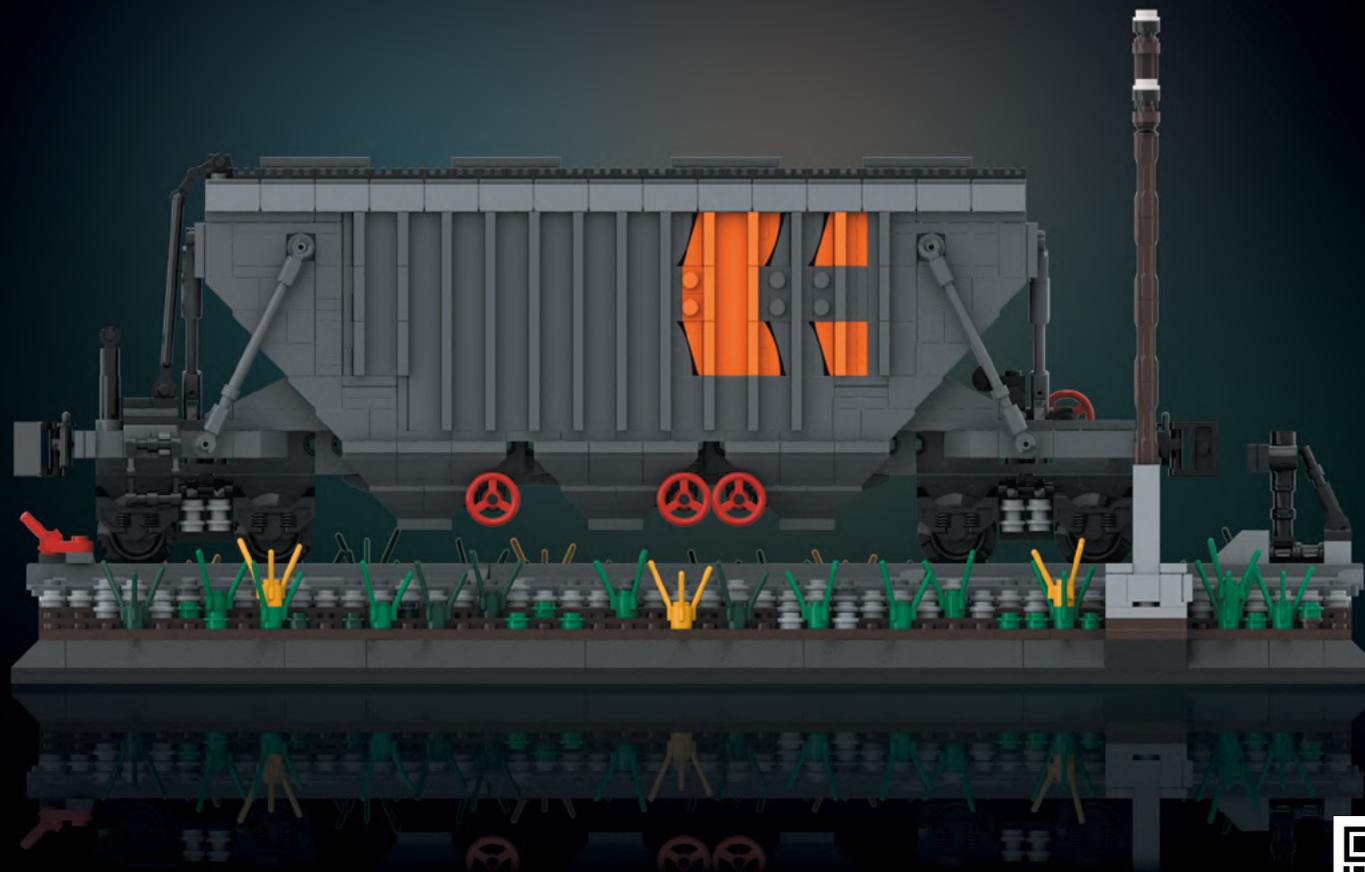




limited edition
вагон-хopper



Хopper – специализированный вагон, предназначенный для перевозки зерна.
Модель создана на базе вагона-хopperа 19-9870-01.



ХОППЕР ВАГОН-ЗЕРНОВОЗ

ОДИН ИЗ САМЫХ ДРЕВНИХ СЫПУЧИХ ГРУЗОВ В ИСТОРИИ ЧЕЛОВЕЧЕСТВА – ЗЕРНО. ЕГО РОЛЬ В РАЗВИТИИ ГРУЗОВЫХ ПЕРЕВОЗОК ОГРОМНА.



Строительство железных дорог привело к многократному увеличению перевозок сыпучих грузов, так как появилась возможность перемещения больших партий на дальние расстояния за сравнительно небольшое время и деньги. Доставка товара гужевым транспортом стоила в шесть раз дороже.

В России первые грузовые вагоны появились в 1846 году: простой прямоугольной формы, двухтележечные – по две оси на каждой тележке. Перемещение большого объема сыпучих грузов в вагонах по железной дороге позволяло экономить на логистике.

В крытый двухосный вагон того времени помещалось до 600 пудов зерна (9,6 тонн). Проблема выгрузки решалась вручную с помощью разнорабочих. Длина грузового состава того времени не превышала 30 вагонов – на рубеже XX столетия из точки А в точку Б одновременно могло доставляться 18 тысяч пудов зерна, то есть всего 288 тонн. Довольно долгое время грузовые вагоны были универсальными. Впоследствии развитие железных дорог привело к созданию специализированных грузовых вагонов – для разных категорий грузов. А специально для сыпучих продуктов были спроектированы вагоны-бункеры, самостоятельно выгружающие груз. Открытый четырехосный саморазгружающийся вагон для насыпных грузов получил название «хopper». Скорость погрузки-разгрузки таких вагонов отличалась в разы, что способствовало их широкому распространению.



Основные виды закрытых вагонов-хoppers – зерновоз, минераловоз и цементовоз. Все модели отличаются друг от друга способом выгрузки грузов и методом управления разгрузочными люками – механическим (пневматическим) или ручным. Разгрузка может происходить как на само полотно (в межрельсовое пространство), так и в сторону от него – по внешним сторонам вагона.

Кузов хопера представляет собой емкость с большими воронками (бункерами) в нижней части. Снизу расположены люки, при открытии которых груз высыпается на железнодорожное полотно самотеком, под действием собственной тяжести. Разгрузке способствует наклон торцов вагона и стенок бункеров в 41-60 градусов.

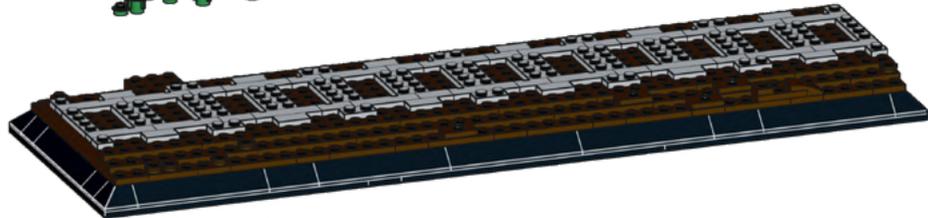
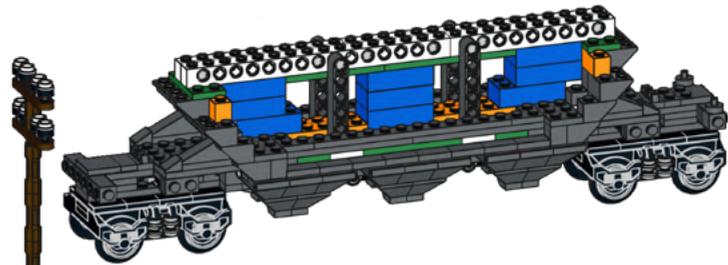
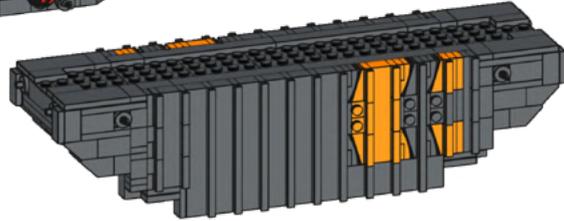
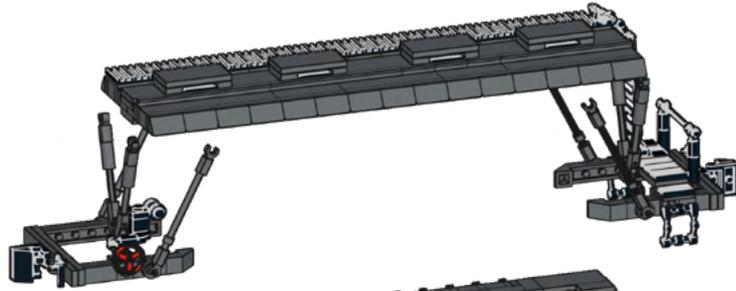
Конструктор, который находится в этом наборе, основан на модели хопера 19-9870-01

ТЕХНИЧЕСКИЕ ХАРАКТЕРИСТИКИ ВАГОНА - ХОППЕРА ДЛЯ ЗЕРНА МОДЕЛИ 19-9870-01

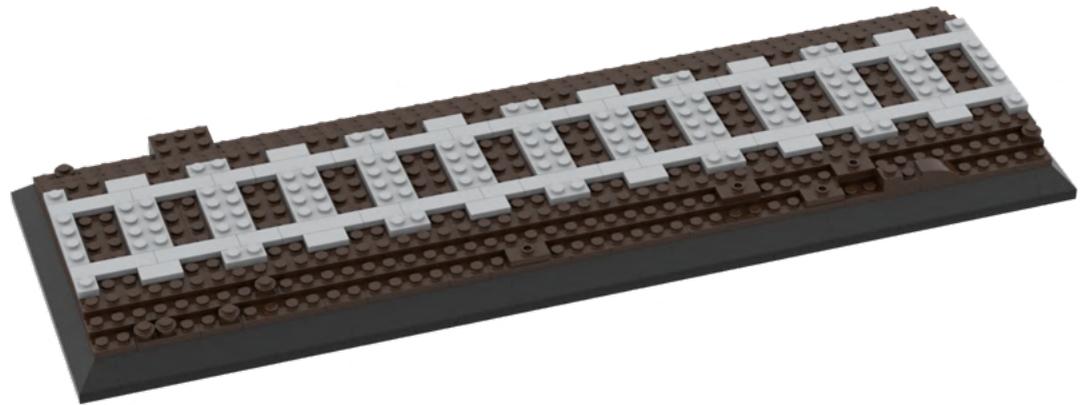
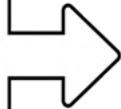
Модель:	19-9870-01
Тип вагона:	4-осный крытый хоппер для перевозки зерна
Особенность модели:	Хоппер-крытый
Завод-изготовитель:	Акционерное общество «Тихвинский вагоностроительный завод»
Грузоподъёмность:	76.5 т
Объём:	101.0 м ³
Количество разгрузочных люков	6 шт
Количество загрузочных люков	4 шт
Механизм разгрузки	Рычажно-винтовой
Нормативный срок службы:	32 года

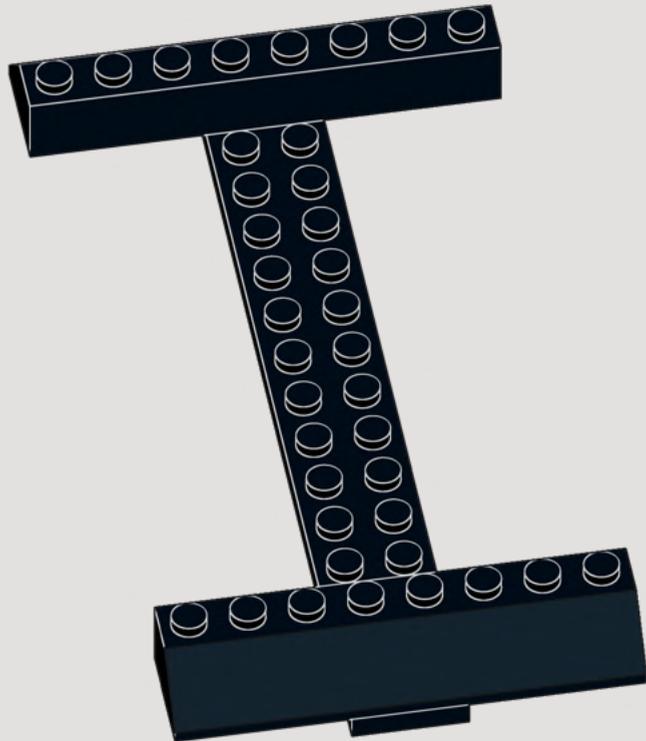
МЕЖРЕМОНТНЫЕ ПРОБЕГИ И СРОКИ ПРОВЕДЕНИЯ ПЛАНОВЫХ РЕМОНТОВ ДЛЯ ВАГОНА МОДЕЛИ 19-9870-01

Деповской ремонт (ДР) после	Постройки	4 года
	Деповского ремонта (ДР) до первого капитального ремонта (КР)	4 года
	Деповского ремонта (ДР) после первого капитального ремонта (КР)	4 года
	Капитального ремонта (КР)	4 года
Капитальный ремонт (КР) после	Постройки	18 лет
Пробег после	Постройки	1000 тыс. км 8 лет
	Деповского ремонта (ДР)	1000 тыс. км 8 лет
	Капитального ремонта (КР)	1000 тыс. км 8 лет

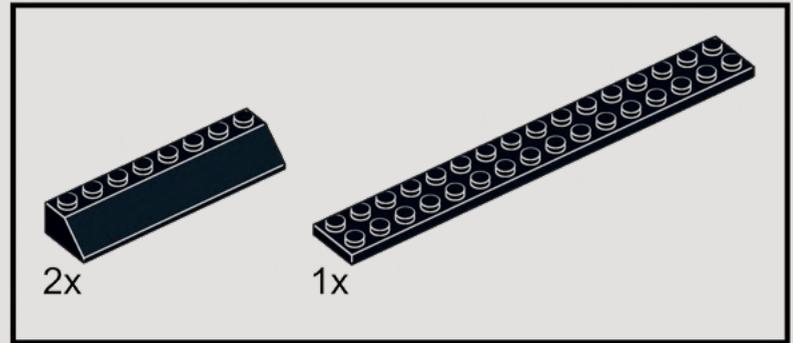


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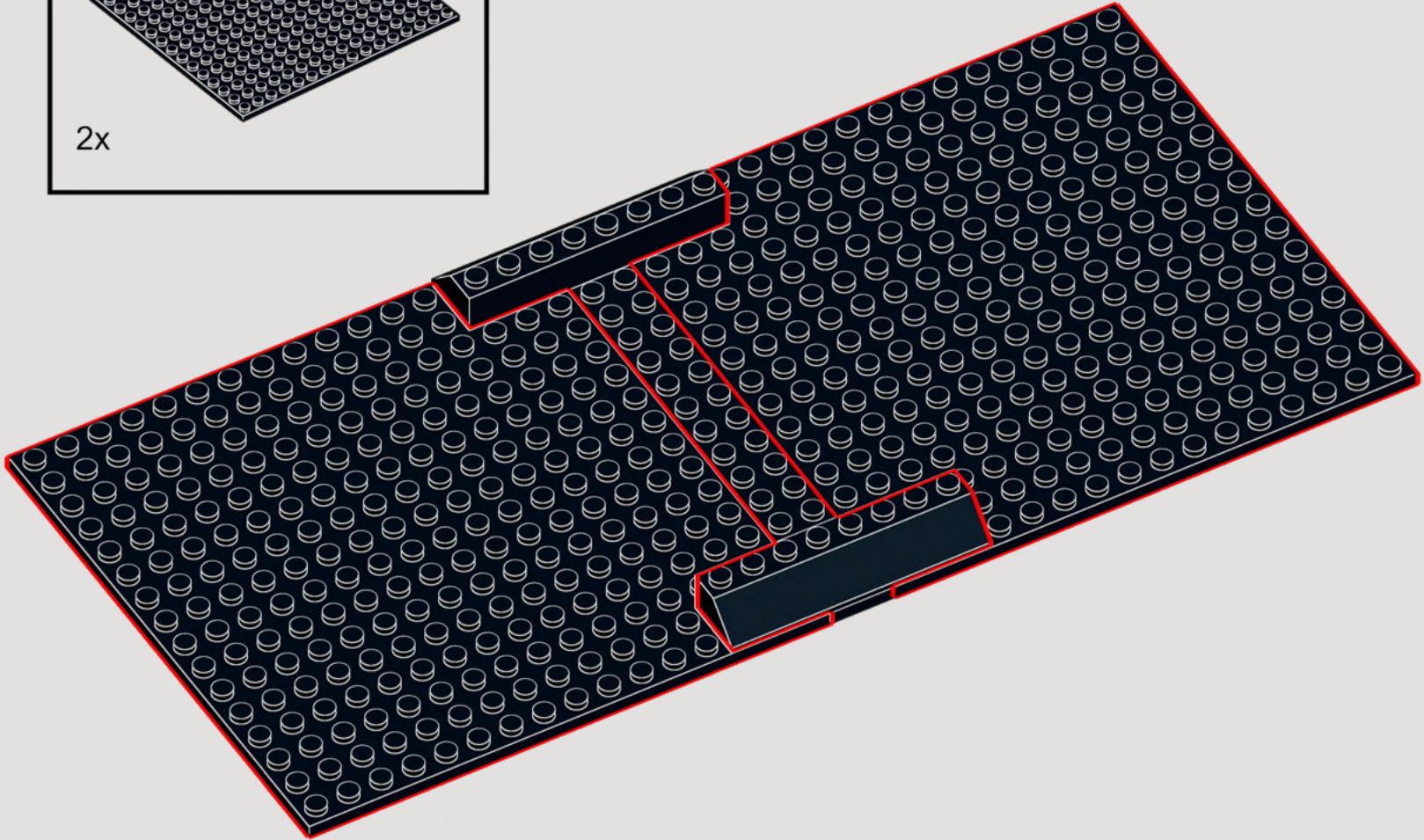
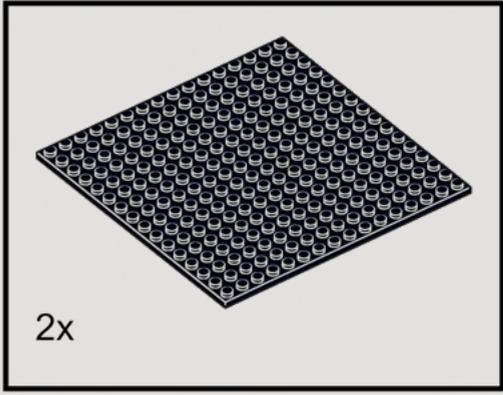




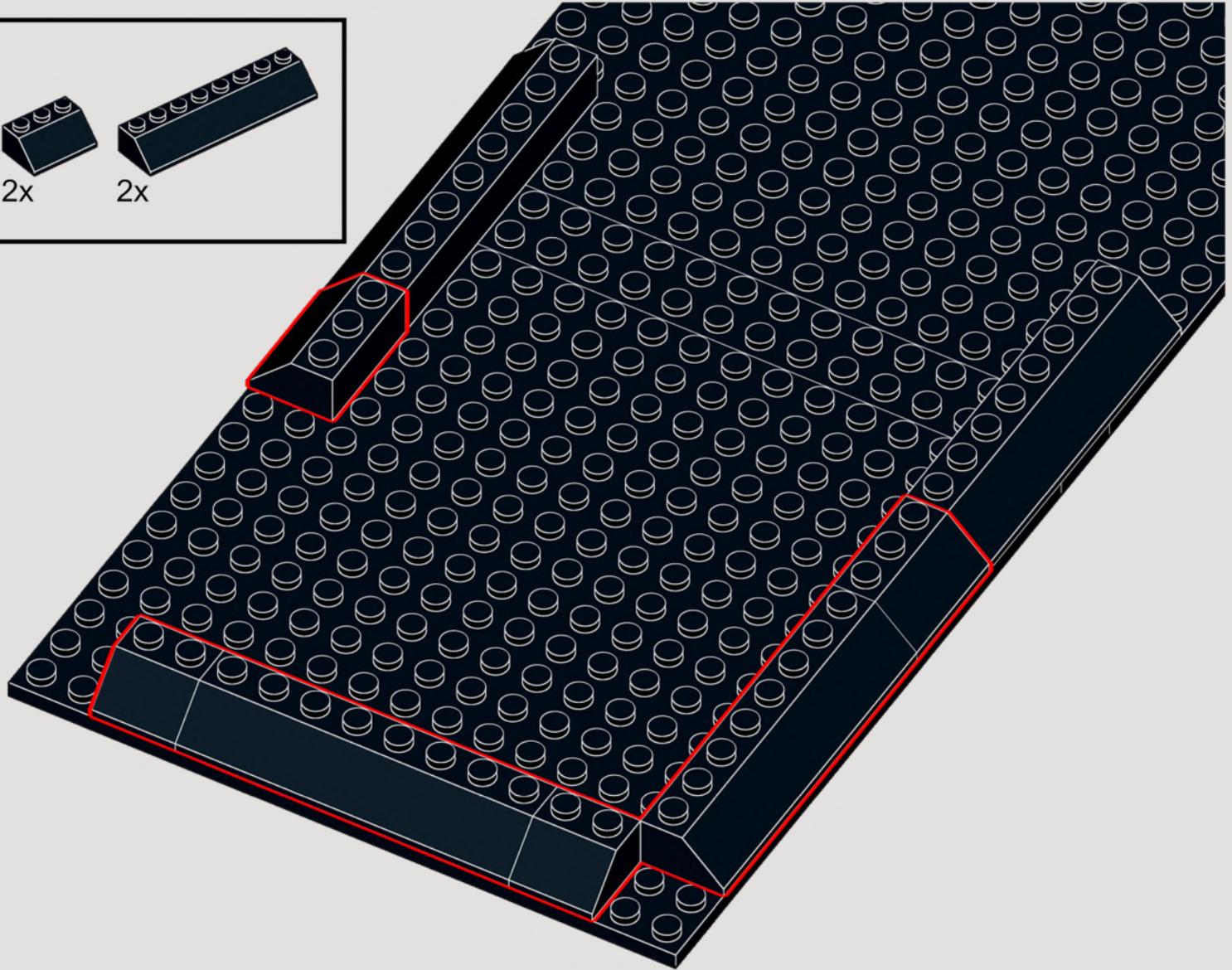
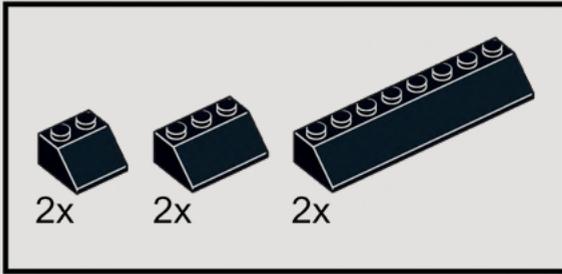
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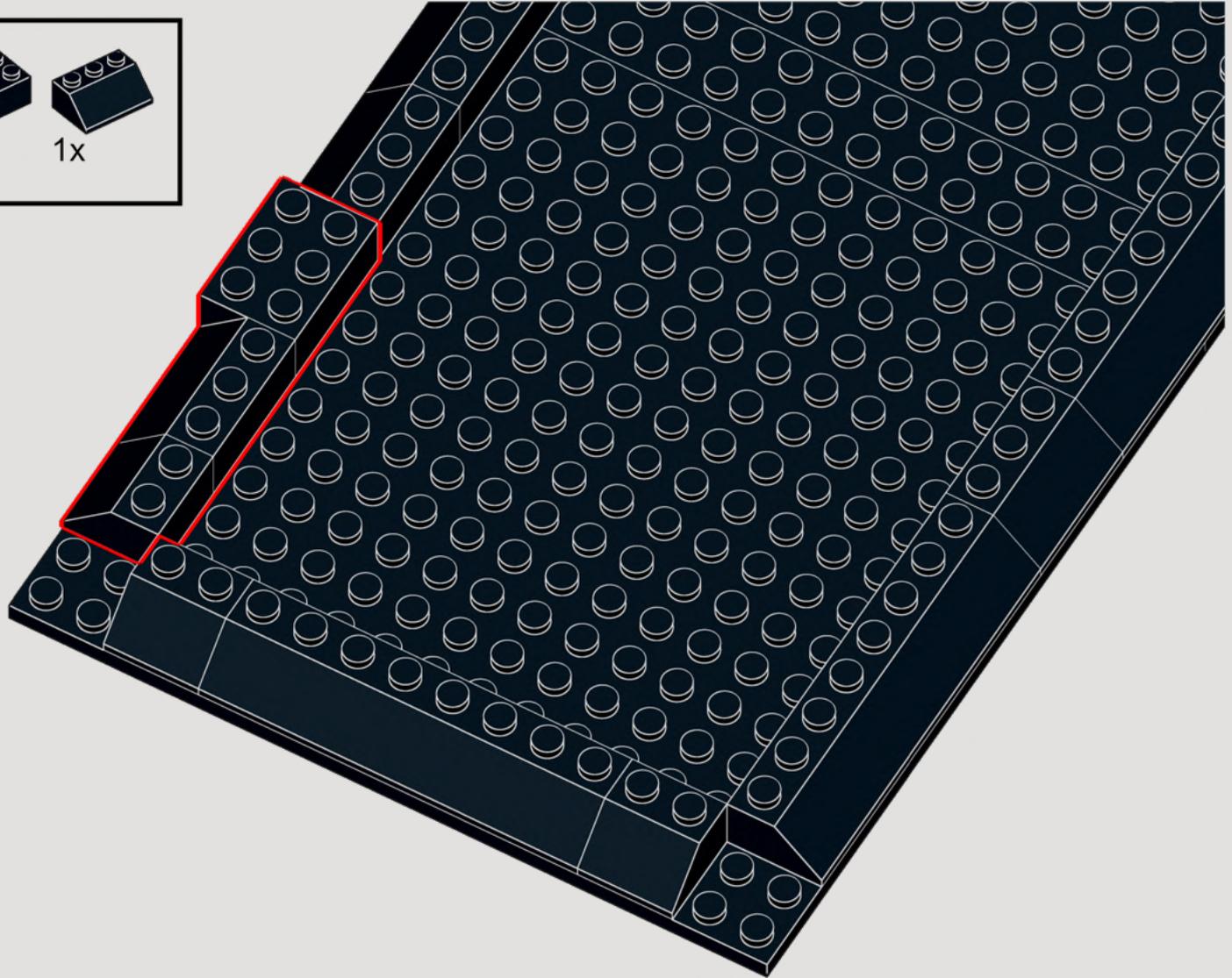
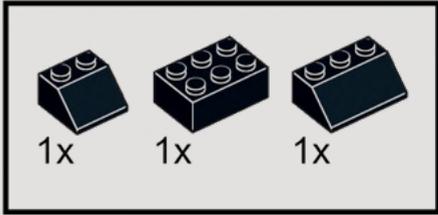
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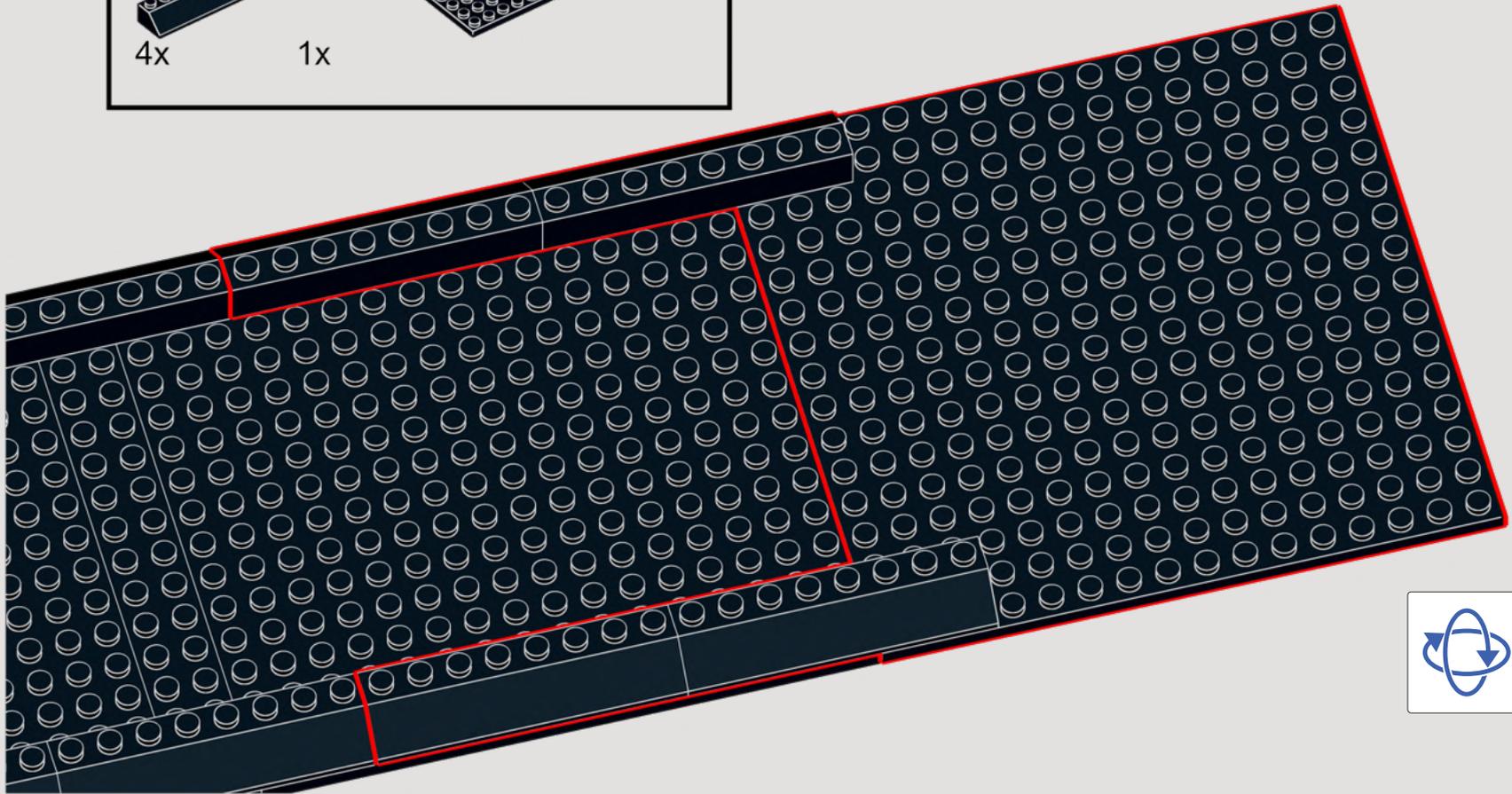
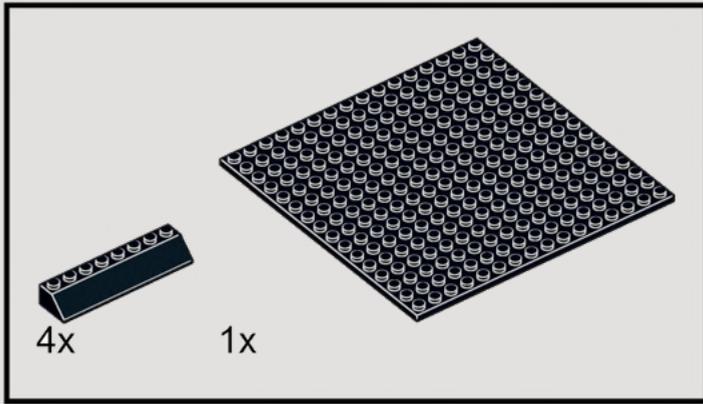
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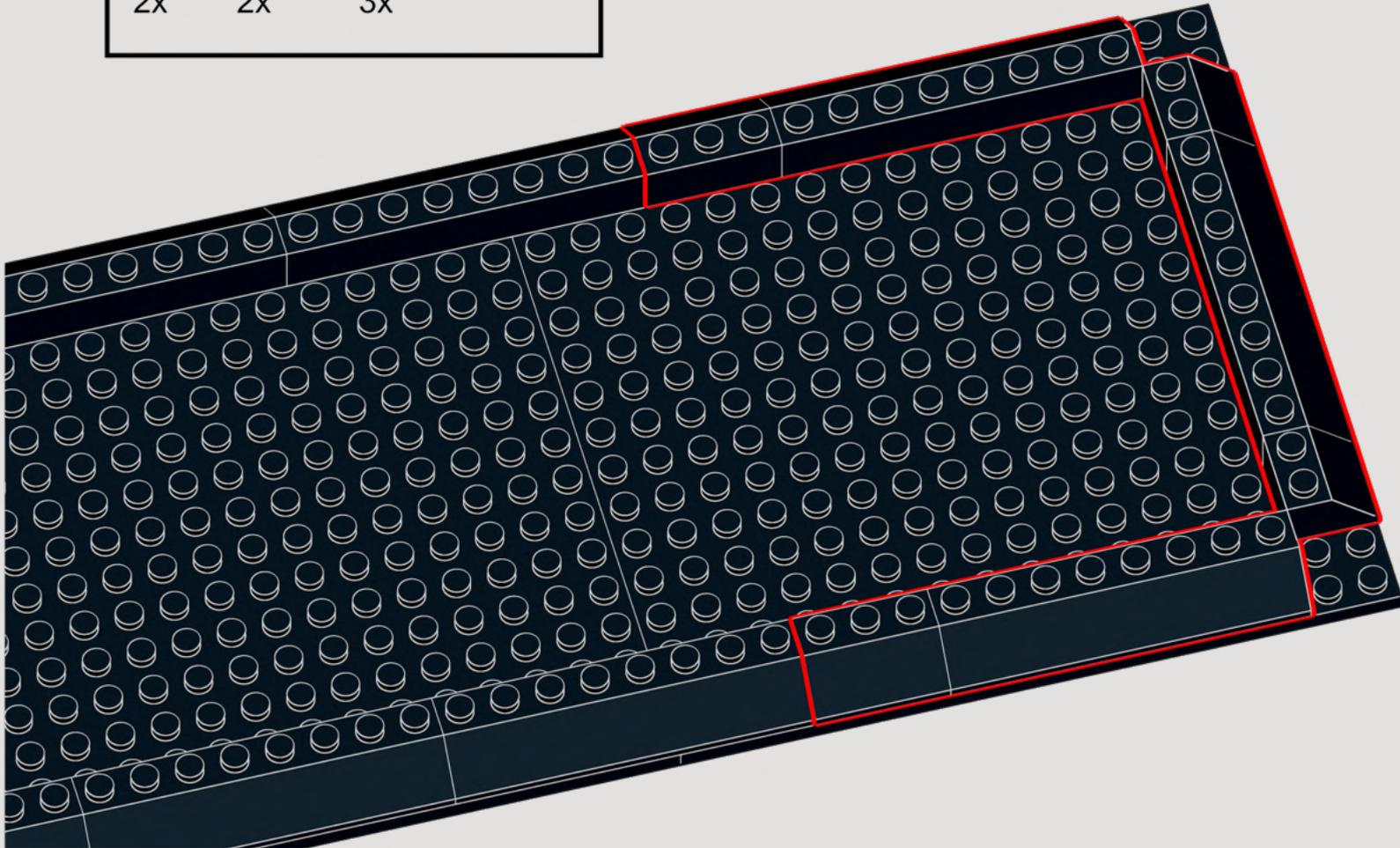
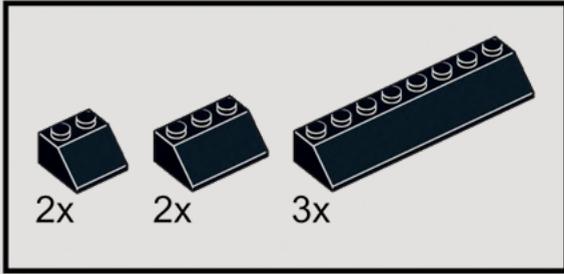
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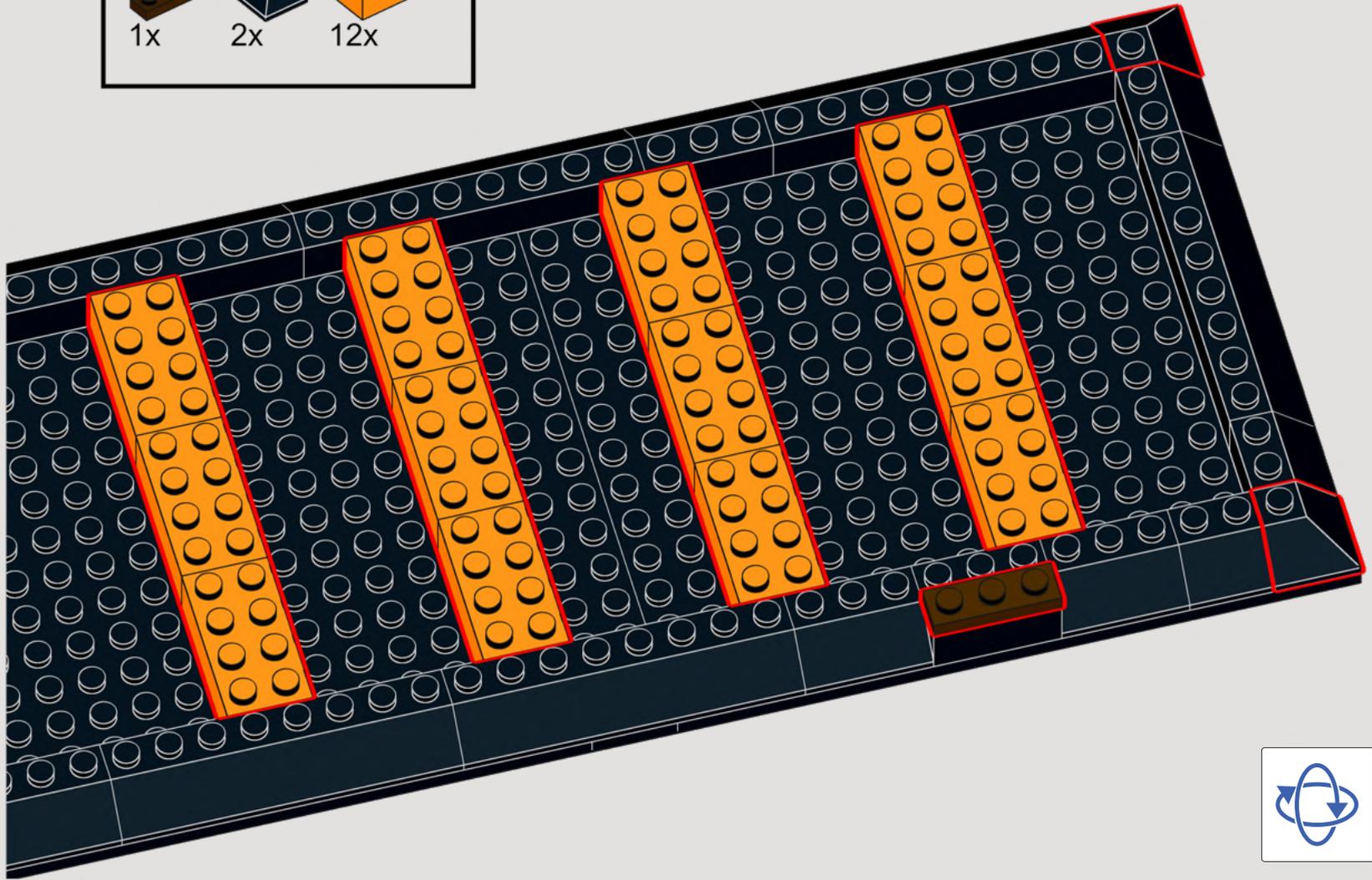
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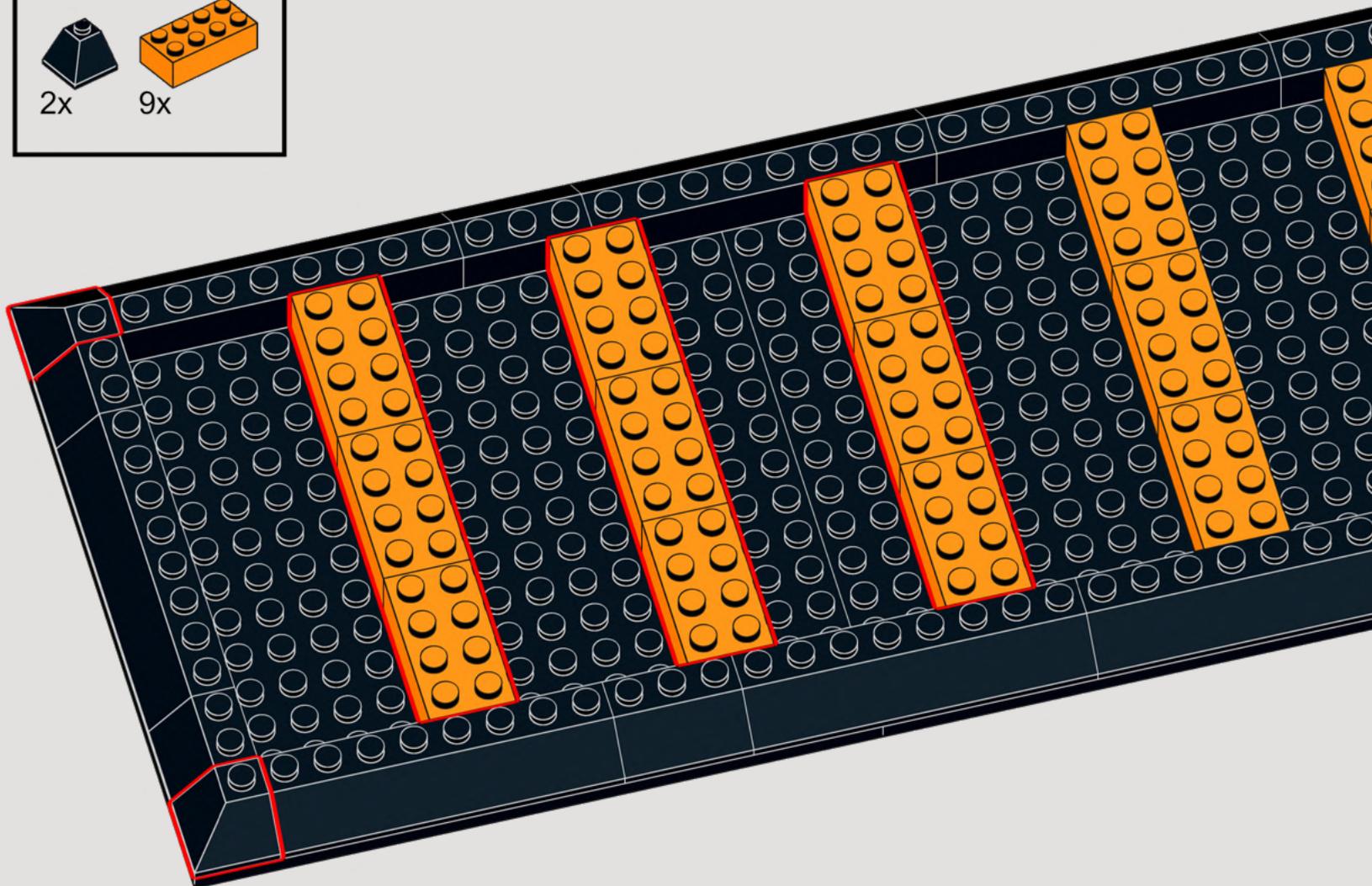
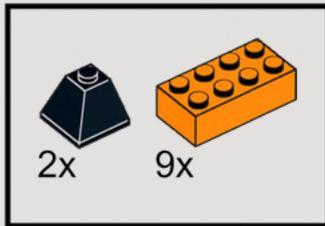
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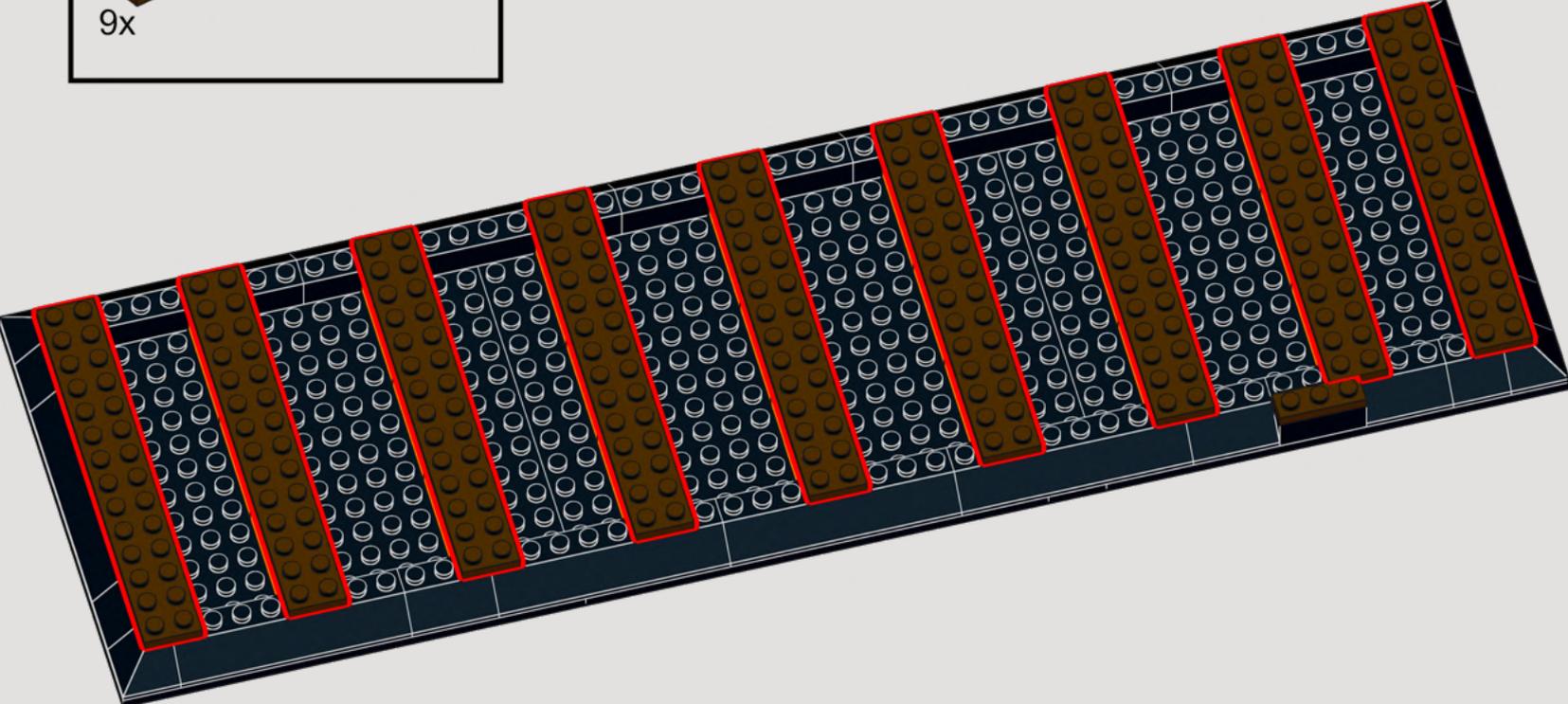
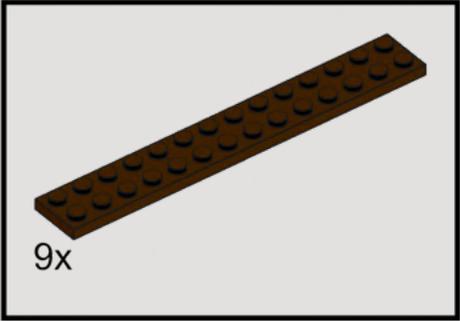
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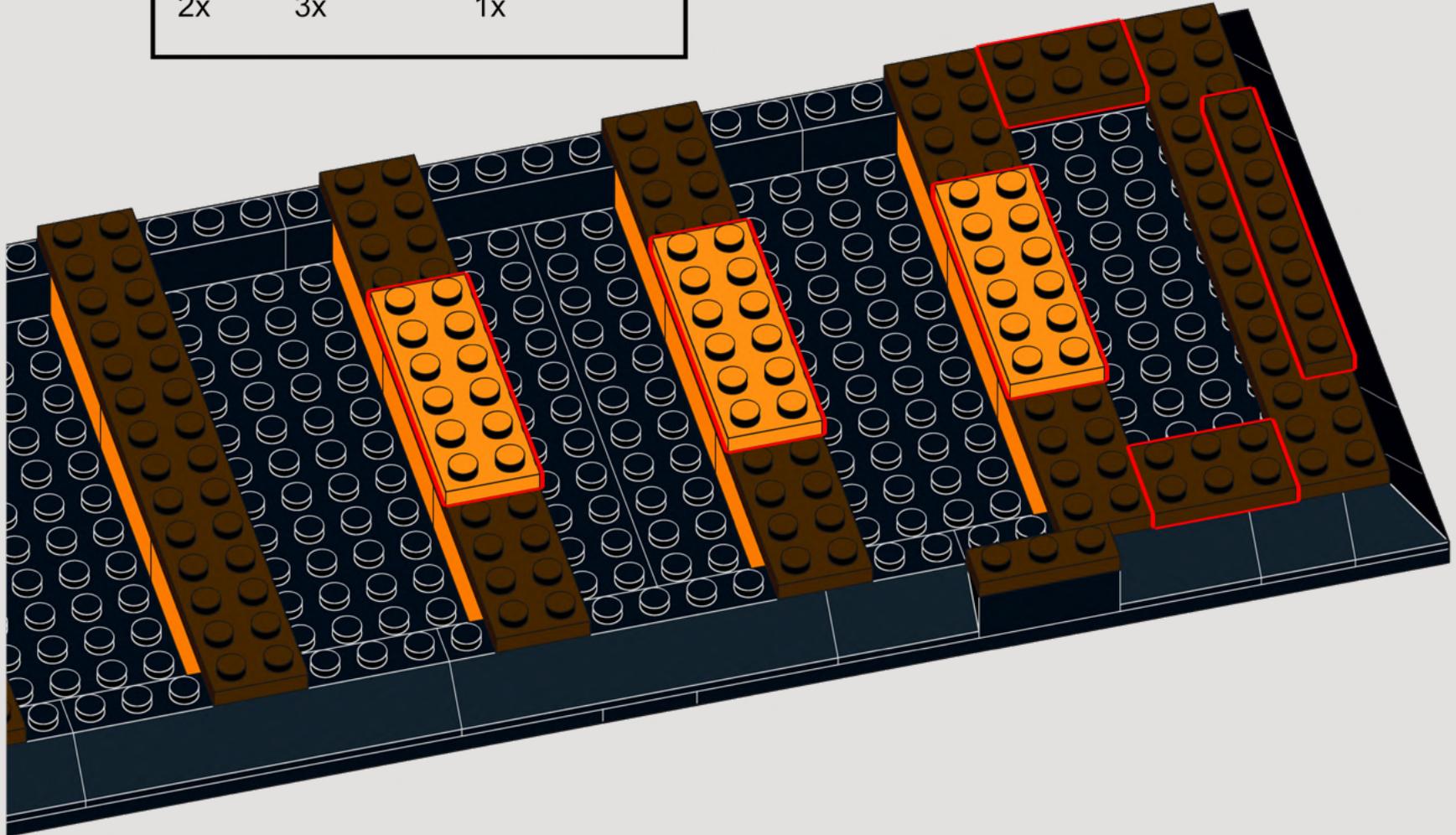
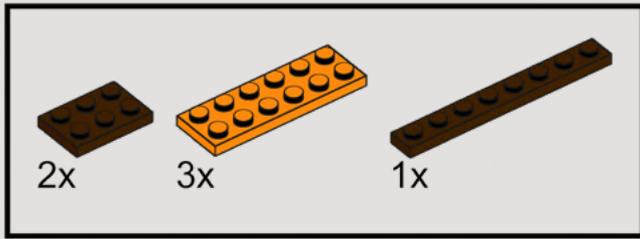
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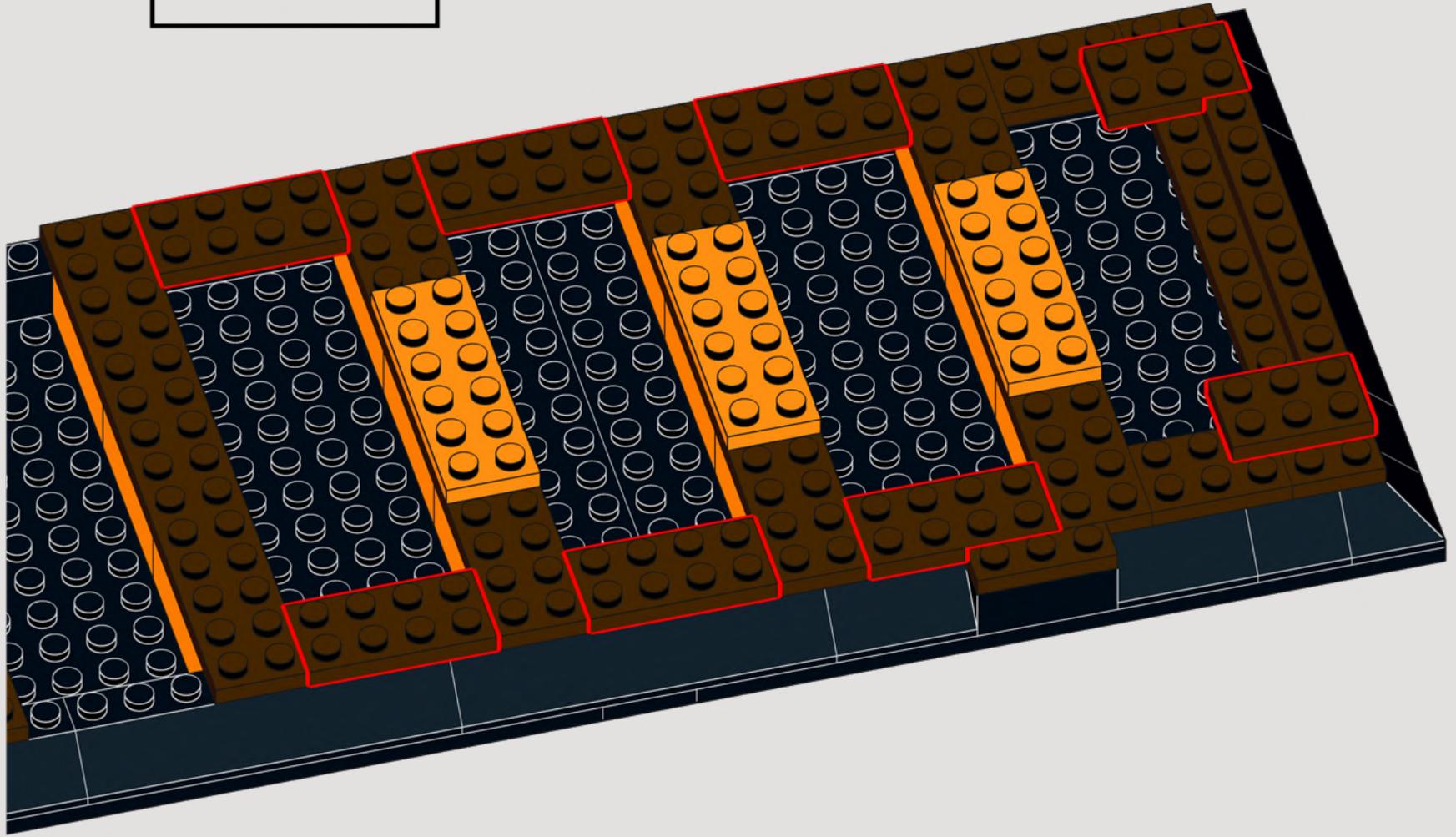
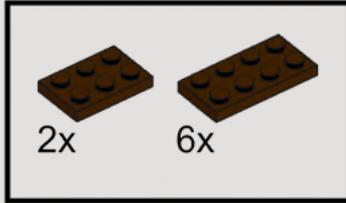
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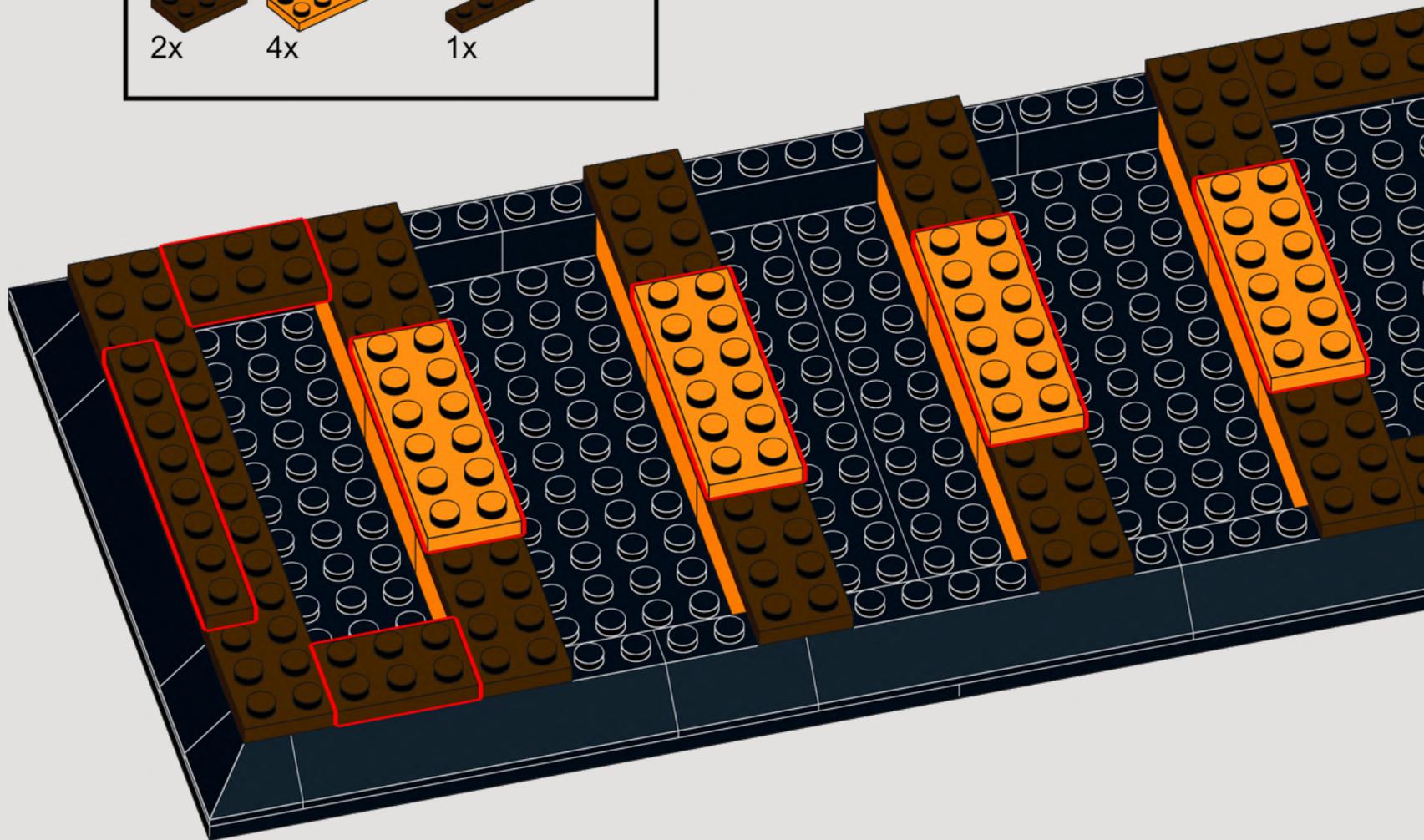
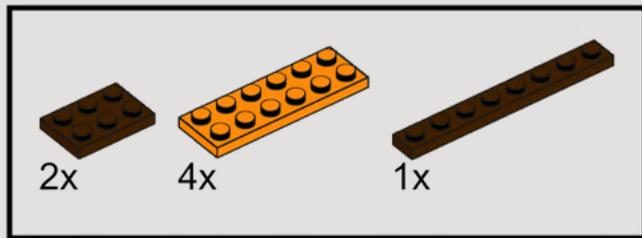
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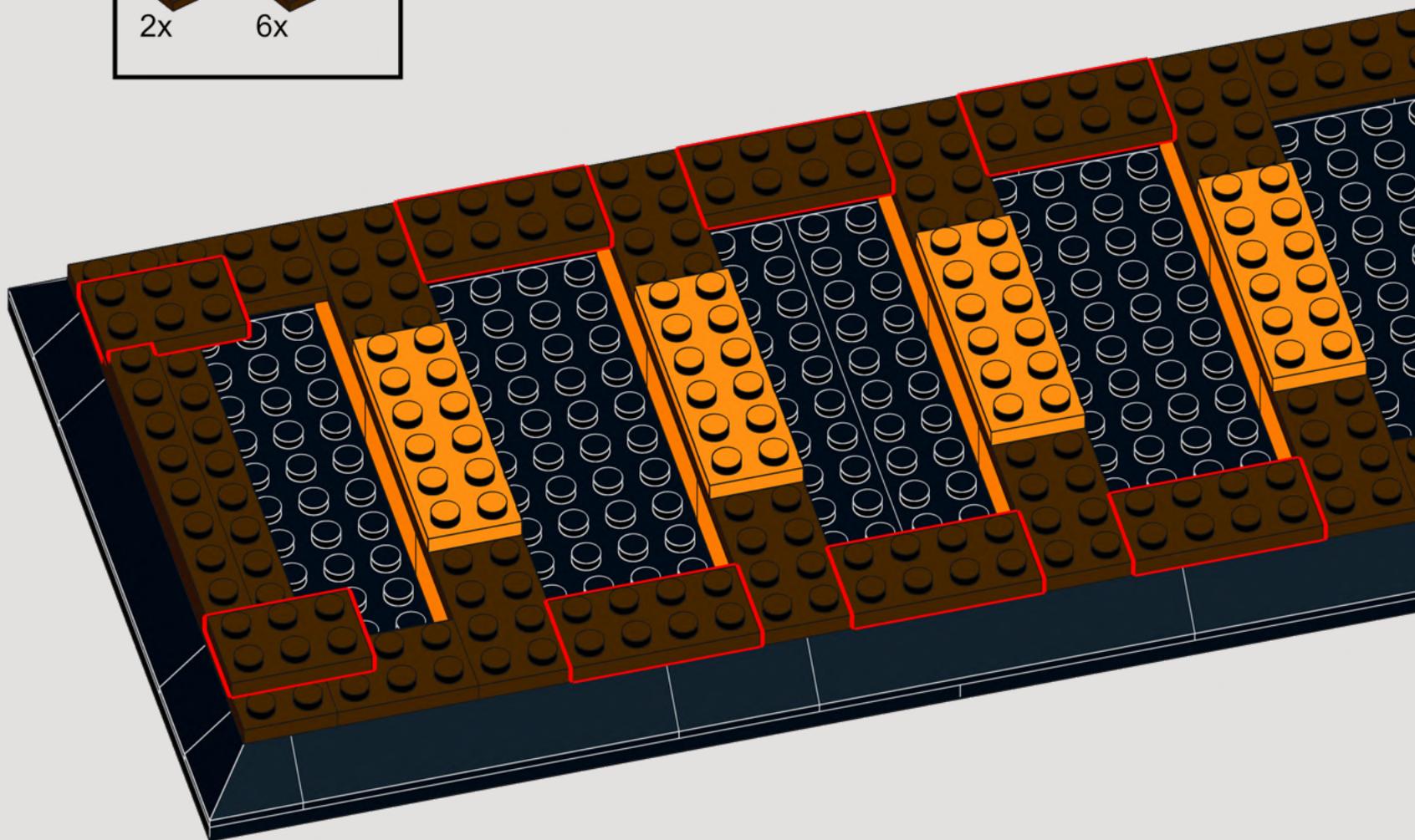
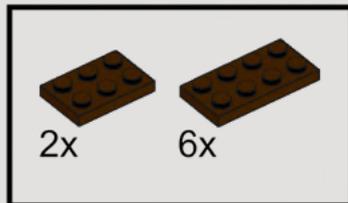
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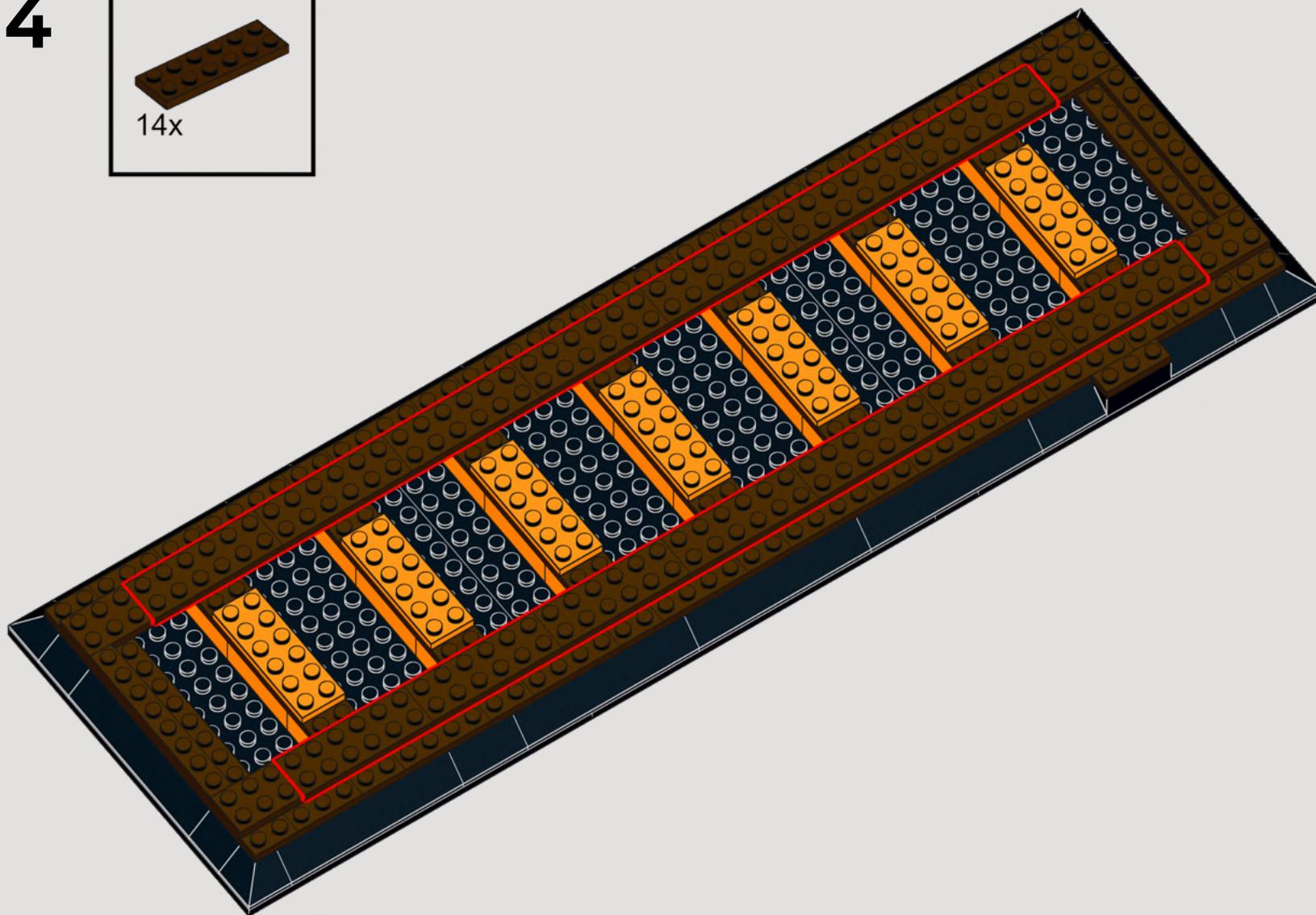
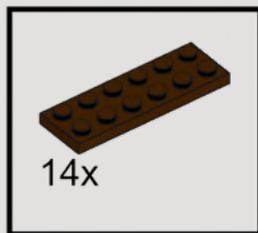
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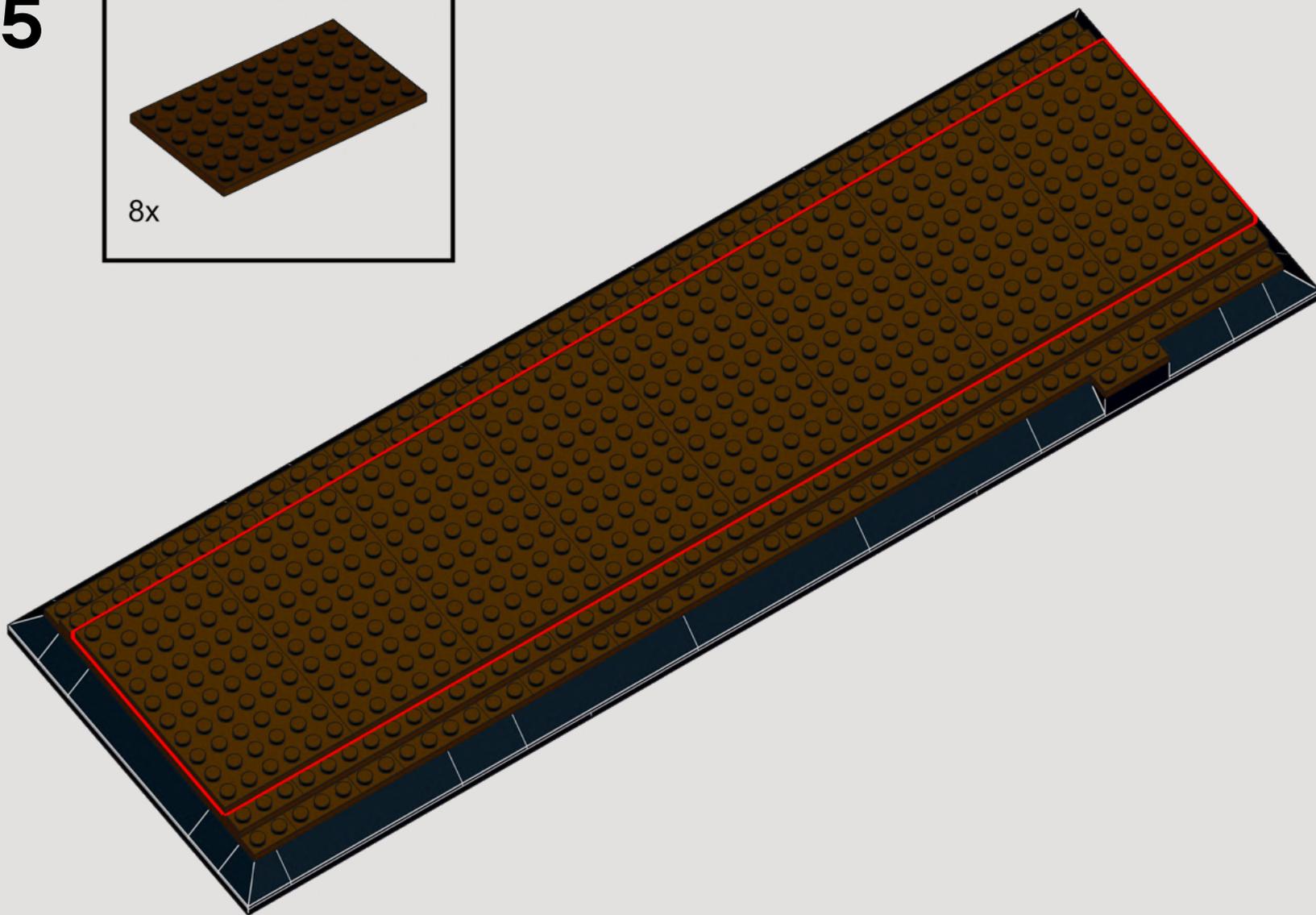
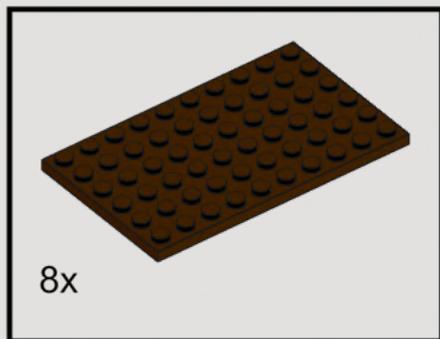
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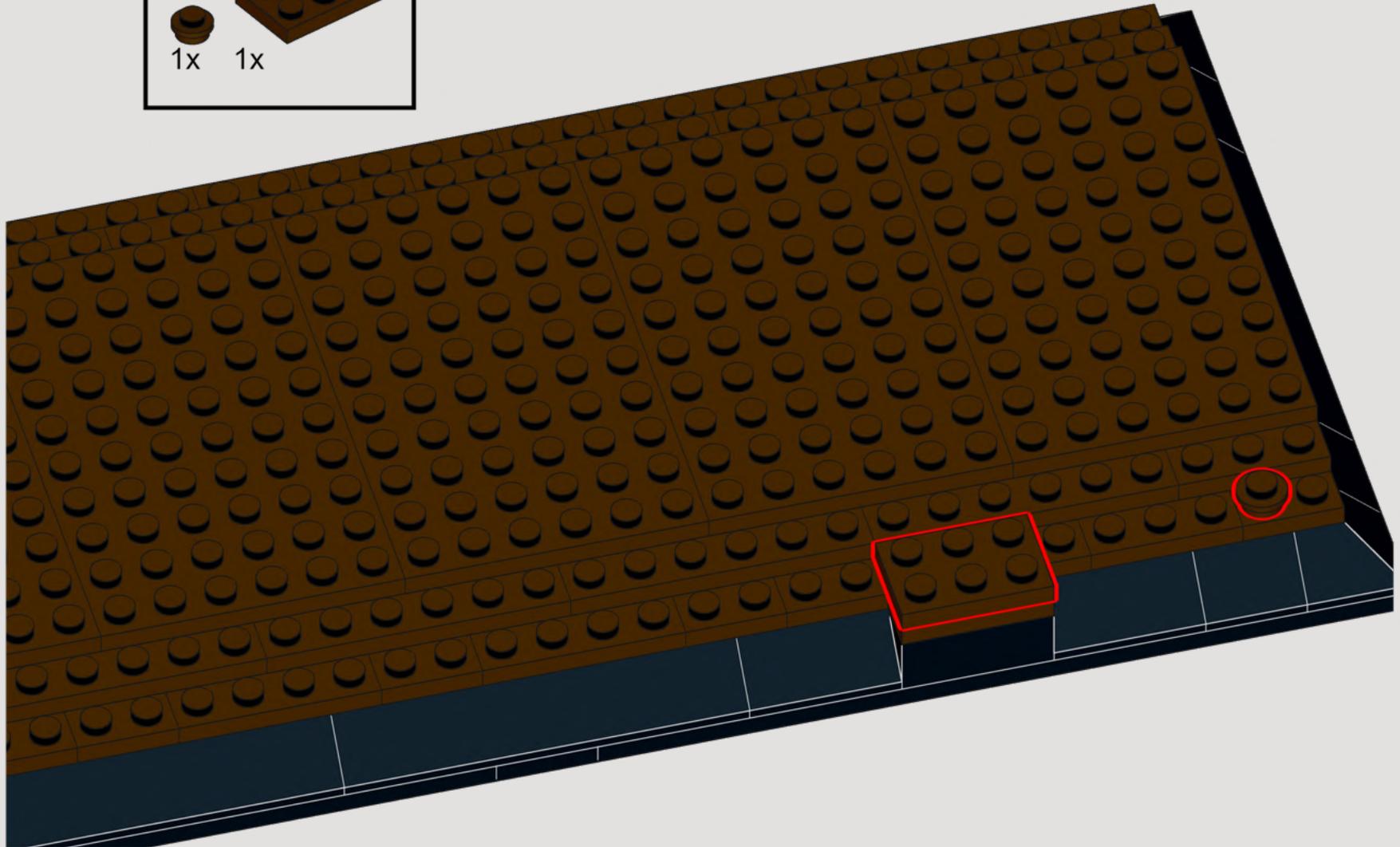
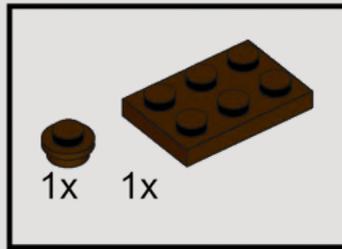
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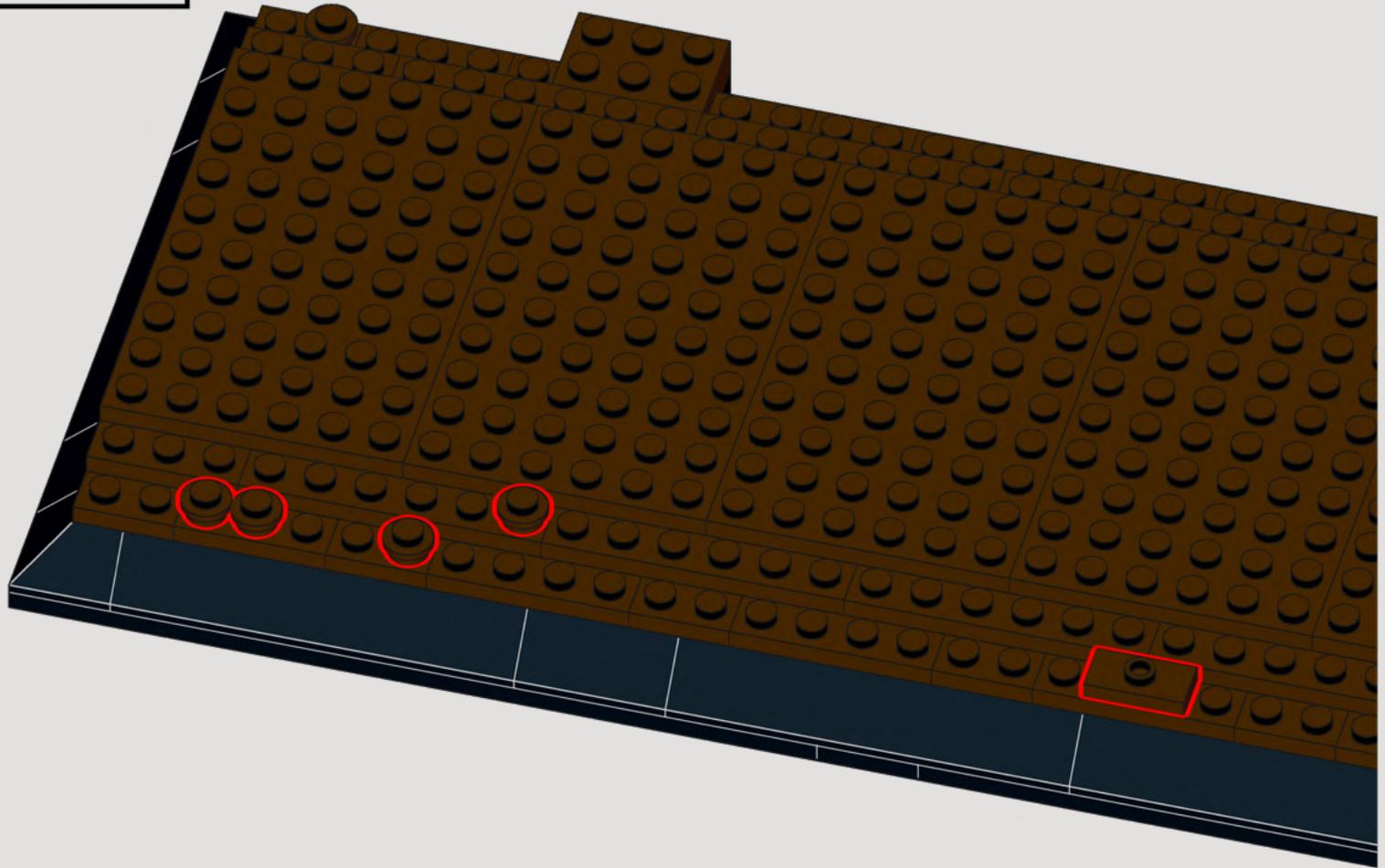
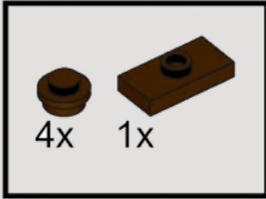
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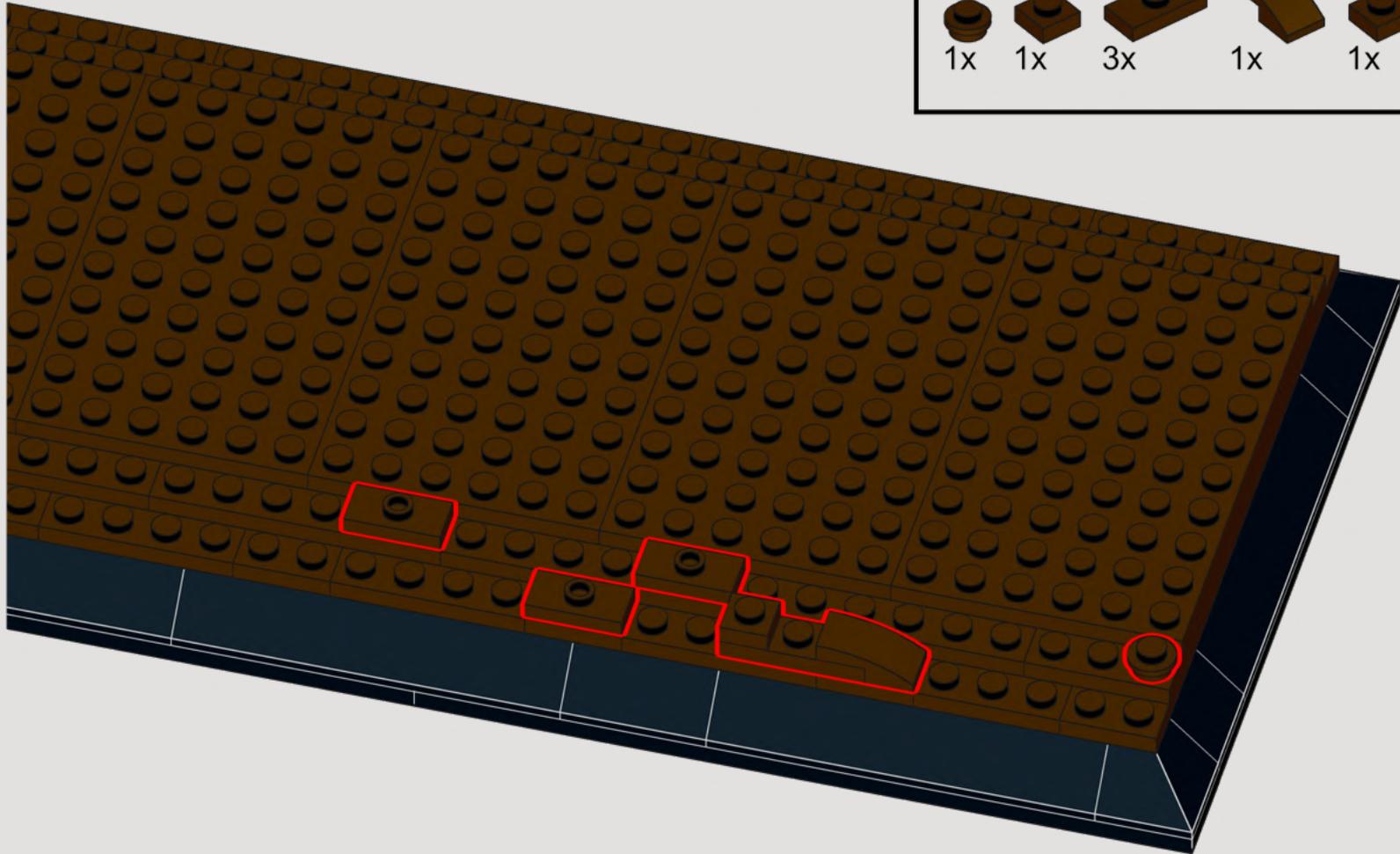
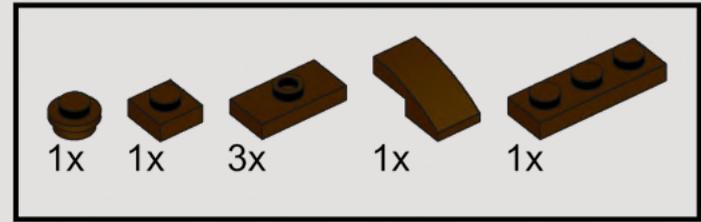
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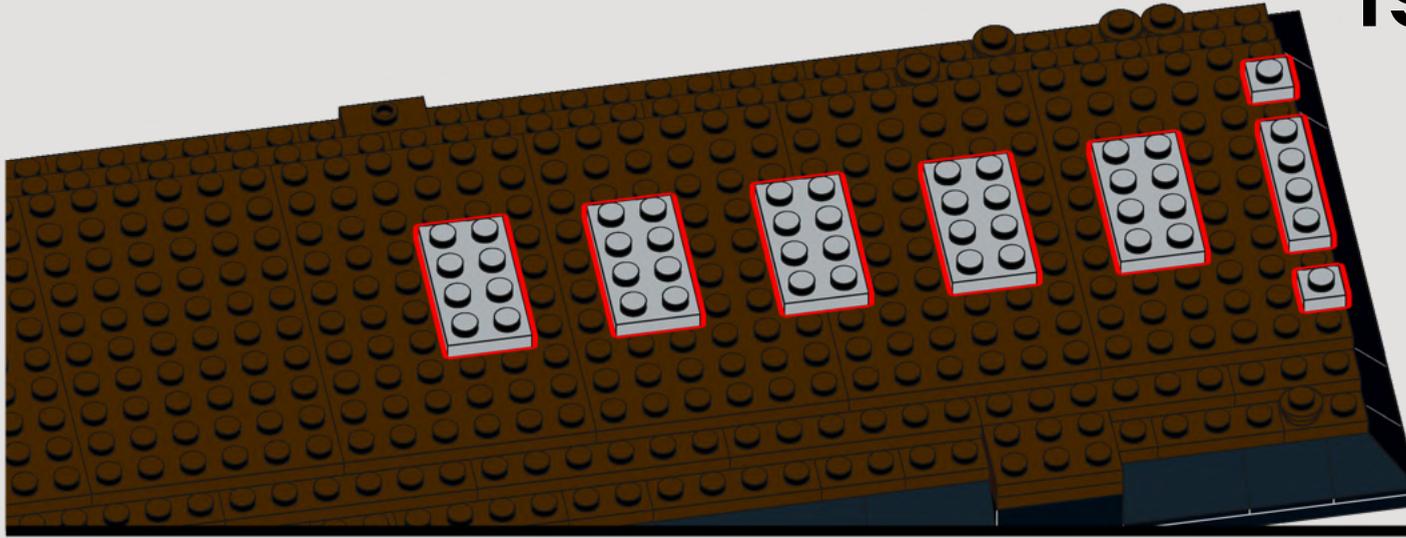


