



NASA
Space Shuttle Discovery STS-31

Wingspan:	78.04 ft
Launches:	29
Active:	August 30, 1984 - March 9, 2011
Orbital Velocity:	17,500 mph
Max Altitude:	350 miles
Earth Orbits:	6,830
Time in Space:	1 year, 22 hours, 29 minutes, 33 seconds



NASA **esa**
Hubble Space Telescope

Launch:	April 24, 1990
Launch Mass:	24,290 lbs
Velocity:	6.72 miles
Deploy Altitude:	350 miles

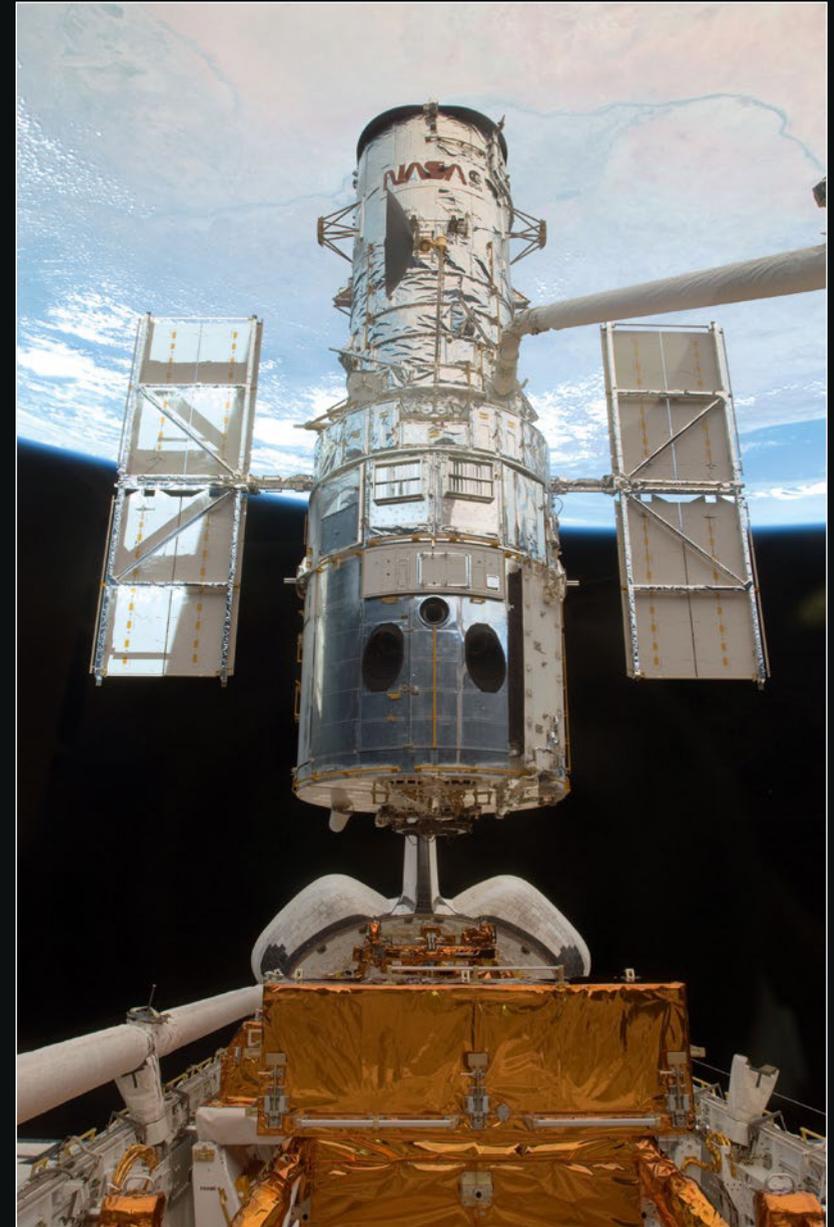
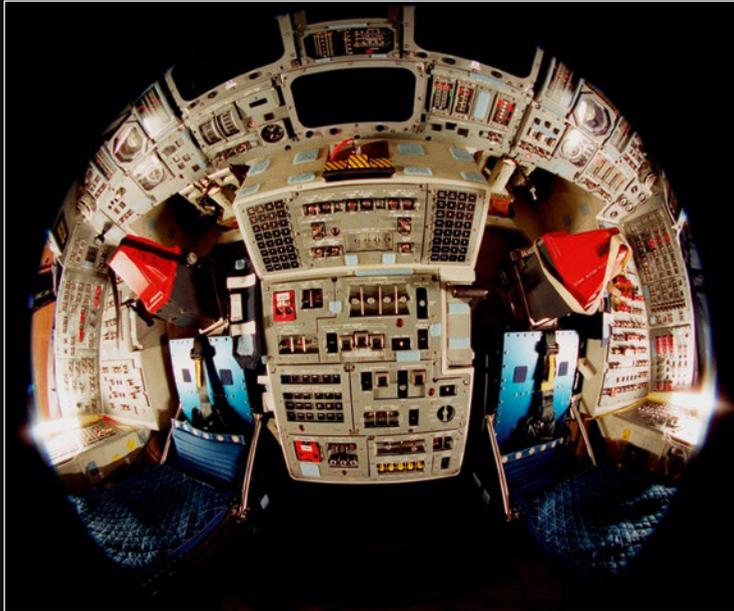


EINE IKONE DER RAUMFAHRT

Die Orbiterflotte der NASA für Missionen mit dem Space Transportation System (STS) bestand einst aus den Spaceshuttles Columbia, Challenger, Discovery, Atlantis und Endeavour. Insgesamt flogen die Raumfähren 135 Missionen und beförderten 355 Menschen ins All. Die Discovery brachte es auf die meisten Missionen, transportierte die meisten Passagiere und flog höher und weiter als die anderen 4 Orbiter. Der Discovery war es auch vorbehalten, im April 1990 im Rahmen der Mission STS-31 das Hubble-Weltraumteleskop im Weltraum auszusetzen. Aus Anlass des 40-jährigen Jubiläums des Spaceshuttle-Programms im Jahr 2021 möchten wir an diese berühmte Mission erinnern.

DIE MISSION

Das Aussetzen des Hubble-Weltraumteleskops im April 1990 war einer der wichtigsten Fortschritte in der Astronomie seit Galileos Teleskop. Erstmals wurde ein größeres optisches Teleskop im Weltraum platziert – und somit deutlich höher als auf jedem Berggipfel. Ohne atmosphärische Verzerrungen, Regenwolken und Lichtverschmutzung hat Hubble einen ungehinderten Blick aufs Universum. Wissenschaftler konnten mit Hubble die entferntesten Sterne und Galaxien sowie die Planeten unseres Sonnensystems beobachten.



ANMERKUNGEN DES DESIGNTAMS

Das Spaceshuttle zählt zu den komplexesten Luft- und Raumfahrzeugen, die jemals gebaut wurden. Deshalb war es eine mehr als anspruchsvolle Herausforderung, diesen Orbiter als LEGO® Modell darzustellen. Wir mussten eine glatte Außenhülle gestalten – und einen geeigneten Frachtraum für die Nutzlast. Am kniffligsten war es jedoch, ein funktionierendes Fahrwerk zu integrieren. Front- und Hauptfahrwerk zu koppeln, ohne die Nutzlastbucht zu verkleinern und ohne die Konstruktion des Modells zu beeinträchtigen, war echte Puzzlearbeit! Die komplexe Technik und die ungebändigte Kraft dieser Raumfahrzeuge ist absolut überwältigend. Das Faszinierendste an der Raumfahrt sind jedoch die beförderten Menschen. Deshalb gefallen mir an diesem Modell auch die winzigen blauen Sitze am besten, auf denen die 5 Teilnehmer dieser speziellen Mission ins All gebracht wurden. Als Kind habe ich viele Stunden damit verbracht, meine eigenen Versionen der Mondlandefähre und des Spaceshuttles „Discovery“ aus LEGO Steinen zu bauen. An diesem aufregenden Projekt mitwirken zu dürfen, war ein echtes Privileg.

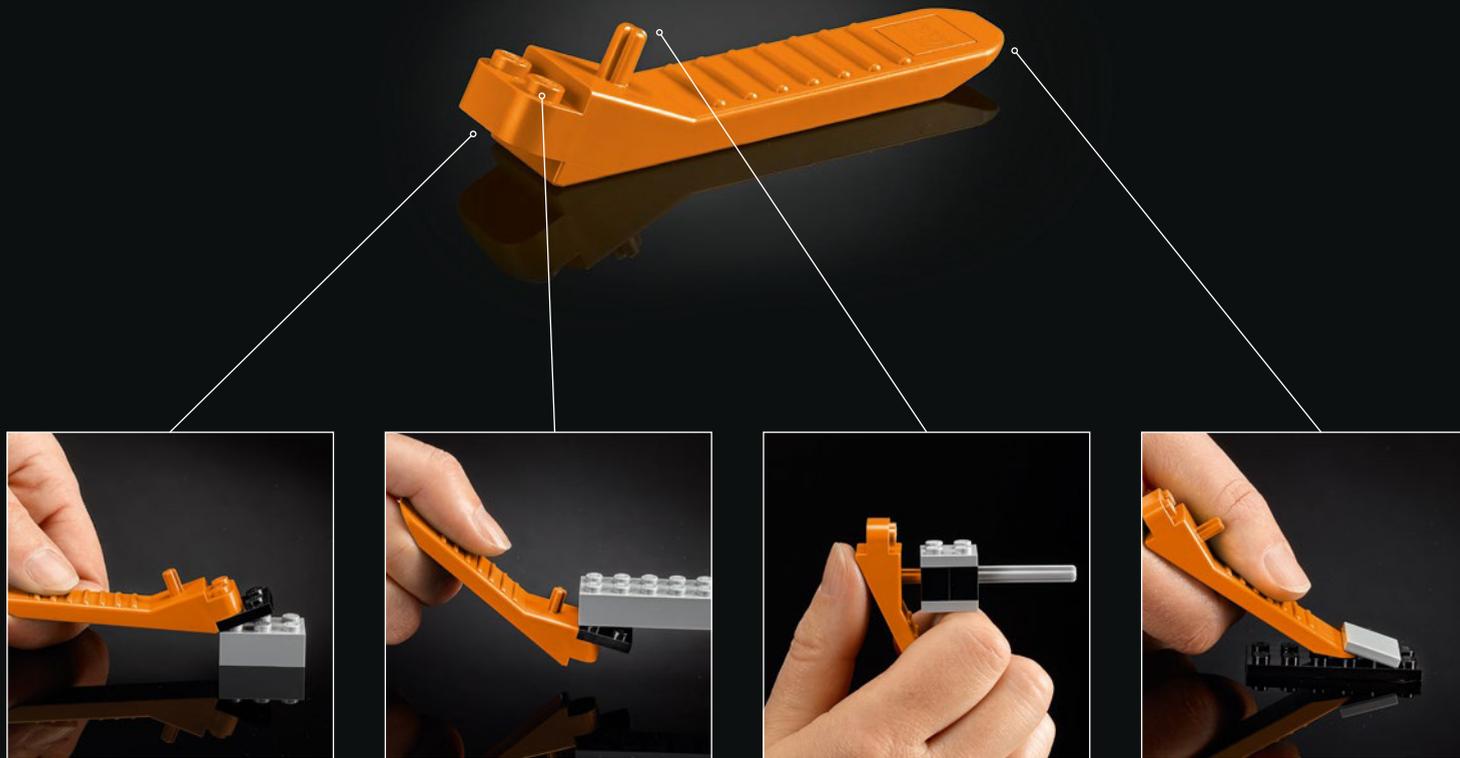
LEGO® Designer Milan Madge



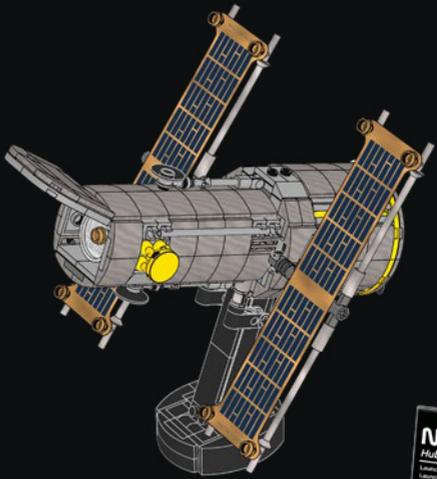
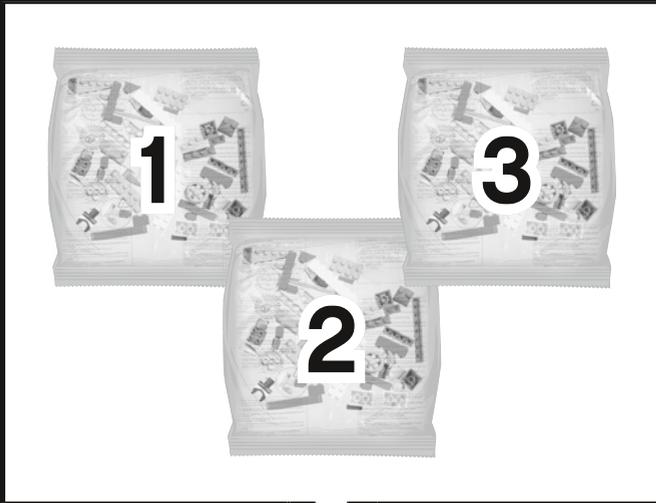


KÜNFTIGE UNTERFANGEN

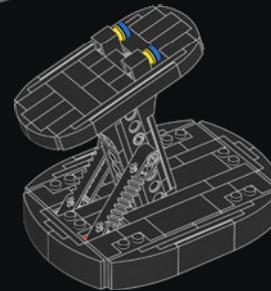
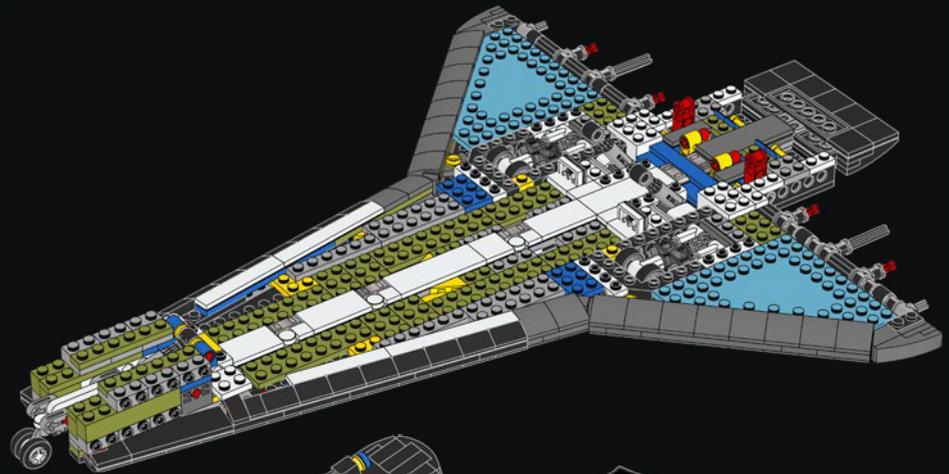
Seit der Außerdienststellung der Spaceshuttles im Jahr 2011 ist die NASA öffentlich-private Partnerschaften mit Unternehmen wie Boeing und SpaceX eingegangen, um eine neue Generation von Raumschiffen und Startsystemen zu entwickeln, die Astronauten in niedrige Erdumlaufbahnen und zur Internationalen Raumstation bringen. Während die Luft- und Raumfahrtindustrie jetzt an Transportsystemen für erdnahe Umlaufbahnen arbeitet, kann sich die NASA verstärkt auf den Bau von Raumschiffen und Raketen für den nächsten riesigen Sprung konzentrieren – genauer gesagt auf Mond- und Marsmissionen.



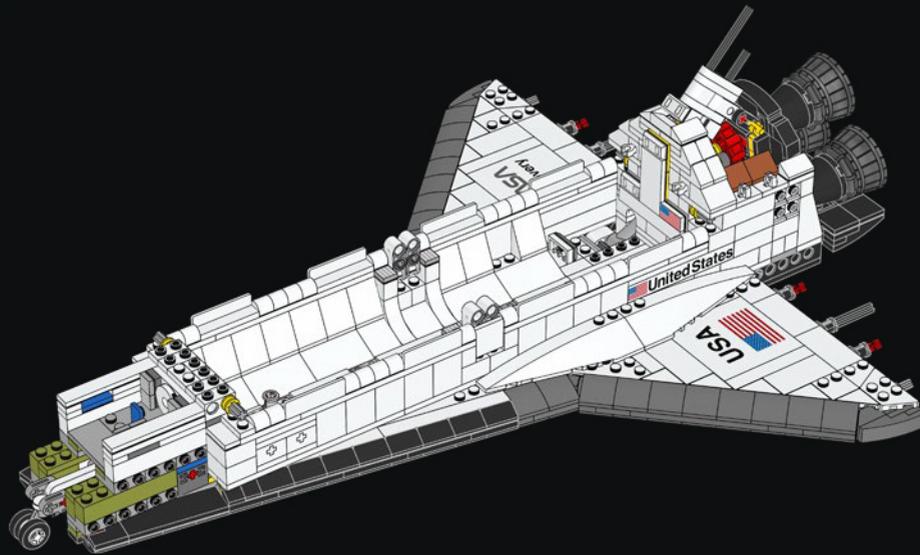
LEGO.com/brickseparator

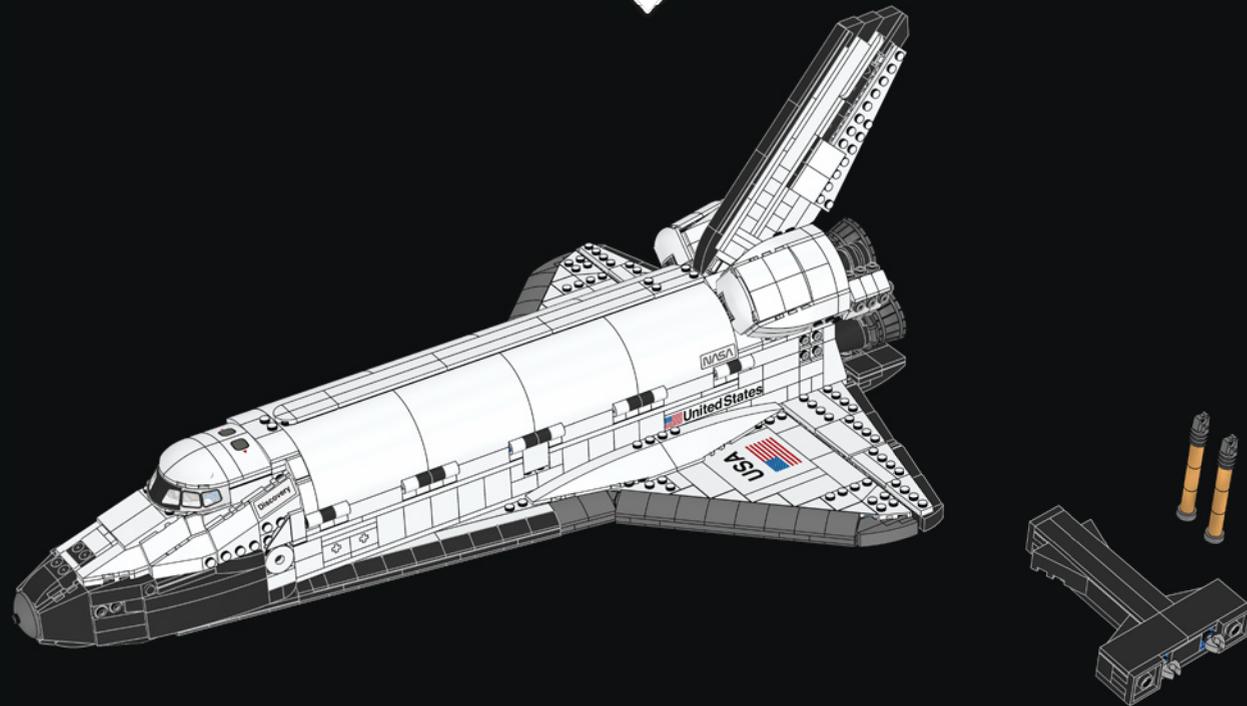


NASA **esa**
Hubble Space Telescope
Launched: April 24, 1990
Launch Weight: 12,400 lbs
Orbiting Altitude: 340 miles



