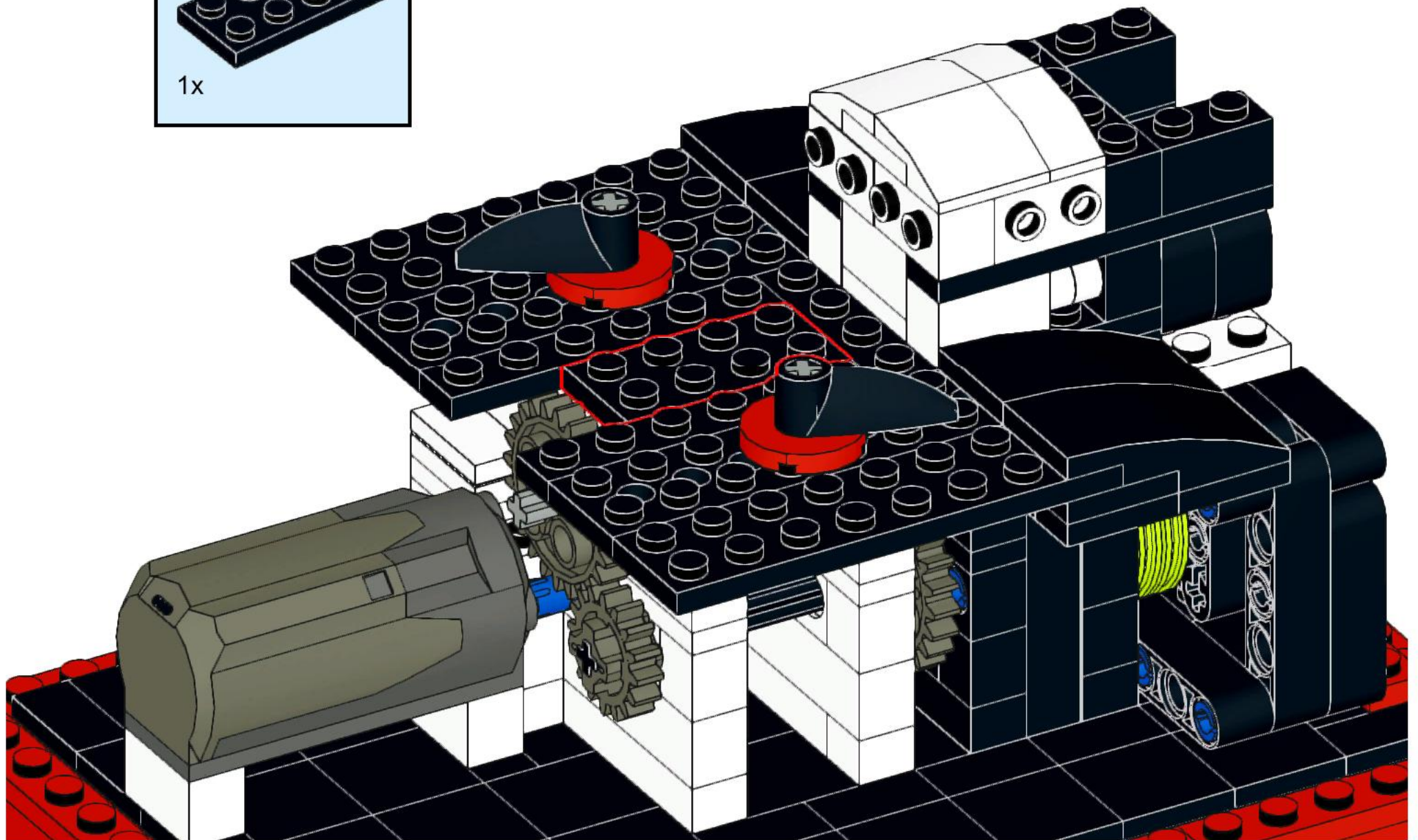
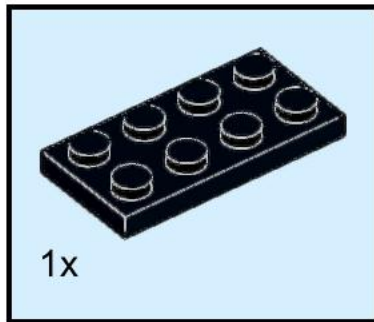
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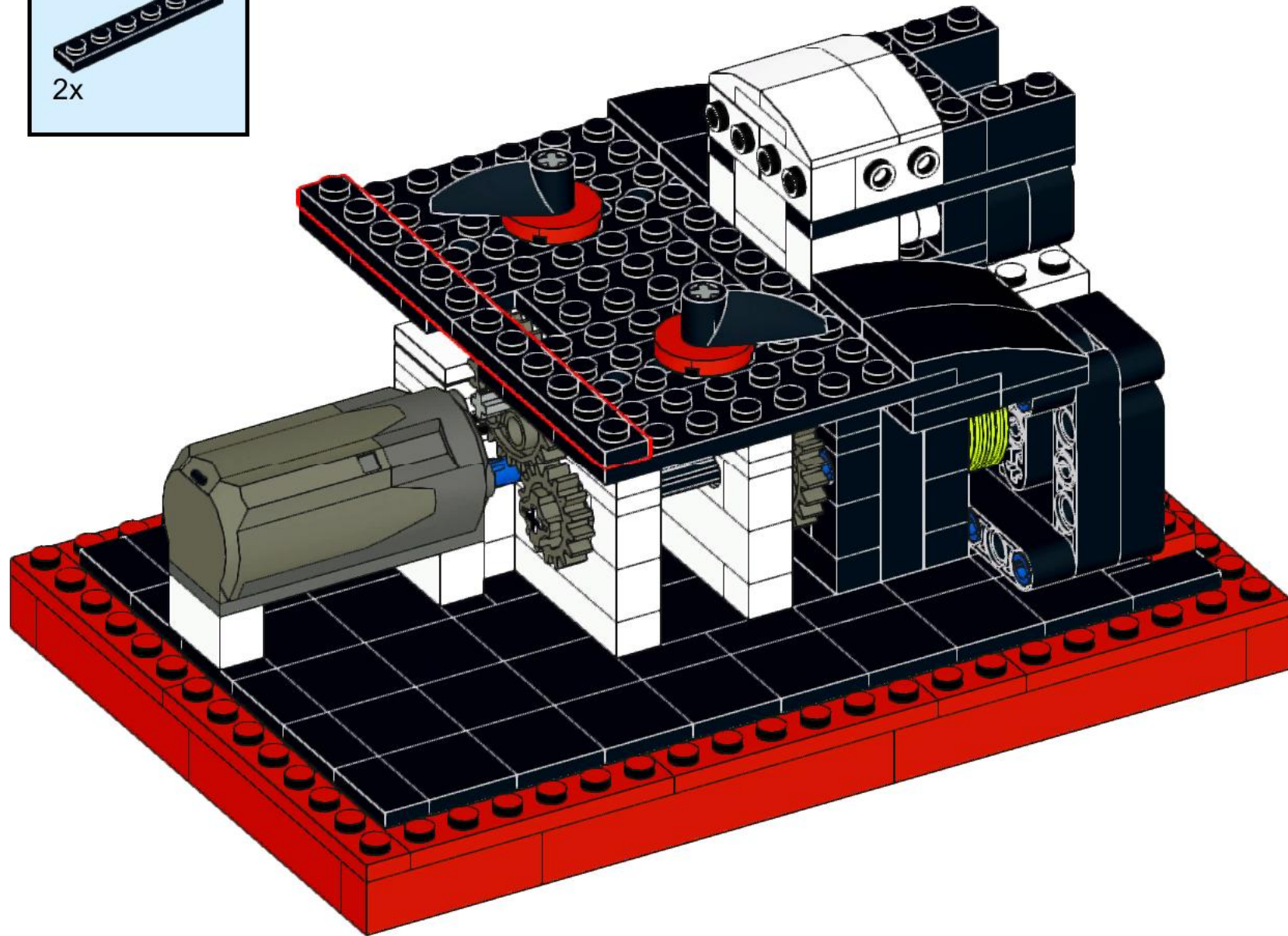
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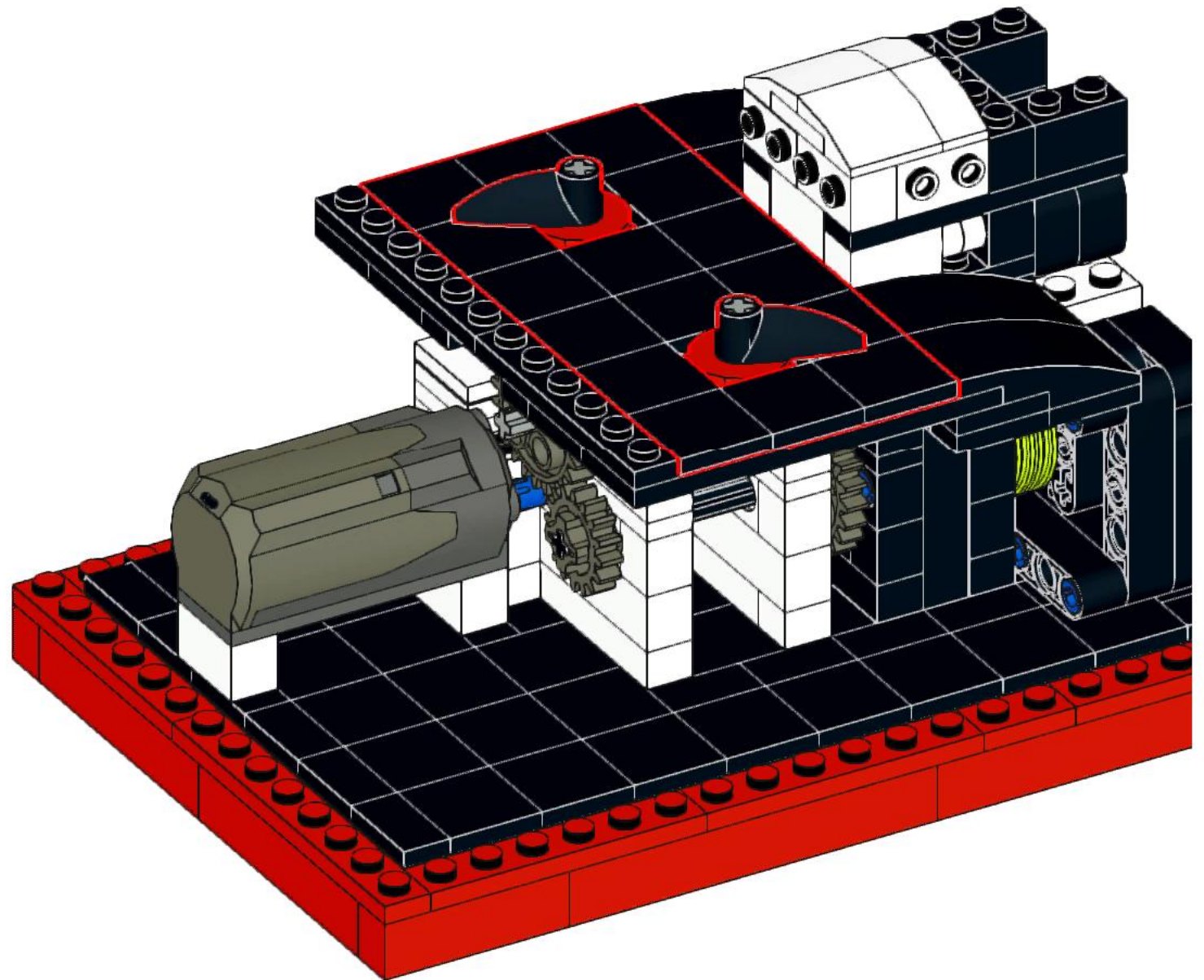
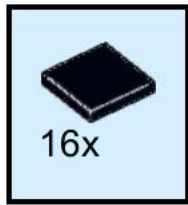
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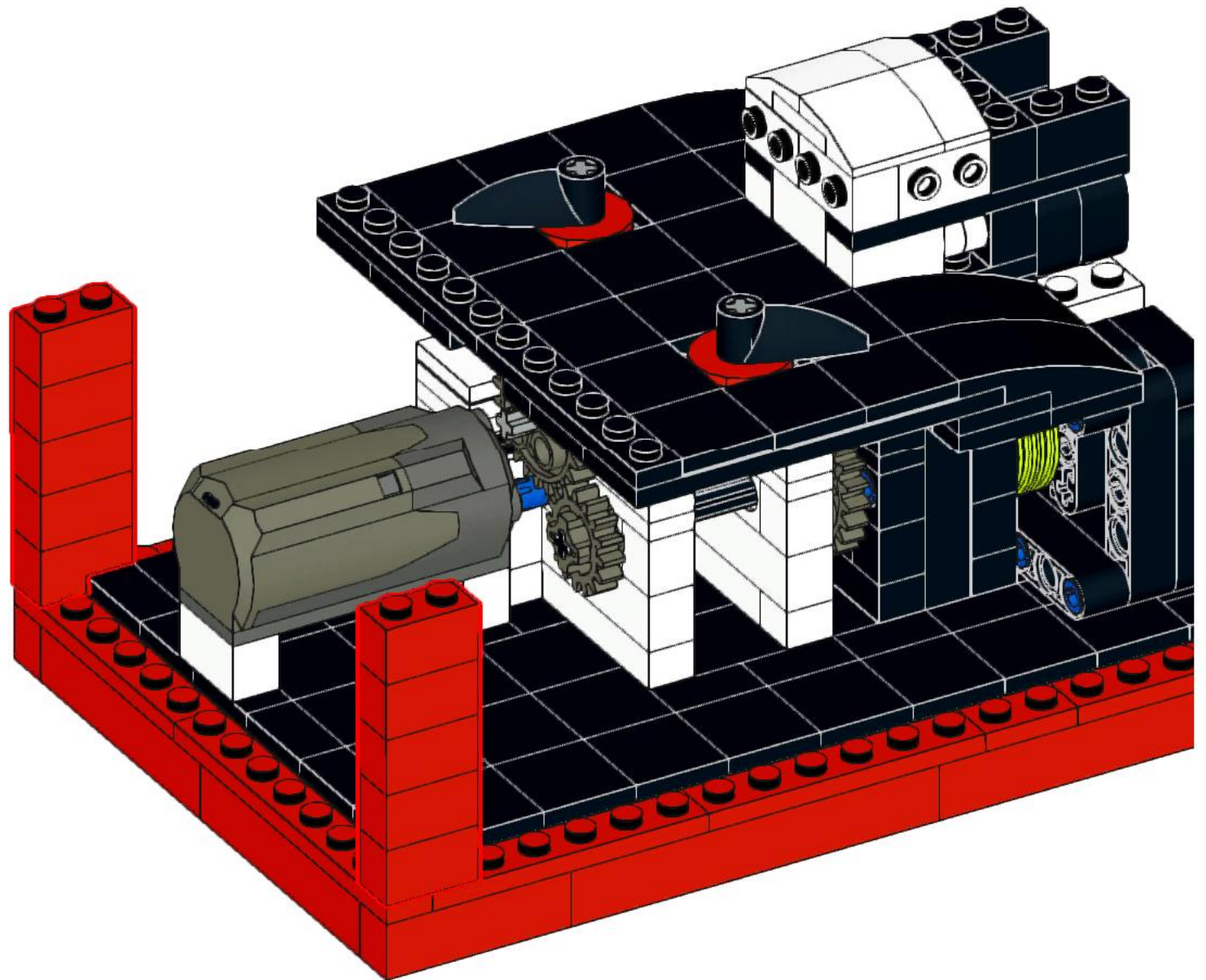
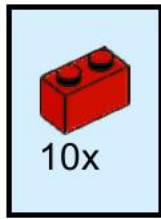
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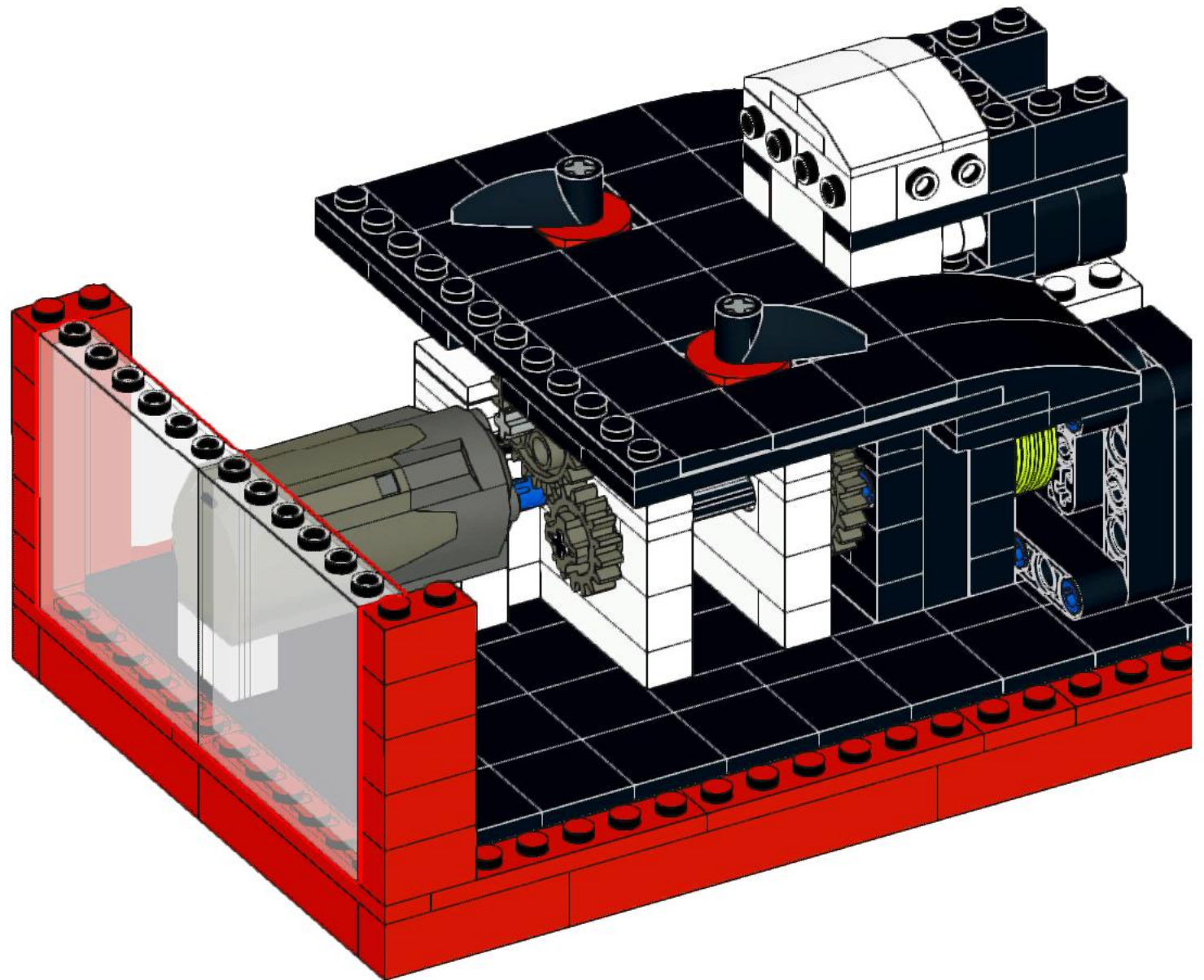
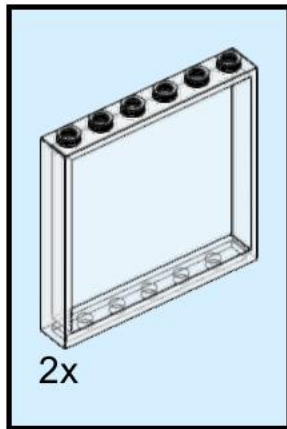
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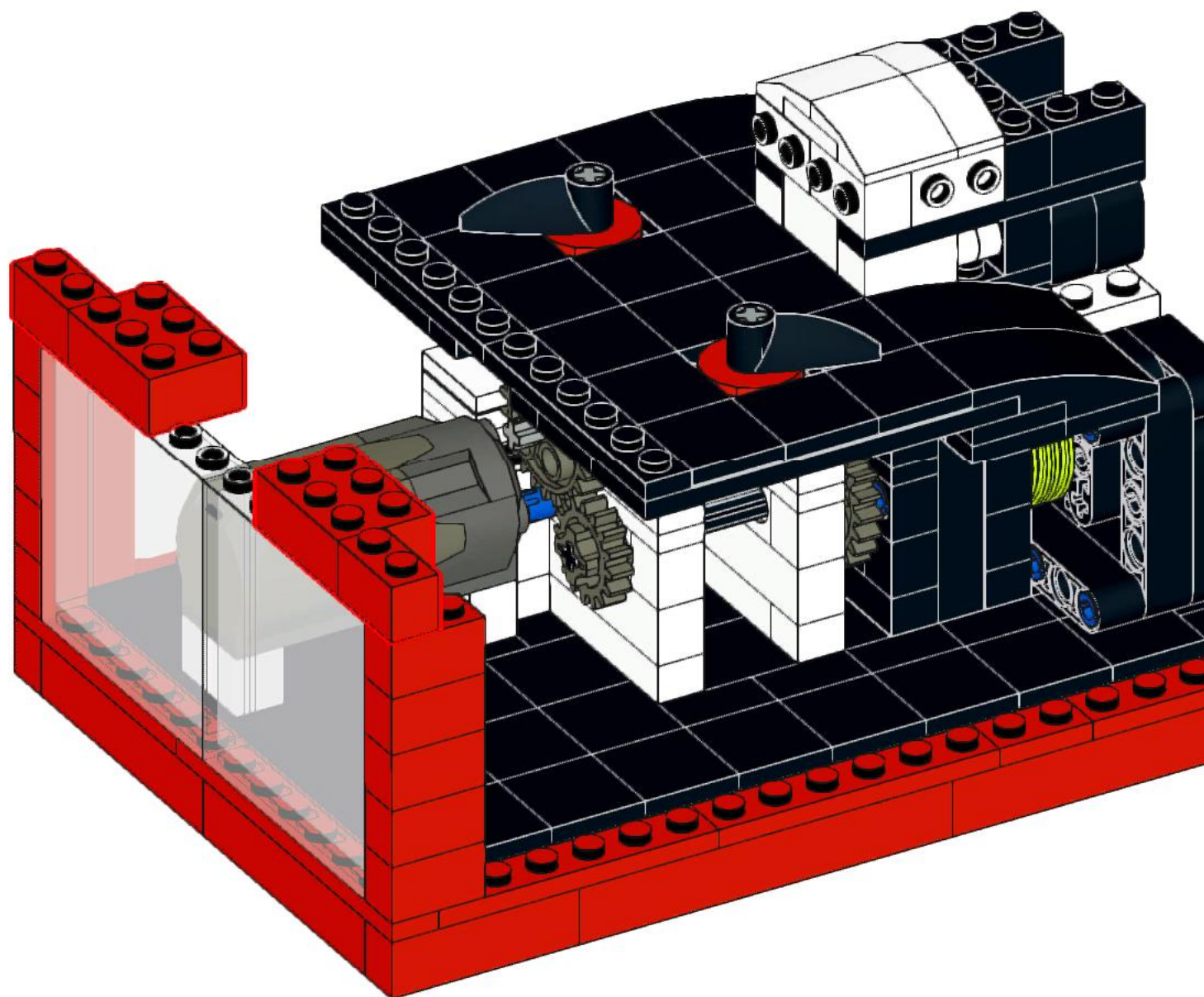
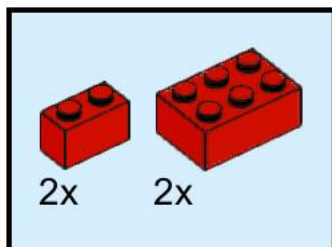
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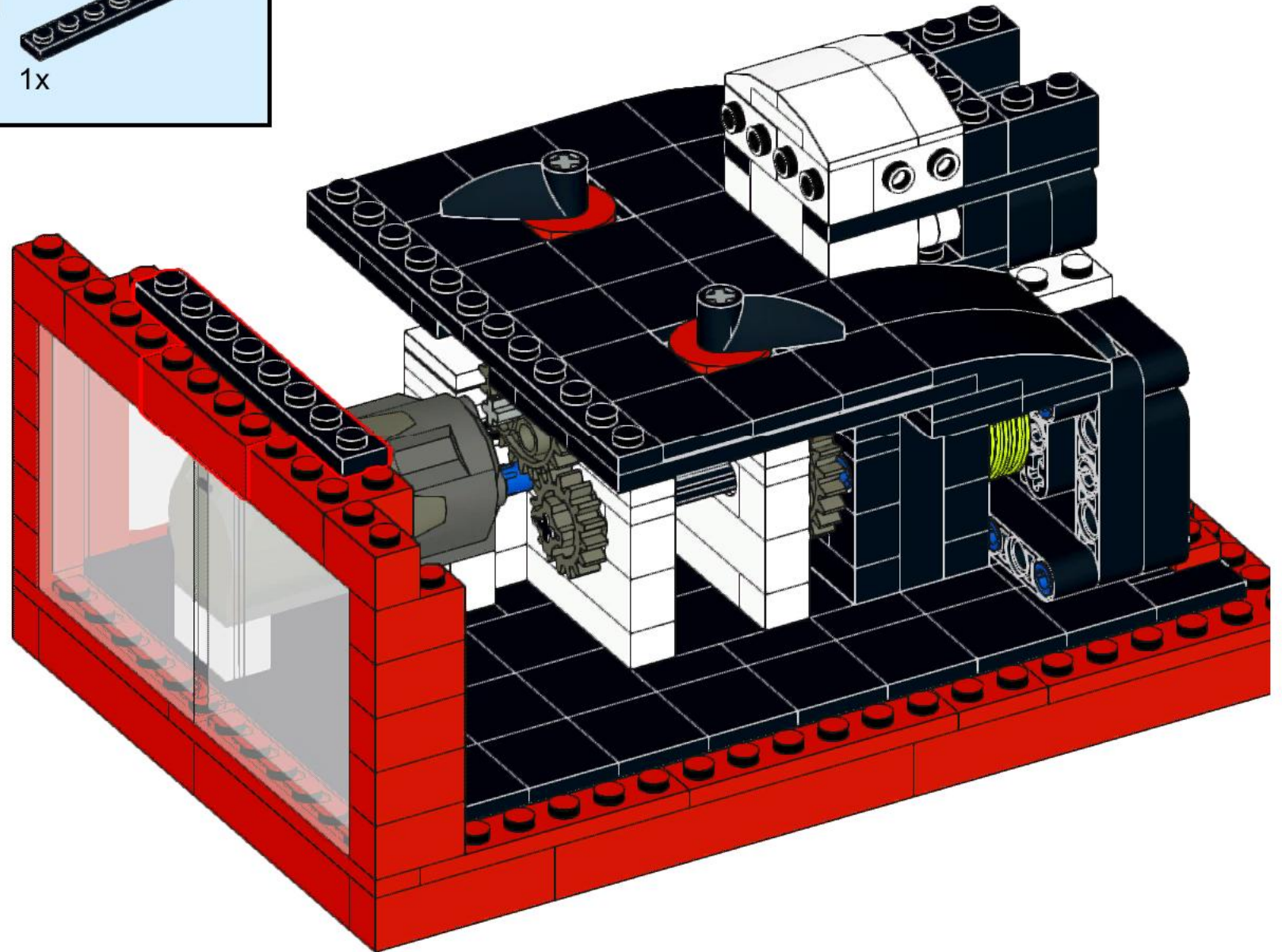
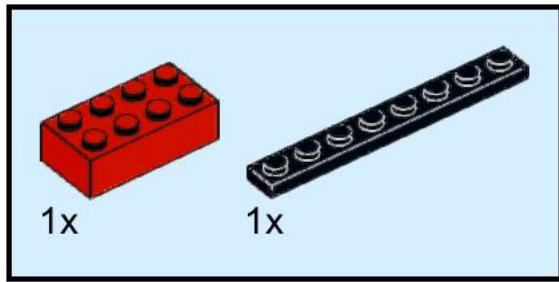
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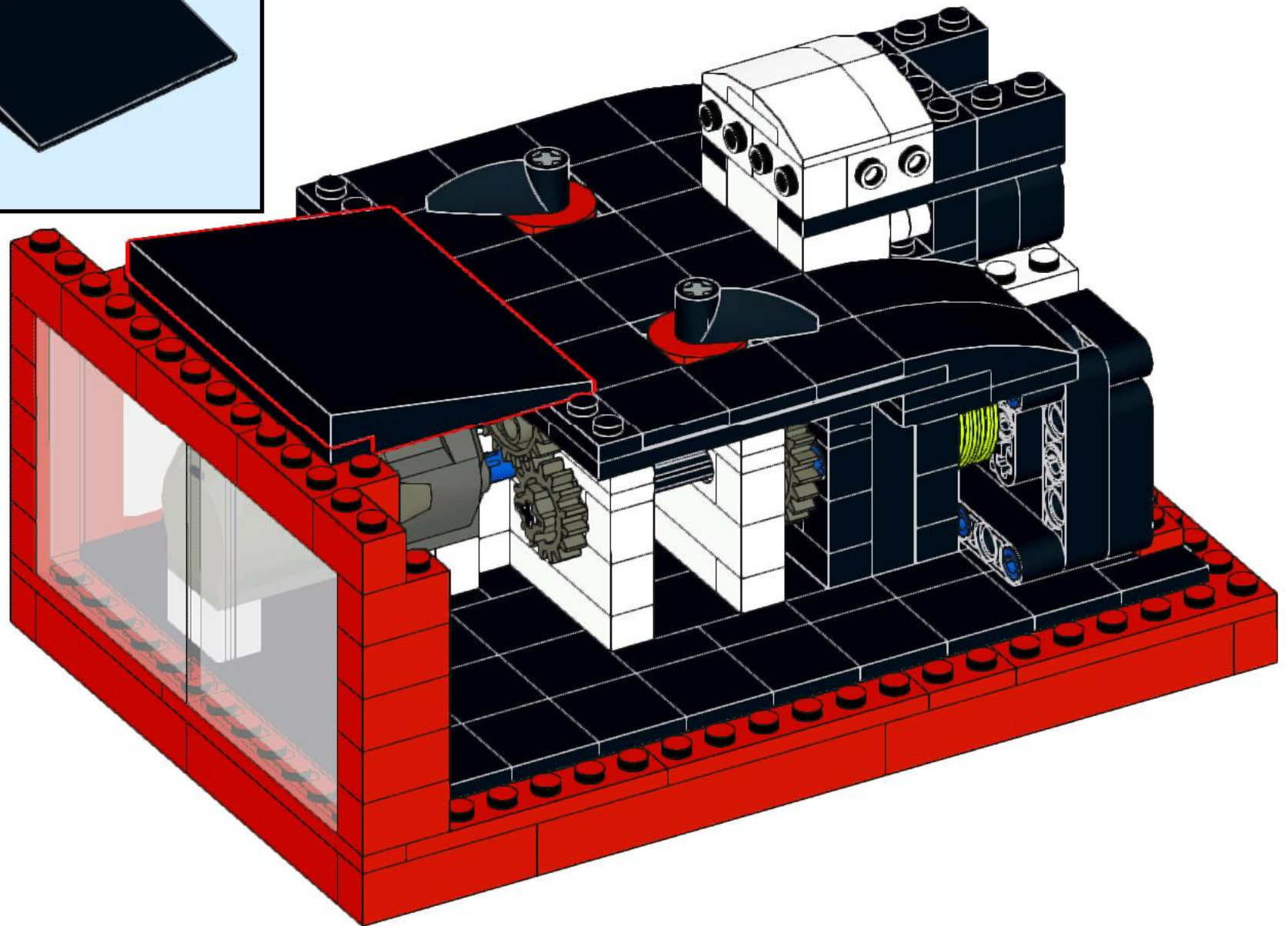
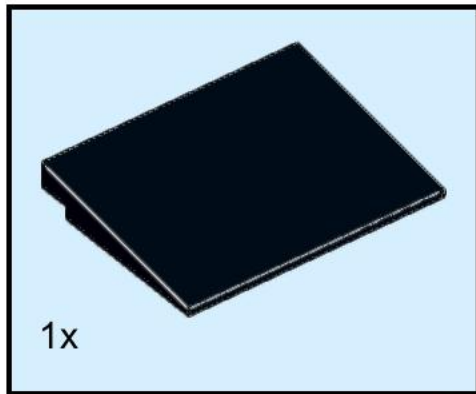
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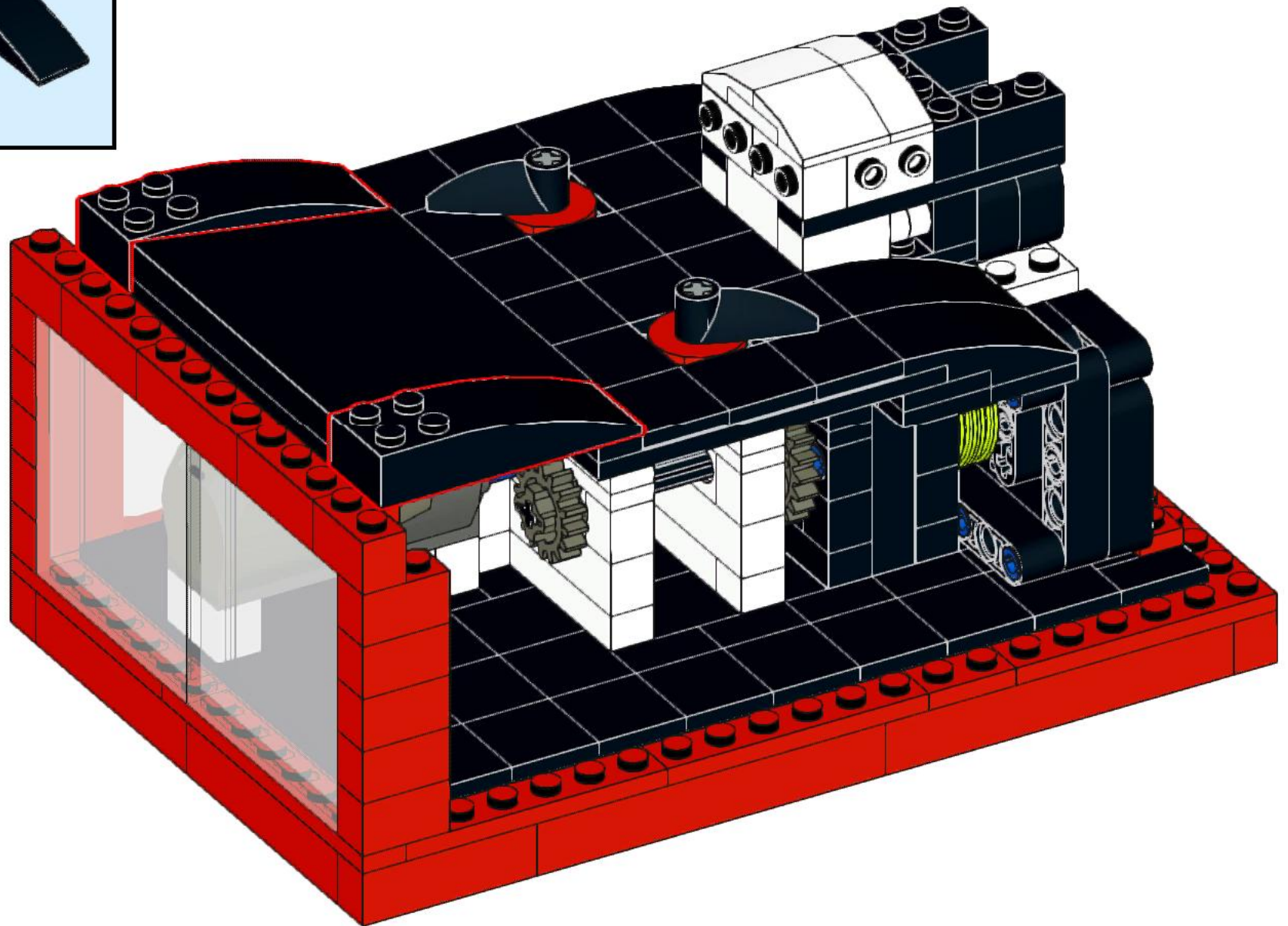
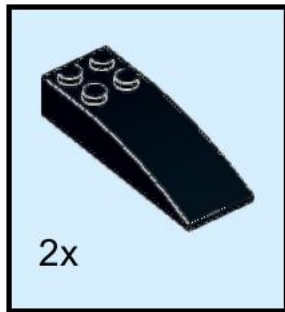
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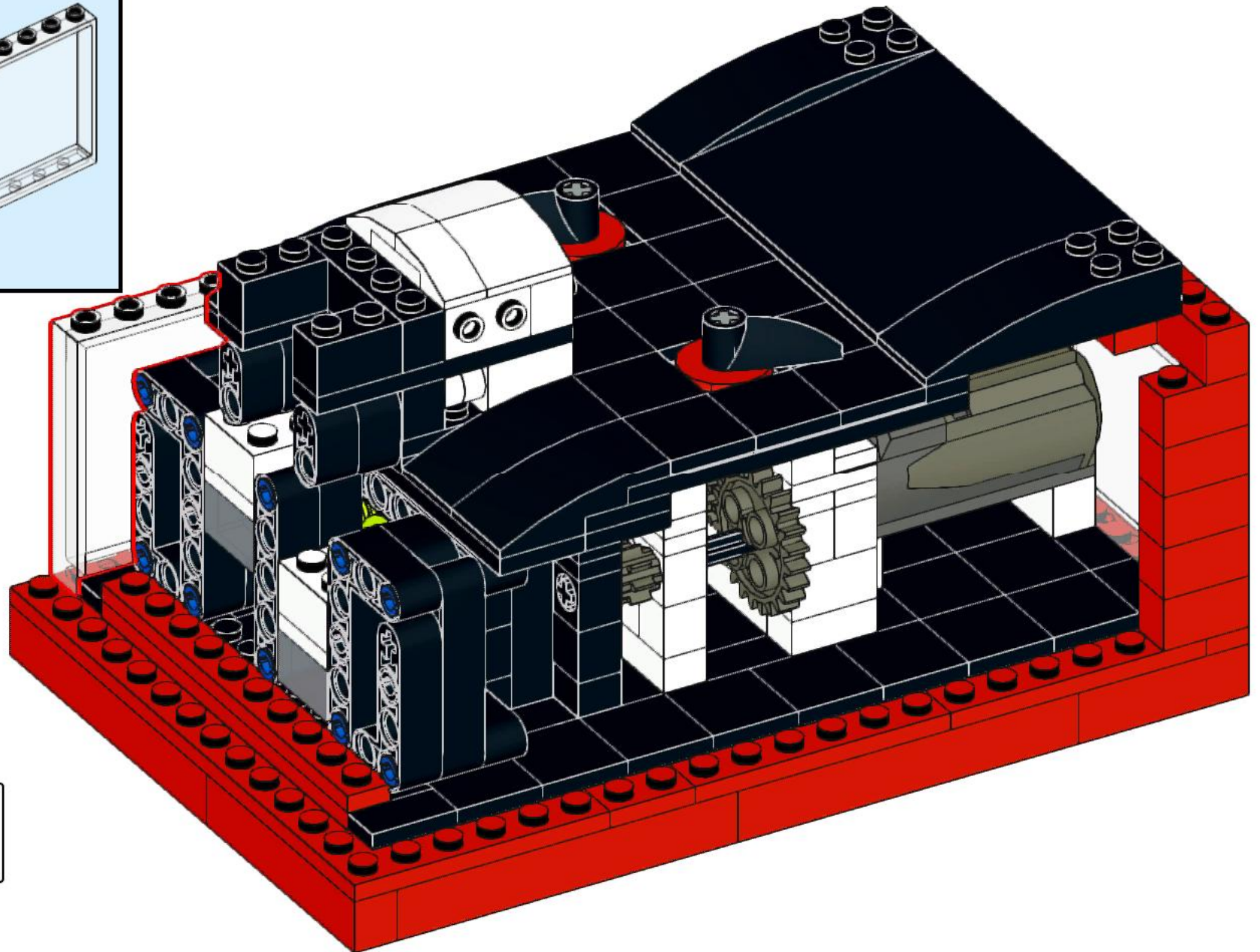
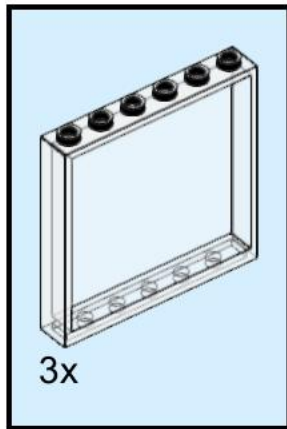
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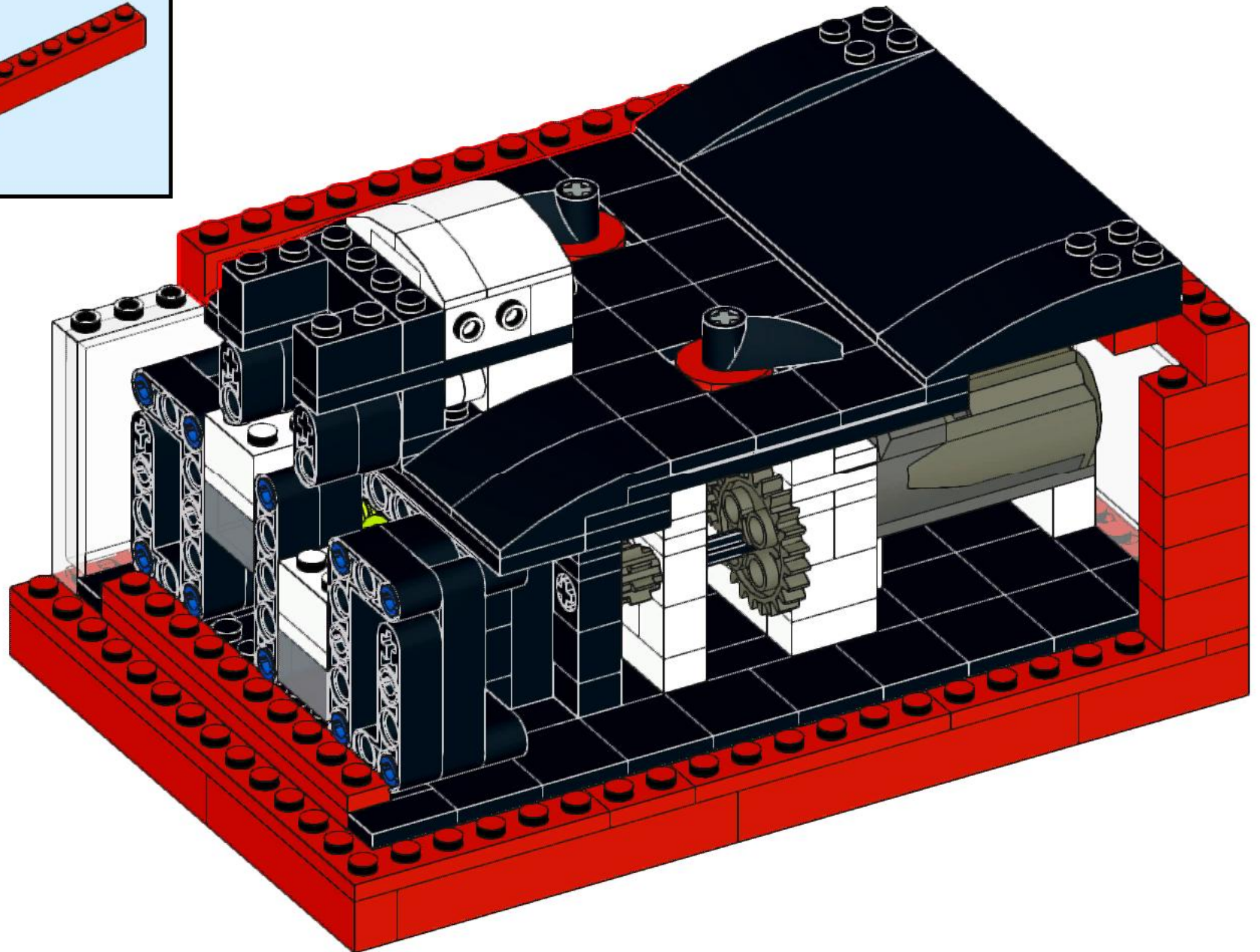
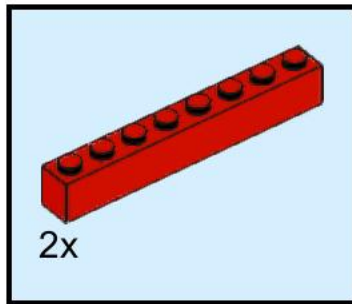
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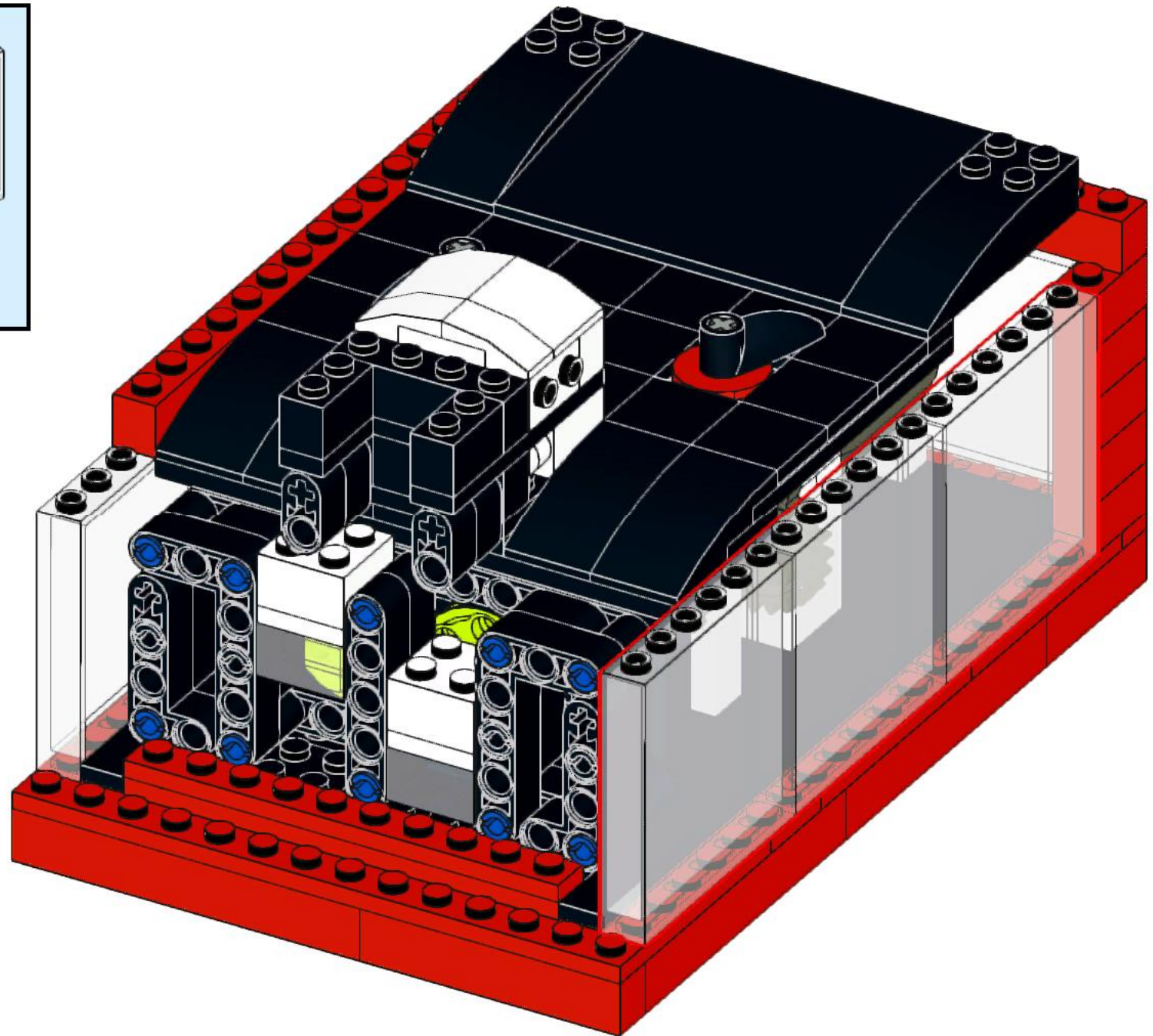
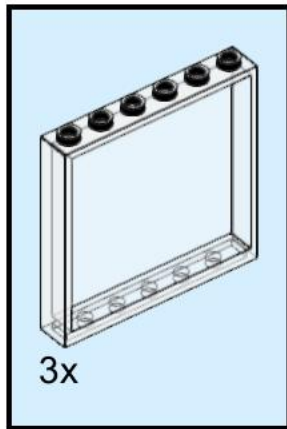
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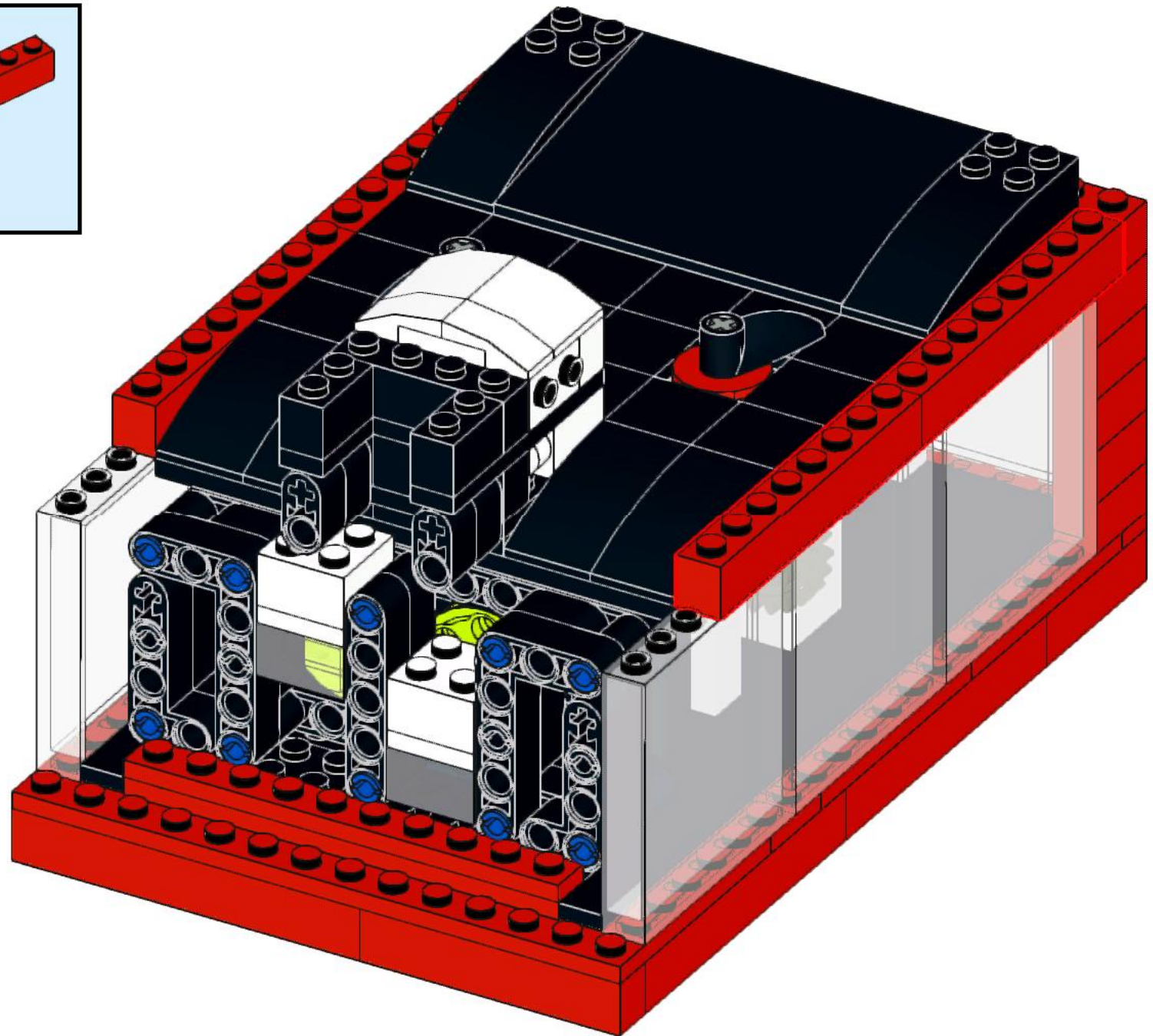
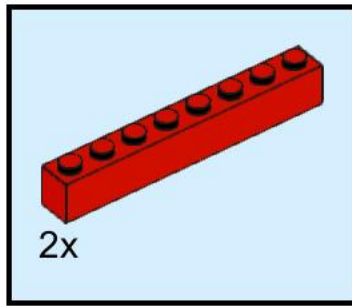
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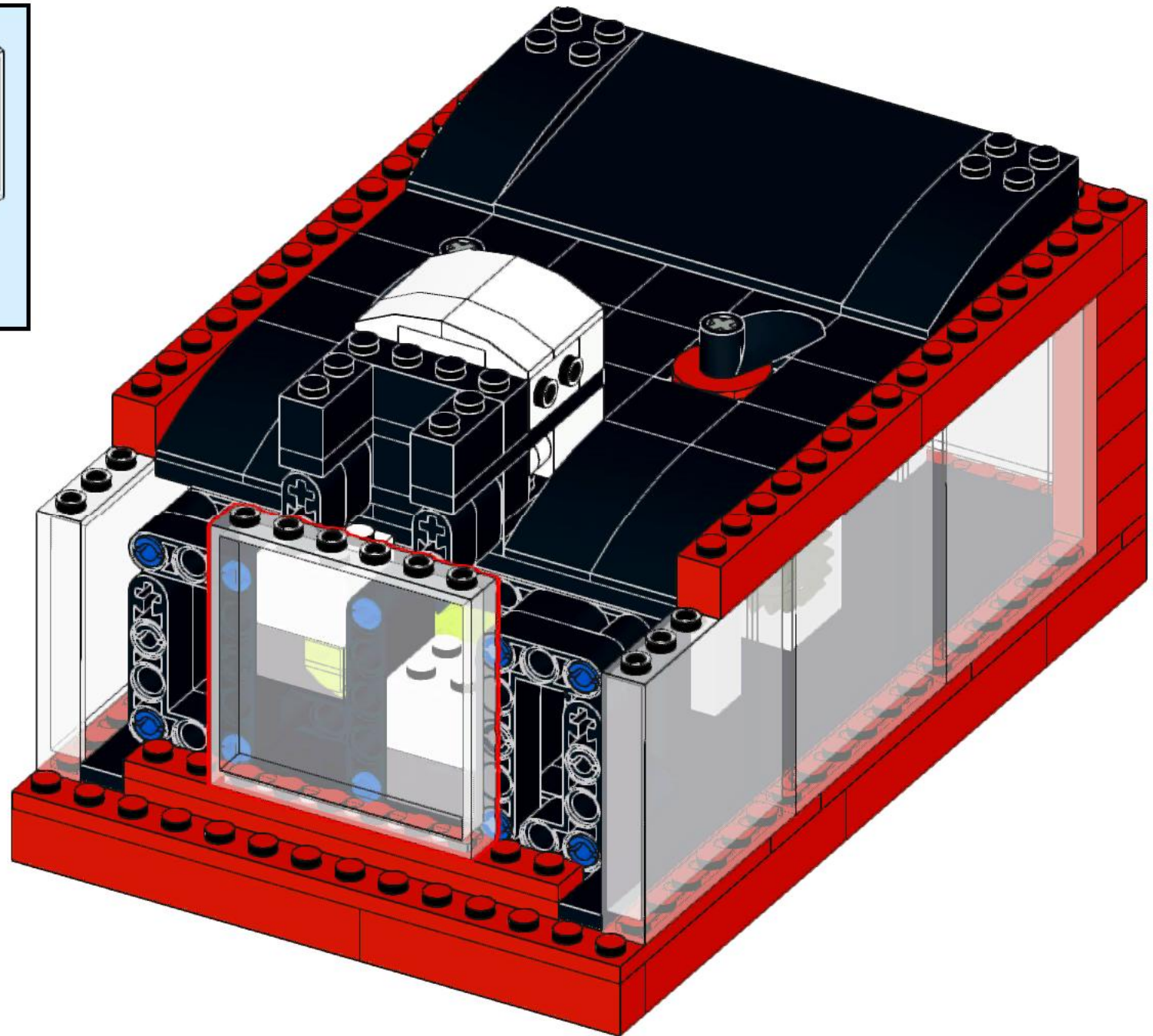
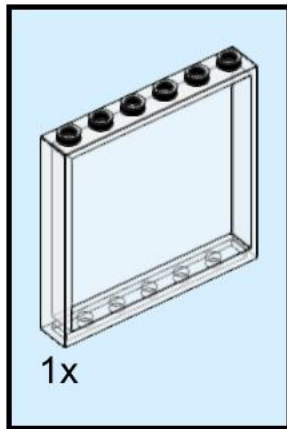