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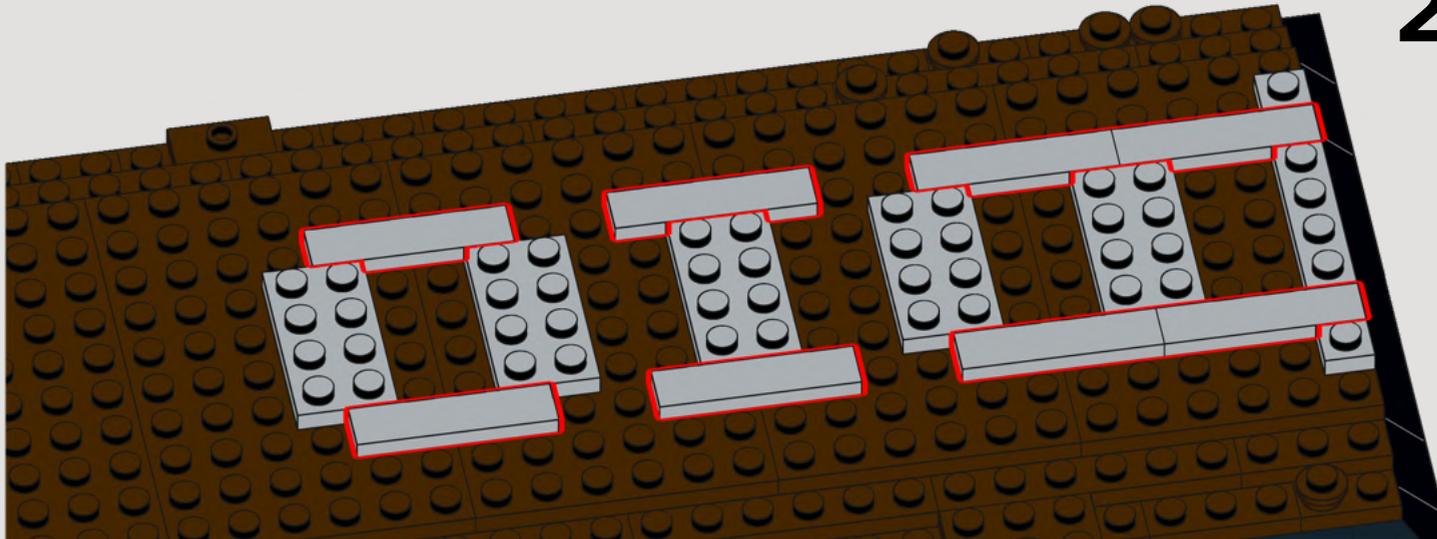
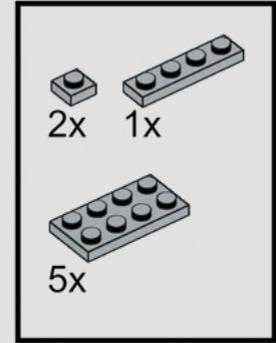


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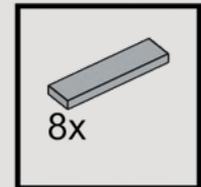




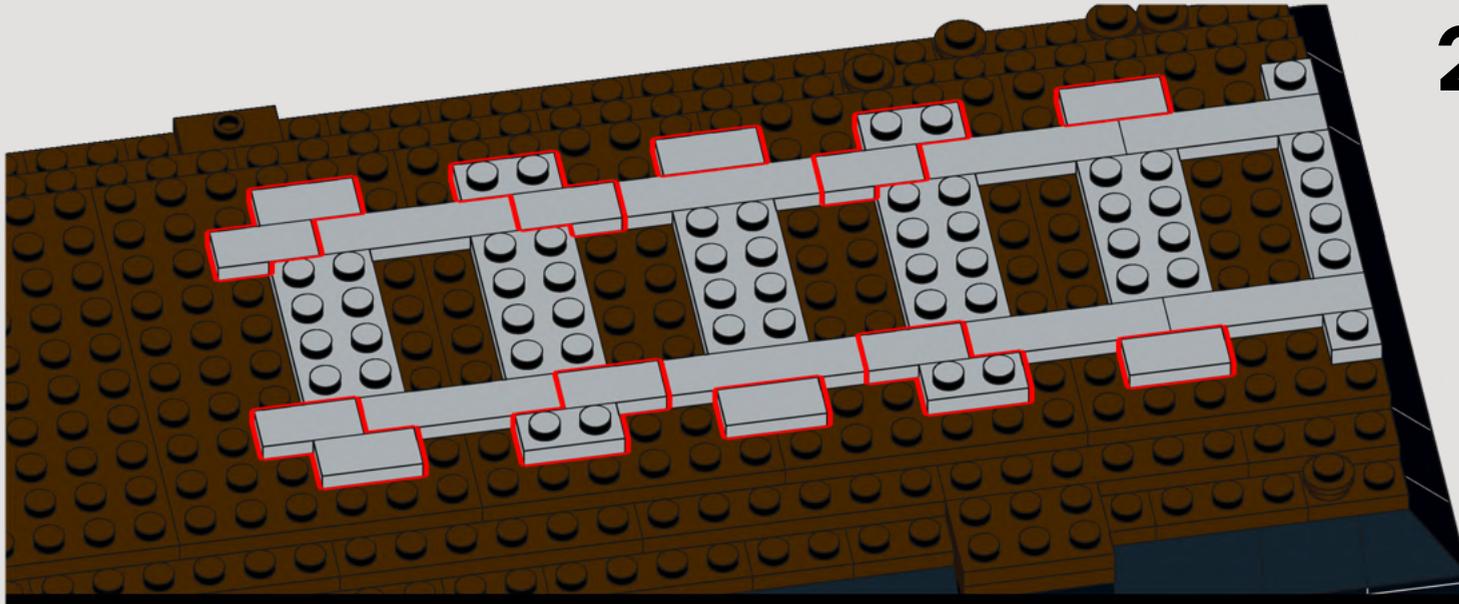
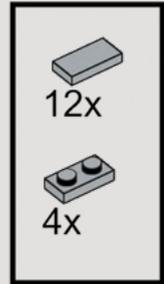
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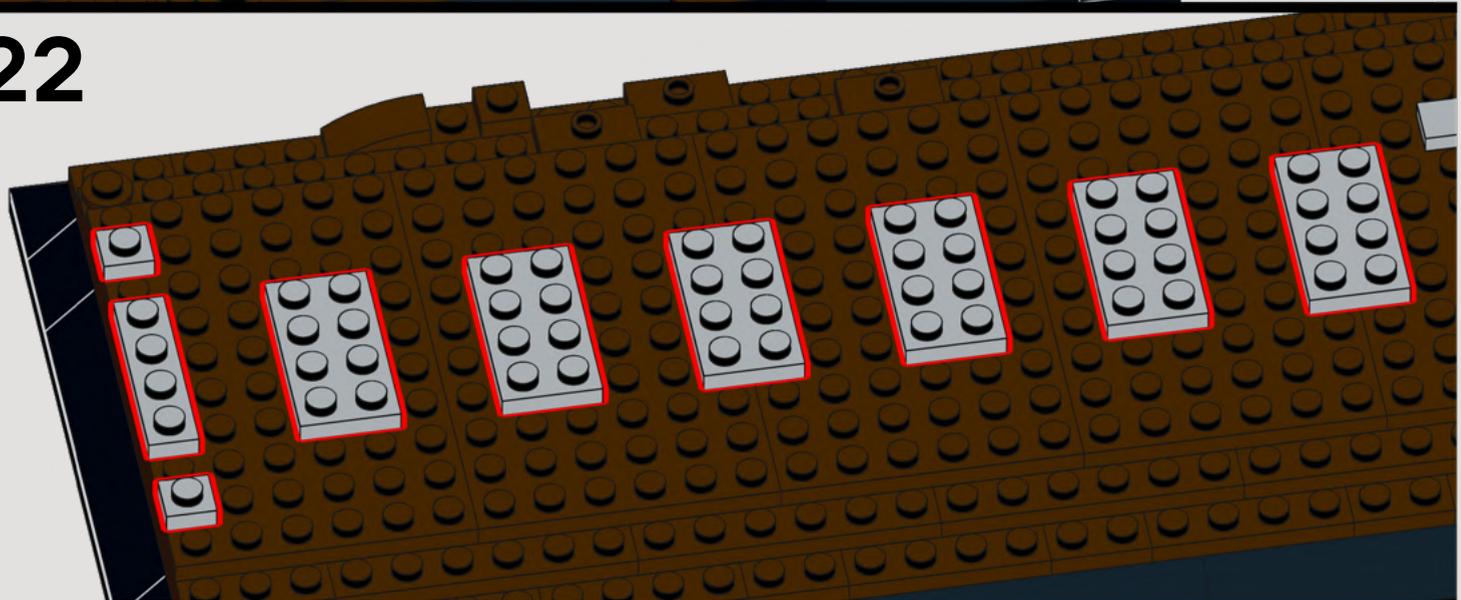
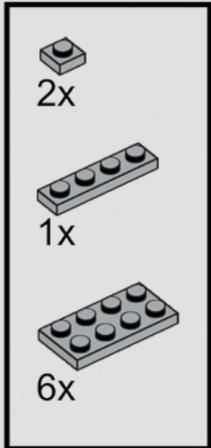
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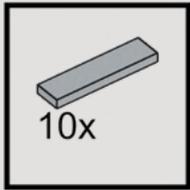


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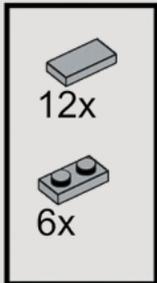
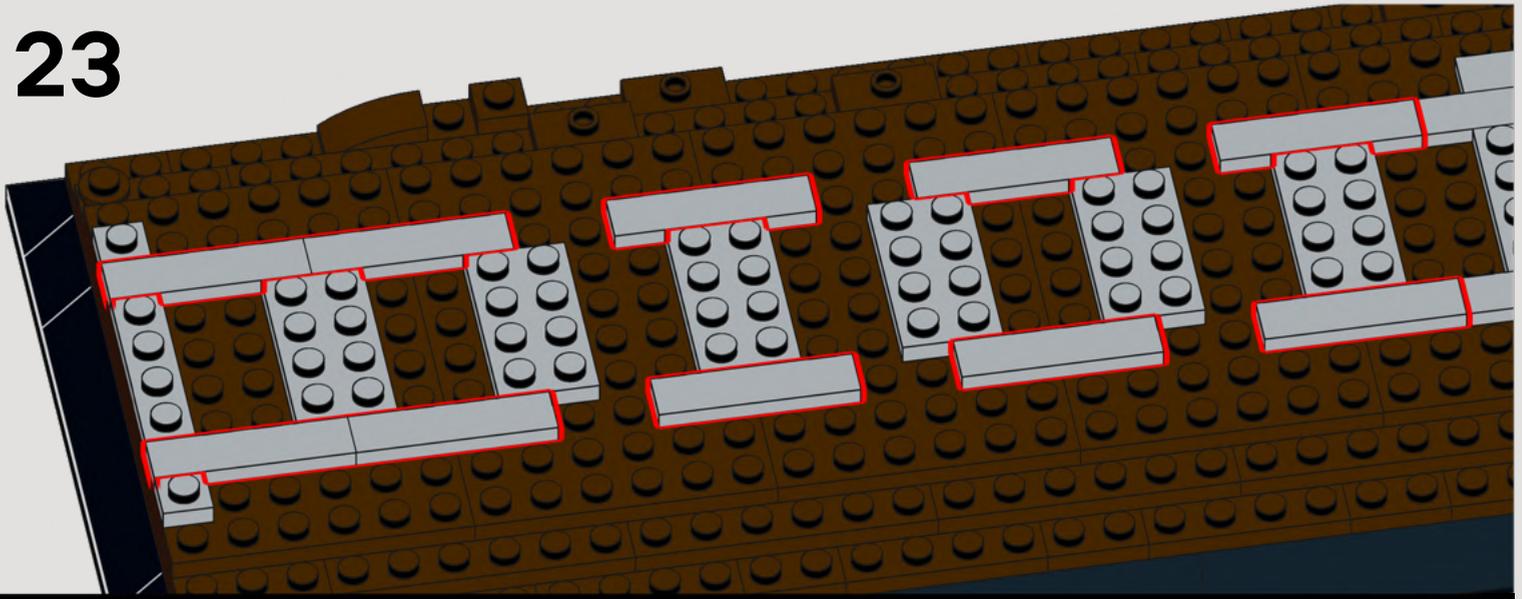


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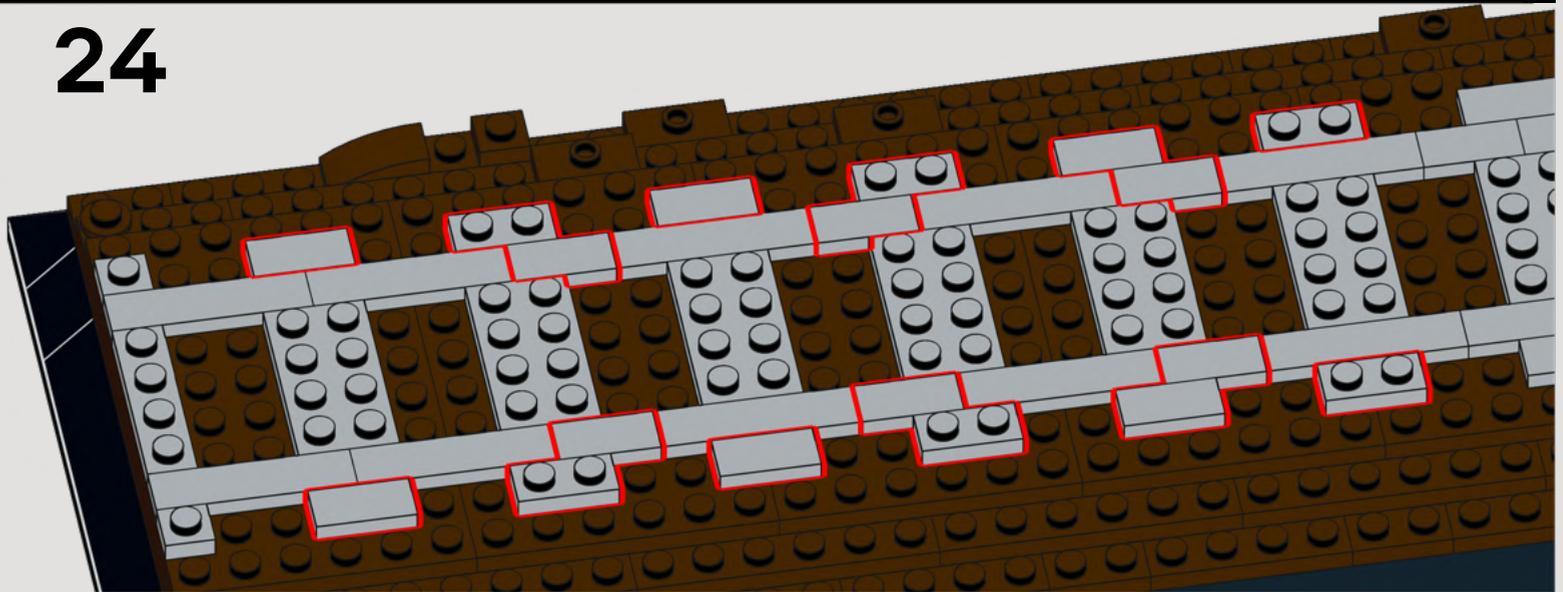




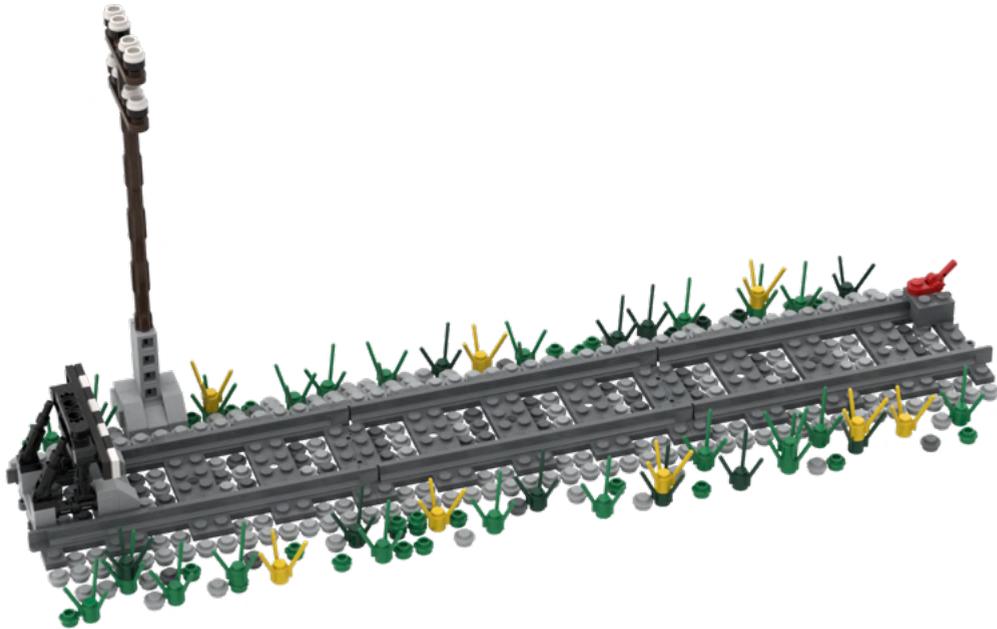
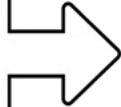
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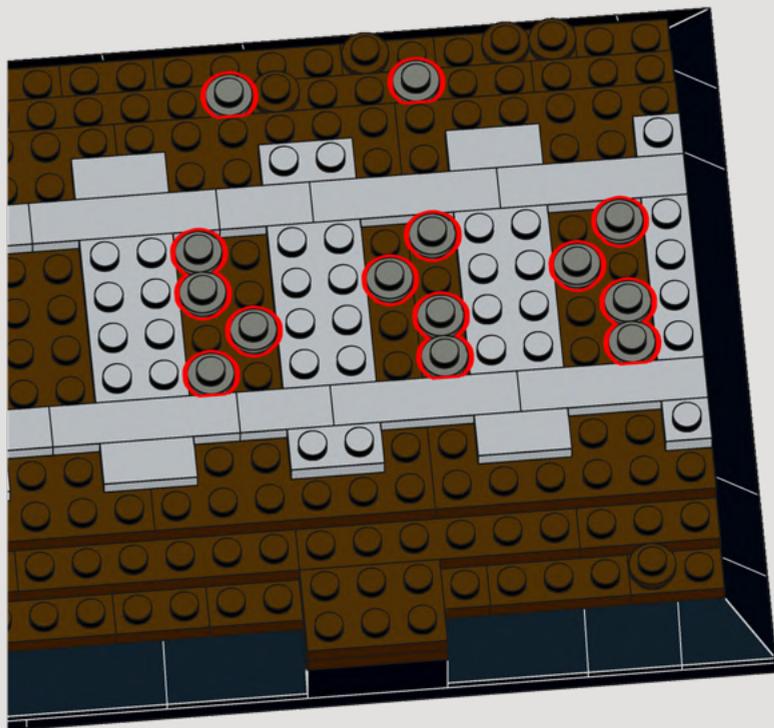
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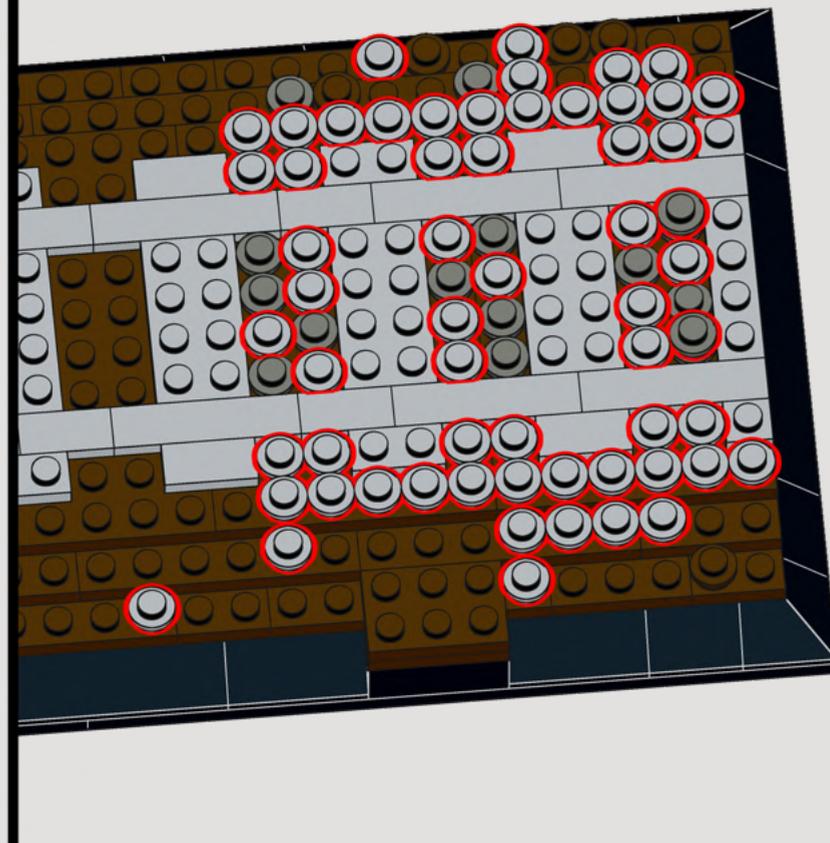
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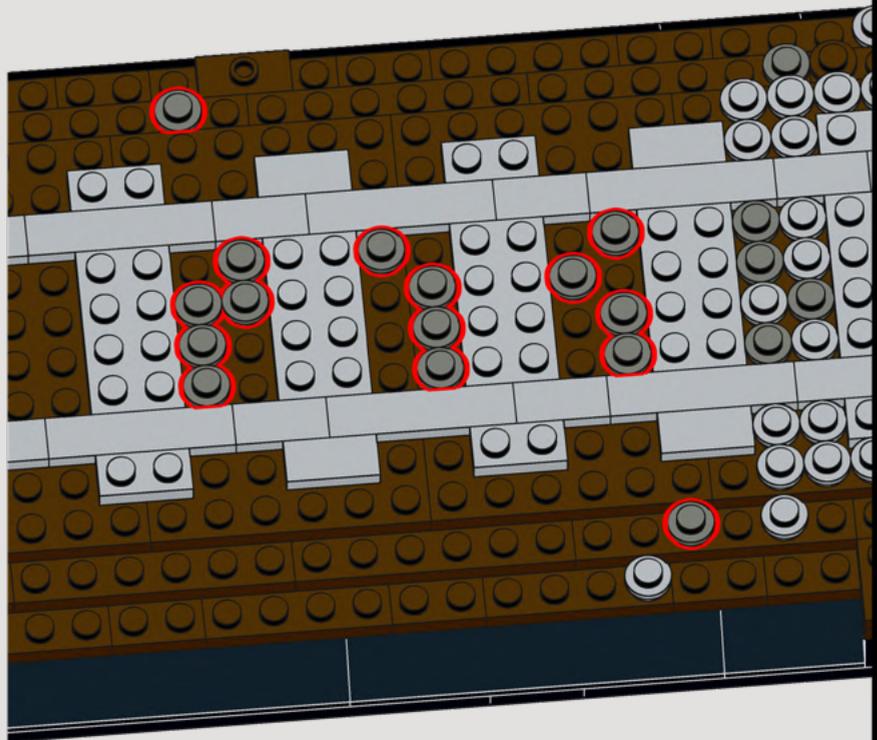
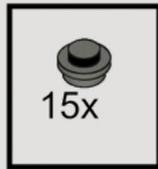
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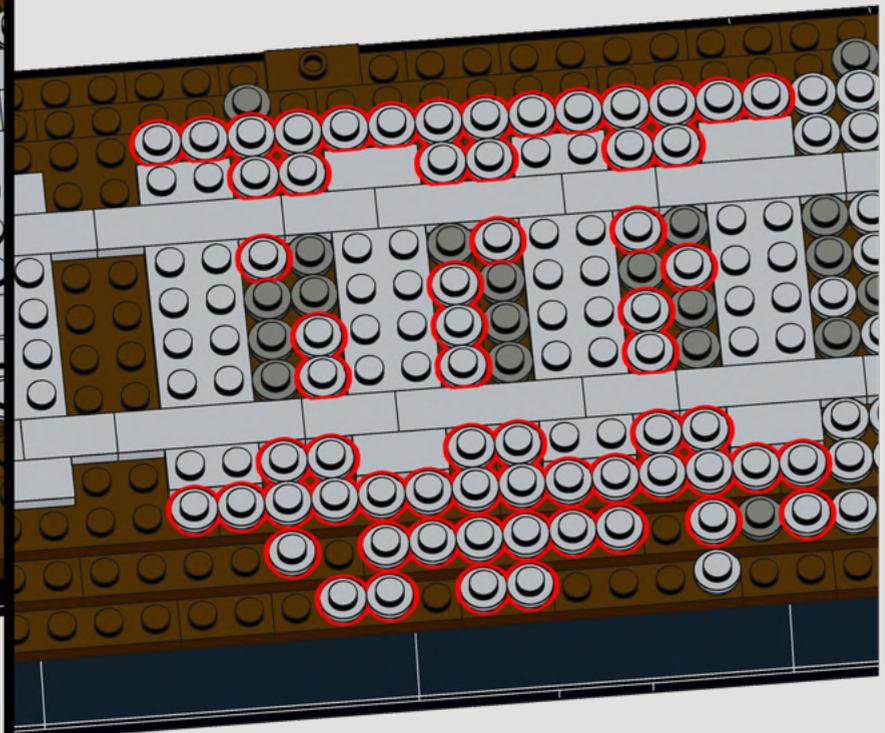
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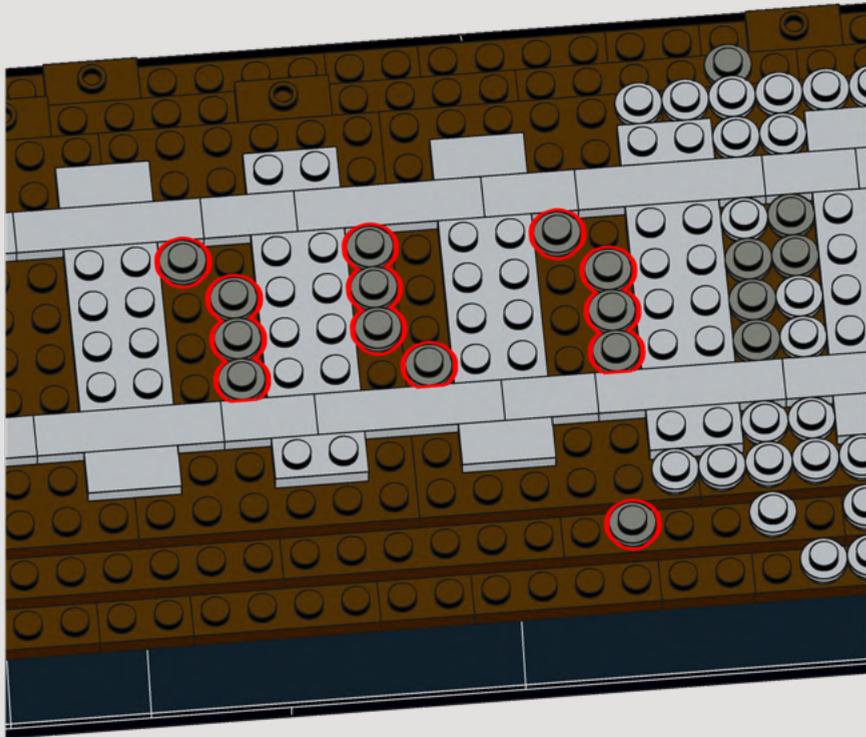
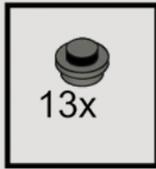
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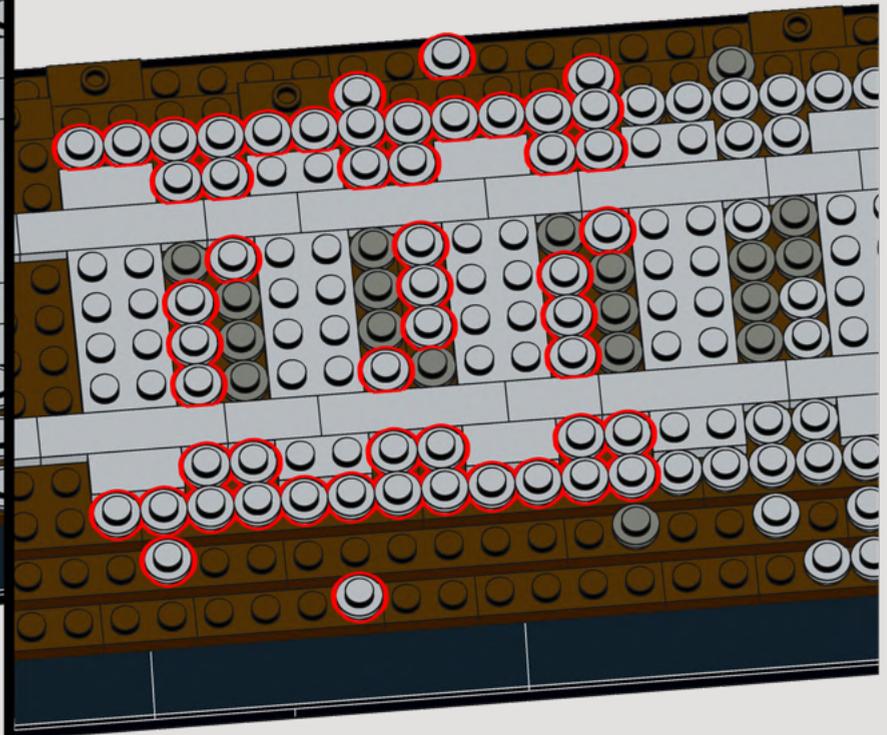
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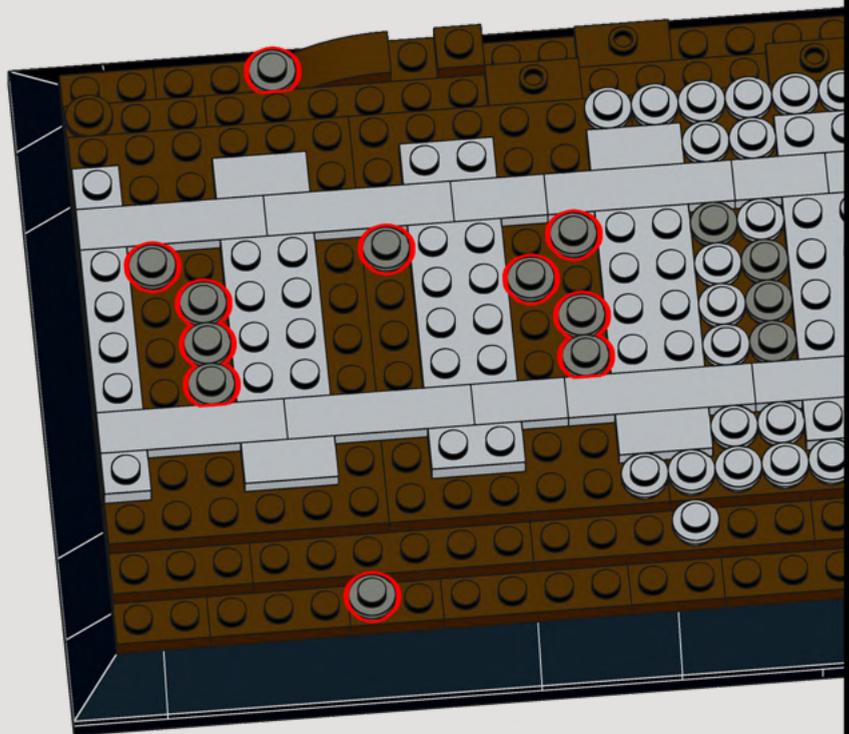
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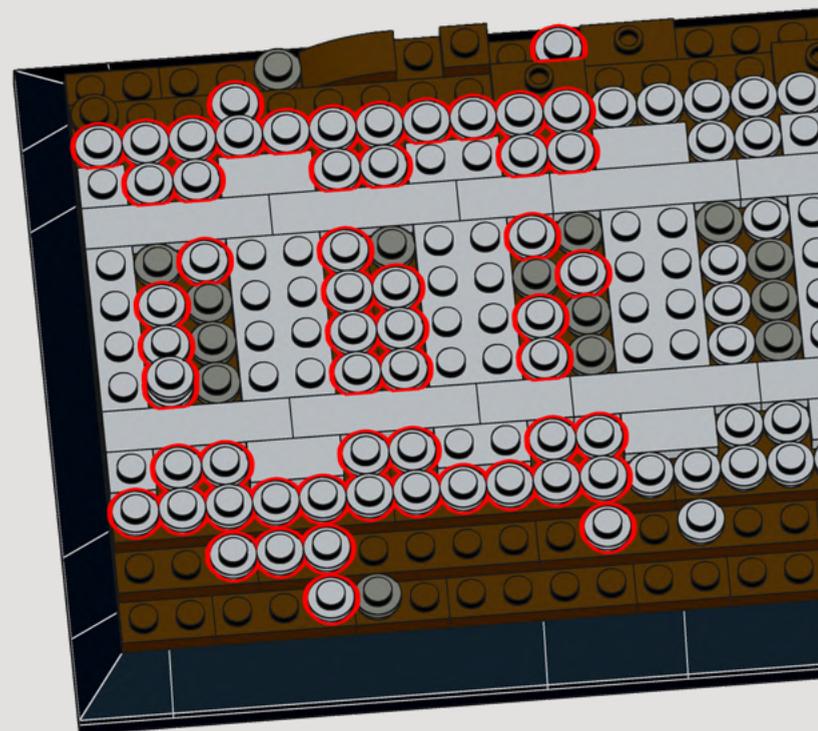
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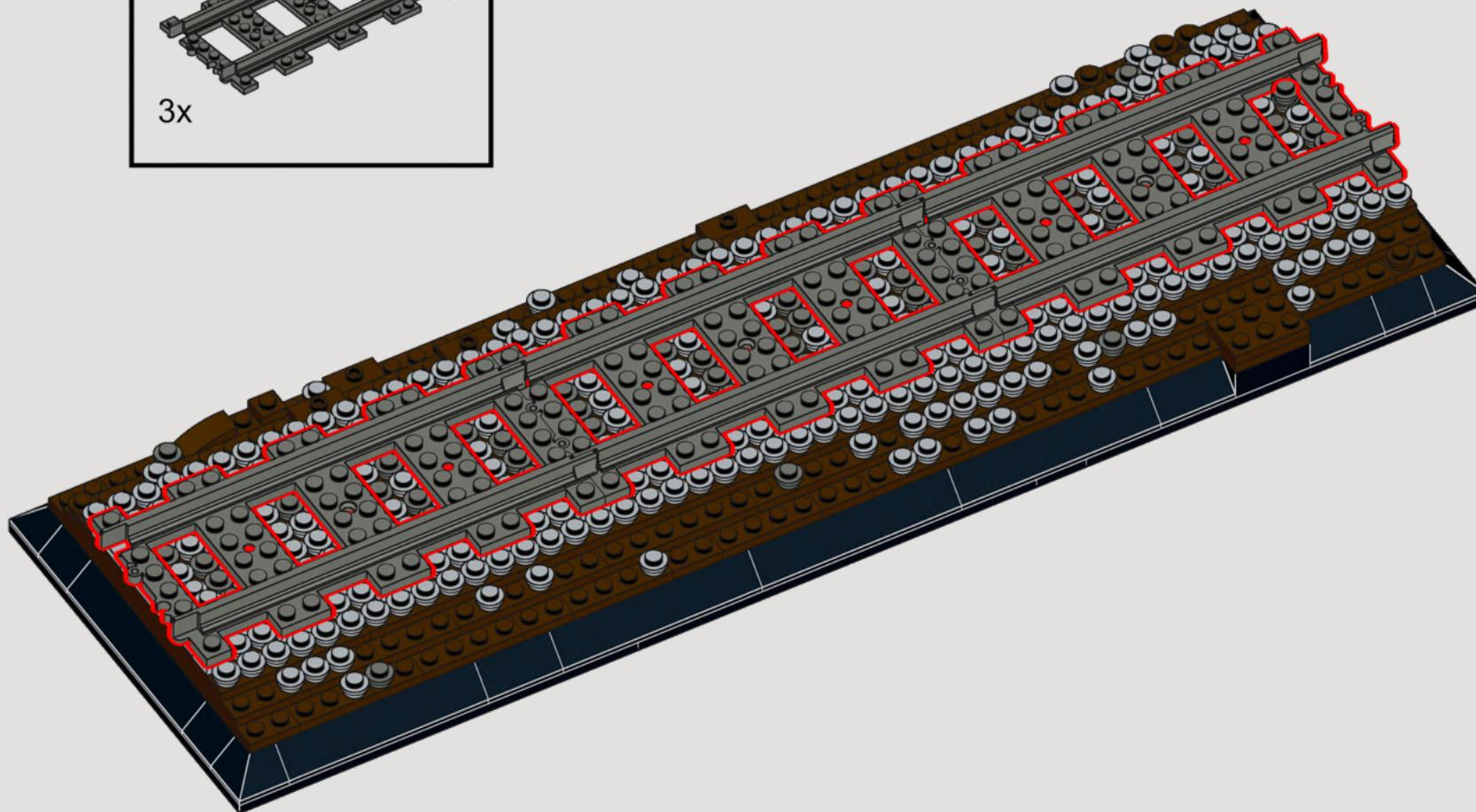
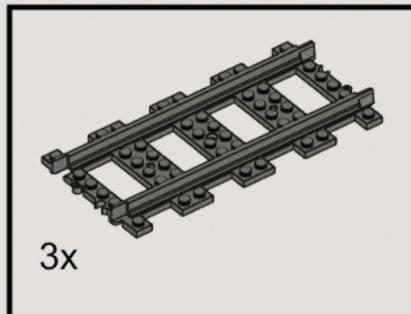
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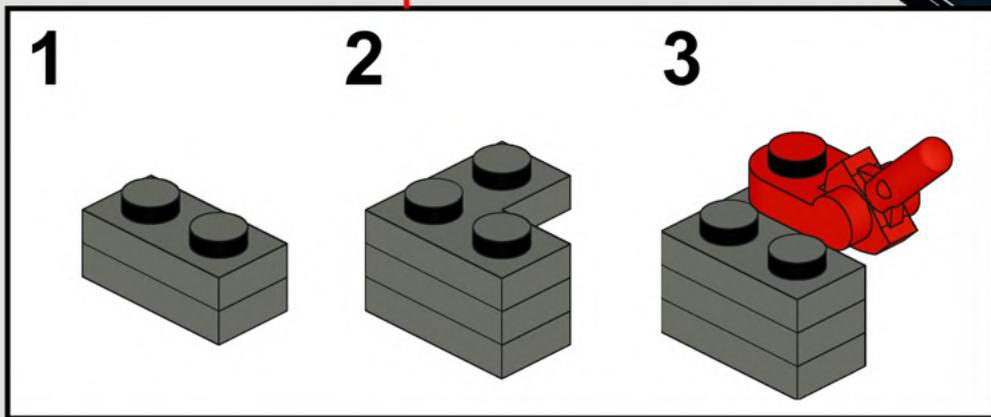
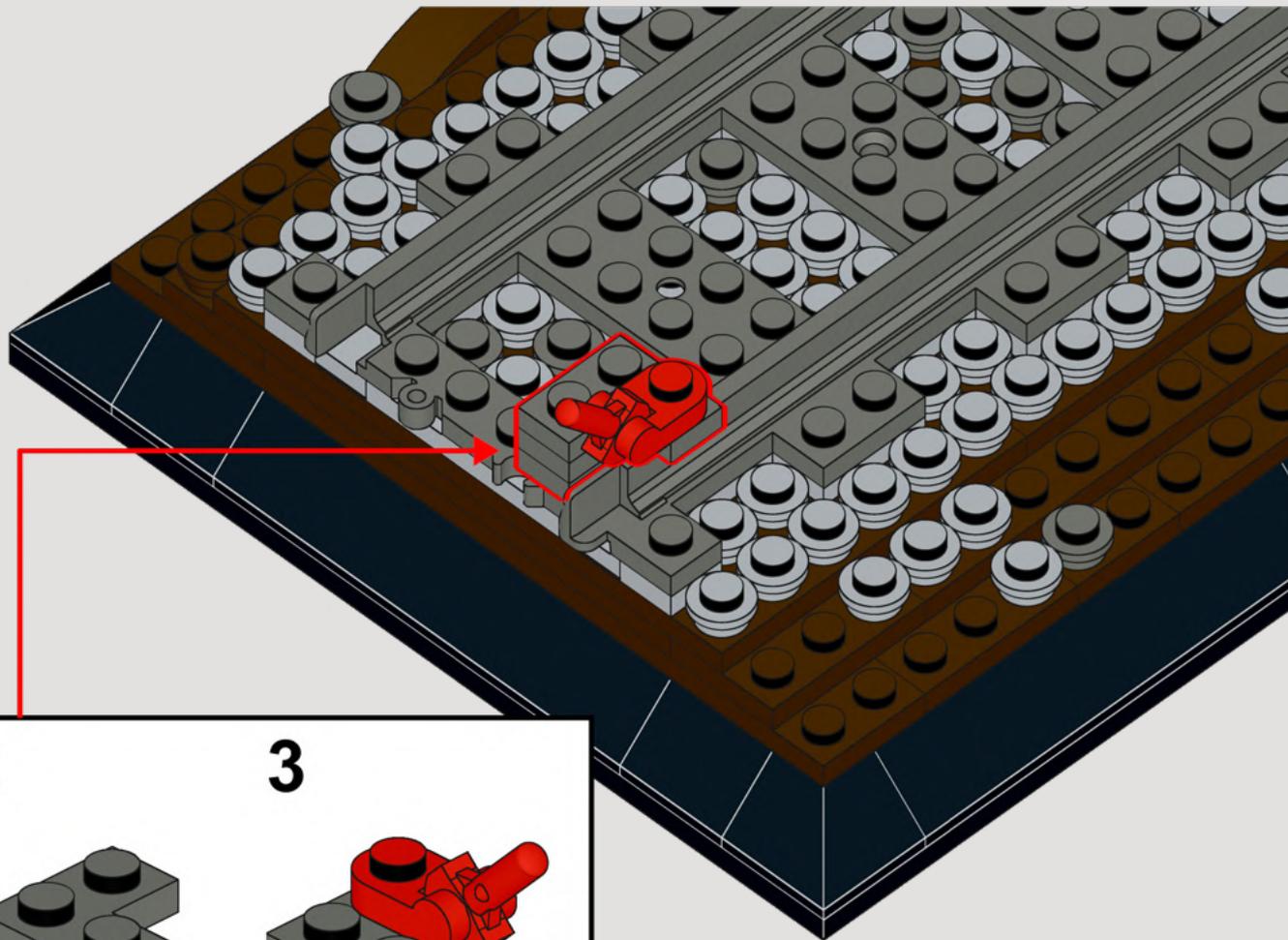
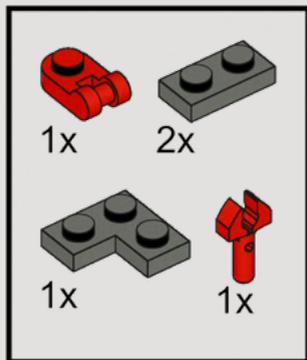
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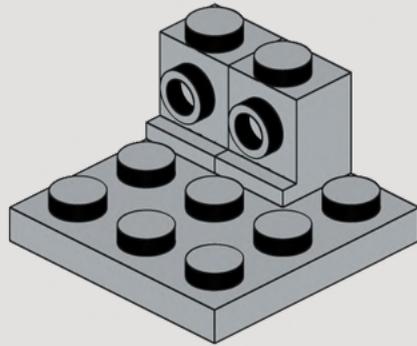
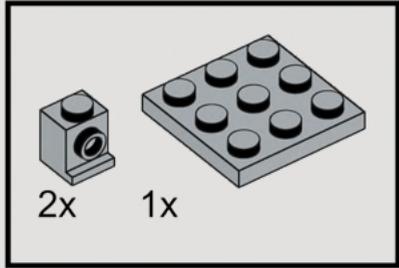