NASA
Space Shuttle Discovery STS-31
Launched: February 24, 1984
Launch Weight: 24,000 lbs
Orbiting Altitude: 200 miles





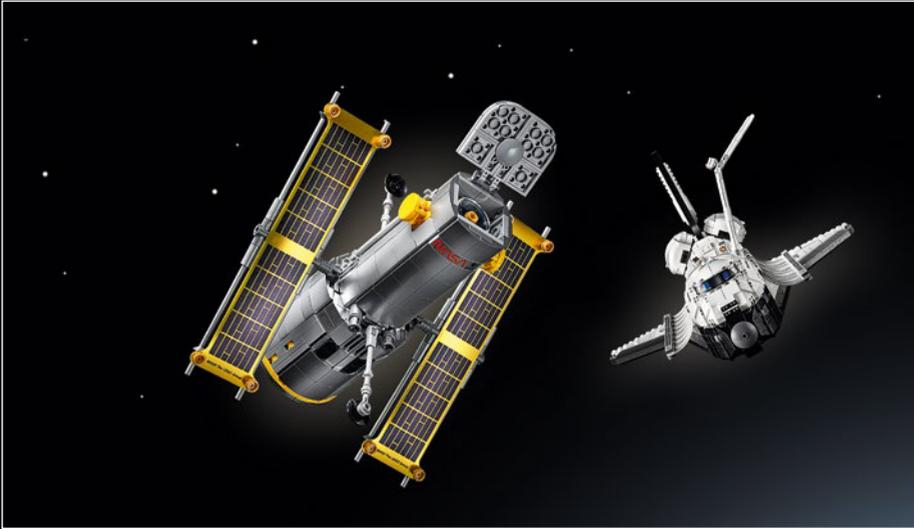
HUBBLE-WELTRAUMTELESKOP

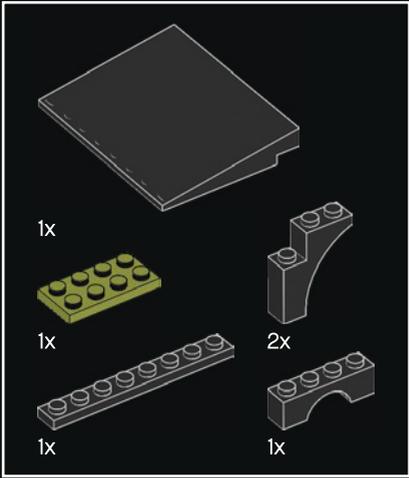
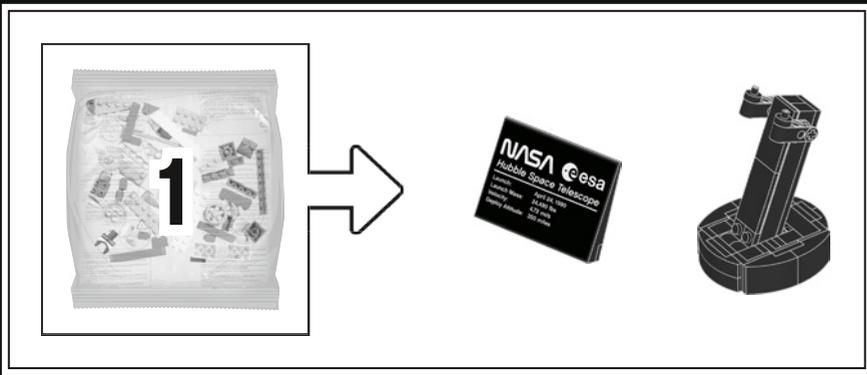
Das Hubble-Weltraumteleskop ist ein Gemeinschaftsprojekt von NASA und ESA, der Europäischen Weltraumorganisation. Von ihrer „hohen Warte“ ungefähr 550 km über der Erde kann das 13,2 Meter lange und 4,2 Meter breite Teleskop Licht derzeit 20 Mal schärfer erkennen als die besten terrestrischen Teleskope.



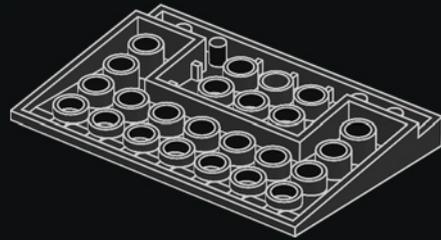
DIE ERSTE GRÖßERE STERNWARTE IM ALL

Hubble sollte mindestens 15 Jahre im Weltall bleiben und die entlegensten Winkel des Kosmos erforschen. Zwischen 1993 und 2009 wurden fünf Wartungsmissionen mit dem Spaceshuttle geflogen. So war es möglich, die geplante Verweildauer deutlich zu verlängern und das Universum mehr als 30 Jahre lang zu beobachten. Während seiner Zeit in der Erdumlaufbahn hat das Teleskop mehr als 1,4 Mio. Beobachtungen gemacht. Astronomen haben diese Daten für mehr als 17.000 Publikationen zu einem breiten Themenspektrum verwendet.

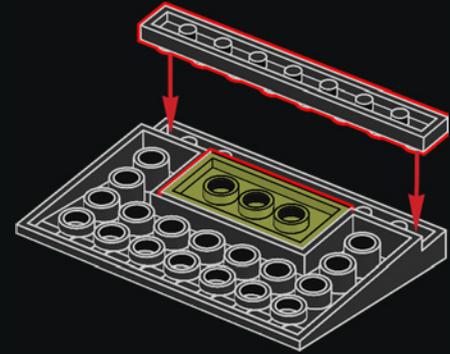




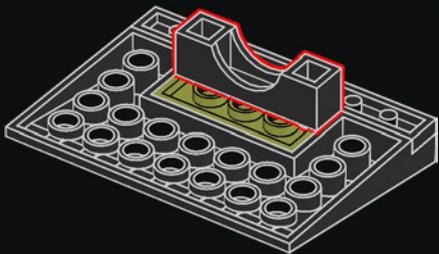
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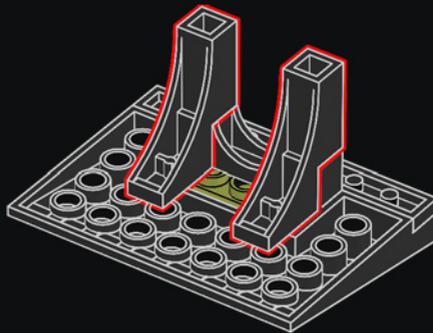
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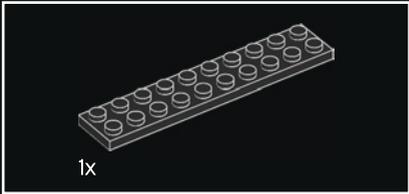
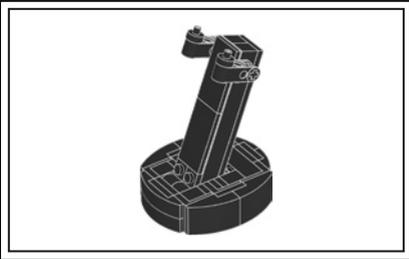


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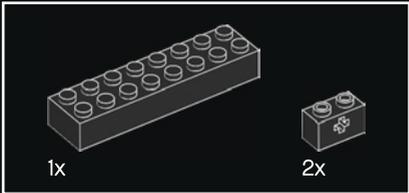
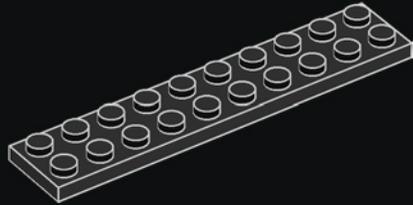
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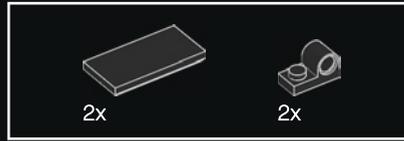
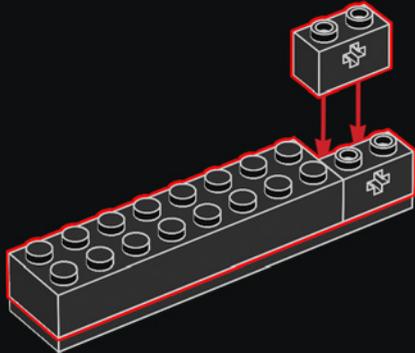
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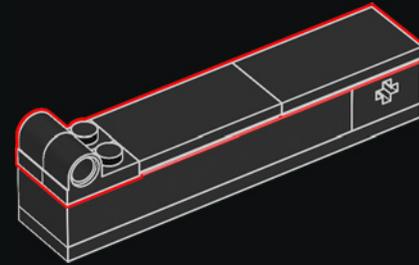
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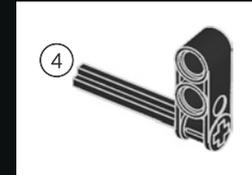
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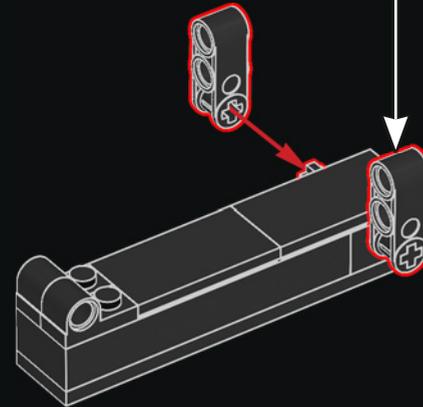
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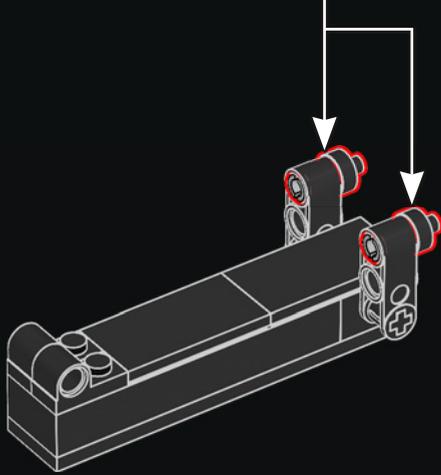
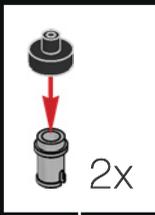


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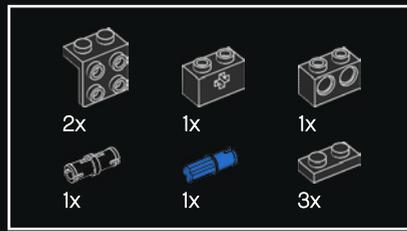
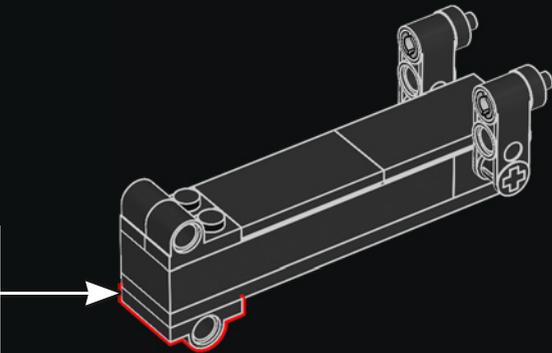




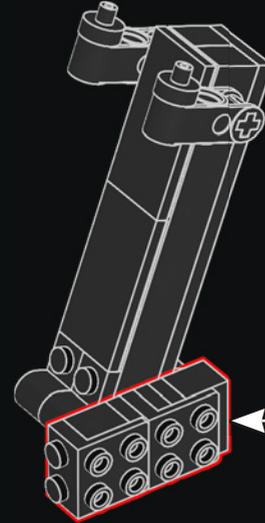
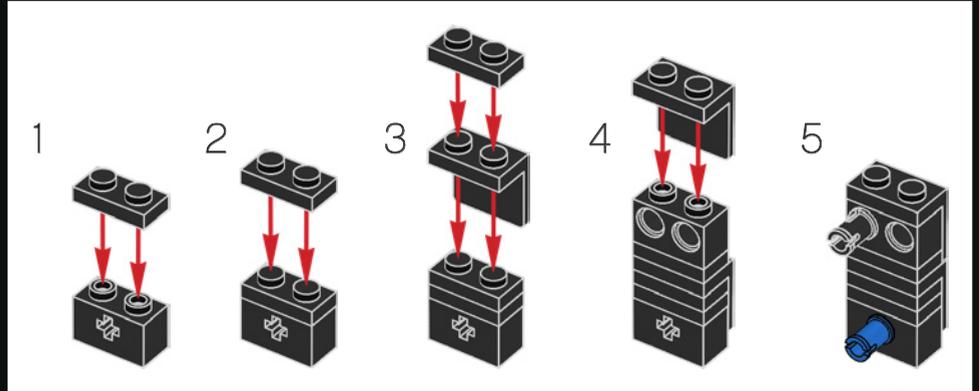
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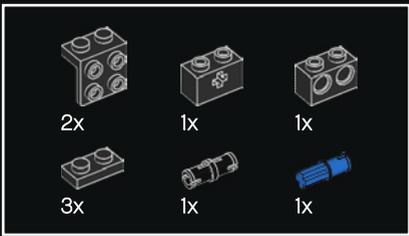


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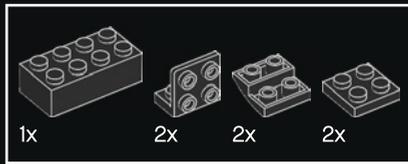
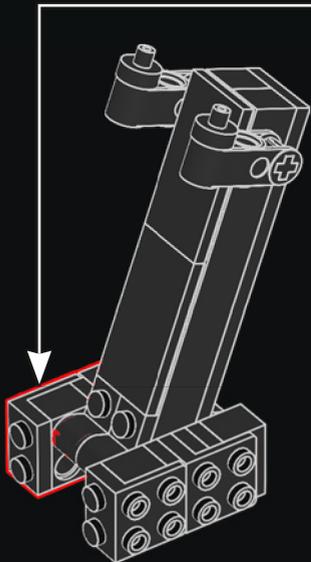
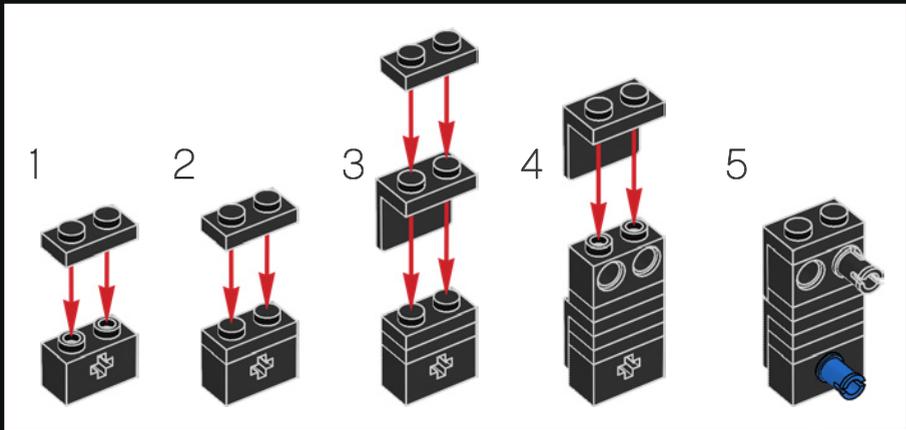


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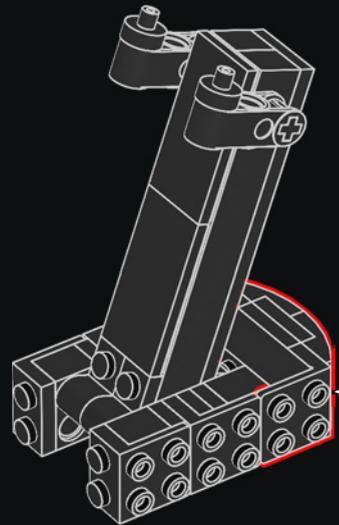
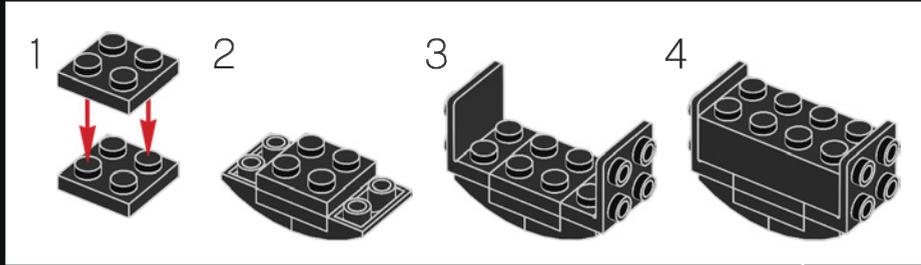




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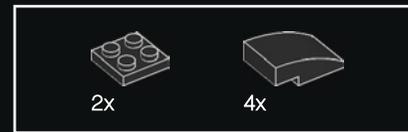
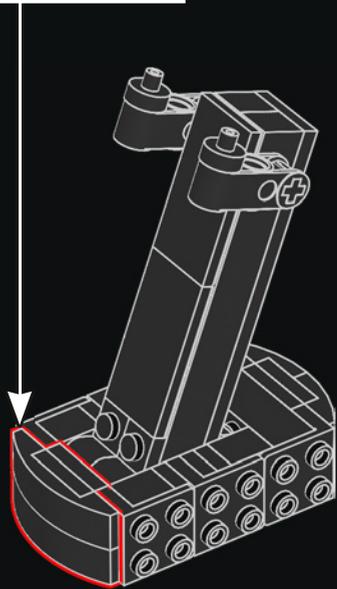
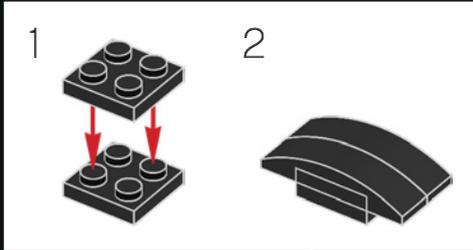