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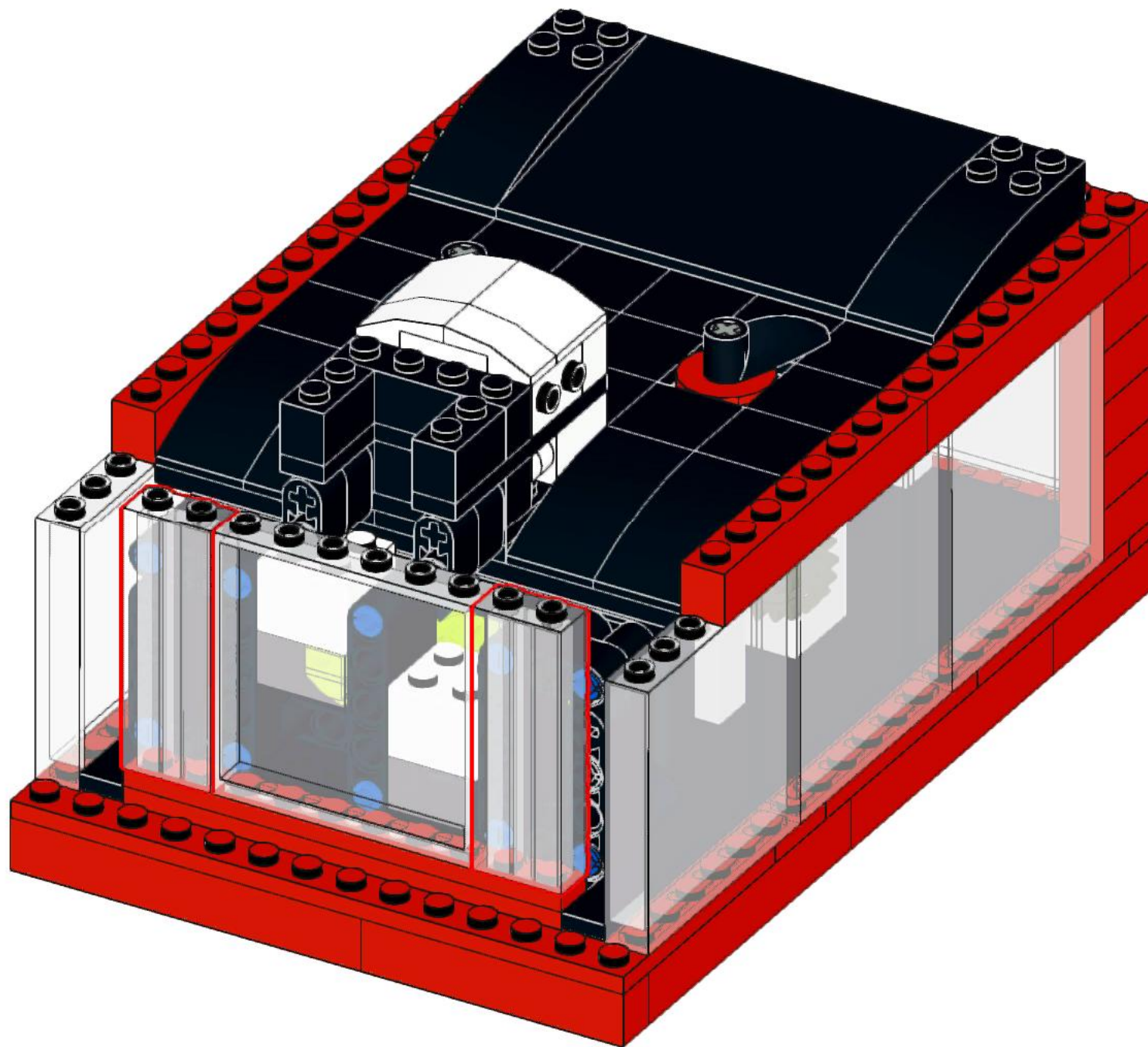
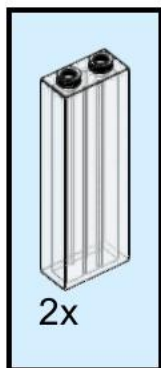
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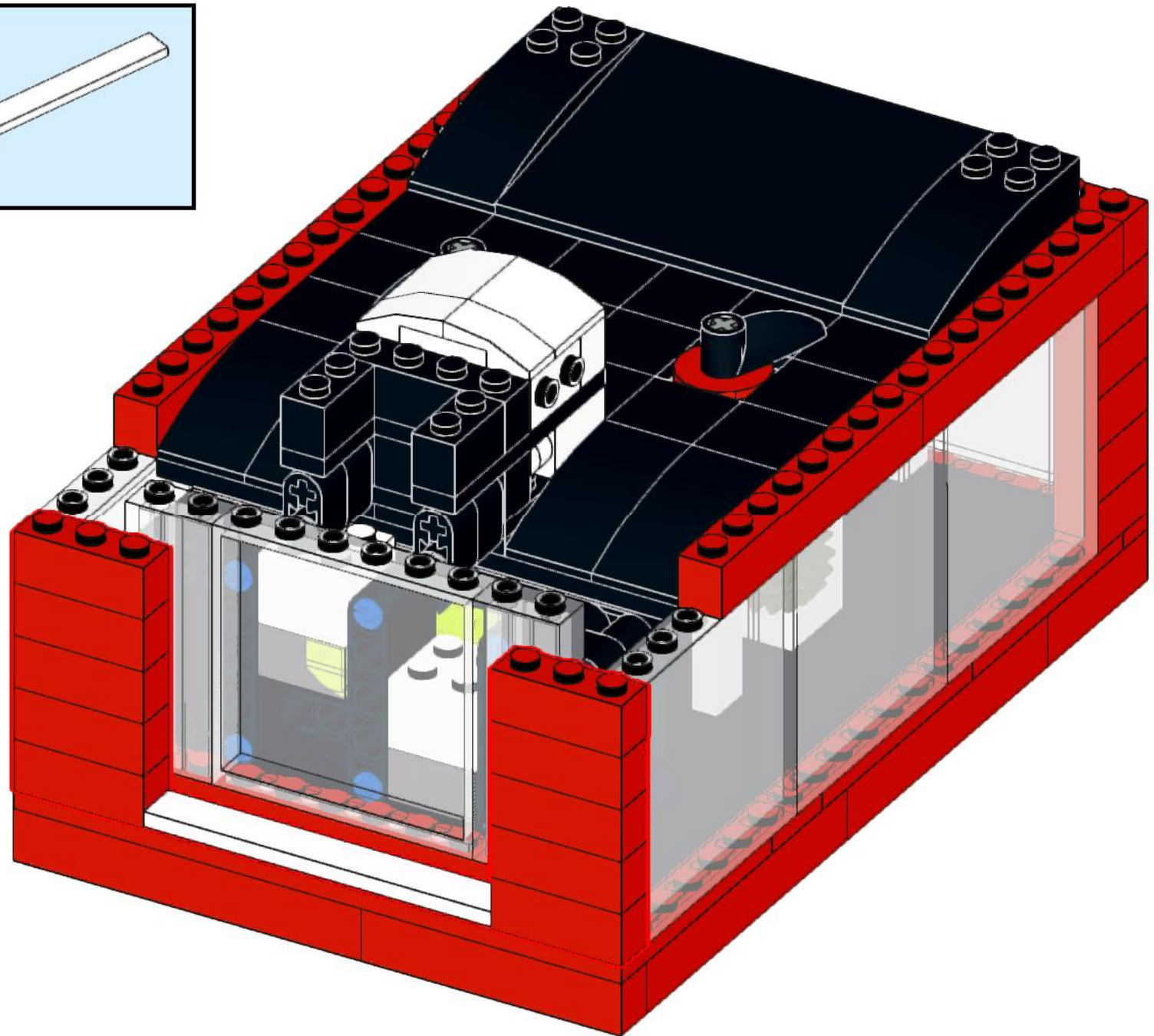
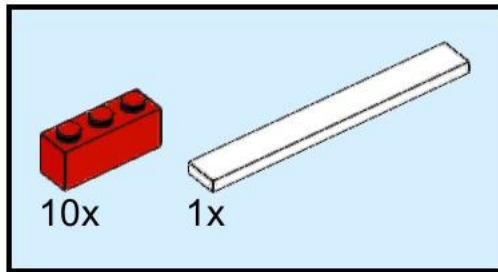
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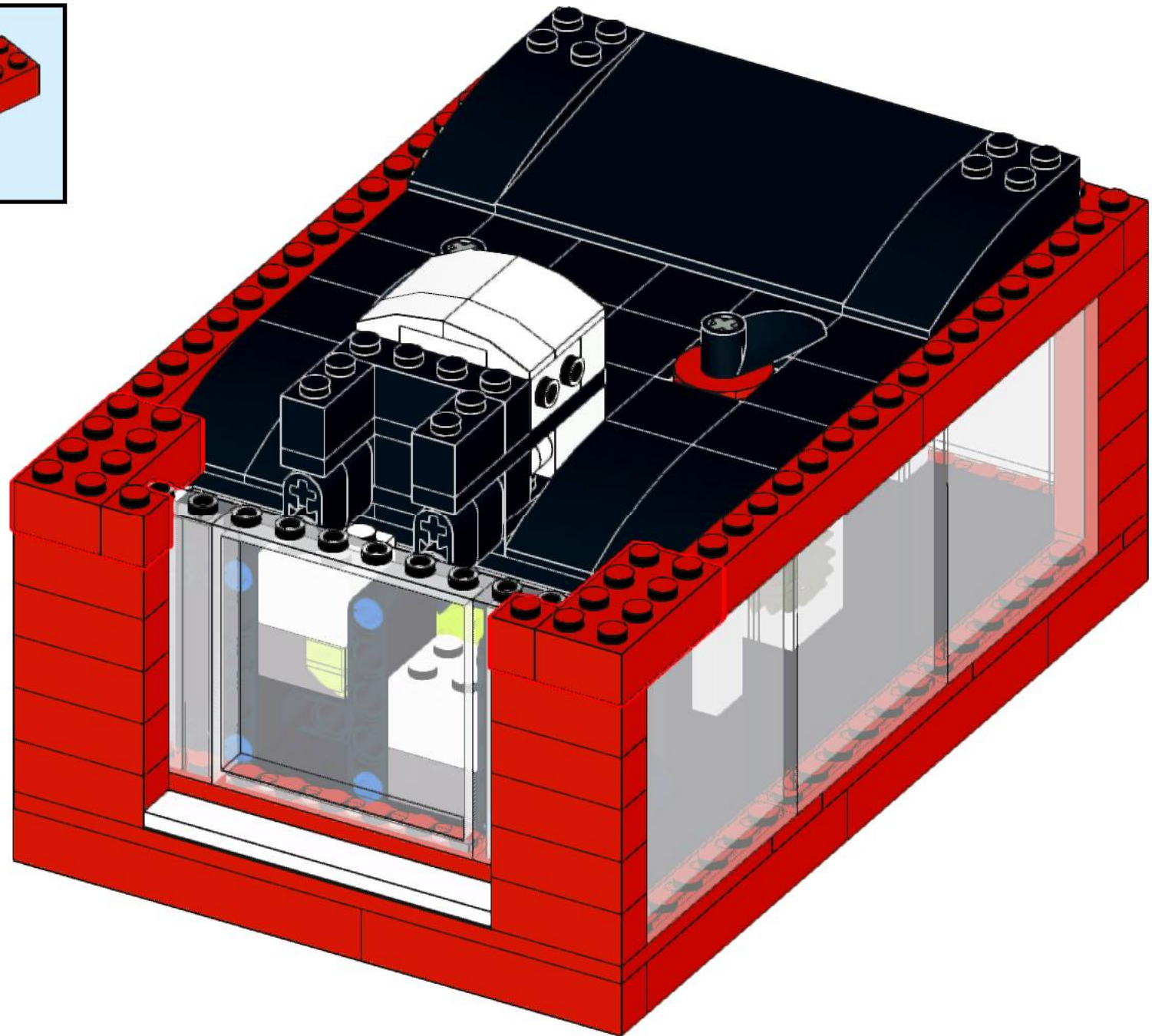
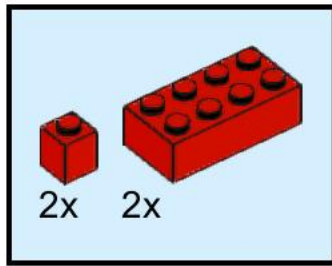
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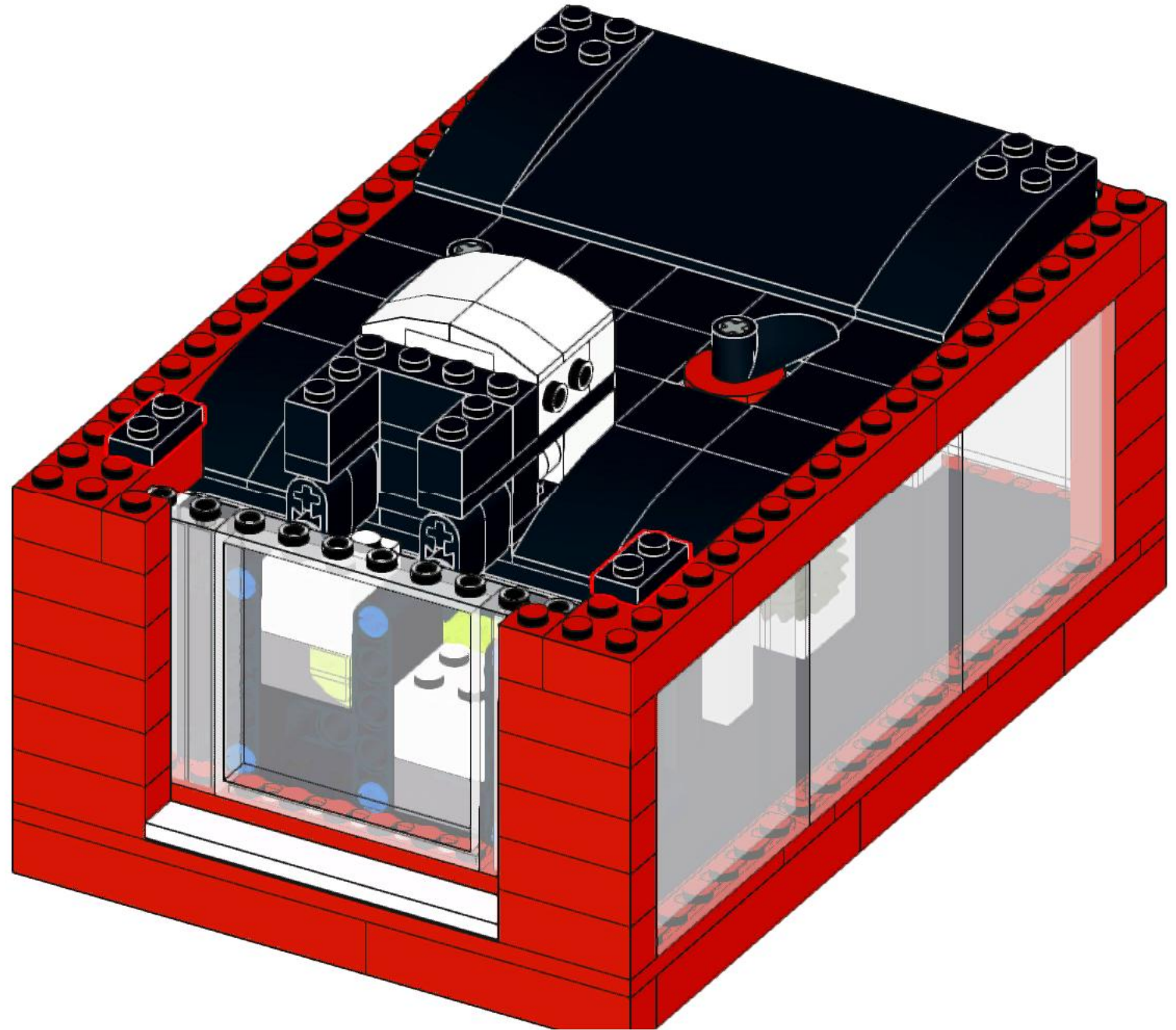
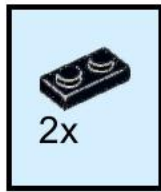
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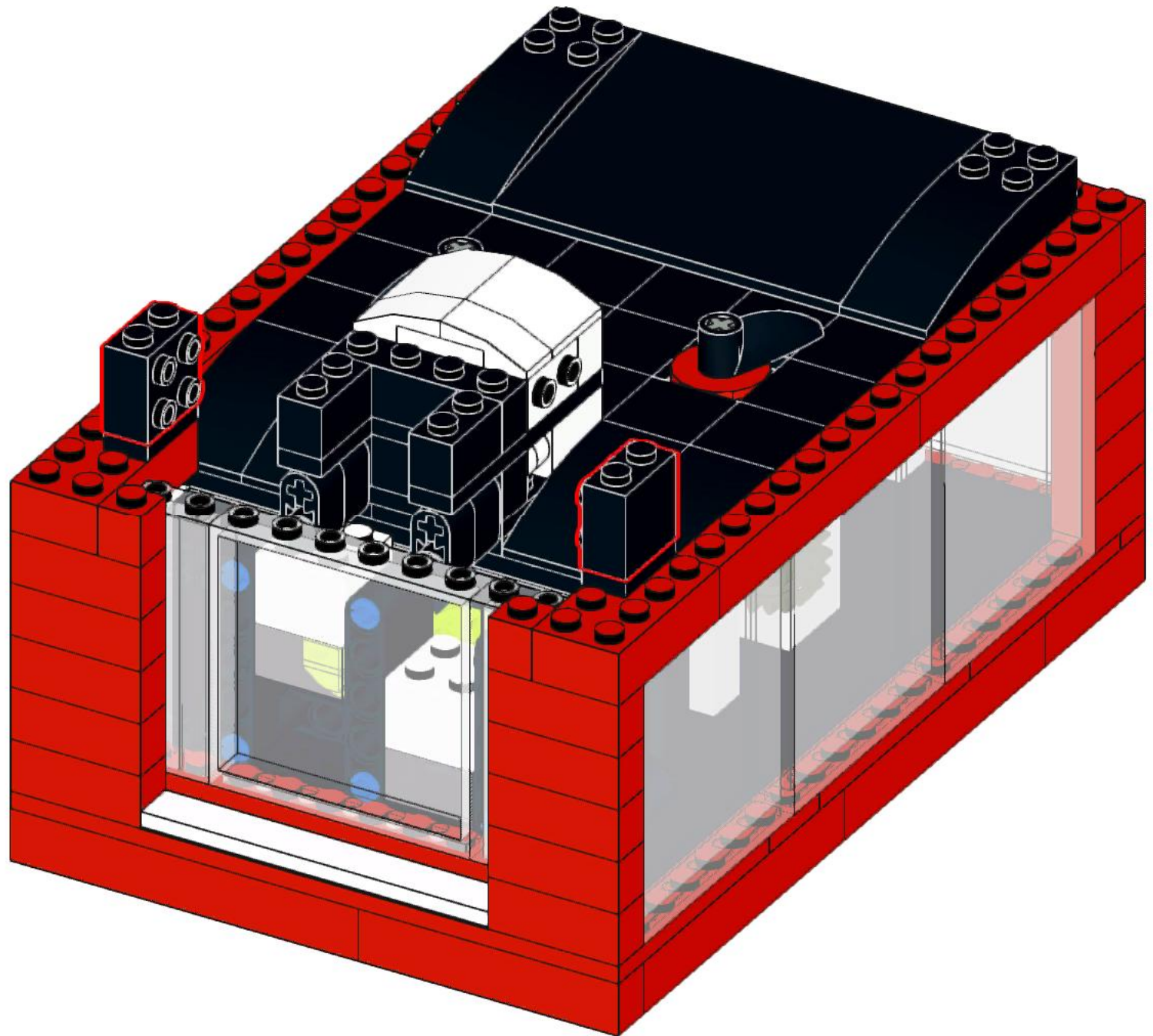
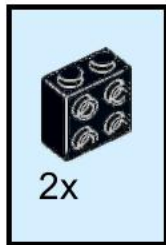
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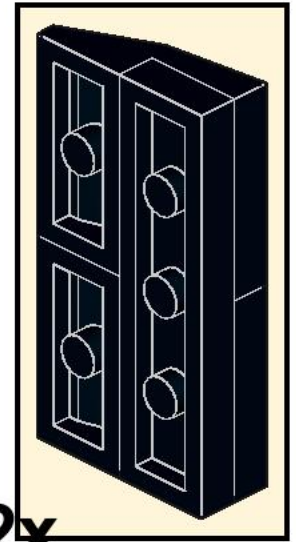
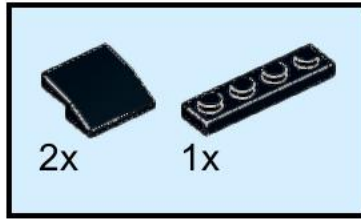
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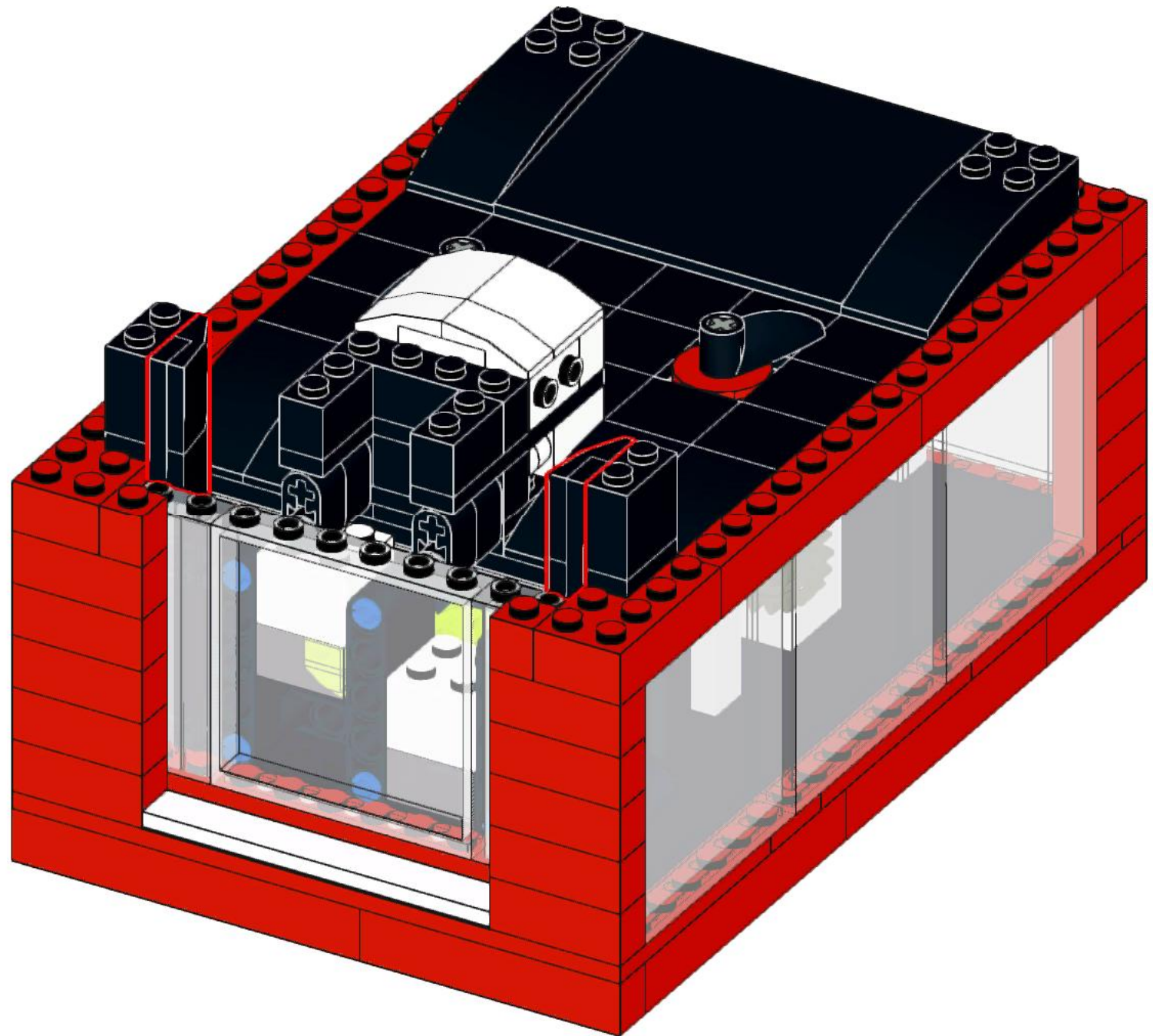
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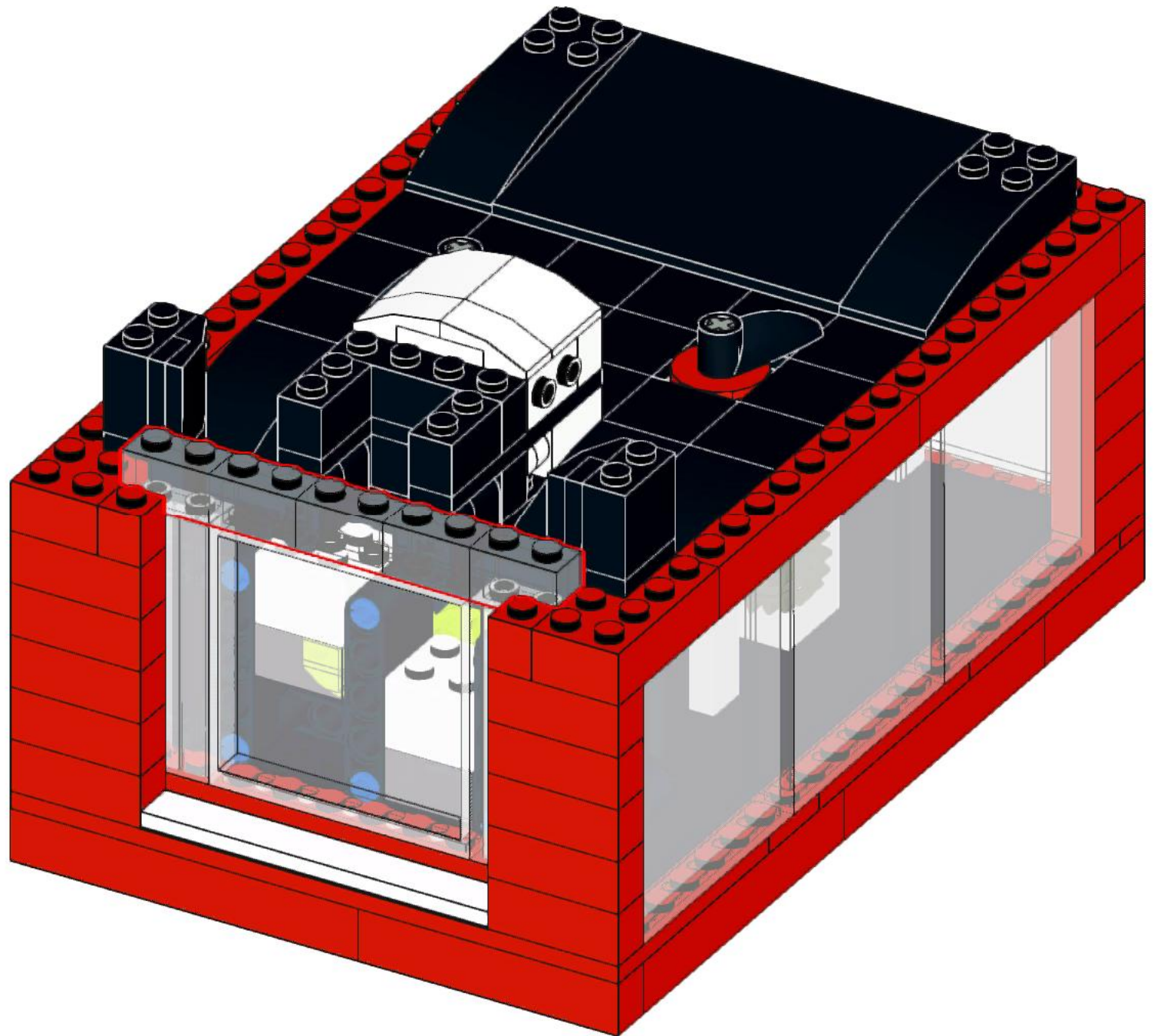
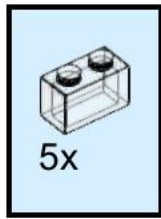
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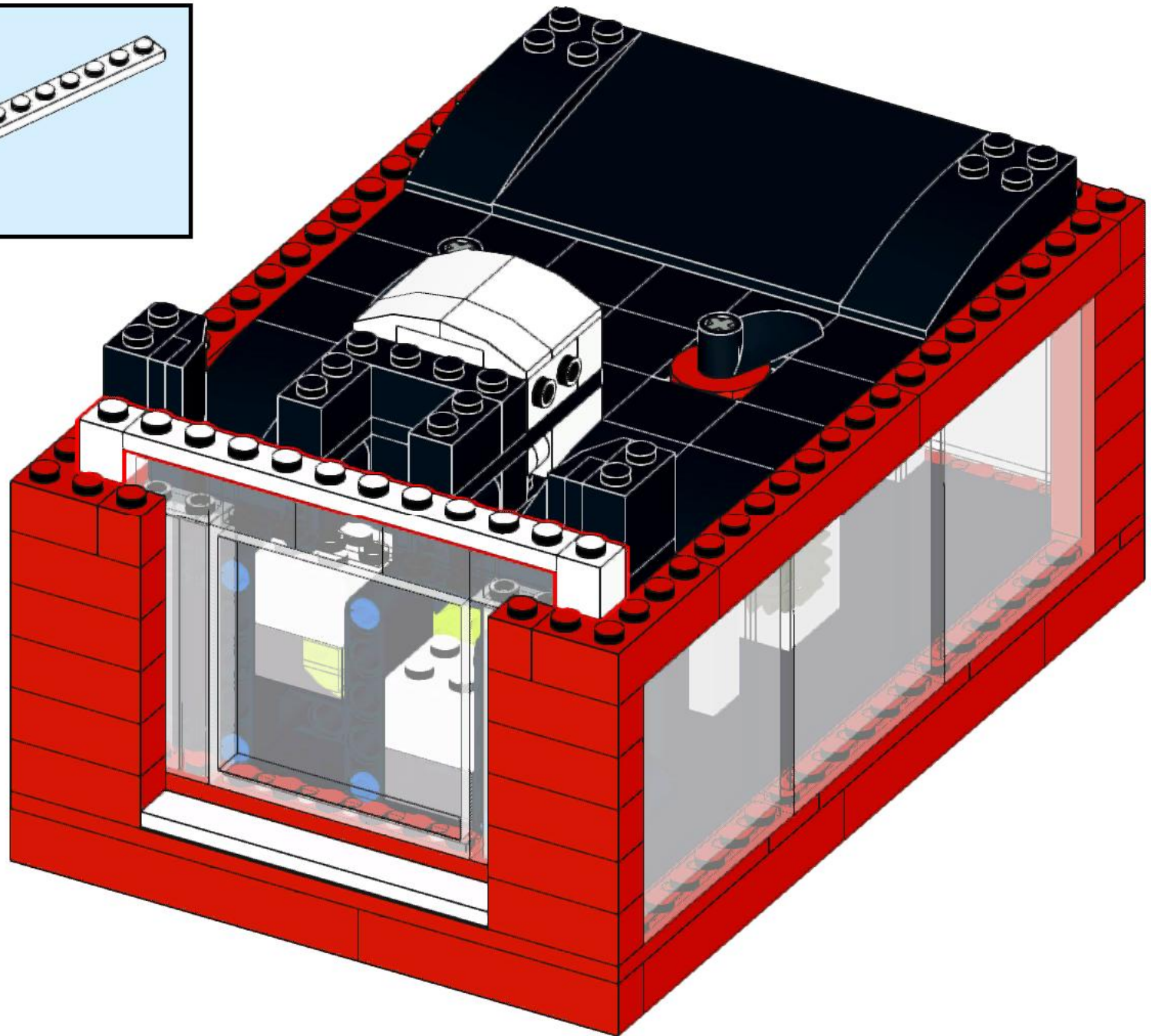
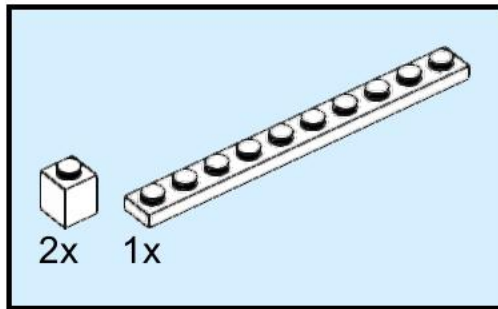
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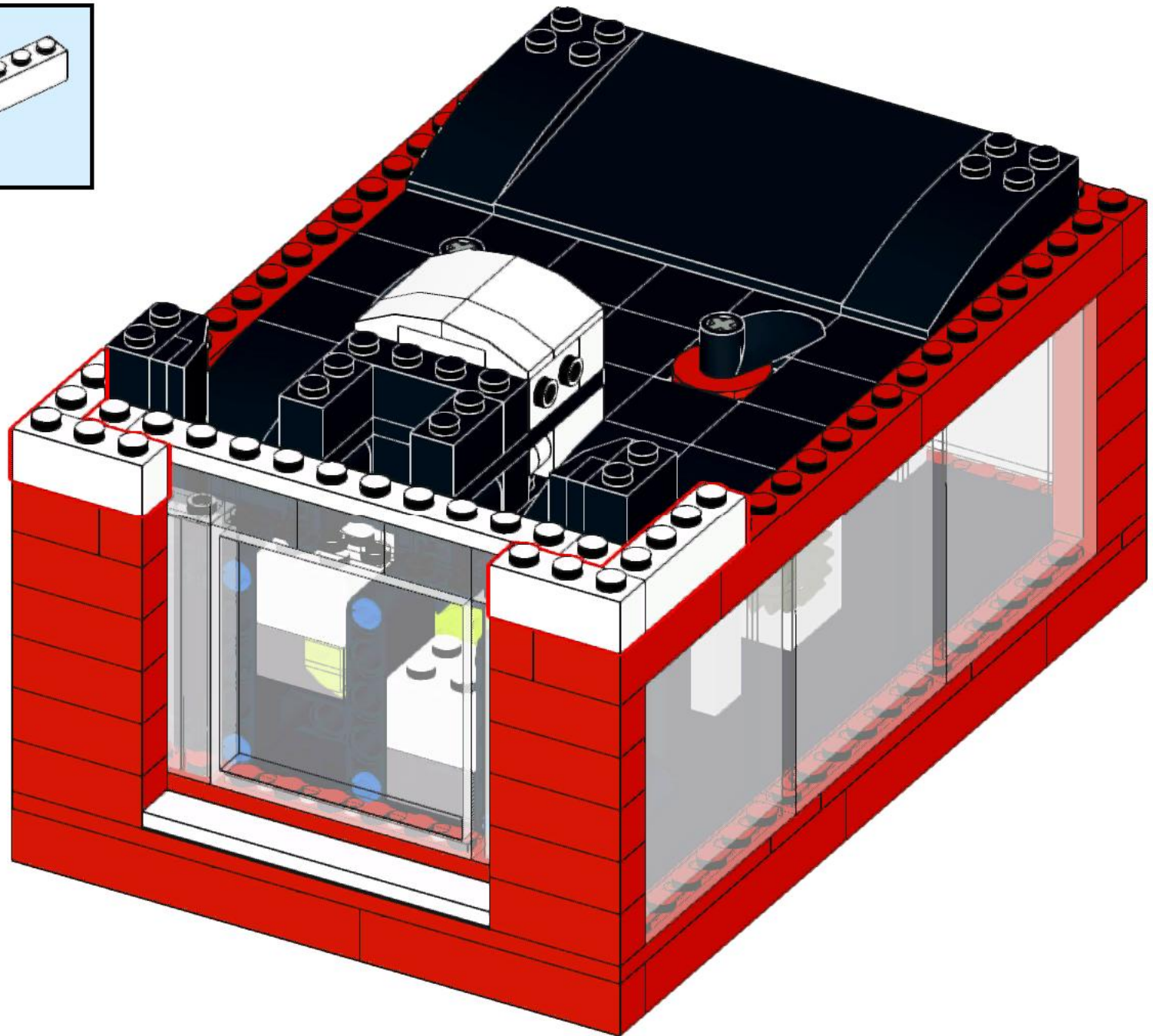
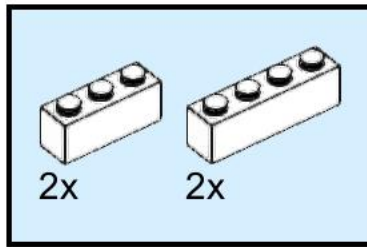
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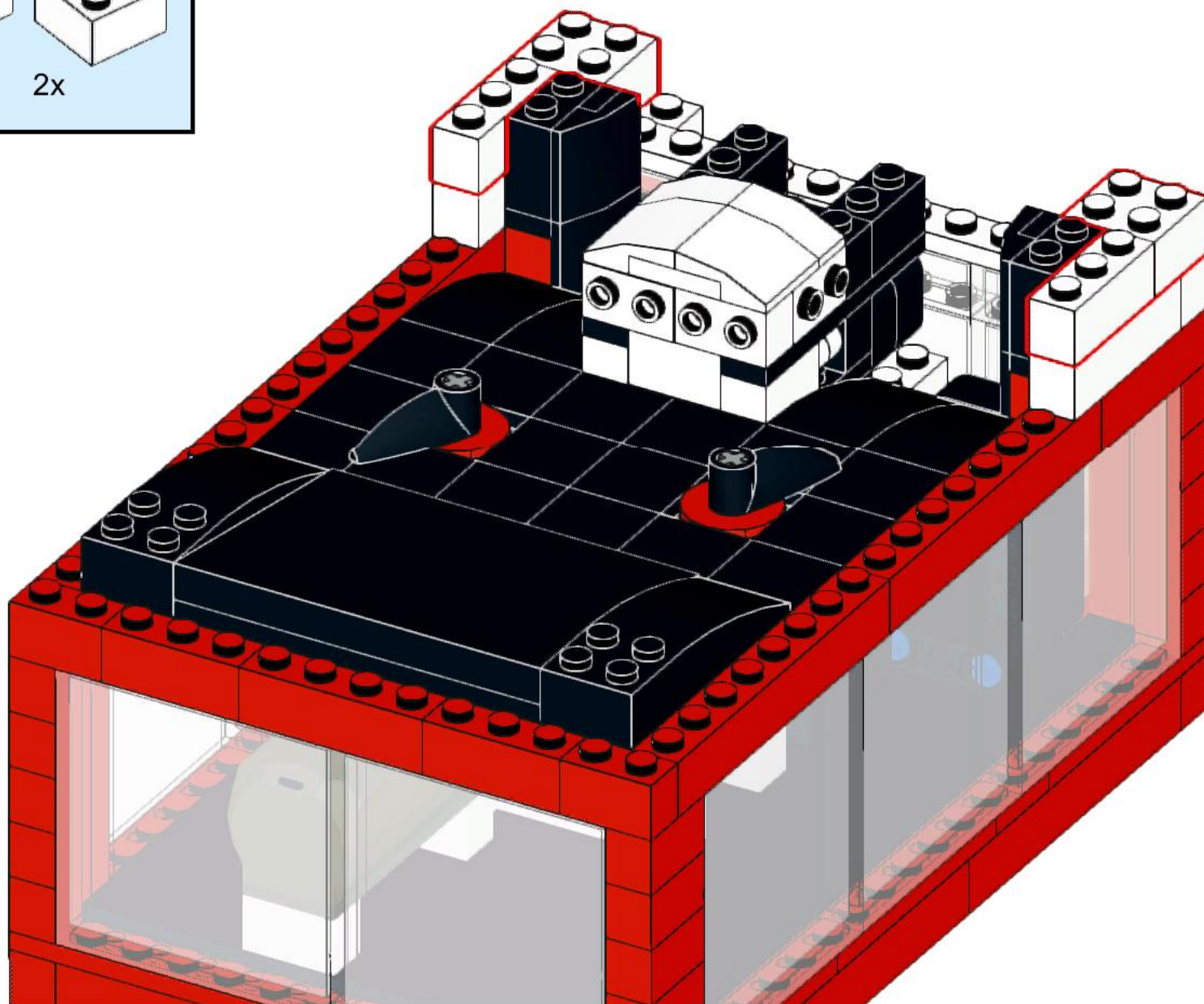
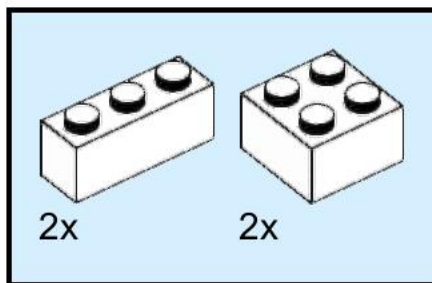
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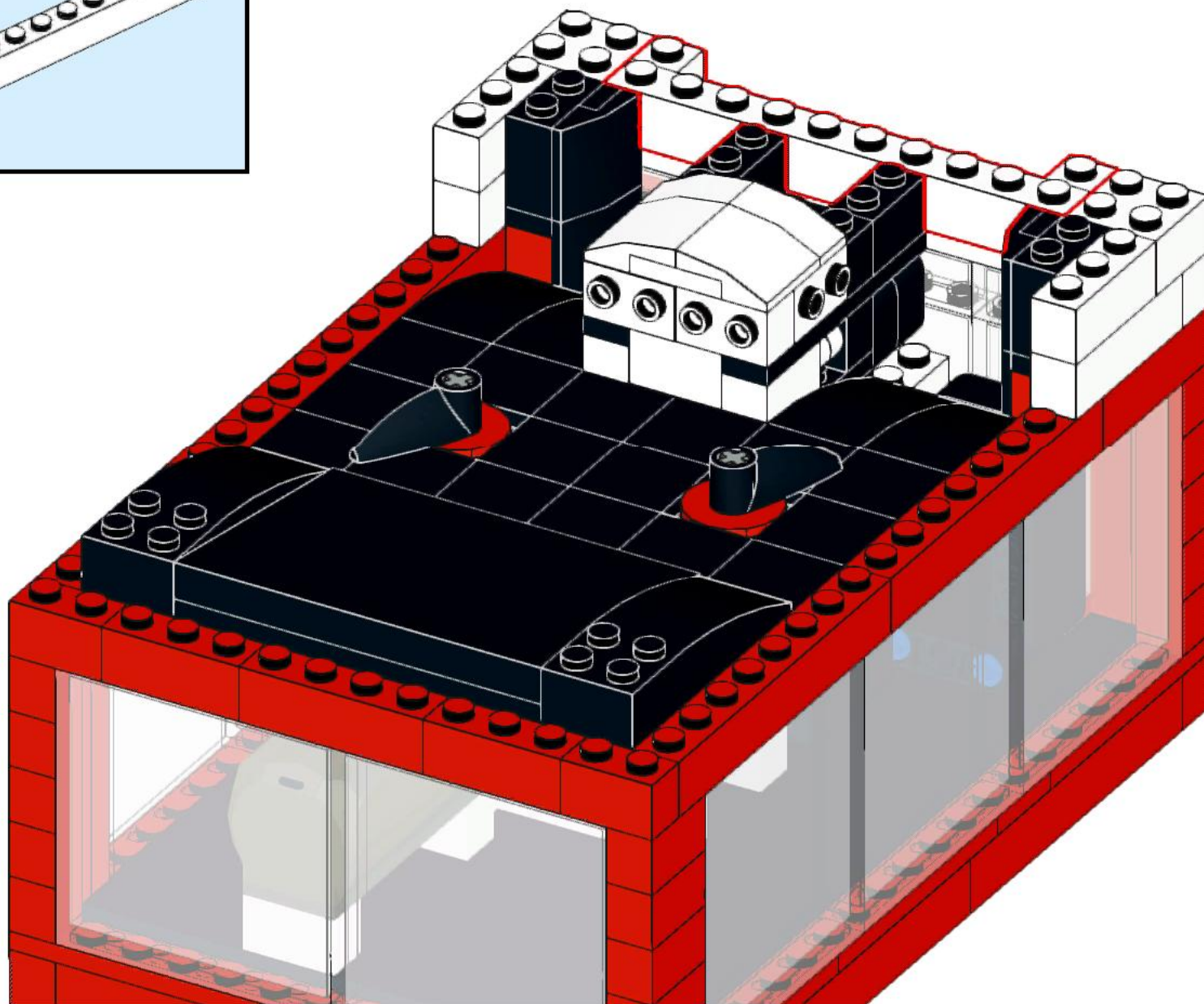
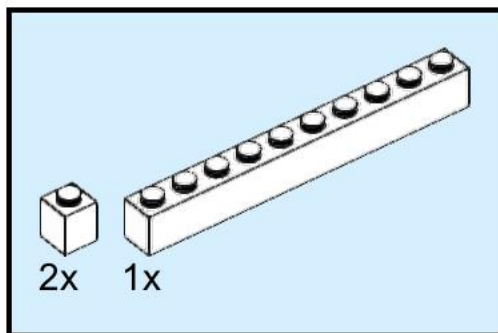
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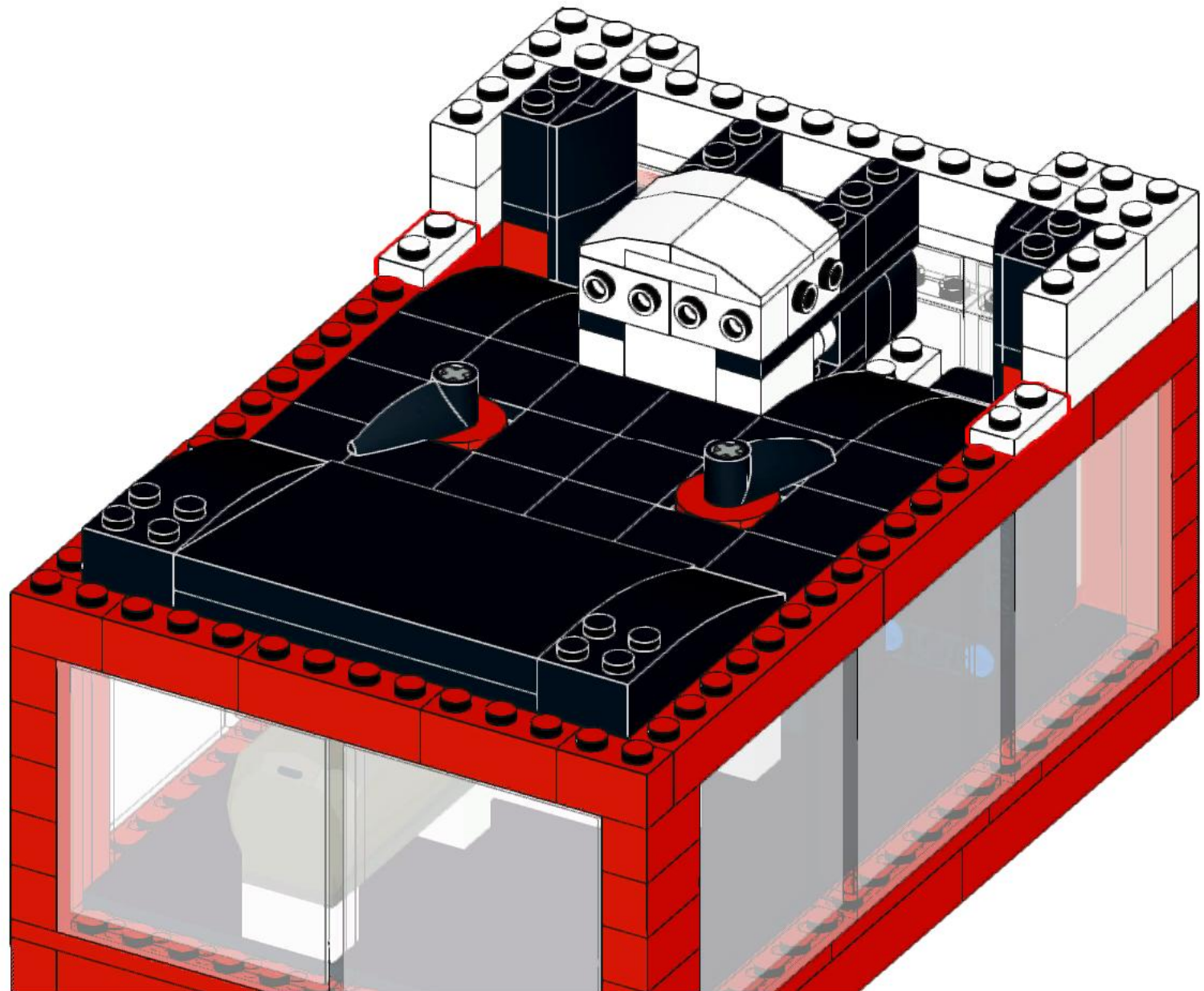
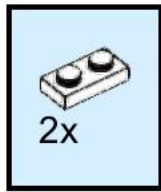
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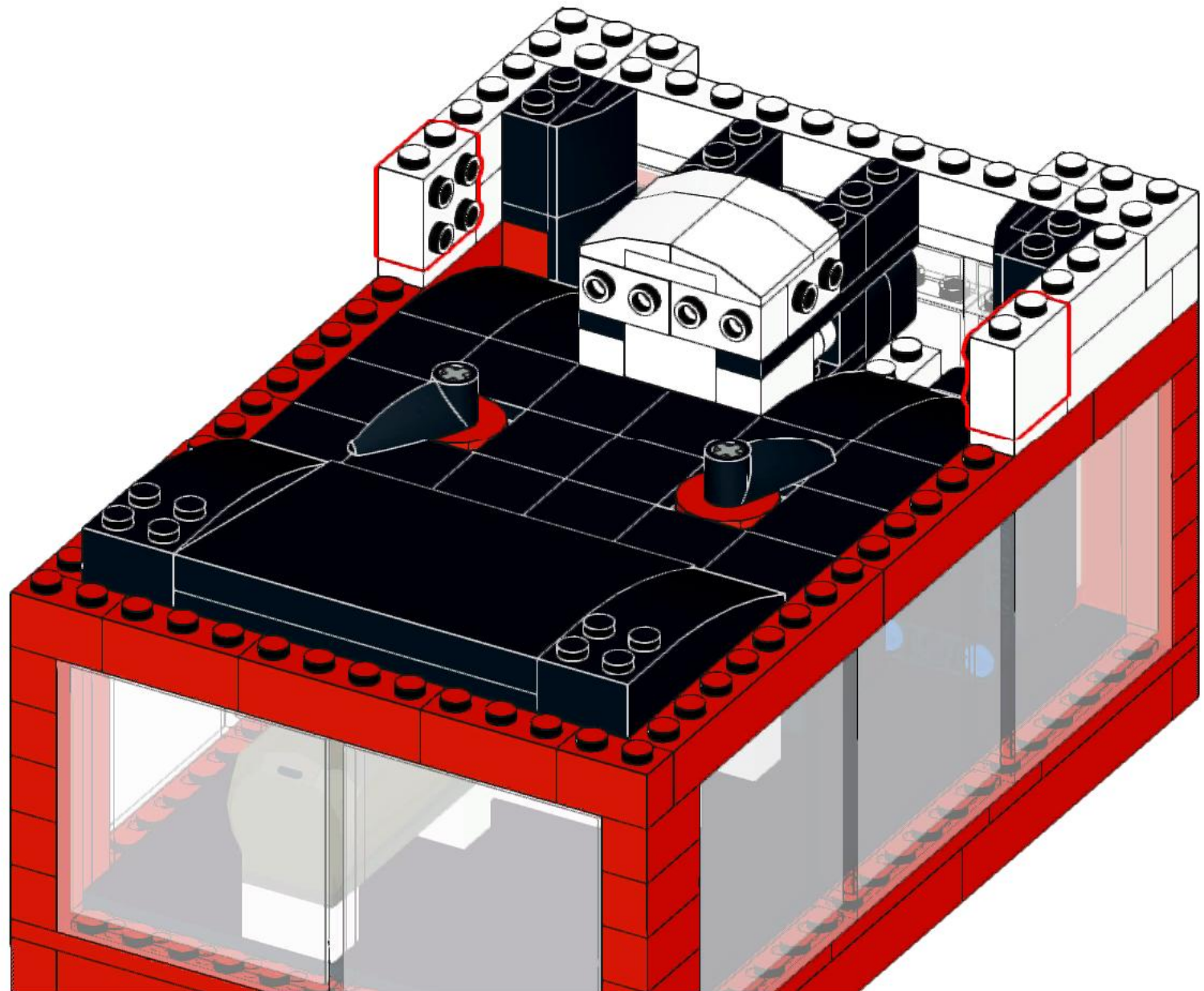