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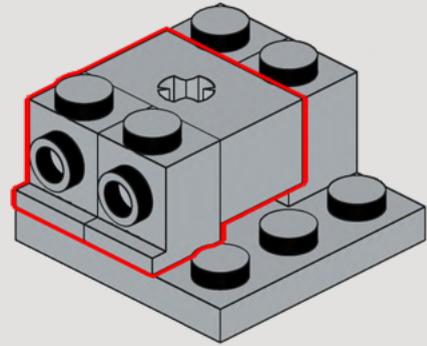
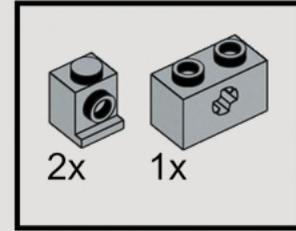




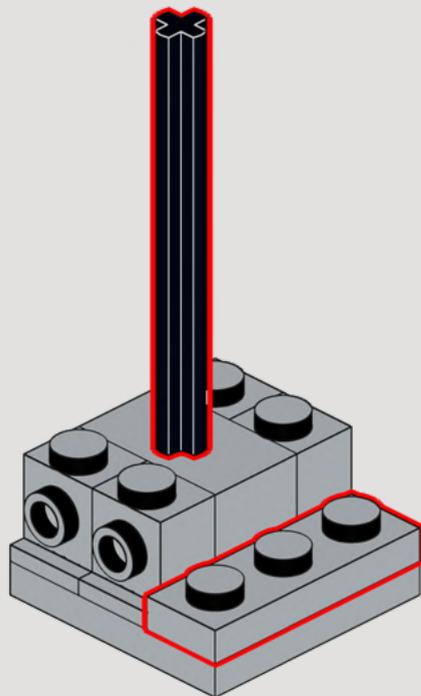
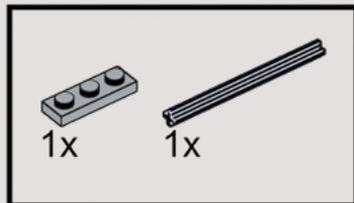
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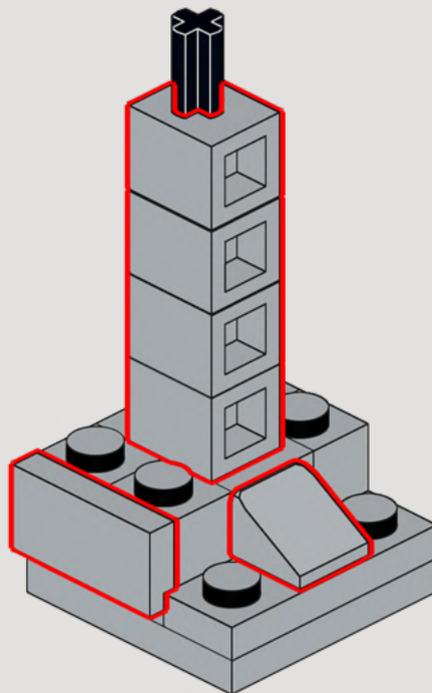
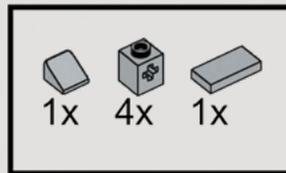
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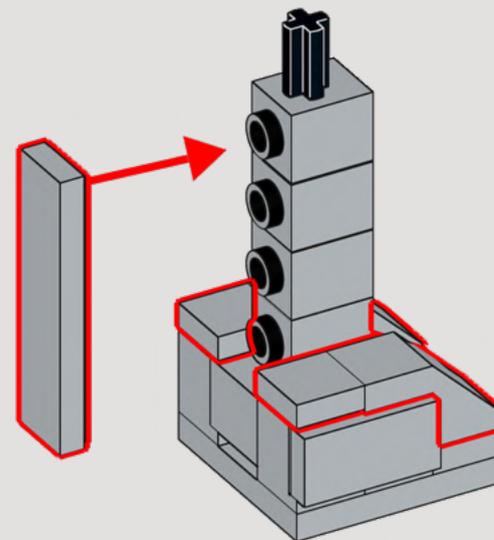
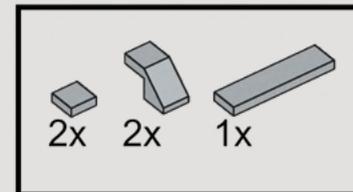
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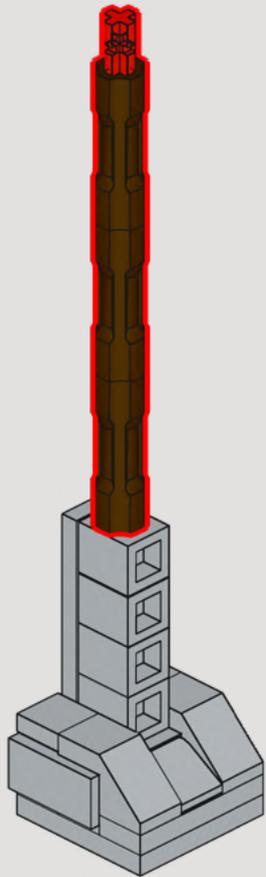
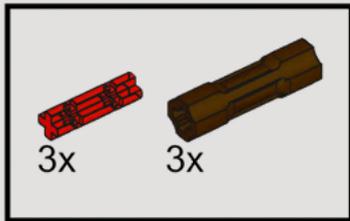
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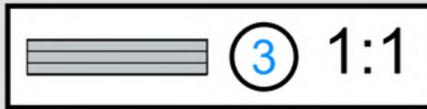
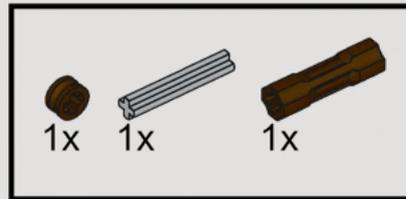
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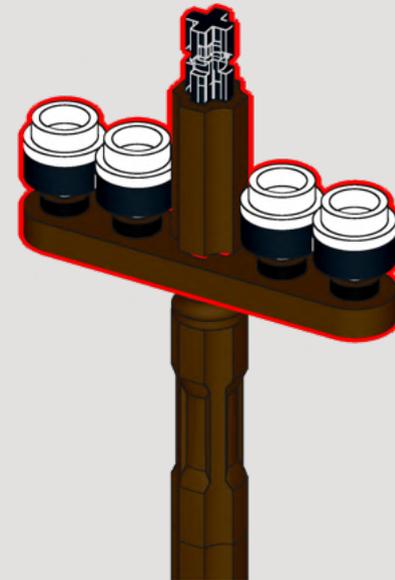
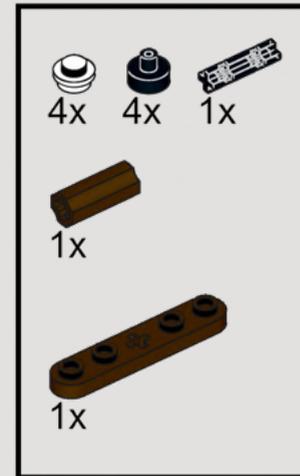
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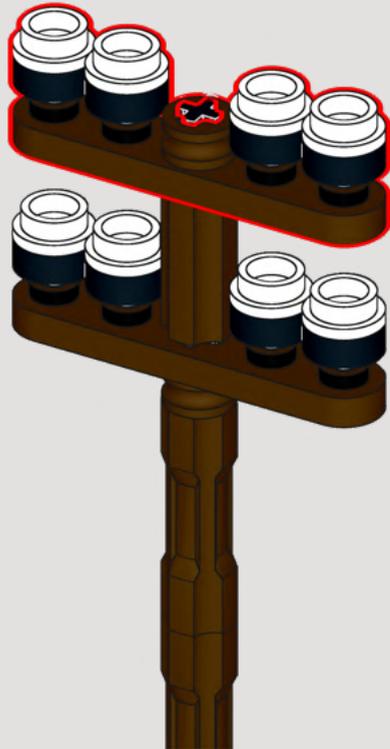
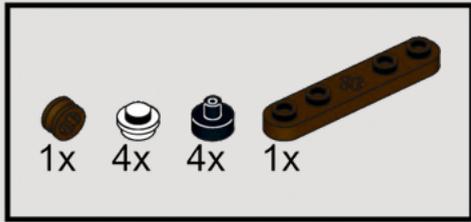
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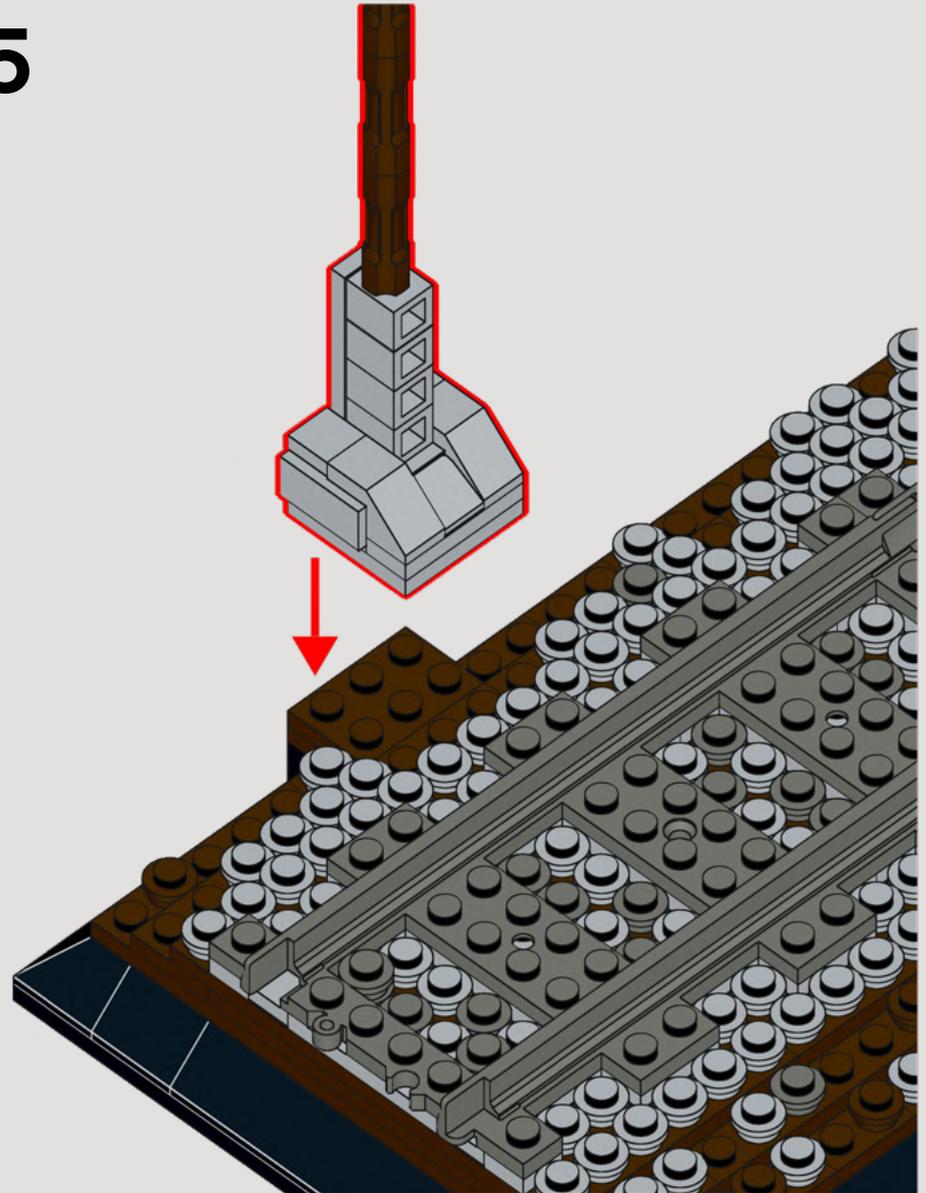
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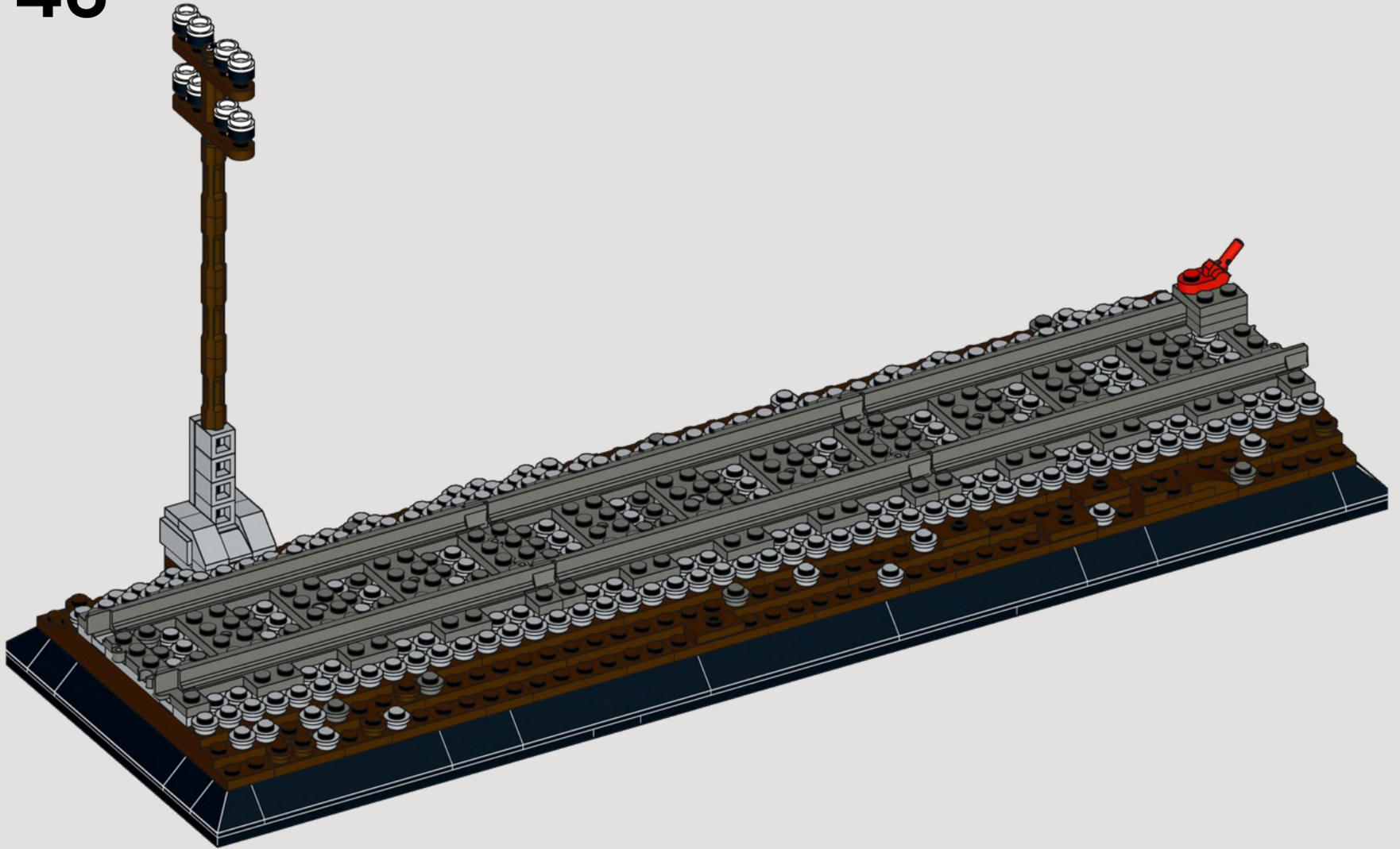
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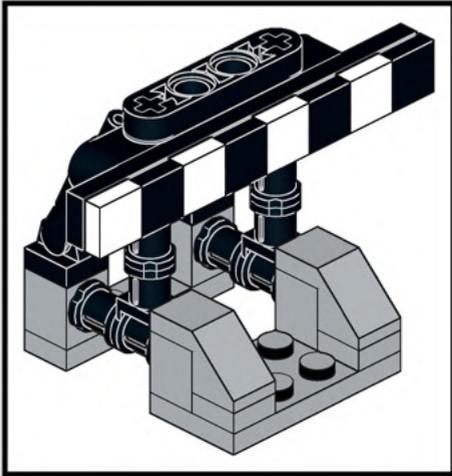


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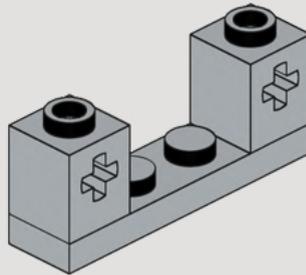
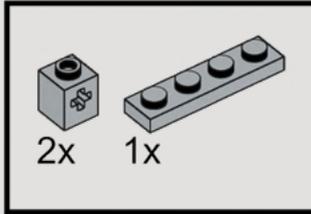


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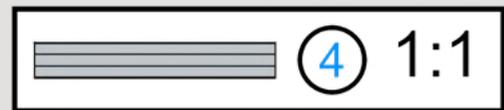
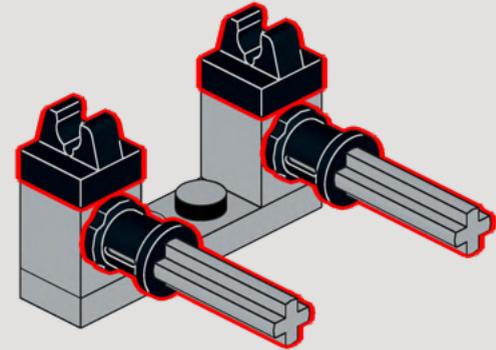
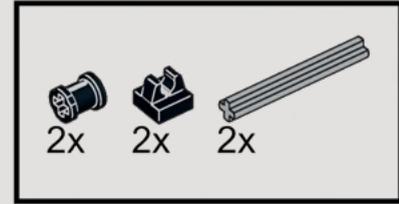




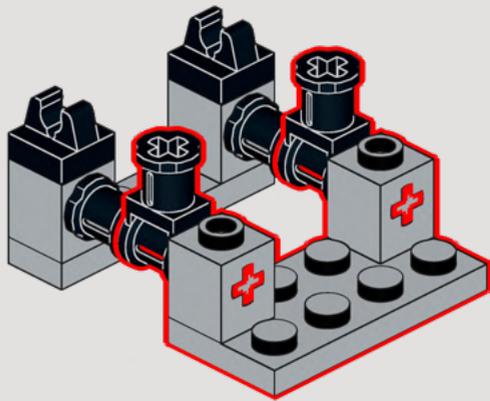
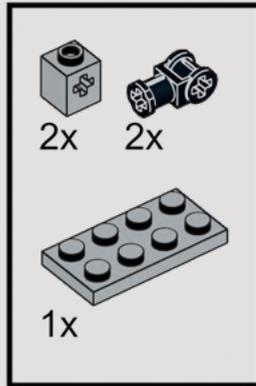
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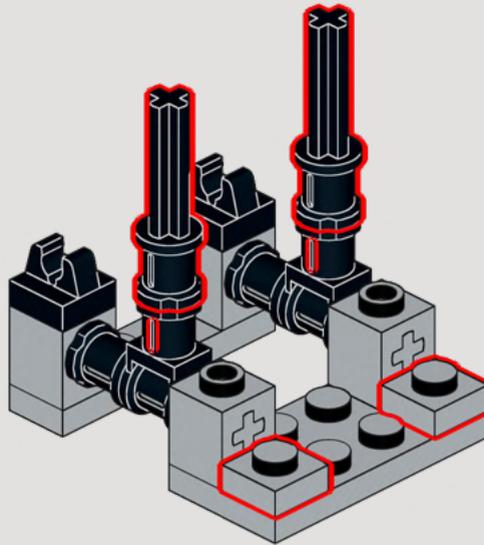
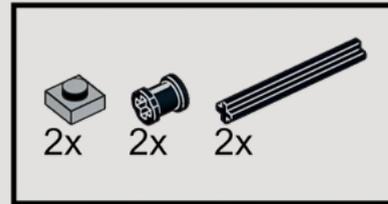
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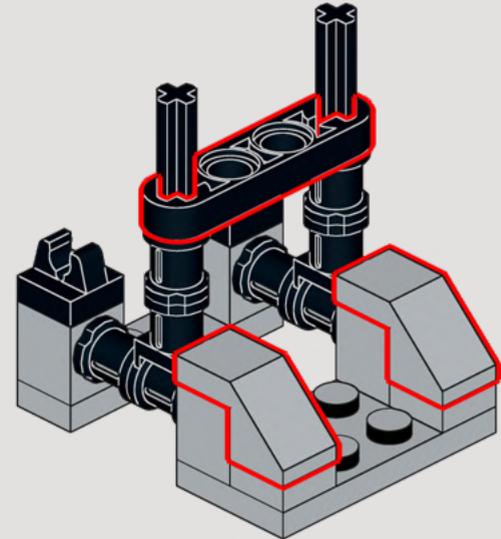
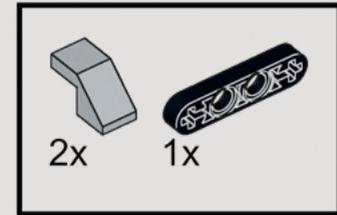
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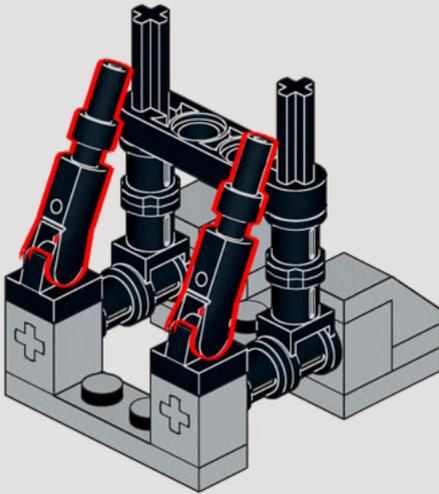
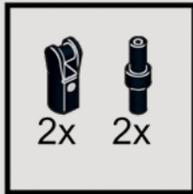
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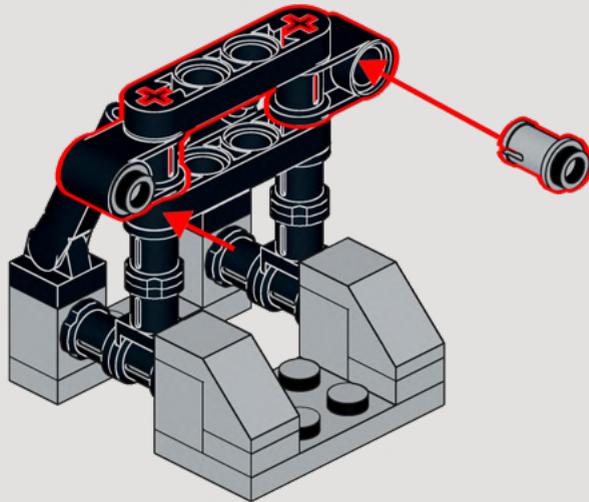
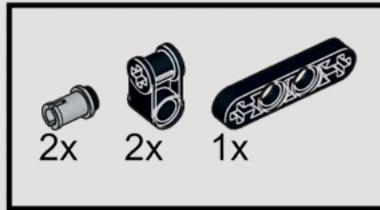
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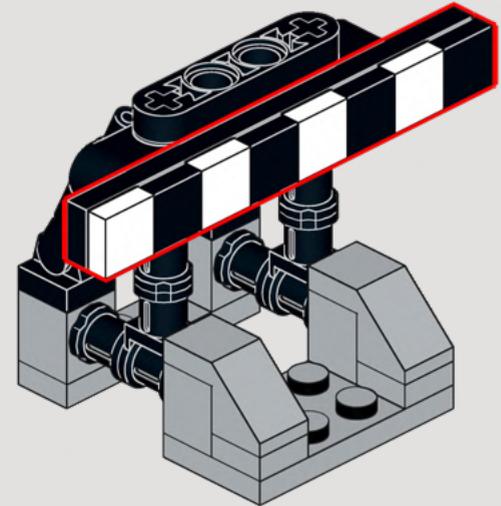
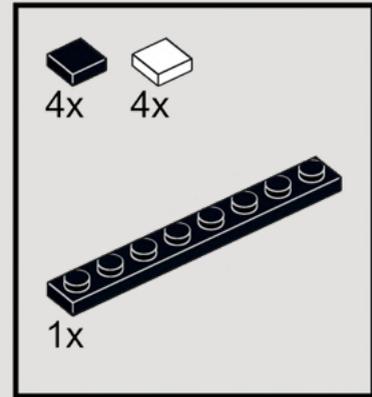
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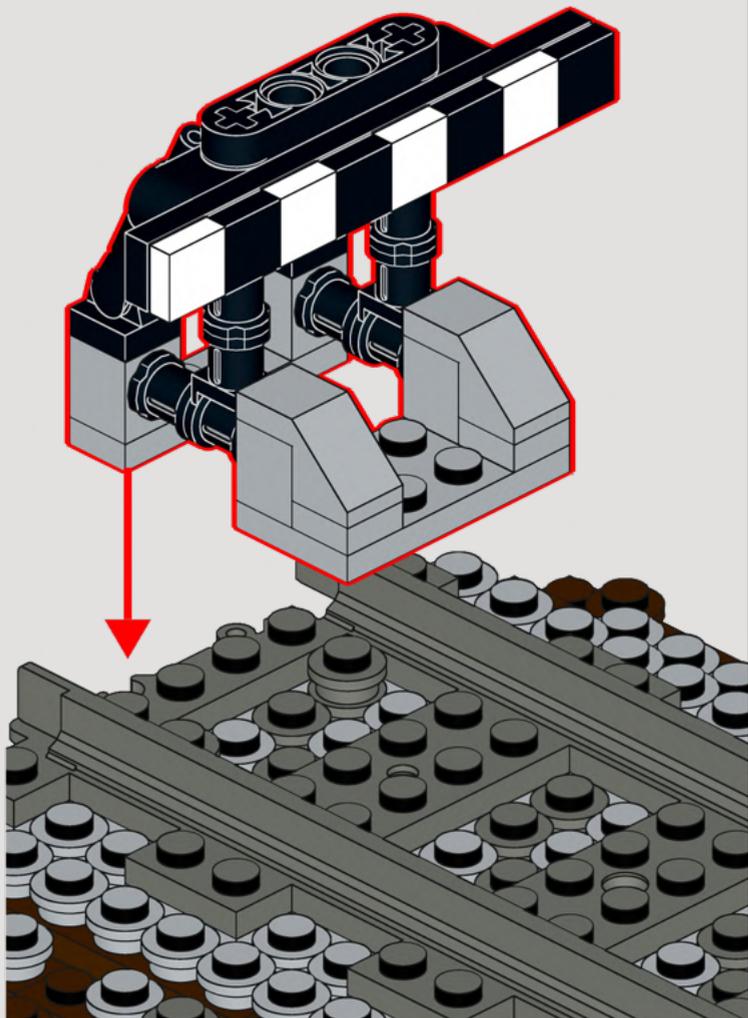
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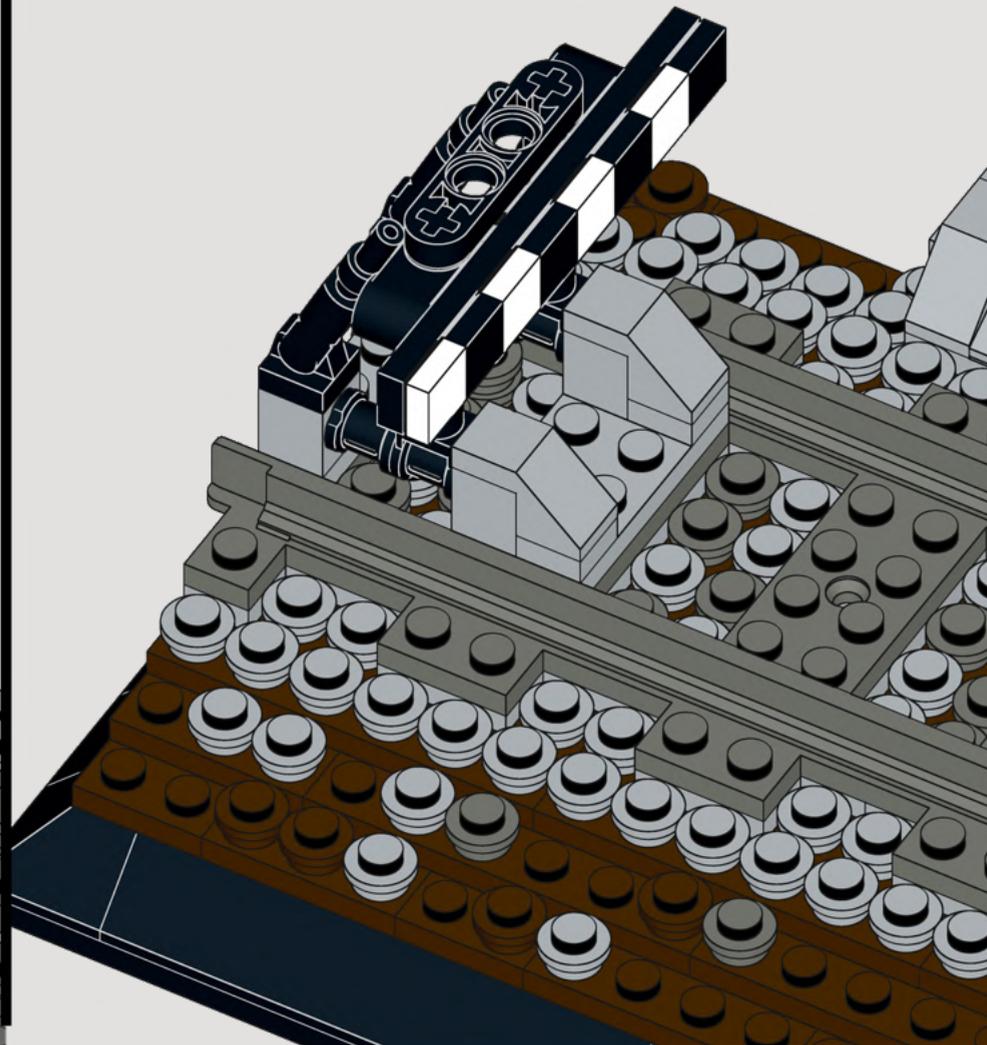
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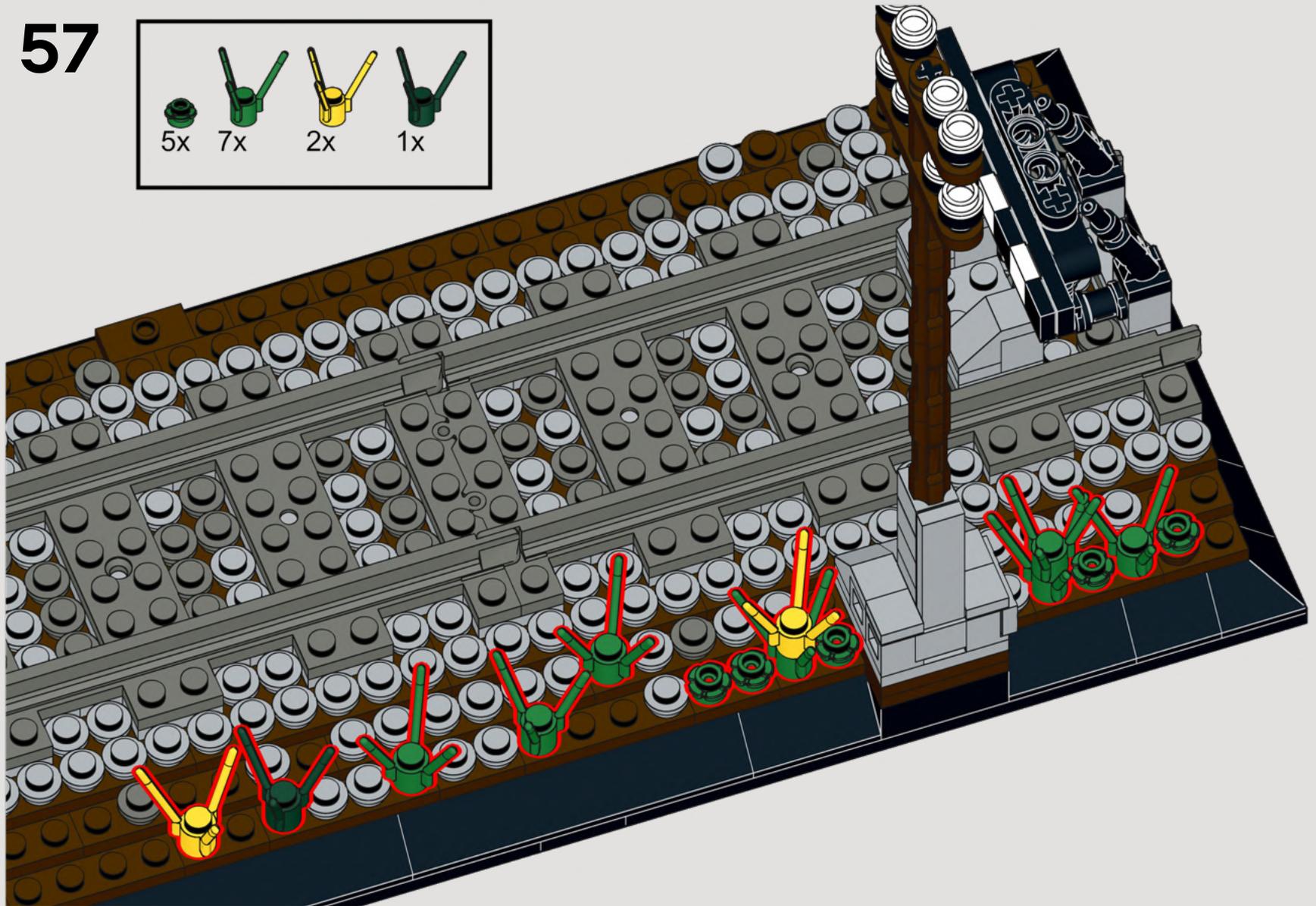
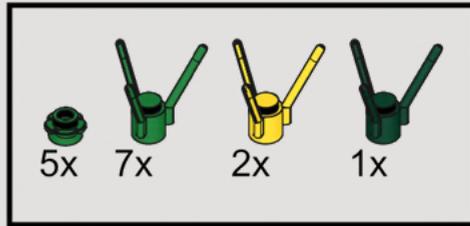
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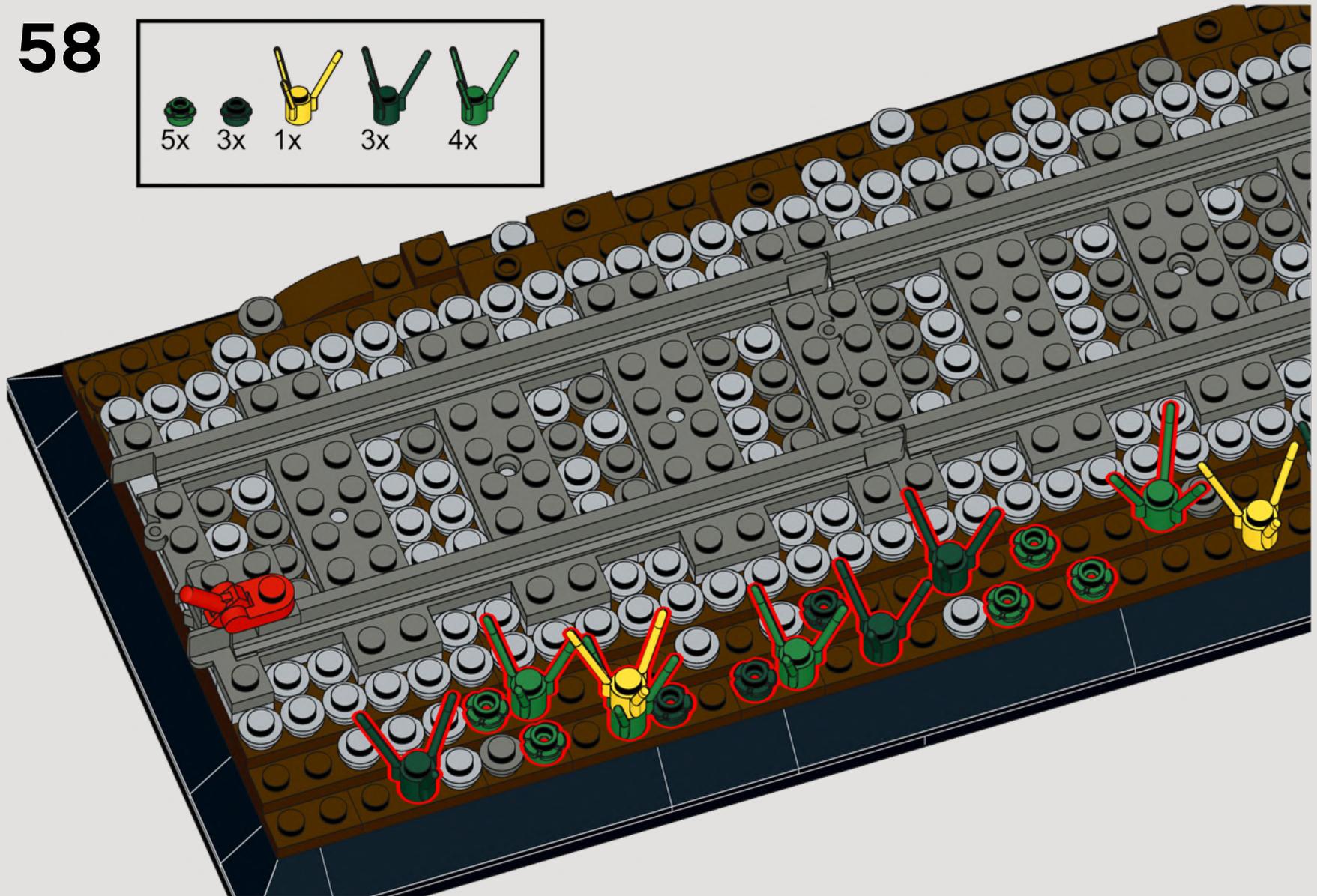
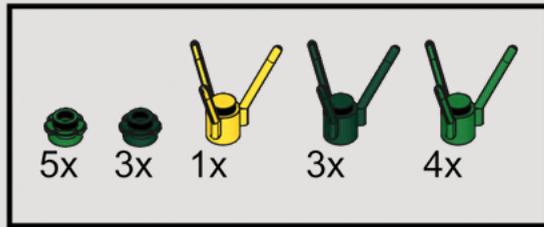
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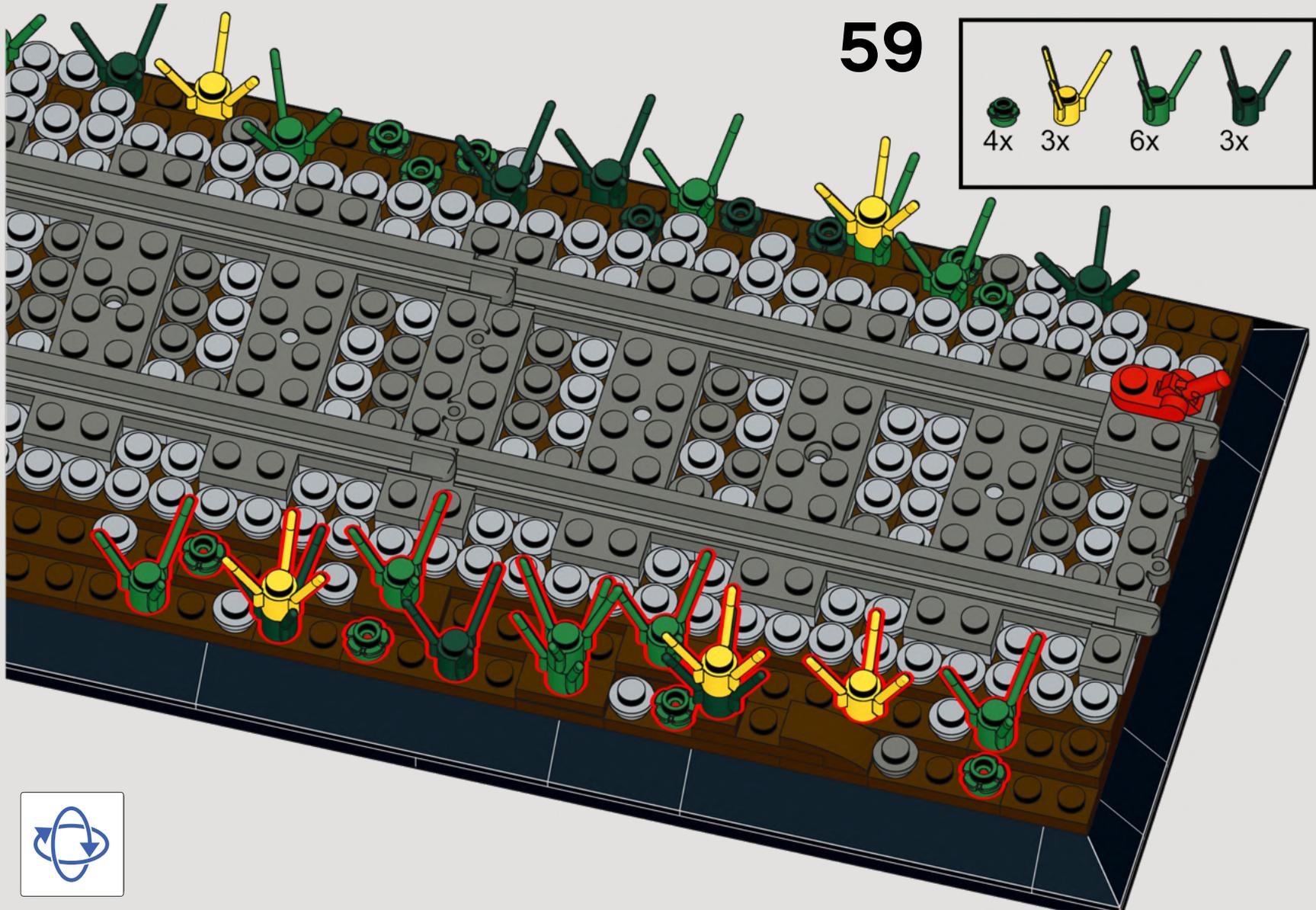
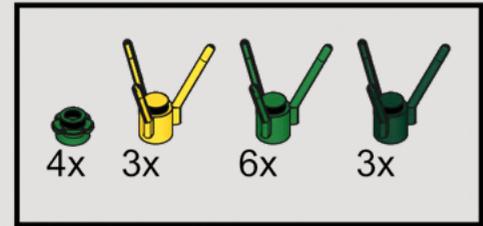
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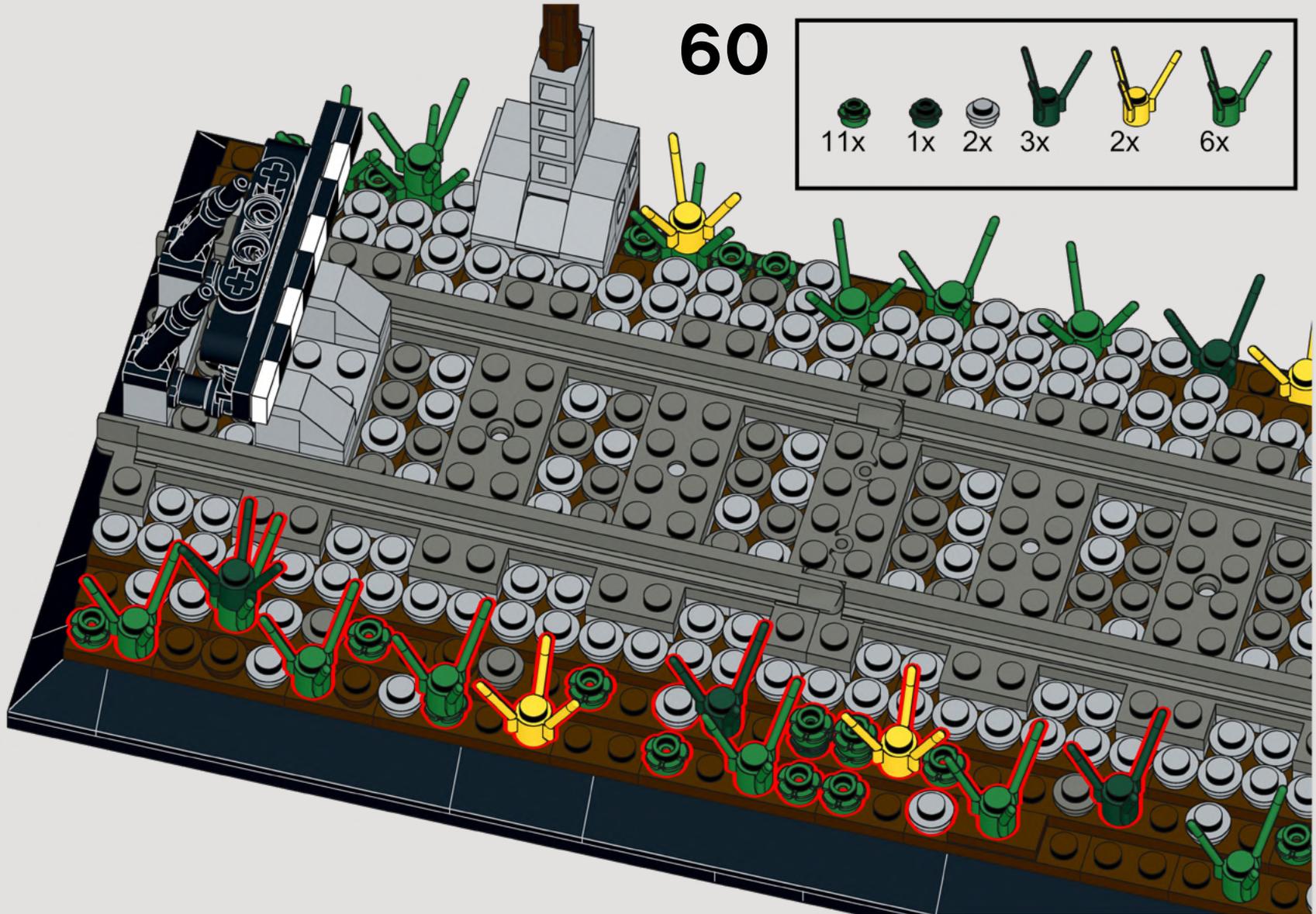
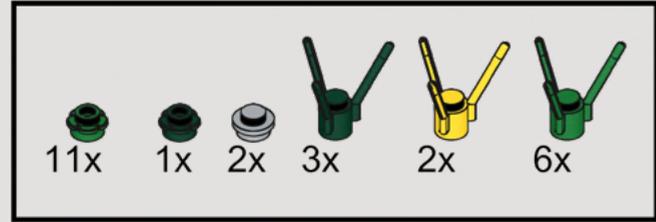
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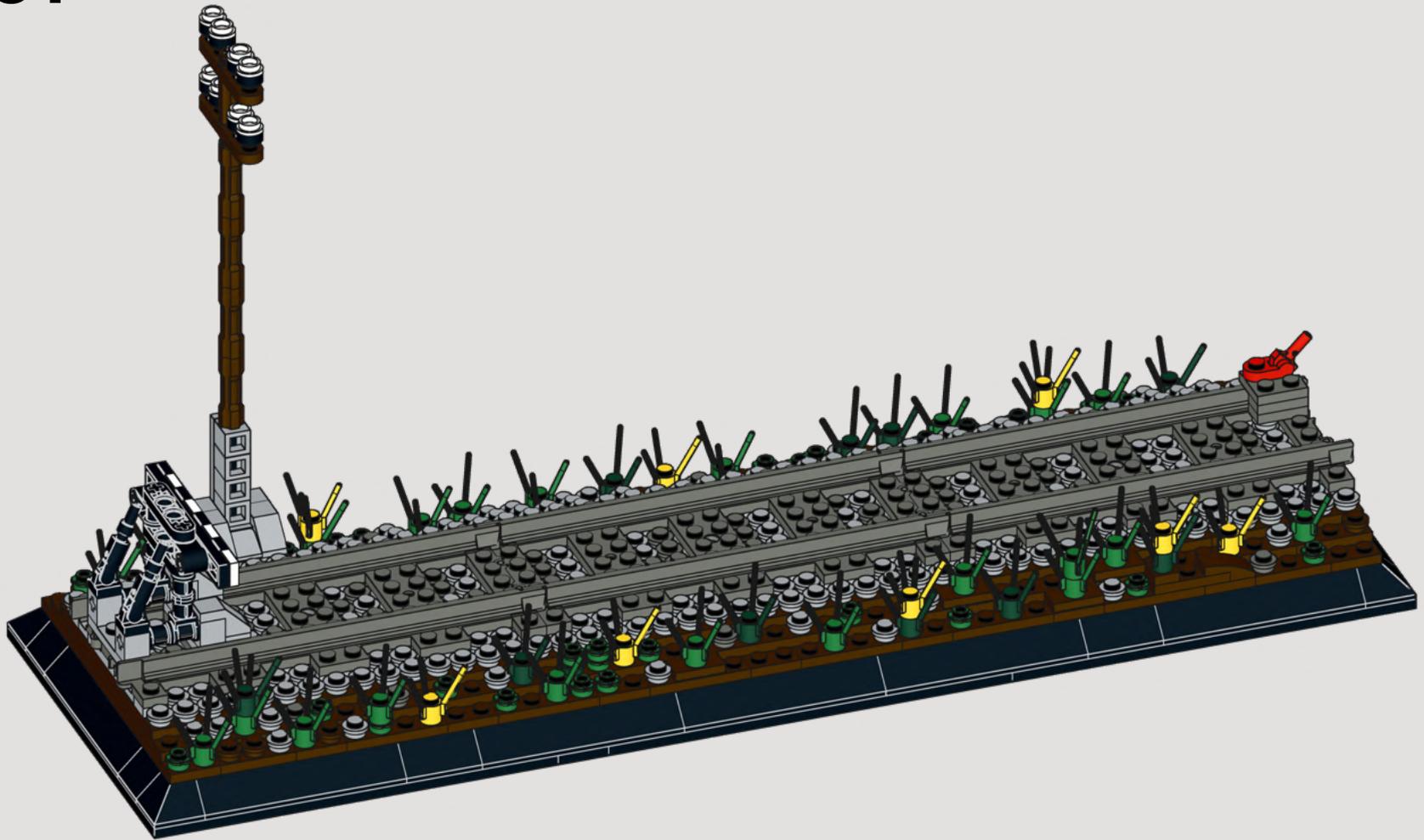
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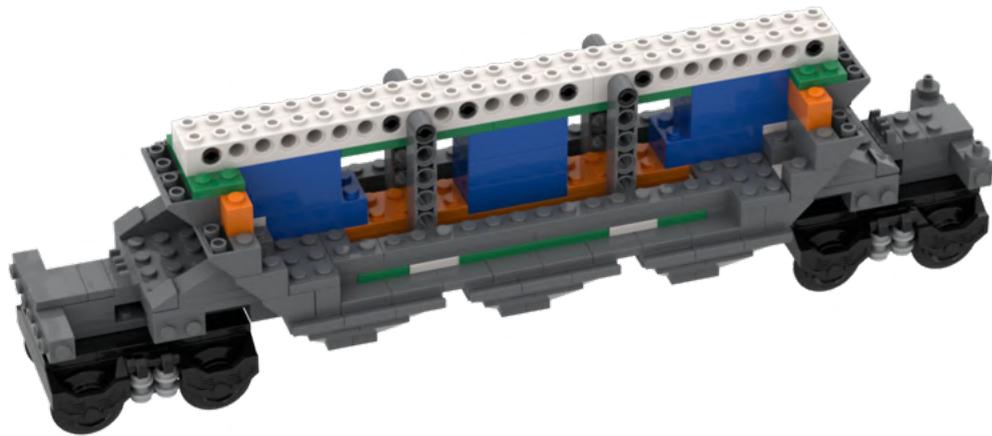
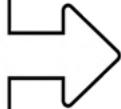
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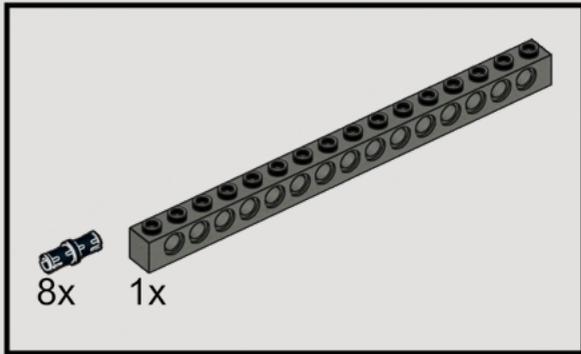


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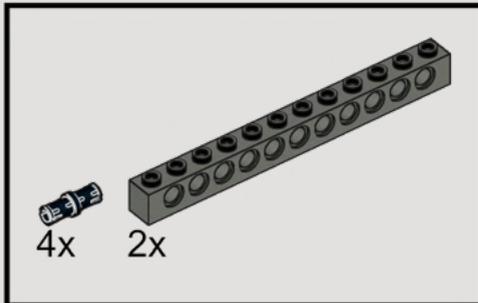
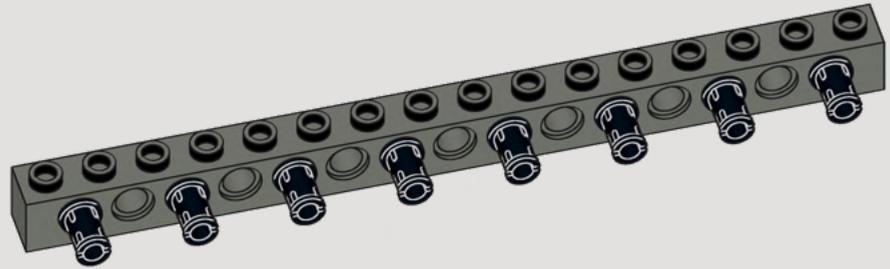


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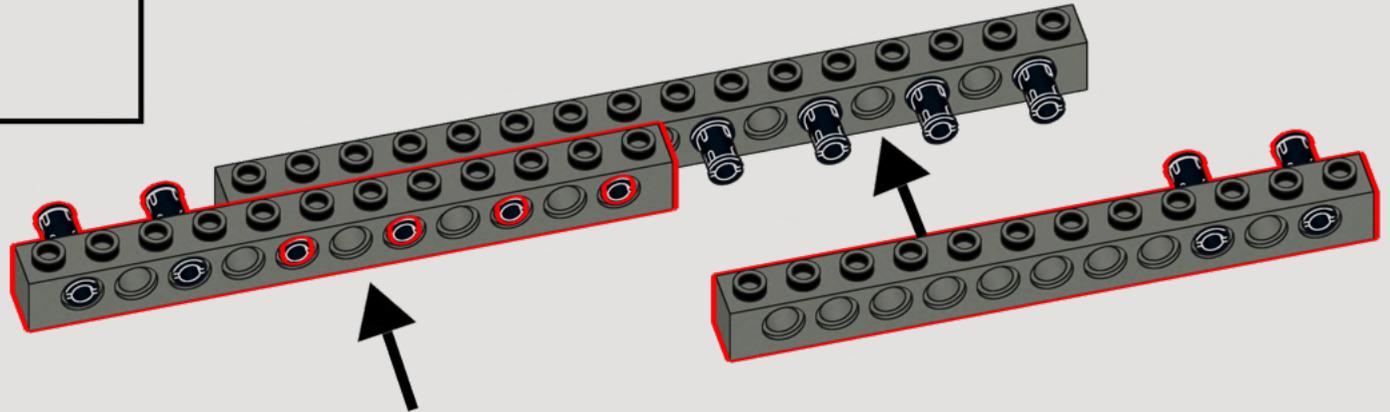


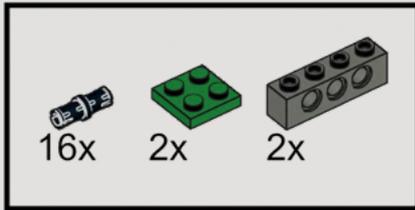


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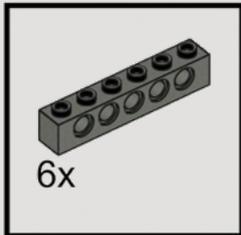
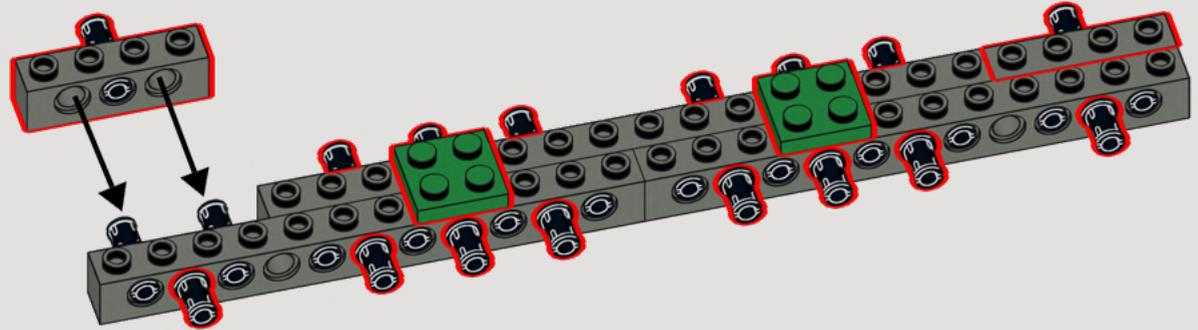


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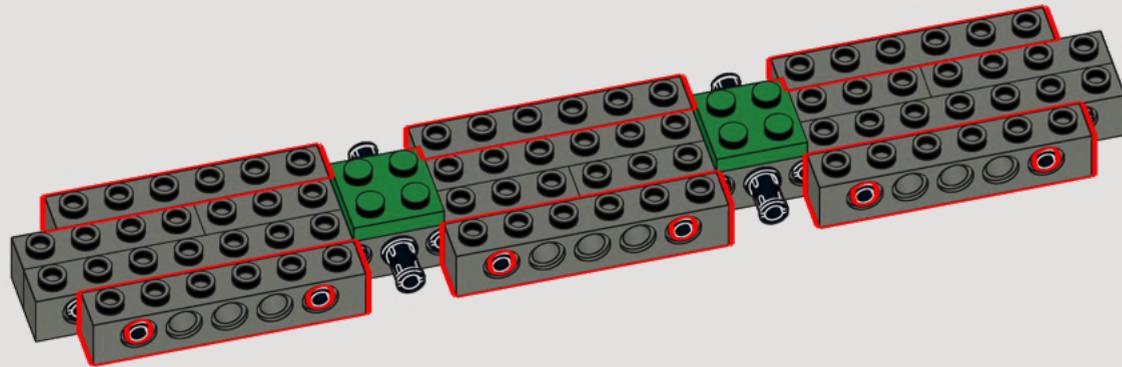