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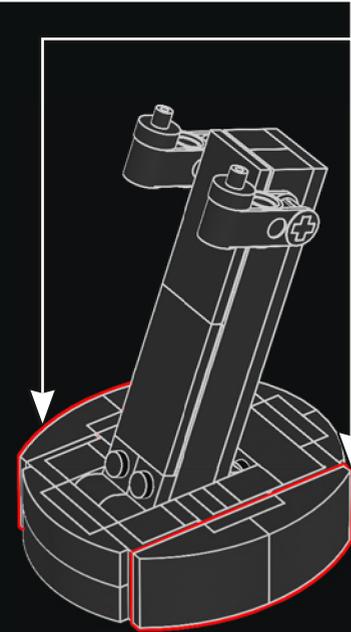
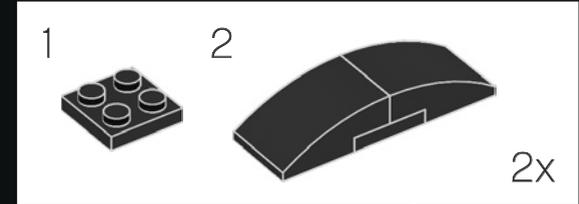




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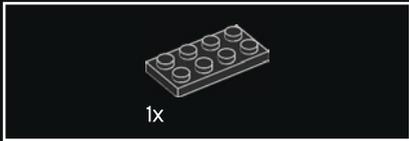
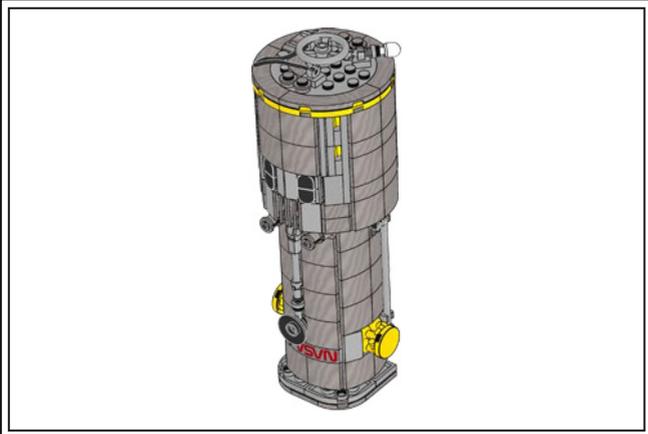
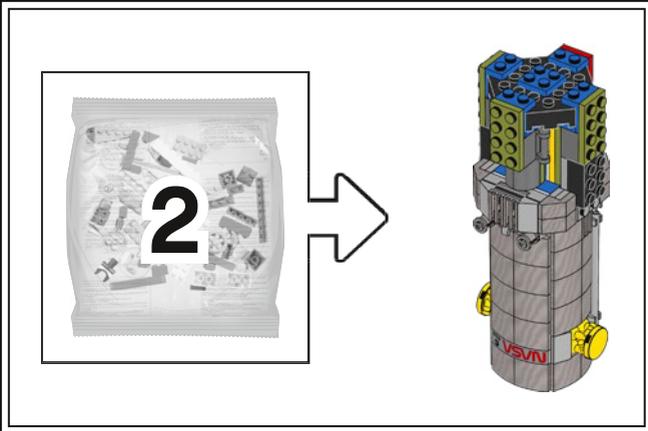


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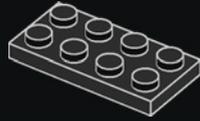


SCHON GEWUSST?

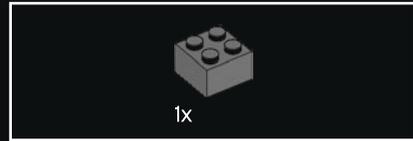
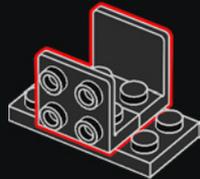
Das Hubble-Weltraumteleskop wurde bereits in den 1940er-Jahren konzipiert. Bis zu seinem Start im Jahr 1990 waren jedoch noch jahrzehntelange Planungen erforderlich.



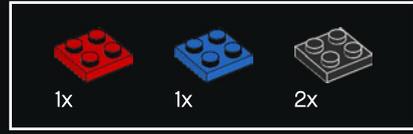
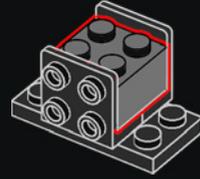
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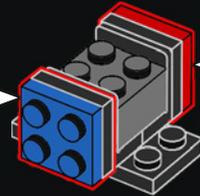
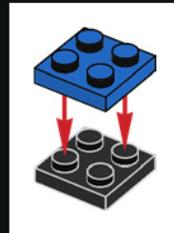
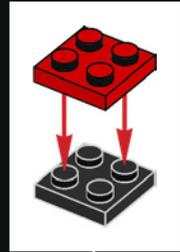
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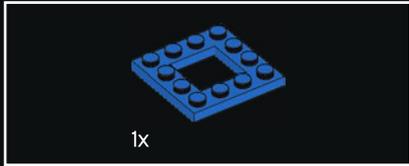
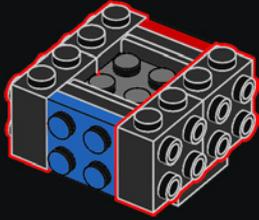


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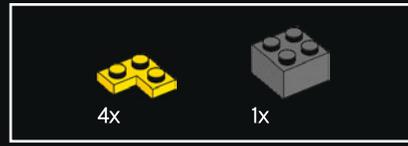
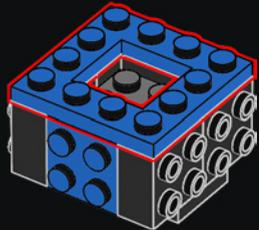




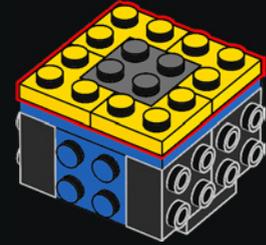
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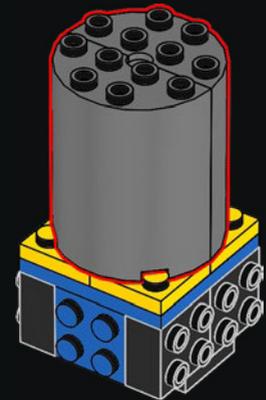
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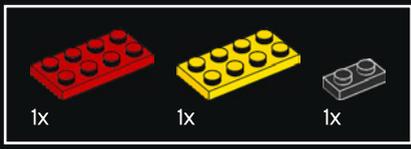


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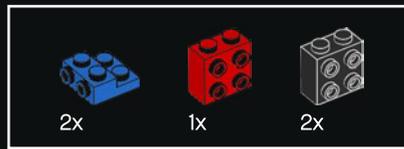
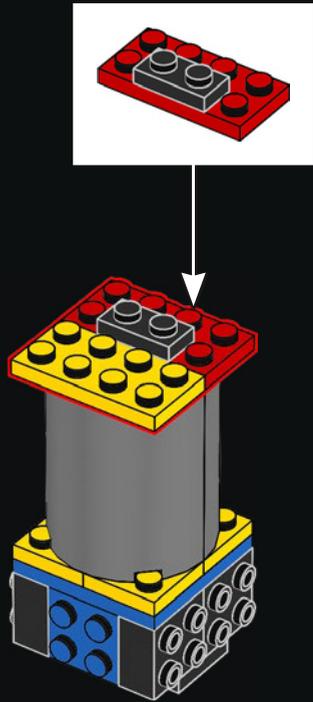


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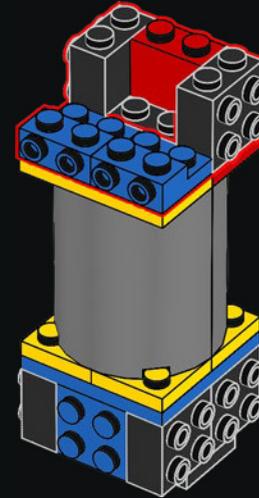




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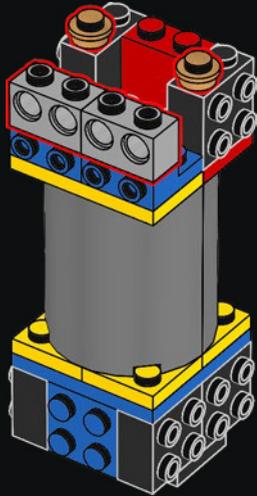


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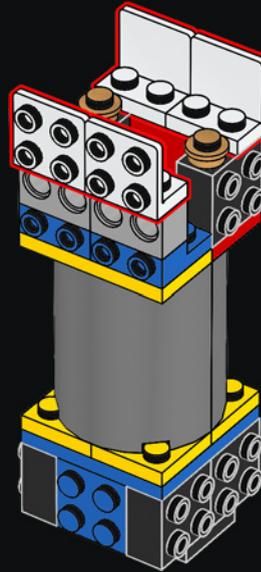


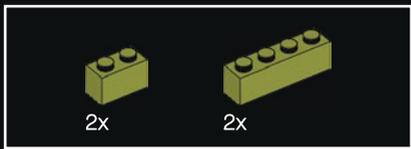


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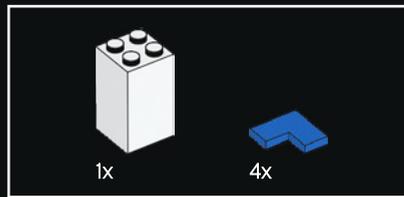
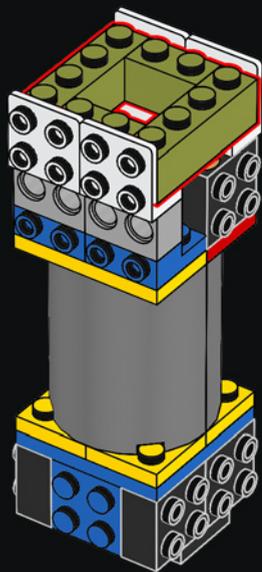


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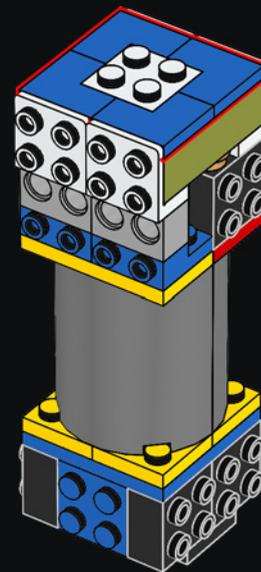




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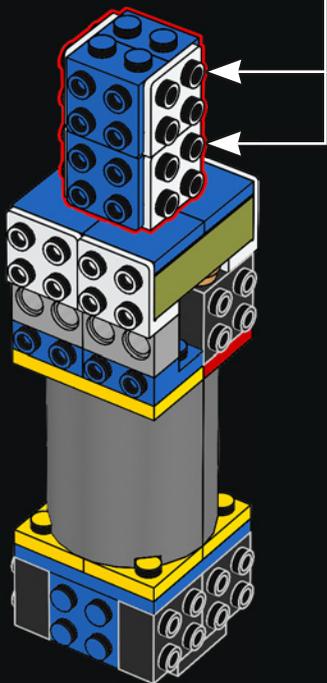
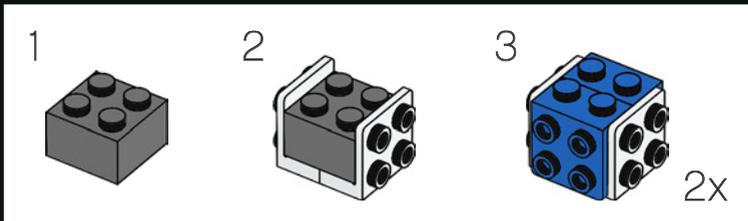


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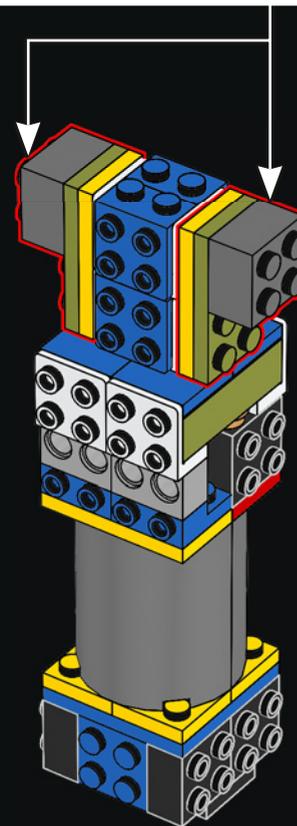
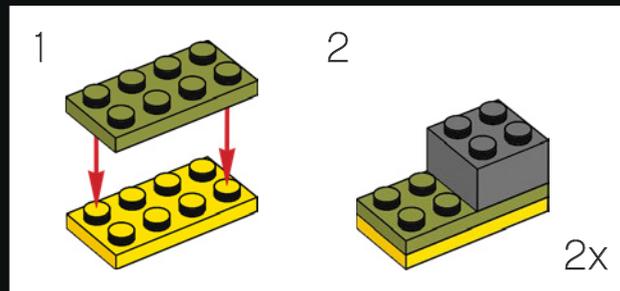


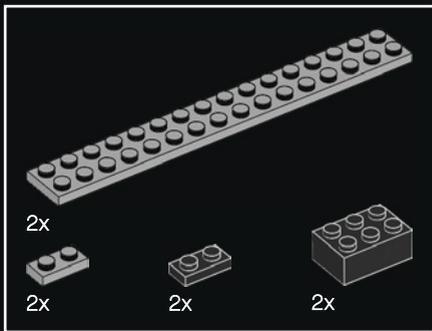


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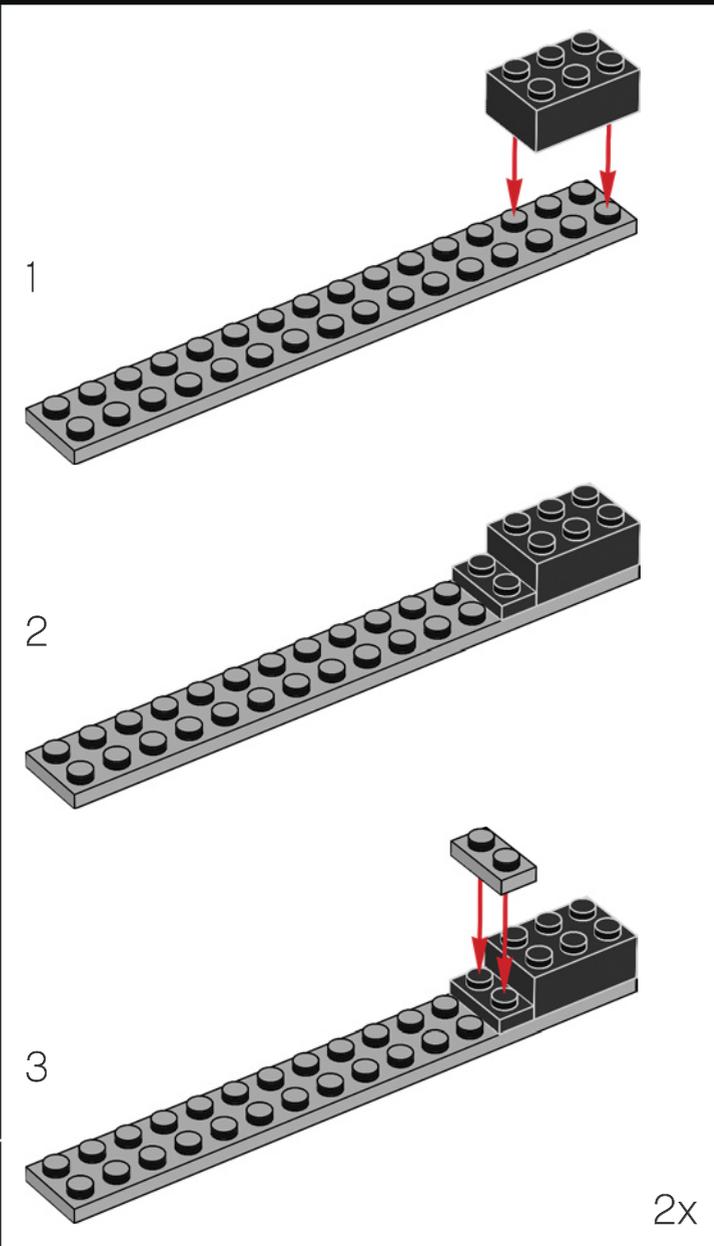
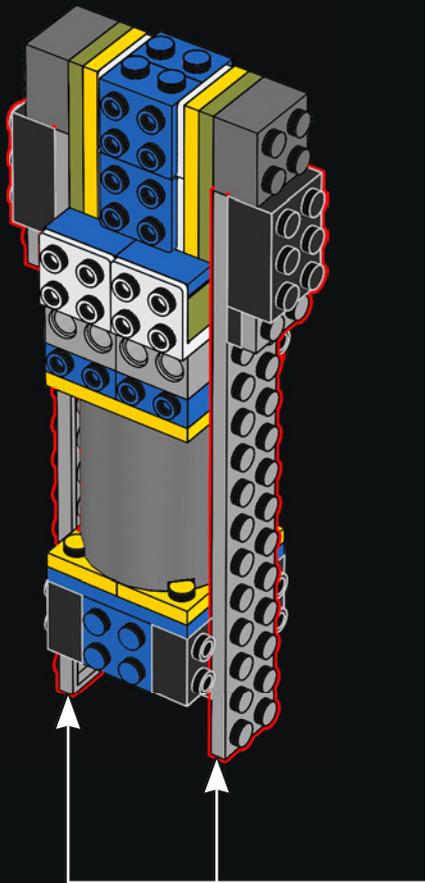


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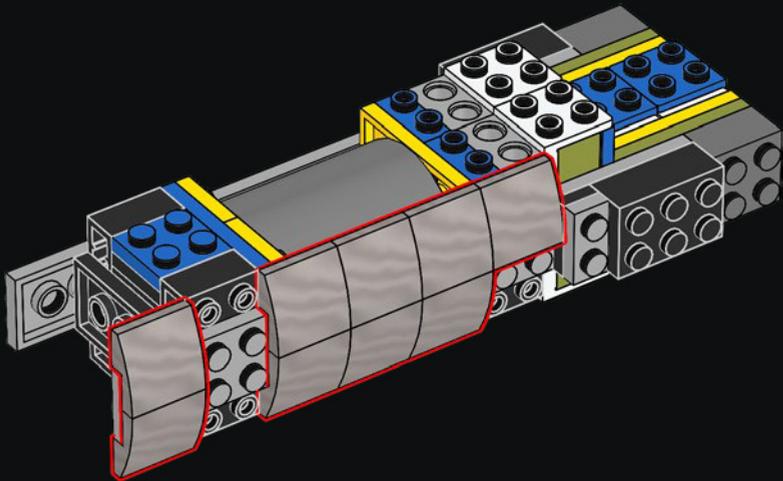