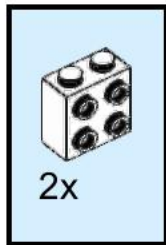
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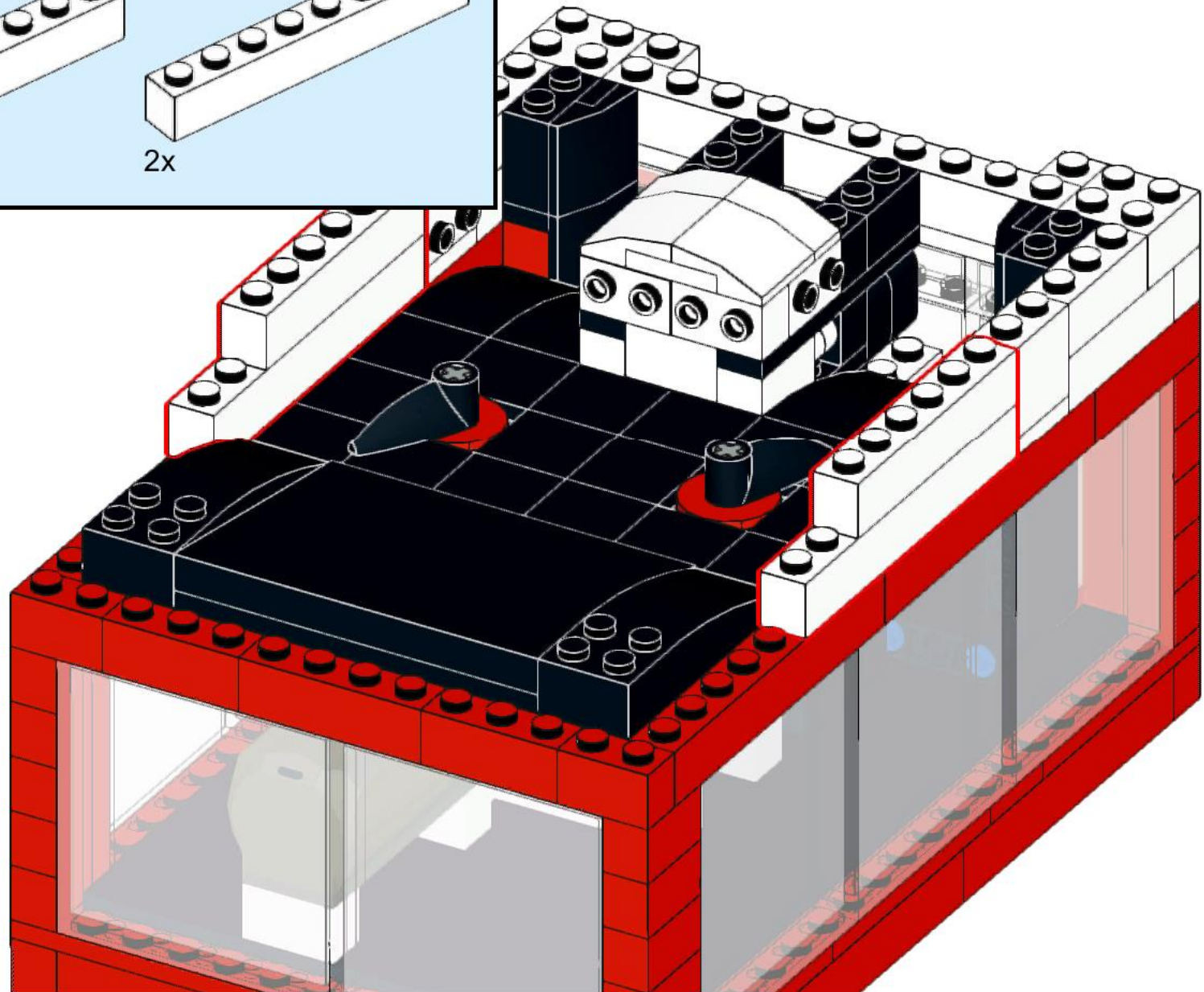
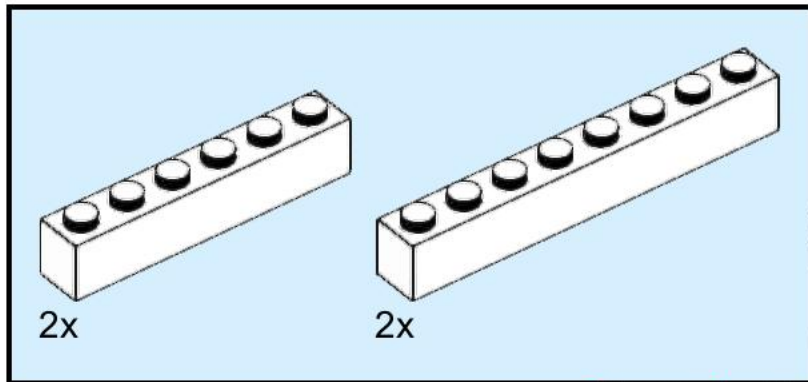
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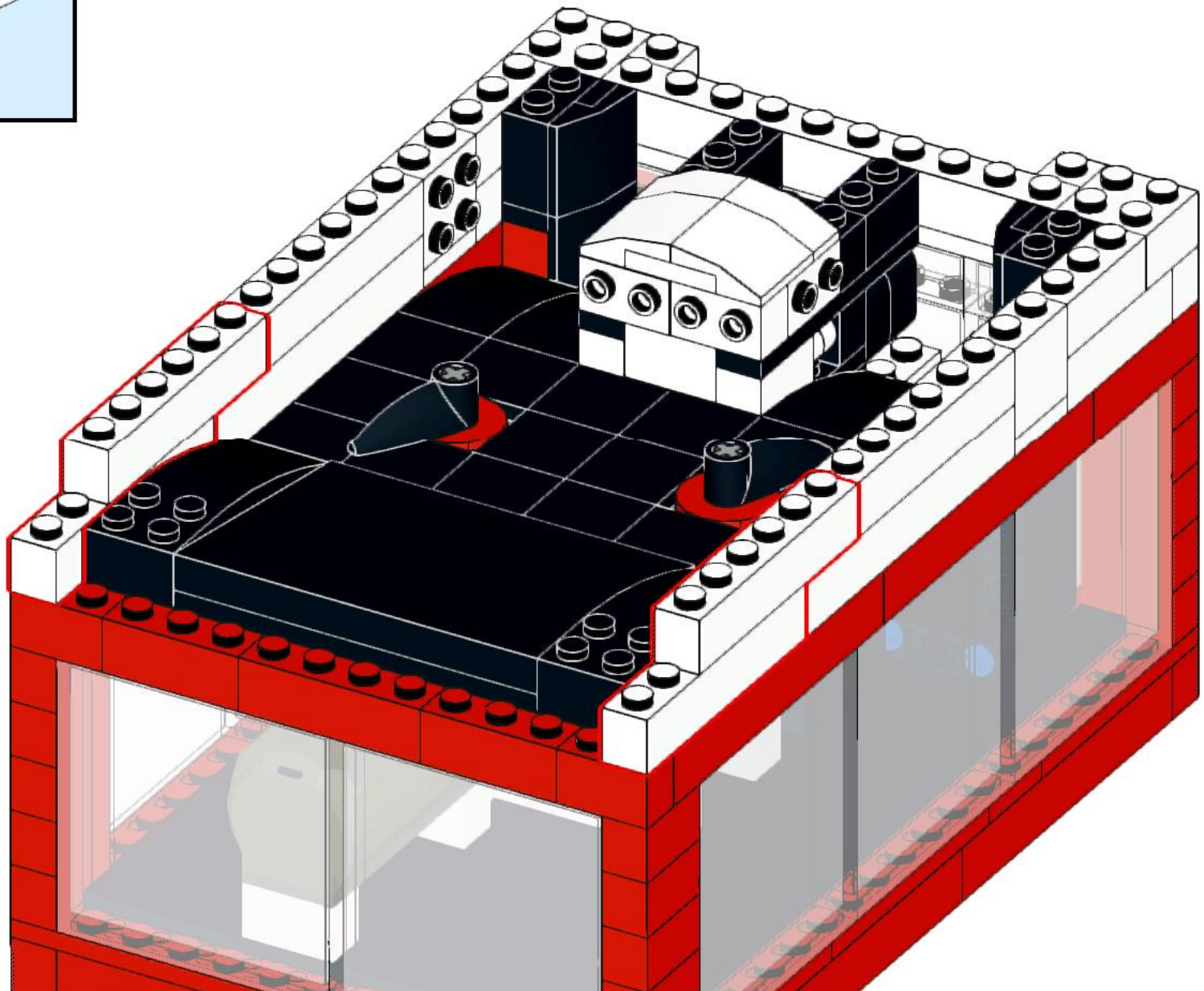
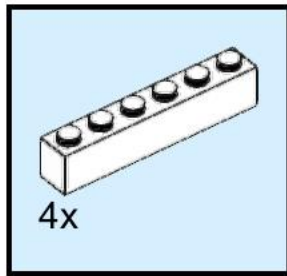
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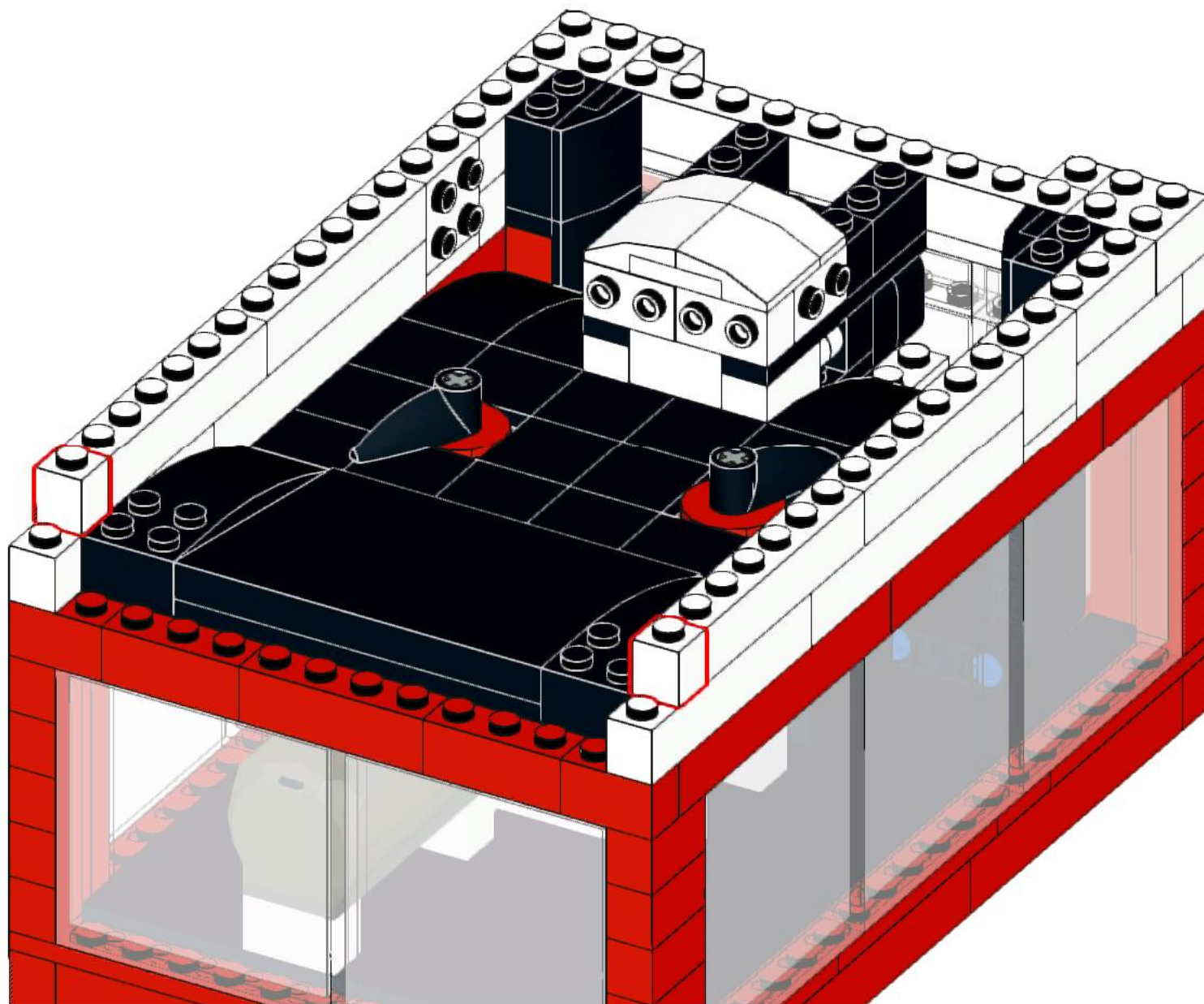
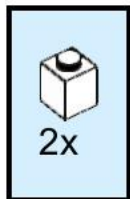
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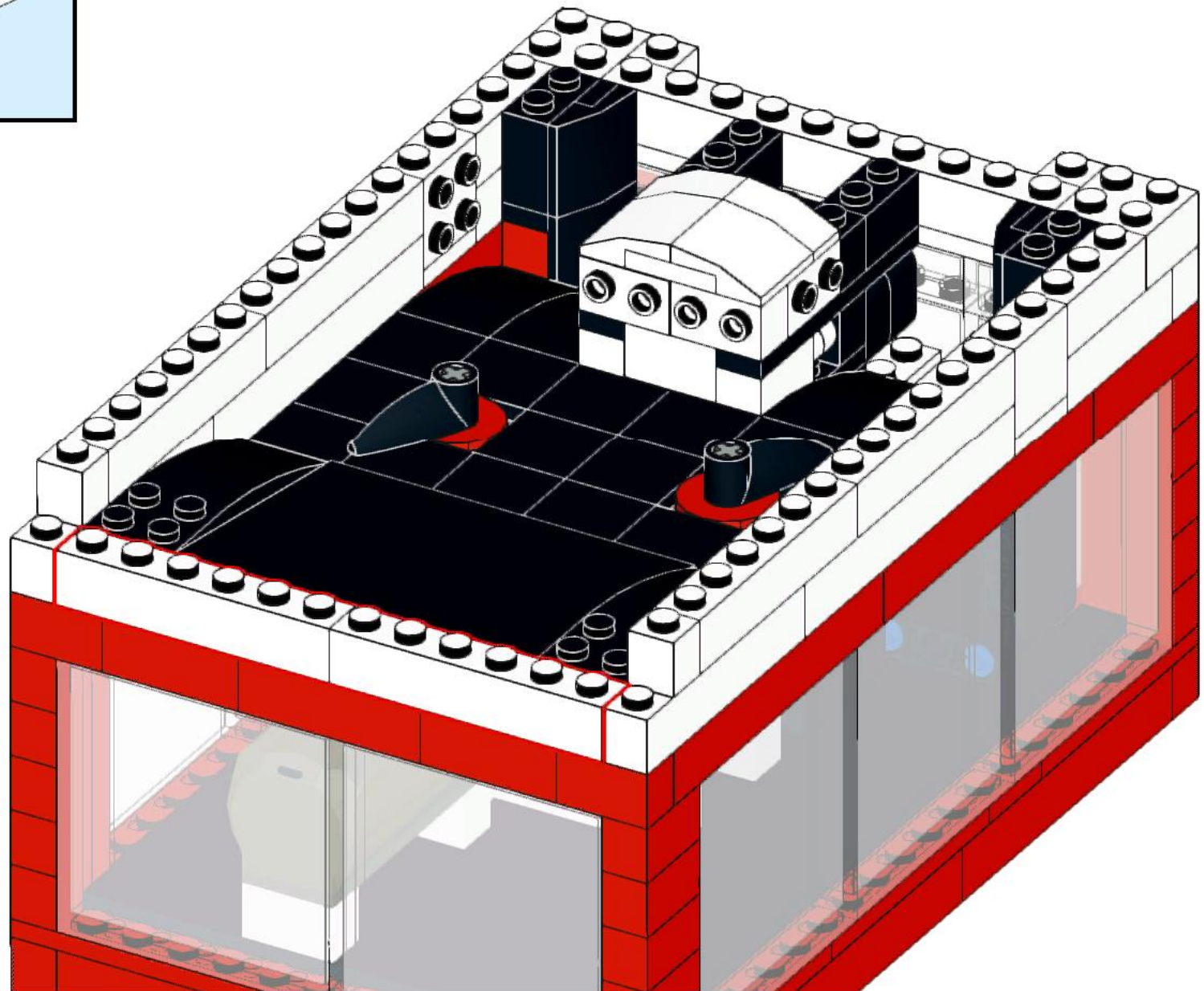
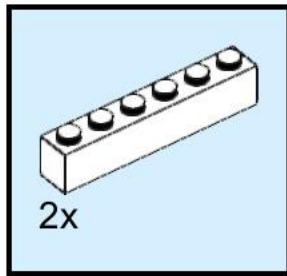
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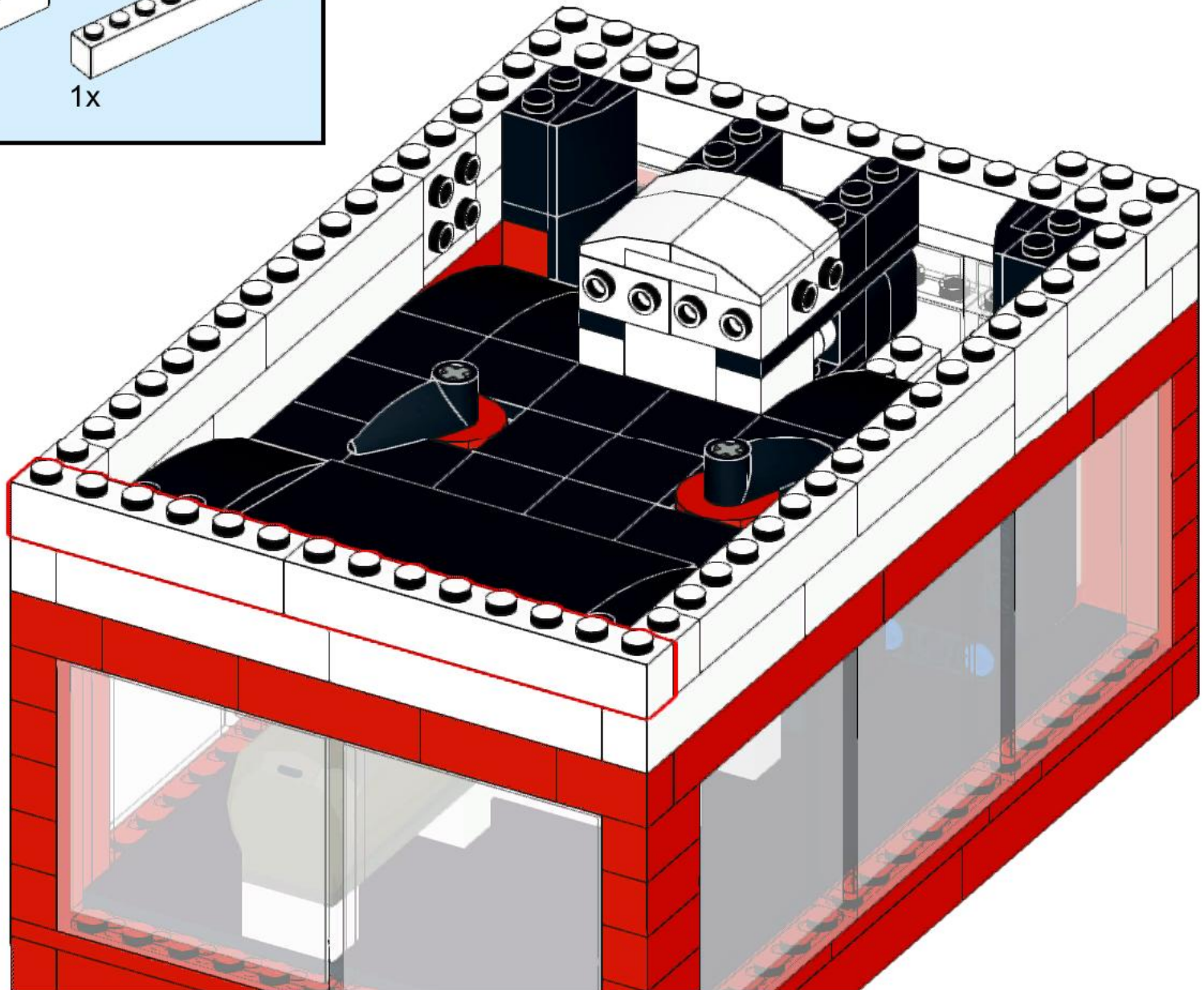
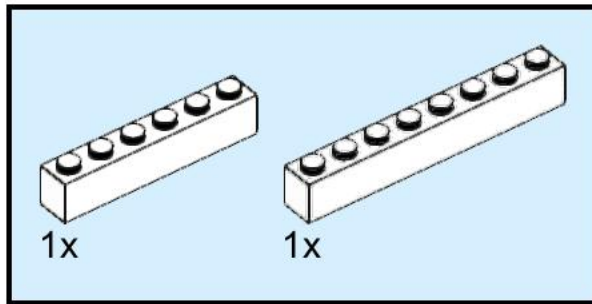
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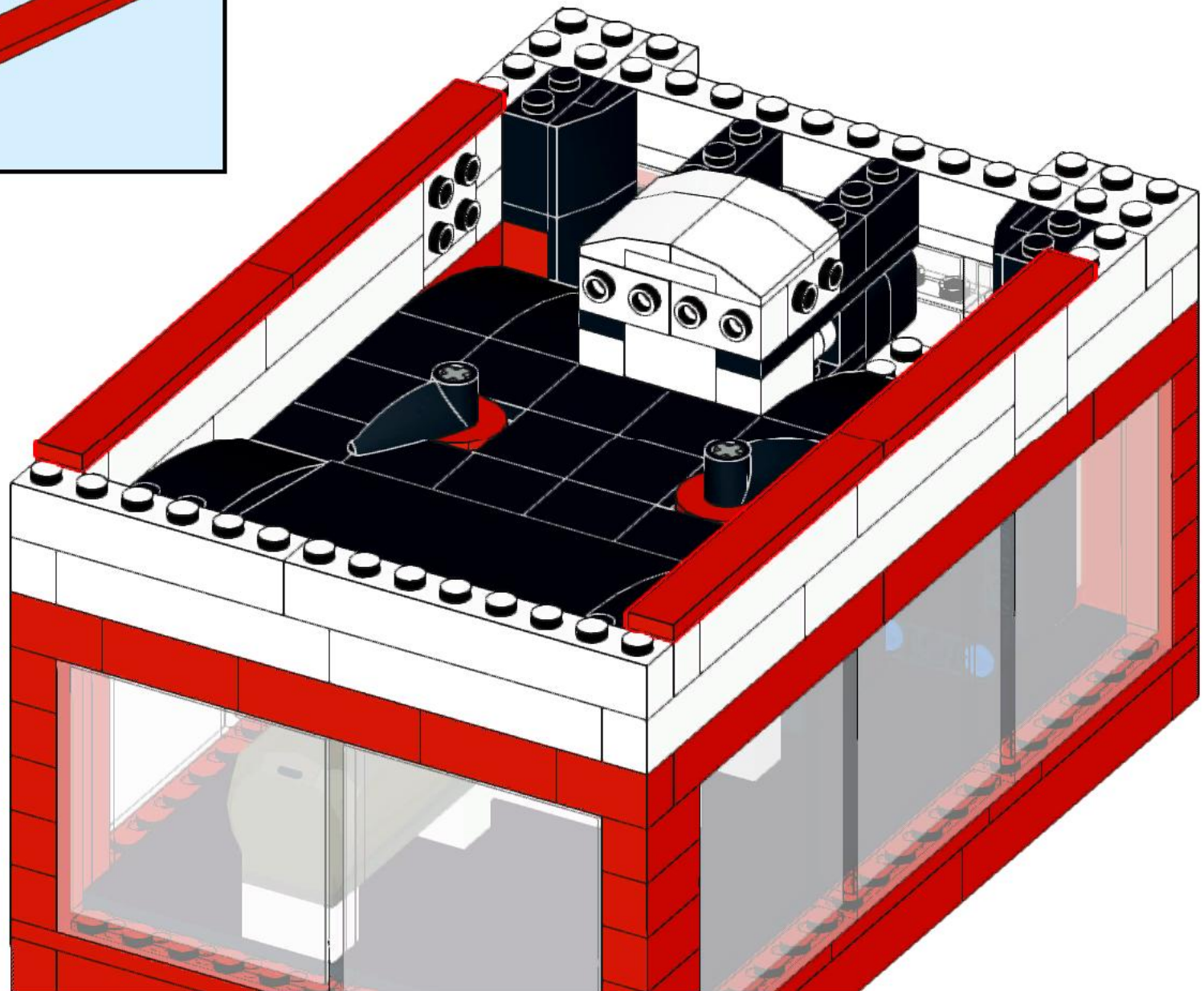
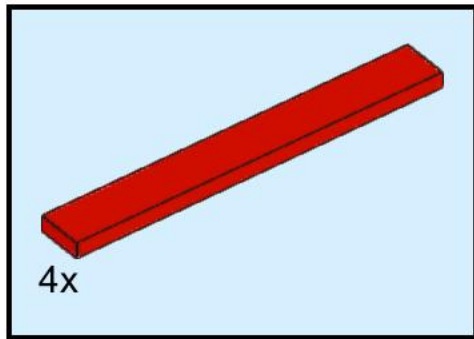
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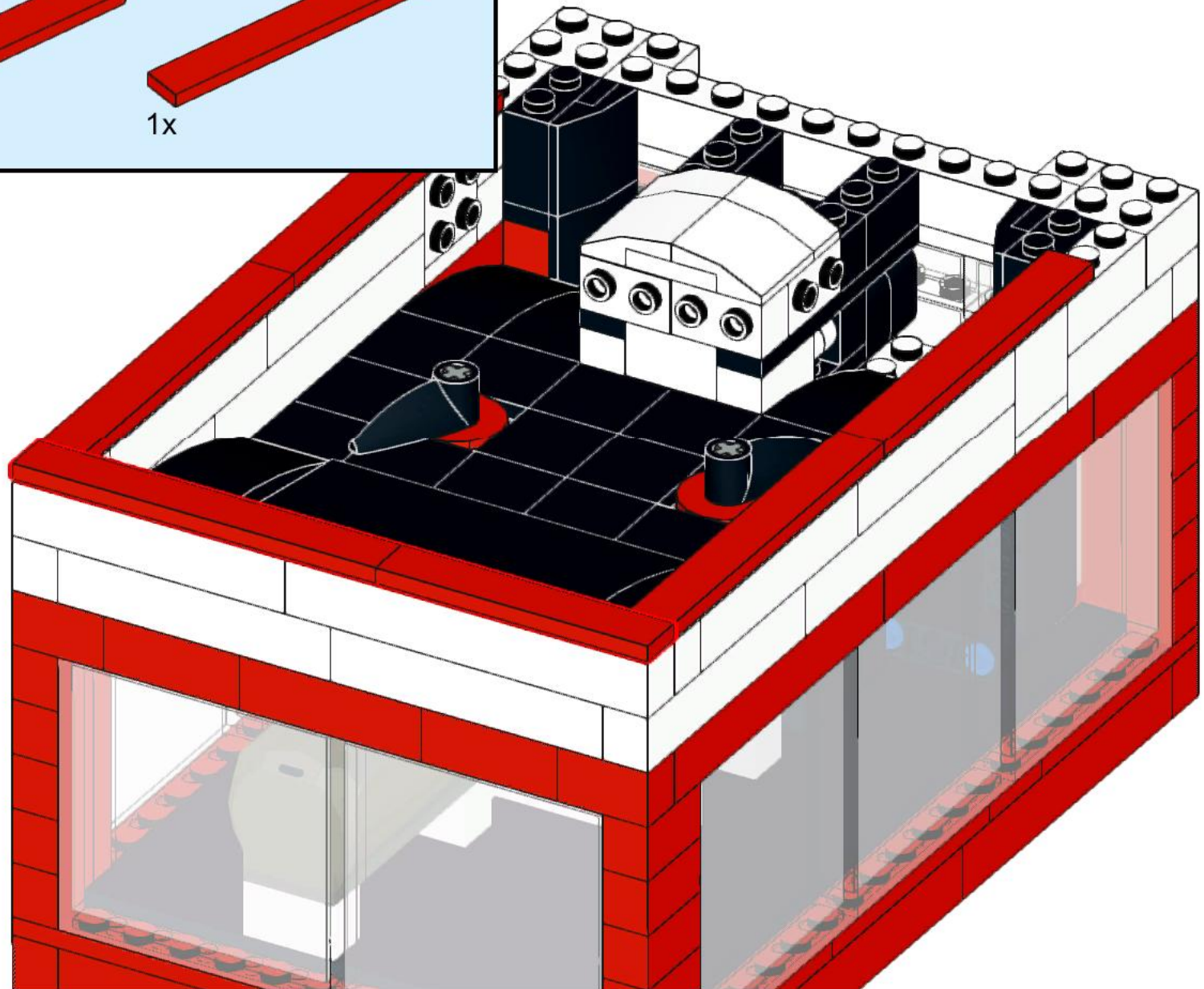
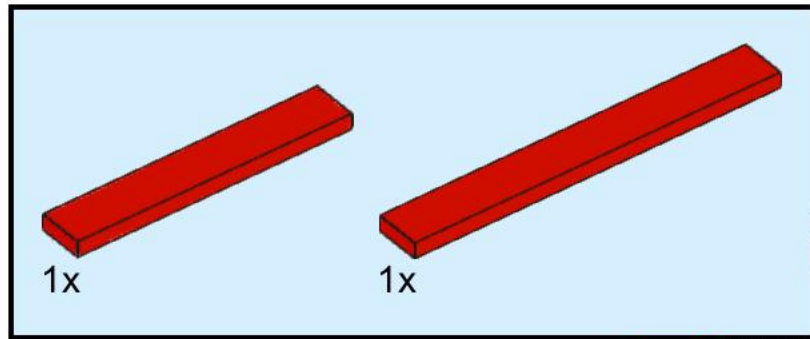
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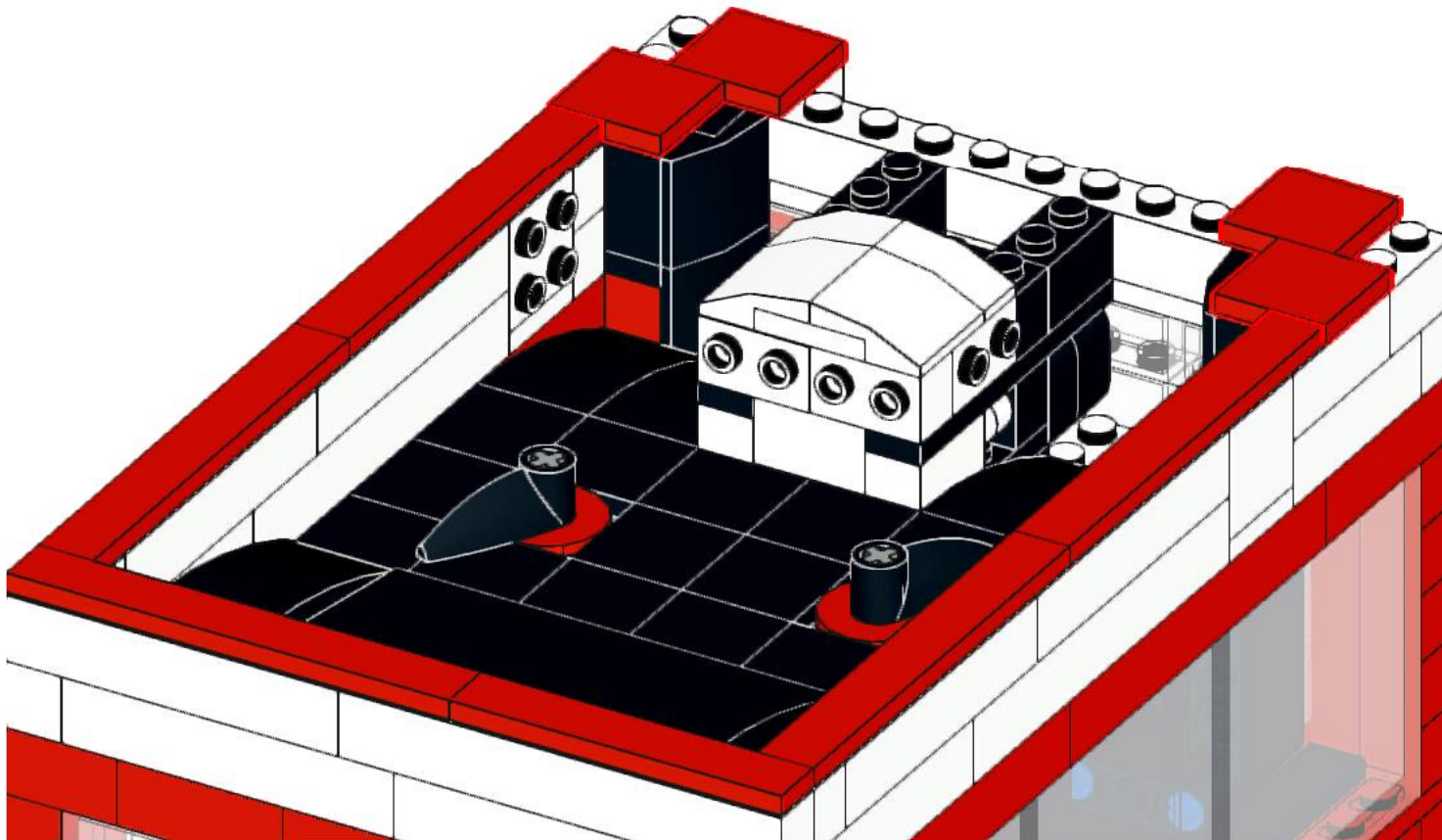
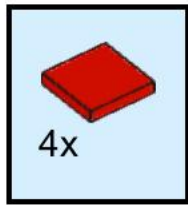
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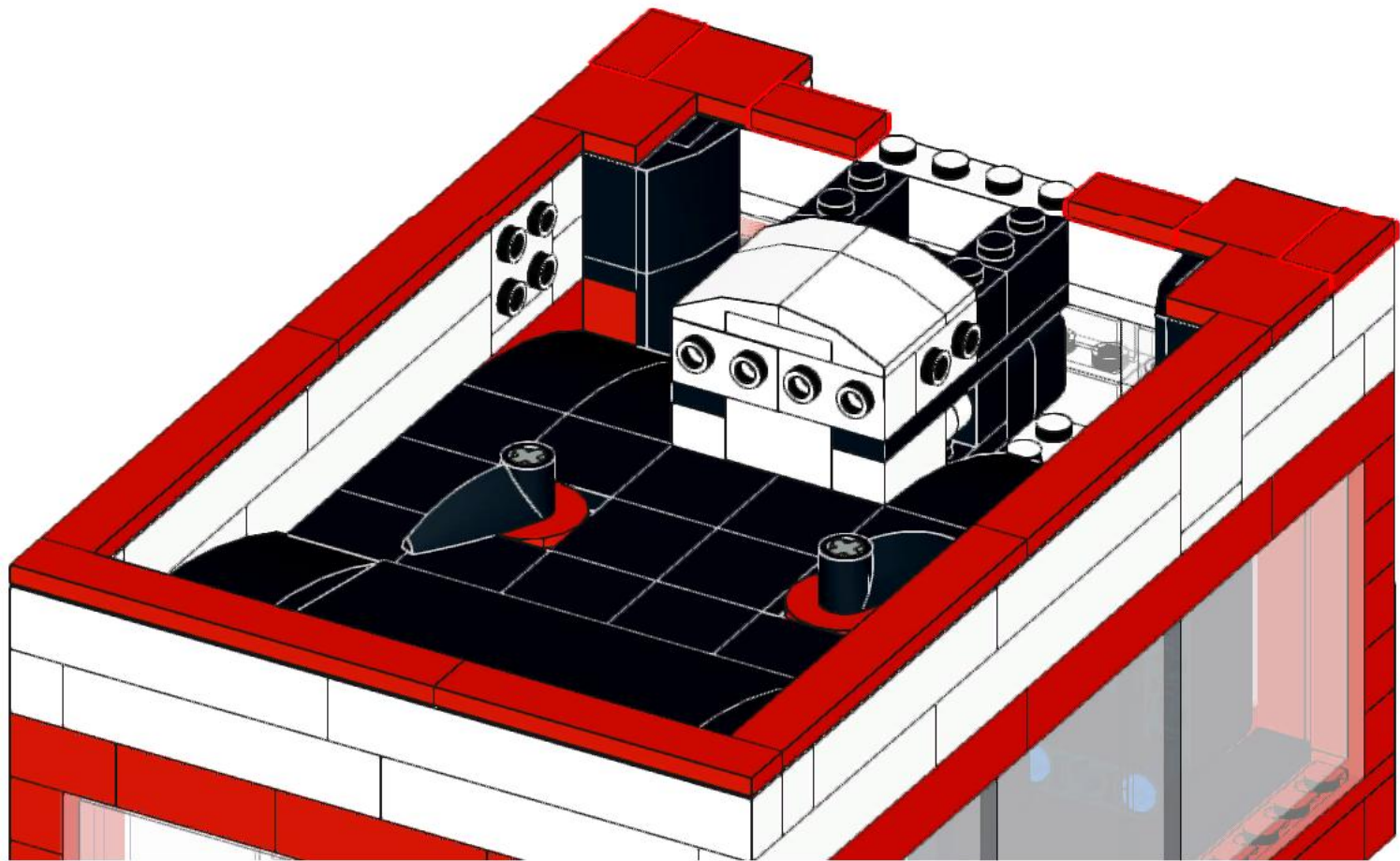
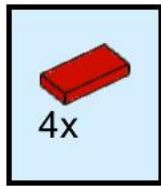
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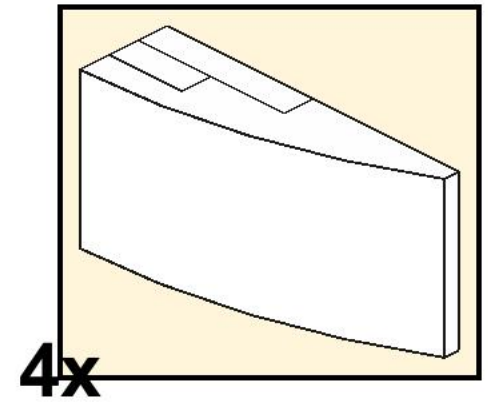
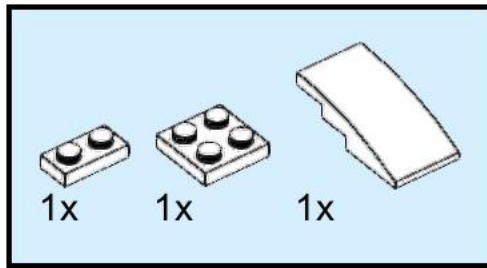
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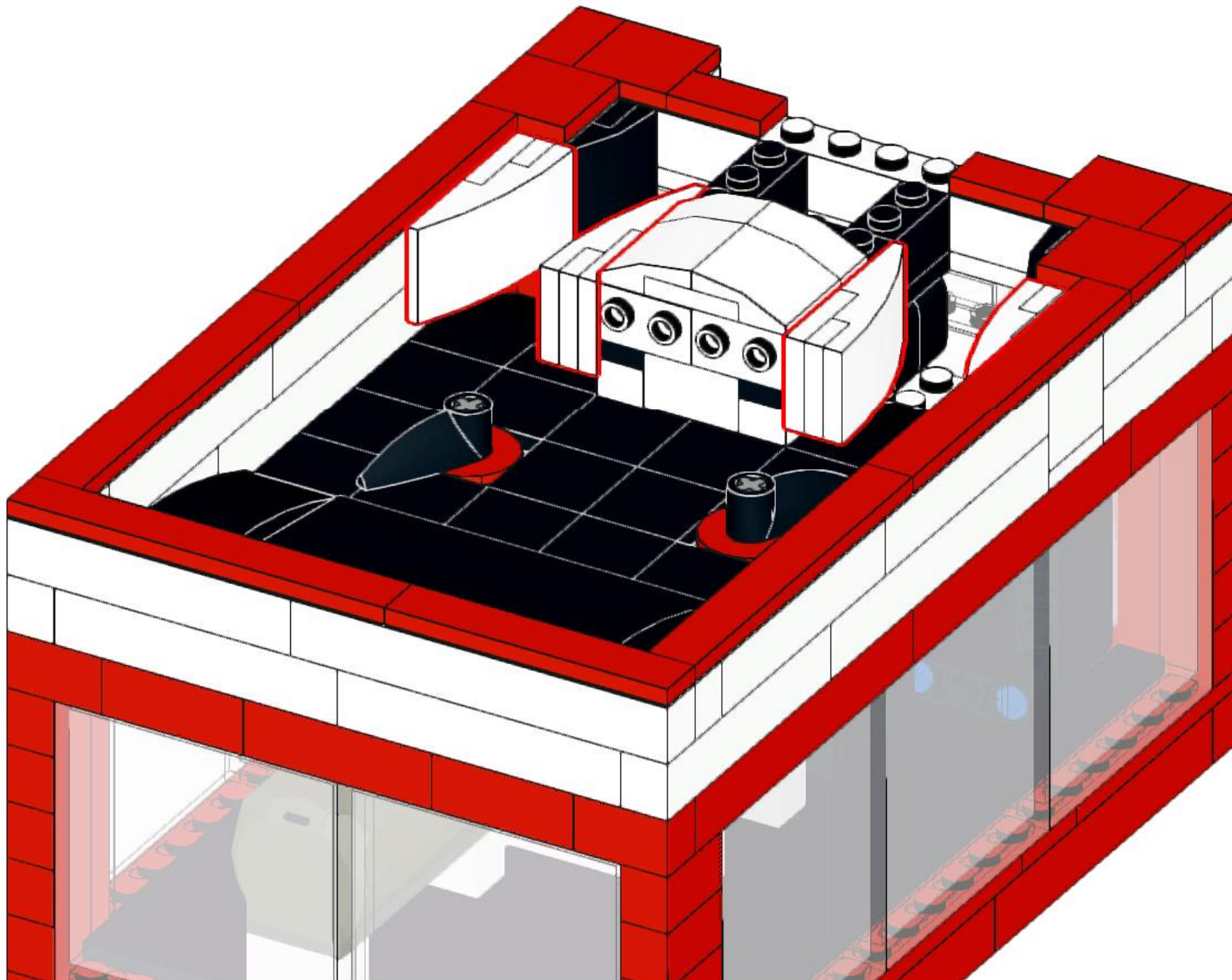
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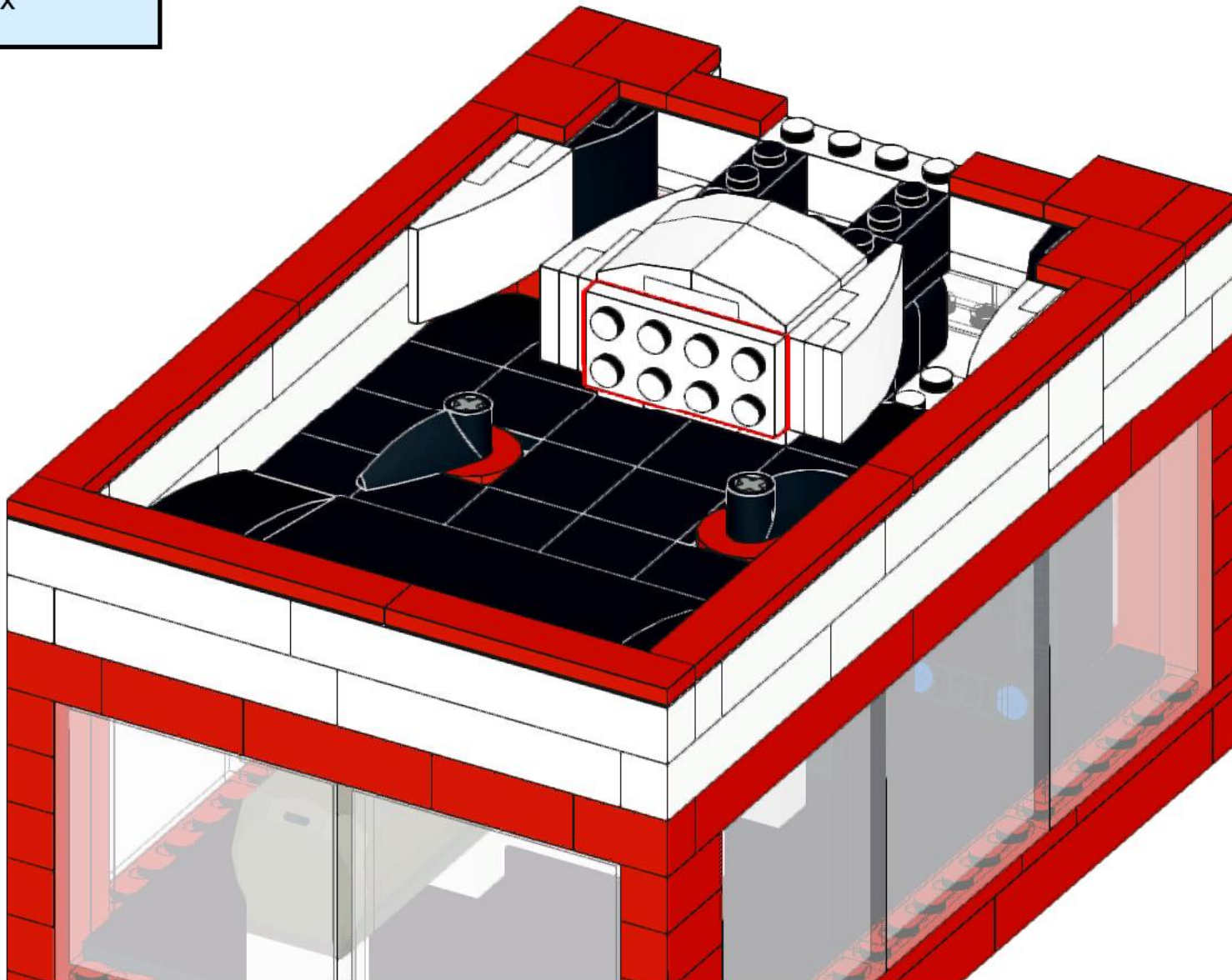
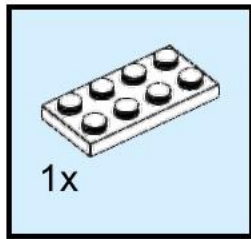
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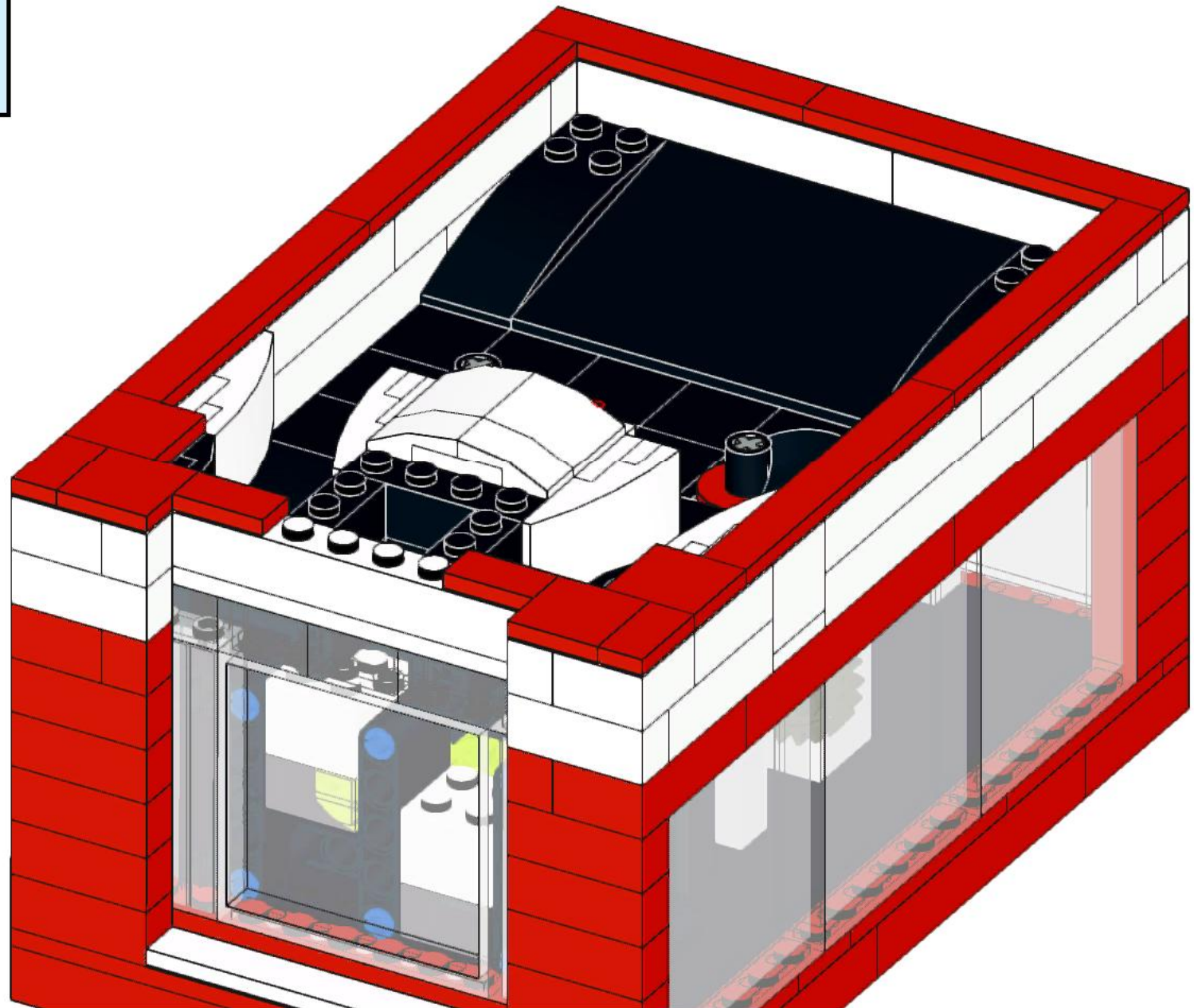
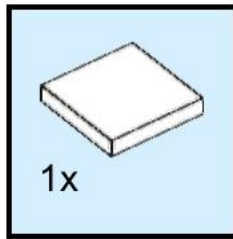
141