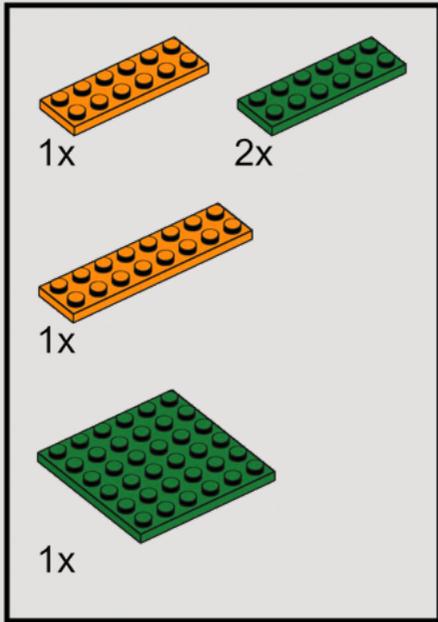


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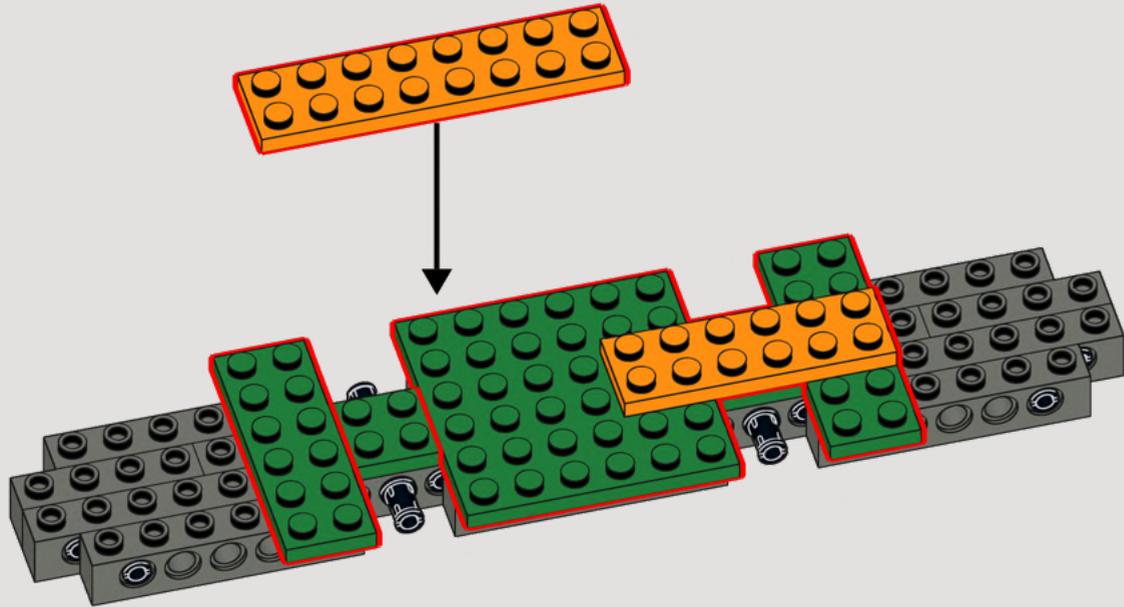


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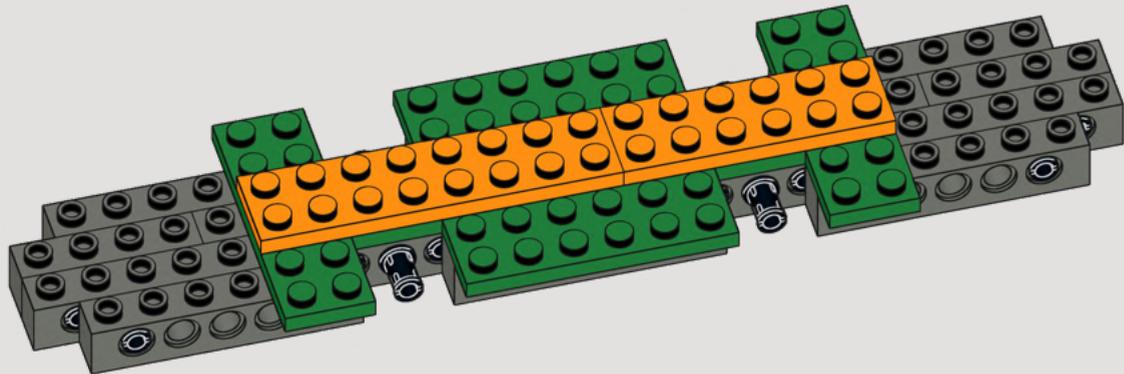


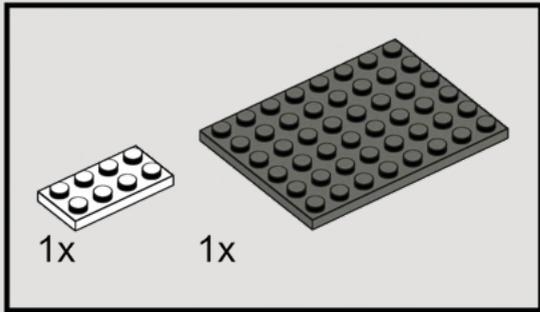


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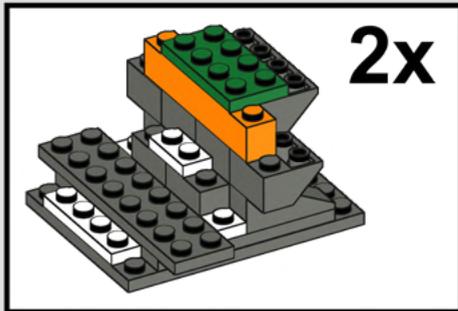
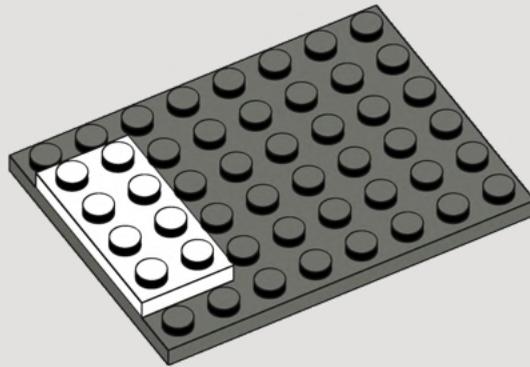


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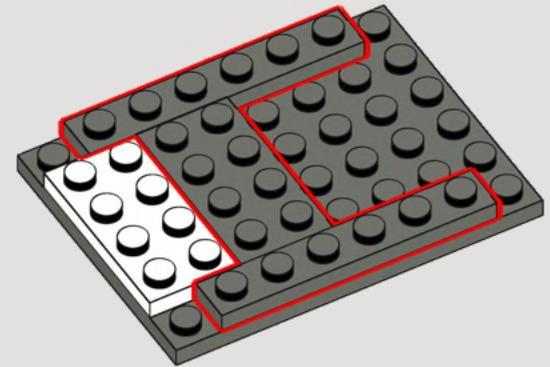
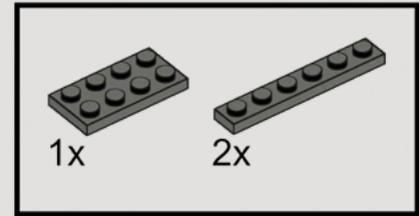




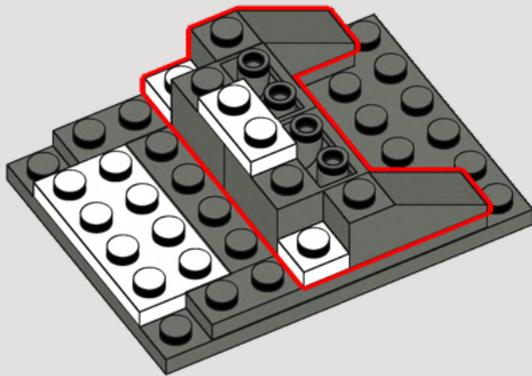
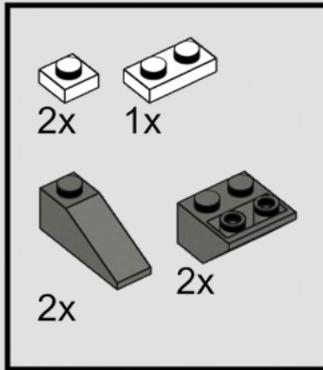
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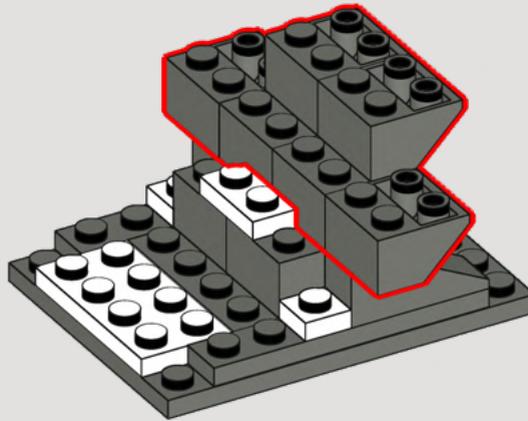
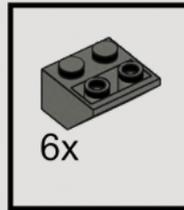
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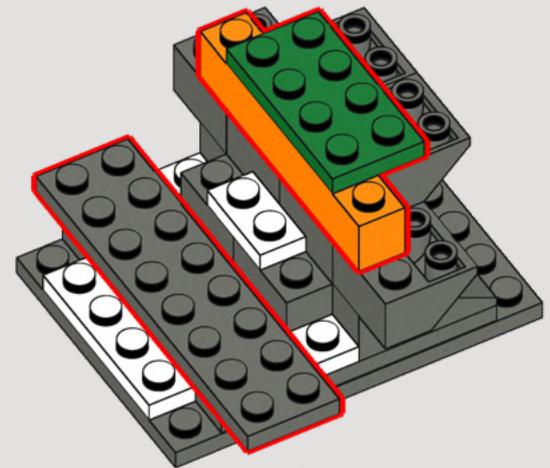
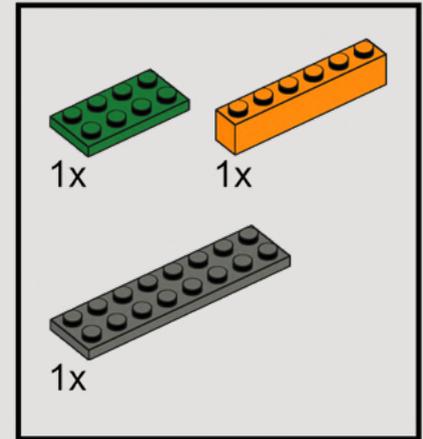
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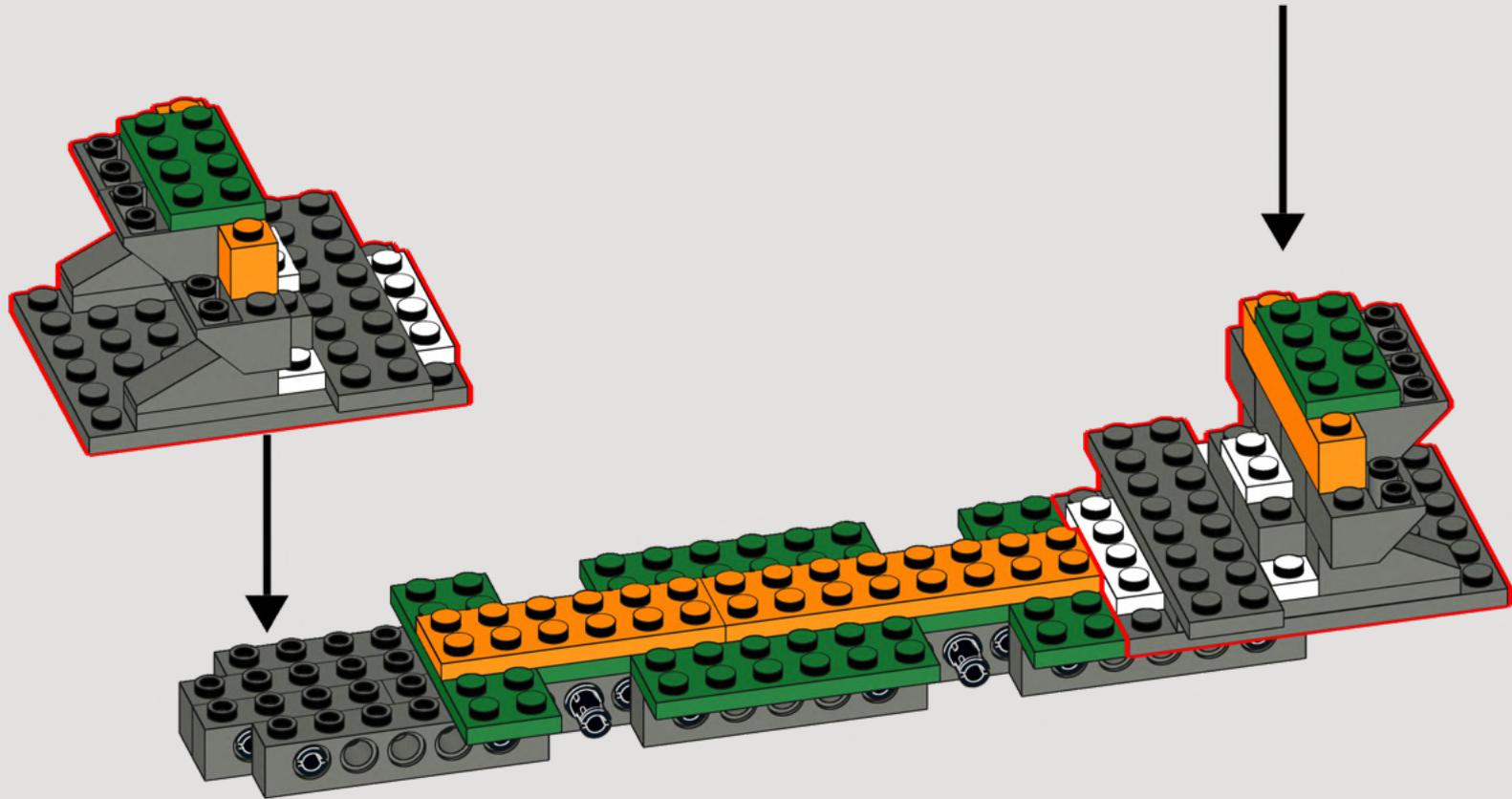


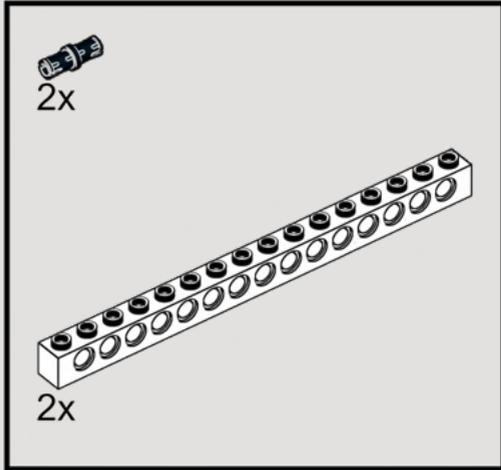
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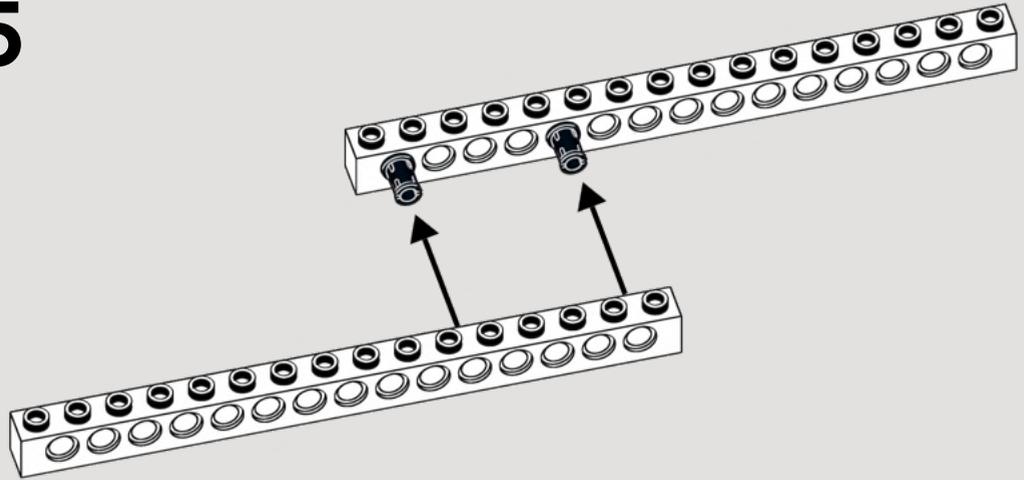
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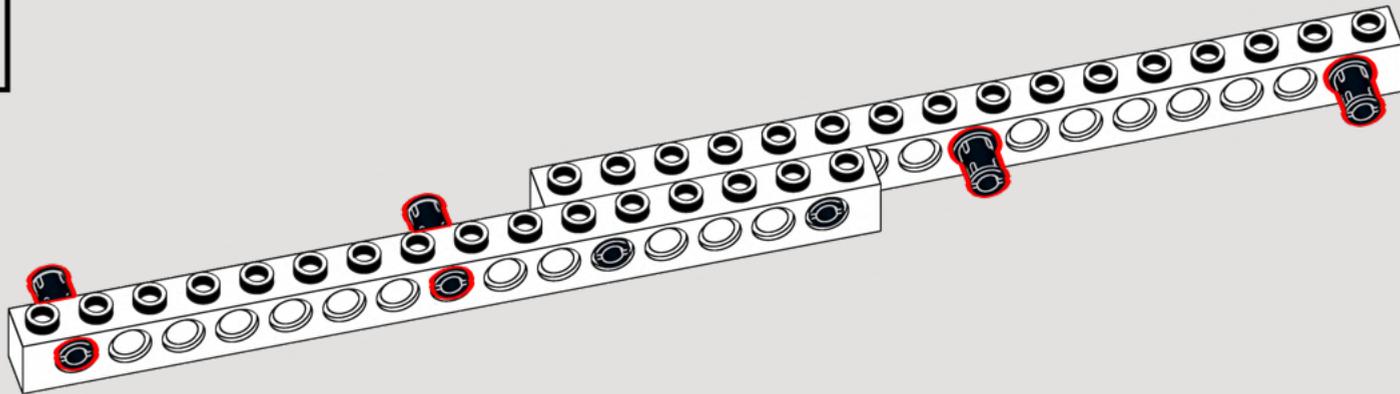


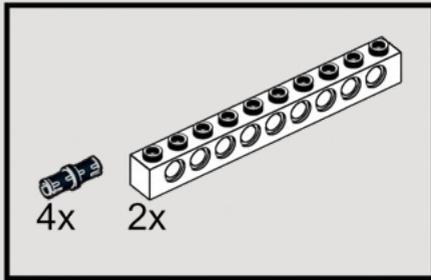


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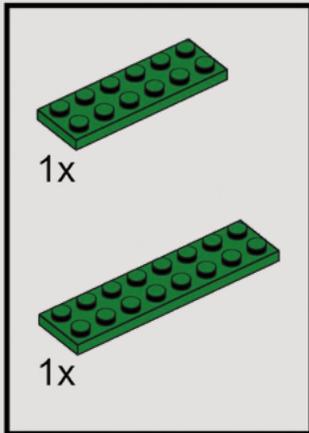
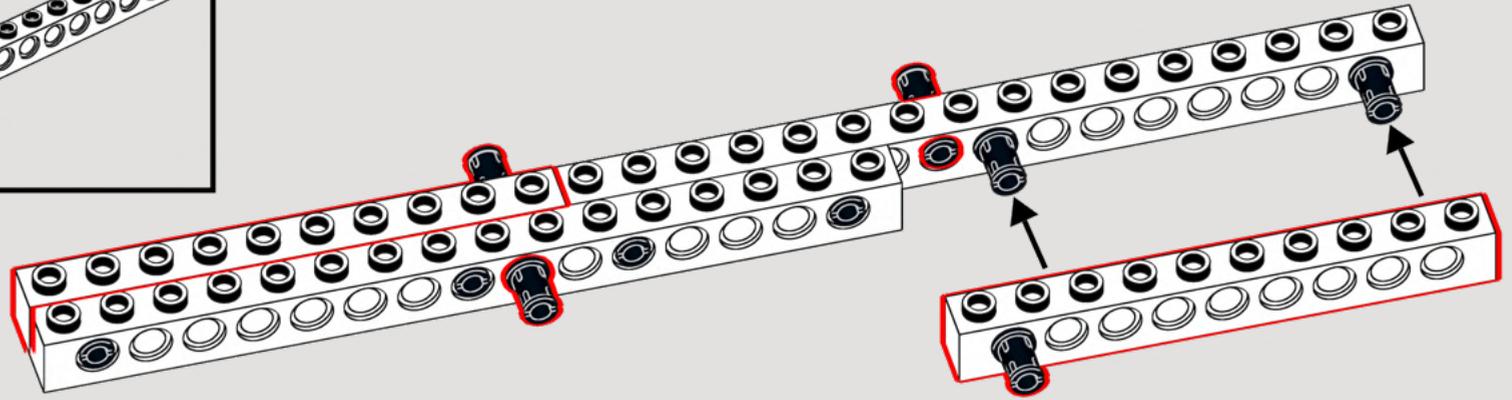


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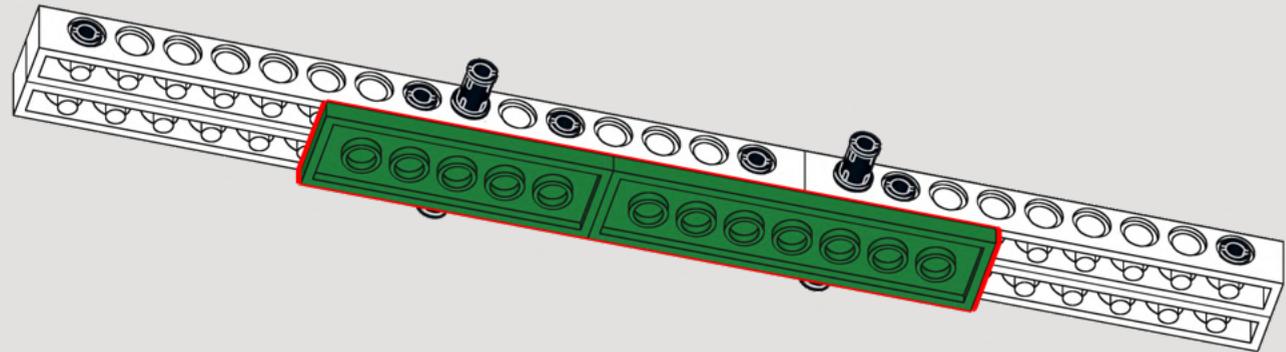




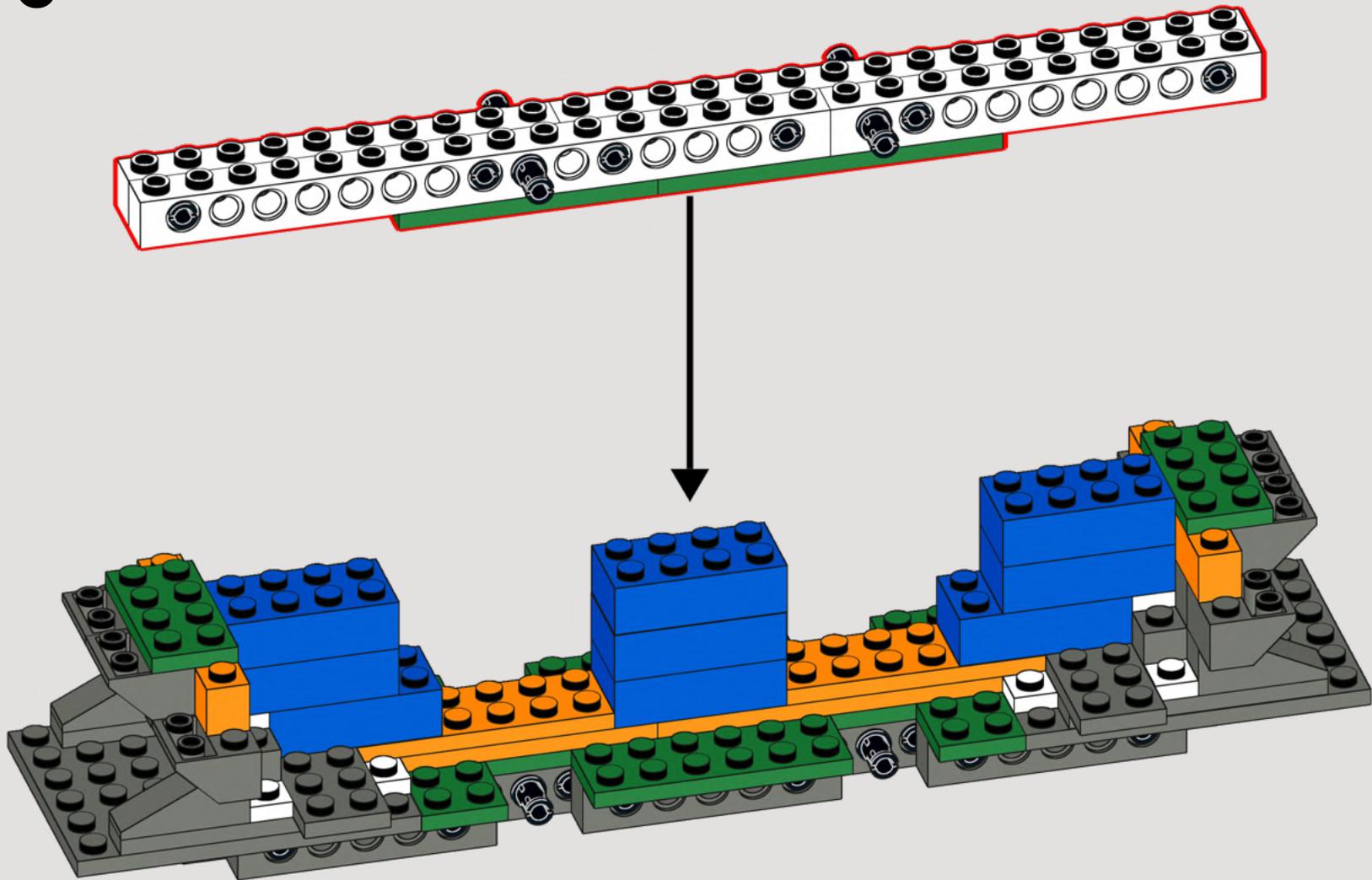
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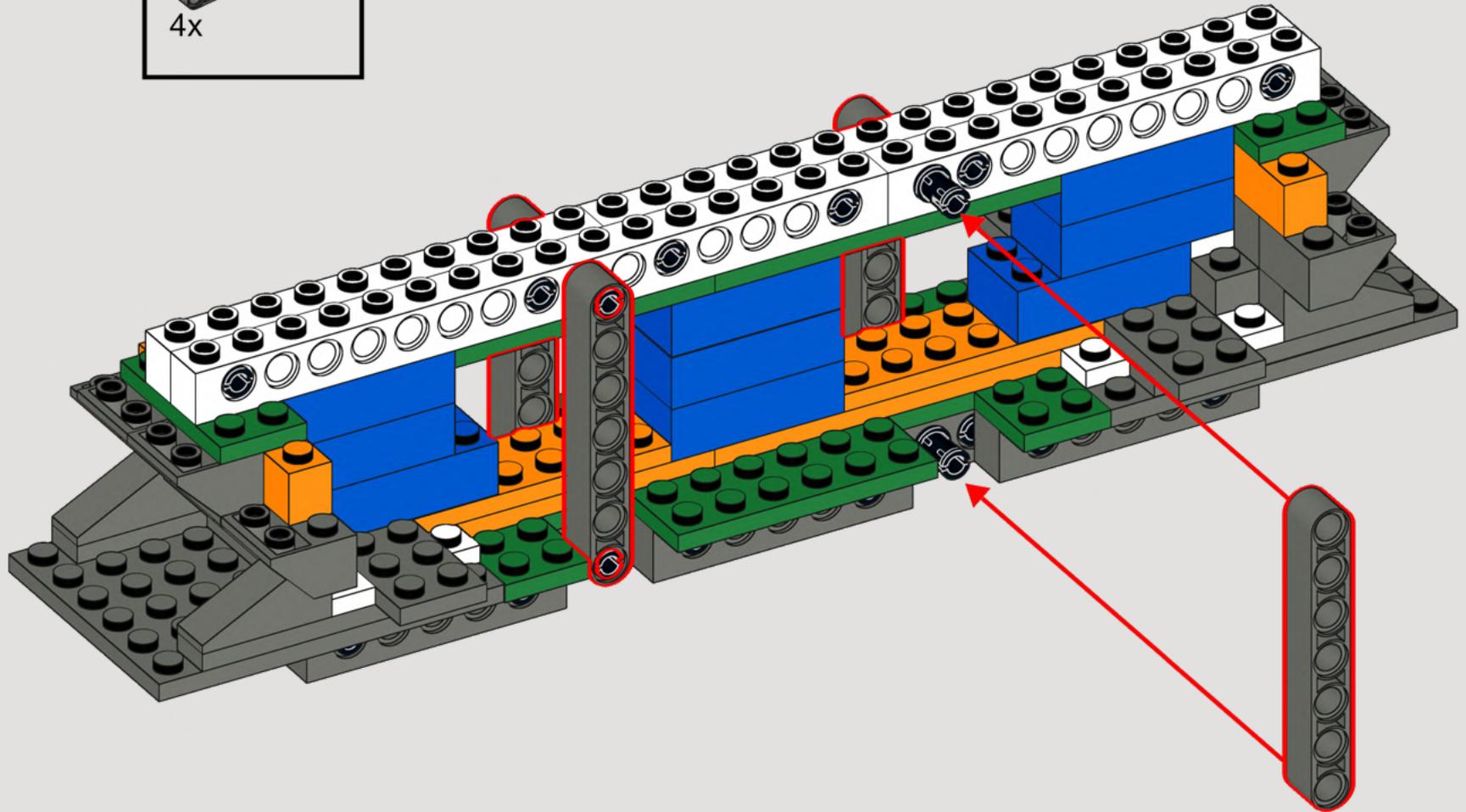
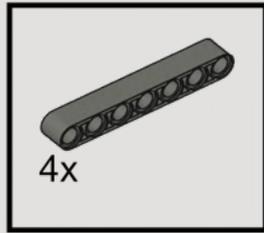
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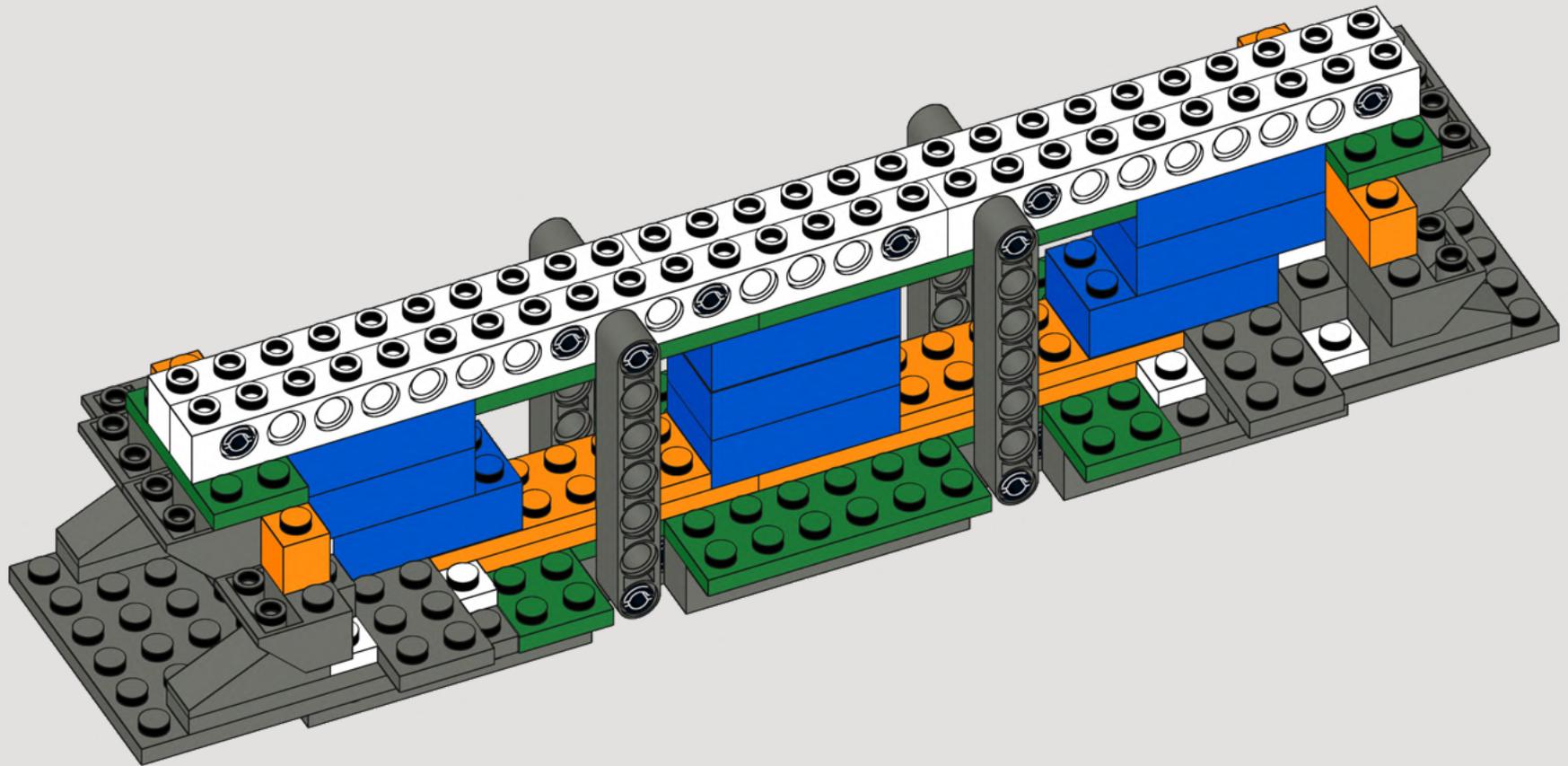
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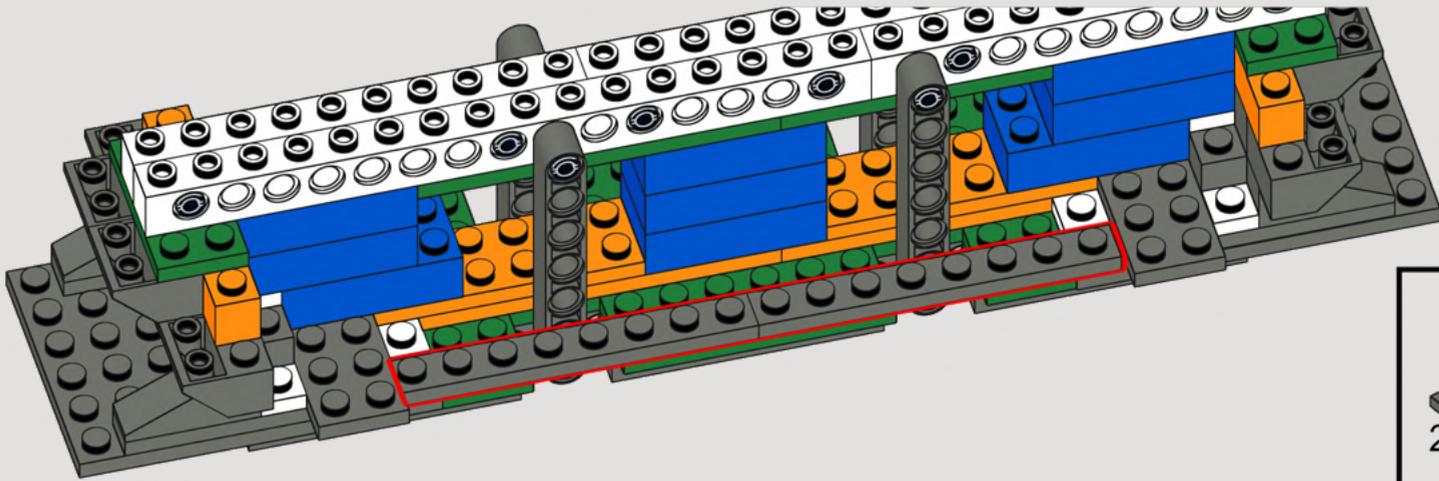


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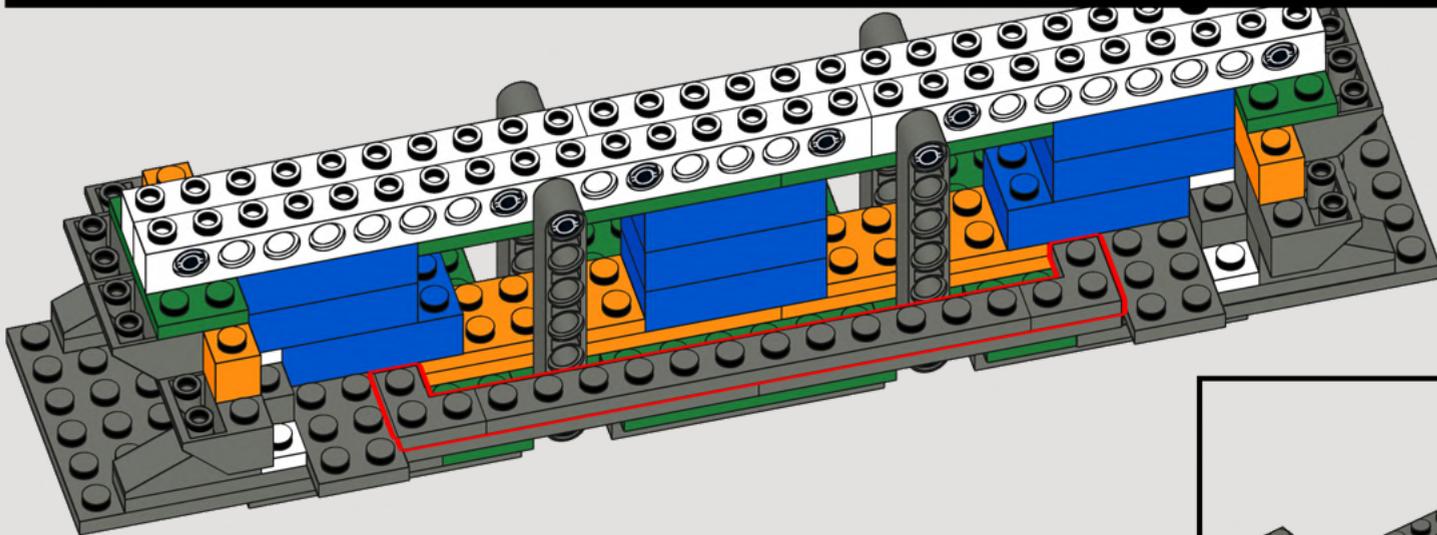
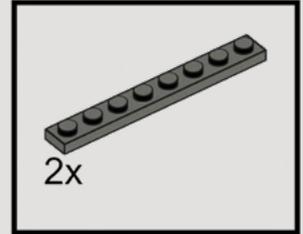


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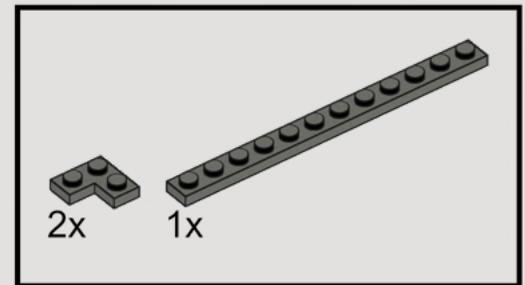




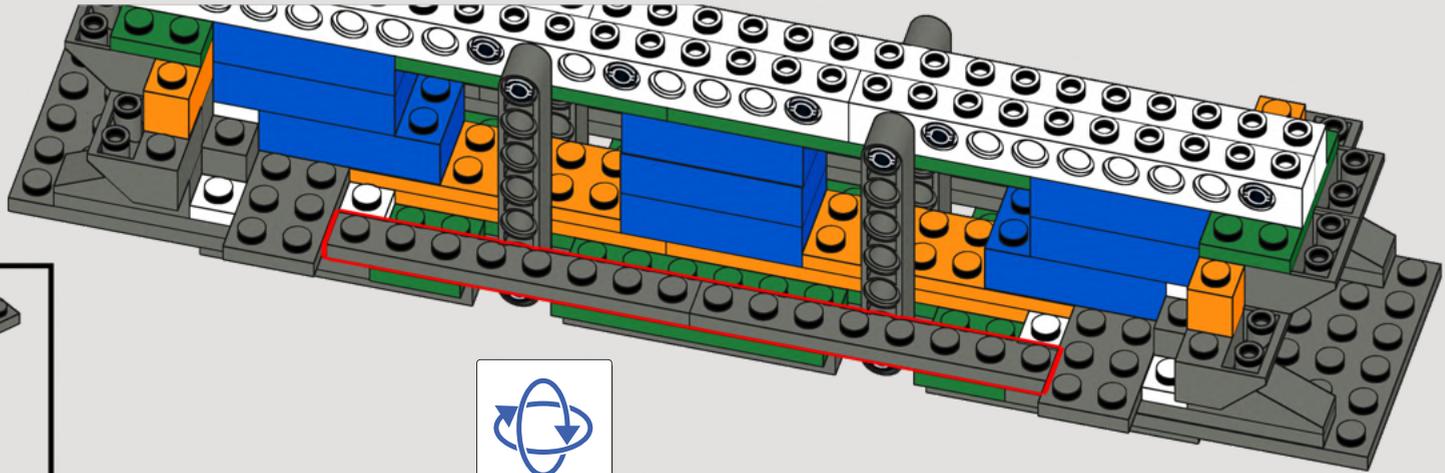
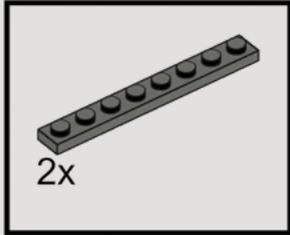
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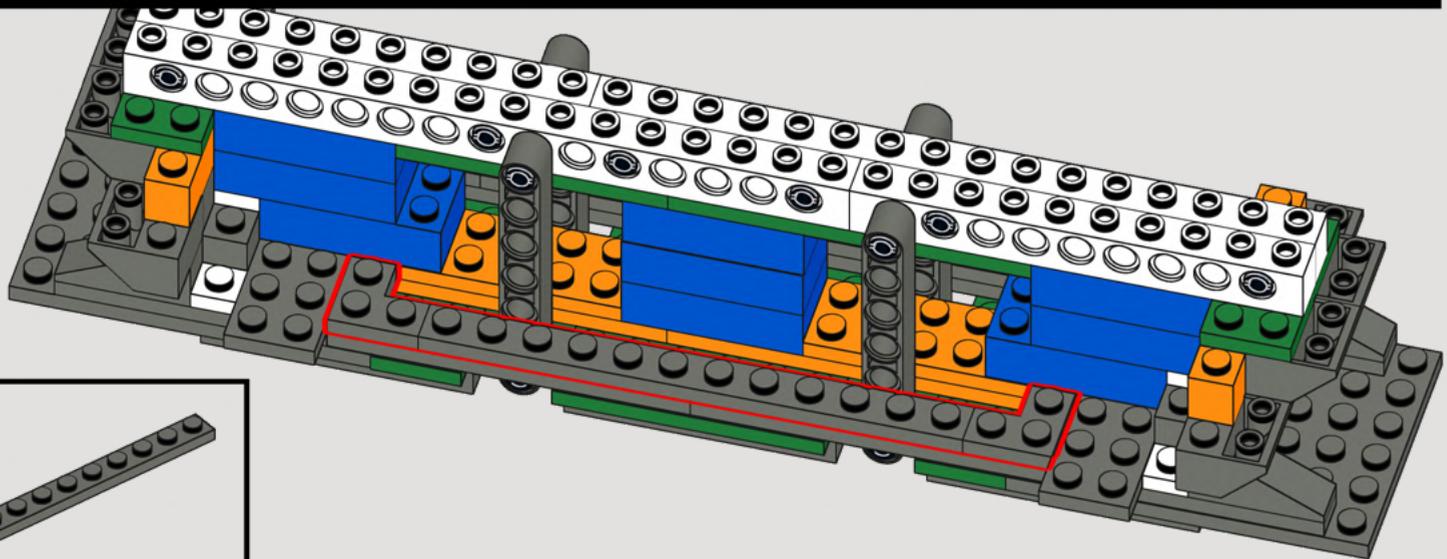
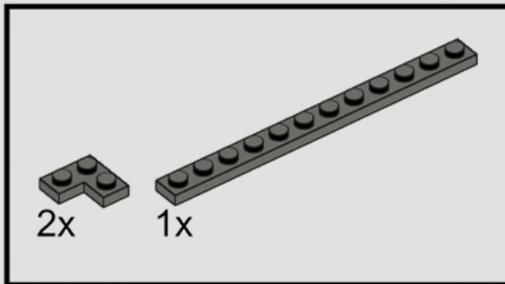
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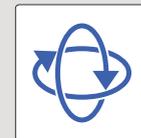
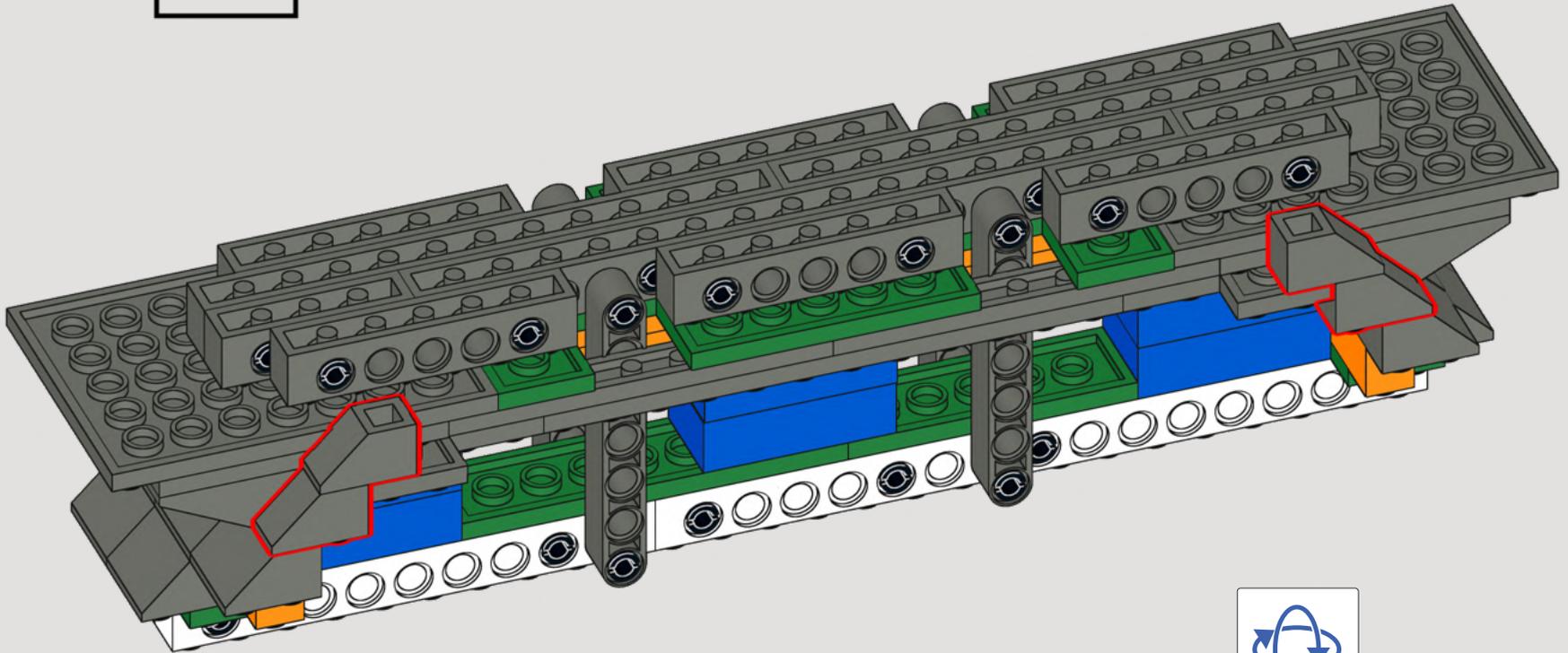
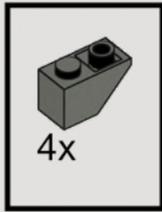
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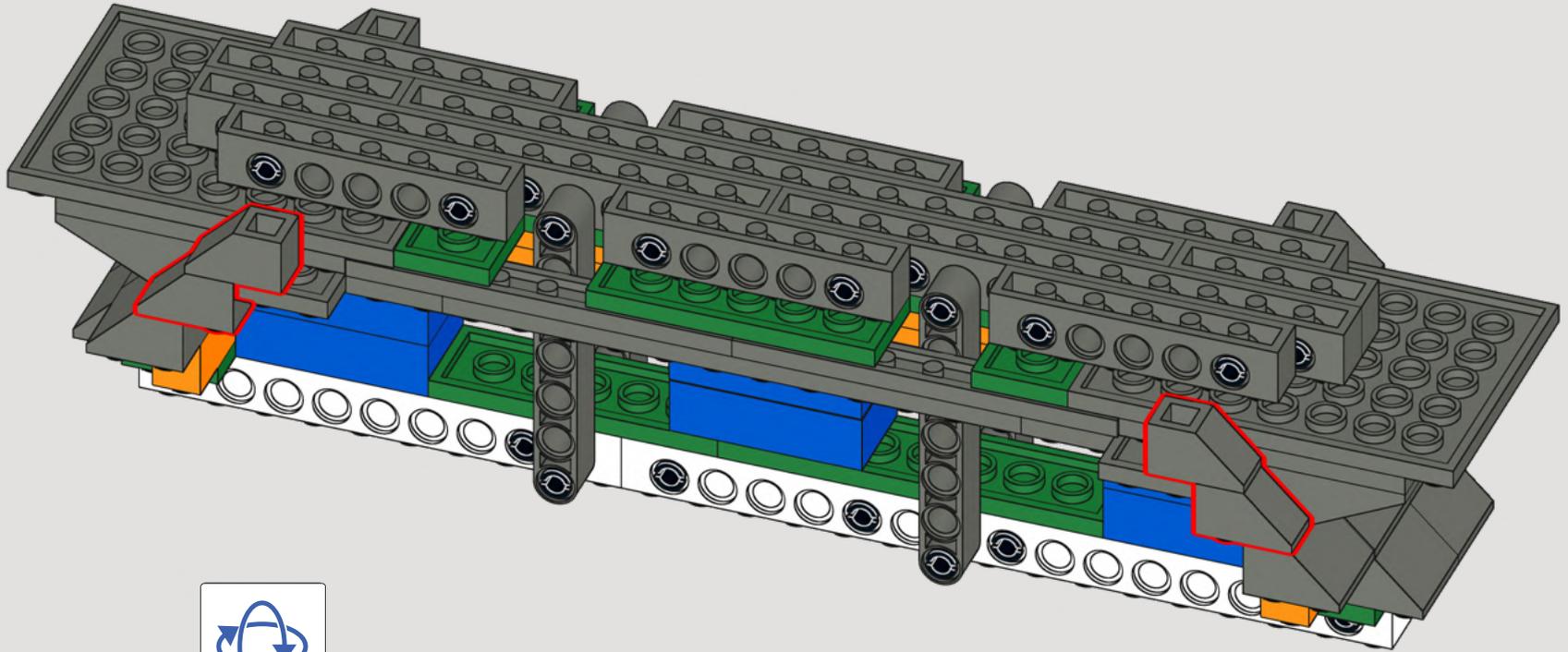
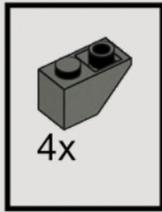
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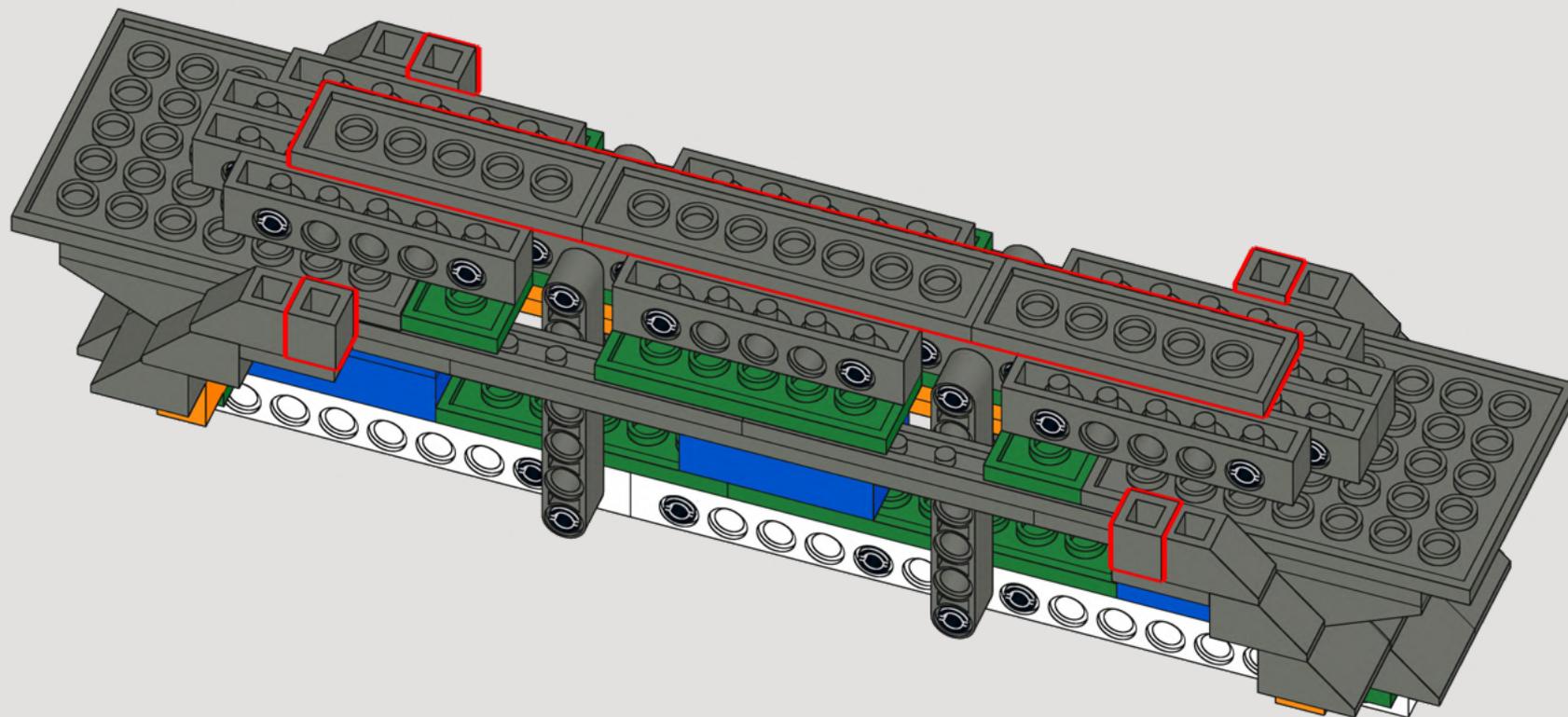
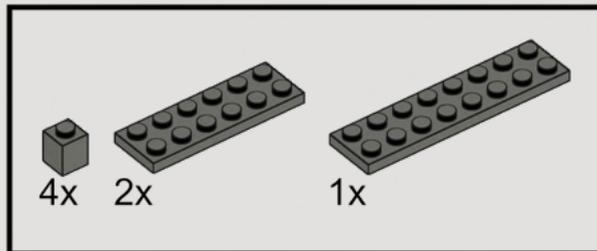
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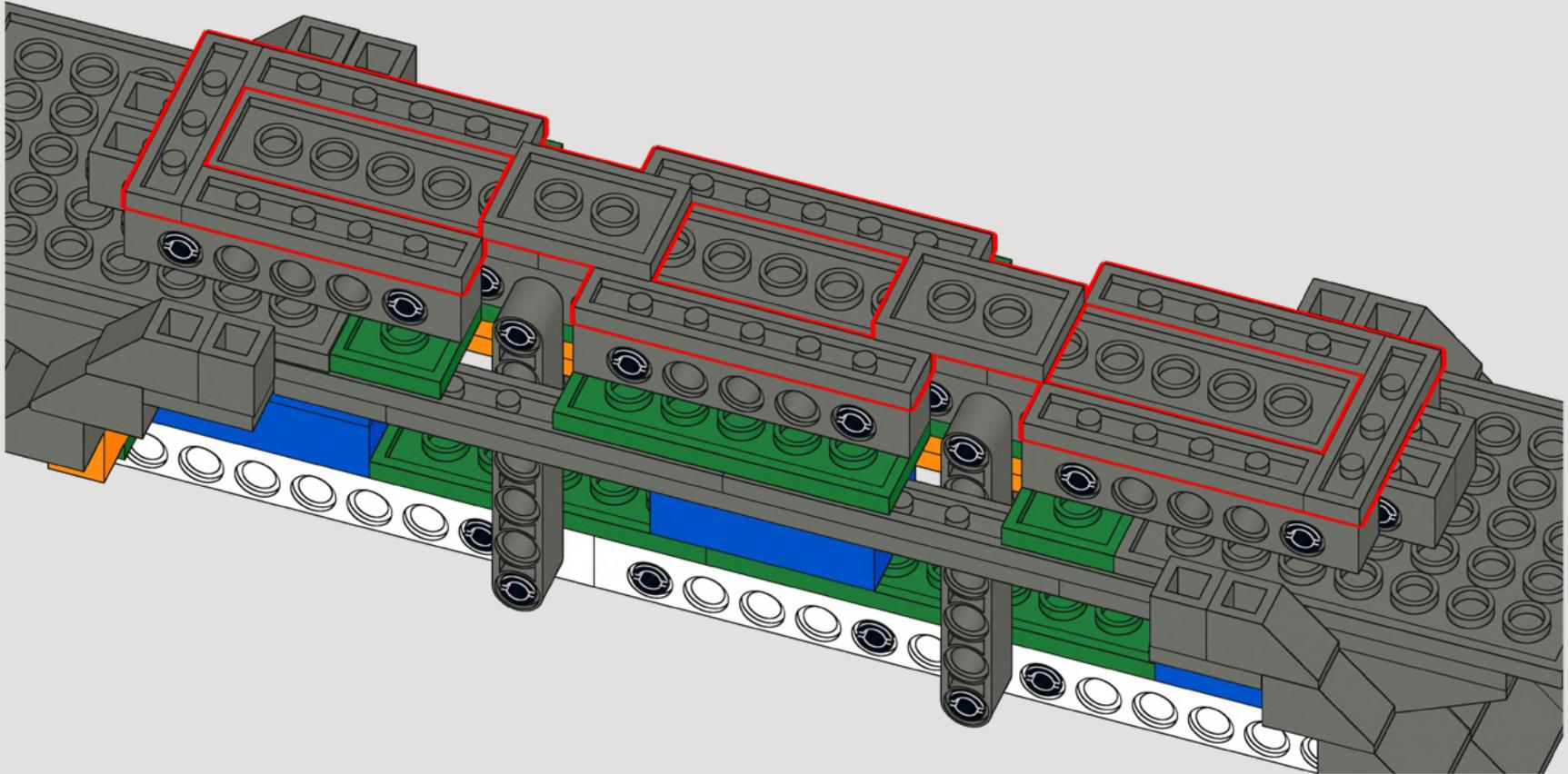
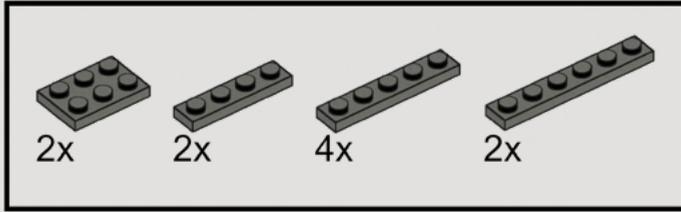
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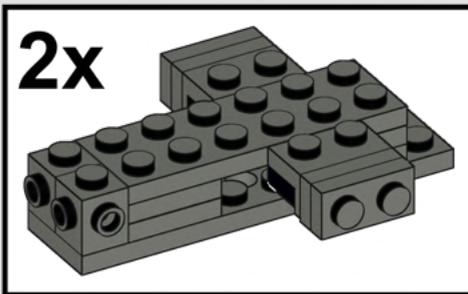
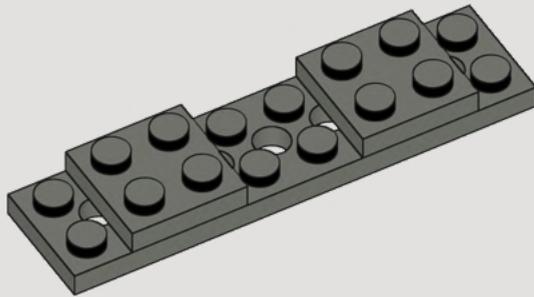
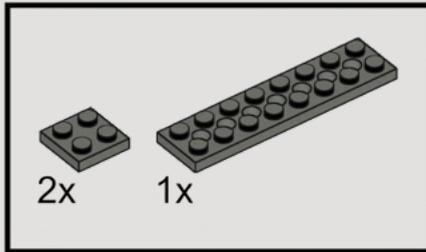
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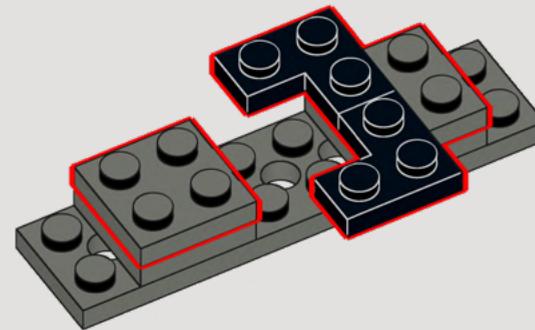
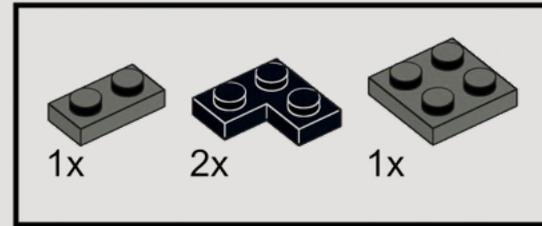
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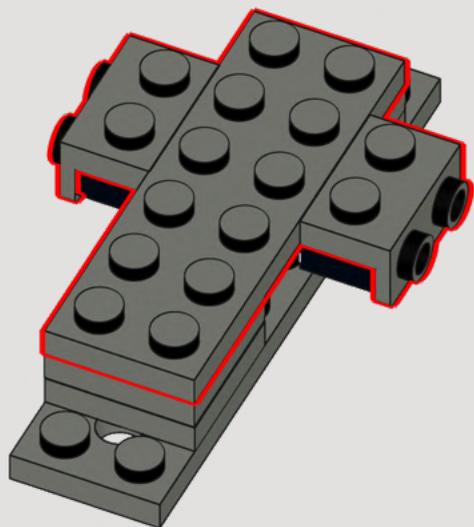
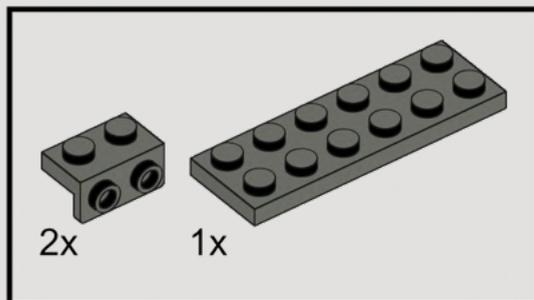
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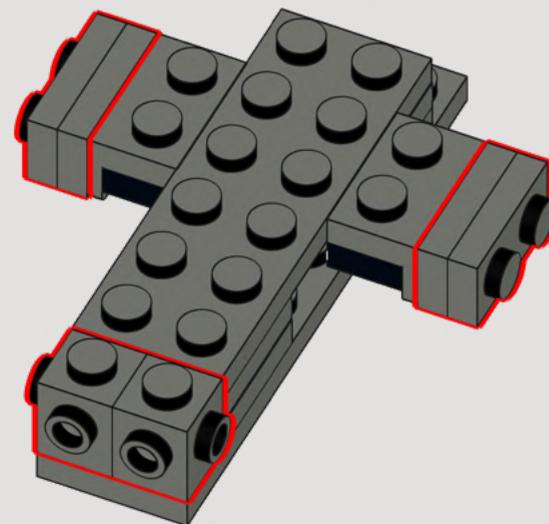
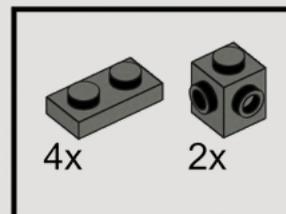
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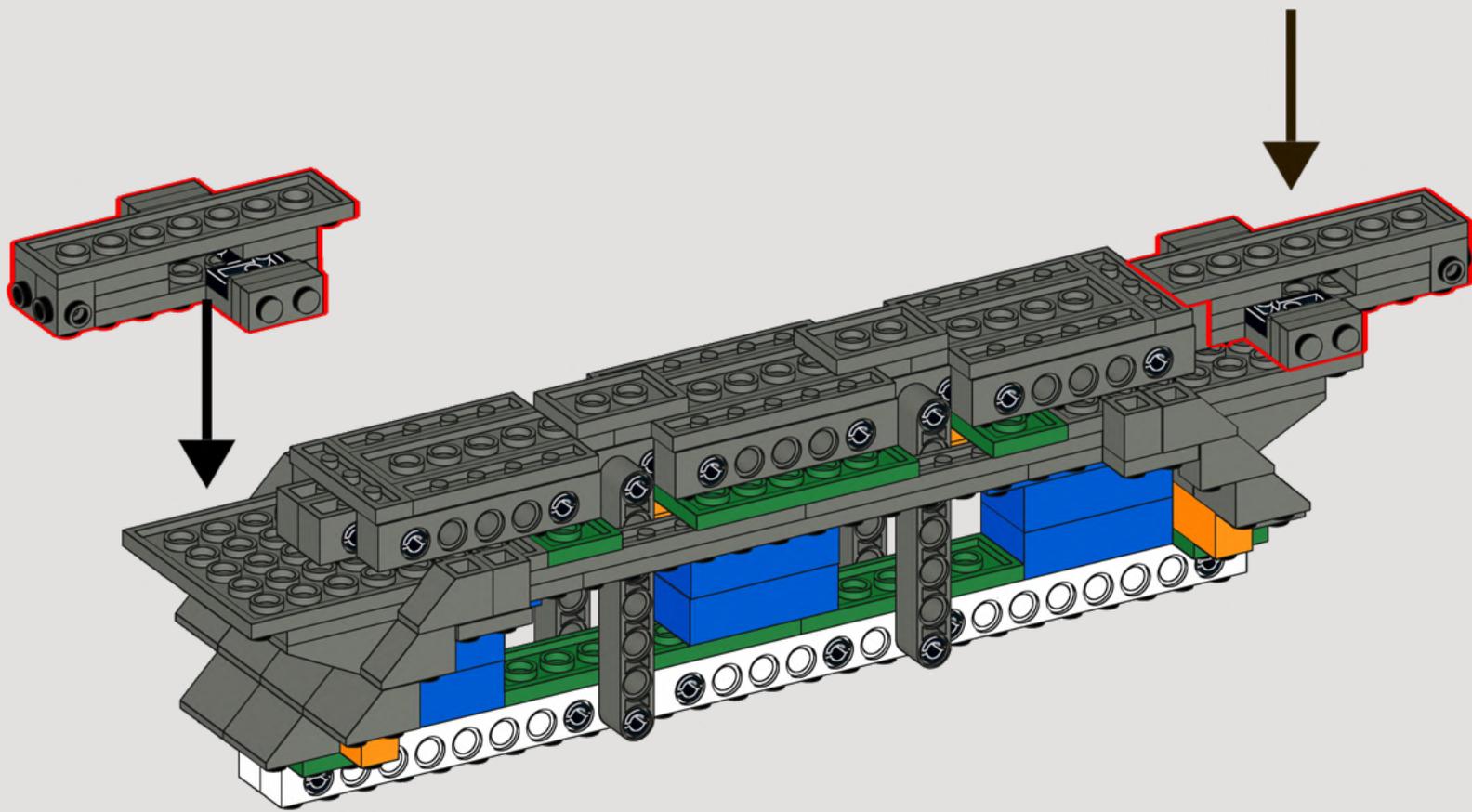