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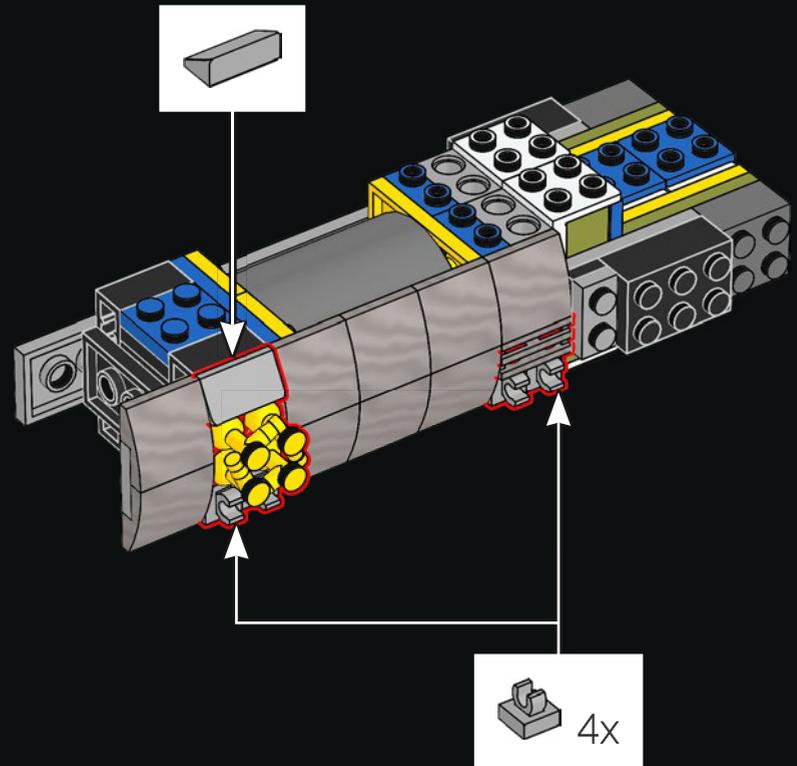




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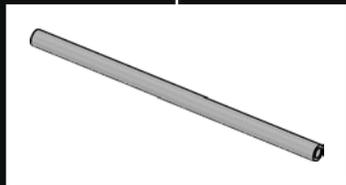
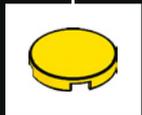
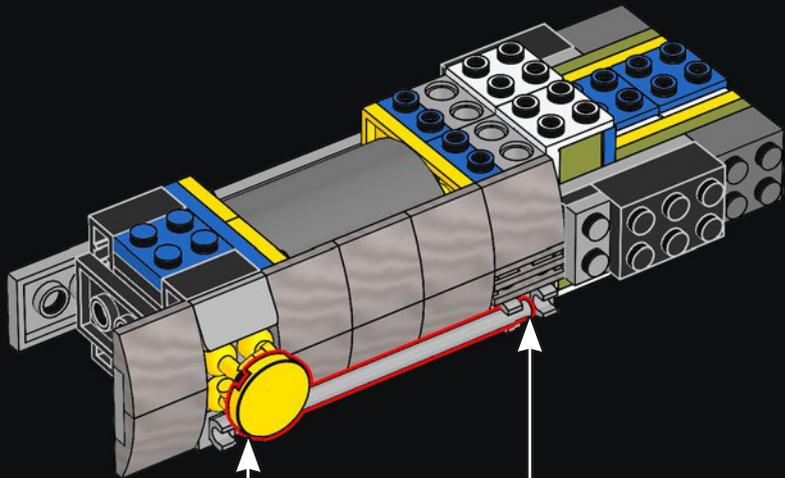


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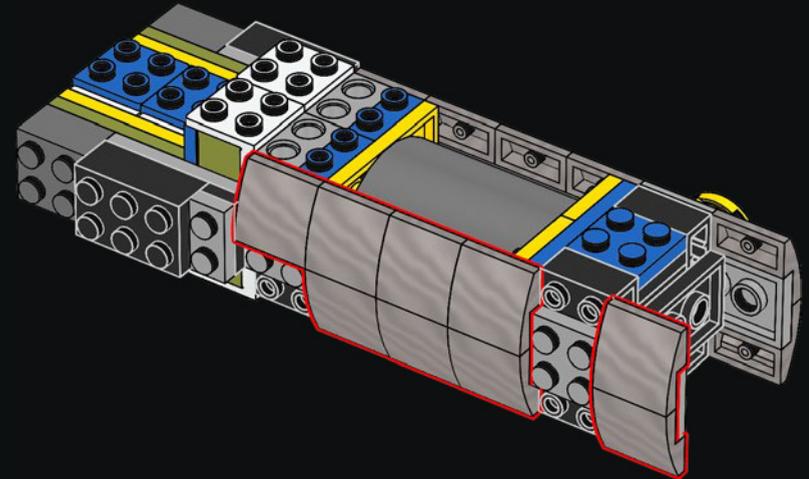


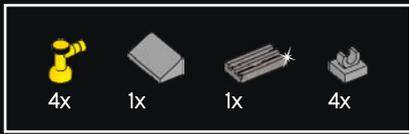


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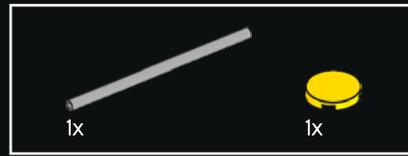
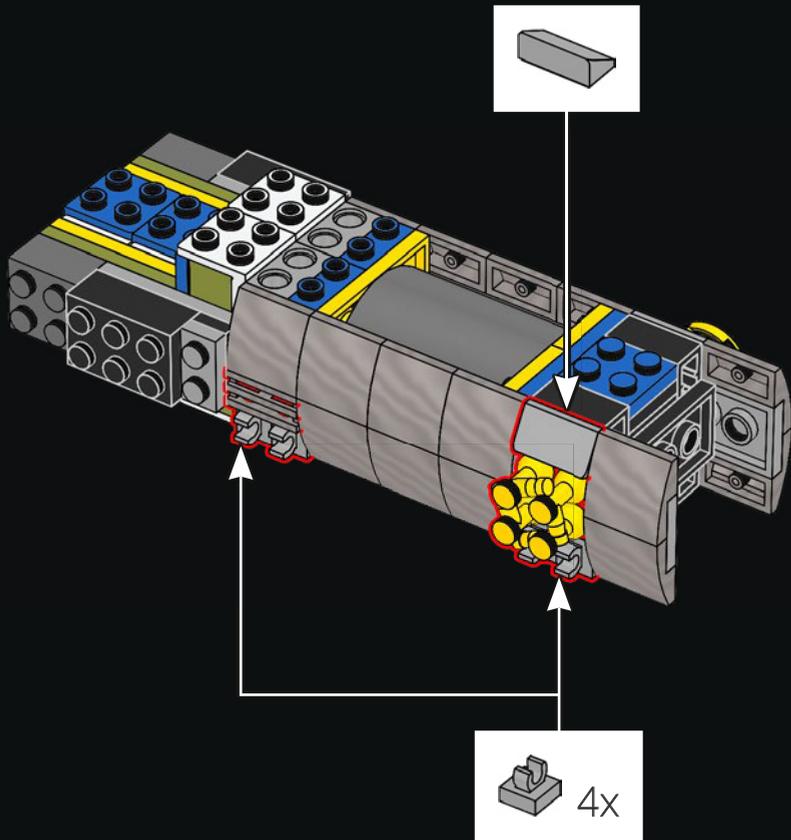


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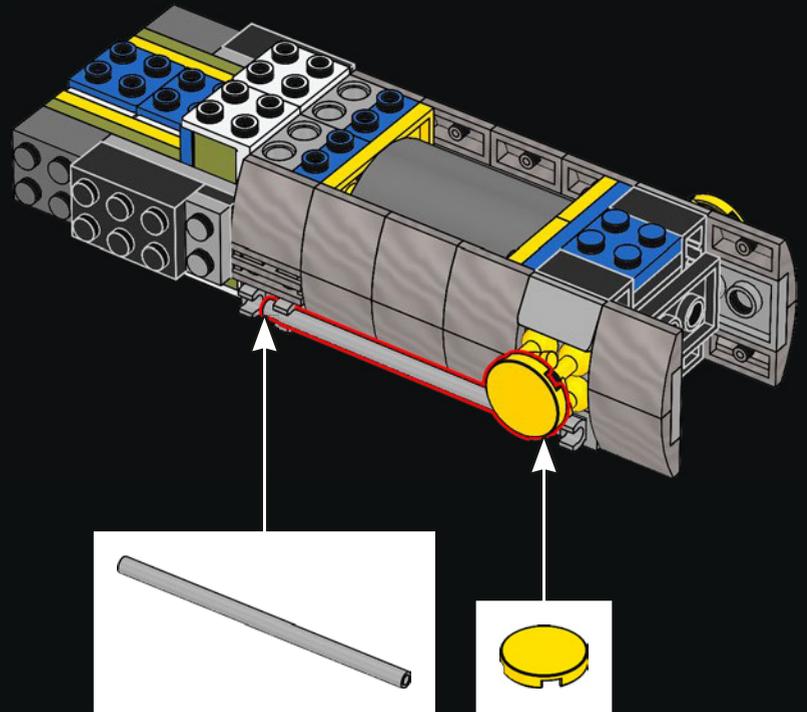


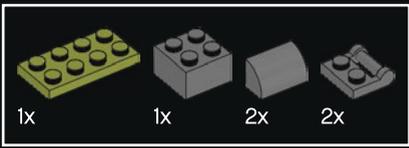


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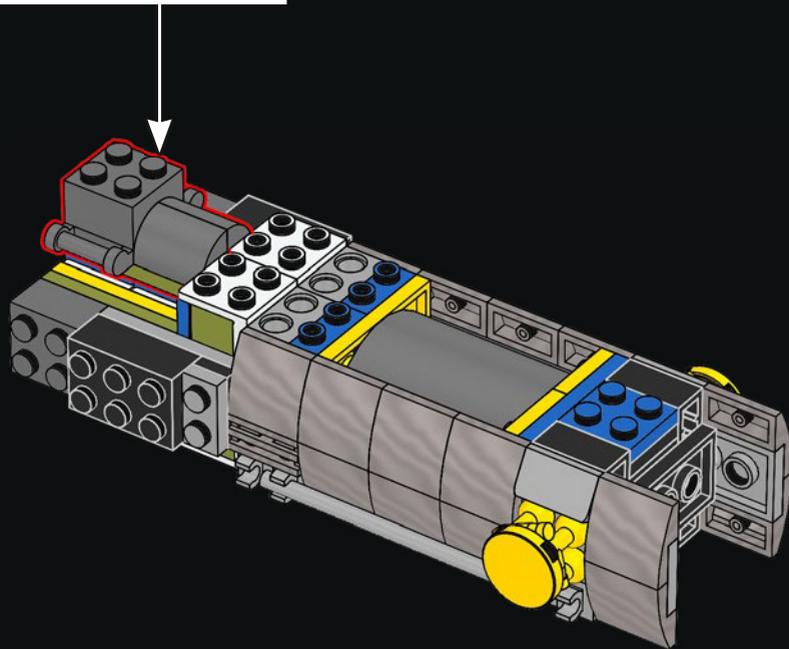
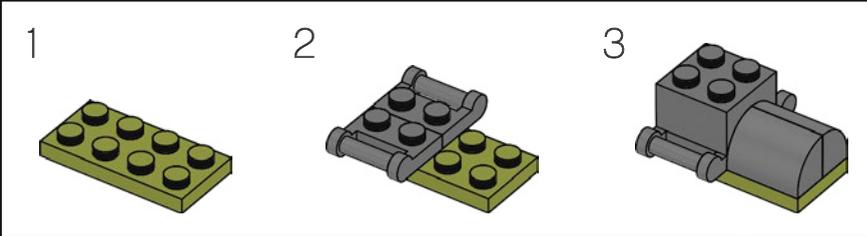


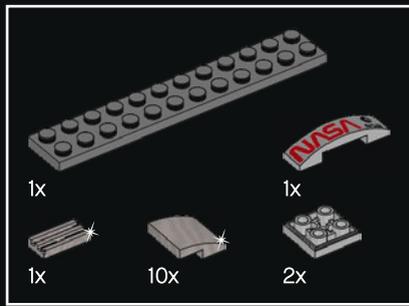
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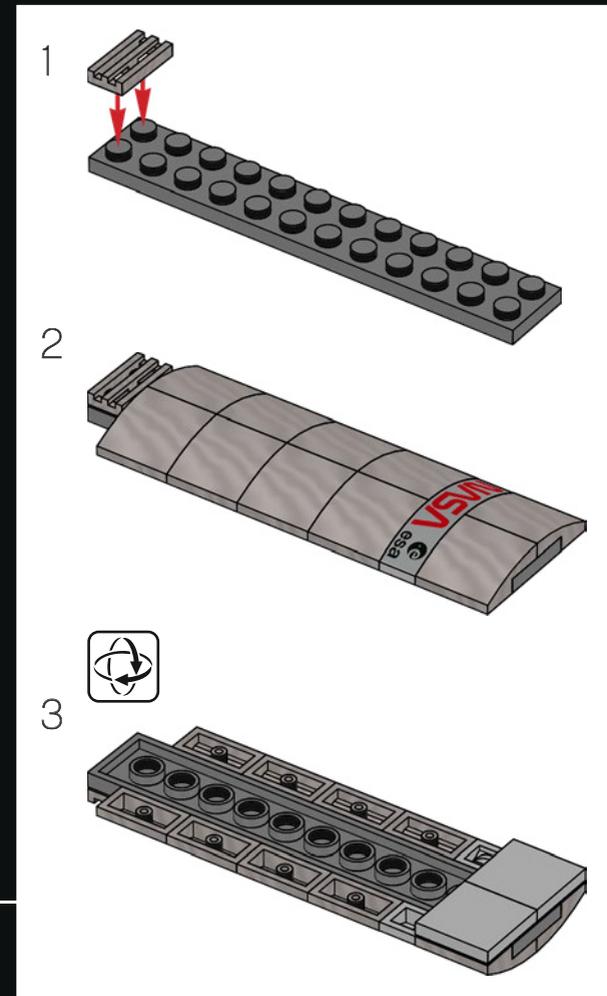
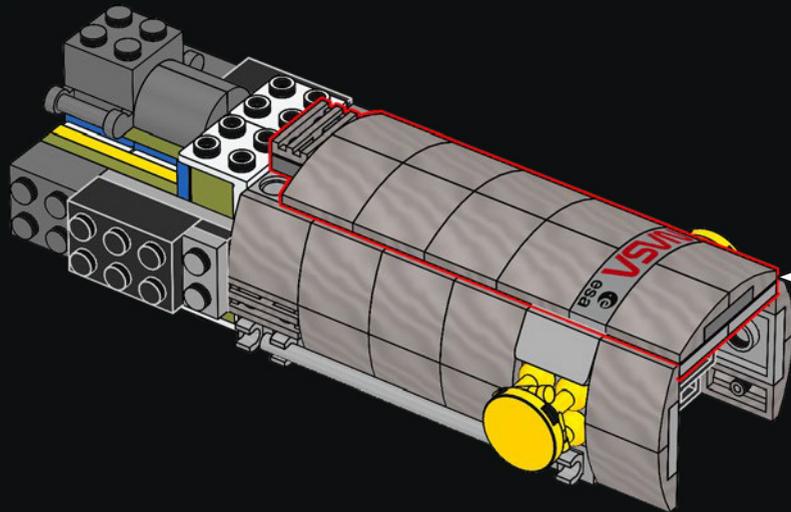


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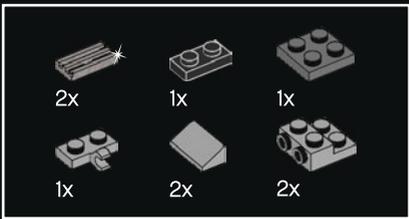


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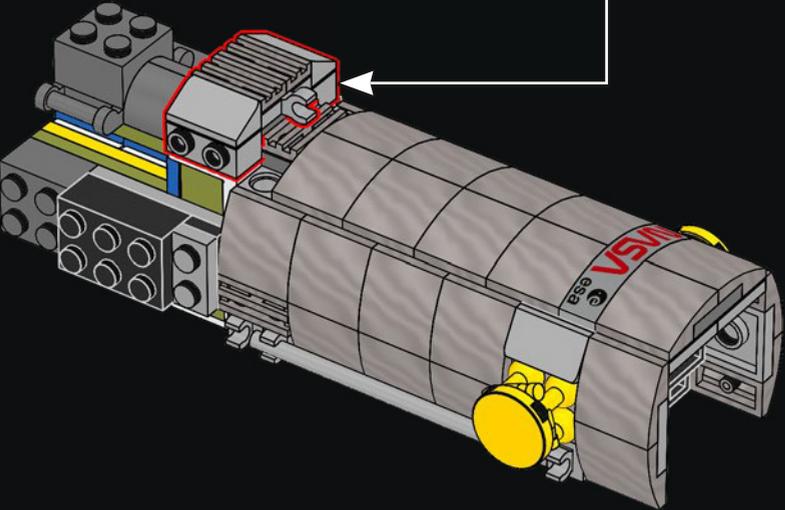
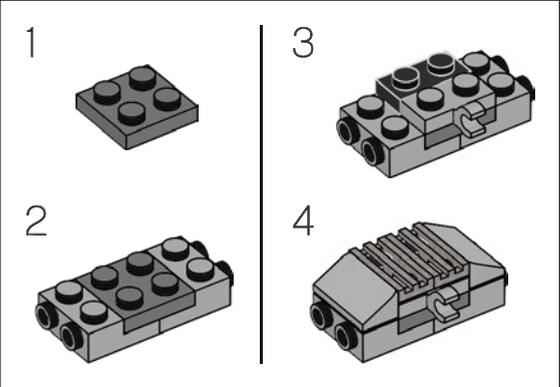


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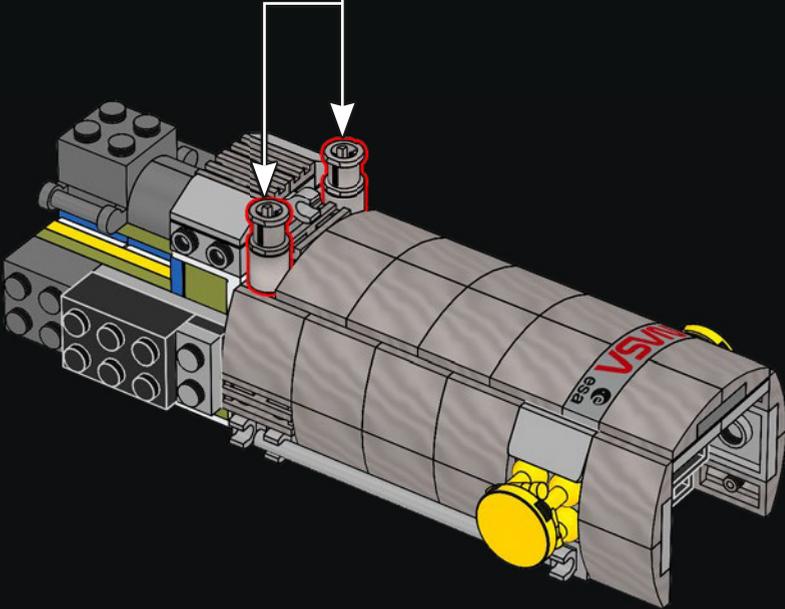
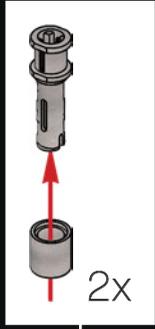
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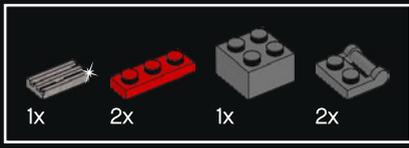