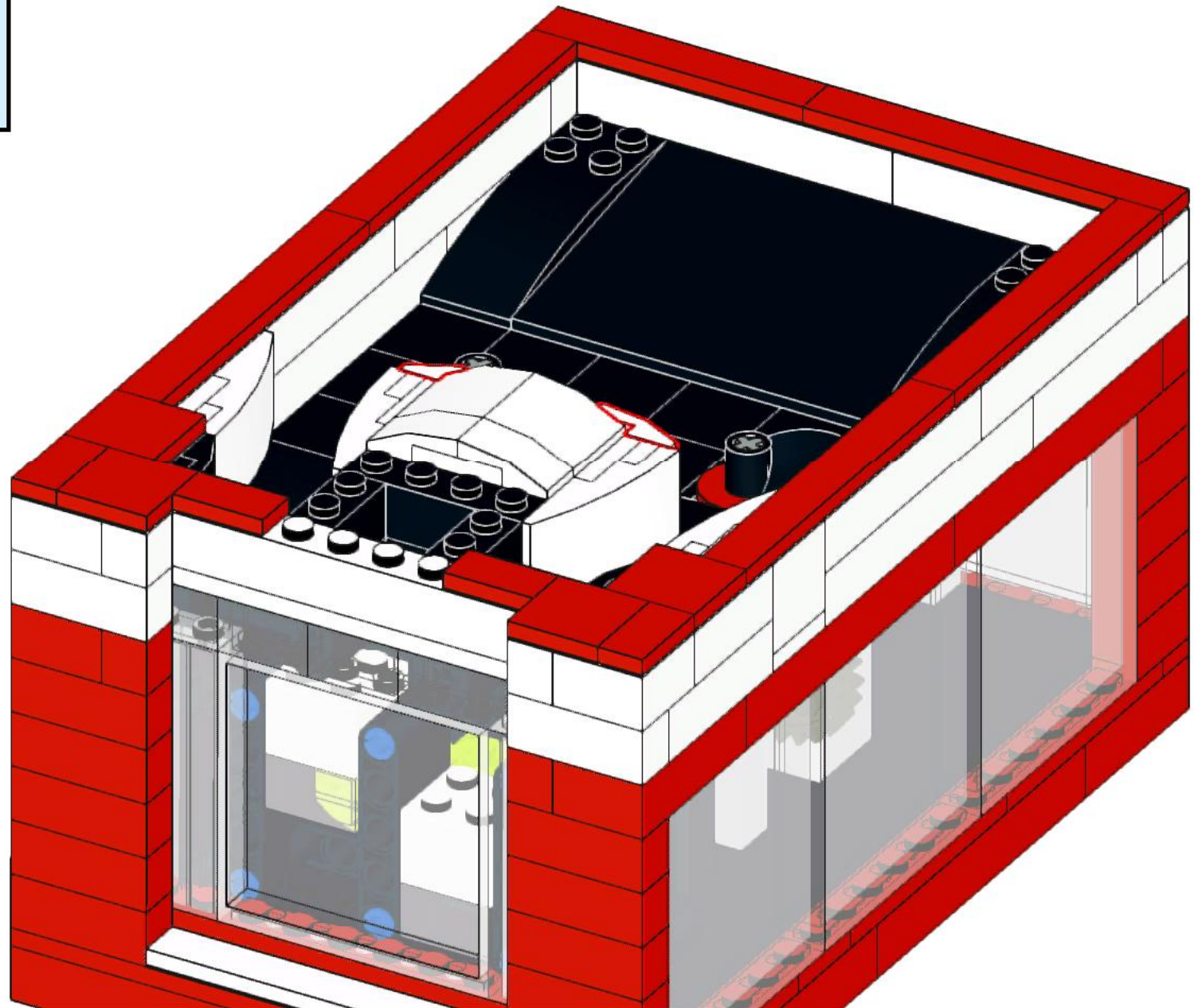
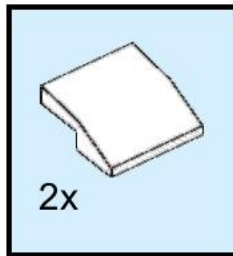
142