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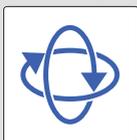
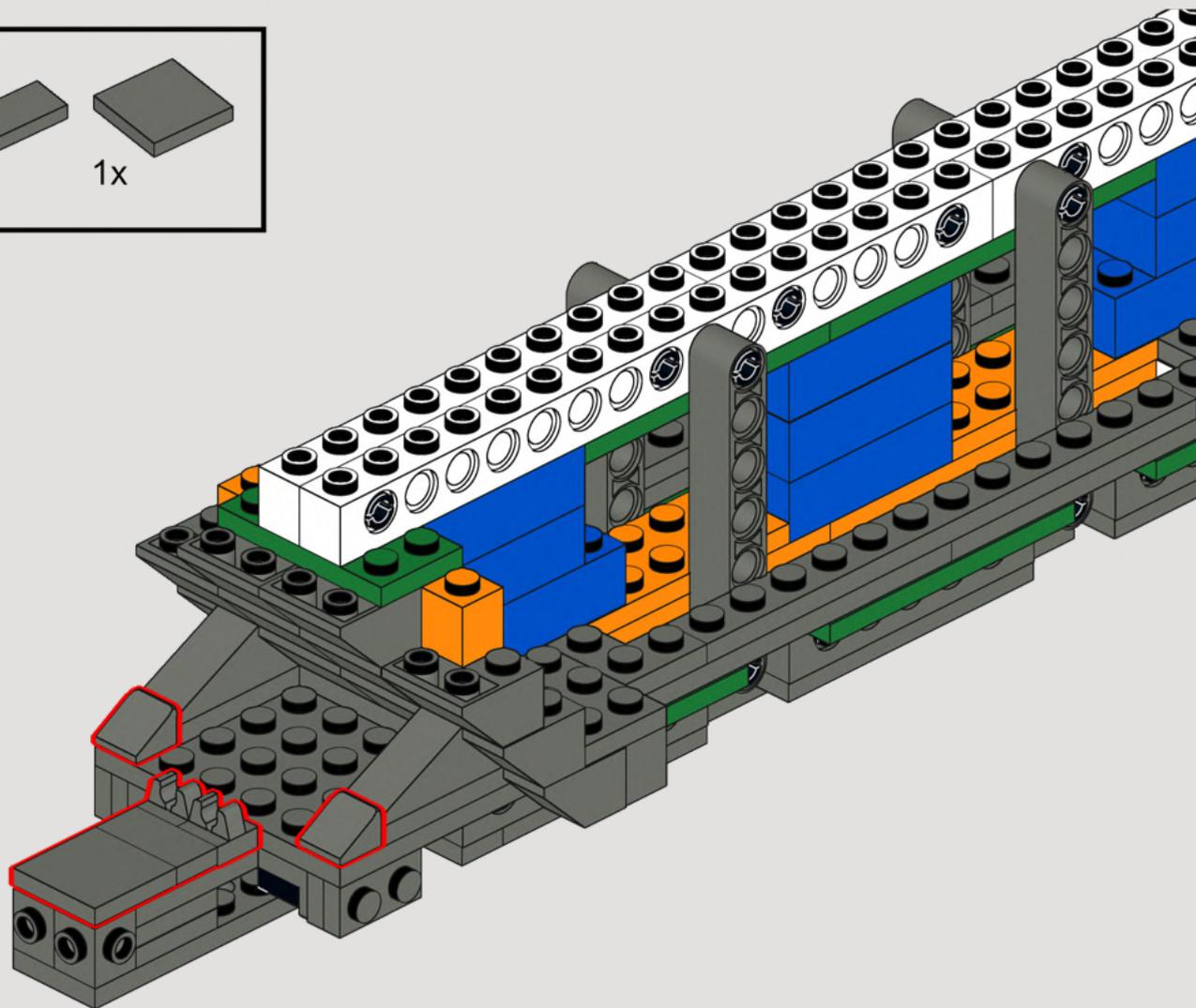
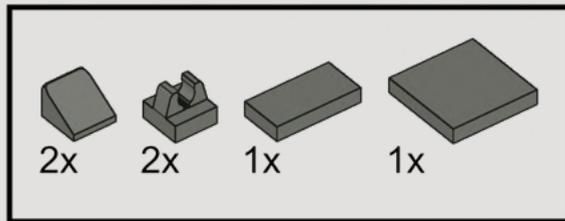


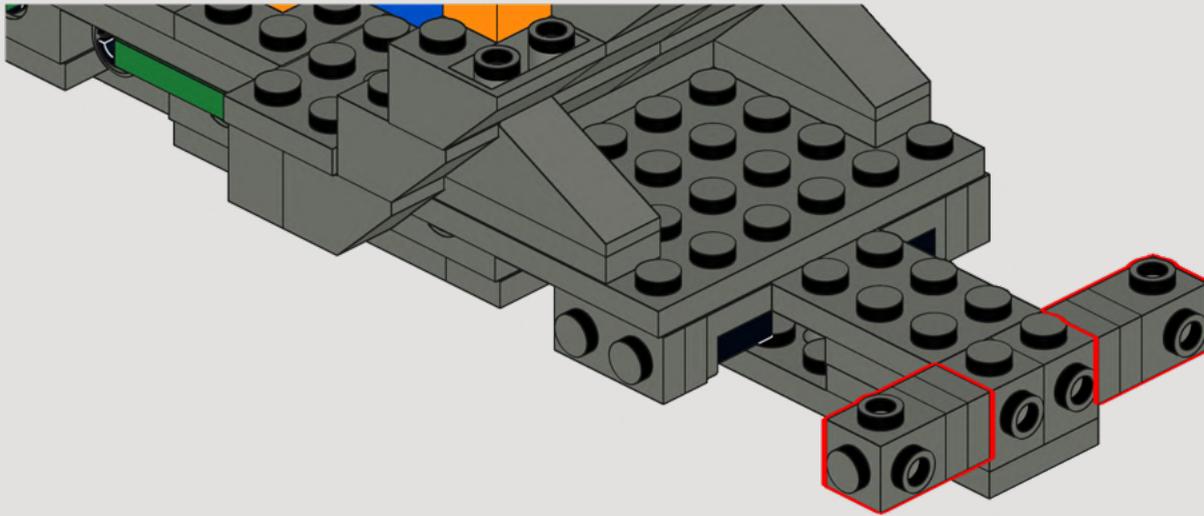
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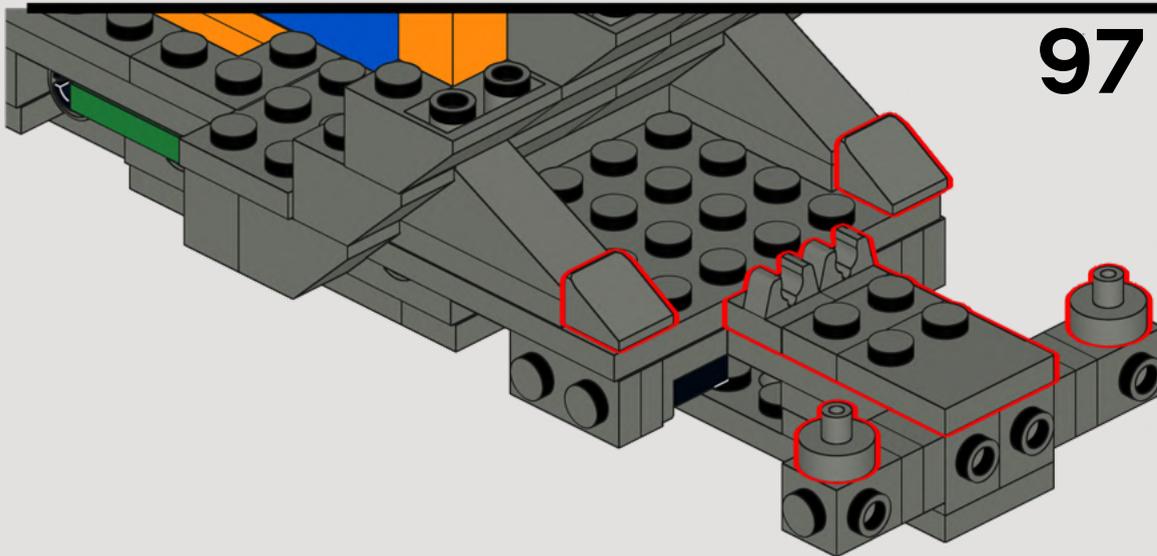
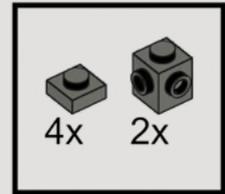


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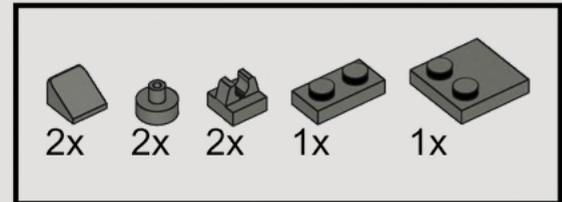




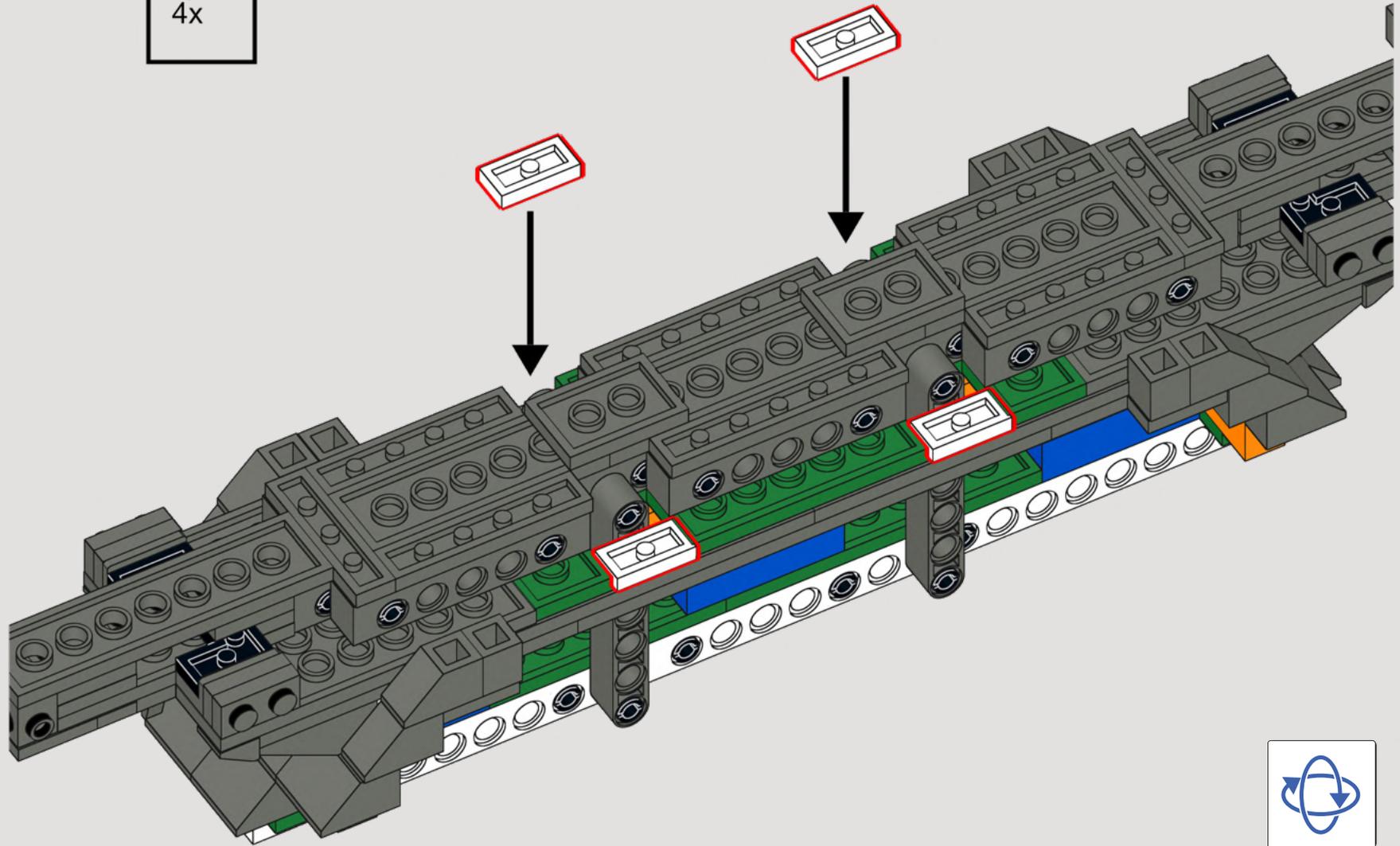
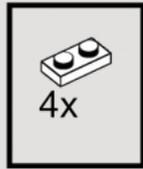
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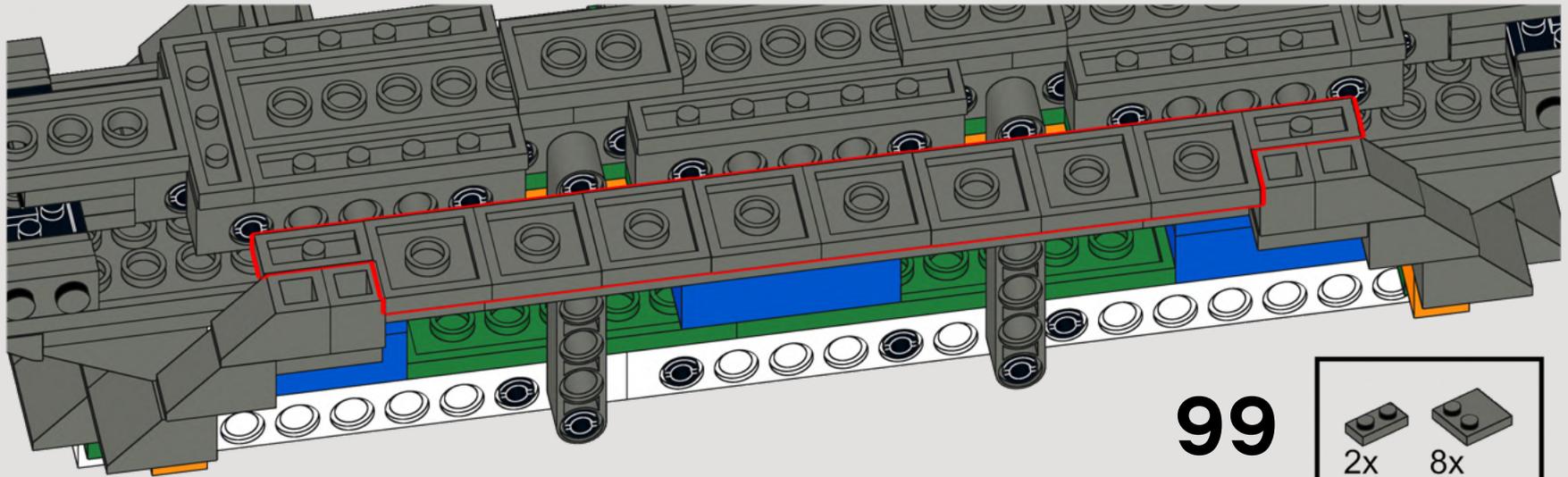


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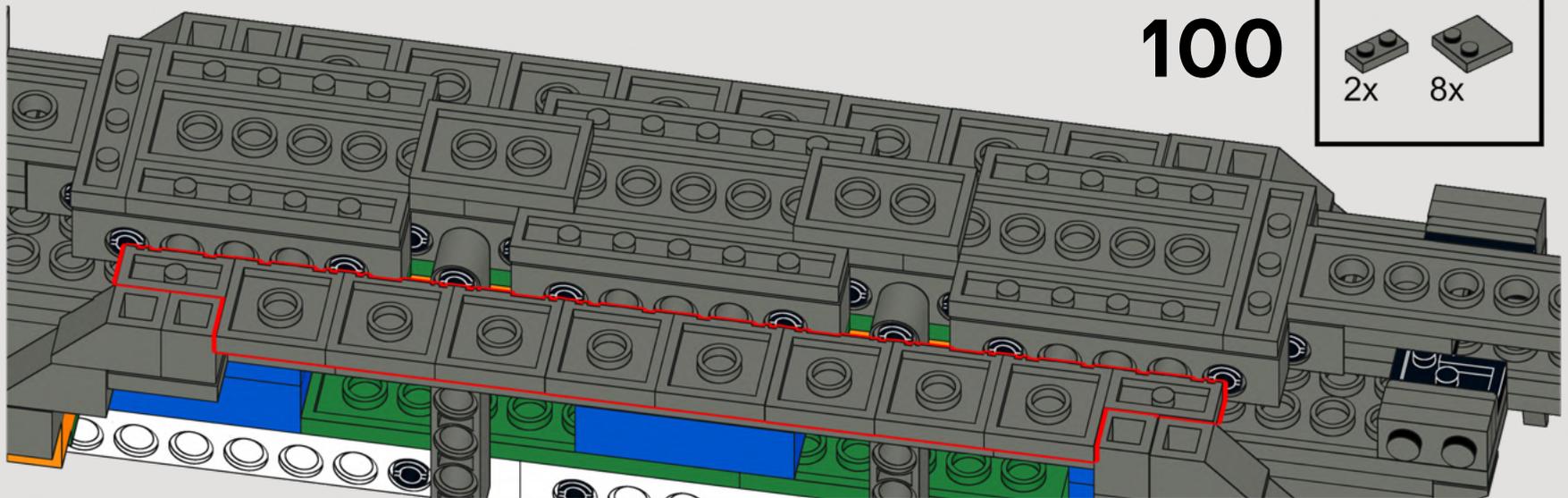
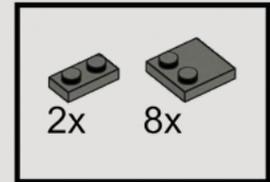


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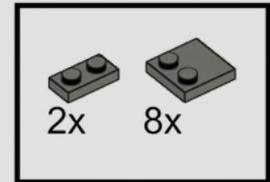




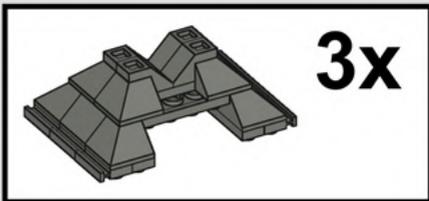
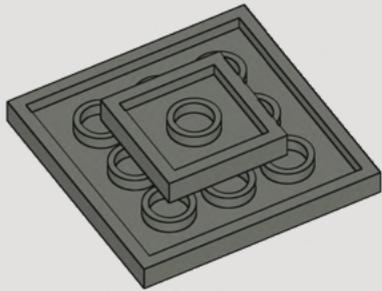
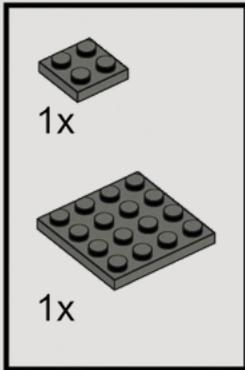
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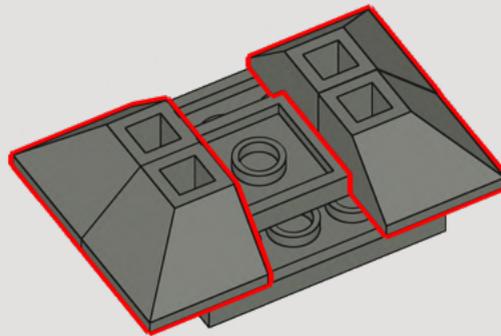
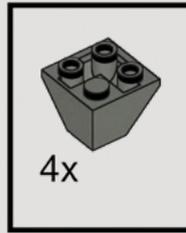
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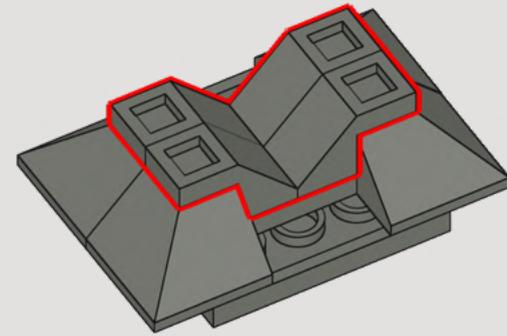
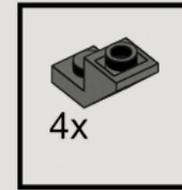
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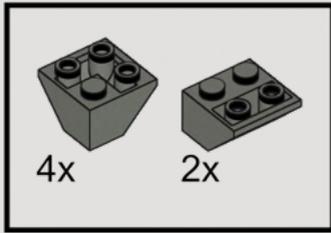


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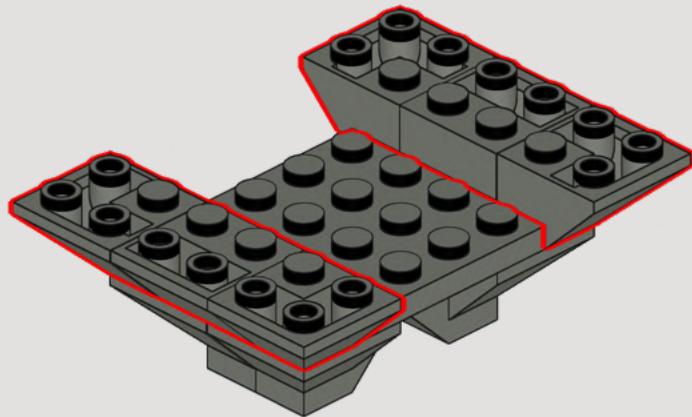


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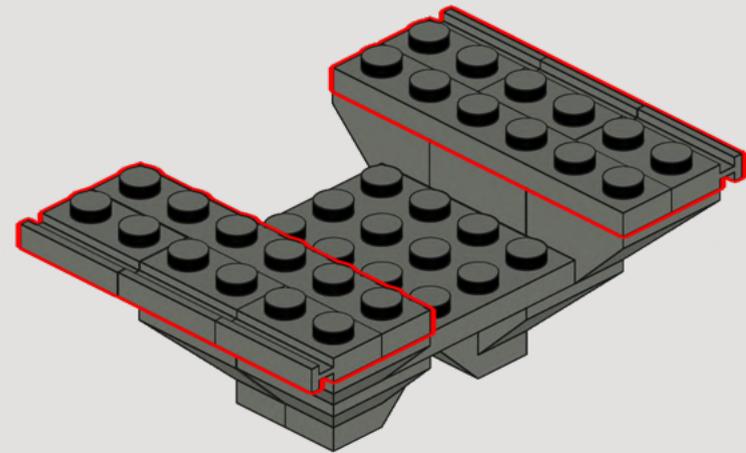
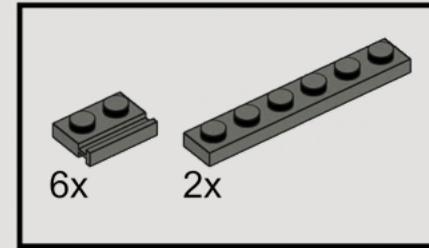




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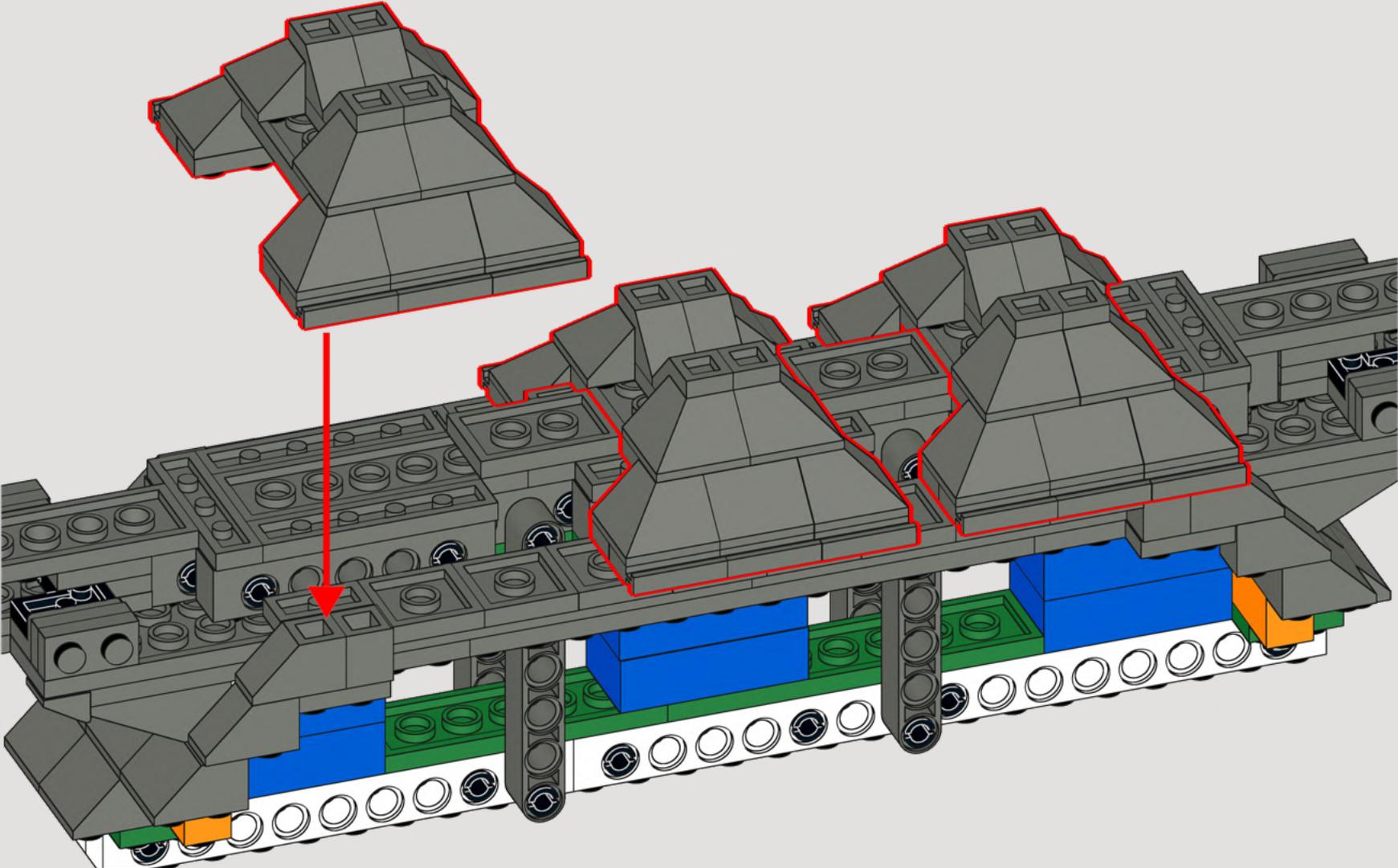


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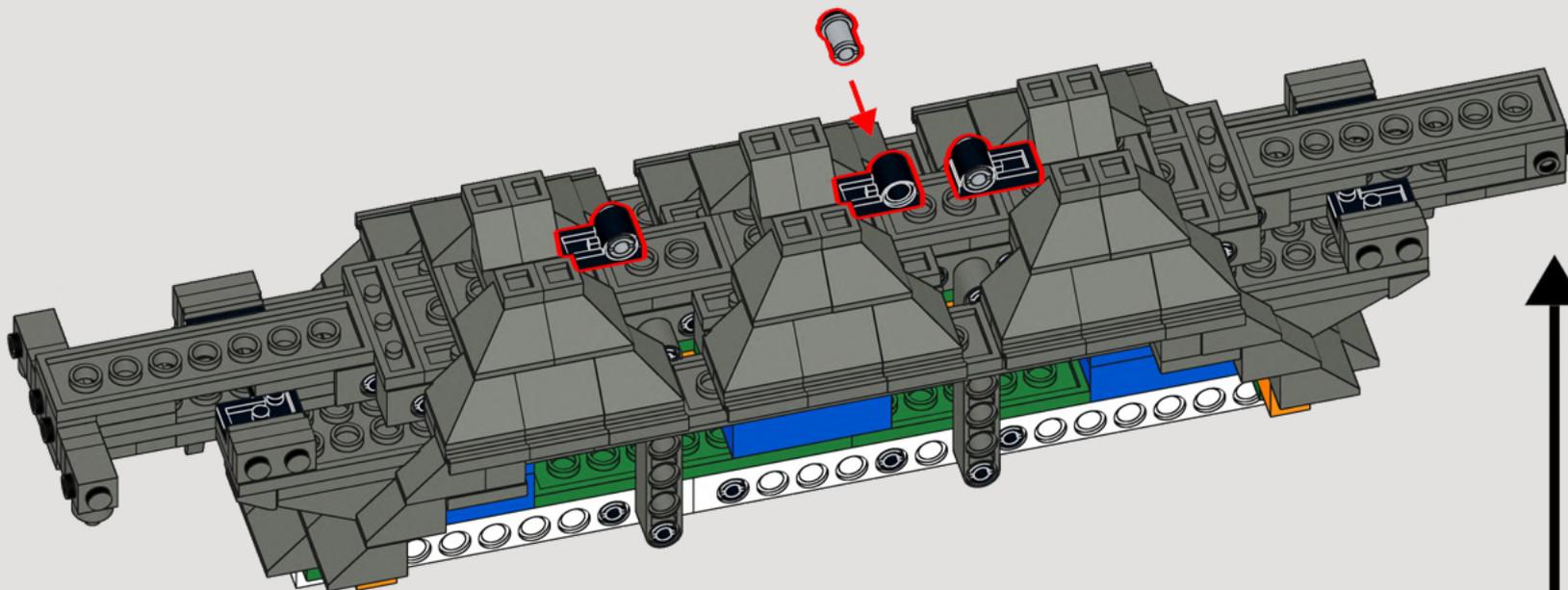
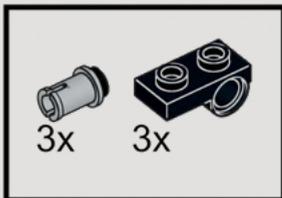


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106

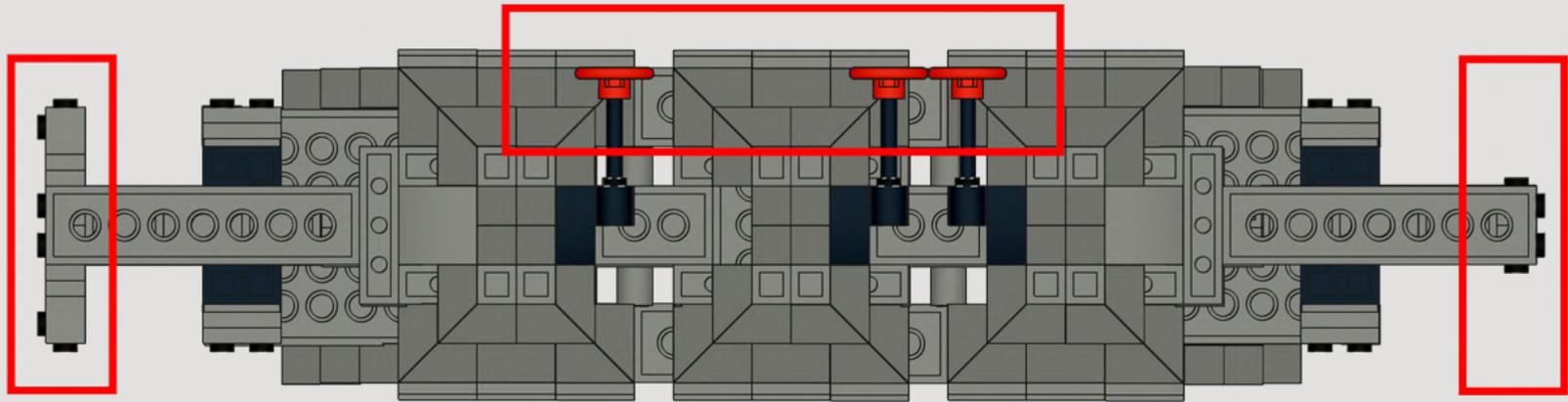


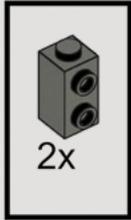
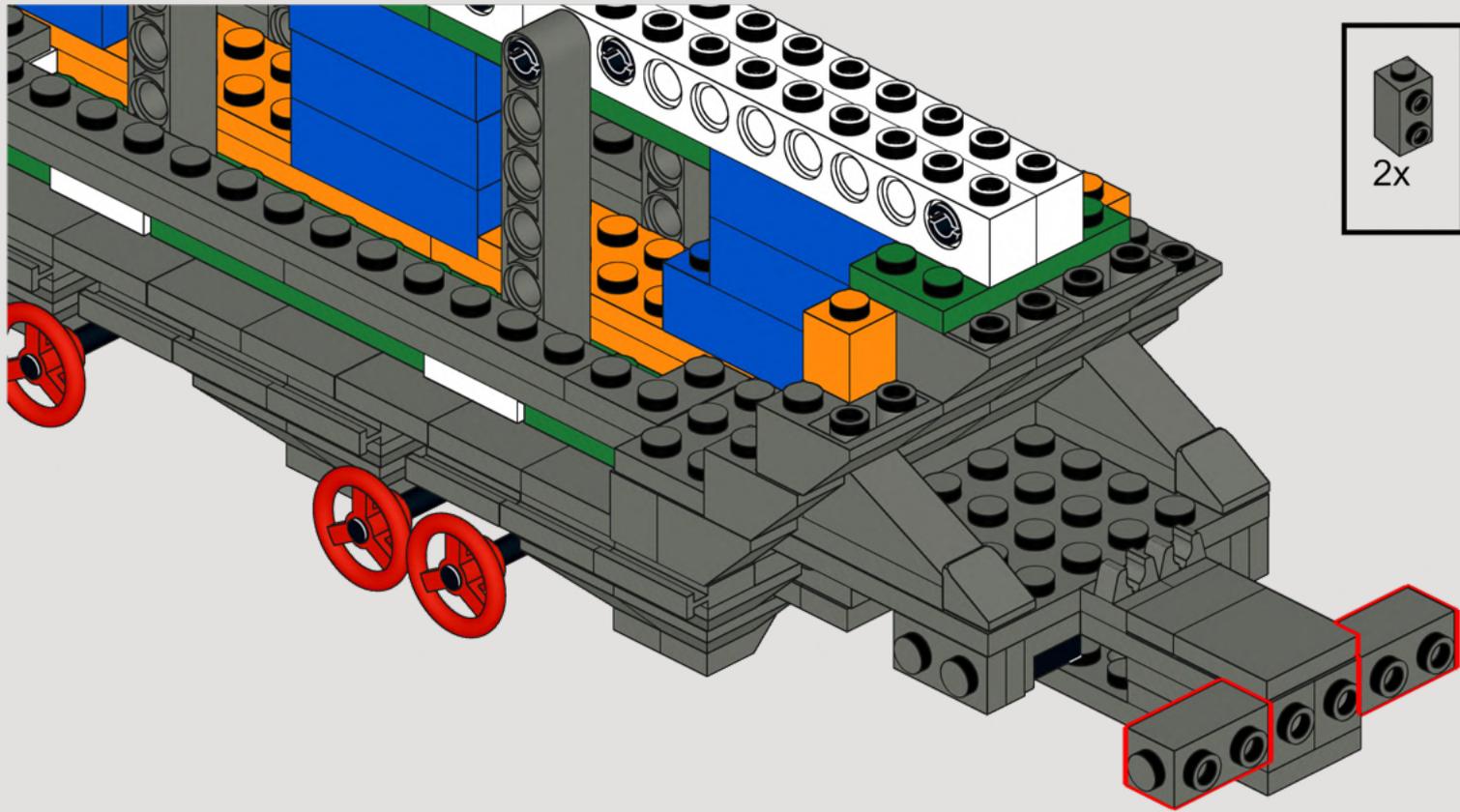
107



Правильно расположить торцы вагона для крепления штурвалов!

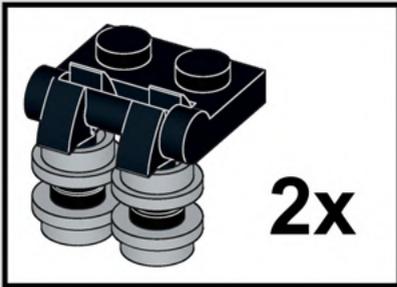
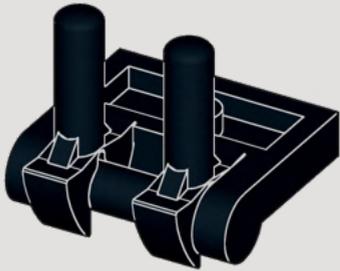
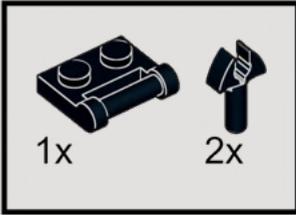
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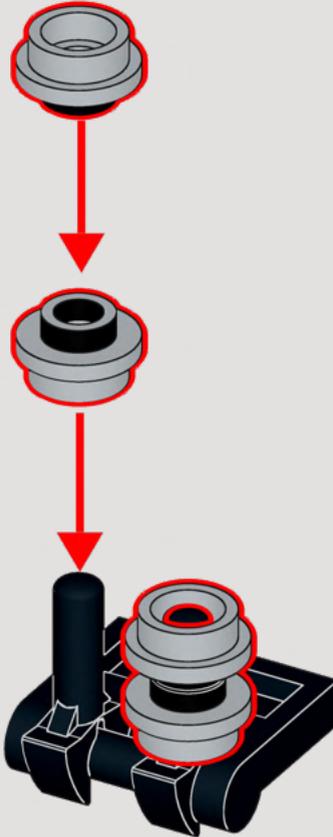
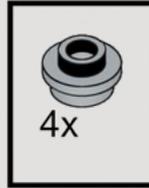


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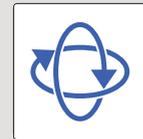
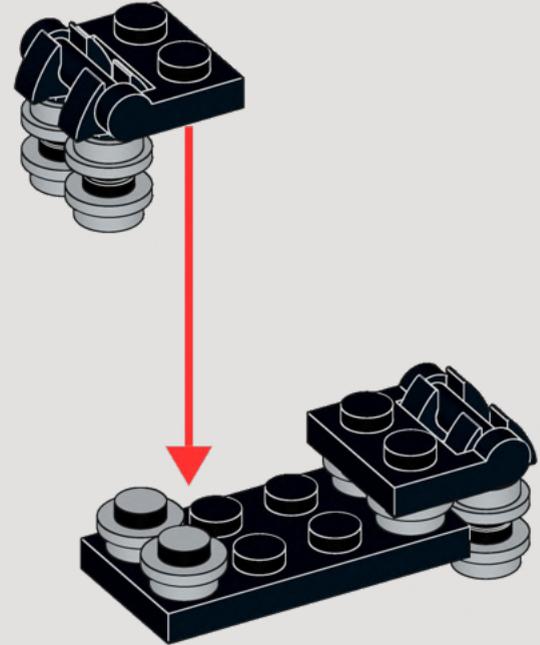
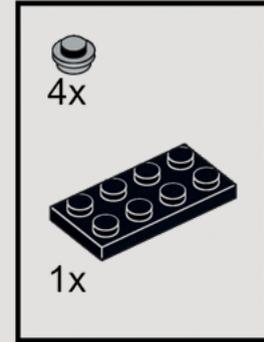
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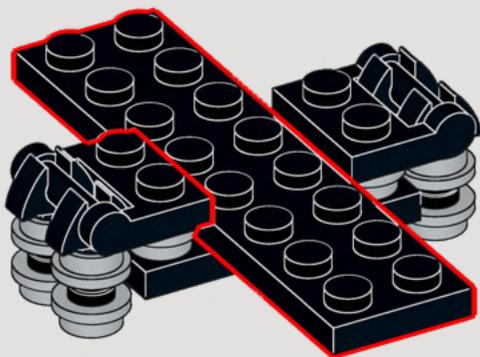
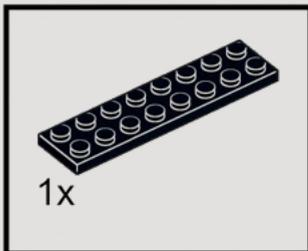


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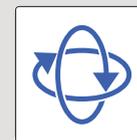
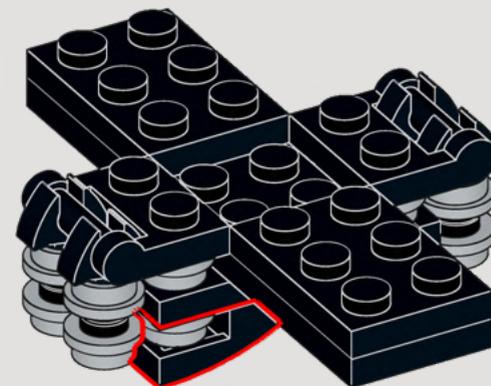
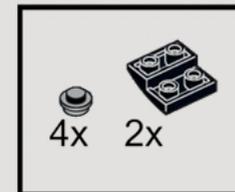
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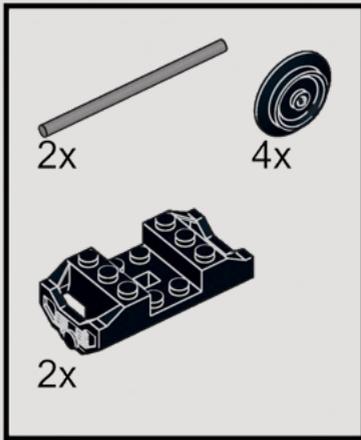


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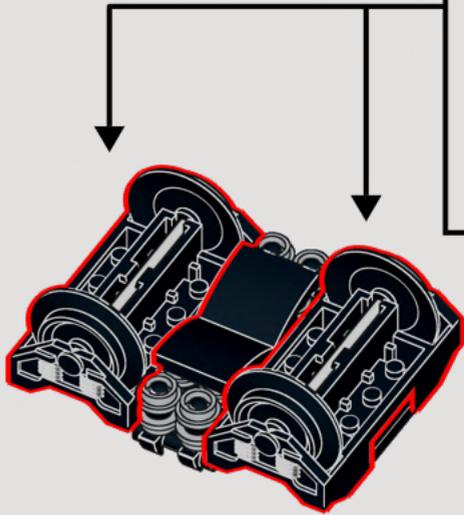
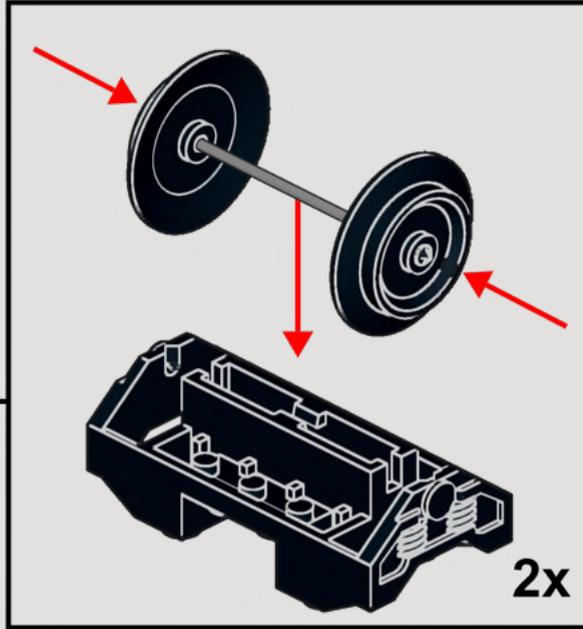


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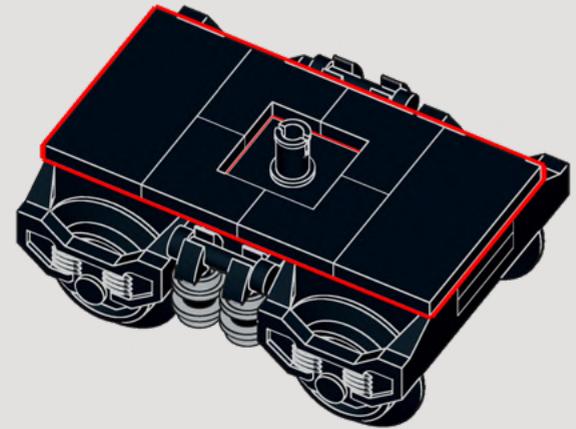
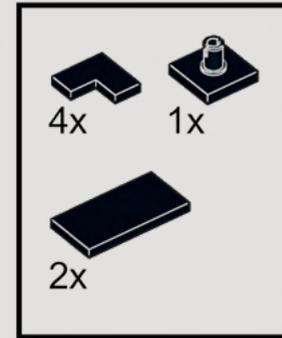




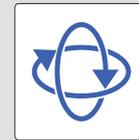
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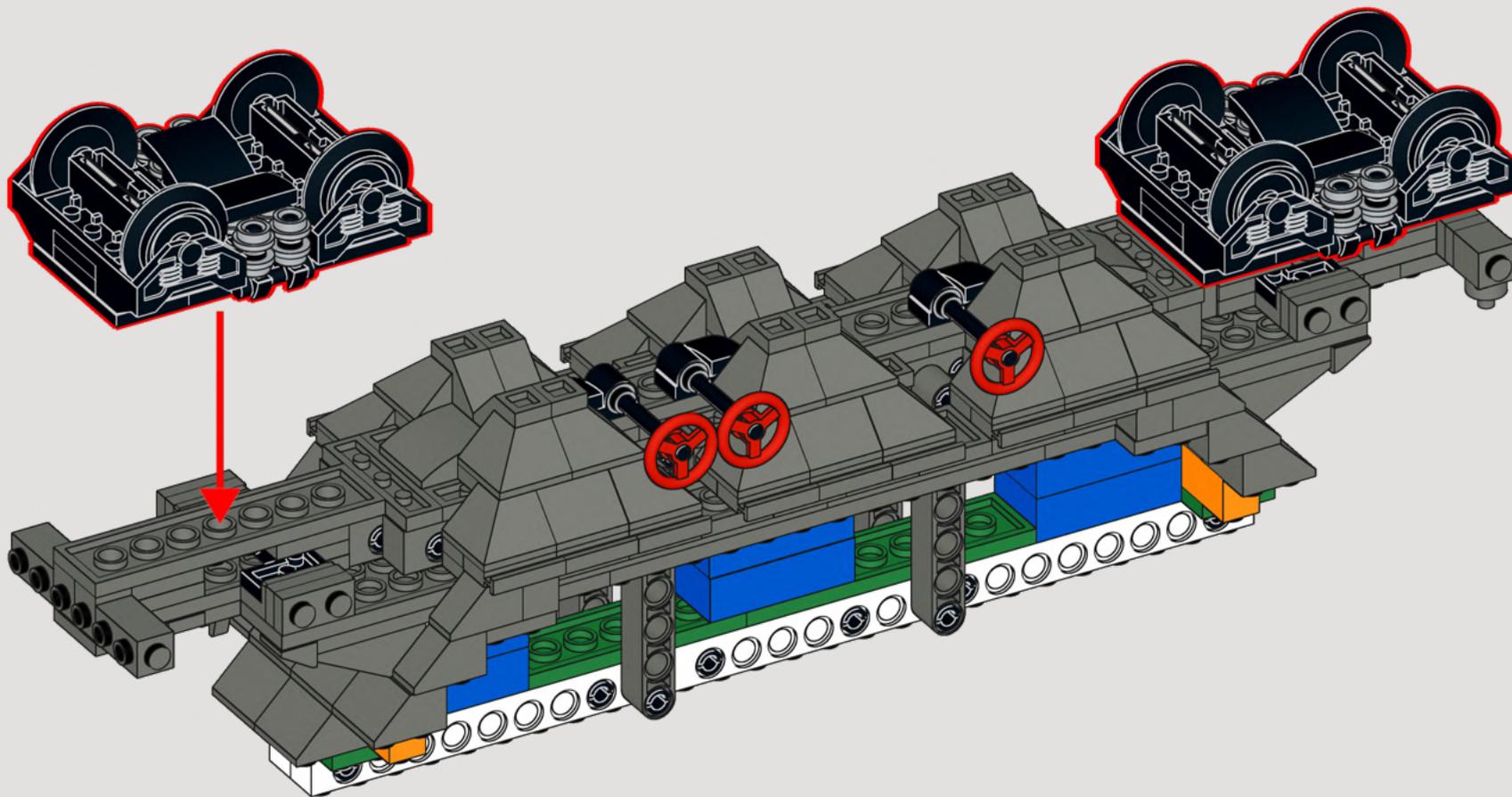
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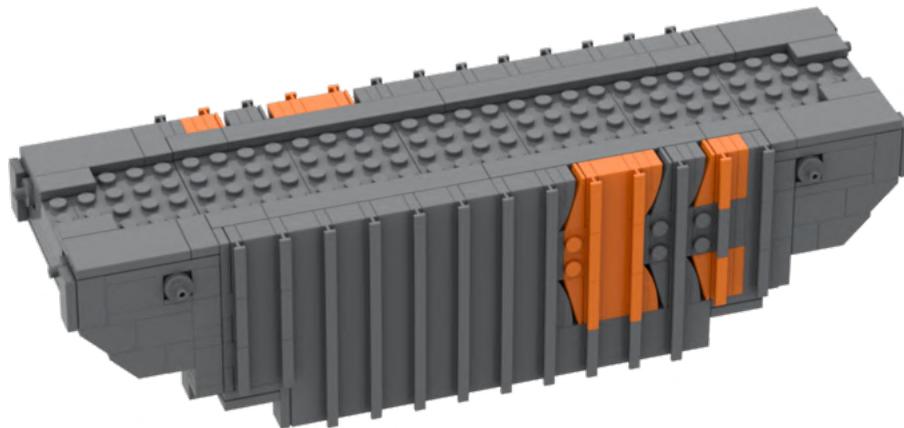
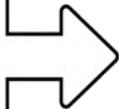


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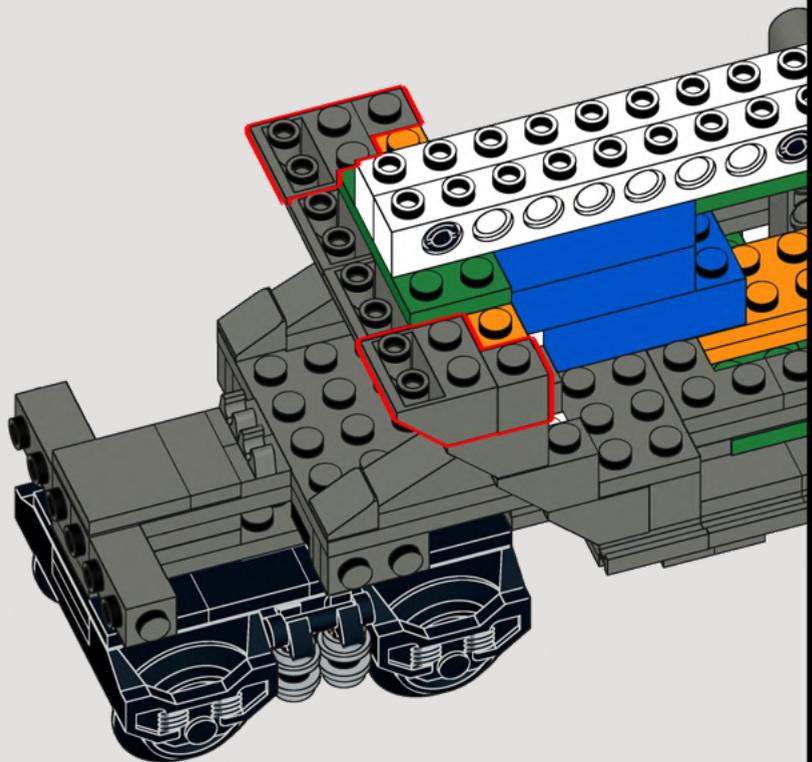
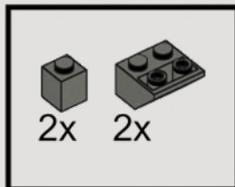


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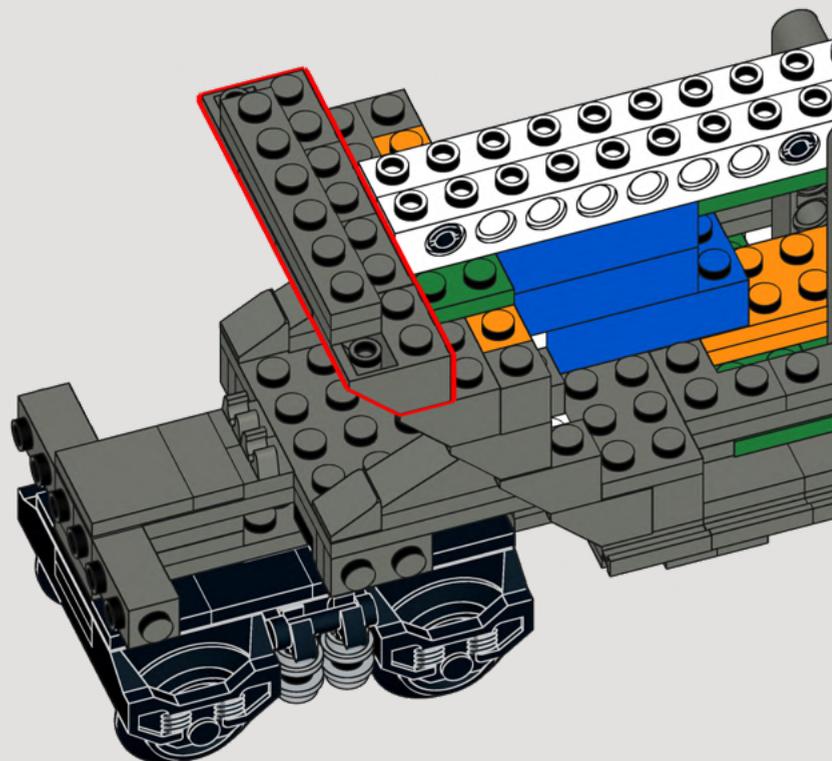
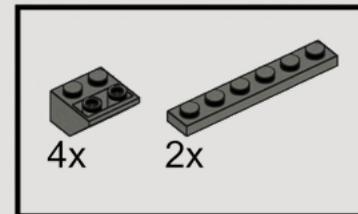