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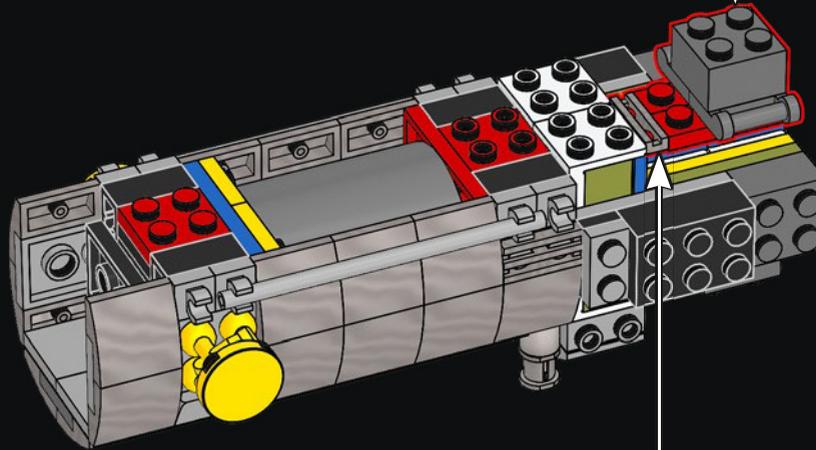
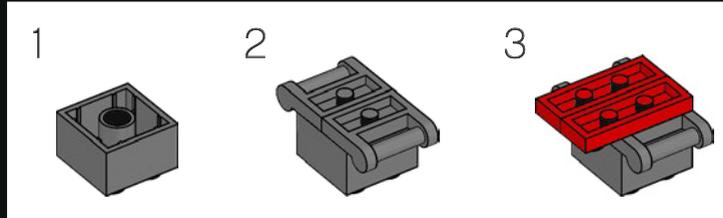


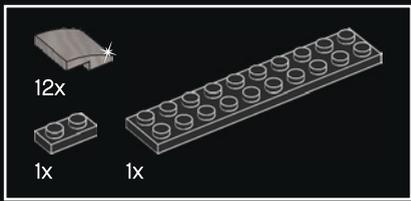
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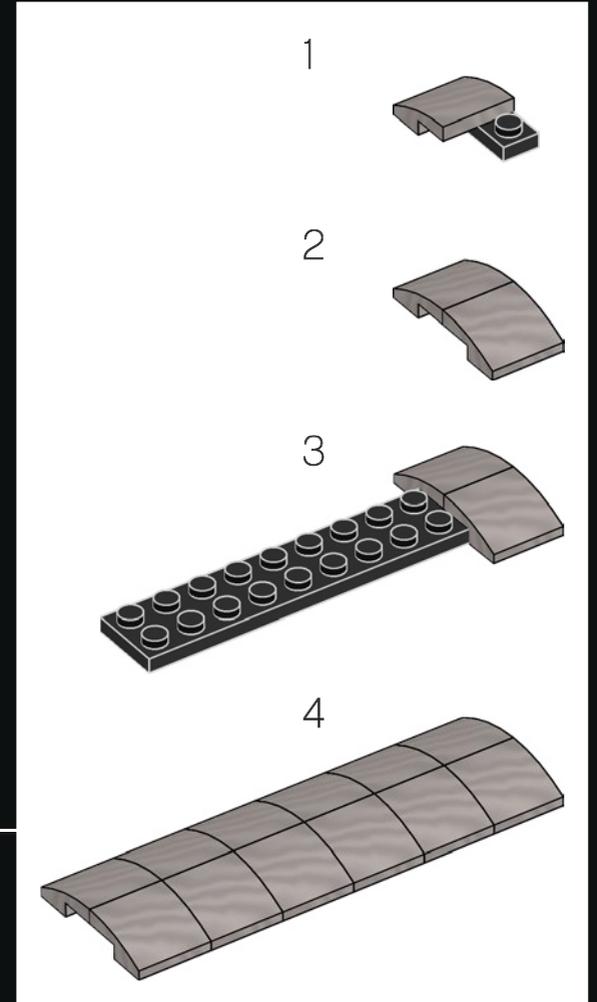
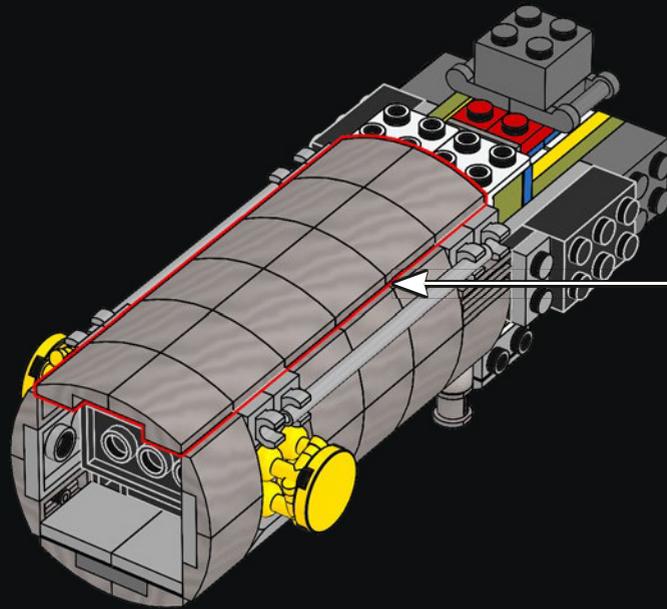


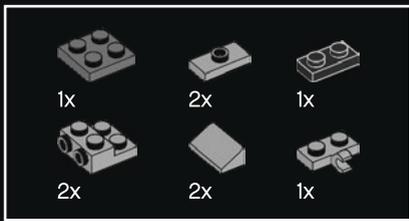
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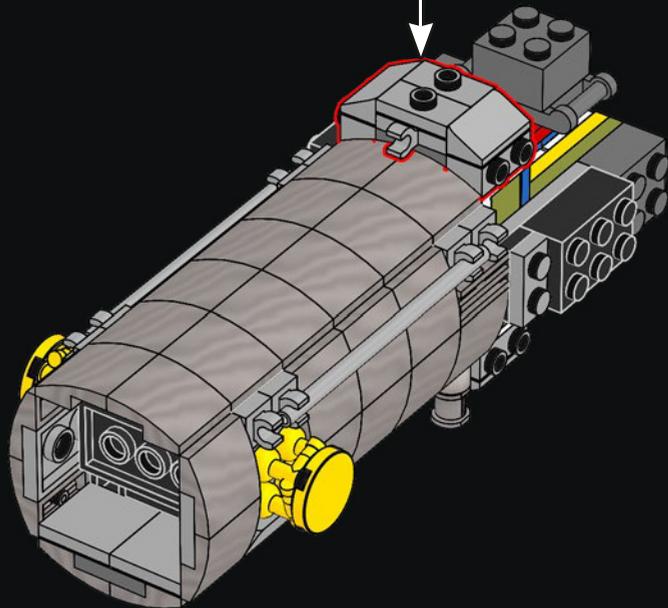
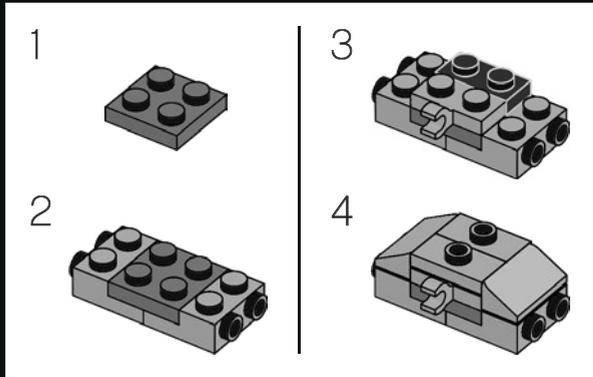


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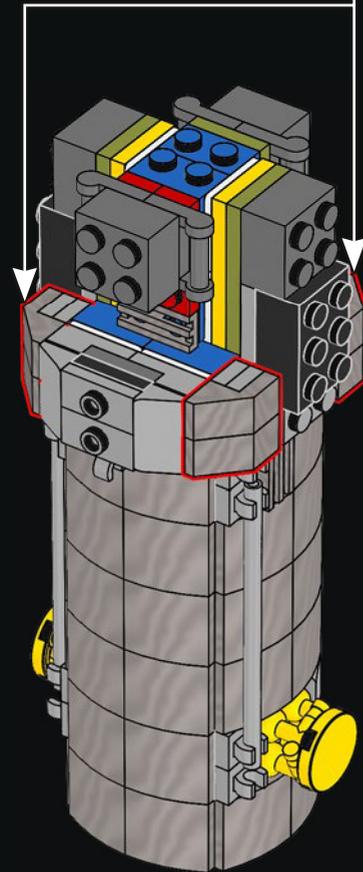
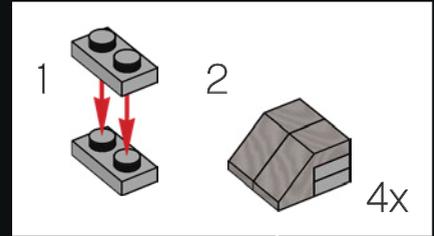


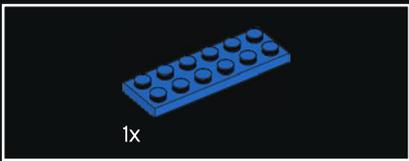


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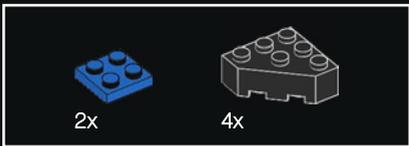
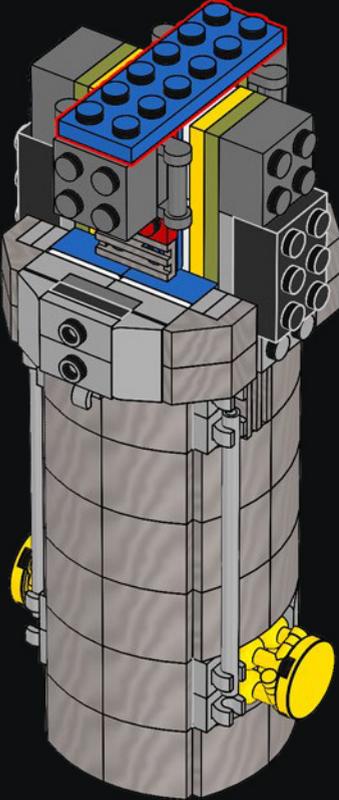


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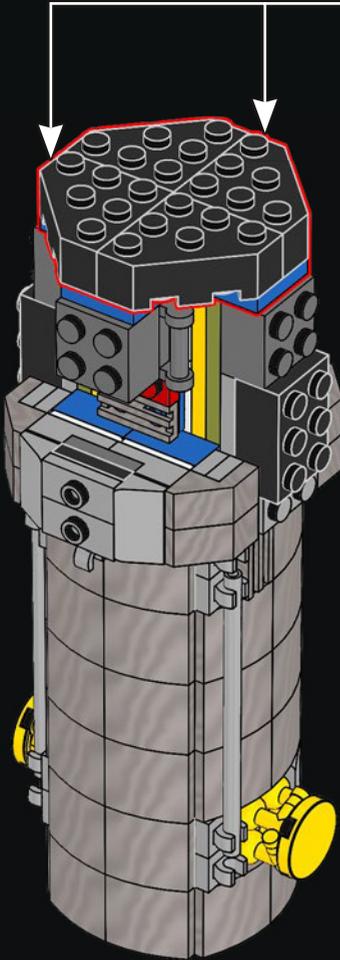
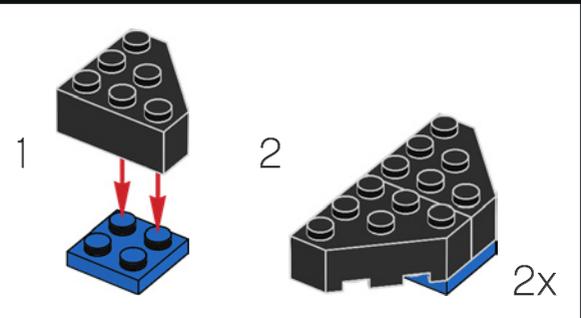




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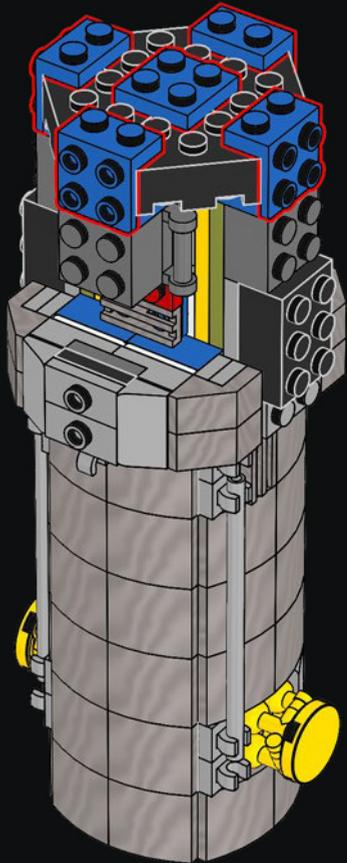


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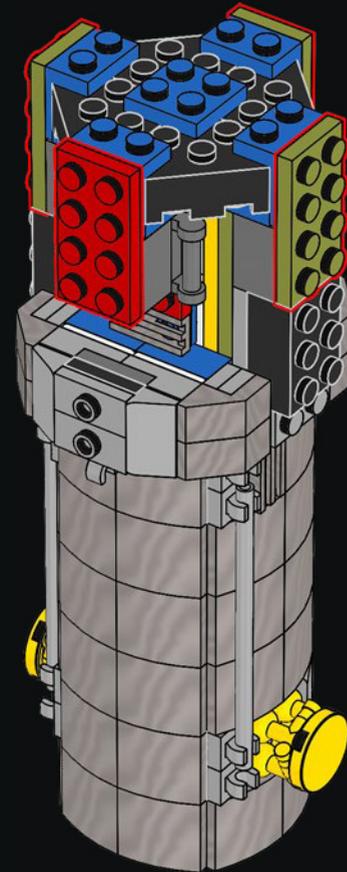




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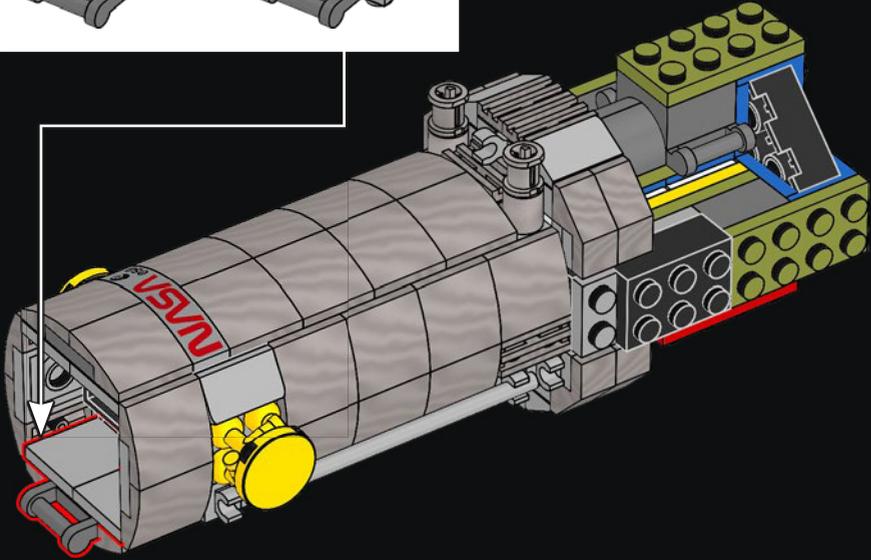
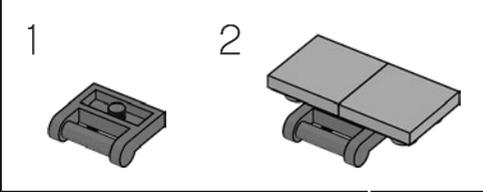


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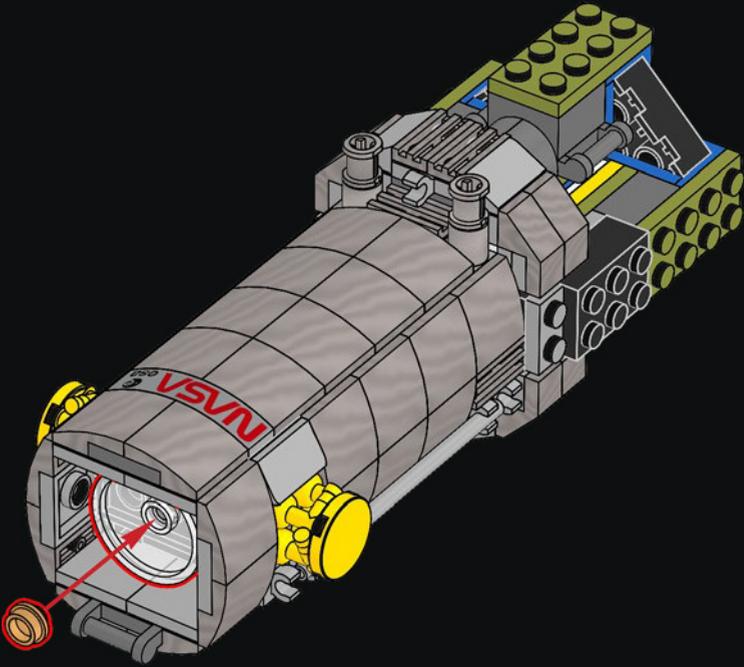