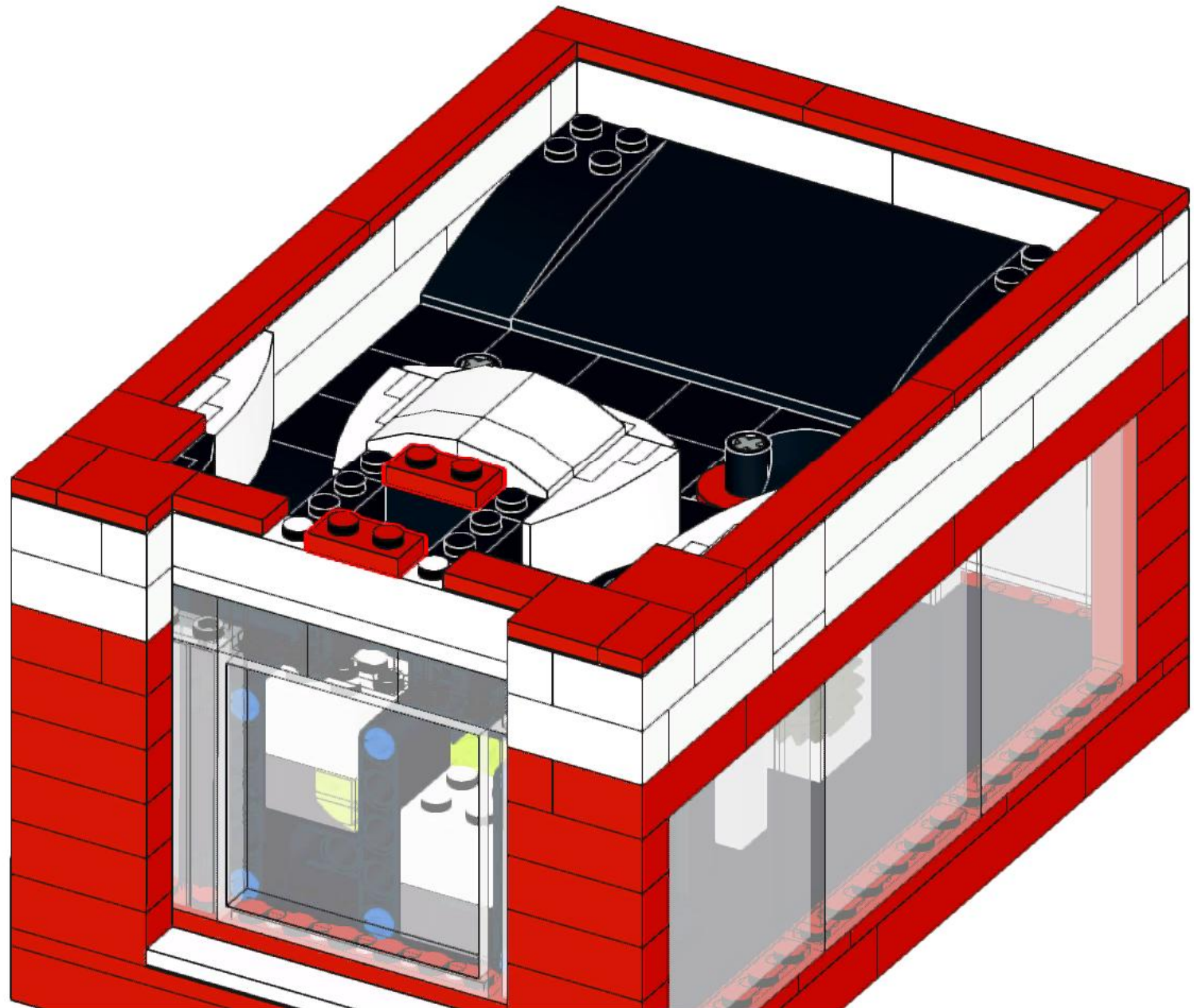
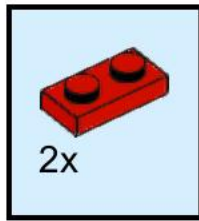
143