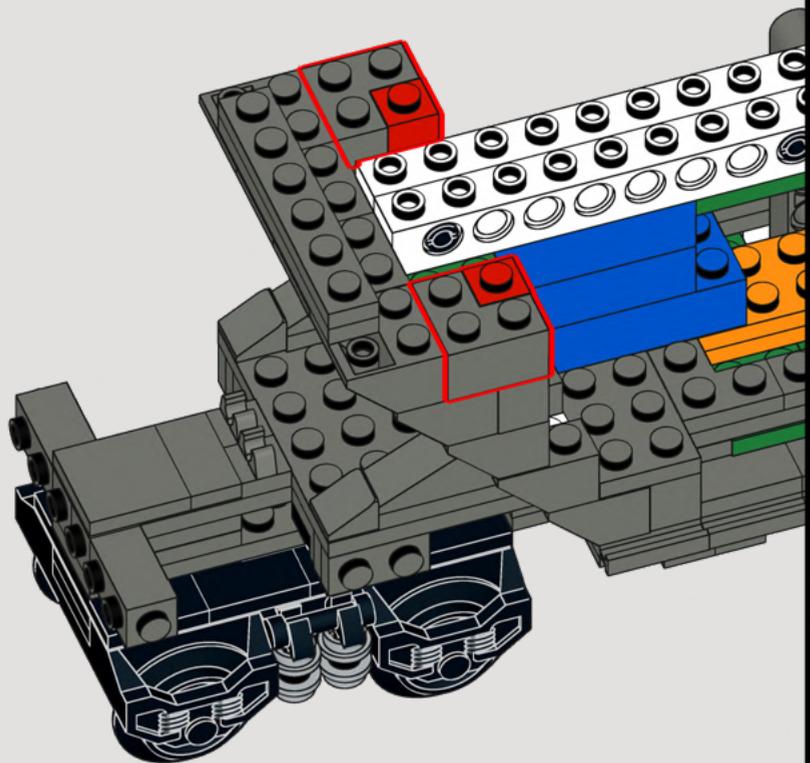
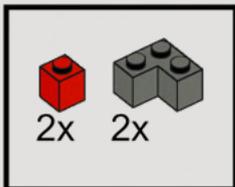
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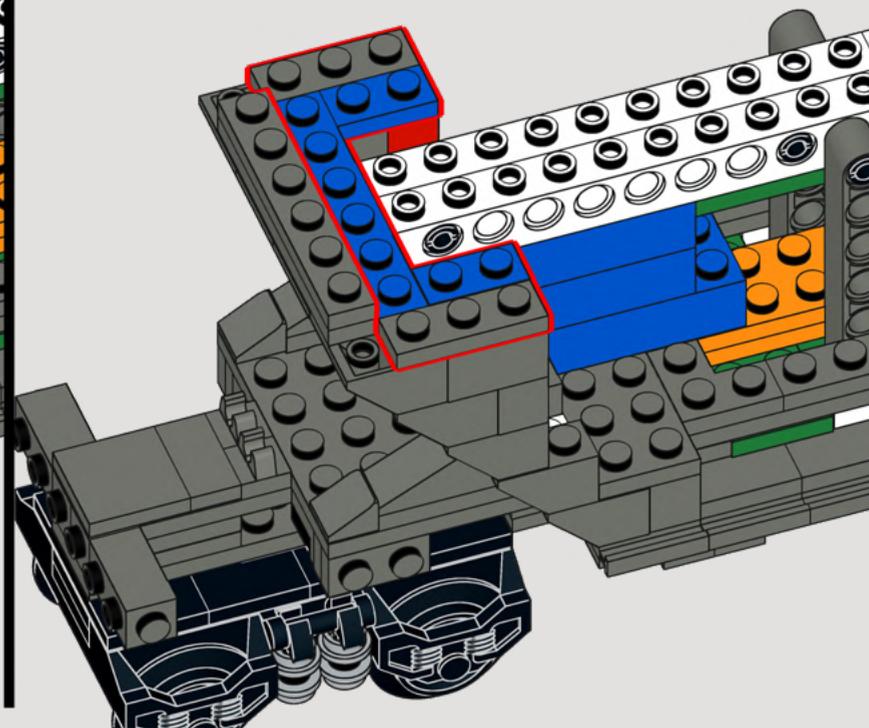
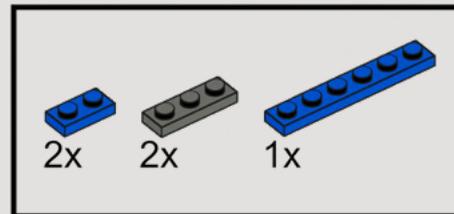
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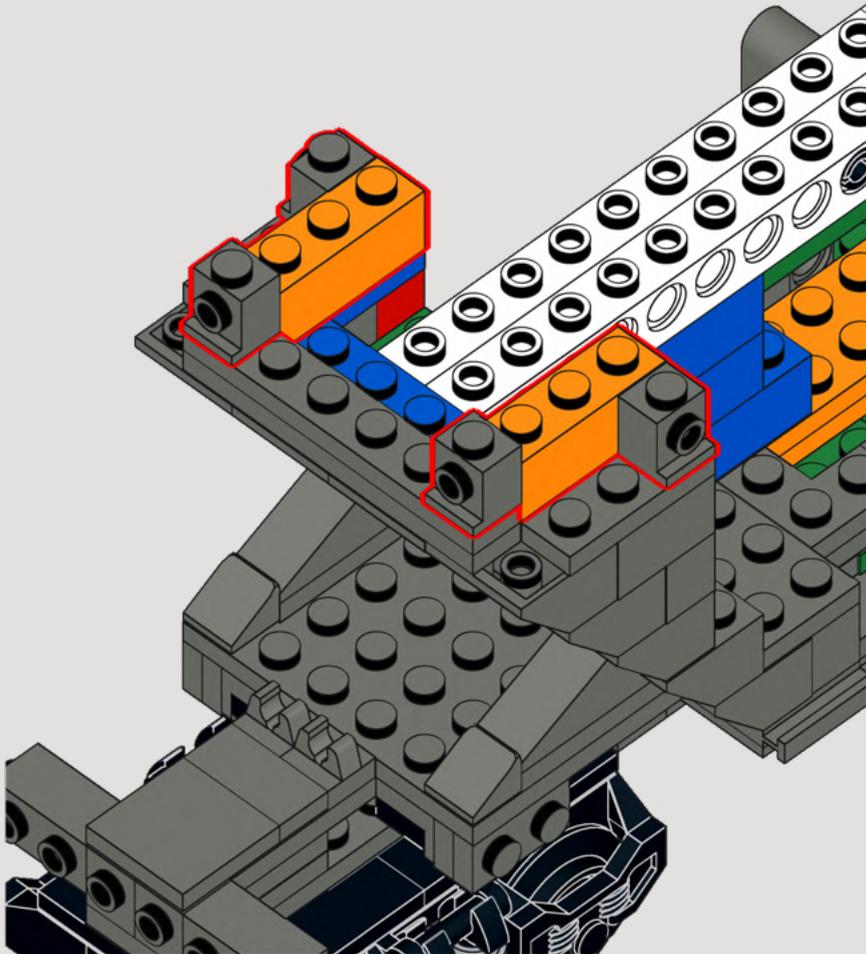
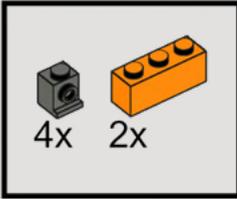
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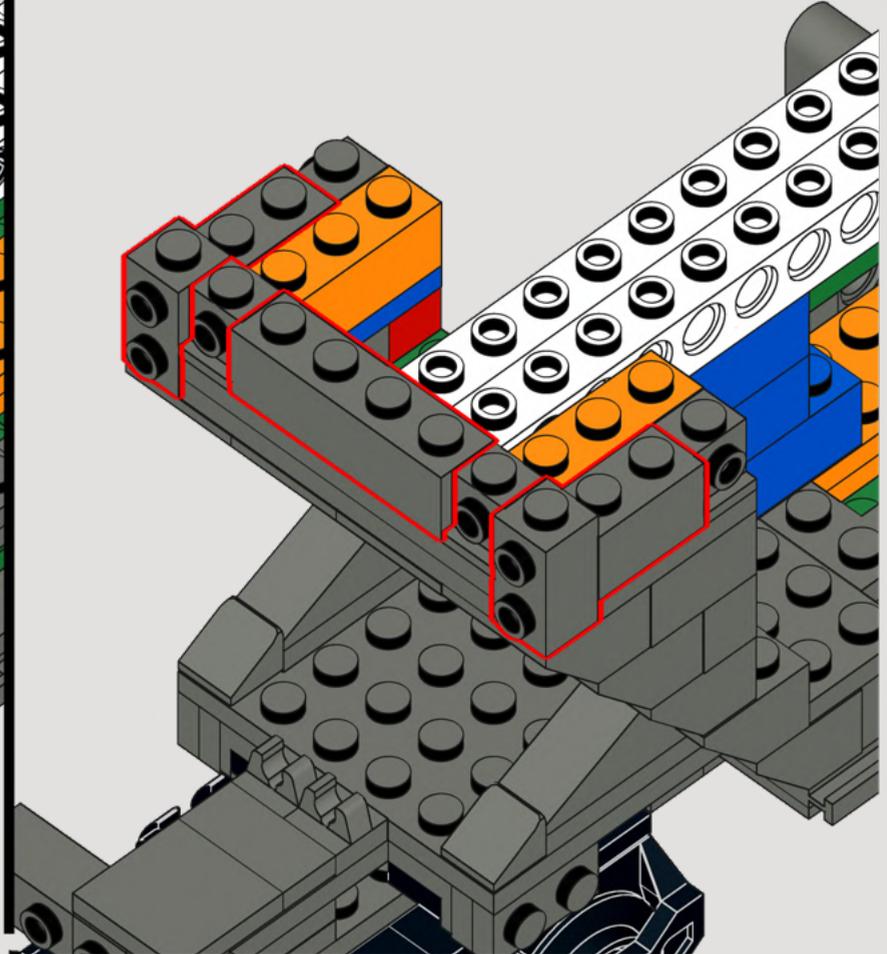
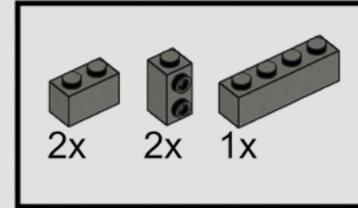
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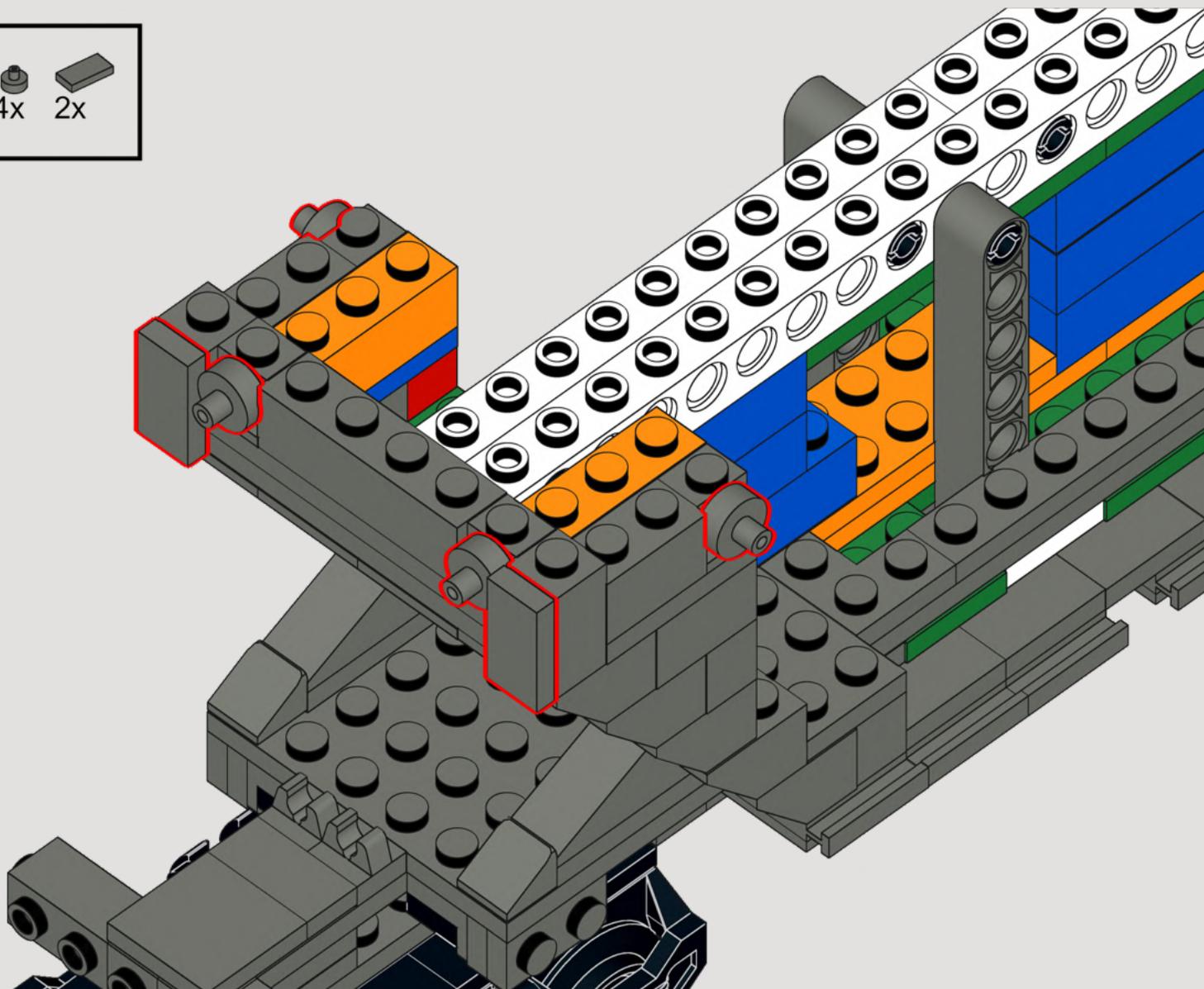
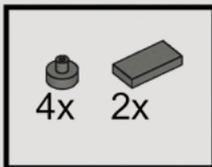
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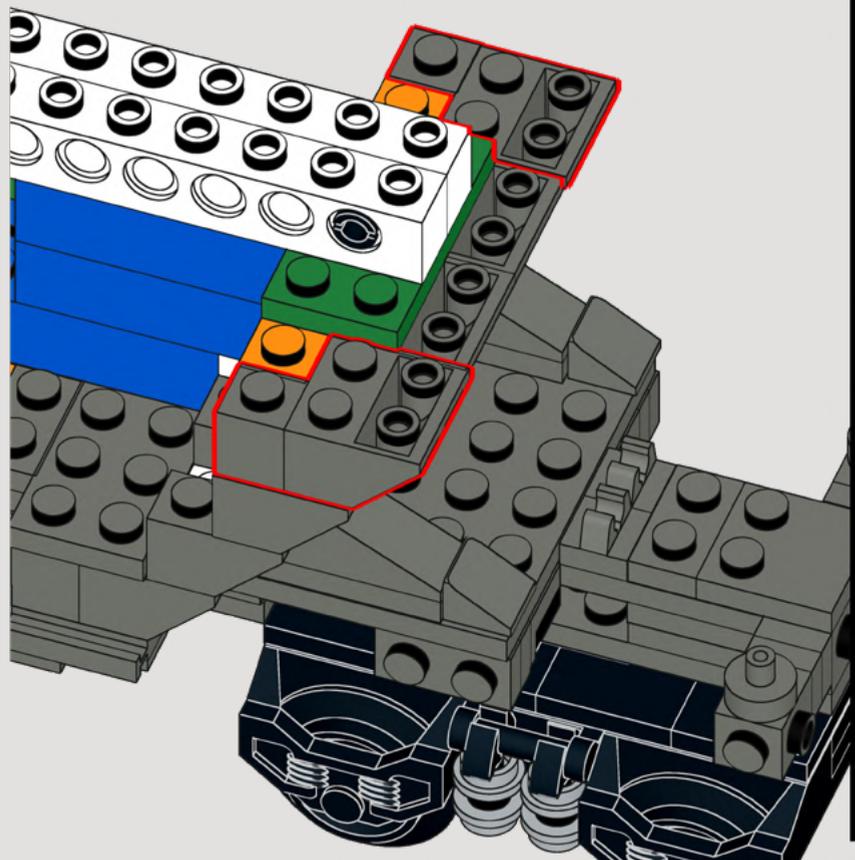
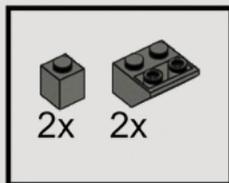
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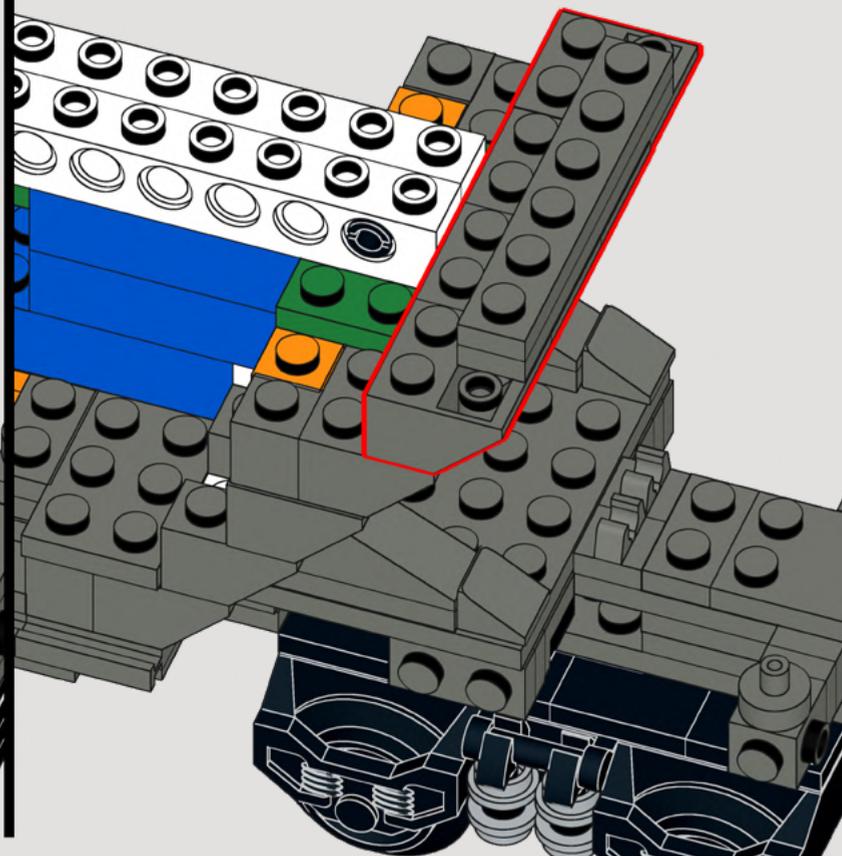
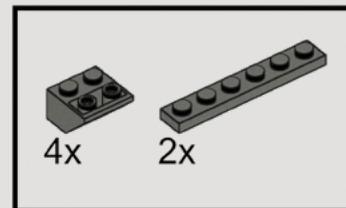
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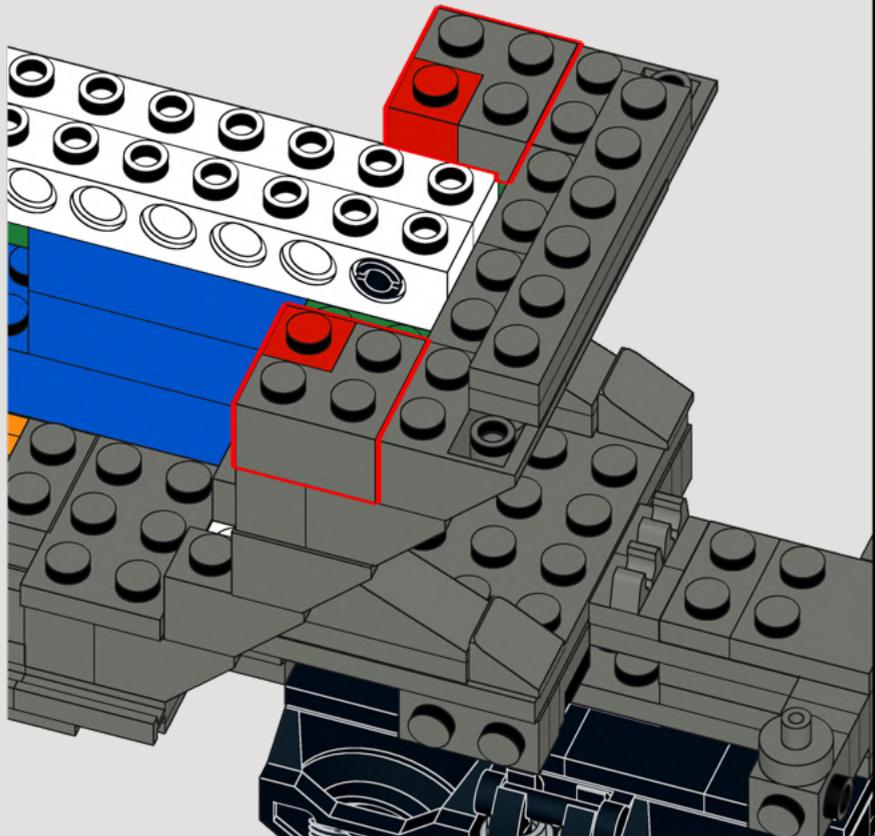
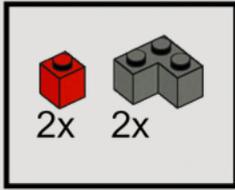
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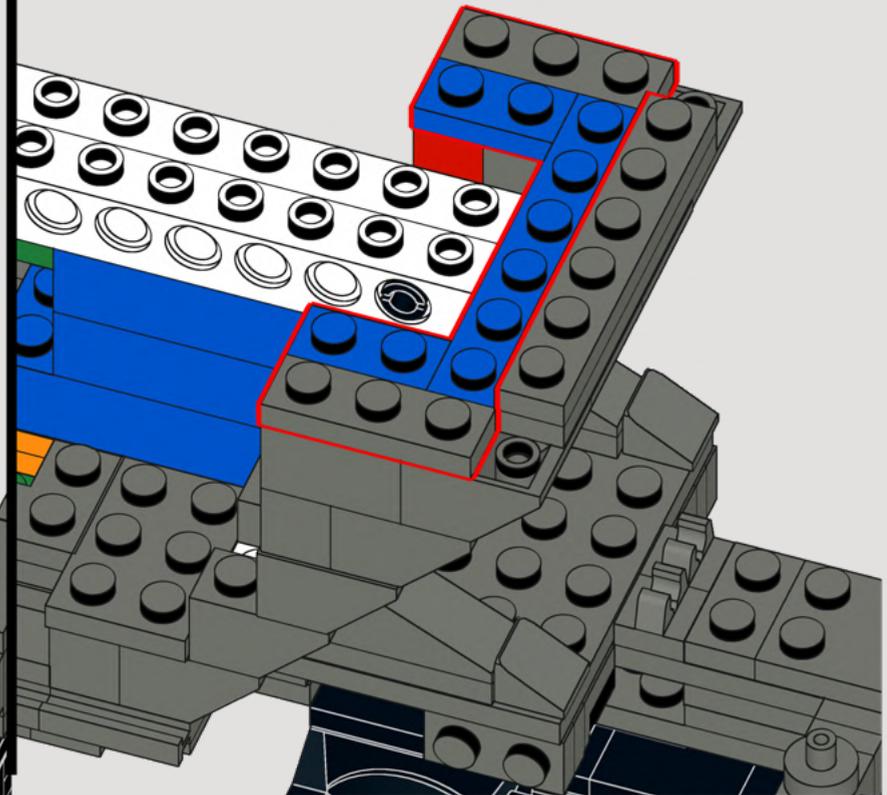
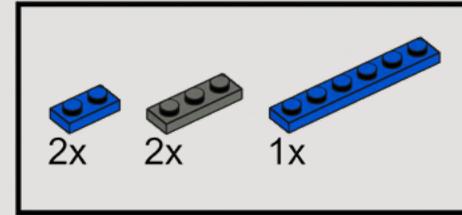
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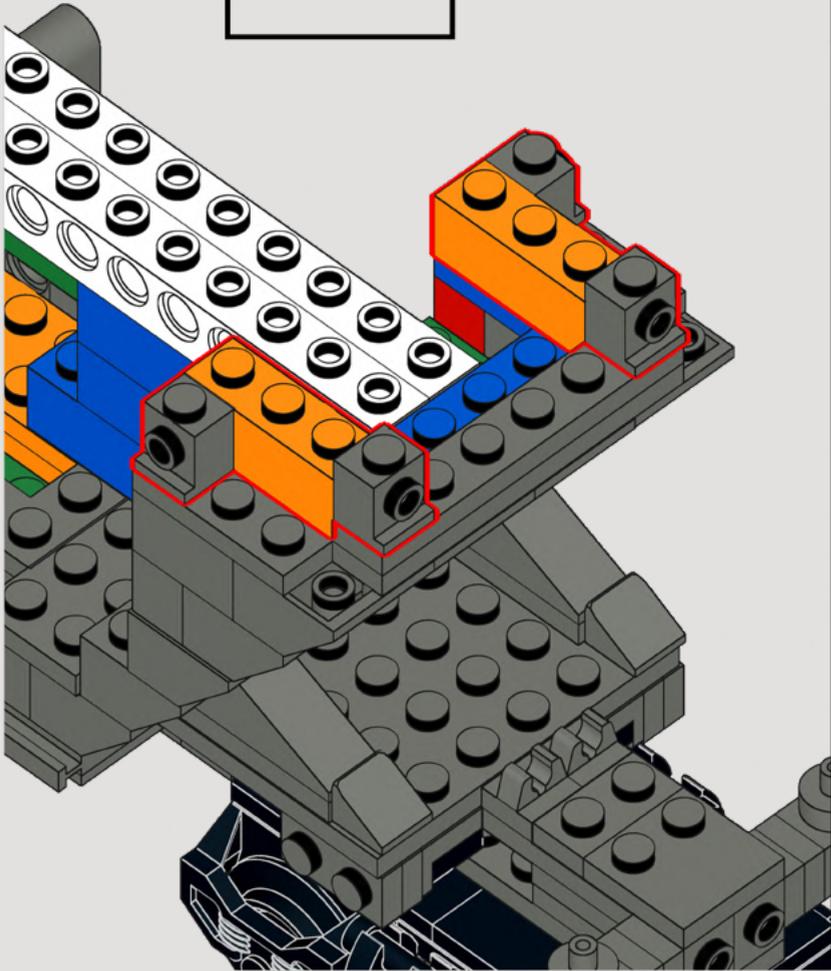
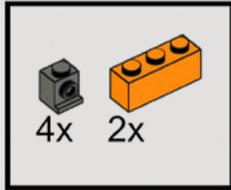
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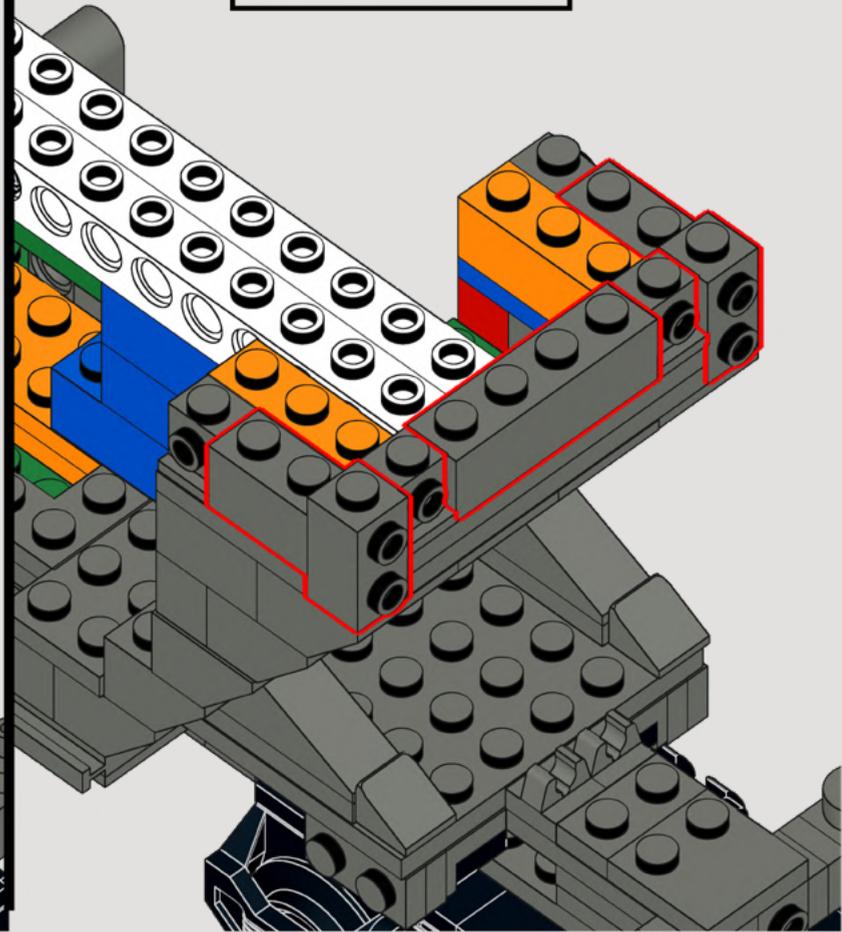
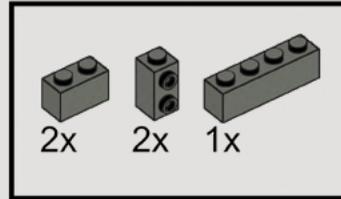
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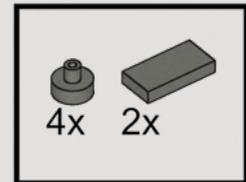
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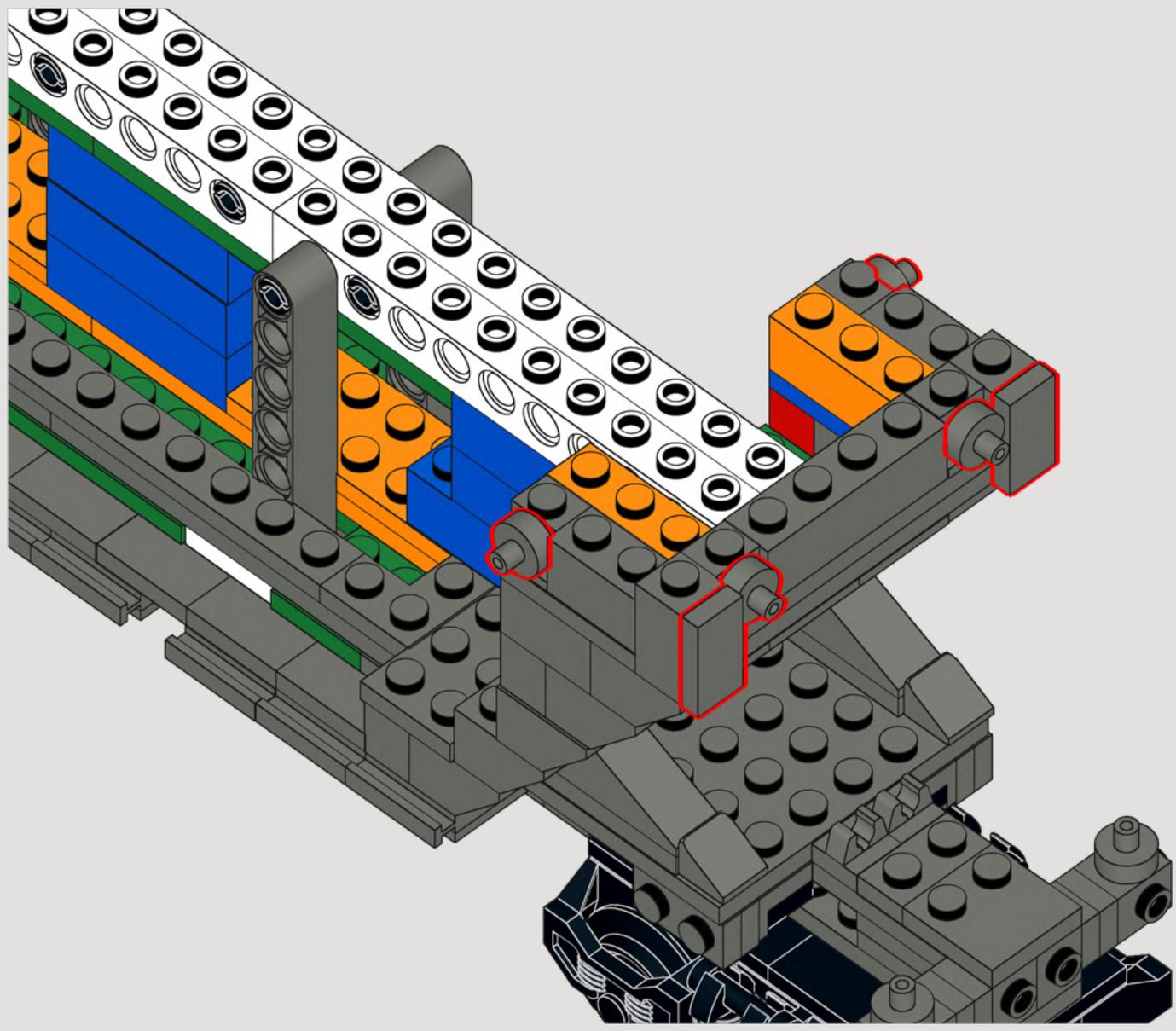
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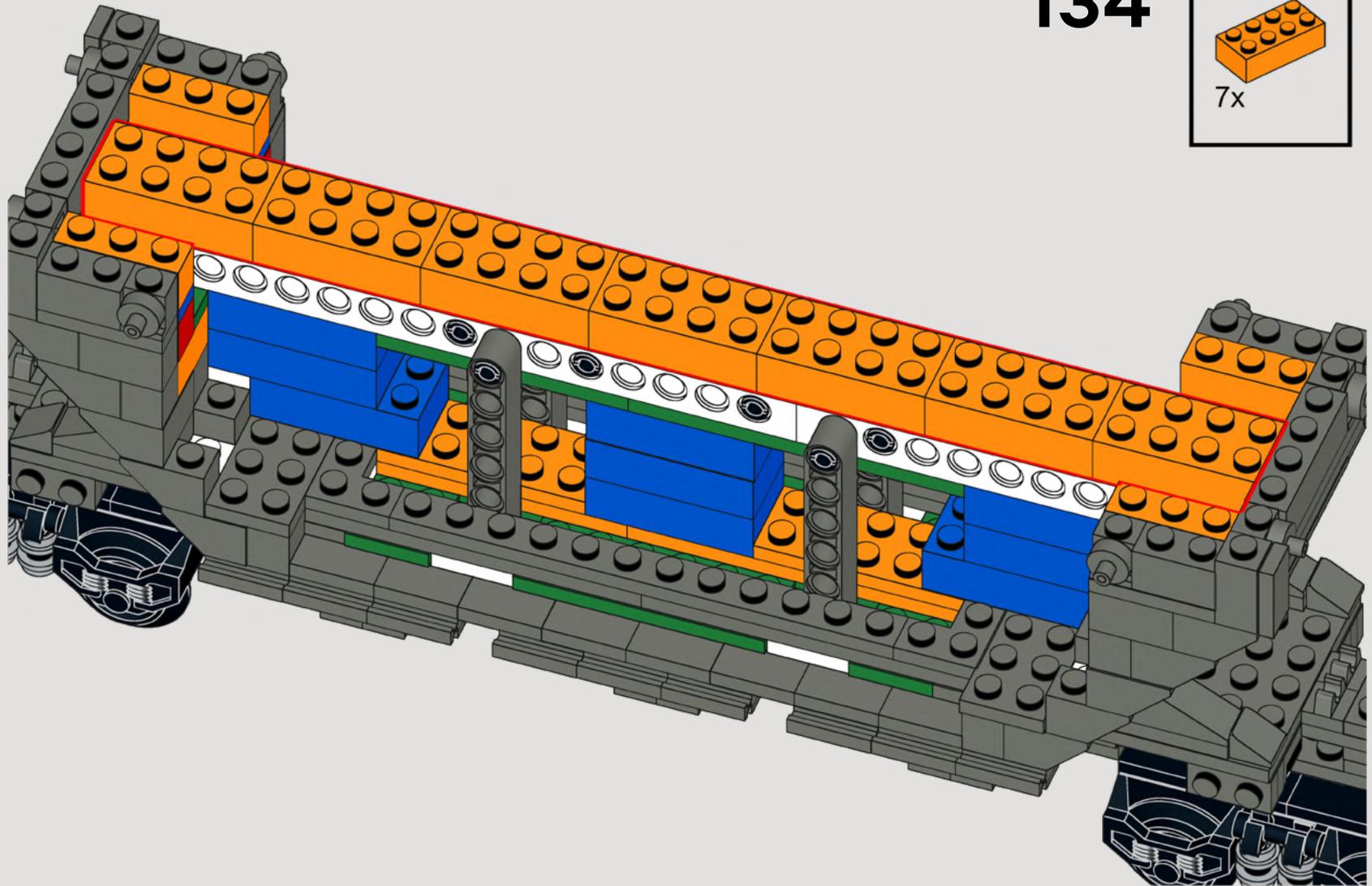
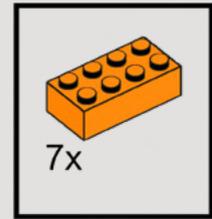
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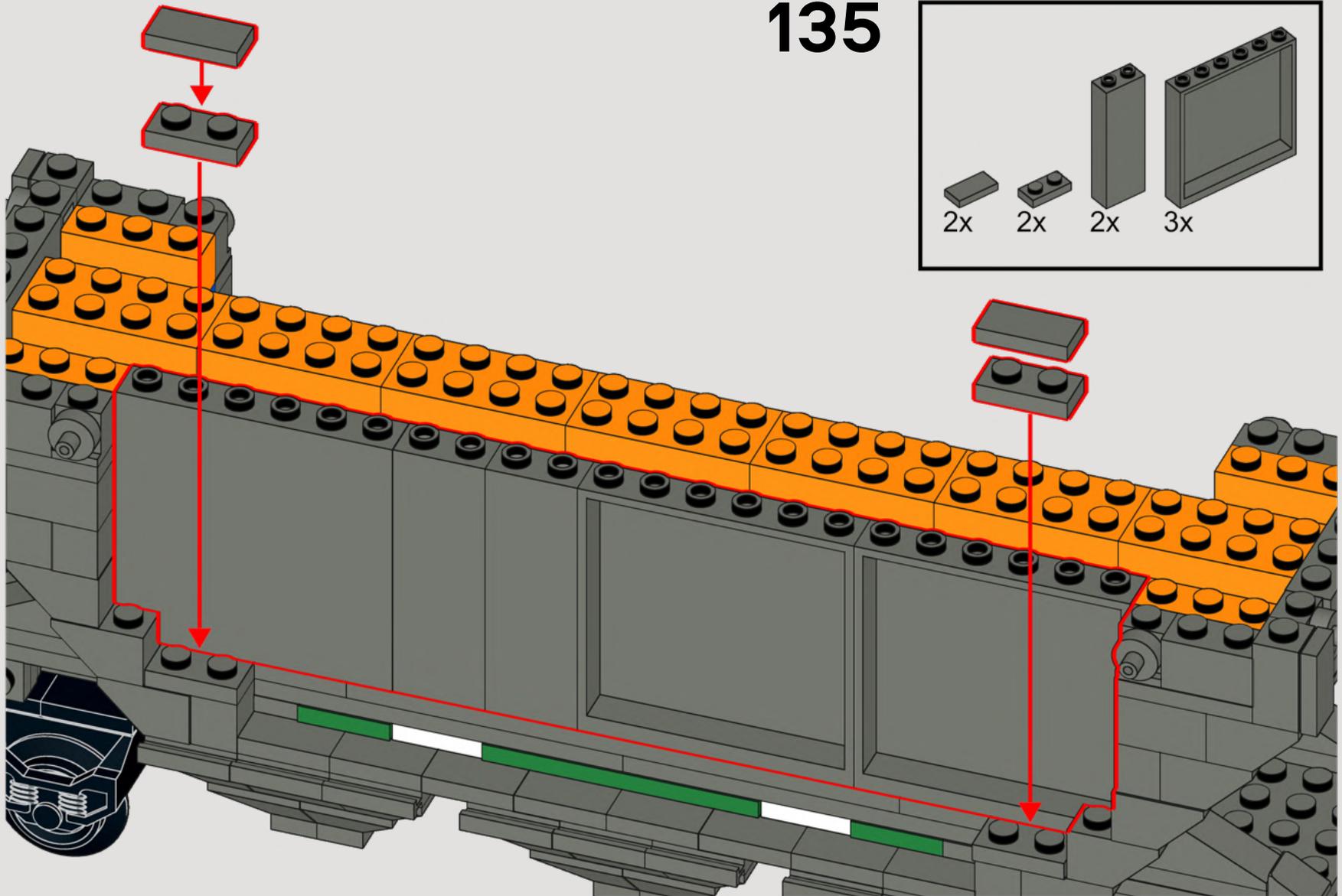
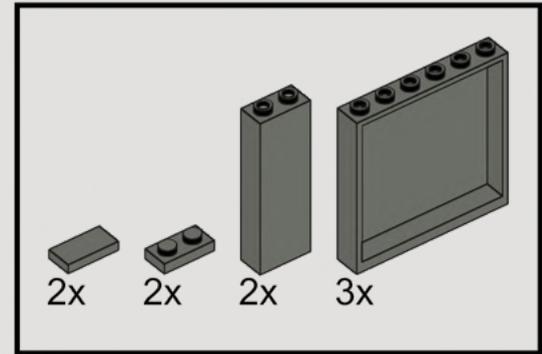
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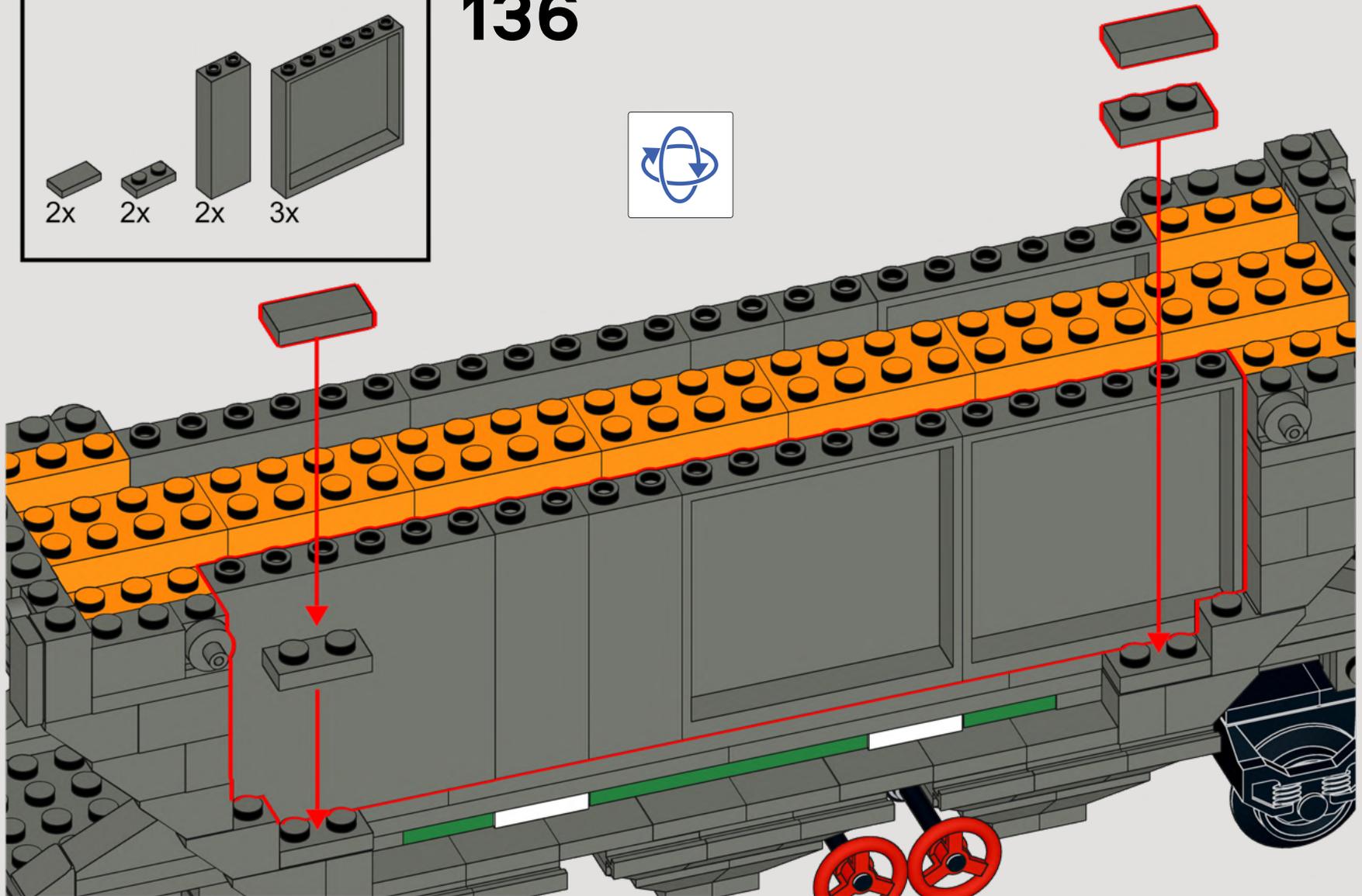
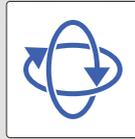
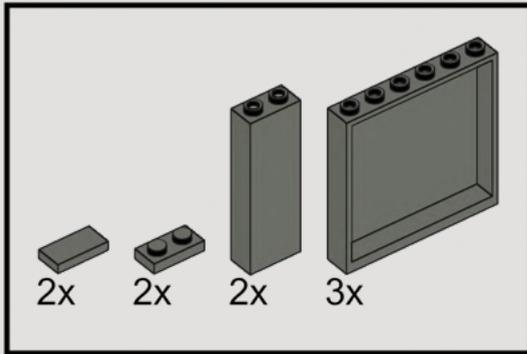
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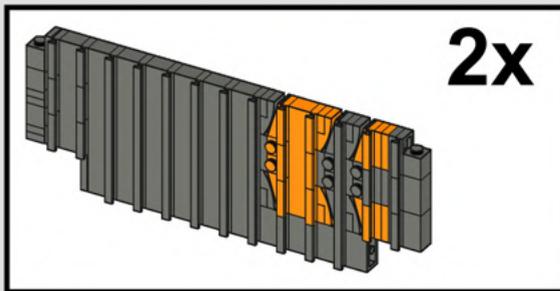
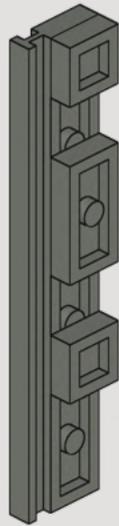
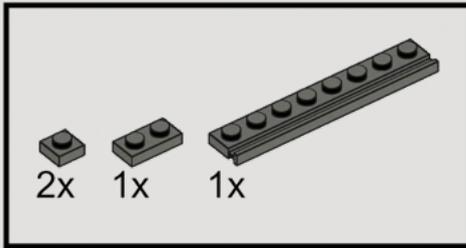
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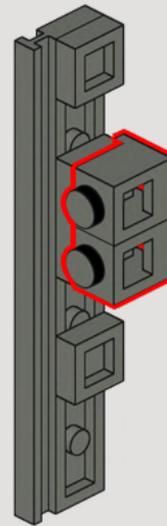
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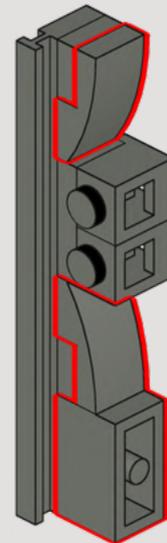
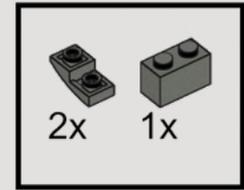
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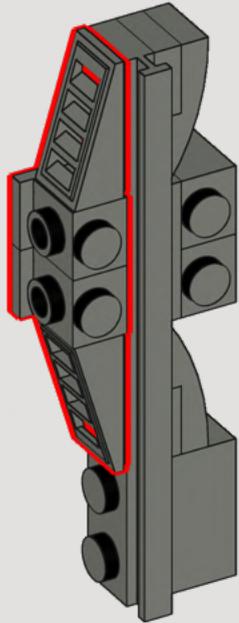
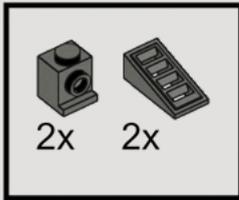
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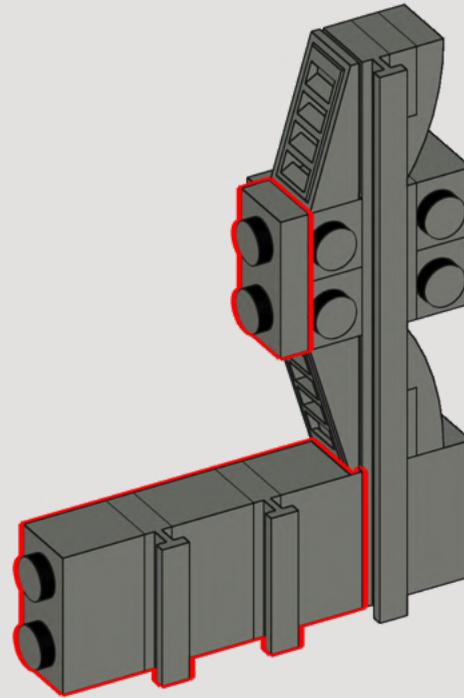
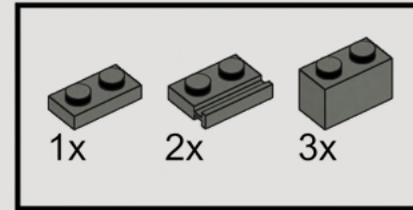
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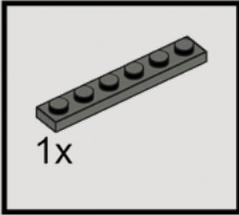
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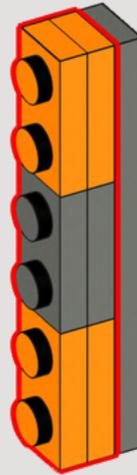
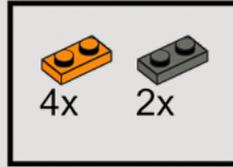
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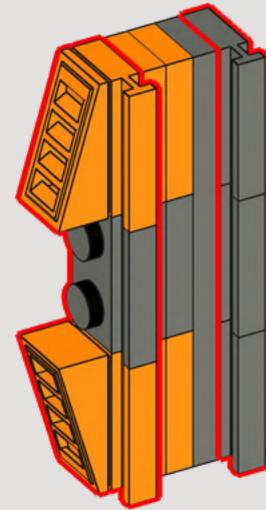
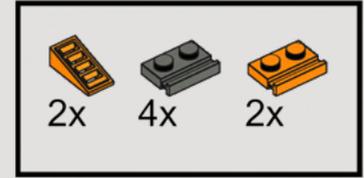
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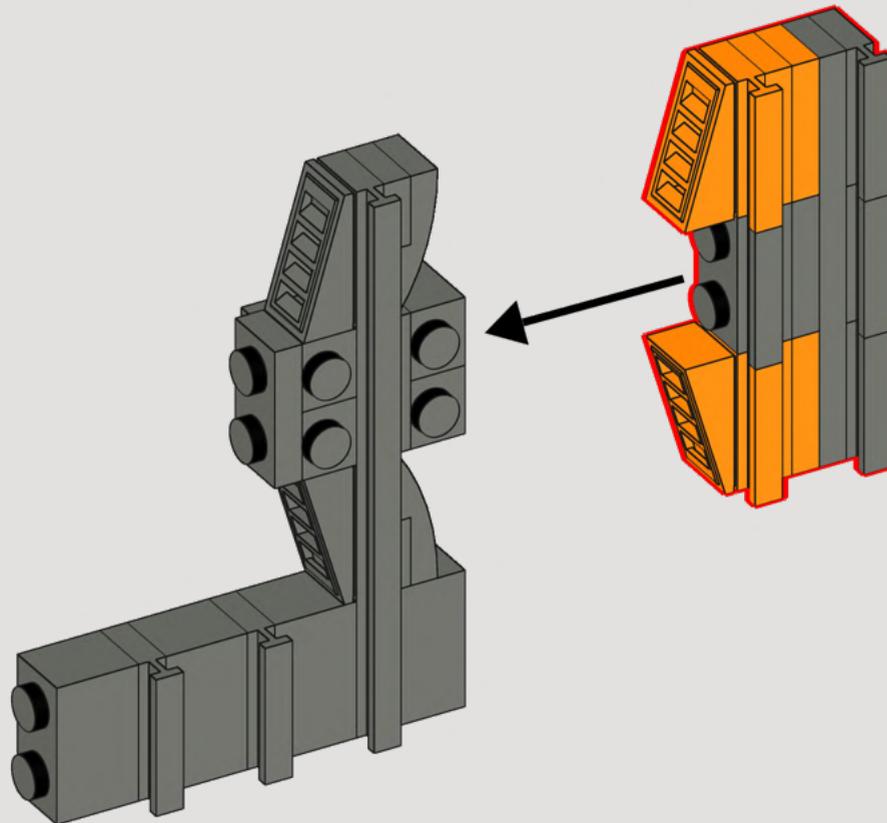
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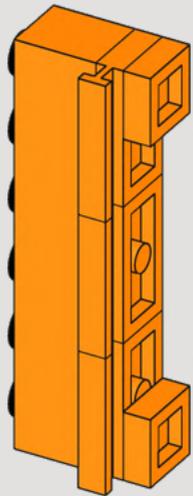
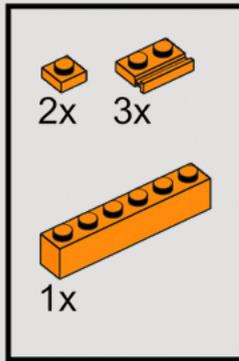
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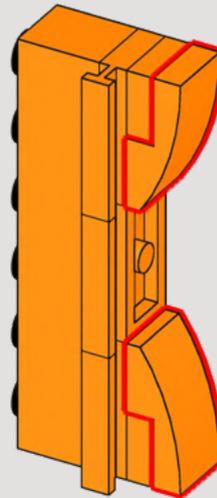
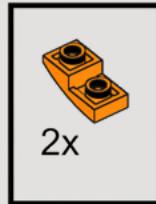
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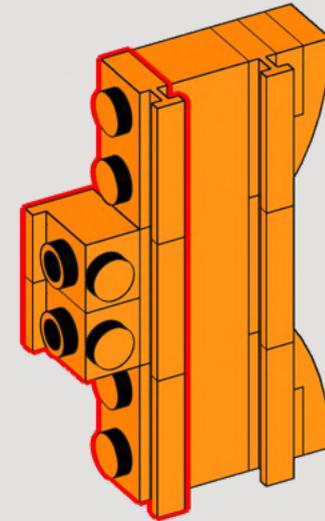
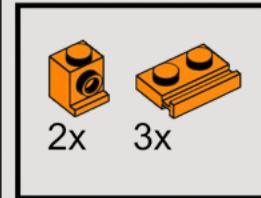
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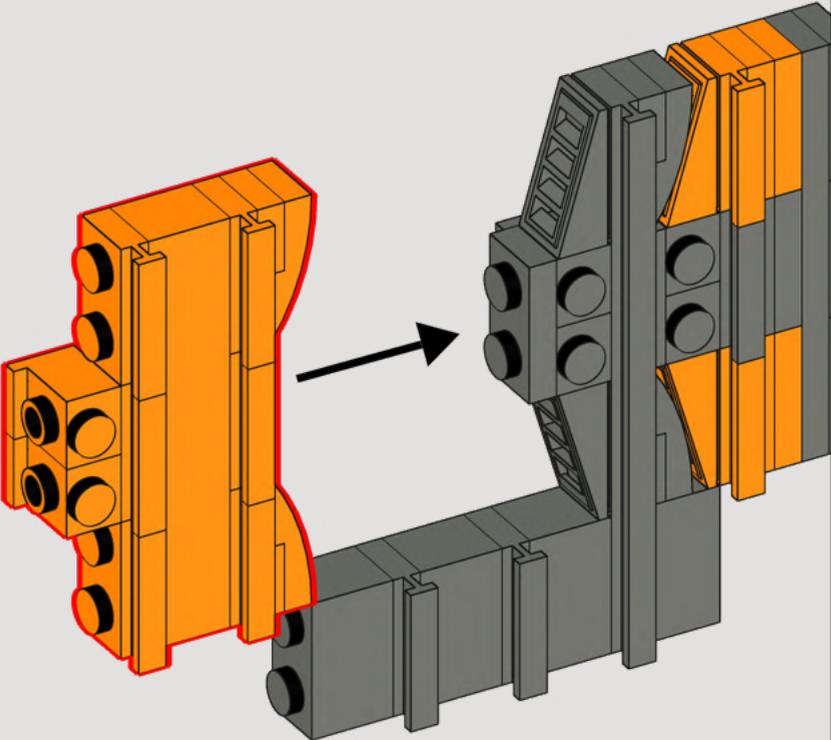
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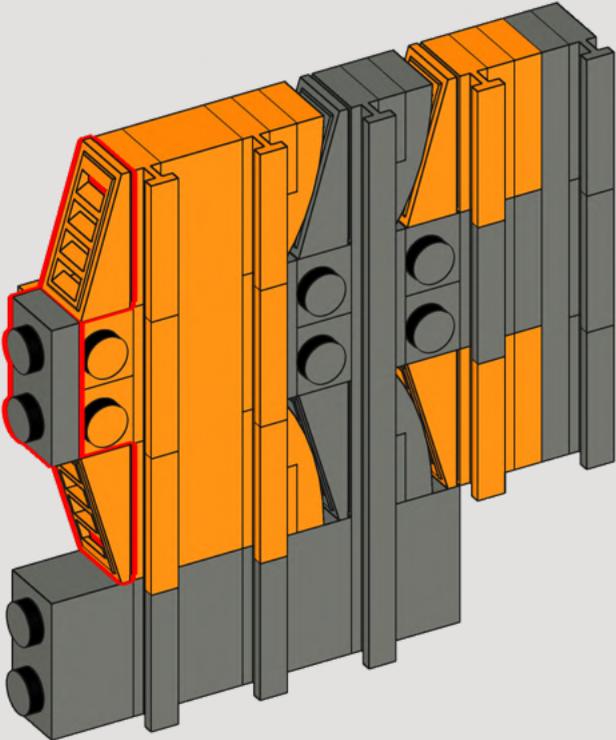
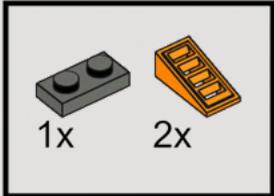
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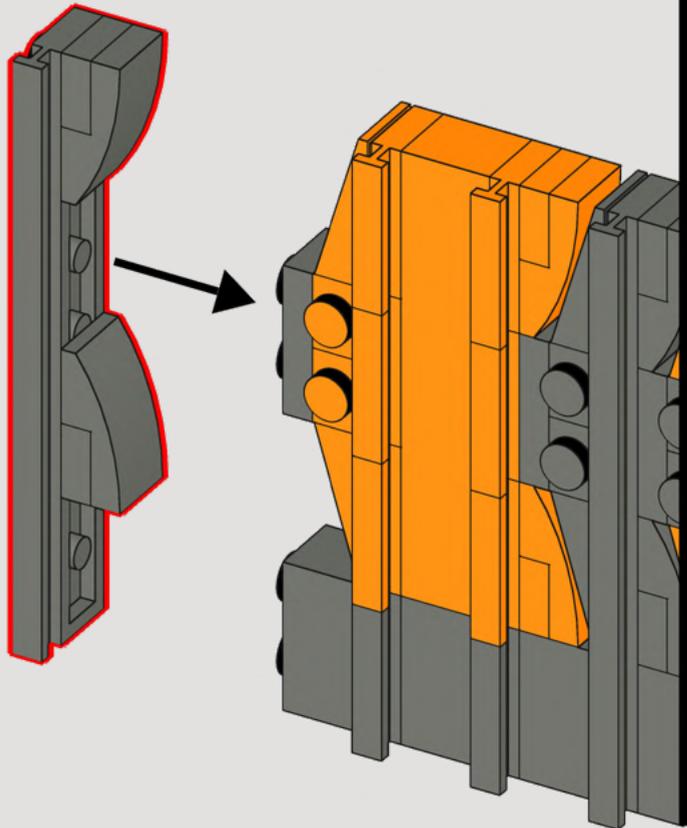
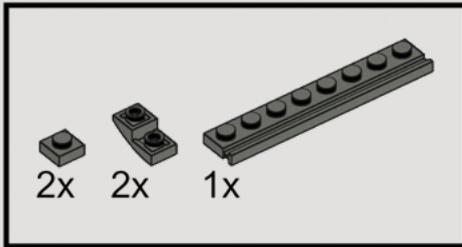
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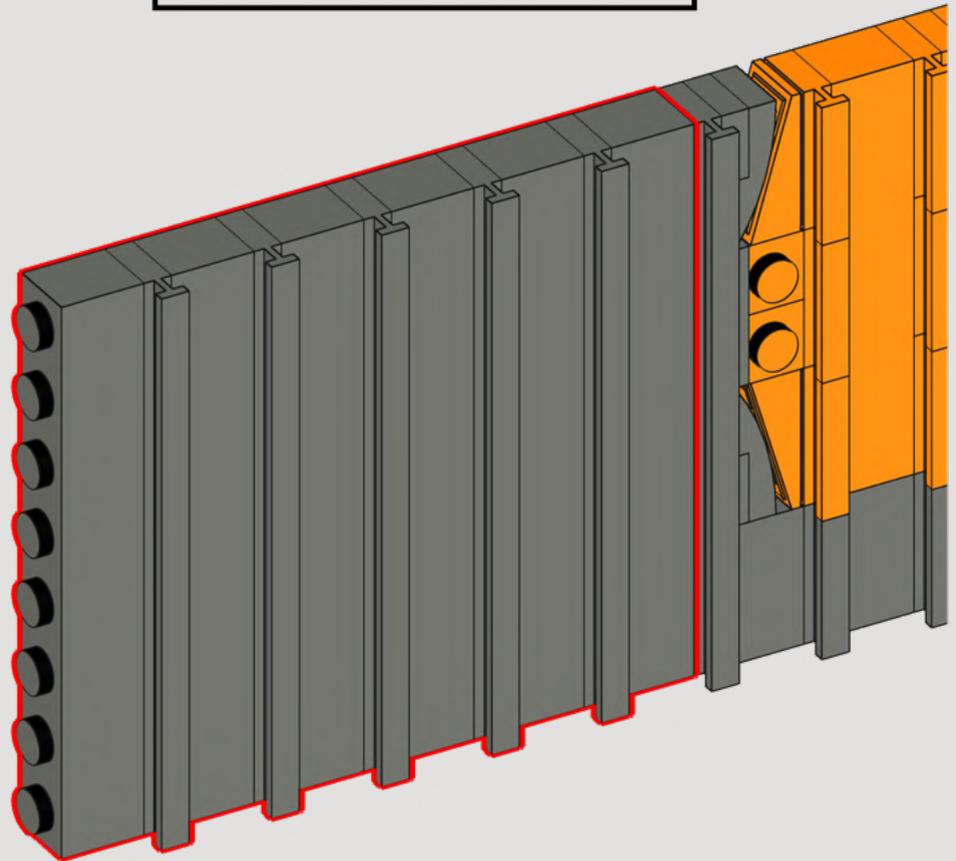
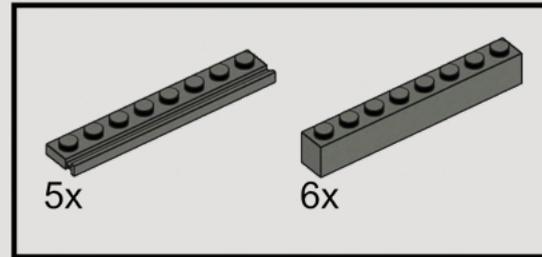
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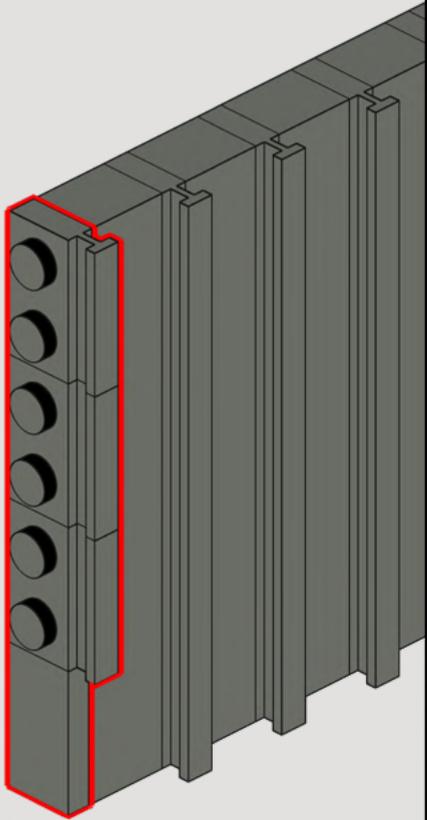
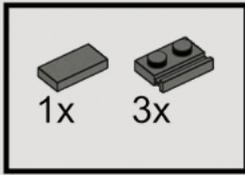
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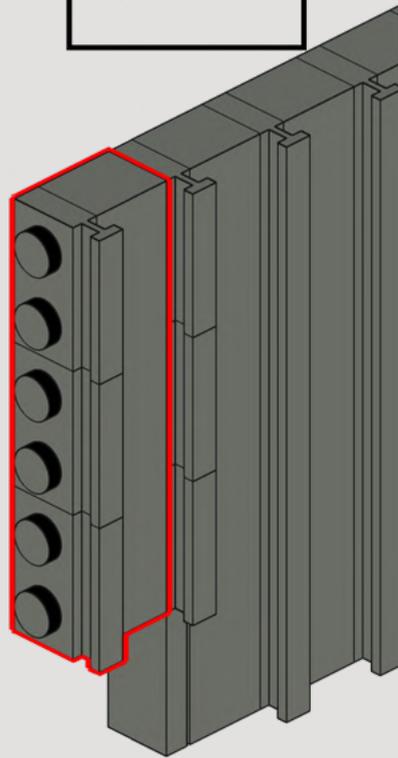
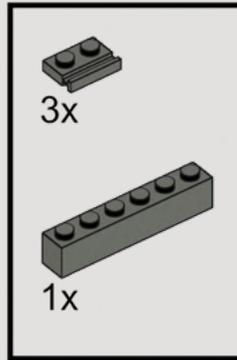
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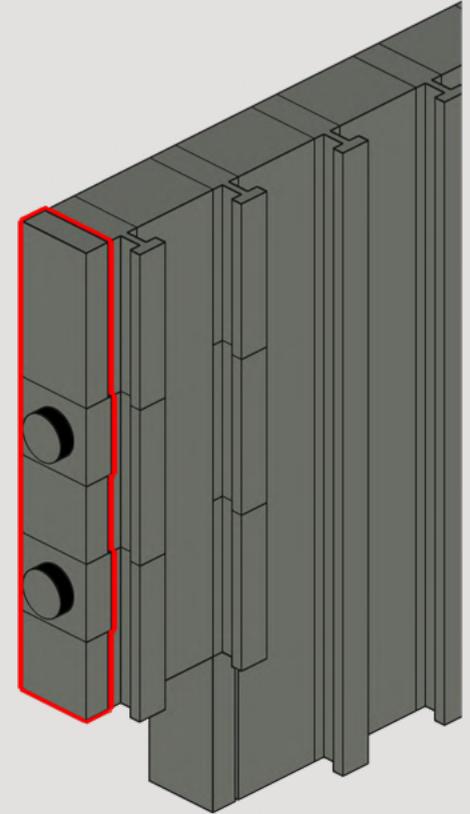
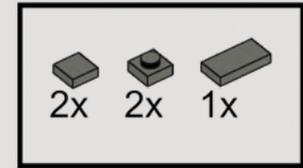
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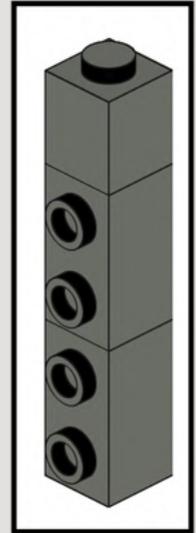
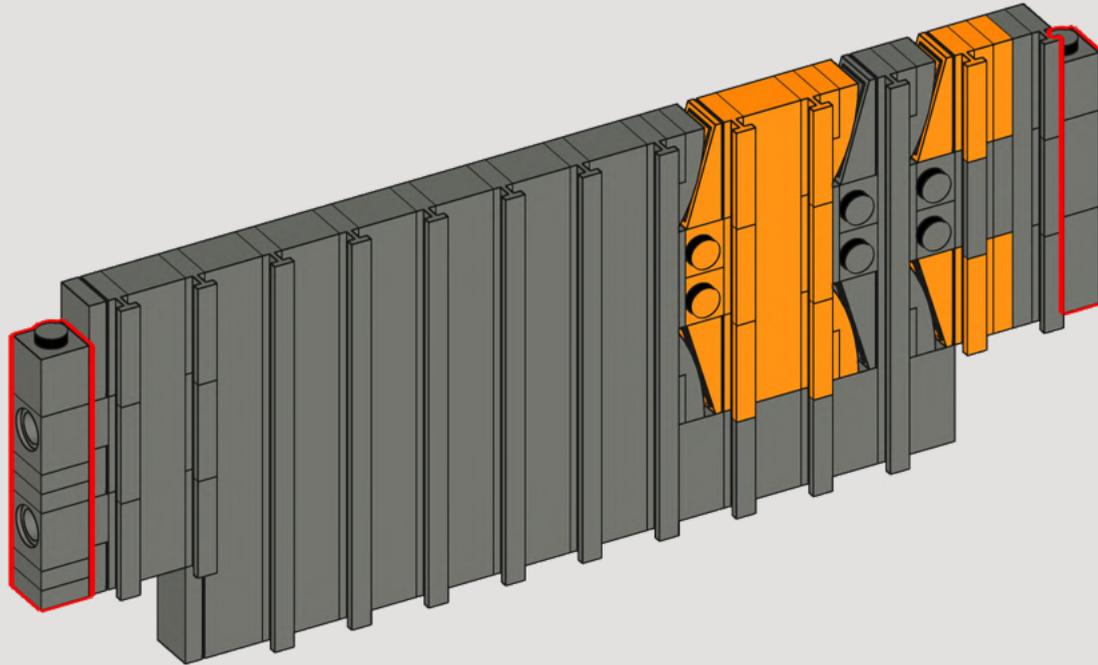
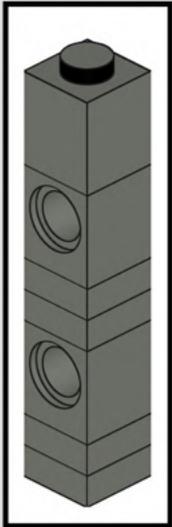
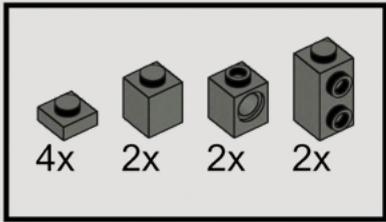
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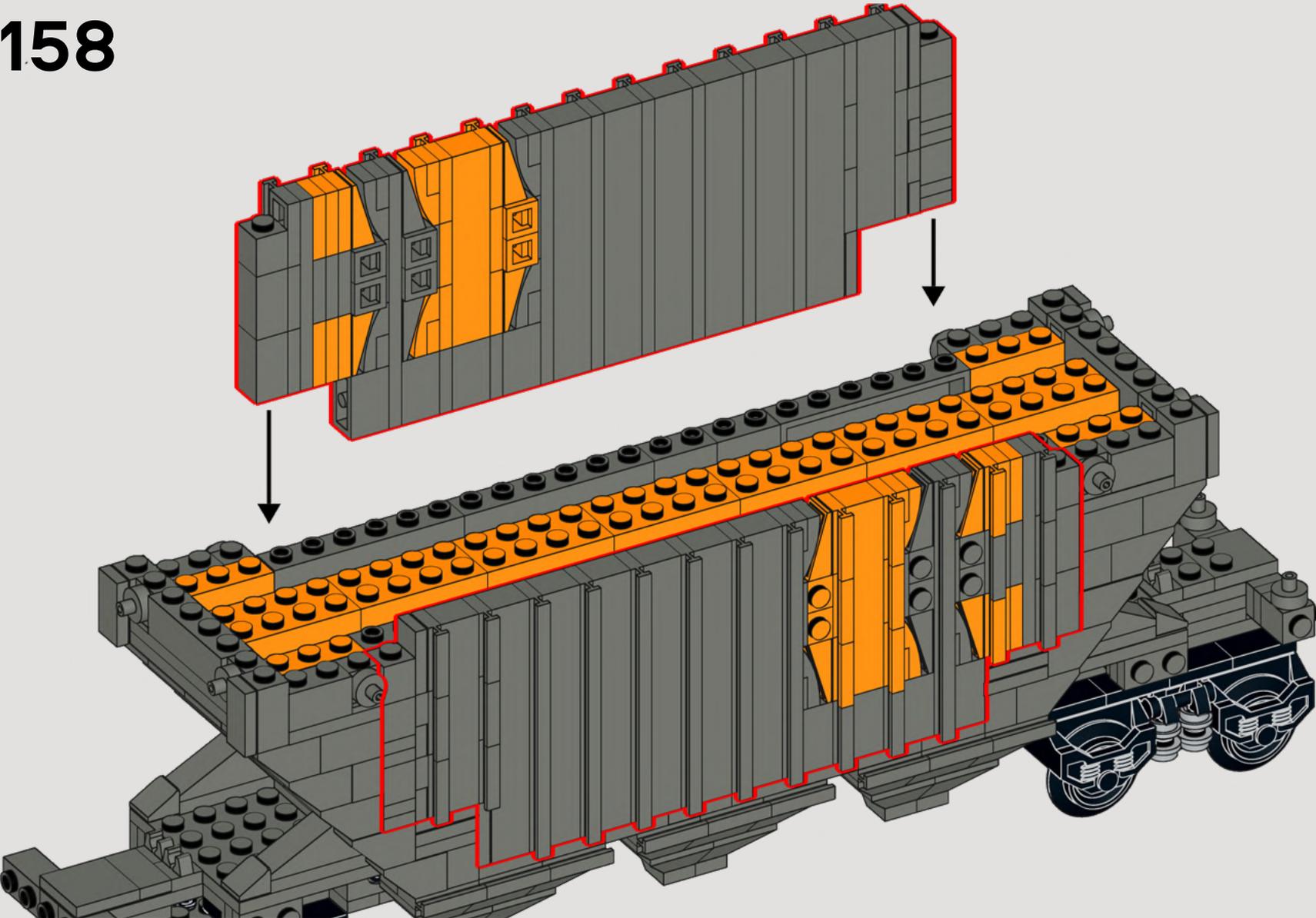
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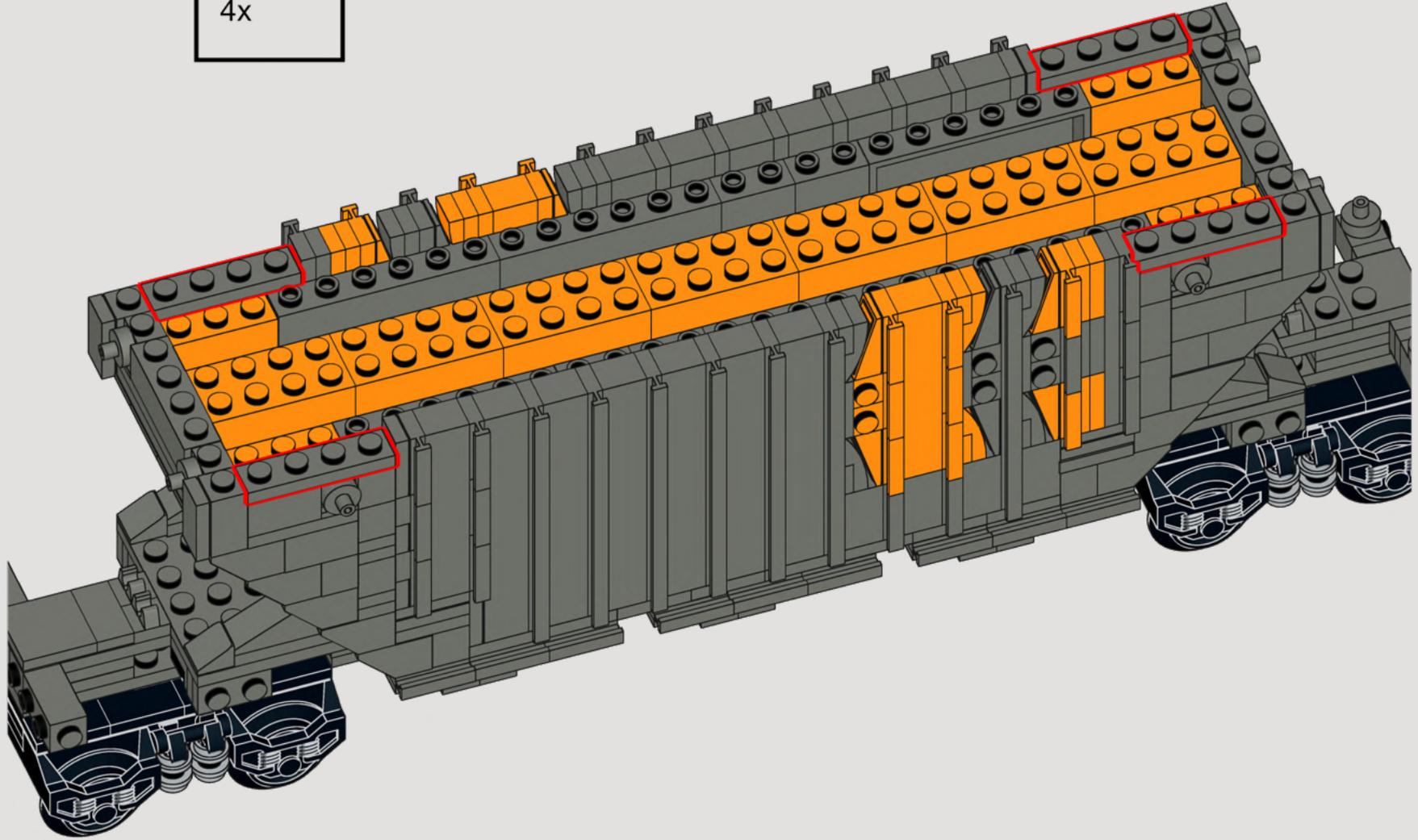
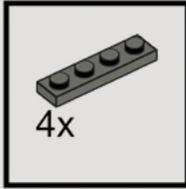
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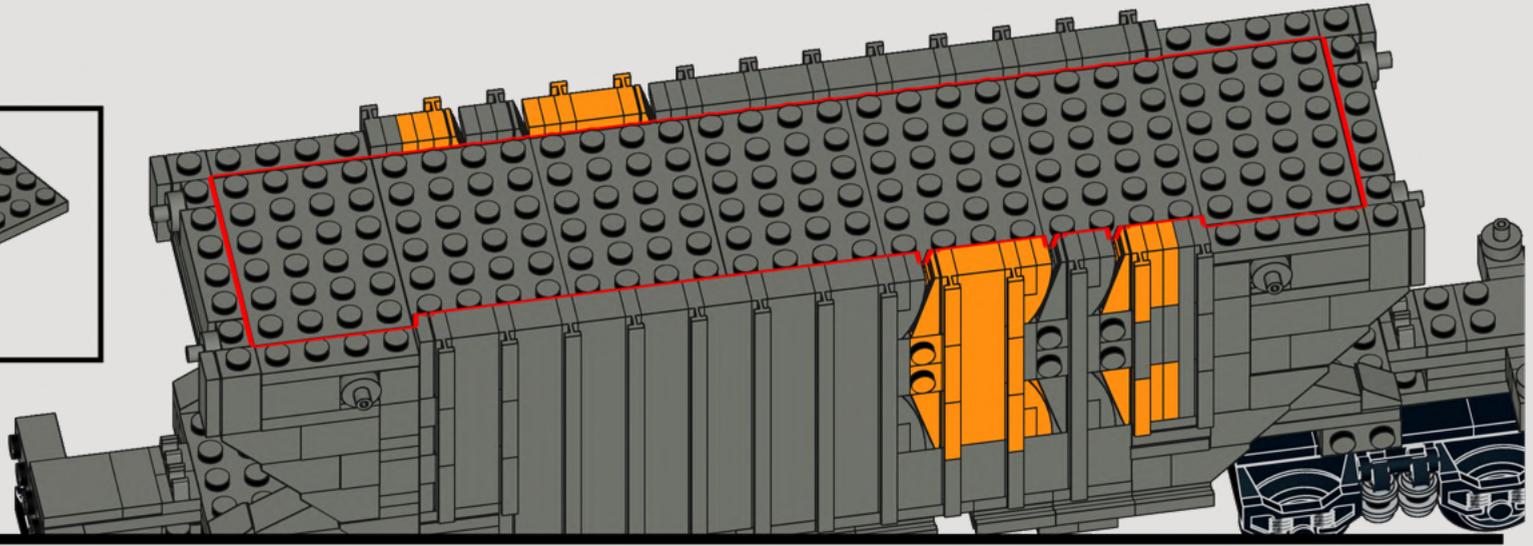
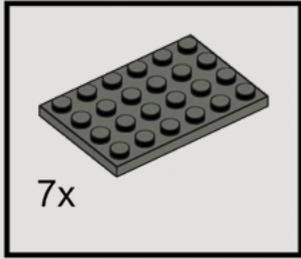
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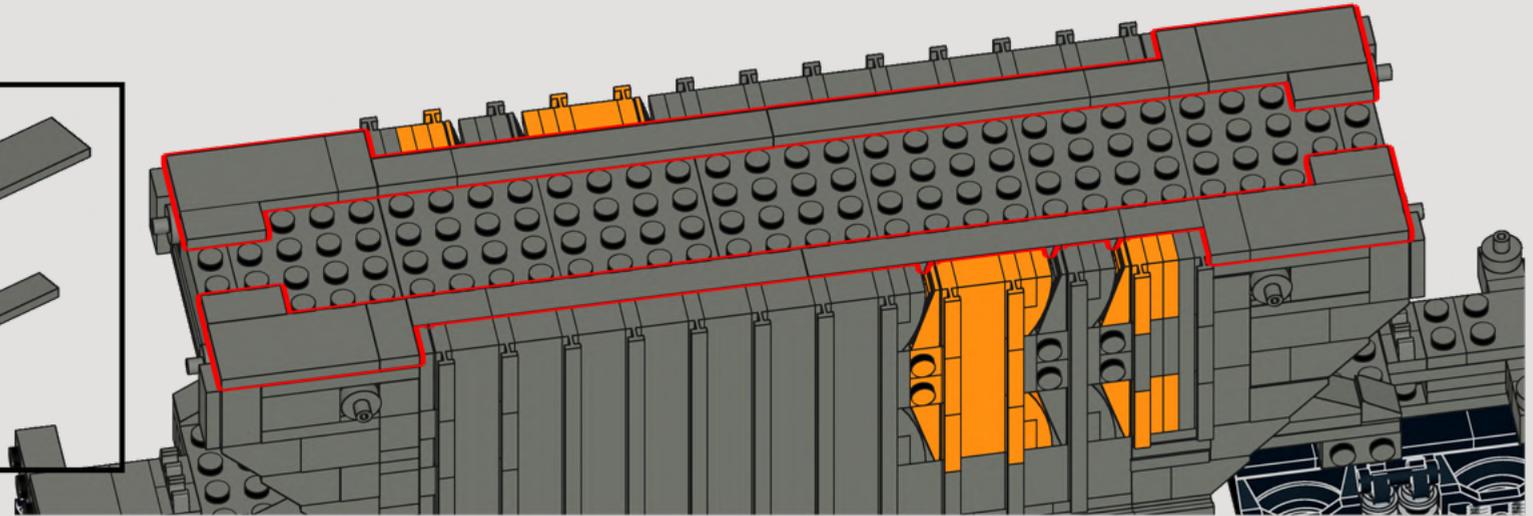
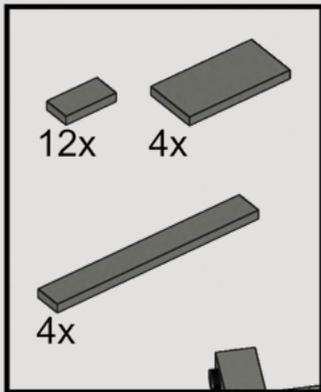
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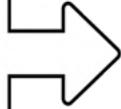
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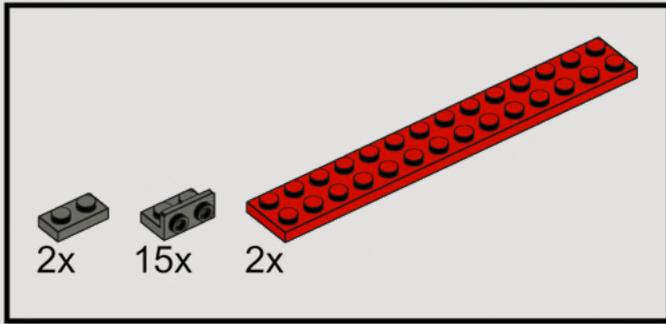