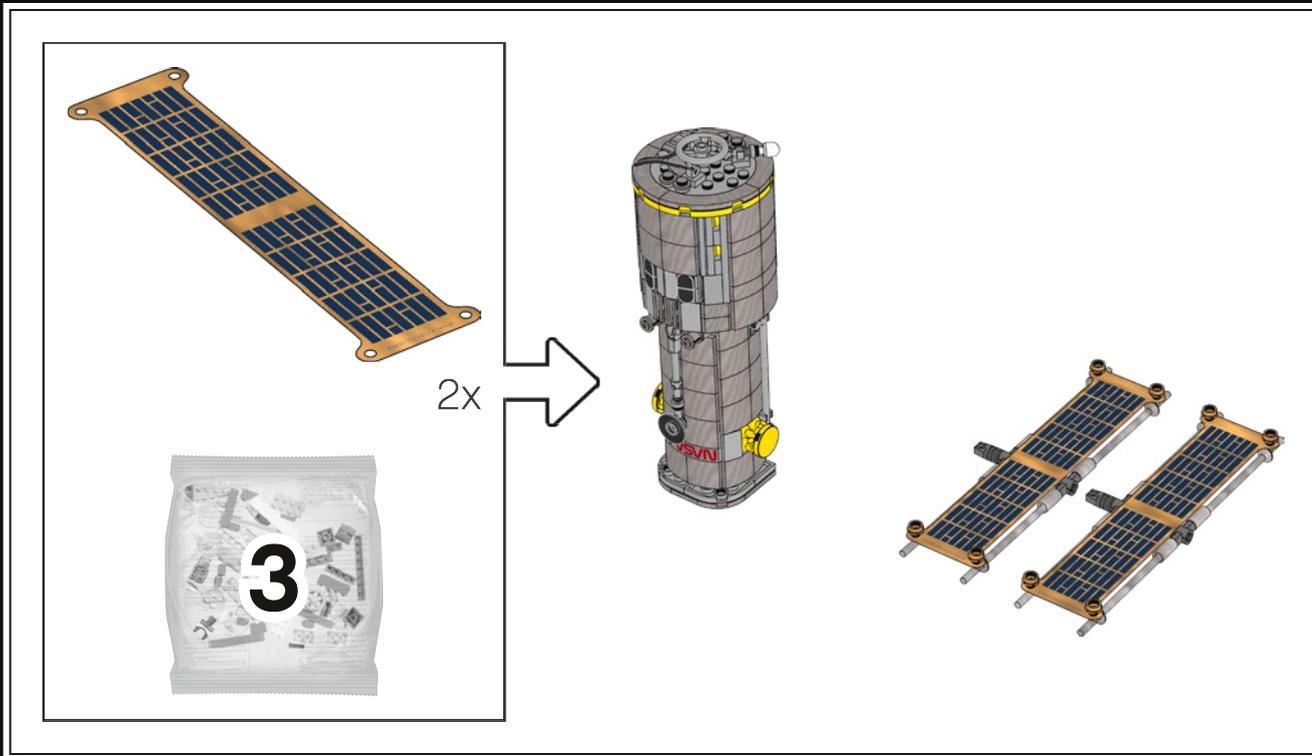


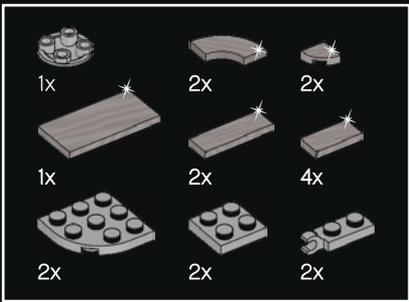
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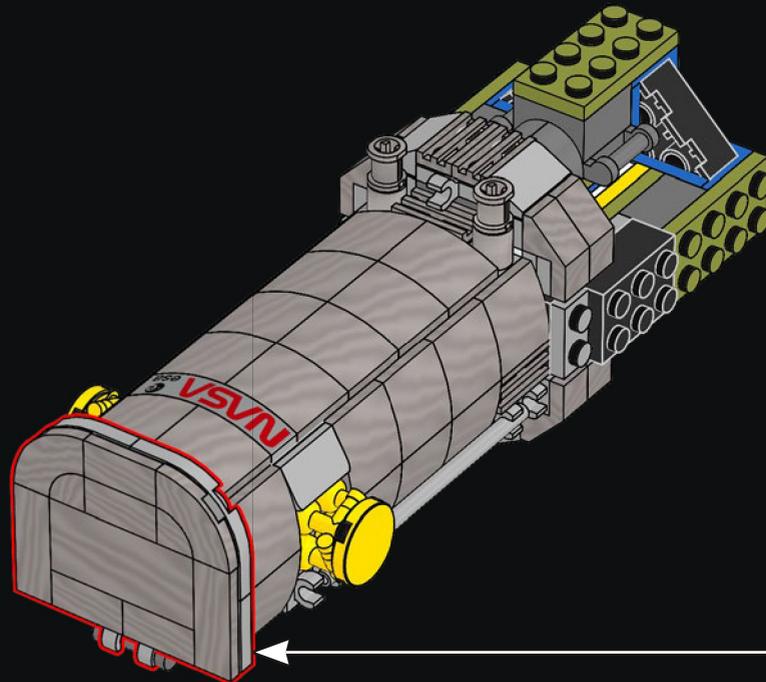
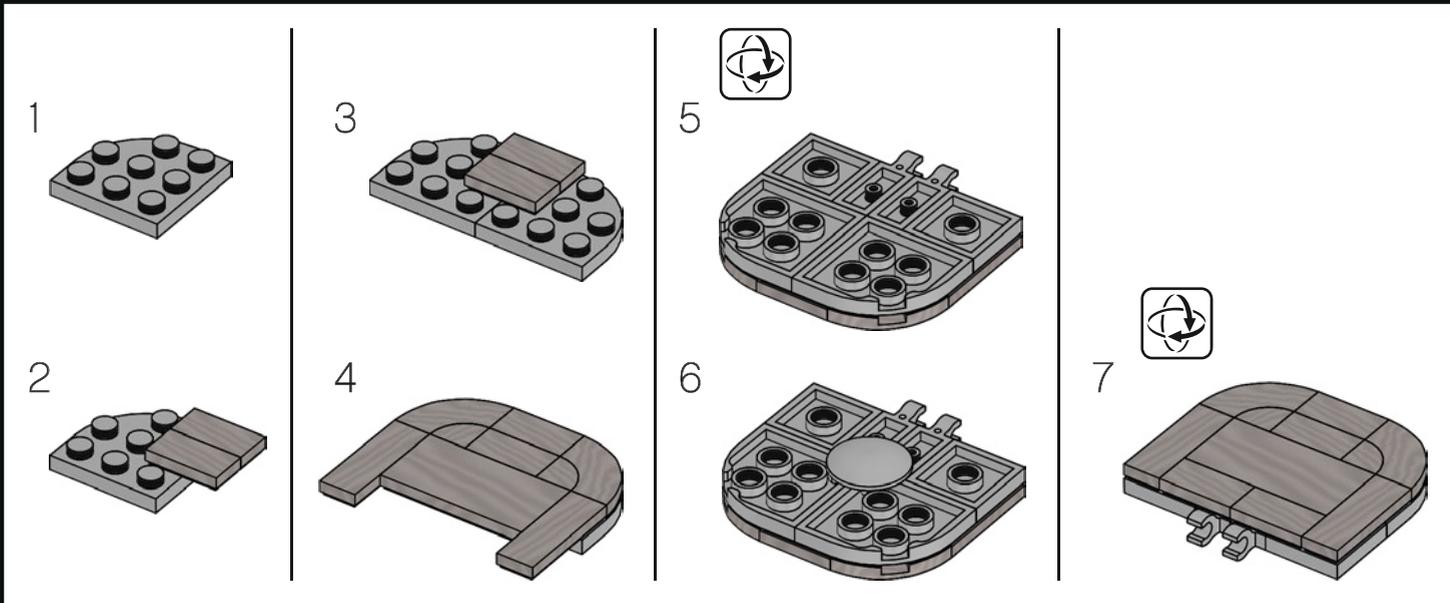
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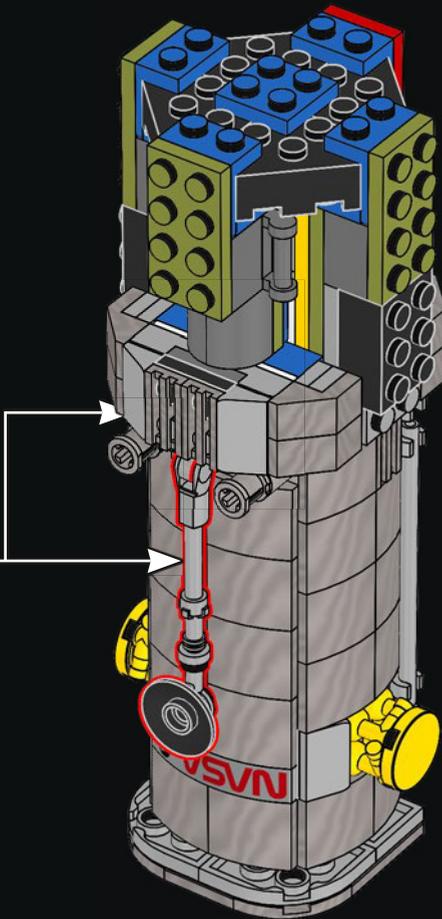
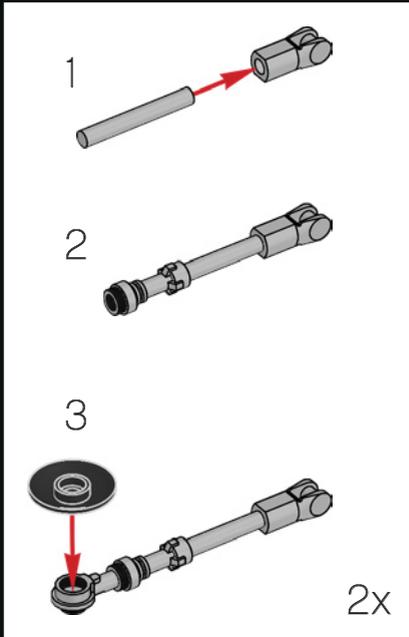


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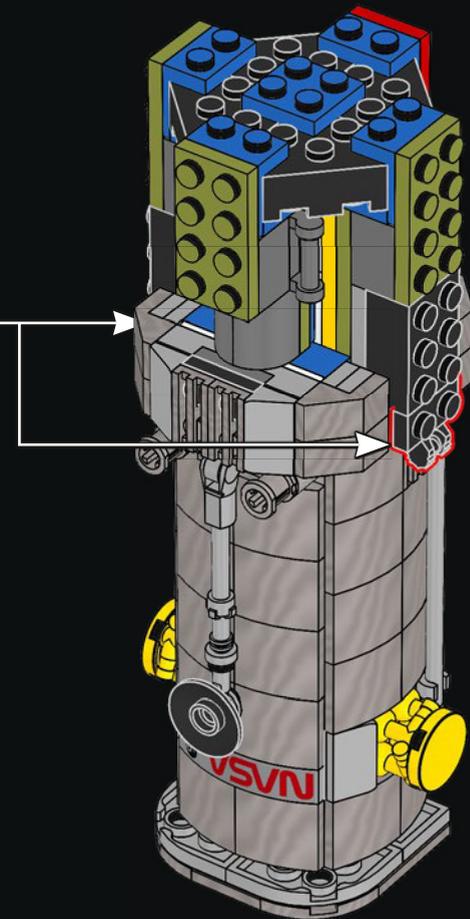


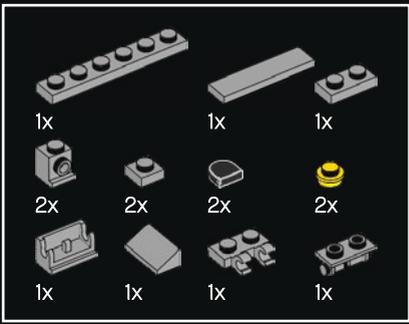


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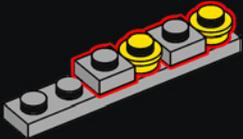


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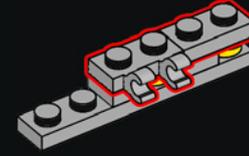
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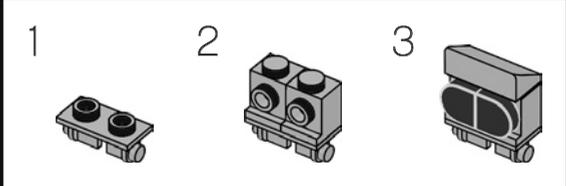
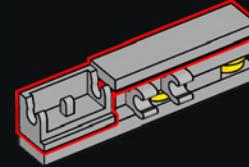
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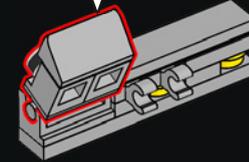
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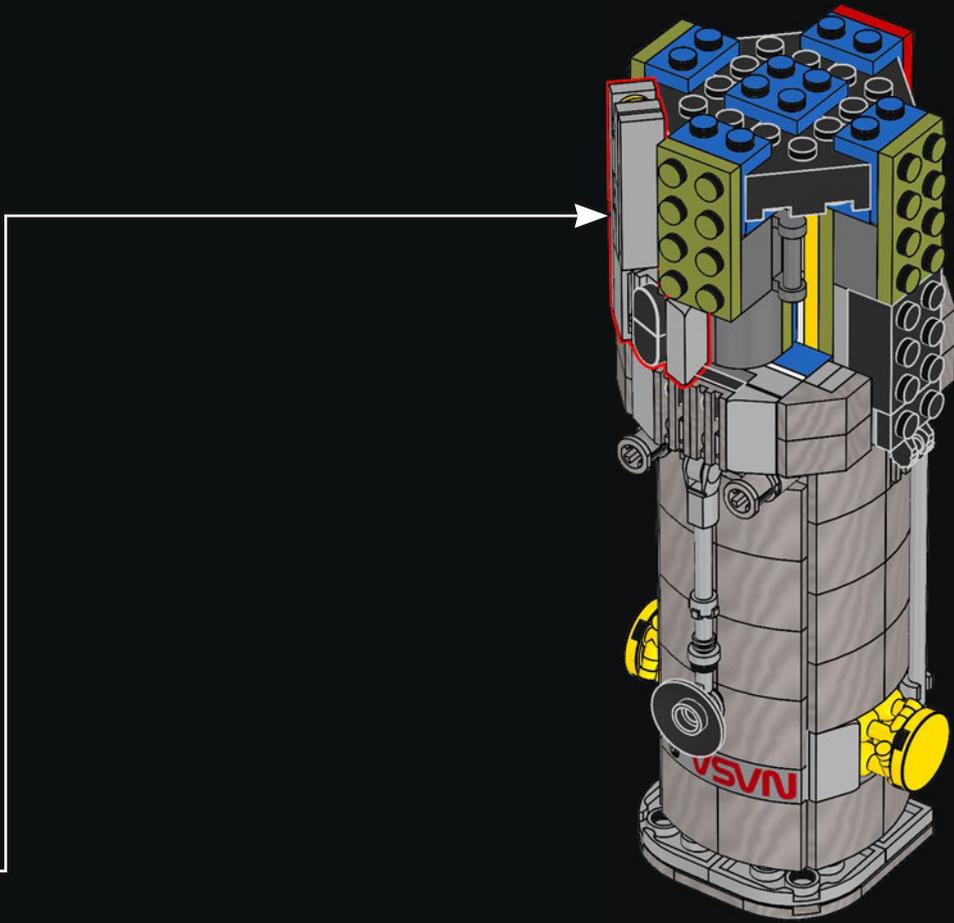


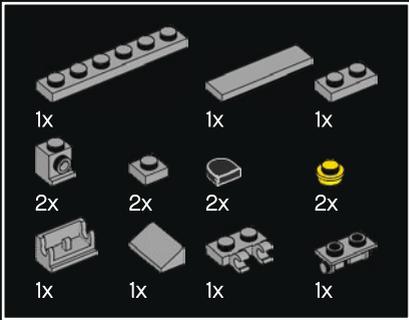
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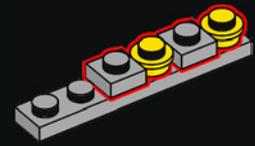


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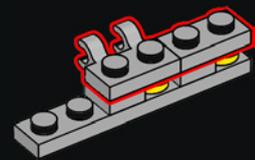
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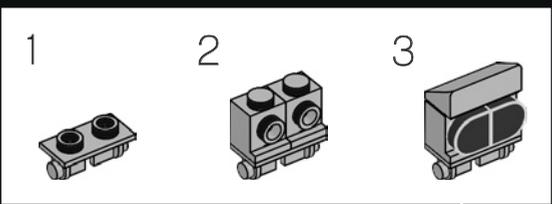
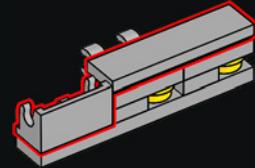
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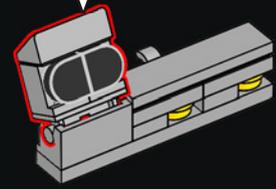
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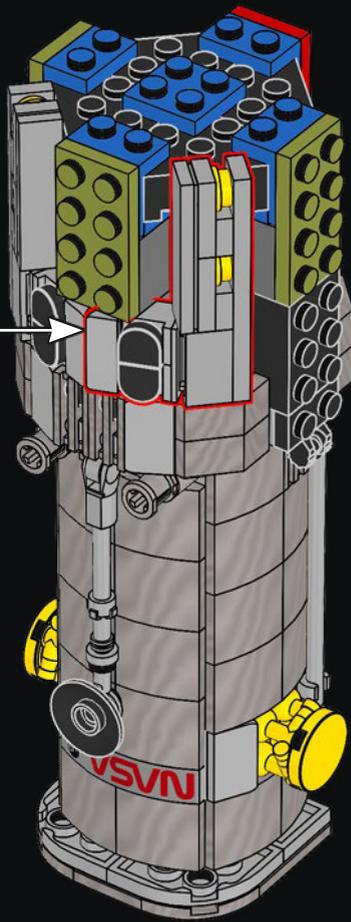


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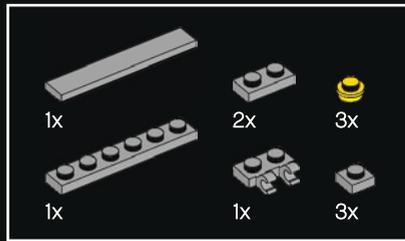
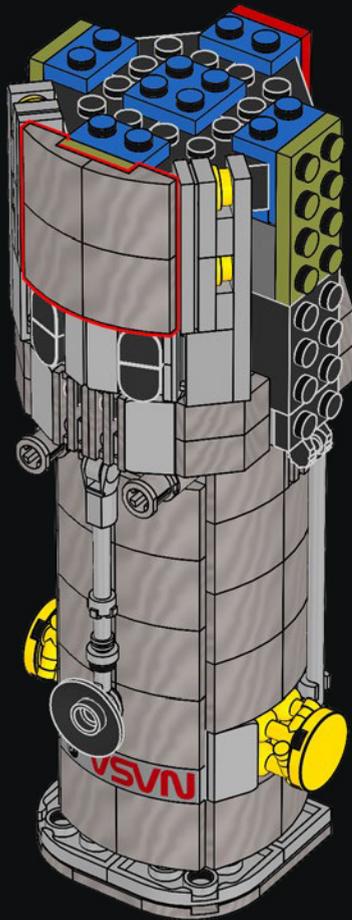
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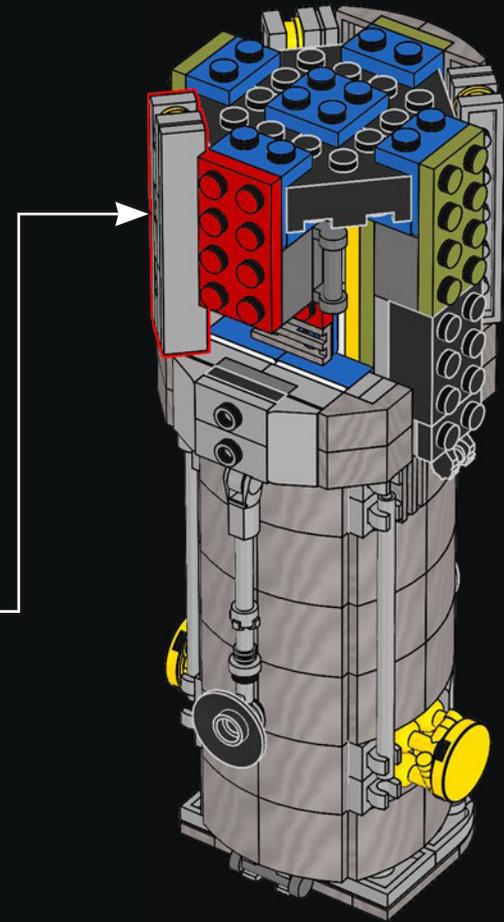
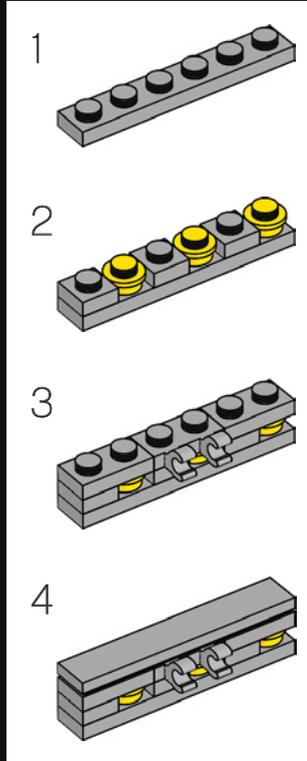