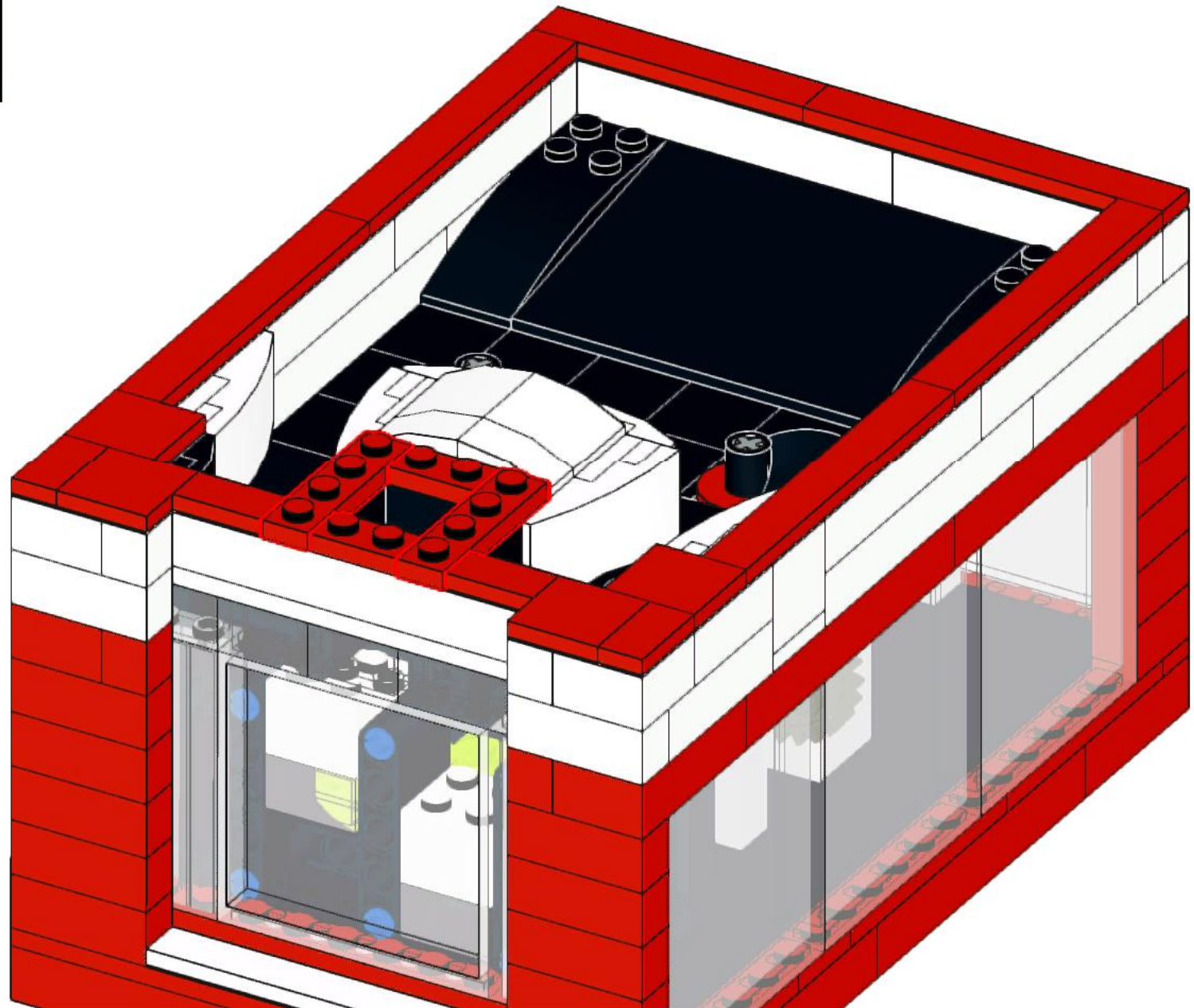
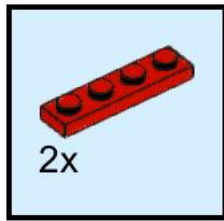
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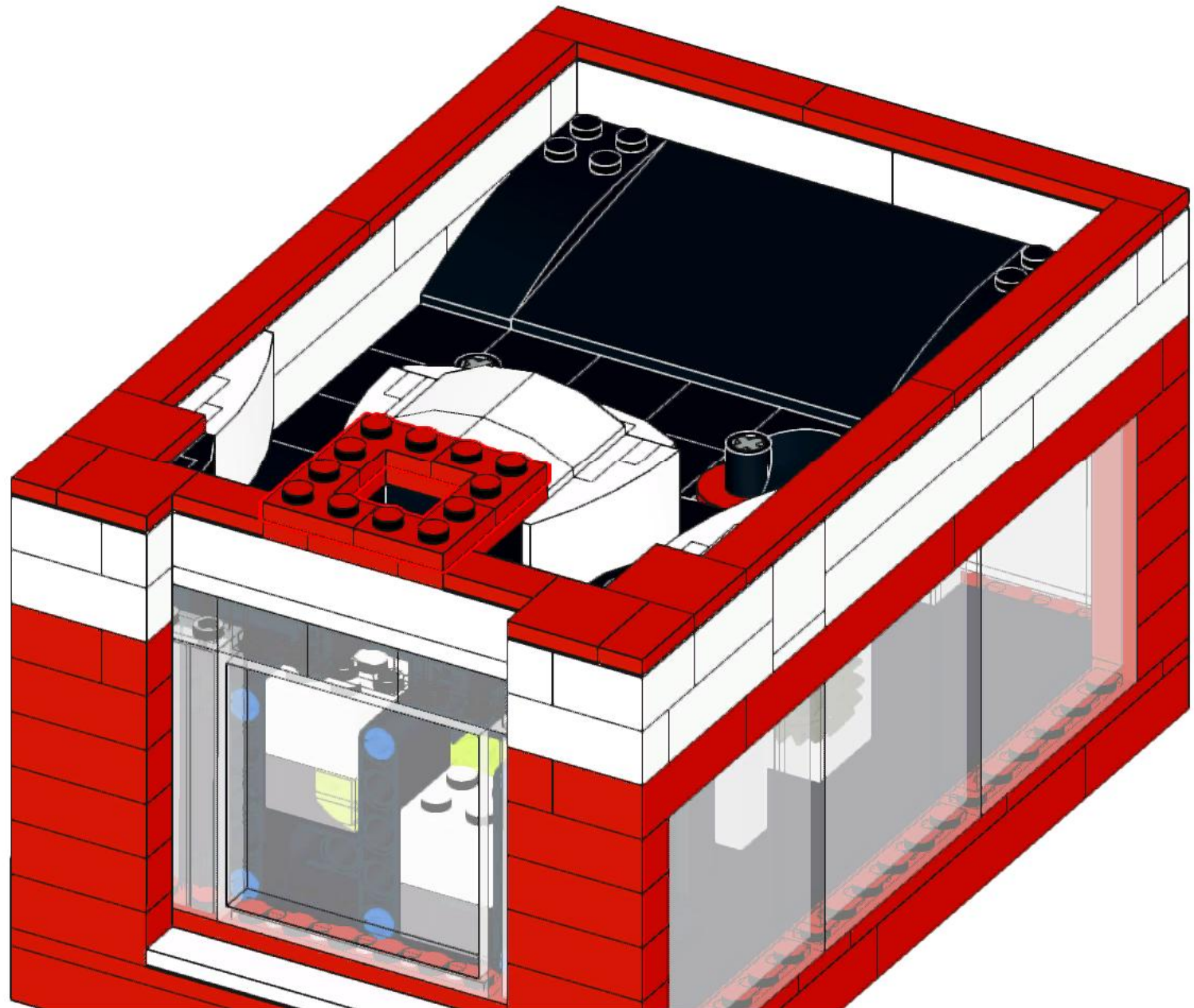
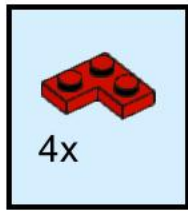
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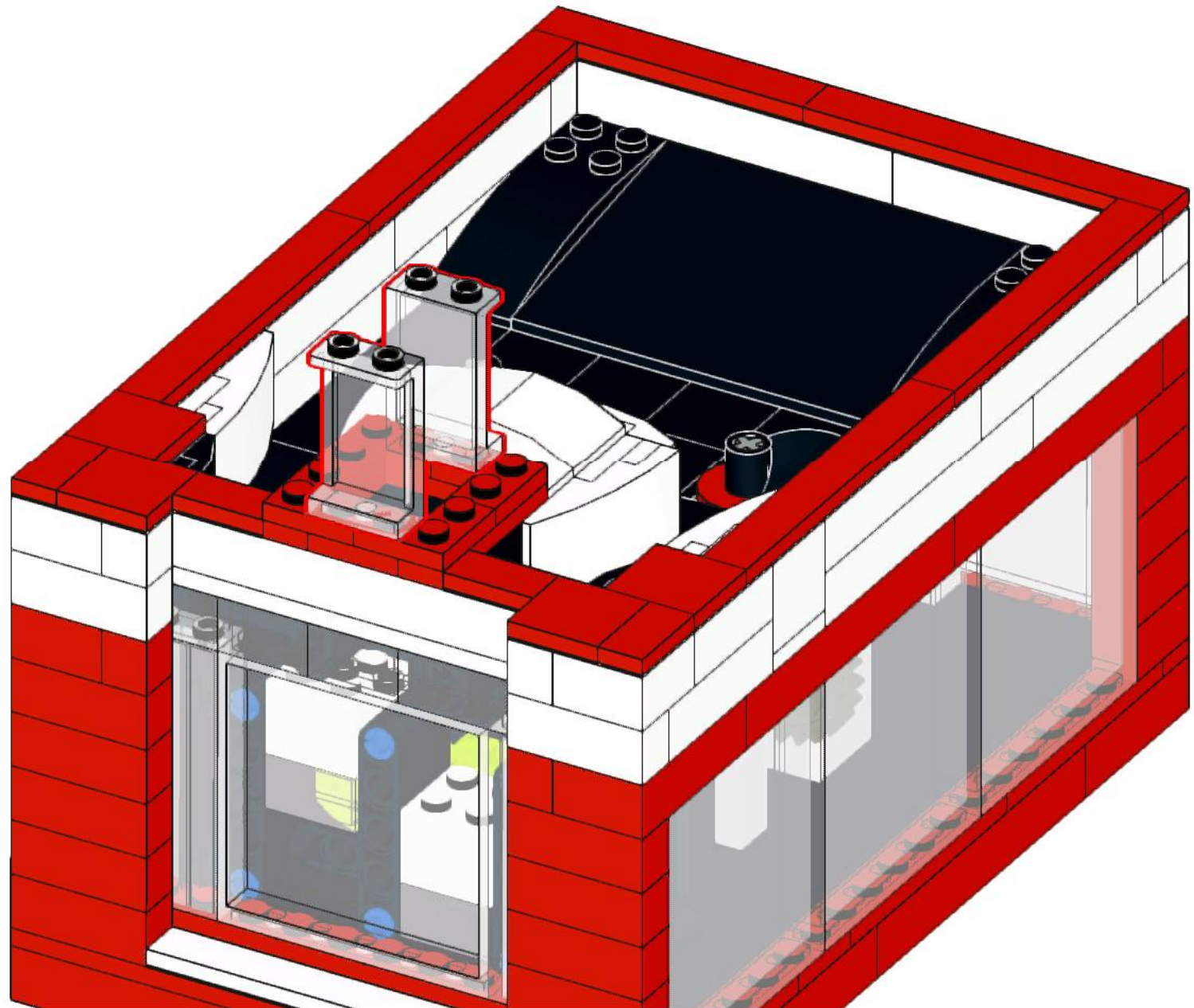
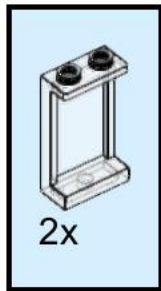
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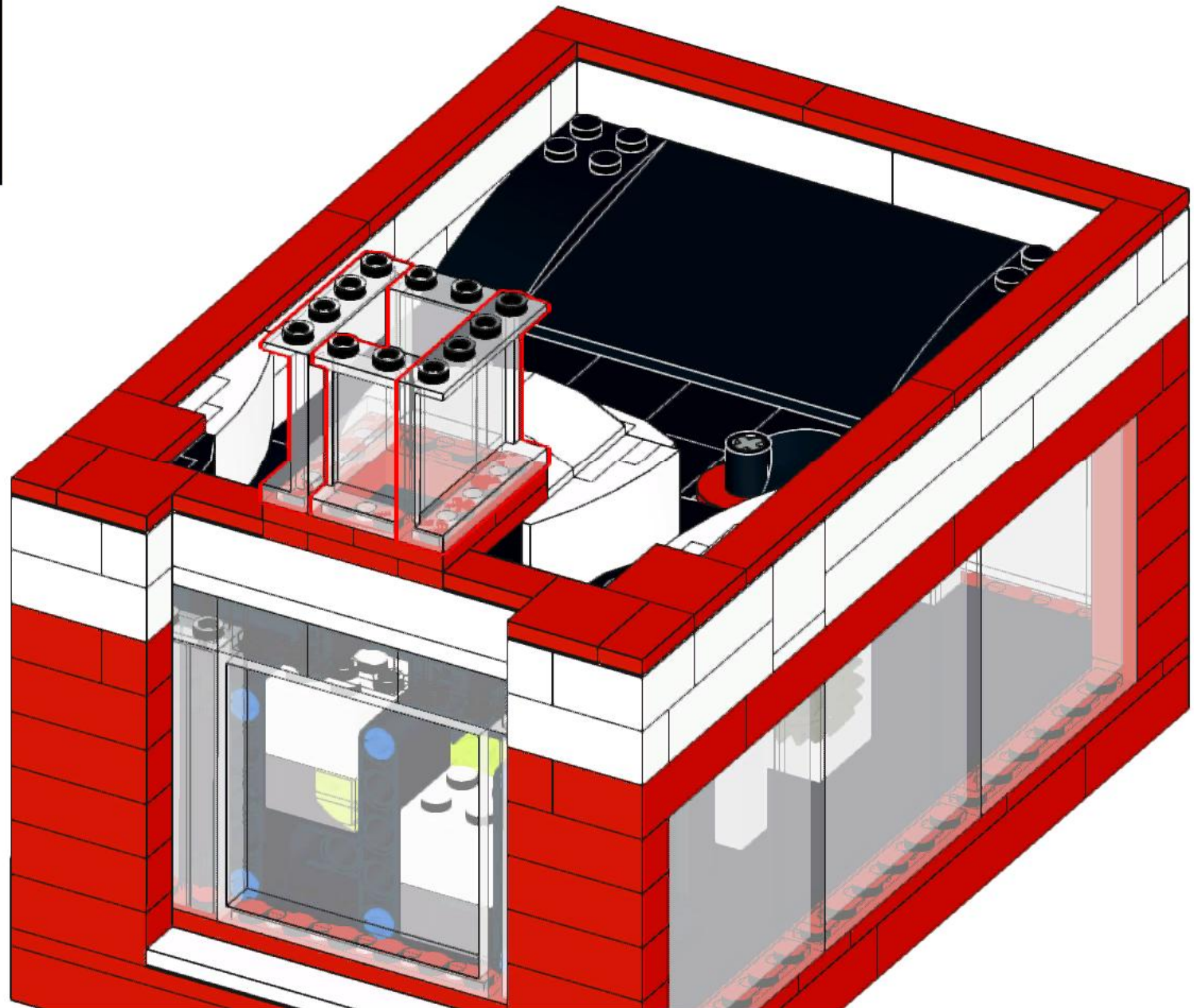
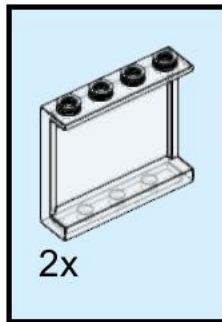
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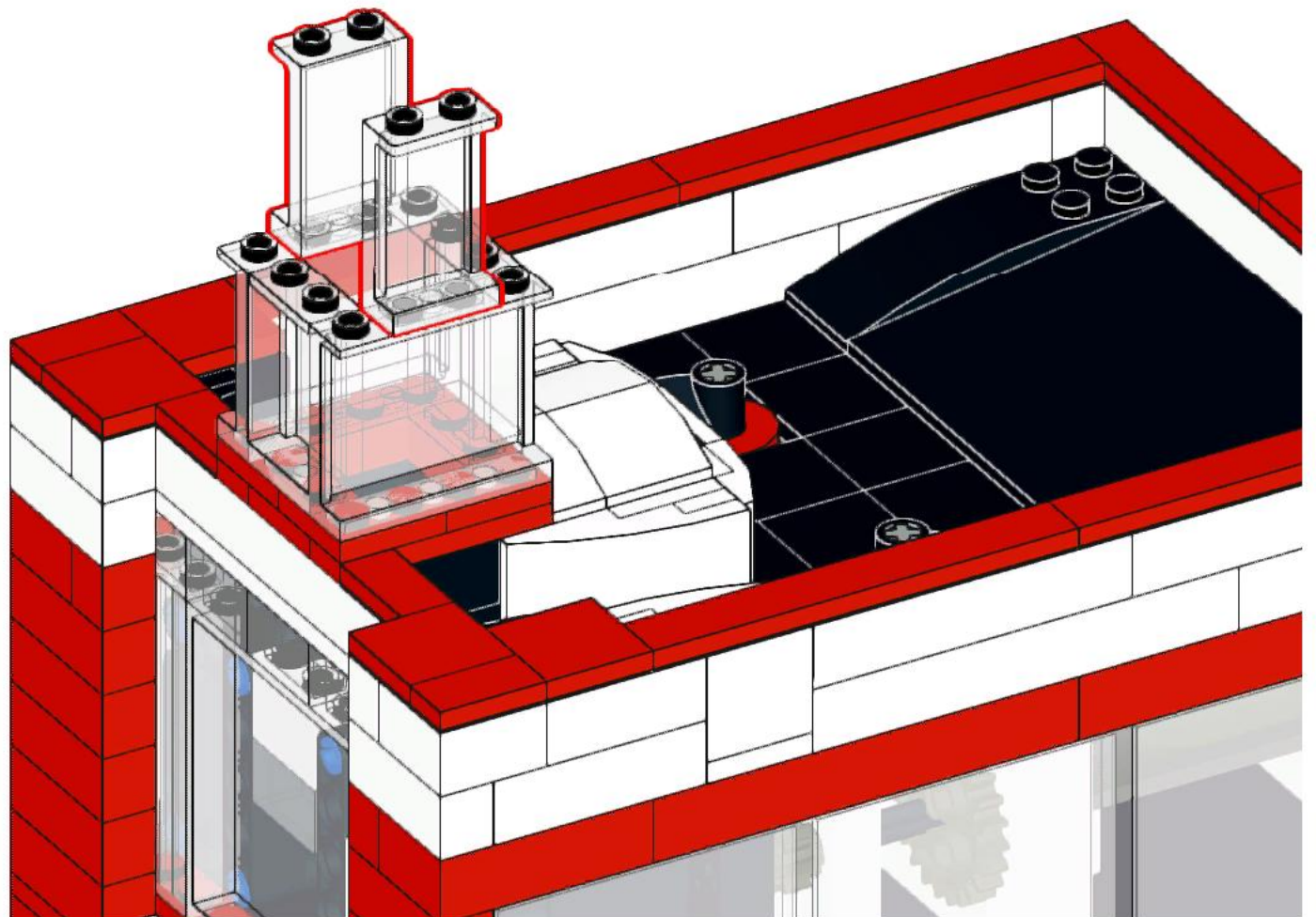
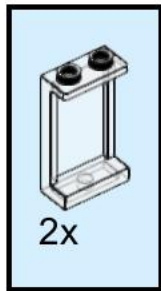
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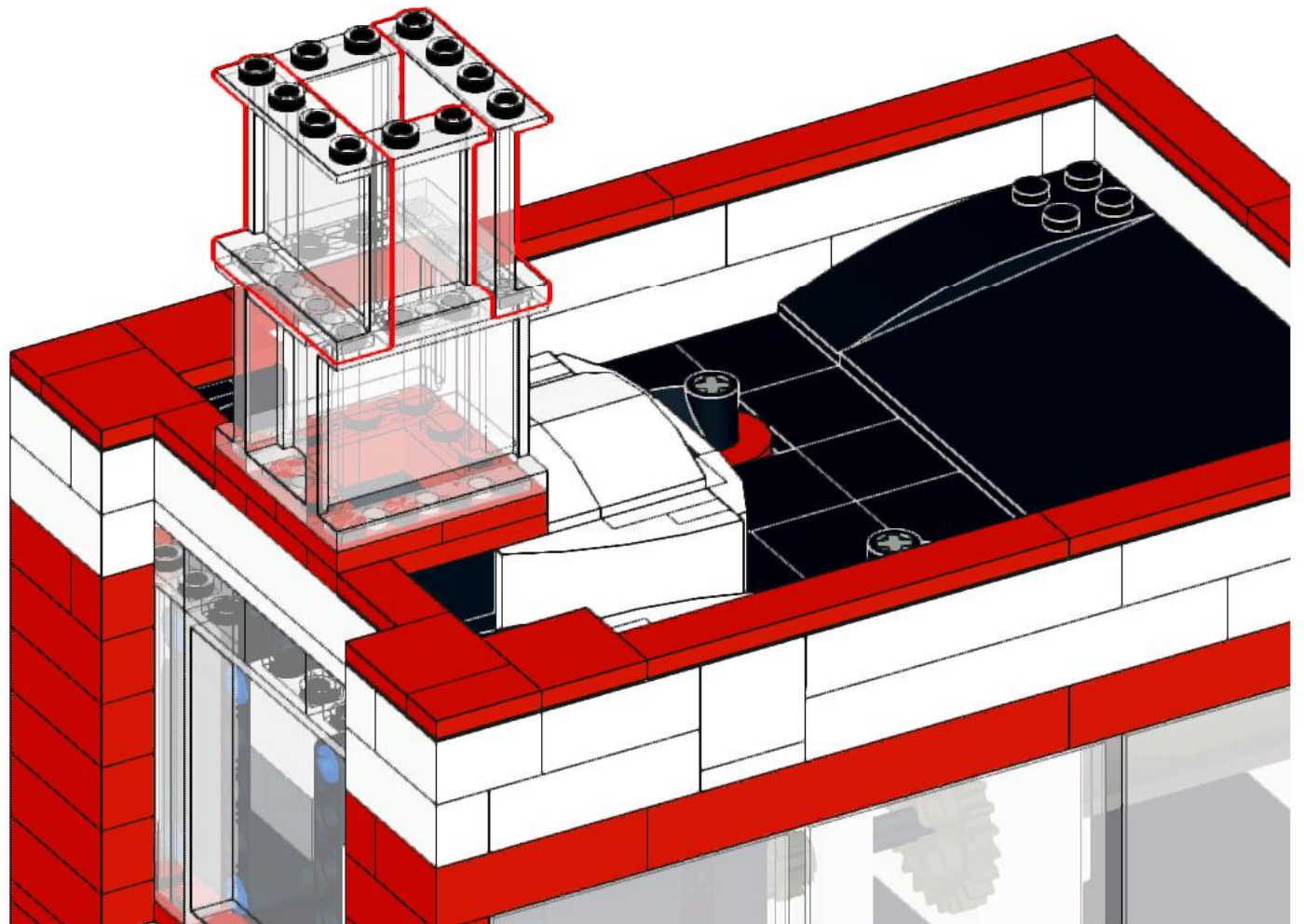
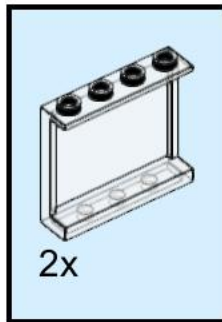
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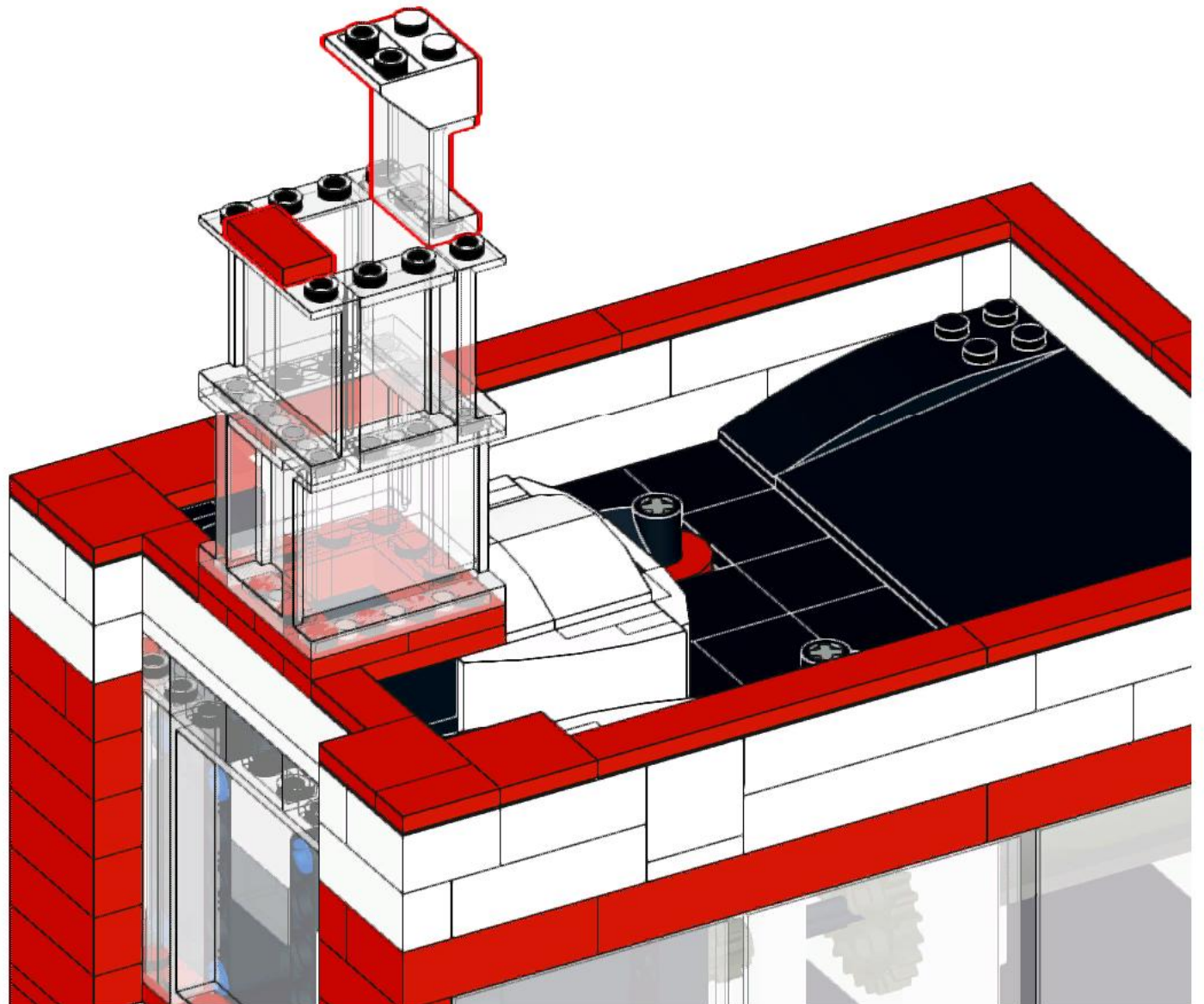
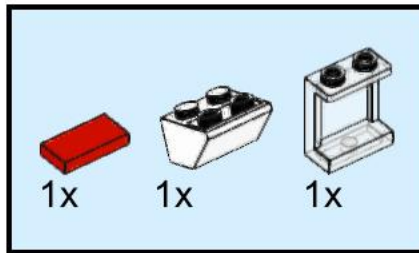
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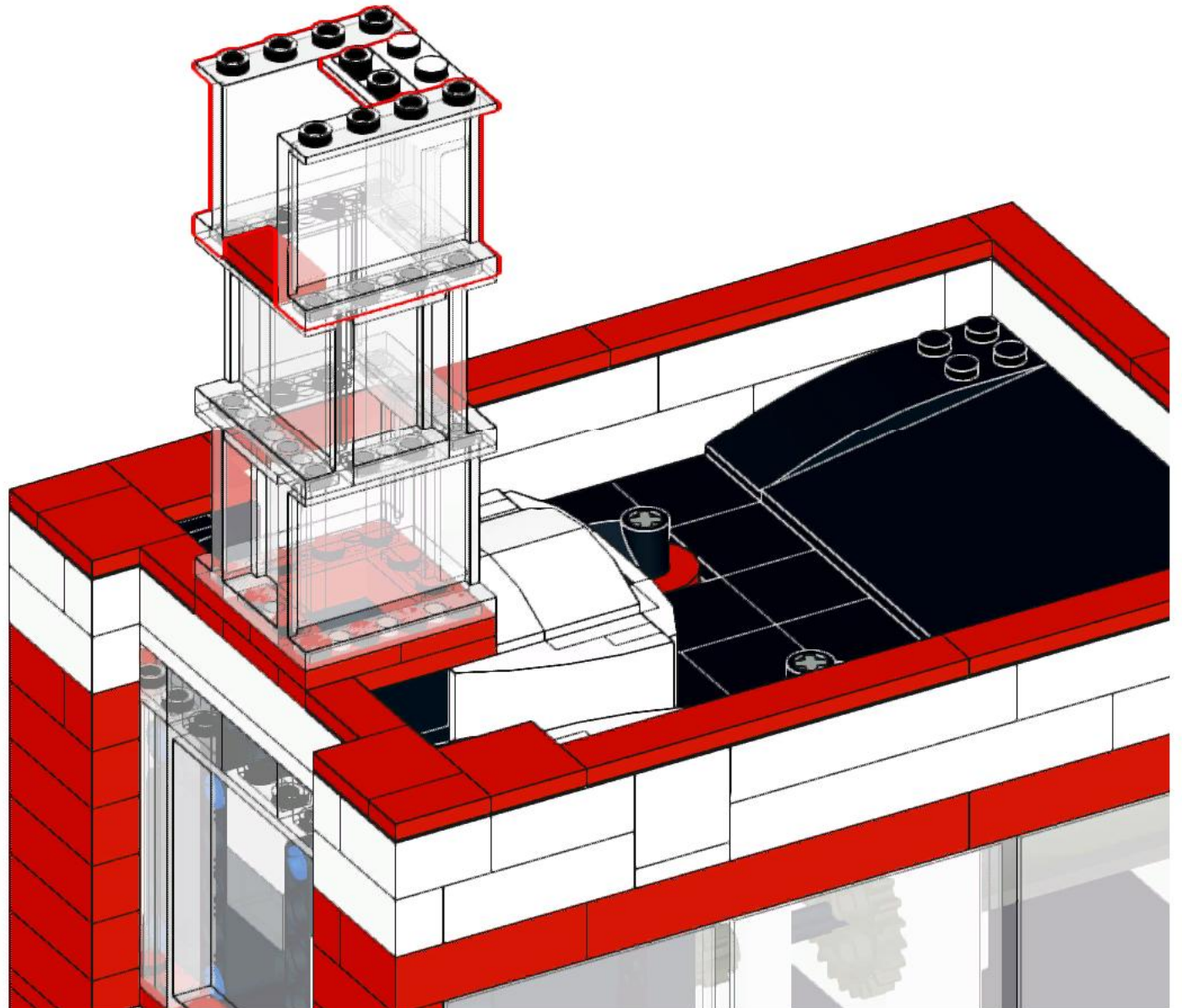
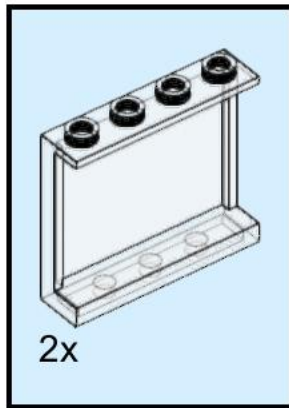
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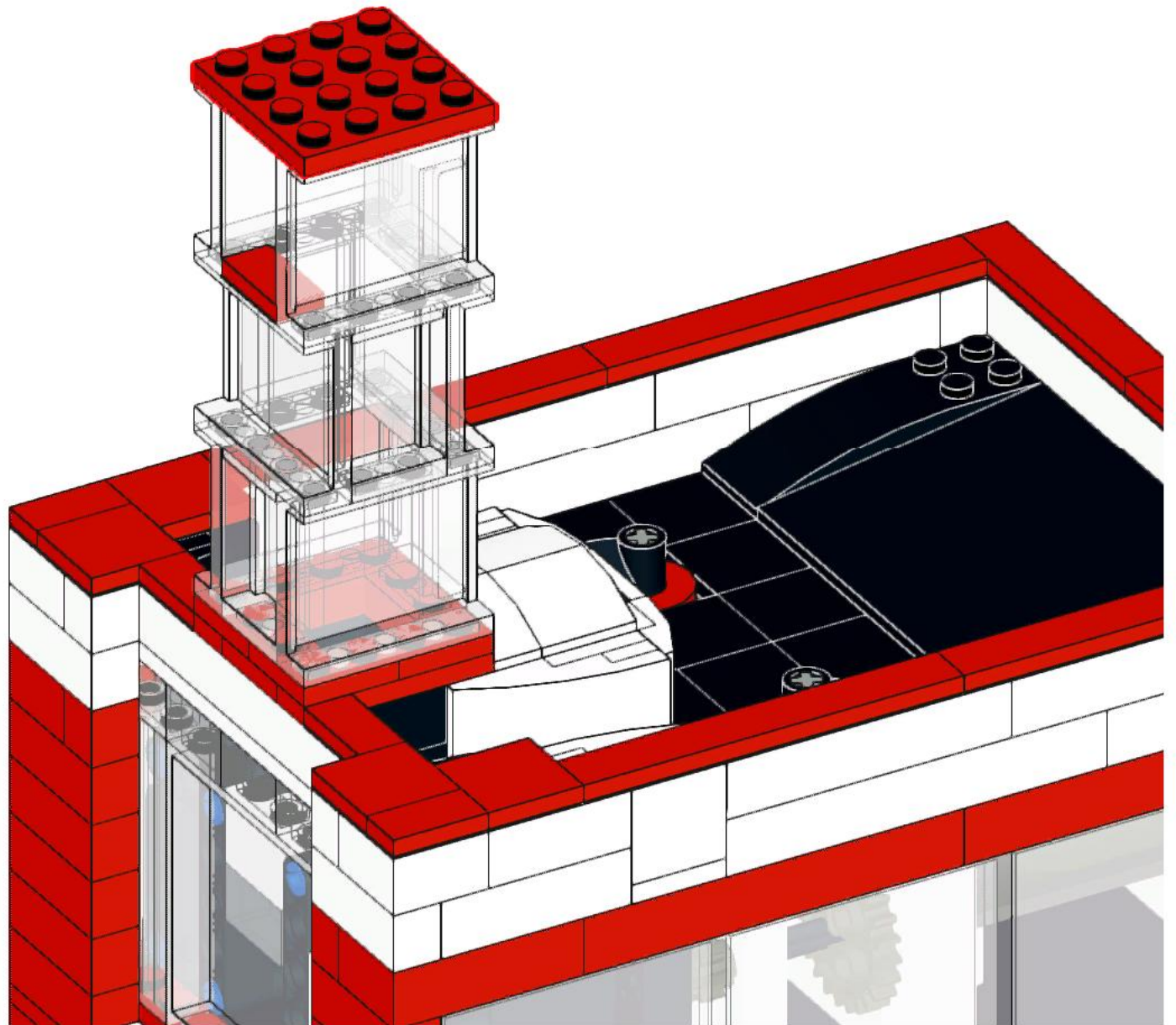
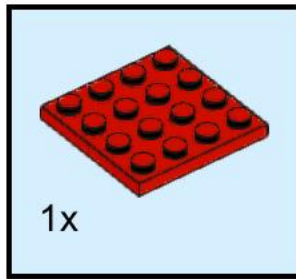
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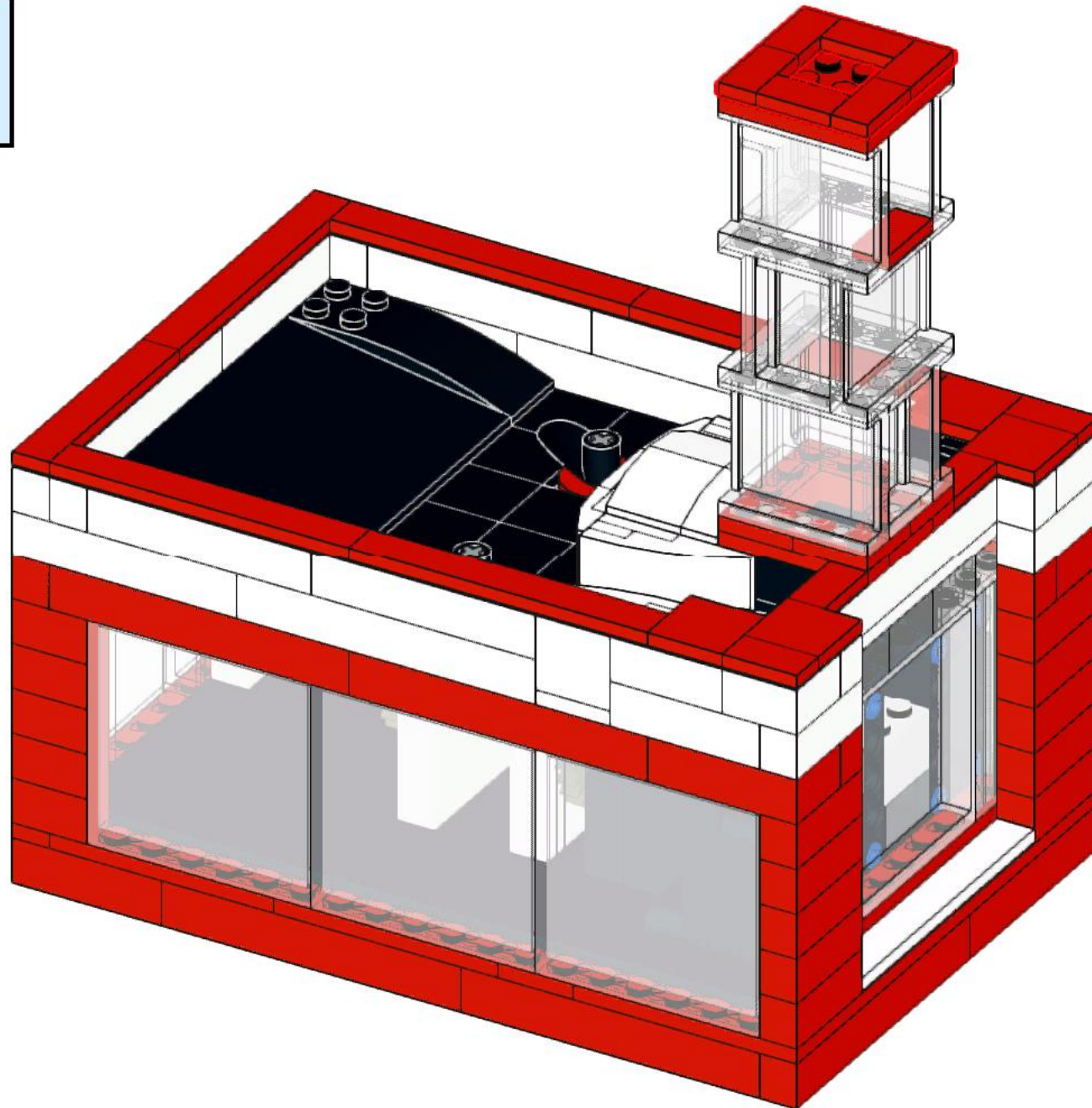
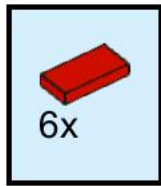
153