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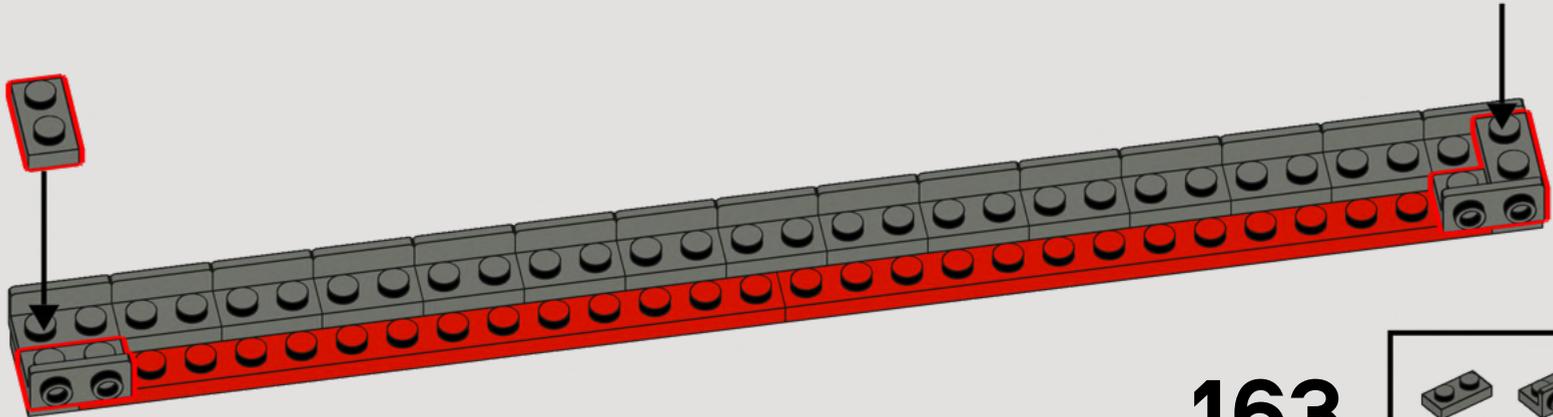
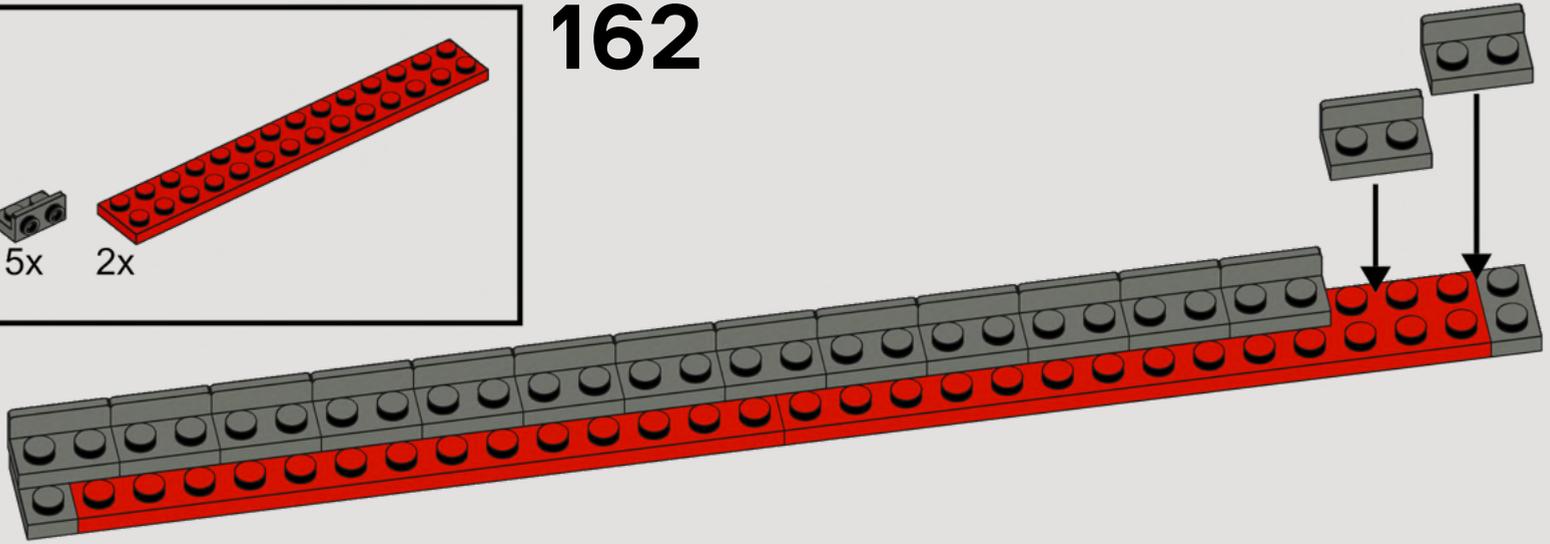


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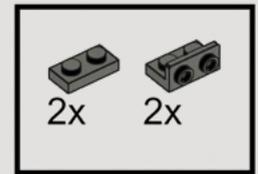




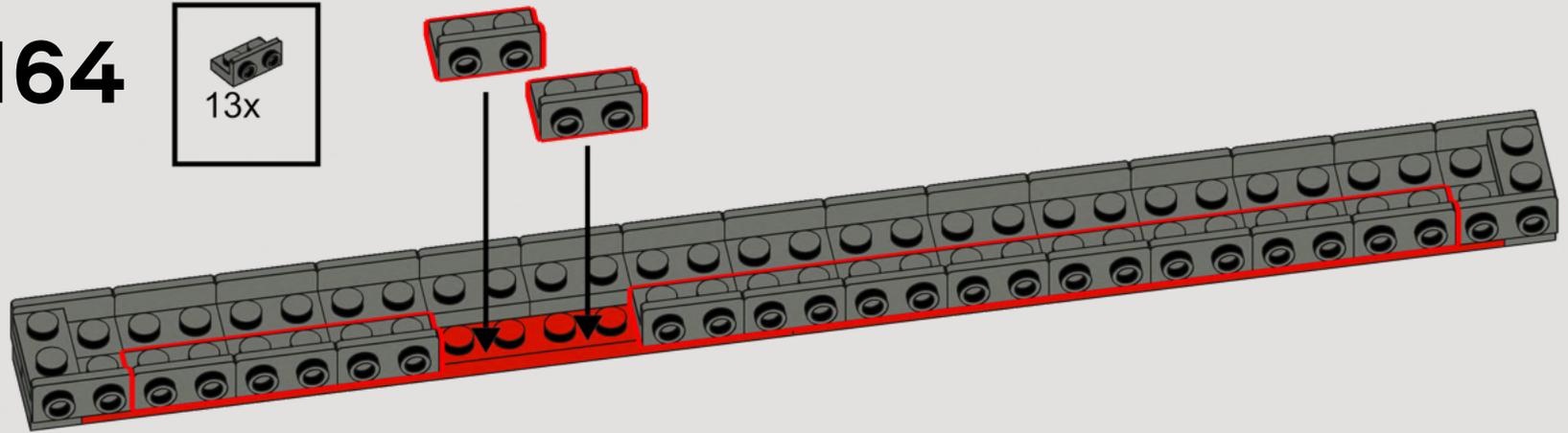
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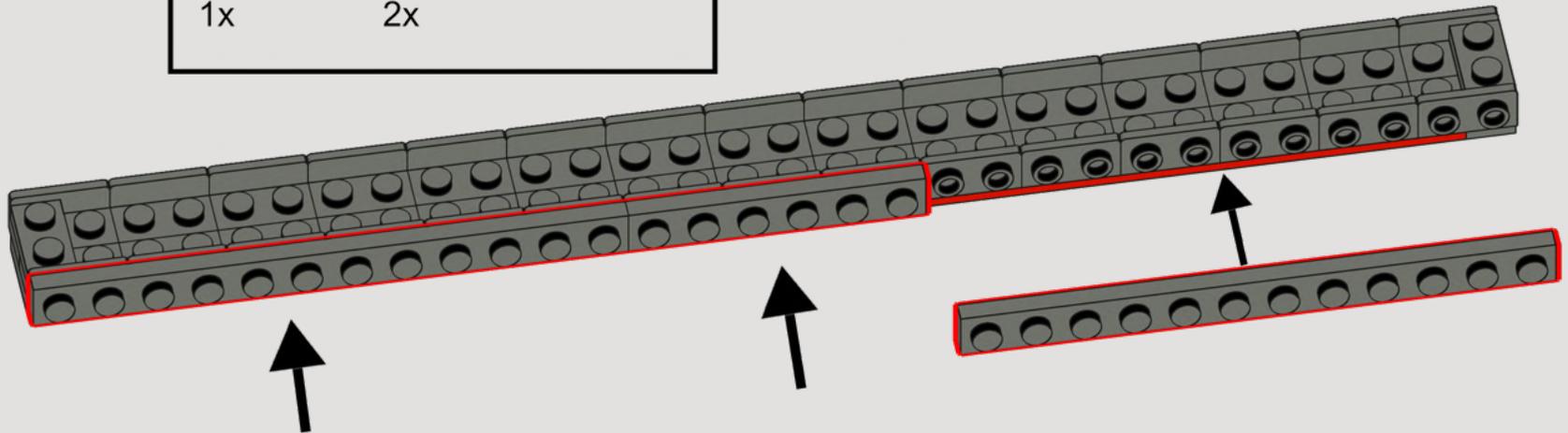
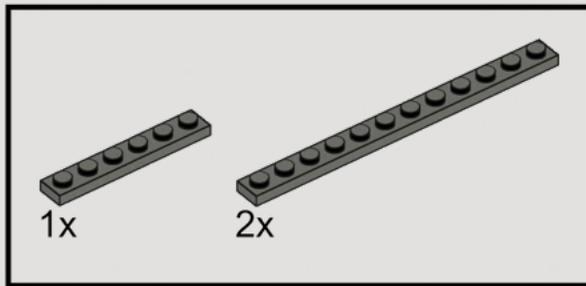
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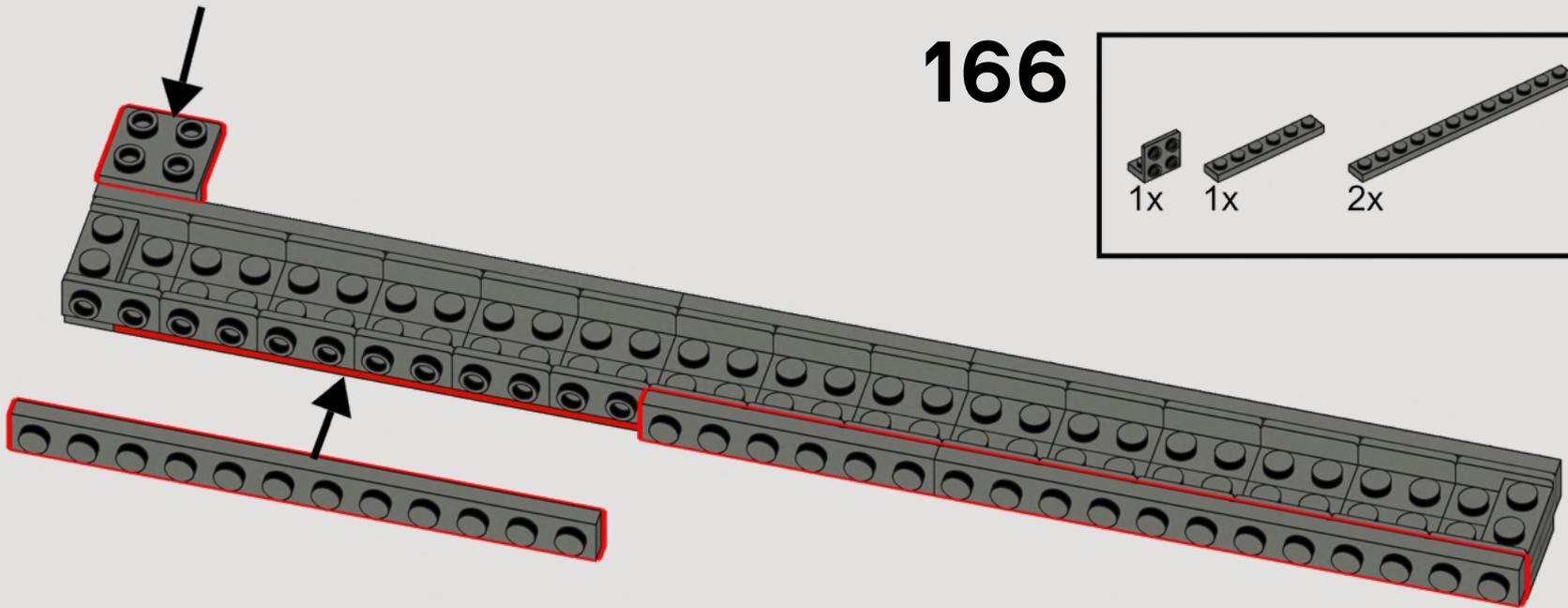
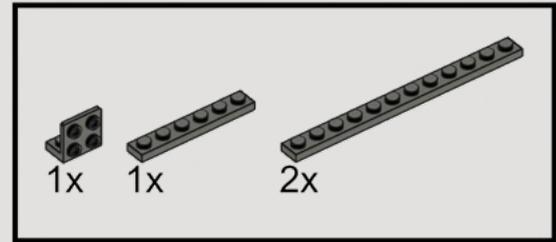
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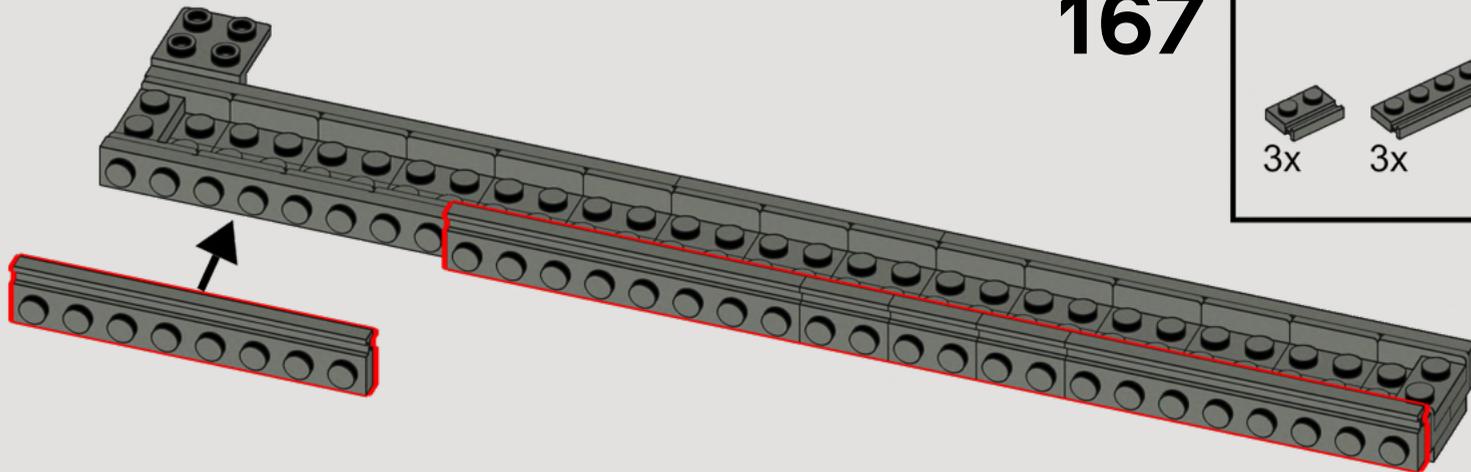
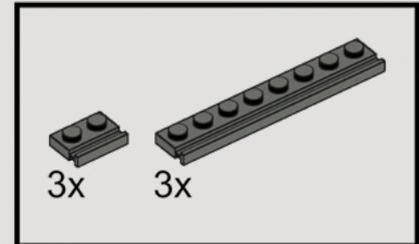
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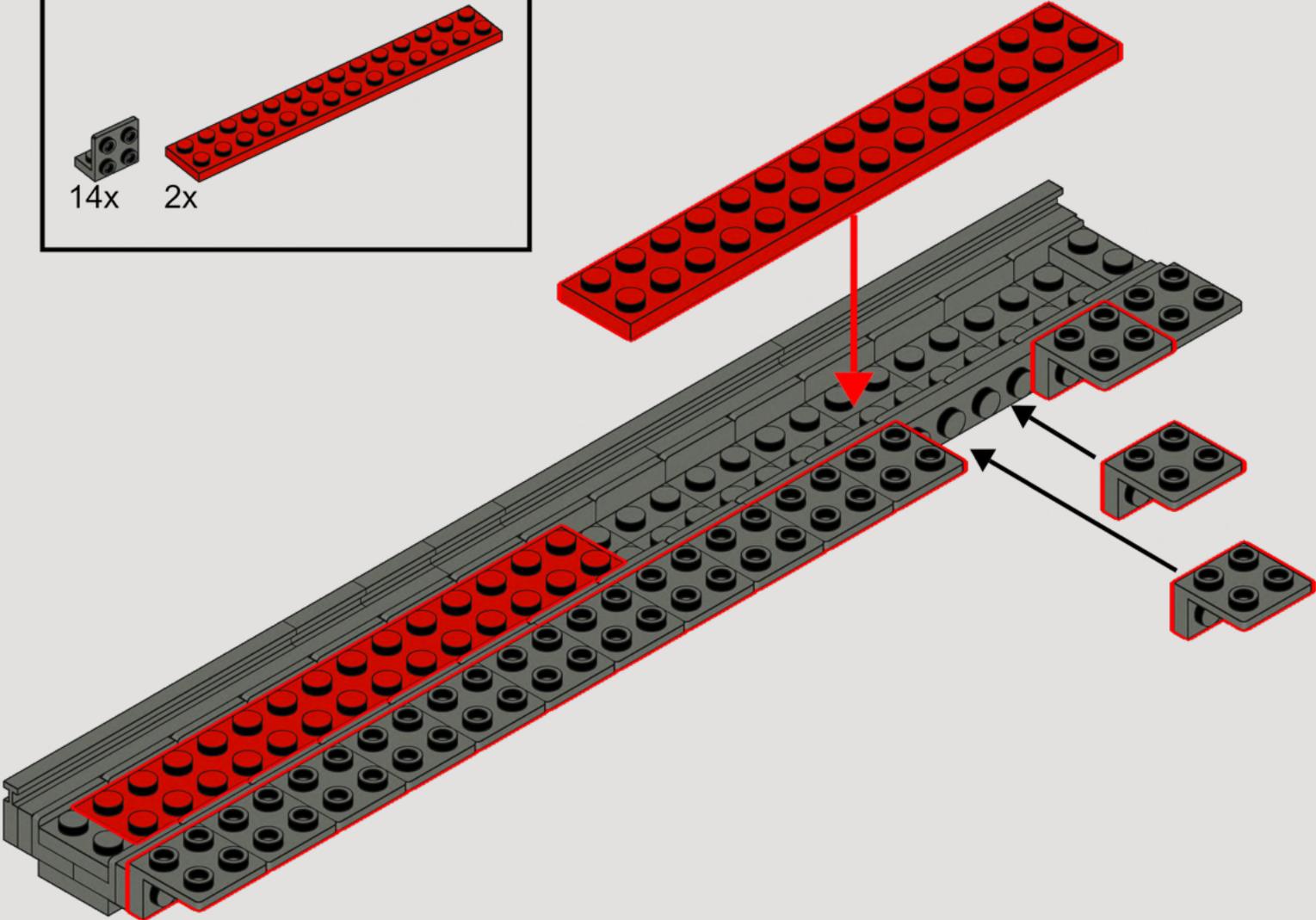
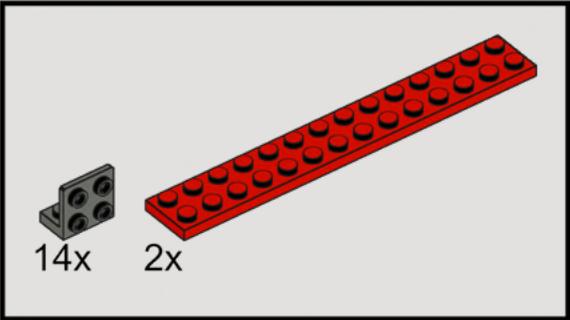
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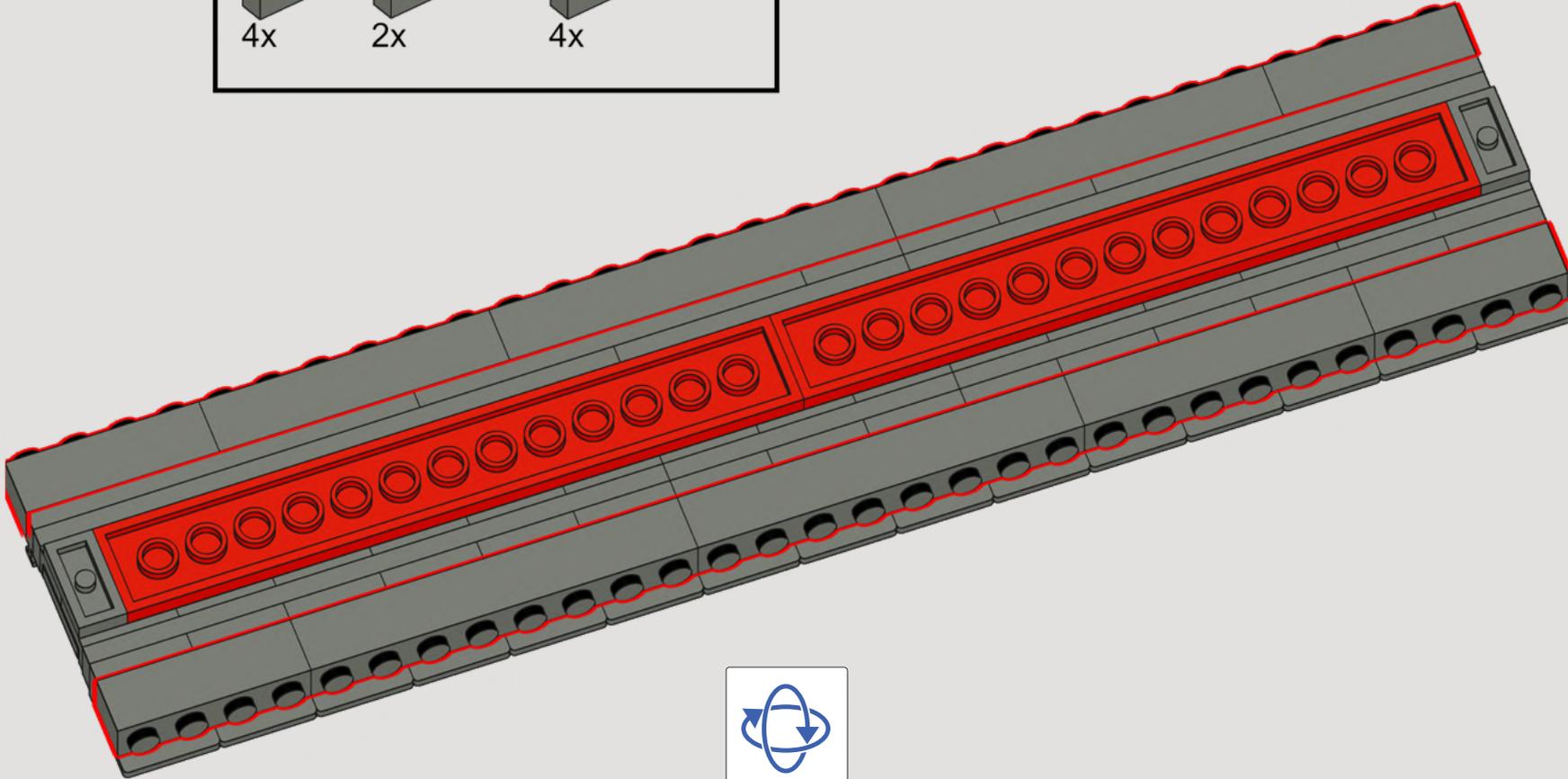
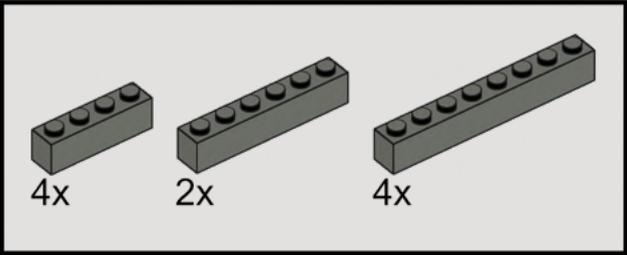
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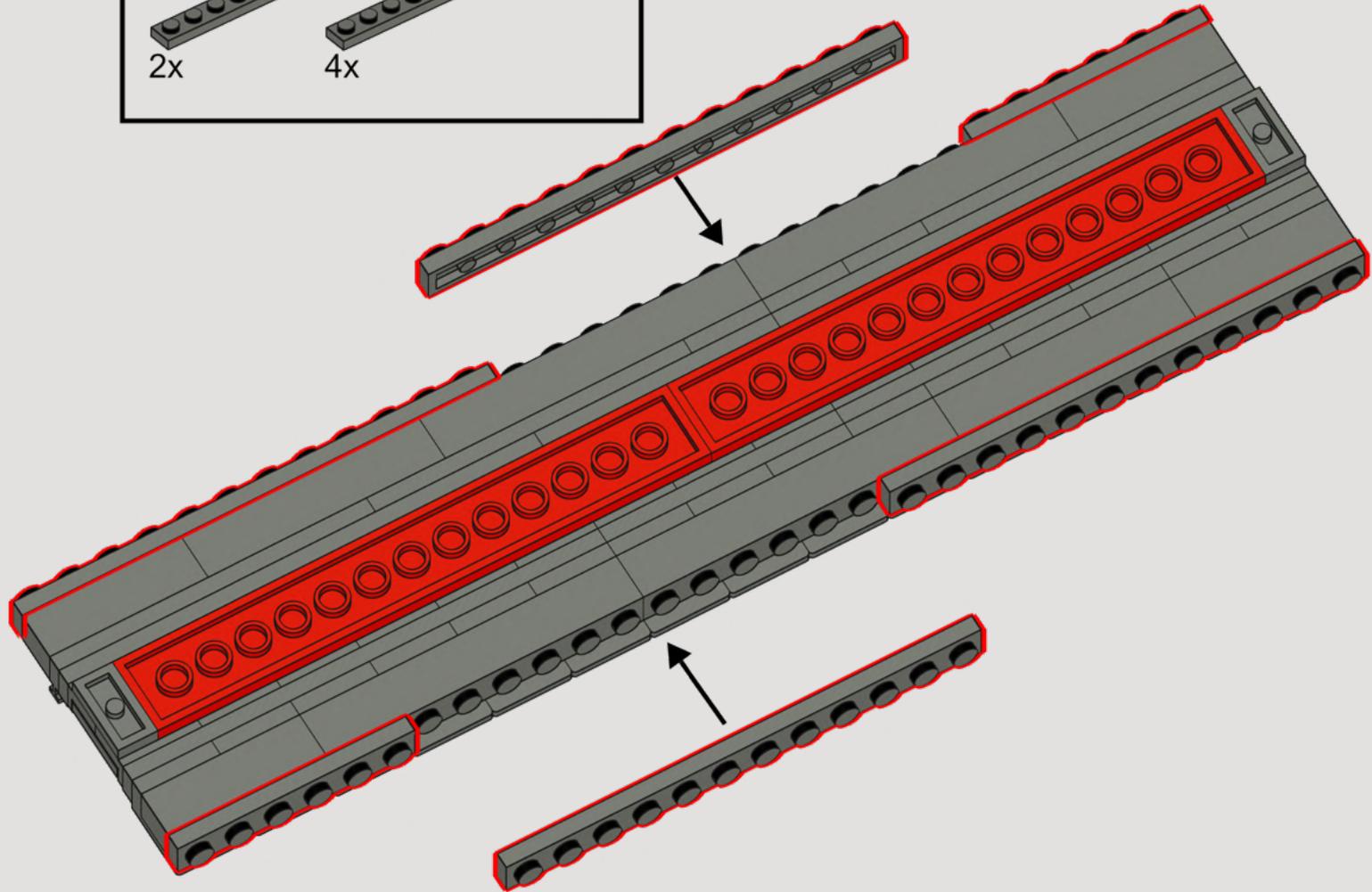
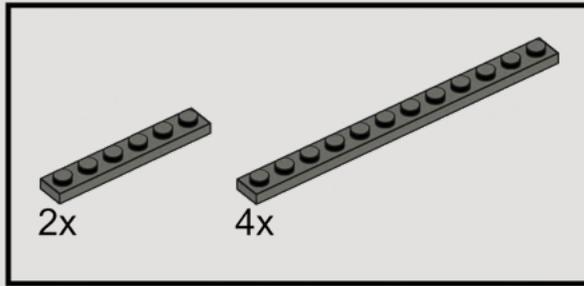
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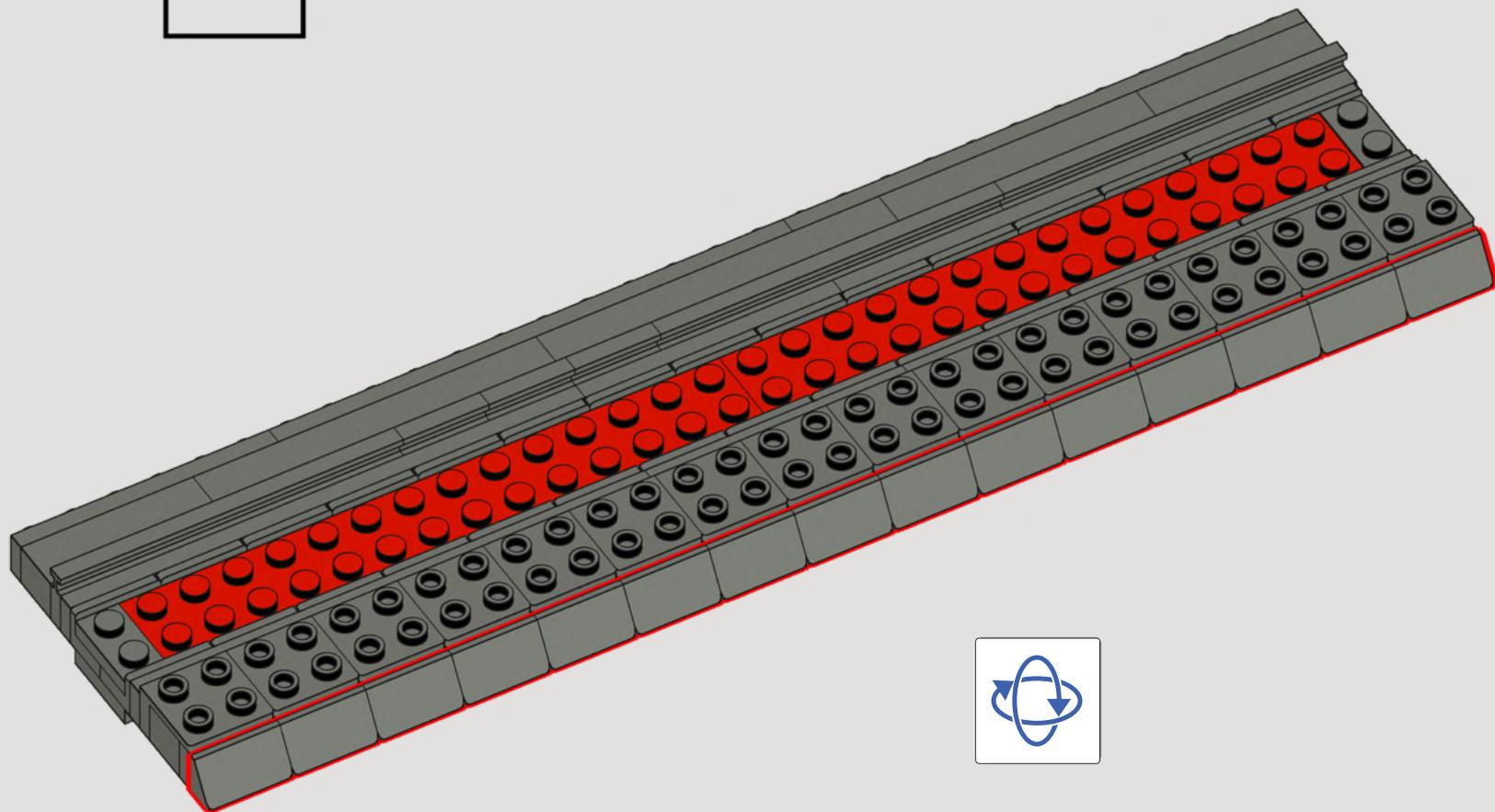
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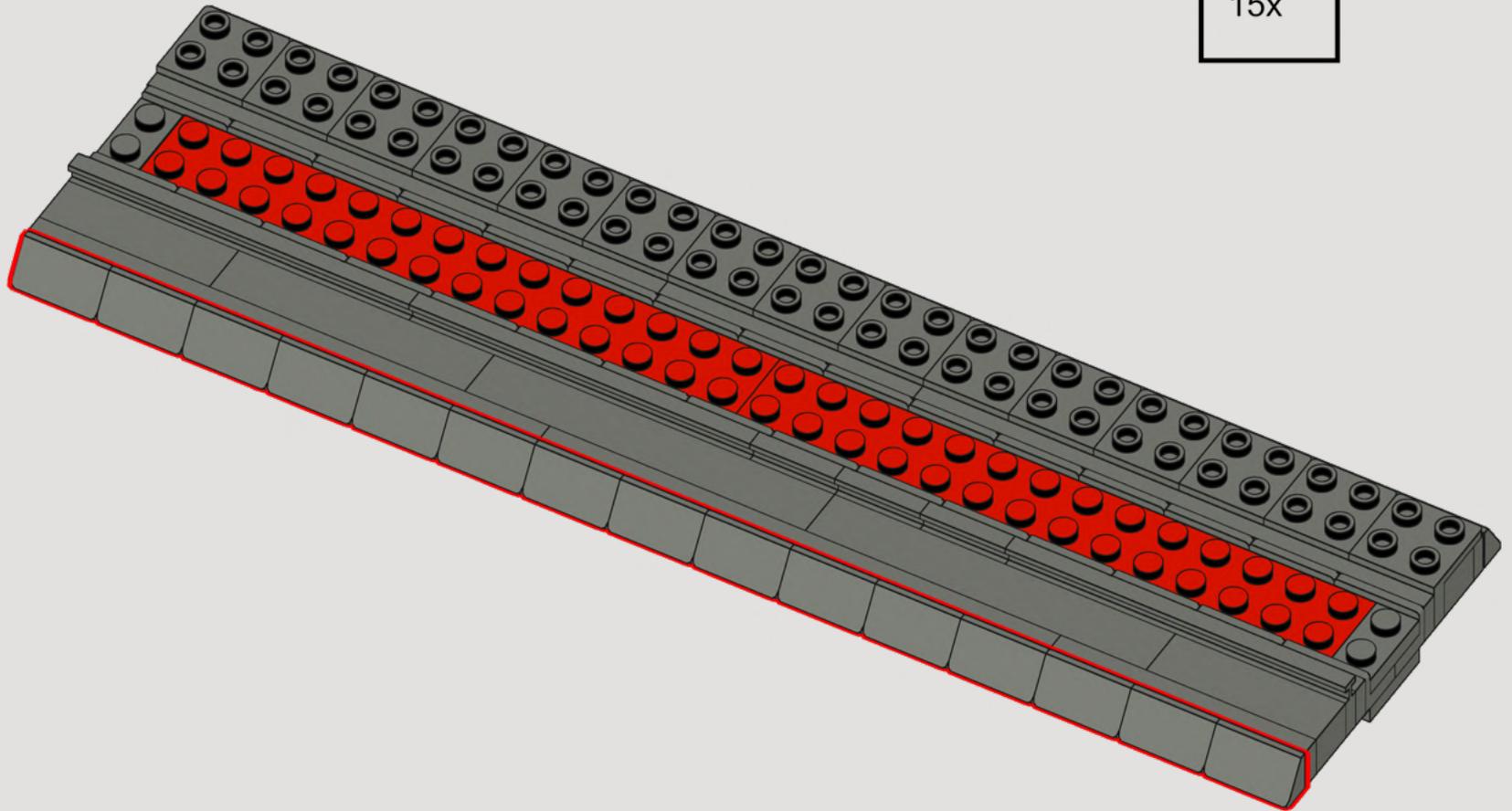


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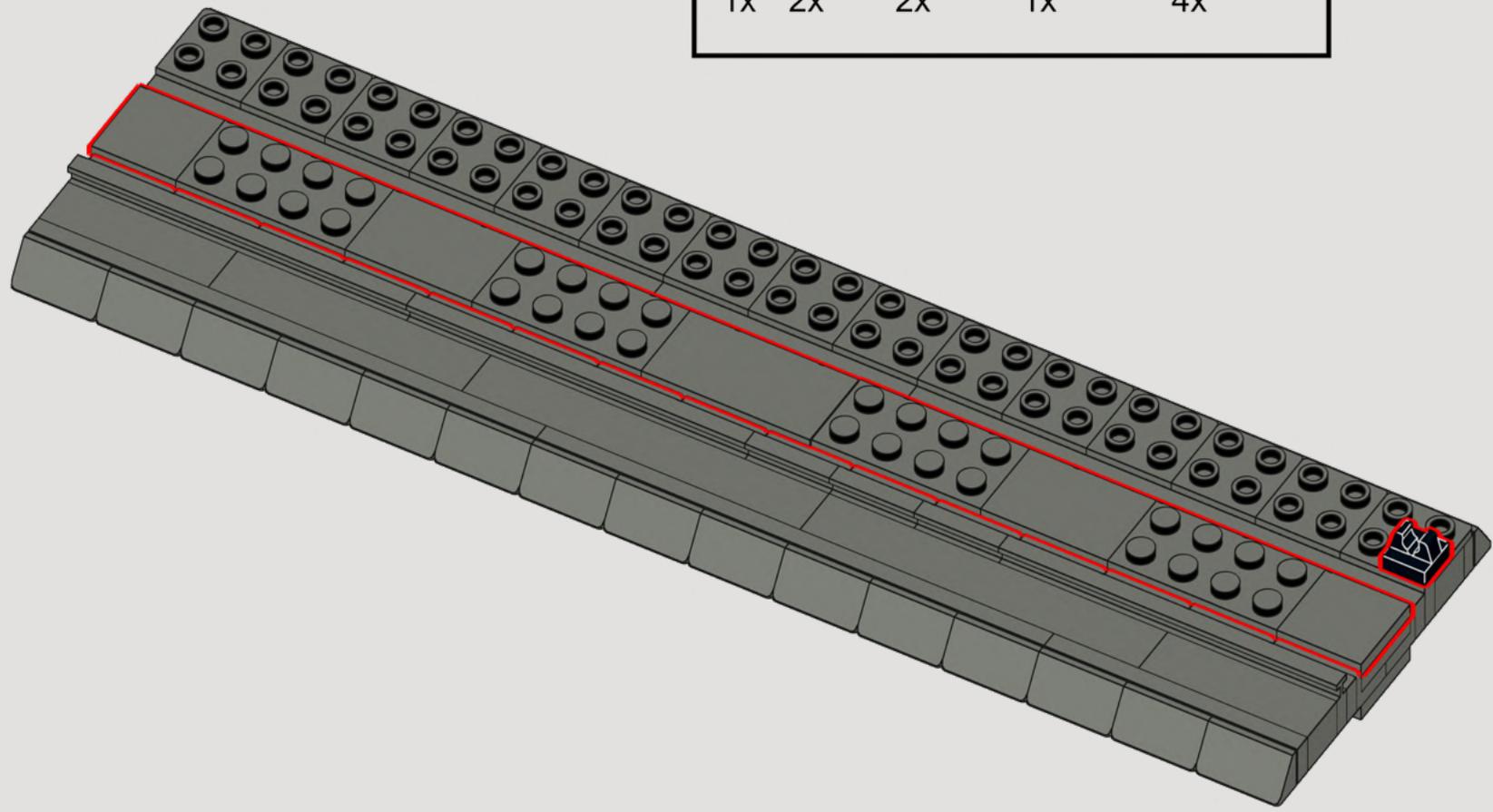
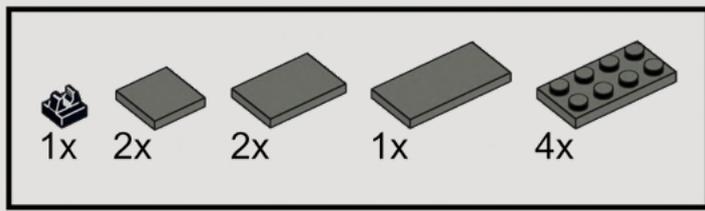


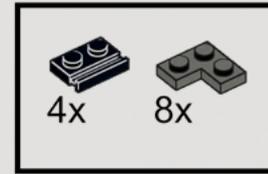


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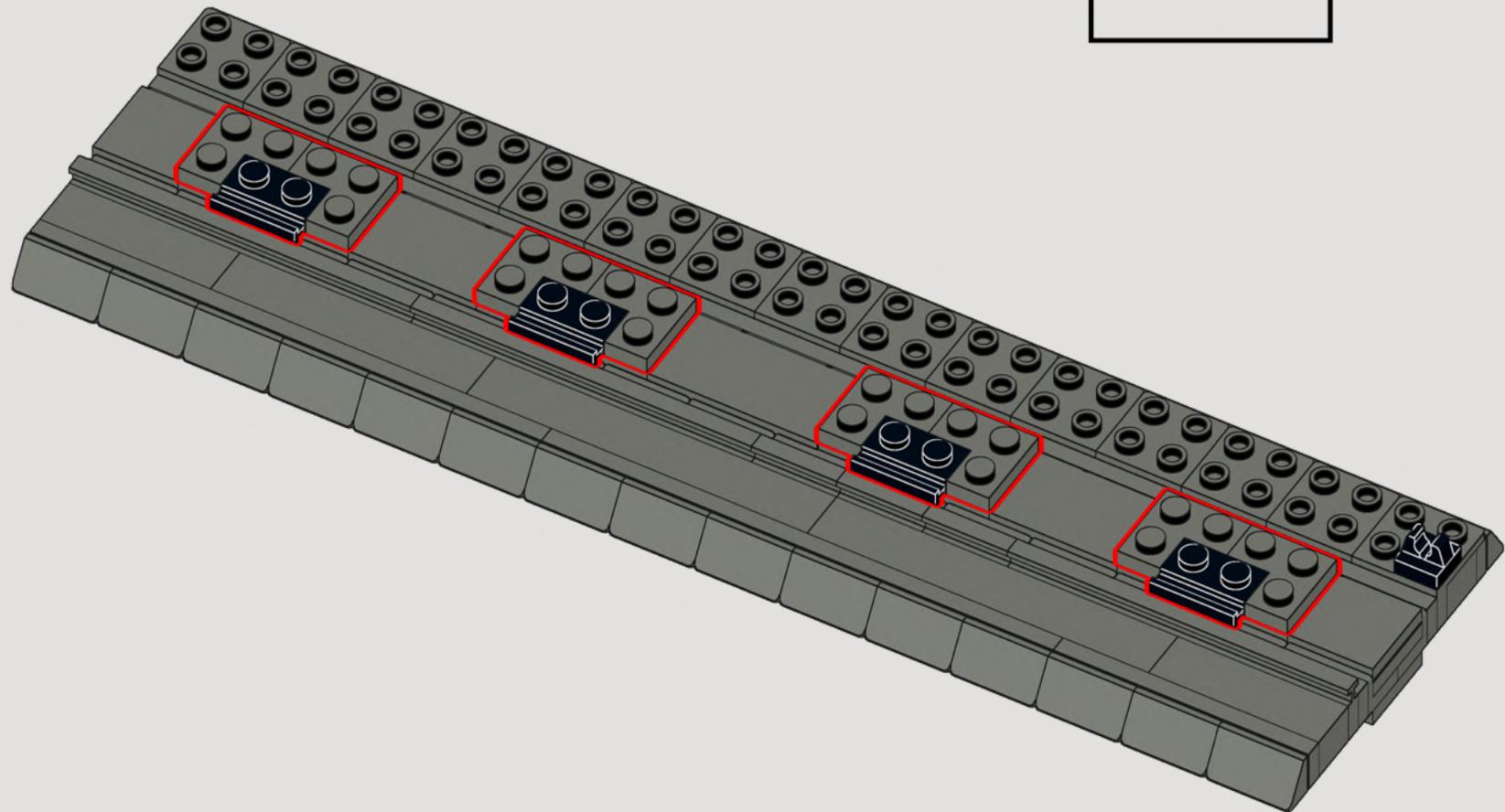


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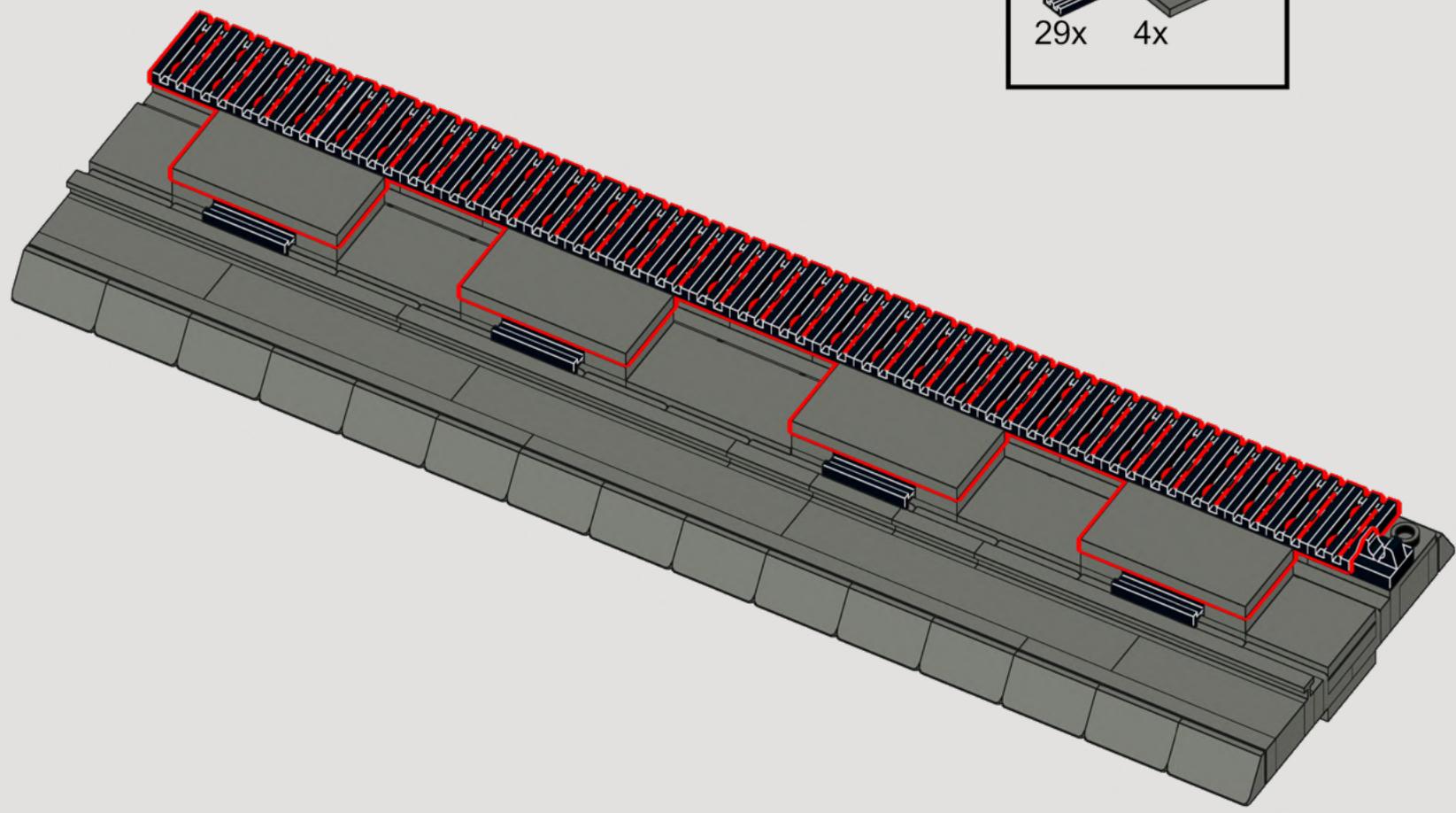
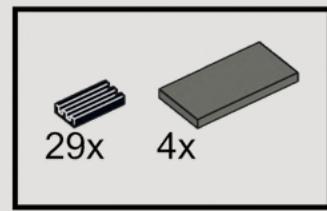