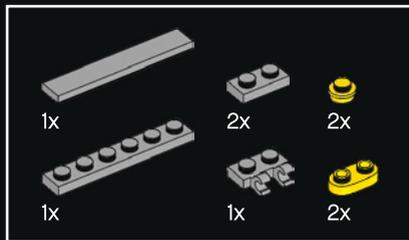


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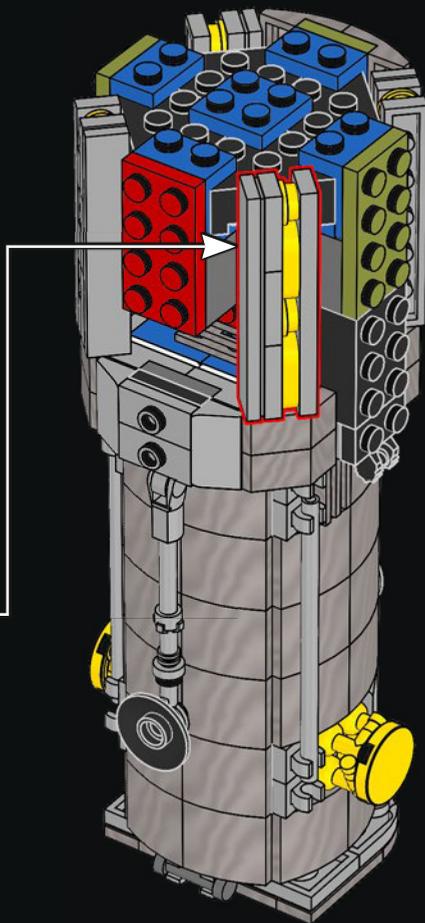
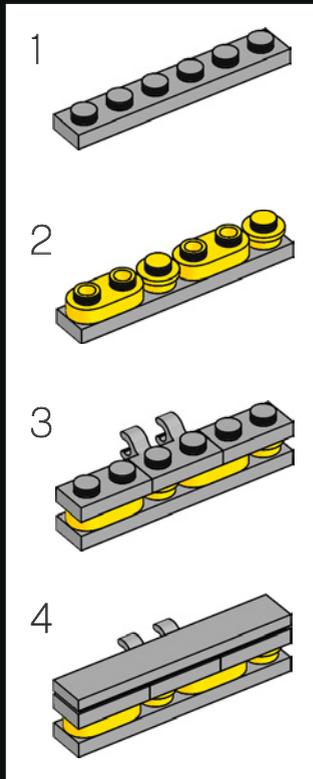


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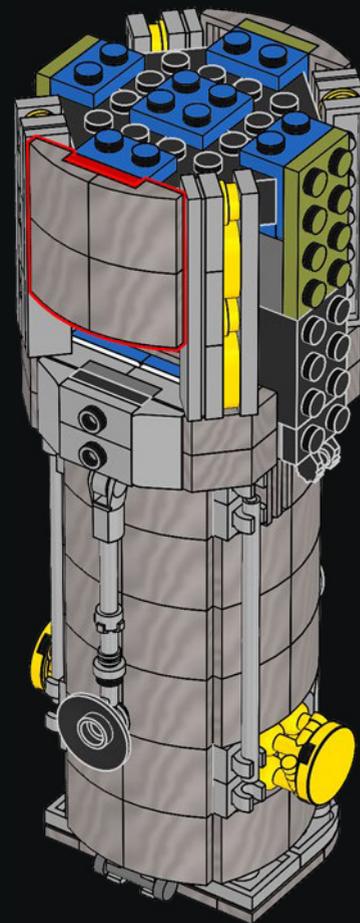


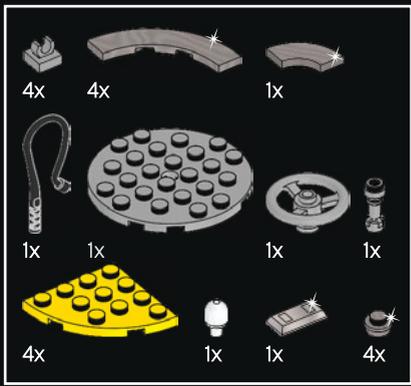


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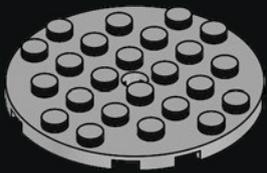
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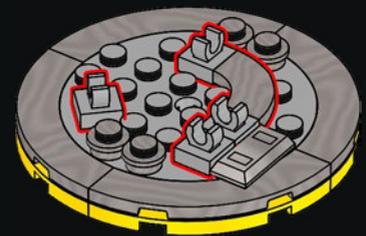
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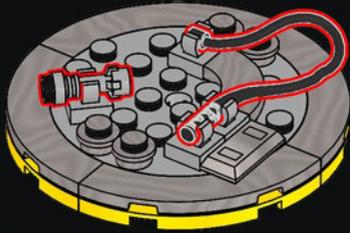
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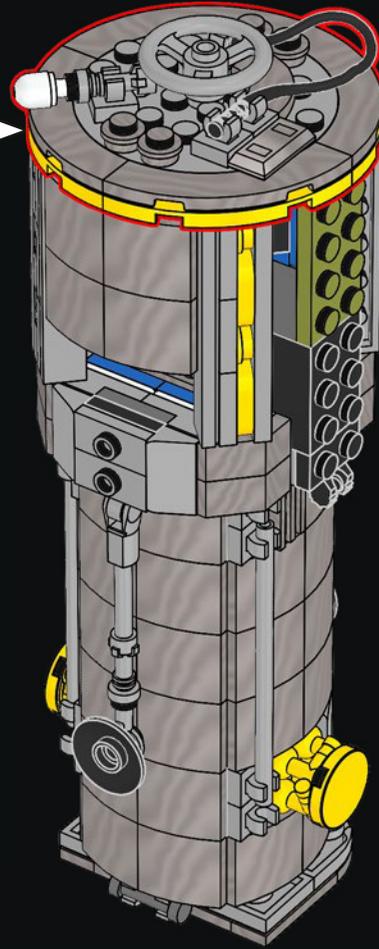
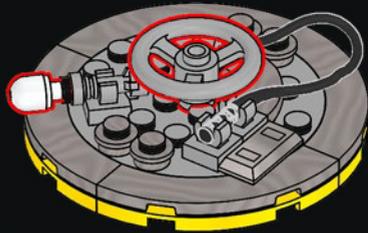
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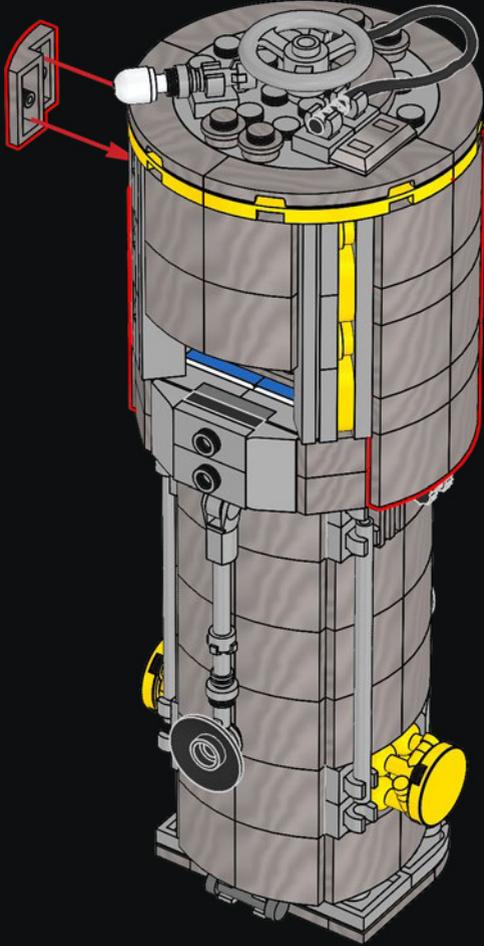


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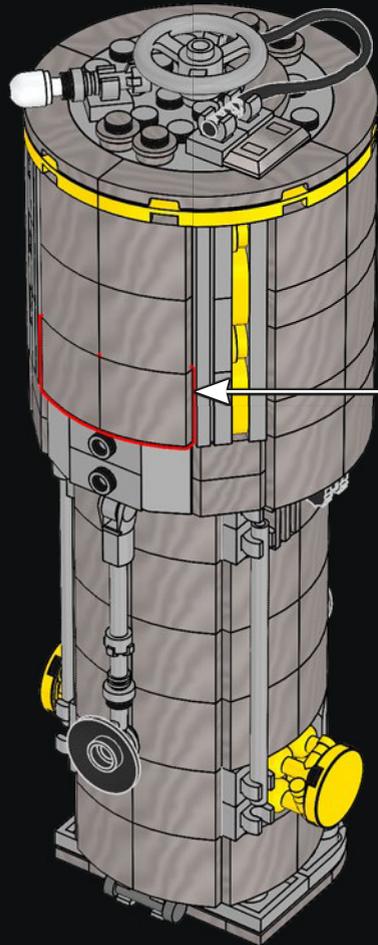
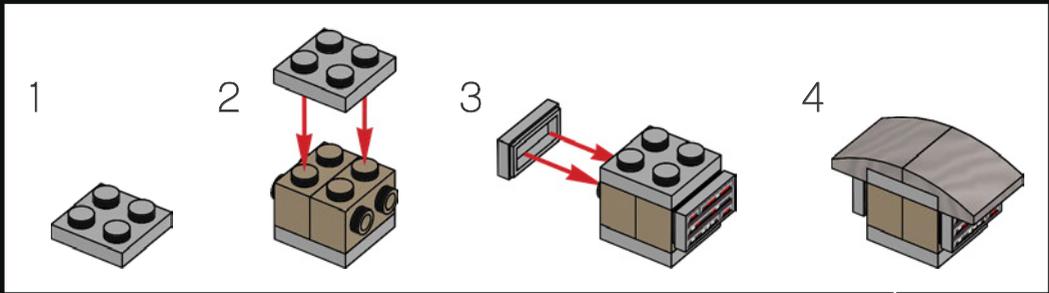


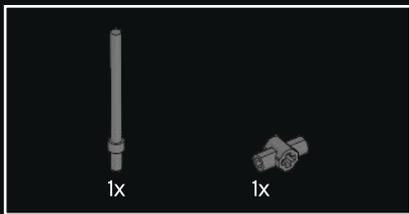
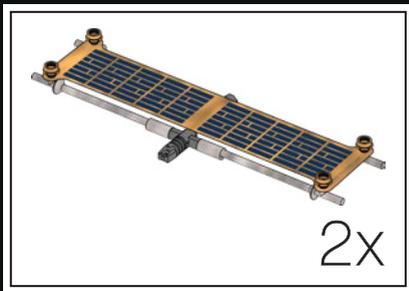
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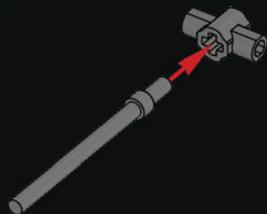


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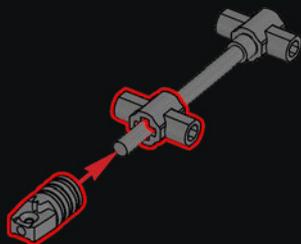




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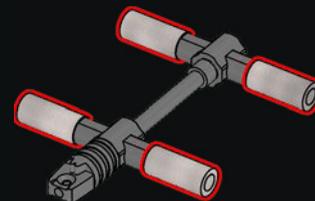
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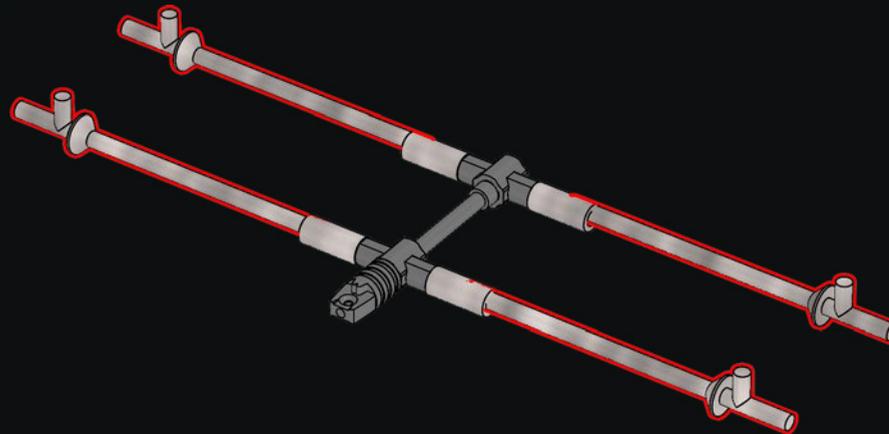
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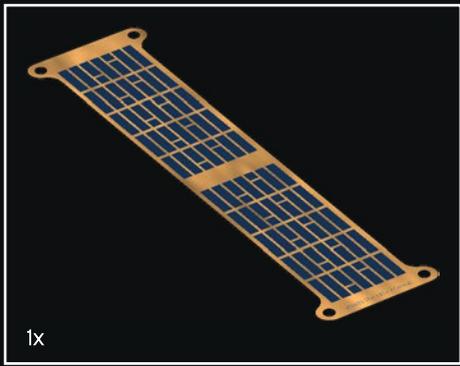


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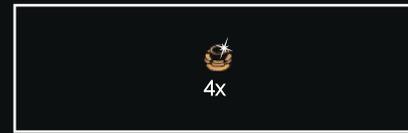
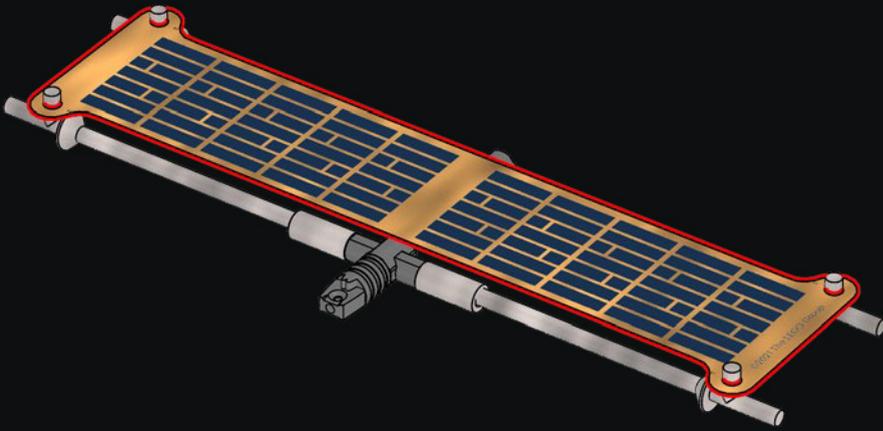


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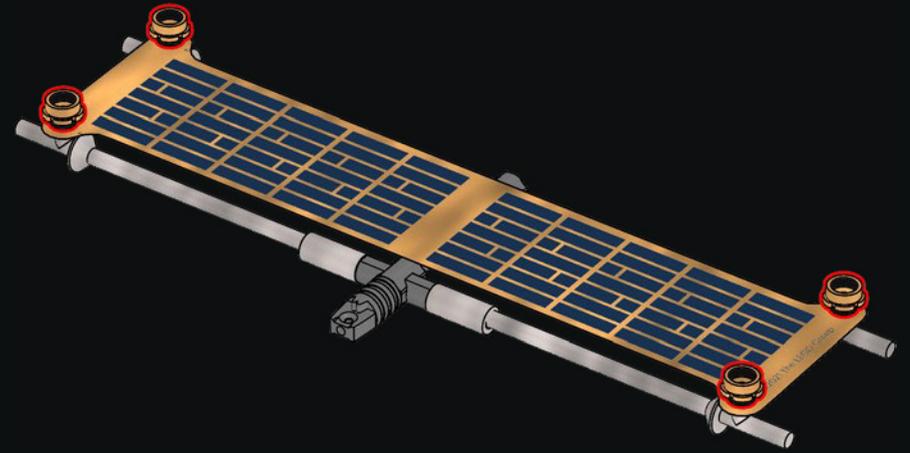




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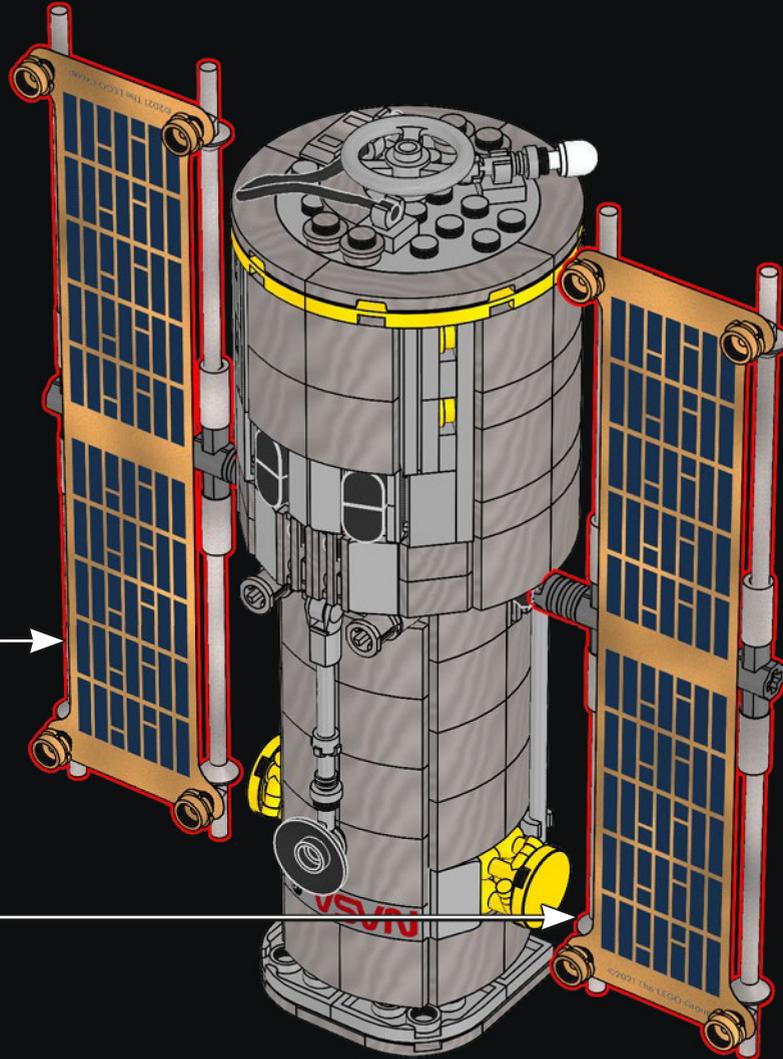