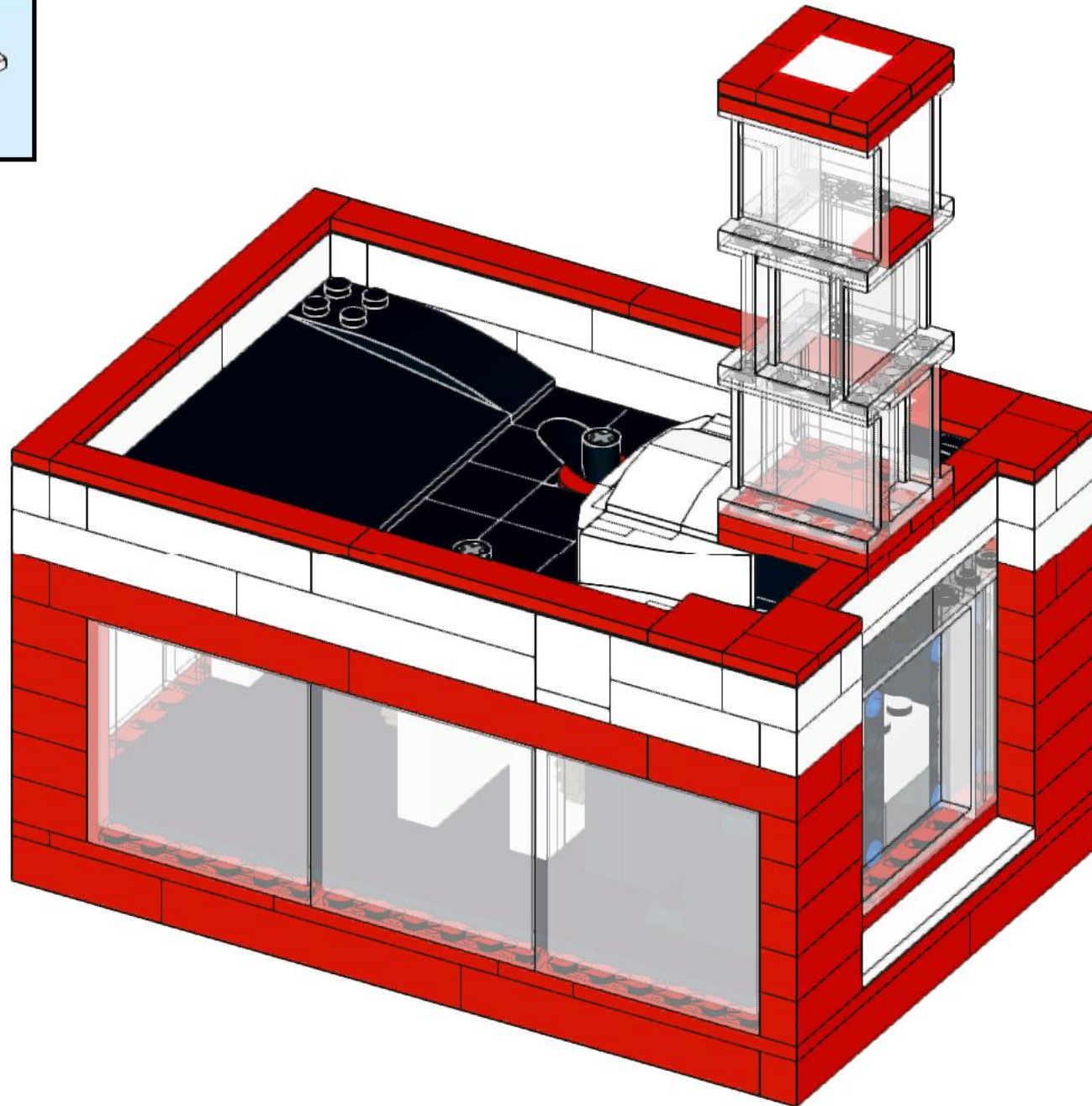
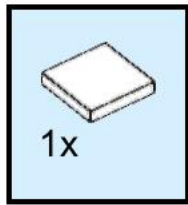
154