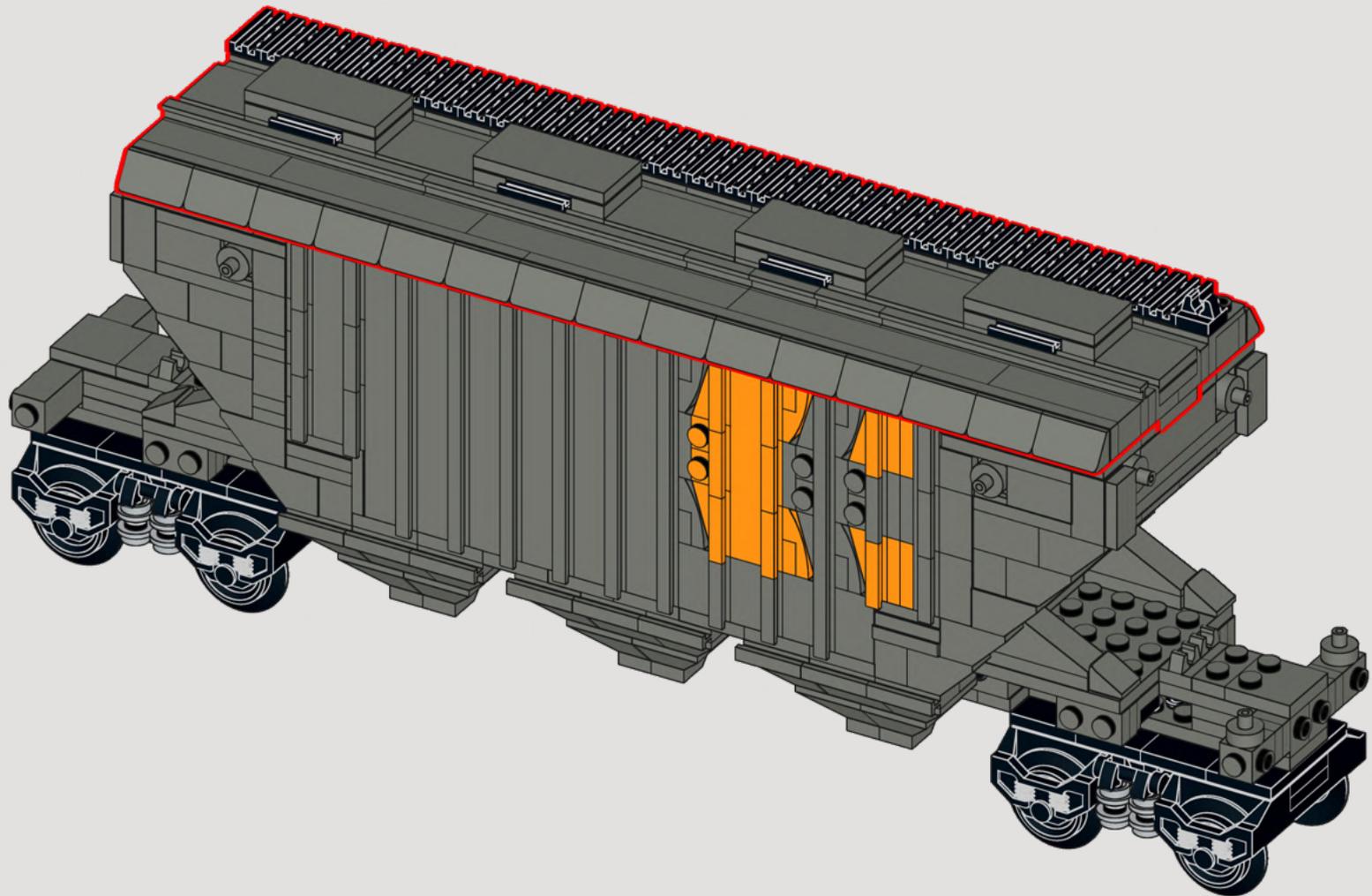
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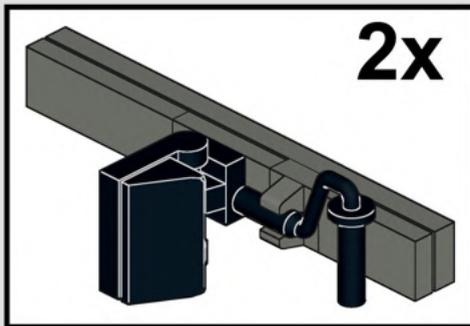
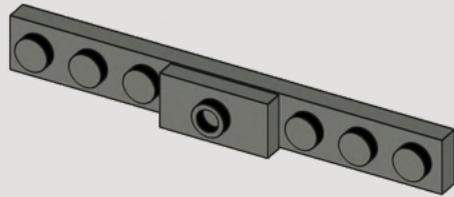
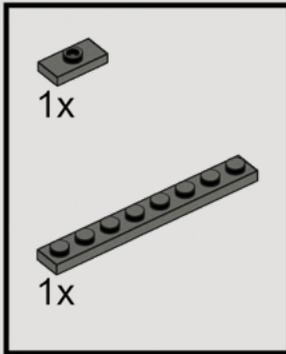
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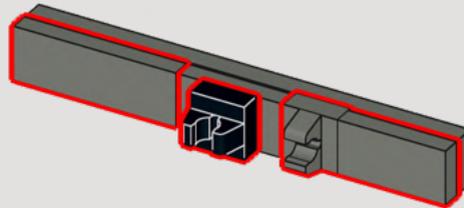
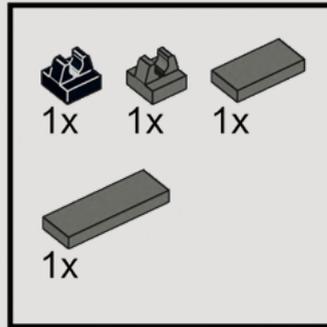
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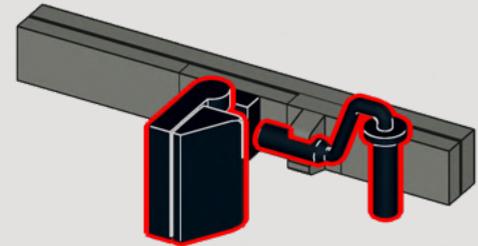
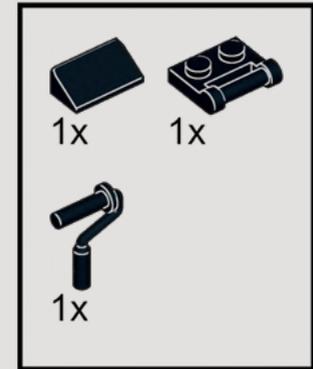
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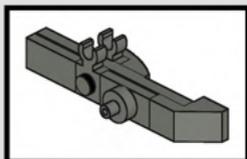
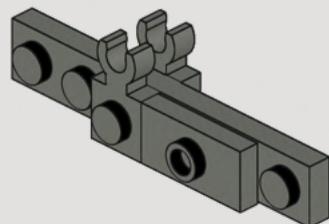
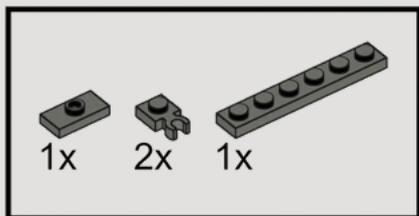


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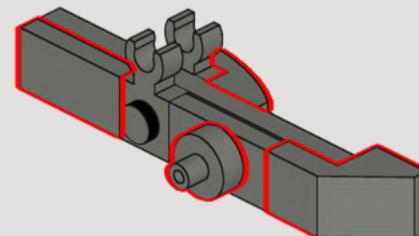
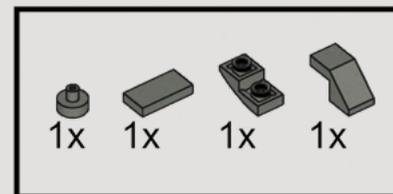
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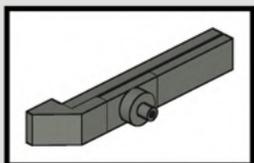
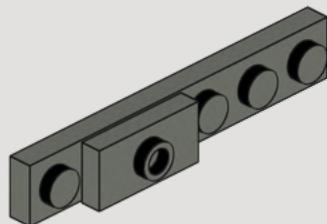
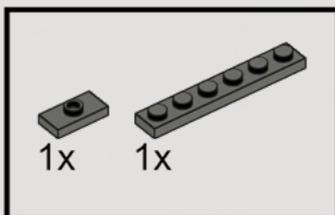
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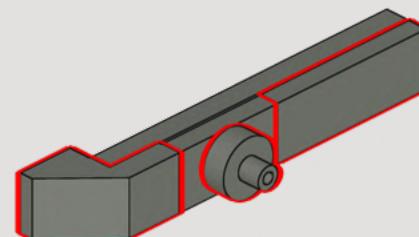
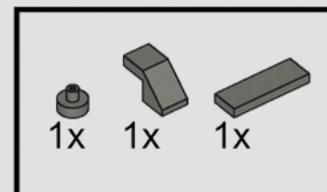
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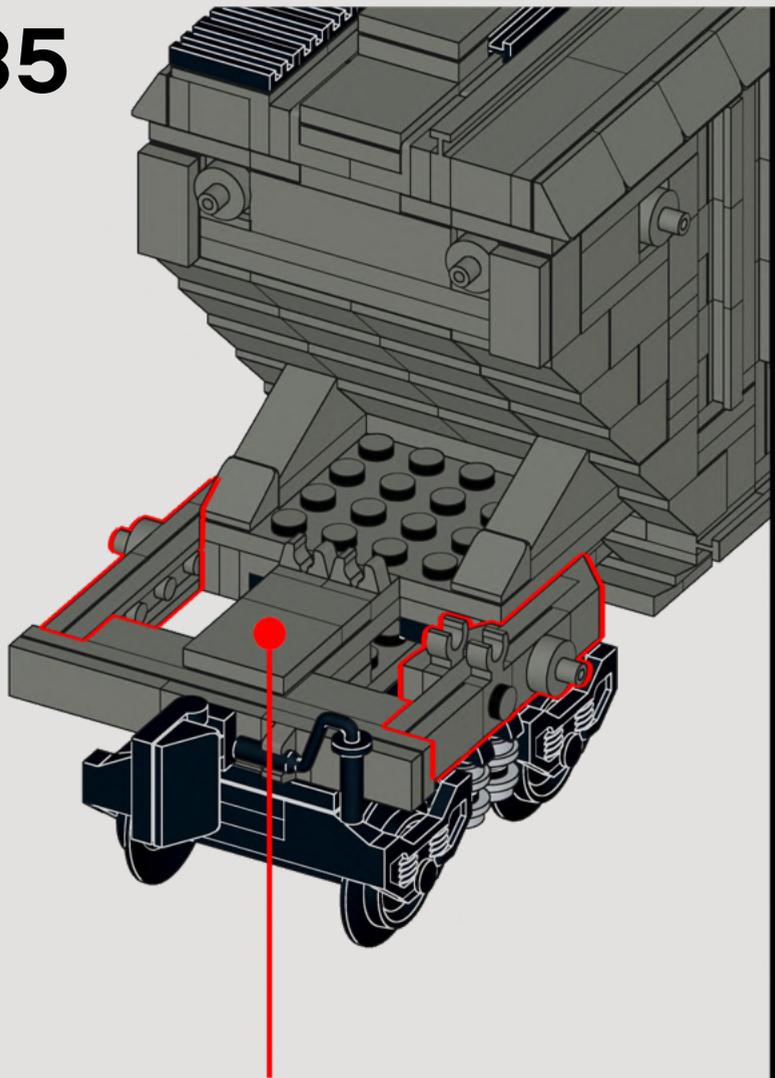
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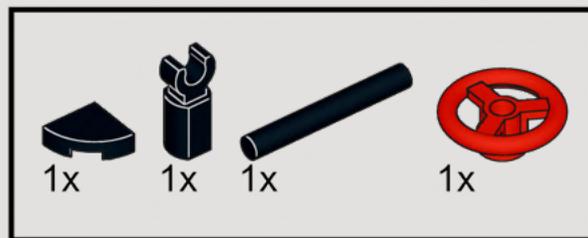
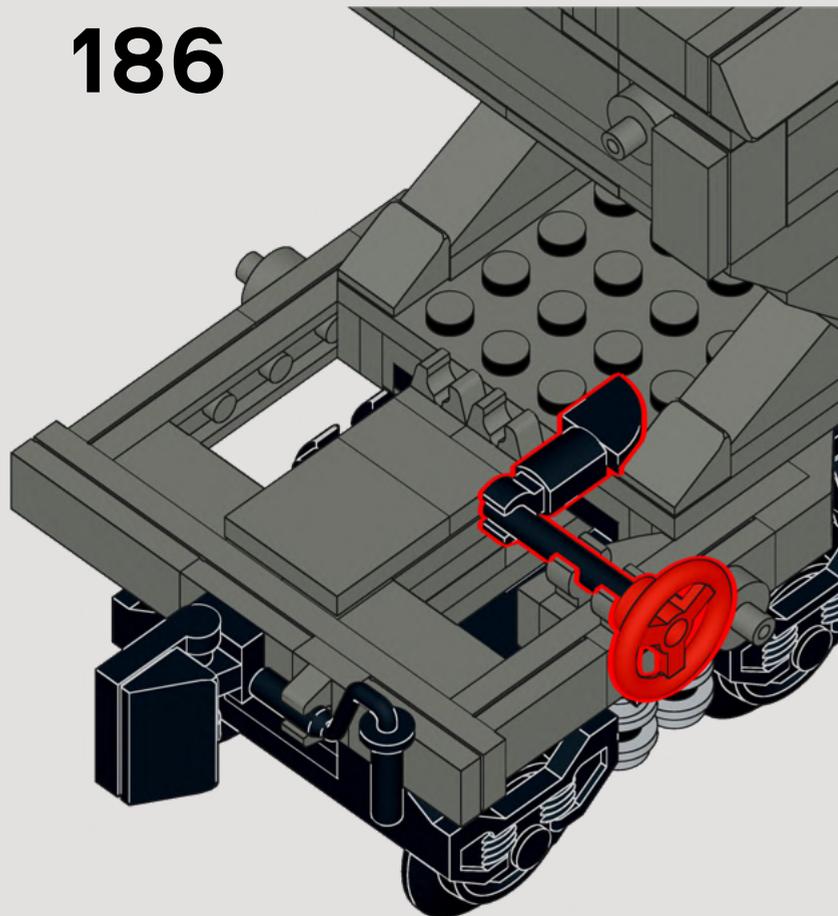


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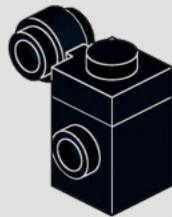
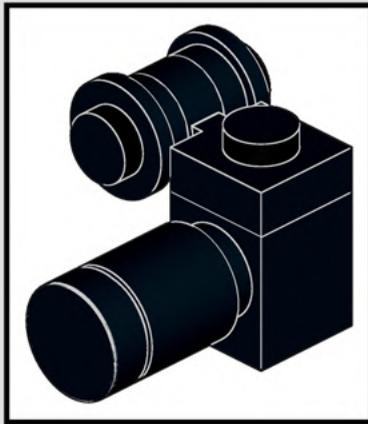
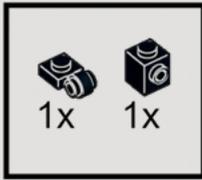


Выбрать правильный торец вагона!

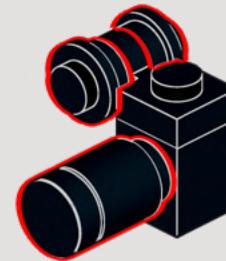
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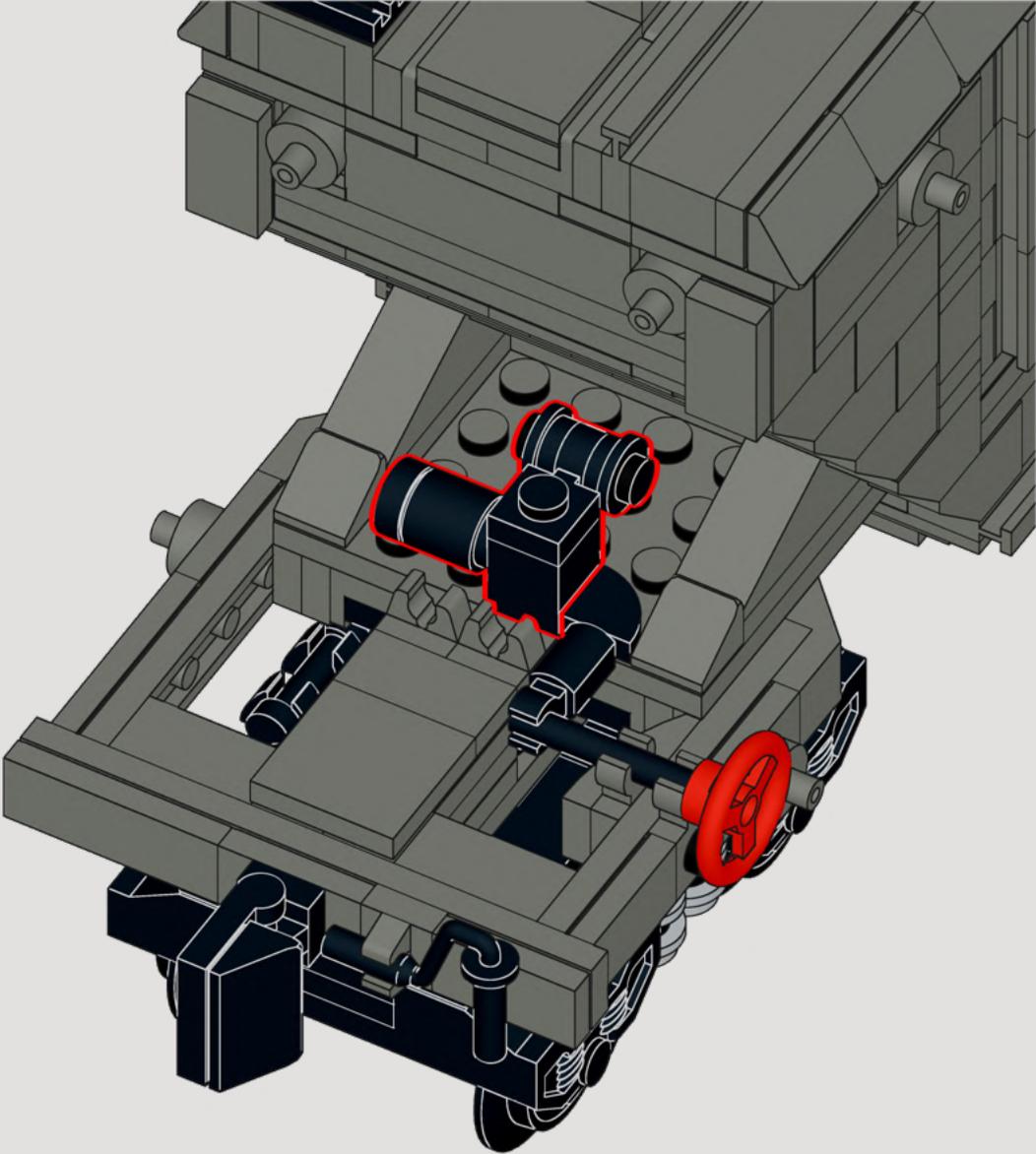
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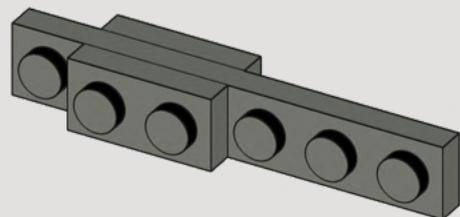
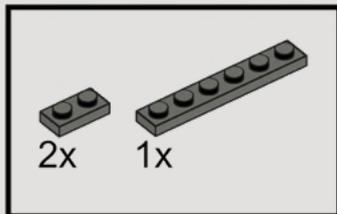
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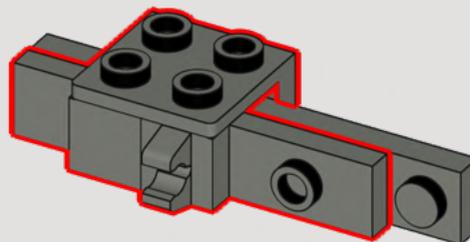
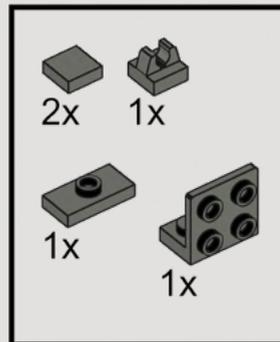
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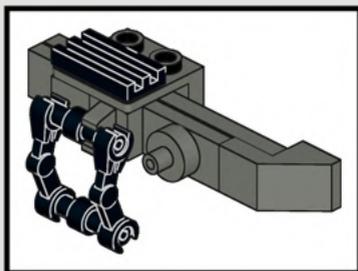
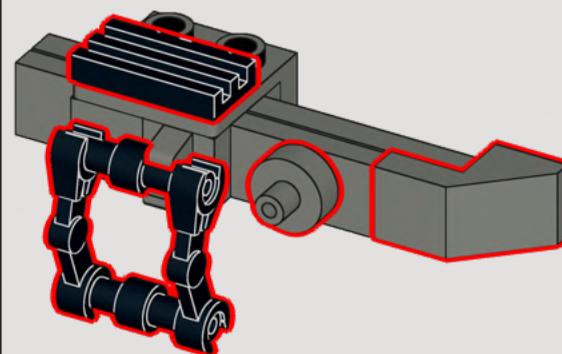
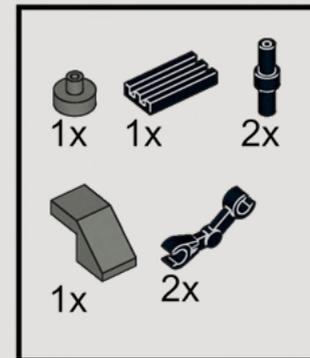
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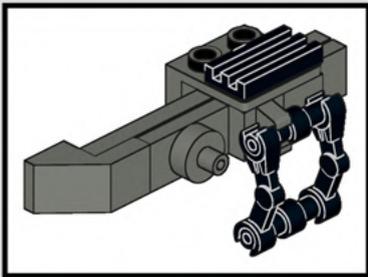
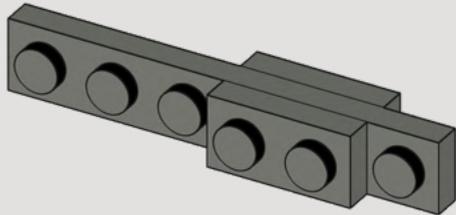
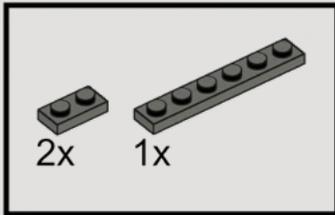
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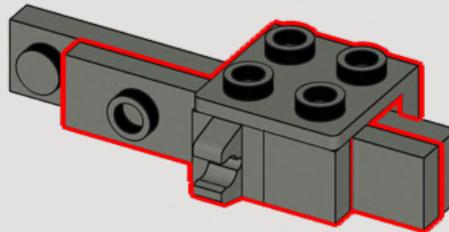
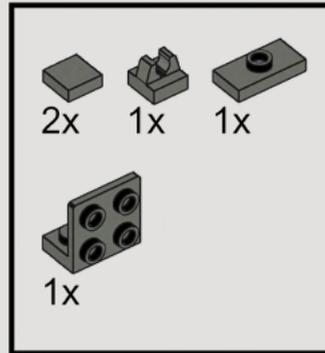
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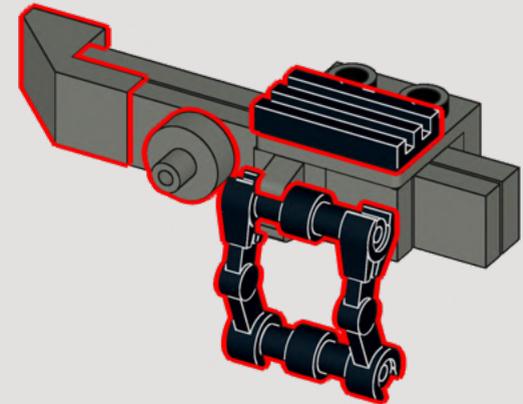
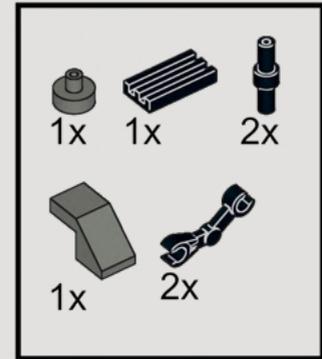
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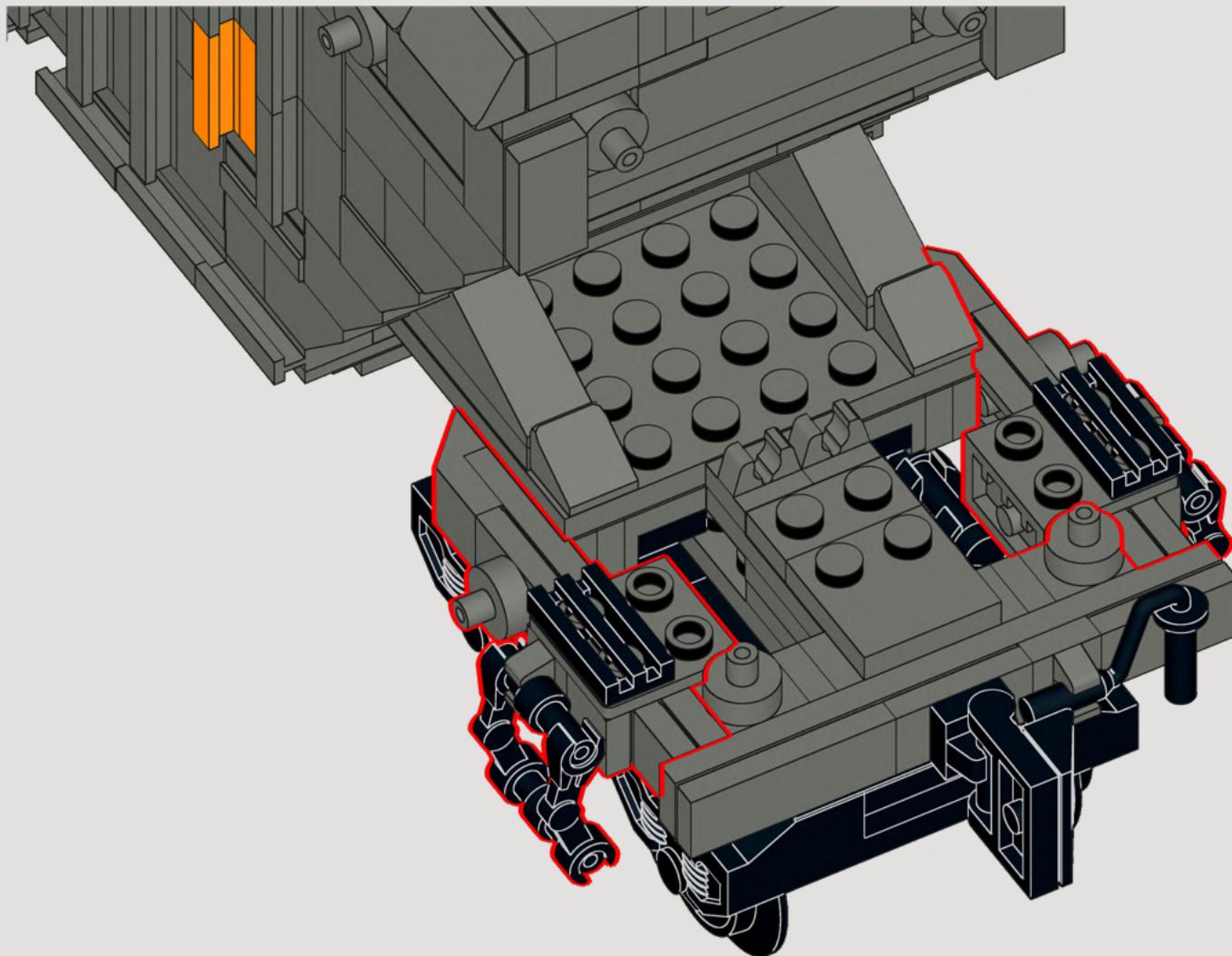


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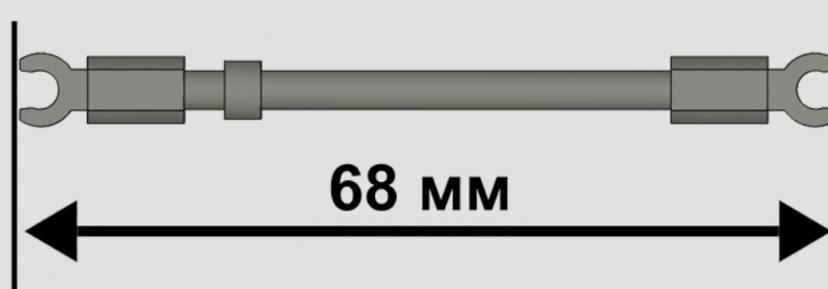
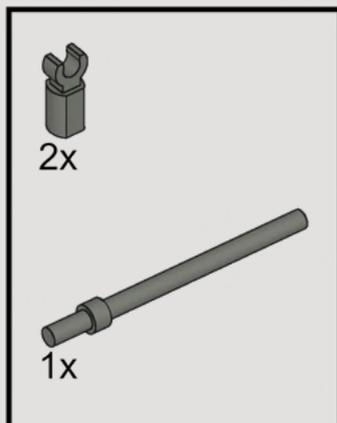


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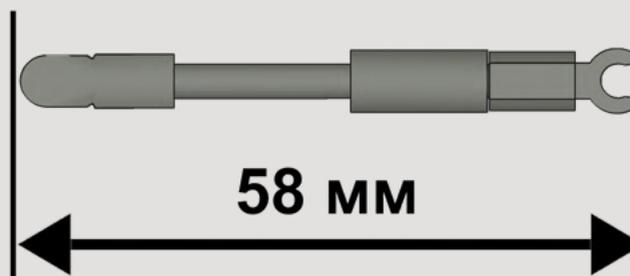
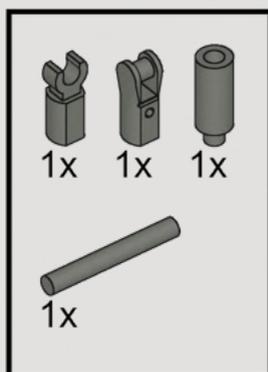


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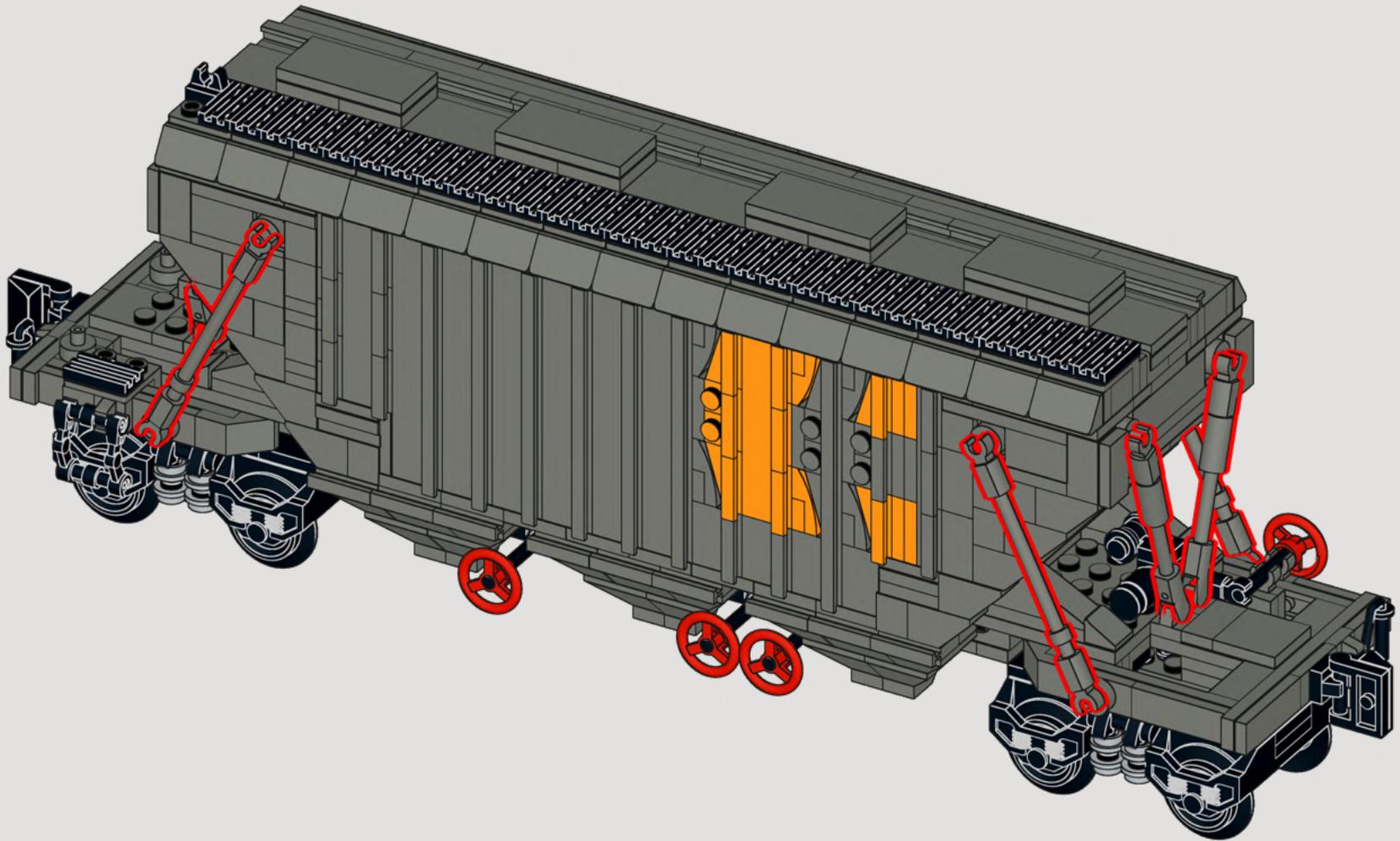
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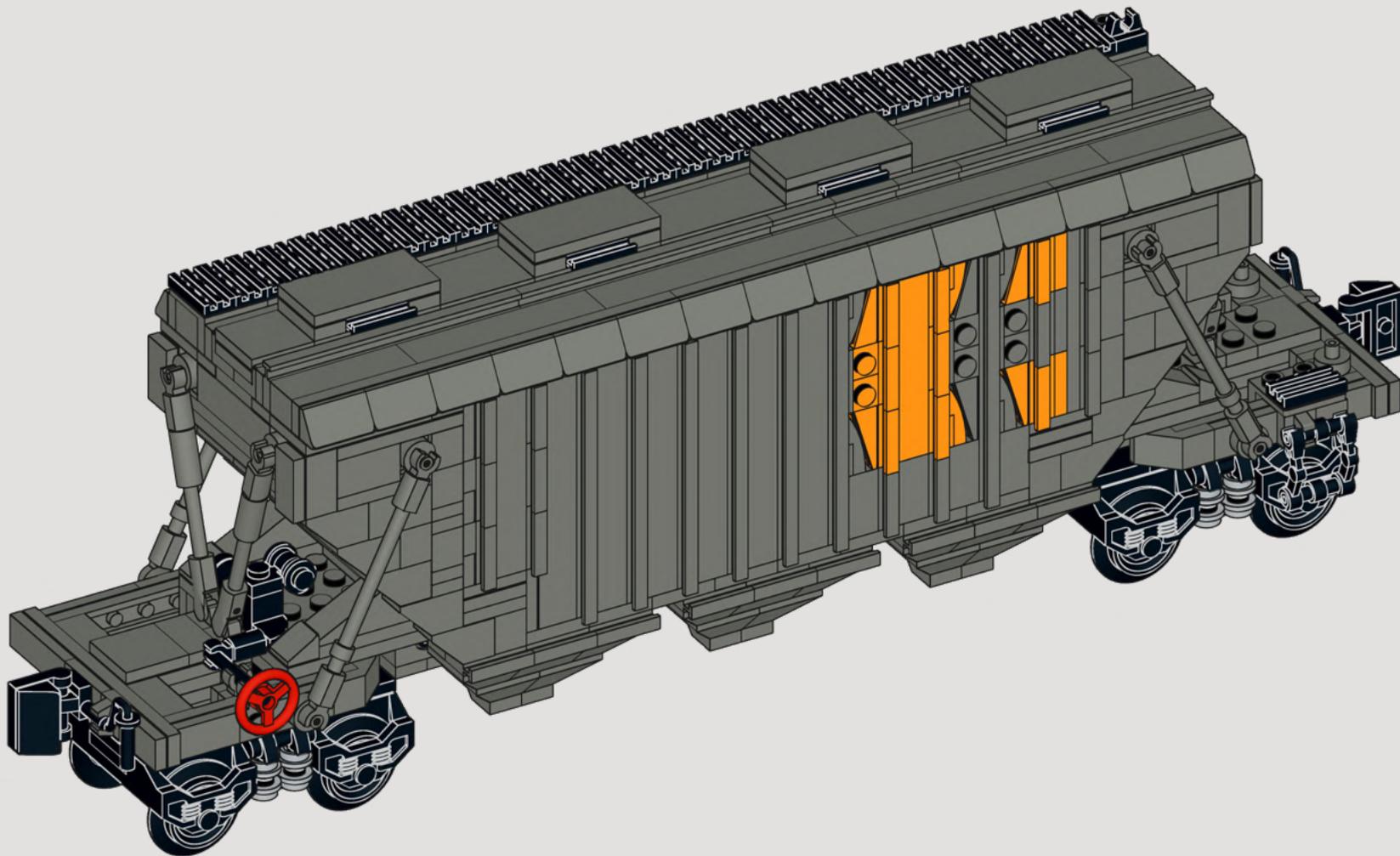


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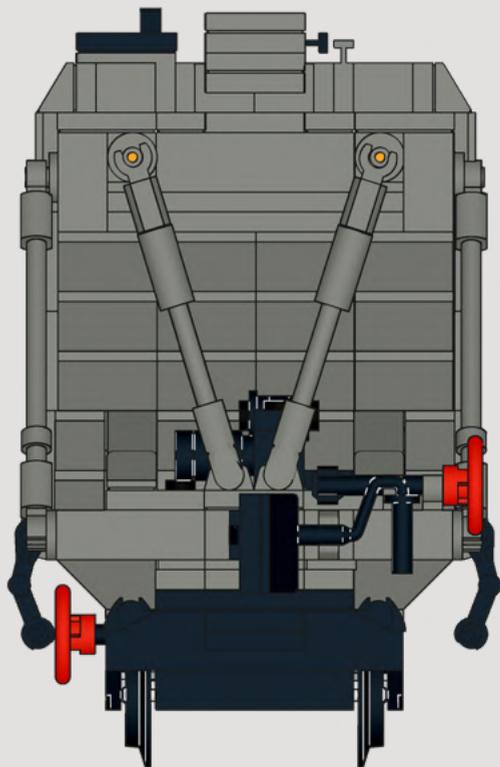
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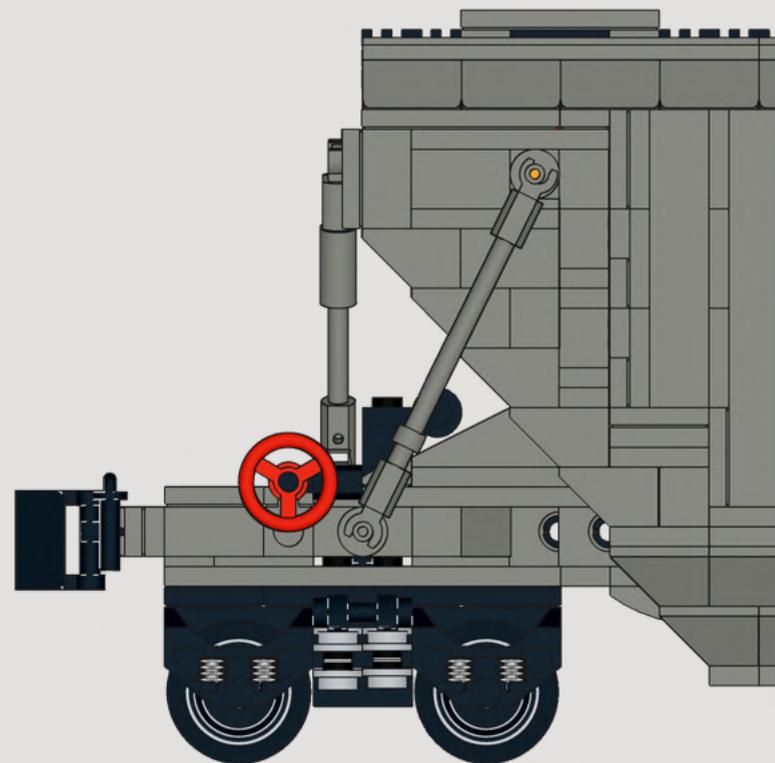
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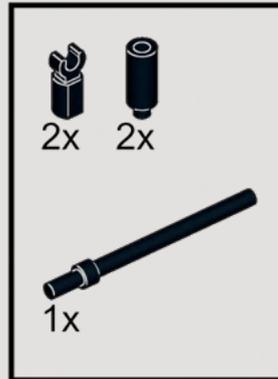
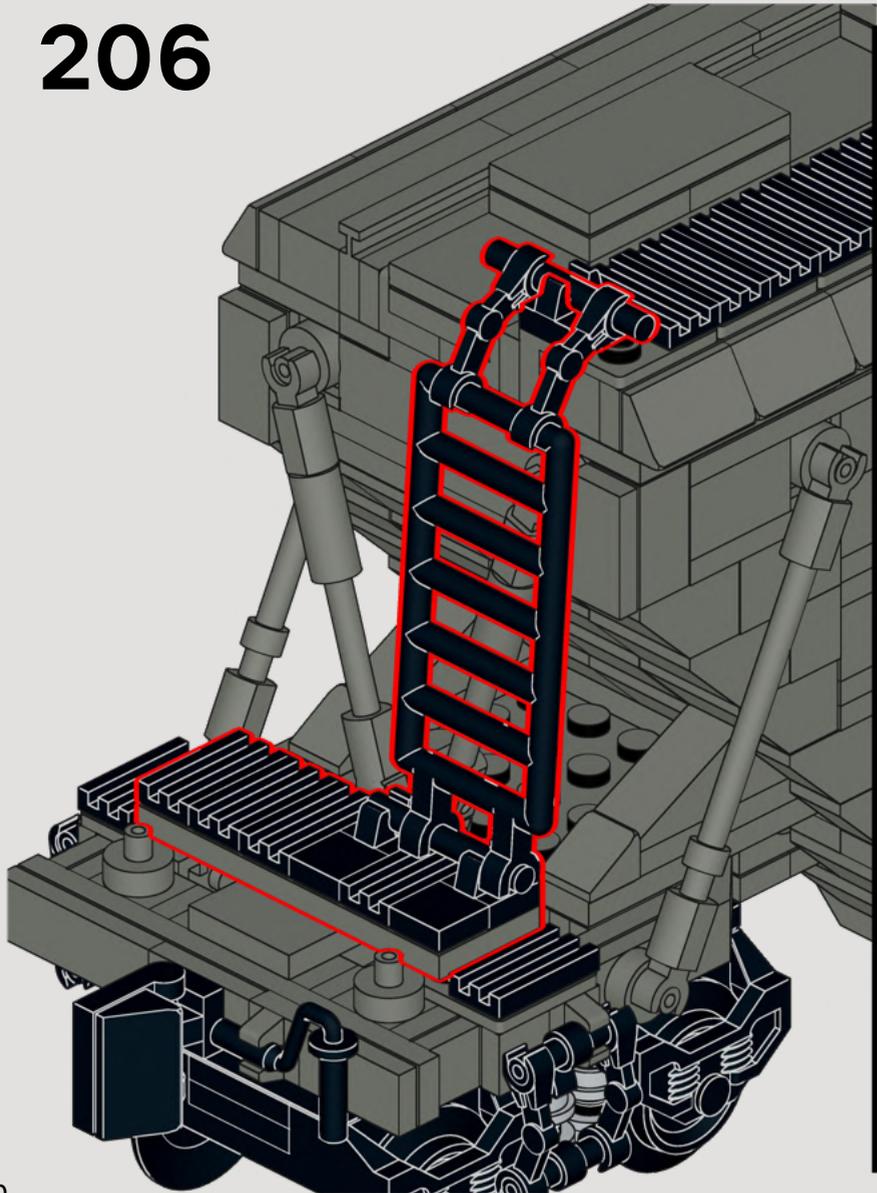
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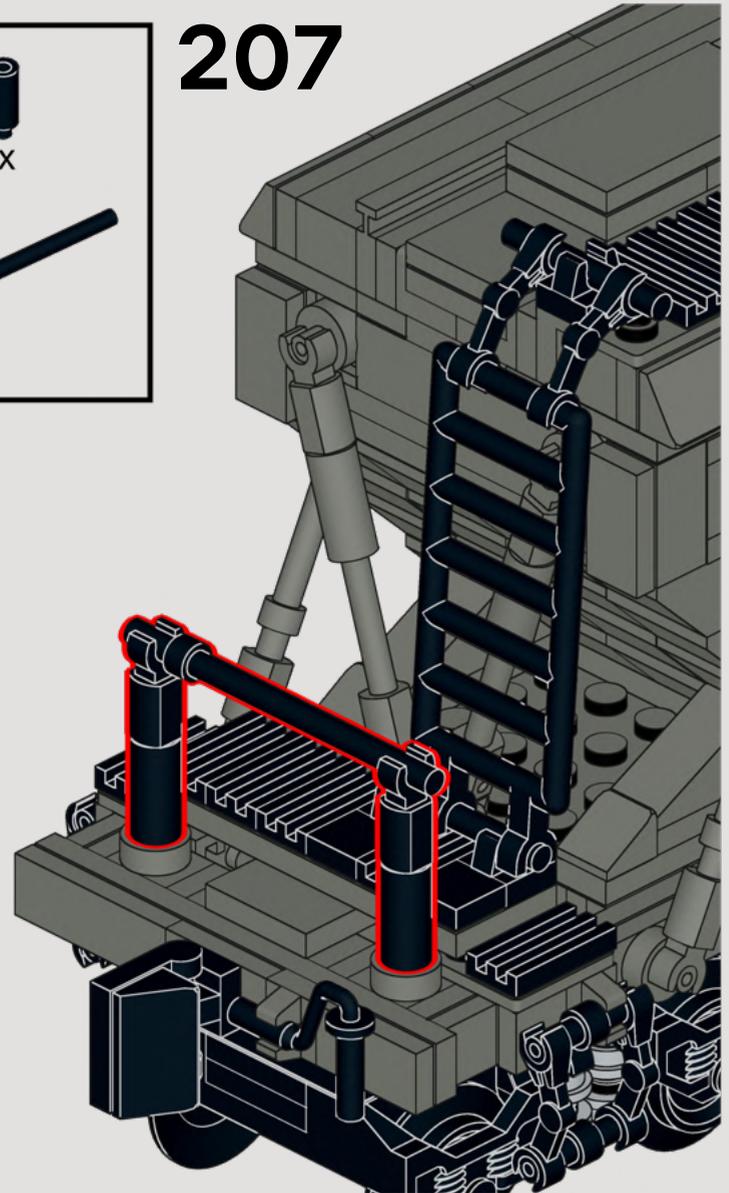
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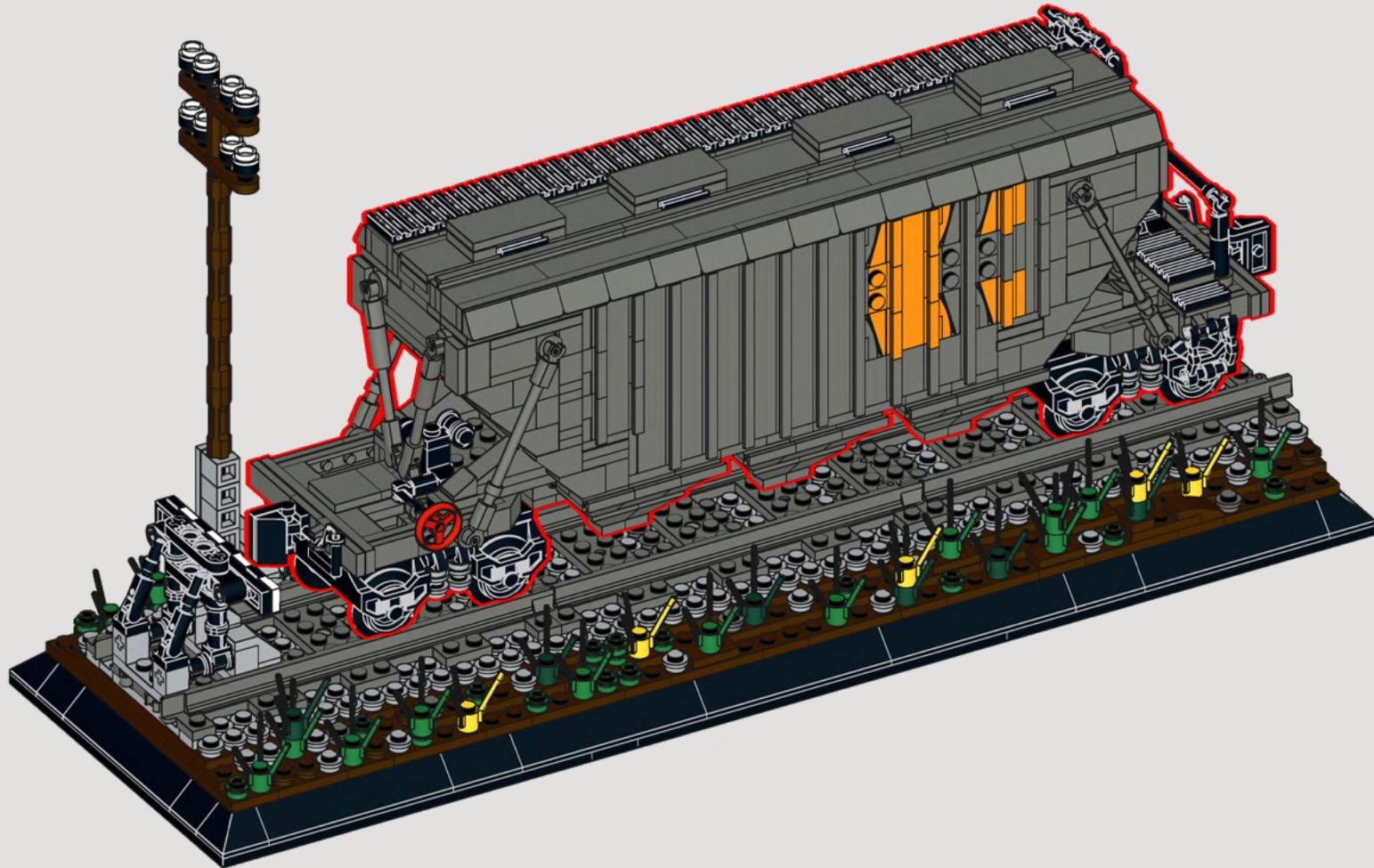
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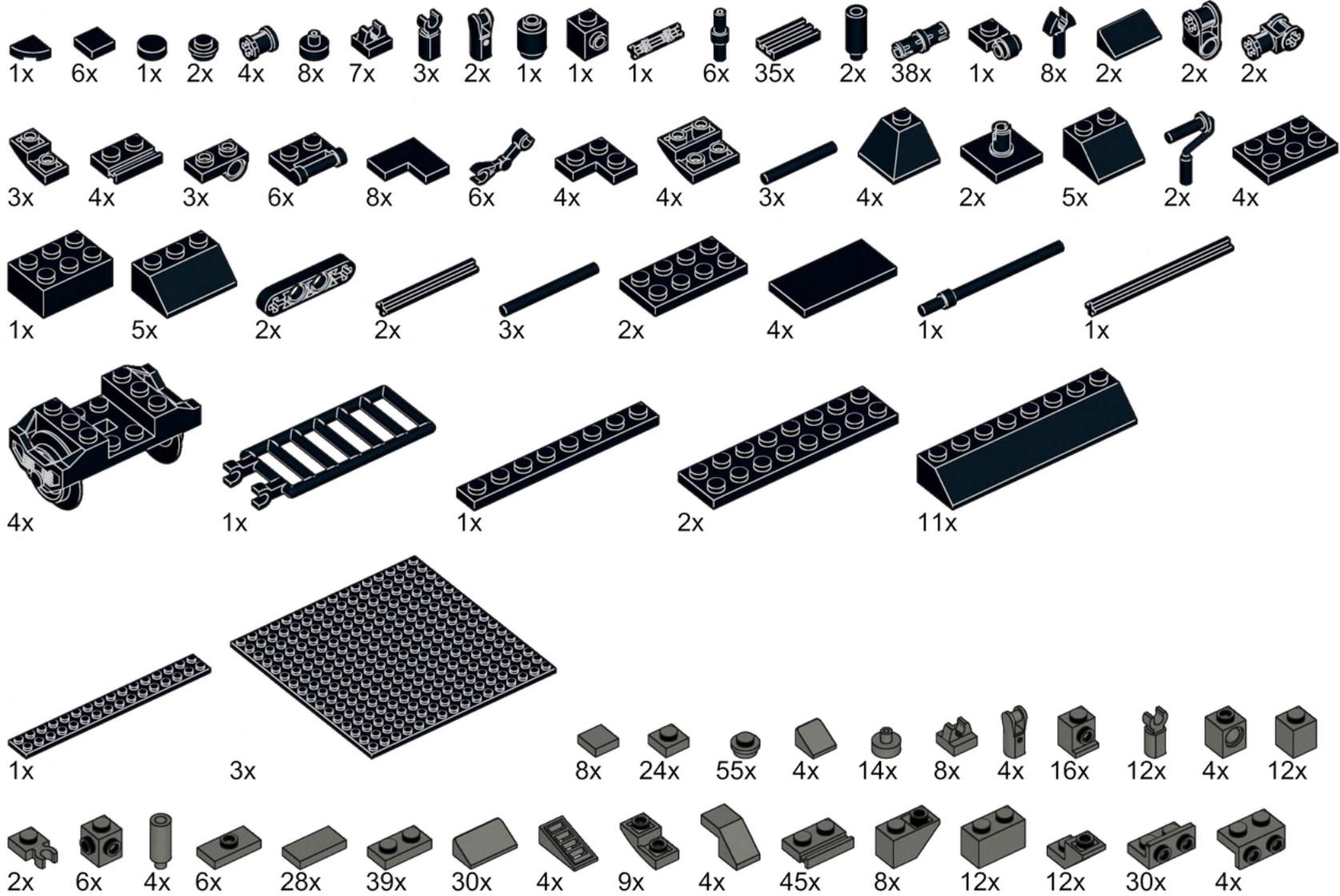


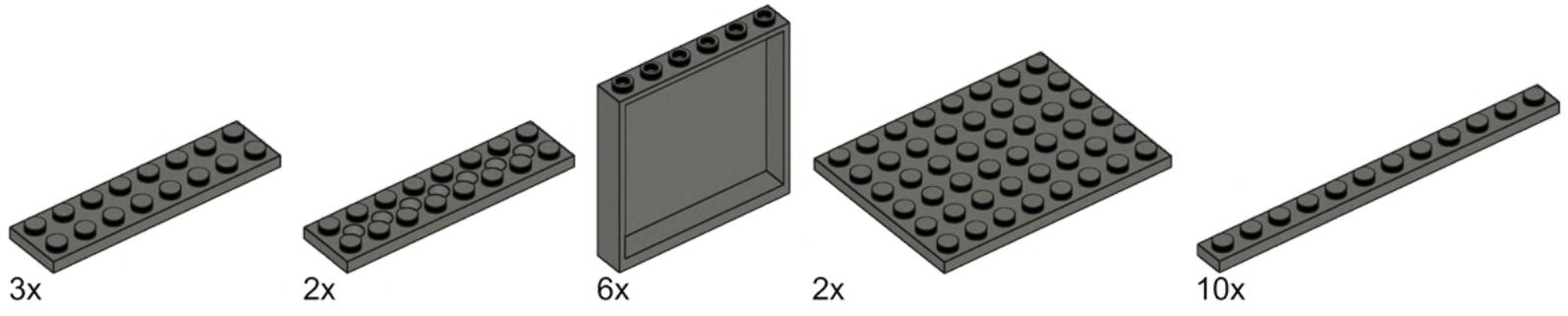
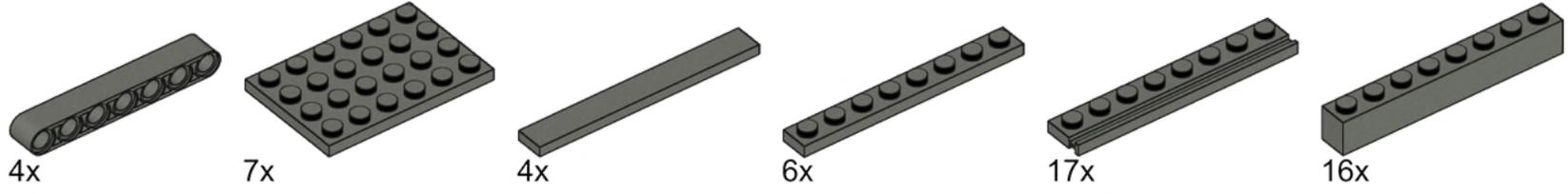
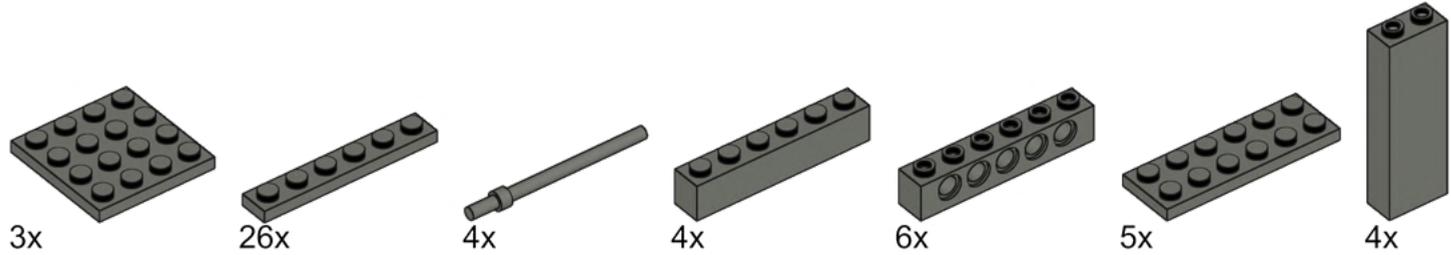
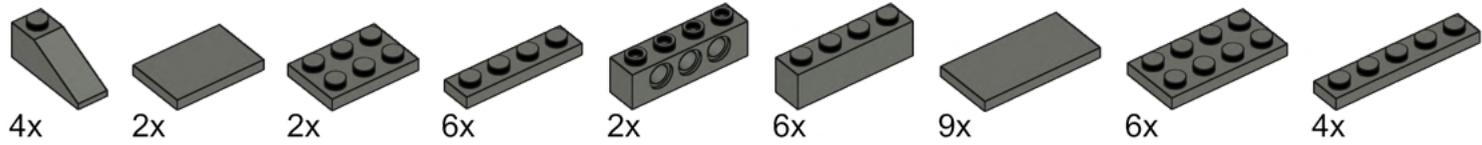
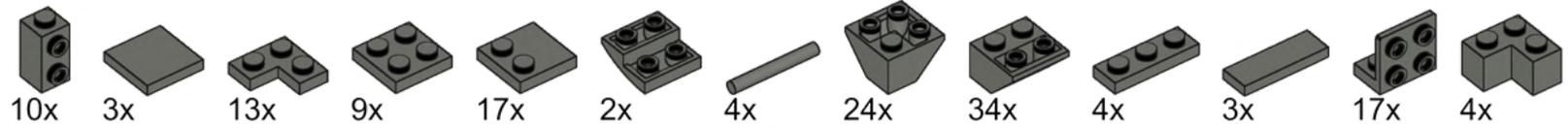
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208





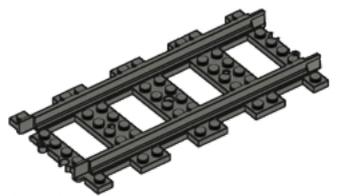




2x



1x



3x



2x



250x



6x



16x



5x



1x



8x



4x



25x



10x



4x



1x



1x



1x



2x



3x



19x



1x



12x



4x



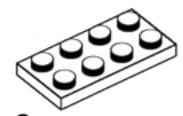
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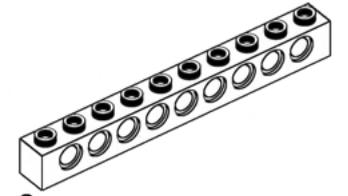
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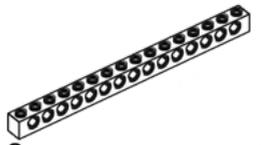
6x



2x



2x



2x



4x



1x



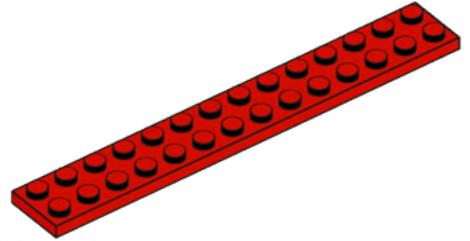
3x



1x



4x



4x



2x



6x



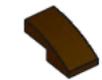
1x



1x



4x



1x



4x



2x



9x



12x