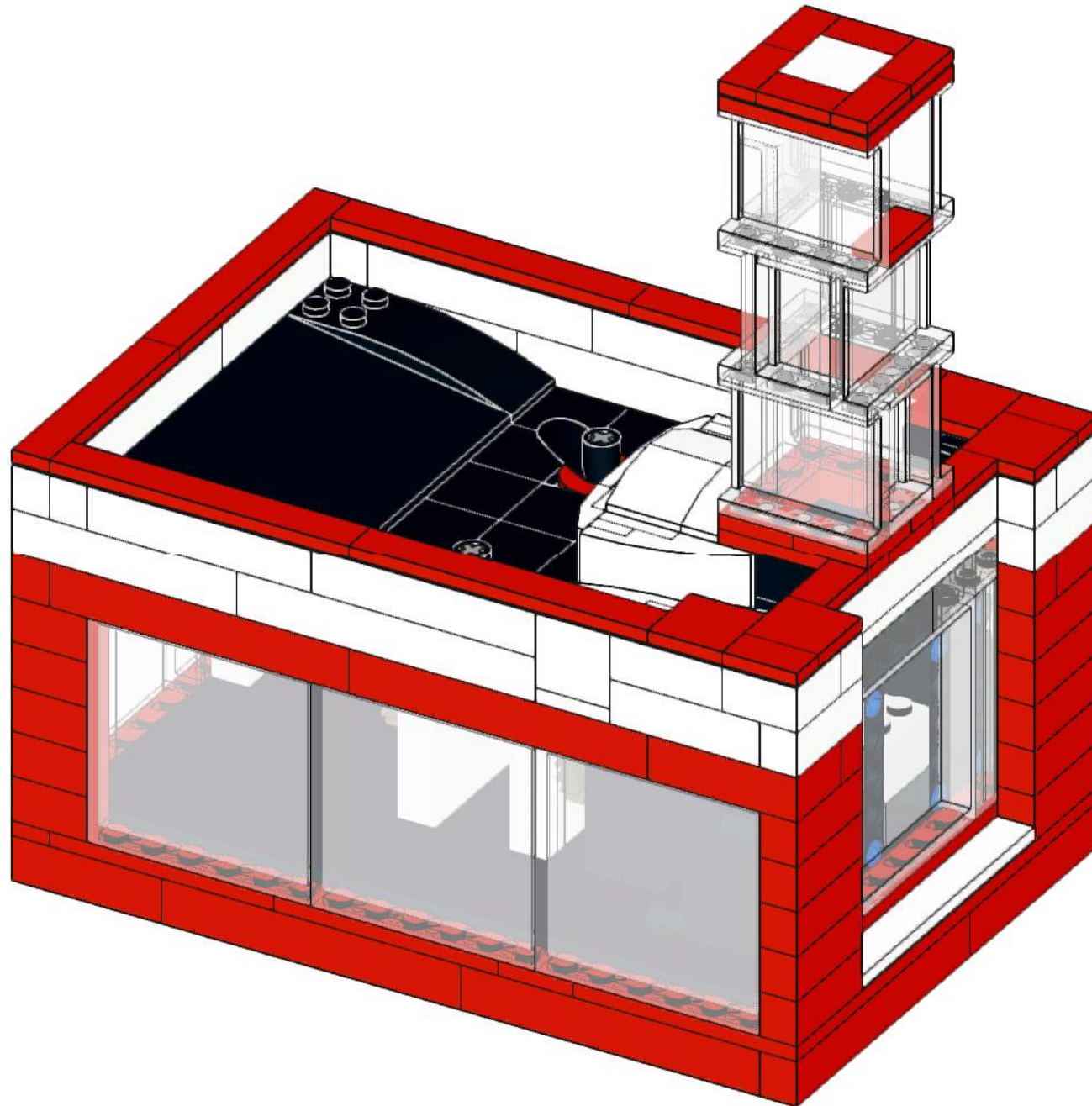
155

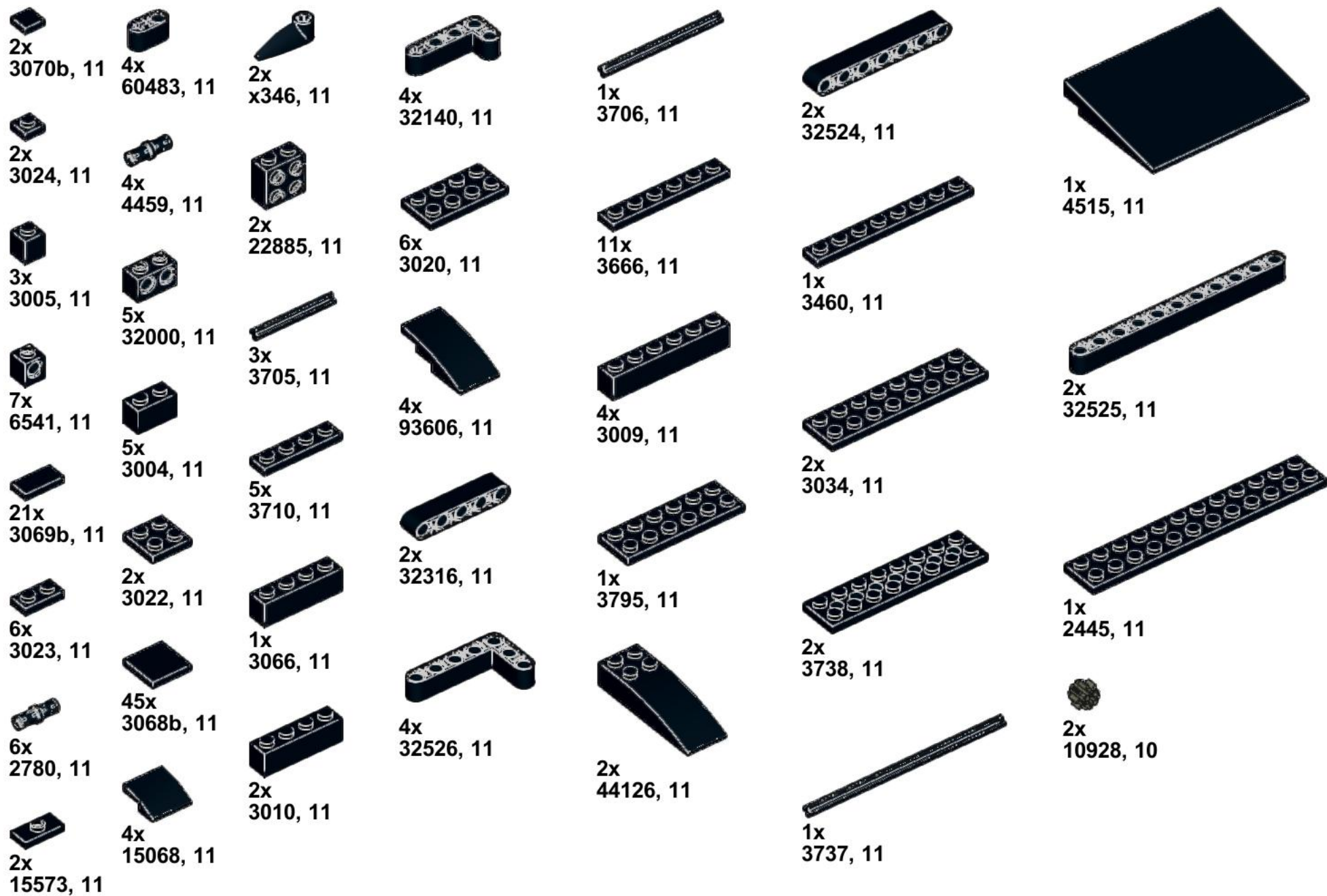


156



157



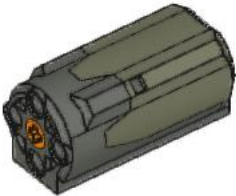




1x
94925, 10



4x
3648, 10



1x
58120c01, 10



2x
3673, 9



3x
4519, 9



2x
32073, 9



2x
3024, 1



13x
3005, 1



1x
3069b, 1



11x
3023, 1



2x
11477, 1



11x
3004, 1



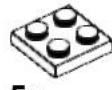
6x
32000, 1



1x
3700, 1



4x
11211, 1



5x
3022, 1



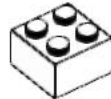
2x
3068b, 1



4x
15068, 1



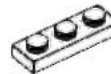
2x
10247, 1



4x
3003, 1



1x
3660, 1



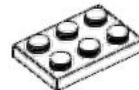
5x
3623, 1



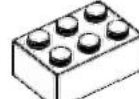
2x
22885, 1



4x
3622, 1



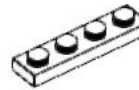
2x
3021, 1



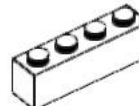
1x
3002, 1



2x
32449, 1



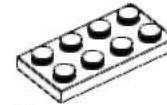
4x
3710, 1



3x
3010, 1



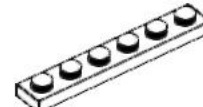
2x
3701, 1



2x
3020, 1



4x
93606, 1



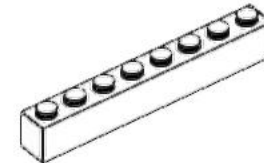
2x
3666, 1



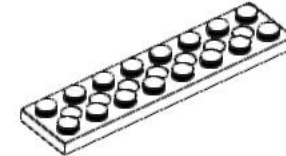
12x
3009, 1



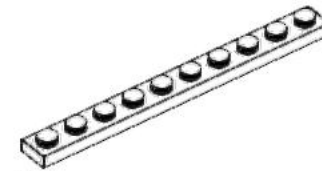
1x
4162, 1



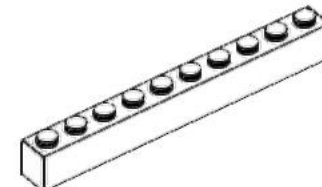
3x
3008, 1



1x
3738, 1



1x
4477, 1



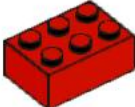
1x
6111, 1




2x
3005, 5



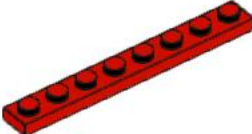
2x
3023, 5



2x
3002, 5



2x
3666, 5




1x
3460, 5




2x
32524, 4




6x
32556, 7



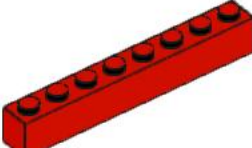
11x
3069b, 5



2x
3710, 5



1x
6636, 5




13x
3008, 5



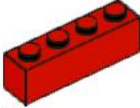
2x
6541, 3



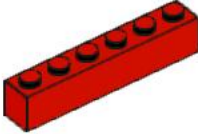
7x
3065, 12



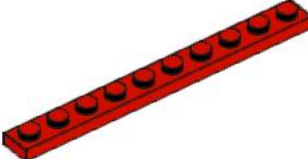
12x
3004, 5




2x
3010, 5



1x
3009, 5



2x
4477, 5



1x
32000, 3



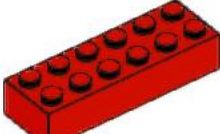
1x
87552, 12



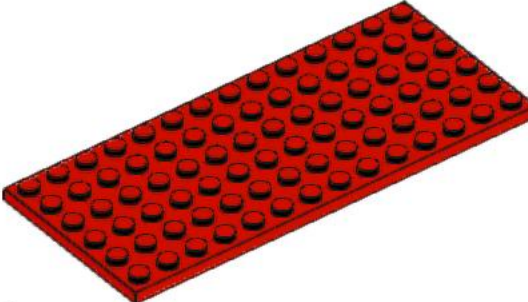
4x
3068b, 5



2x
3020, 5



3x
2456, 5



3x
3456, 5




6x
6589, 33



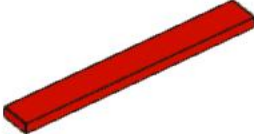
4x
87544, 12



2x
15535, 5



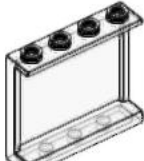
3x
3001, 5



5x
4162, 5



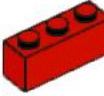
4x
4185, 34



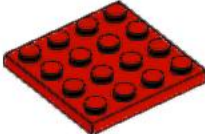
6x
60581, 12



4x
2420, 5



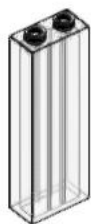
10x
3622, 5



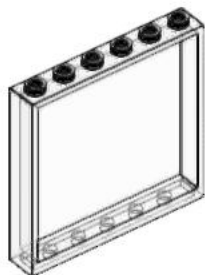
1x
3031, 5



10x
6558, 7



2x
2454, 12



9x
59349, 12