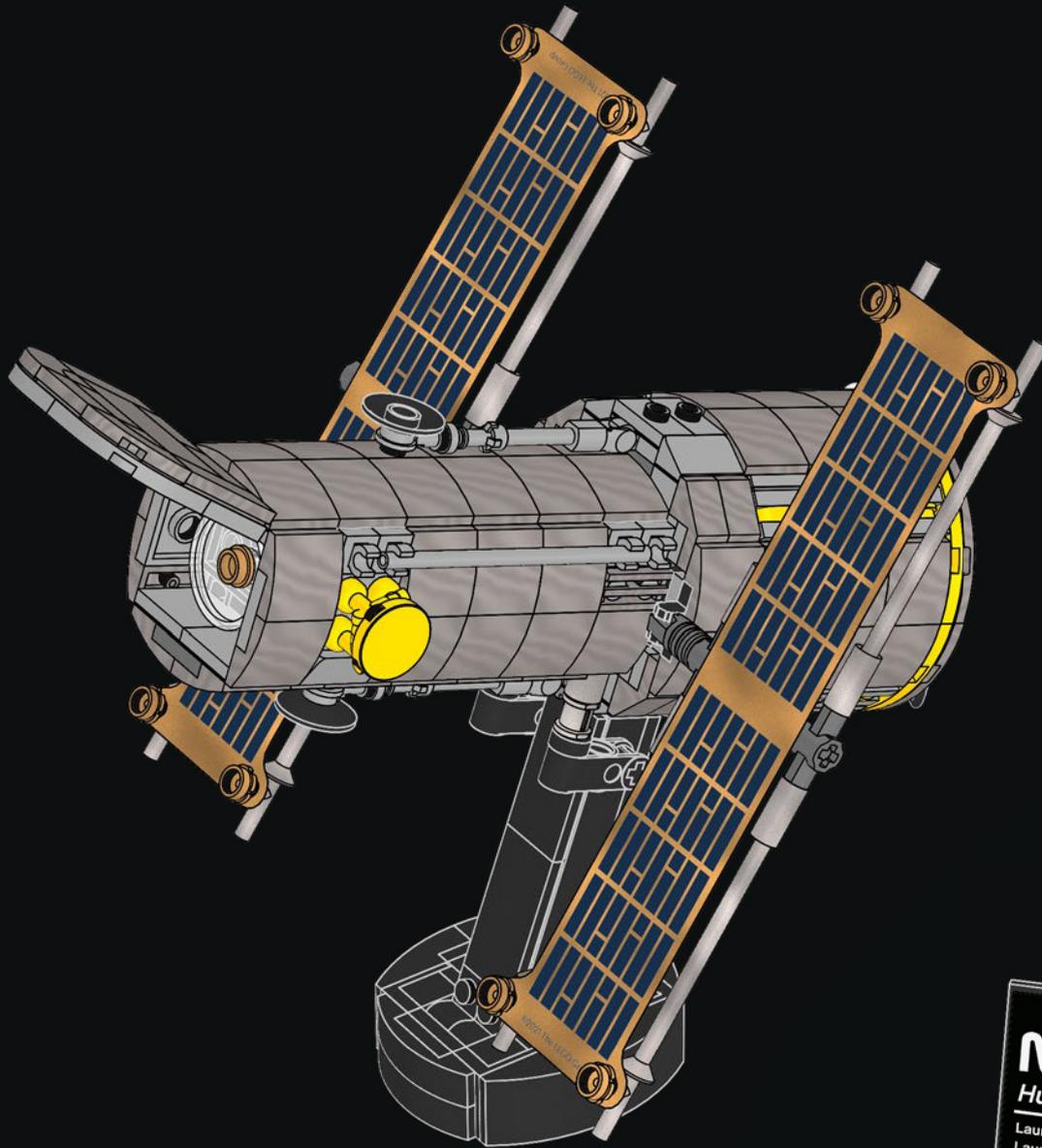
2x

SCHON GEWUSST?

Das Hubble-Weltraumteleskop gewährte die bisher tiefsten Einblicke ins Universum. Noch nie wurden Aufnahmen von ferneren „Himmelskörpern“ gemacht, etwa von Galaxien, die mehr als 13 Milliarden Lichtjahre entfernt sind.

56





NASA  **esa**
Hubble Space Telescope

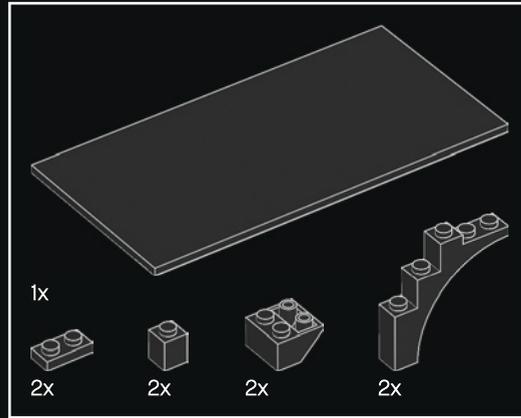
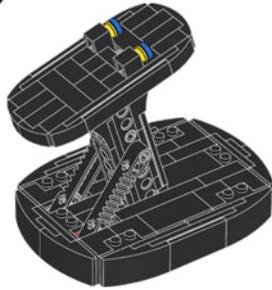
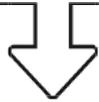
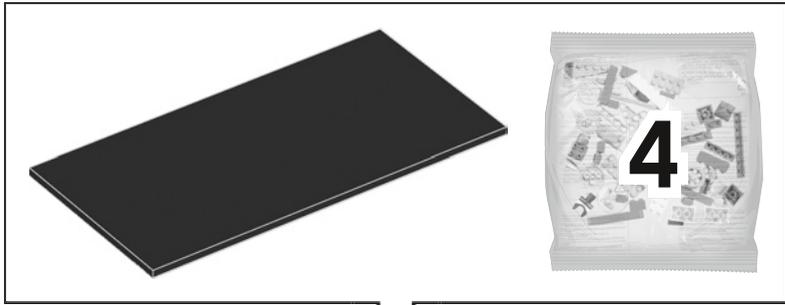
Launch: April 24, 1990
Launch Mass: 24,490 lbs
Velocity: 4.72 mi/s
Deploy Altitude: 350 miles

DAS SPACESHUTTLE „DISCOVERY“

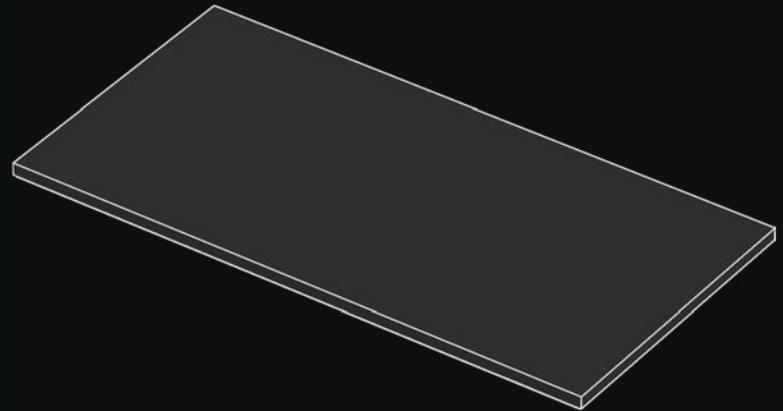
Der Bedarf an wiederverwendbaren Raumfähren, die große Nutzlasten in die Erdumlaufbahn transportieren können, war die Triebfeder des Space Shuttle-Programms. Die „Discovery“ war das dritte „Orbital Vehicle“ (OV-103) der NASA-Flotte und wurde im November 1983 in Dienst gestellt. Letztendlich sollte sie 39 Missionen fliegen, 238 Millionen Kilometer zurücklegen 5.830 Erdumrundungen absolvieren und während ihrer 27-jährigen Einsatzzeit fast 365 Tage im All verbringen. Die fünftägige Mission zur Aussetzung von Hubble startete am 24. April 1990 im Kennedy Space Center der NASA. Die Entwickler schnitten das Teleskop passgenau auf den Laderaum des Space Shuttle zu.







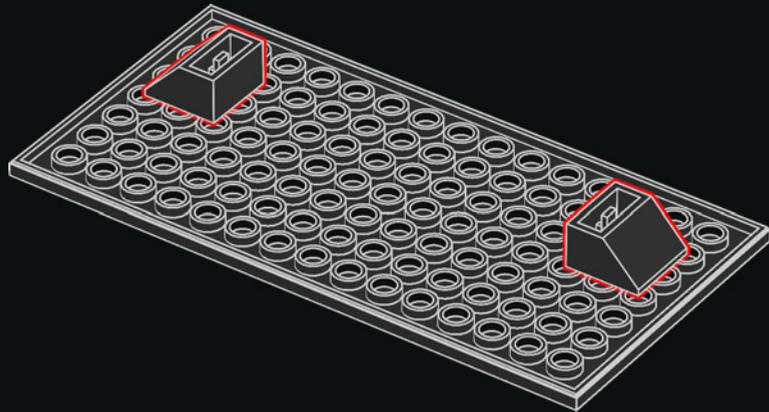
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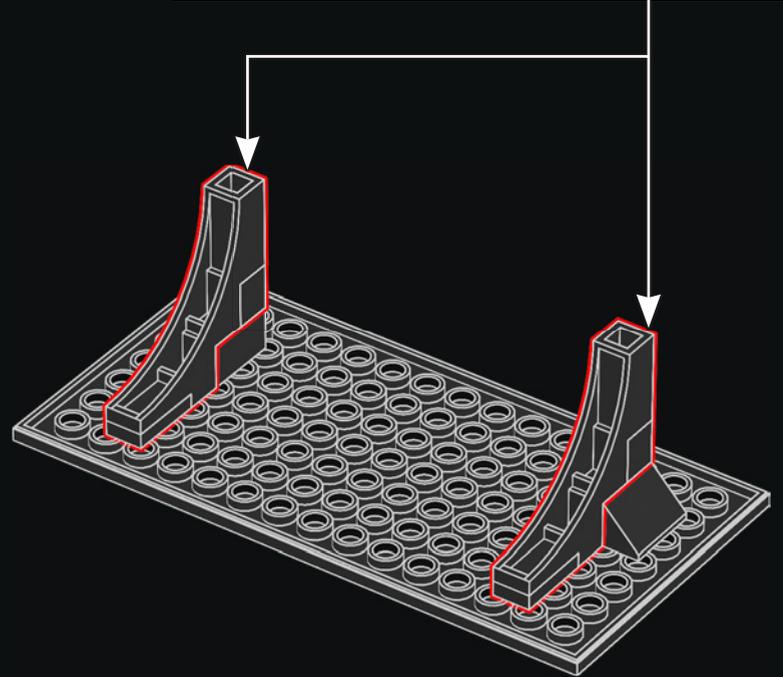
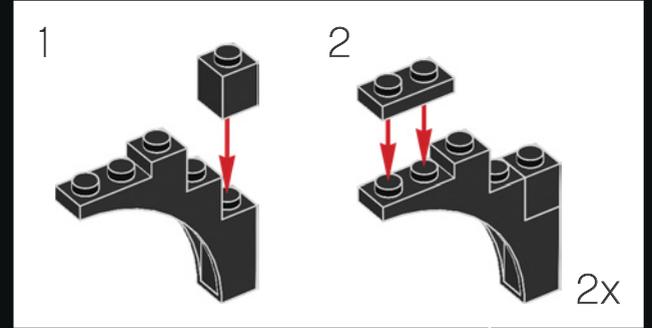
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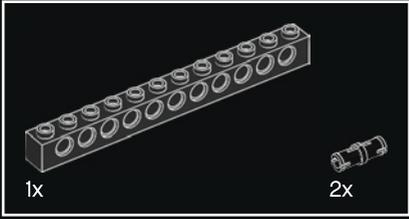
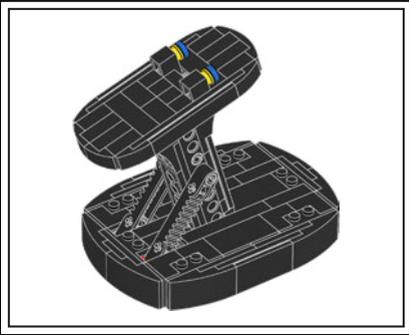


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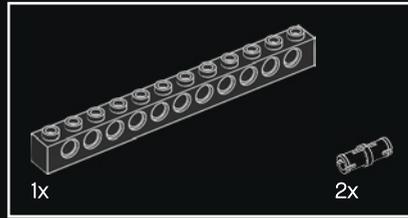
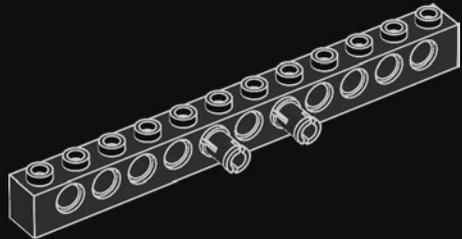


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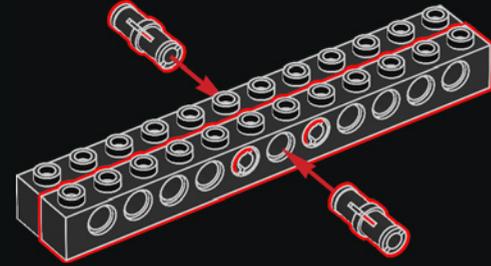




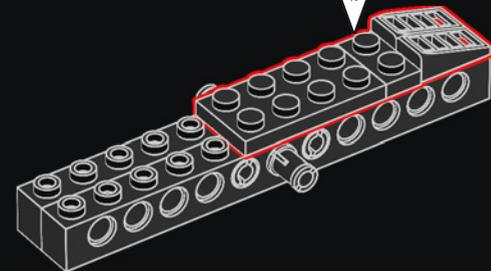
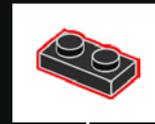
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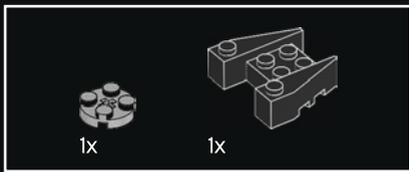


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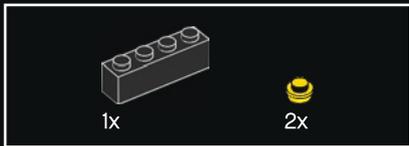
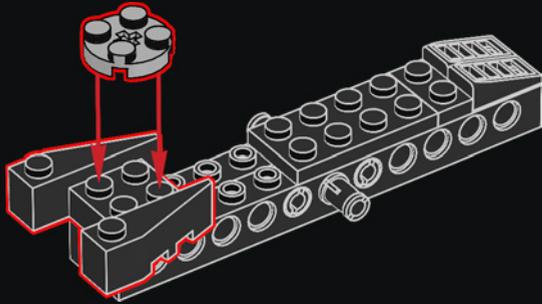


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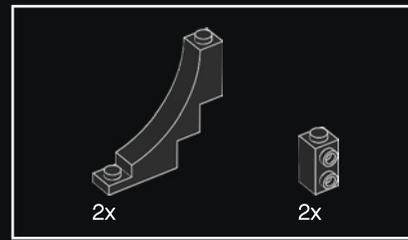
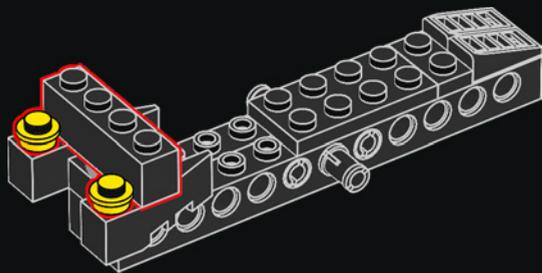




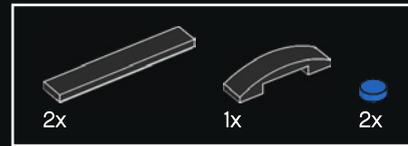
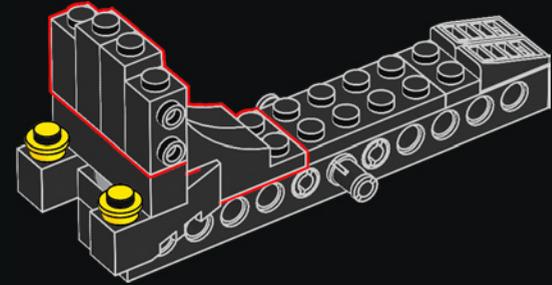
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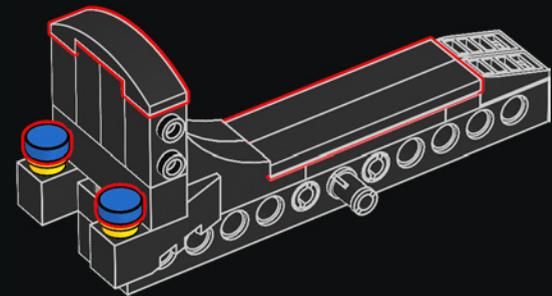
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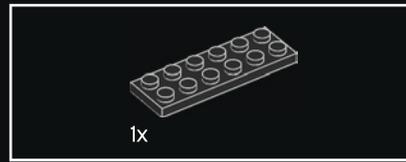
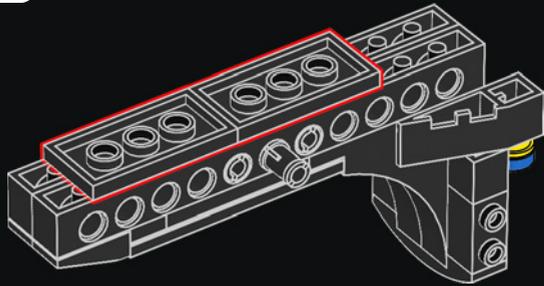


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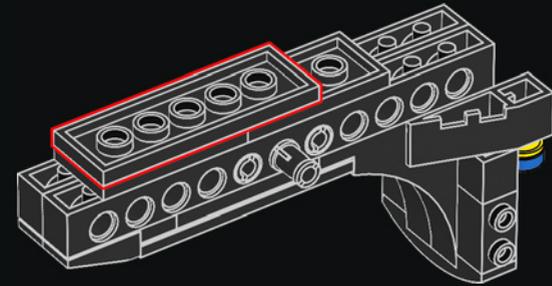


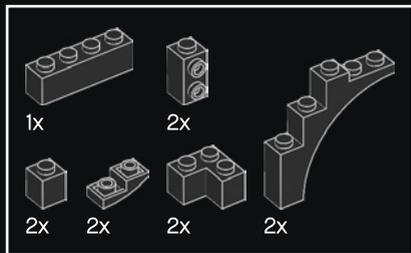


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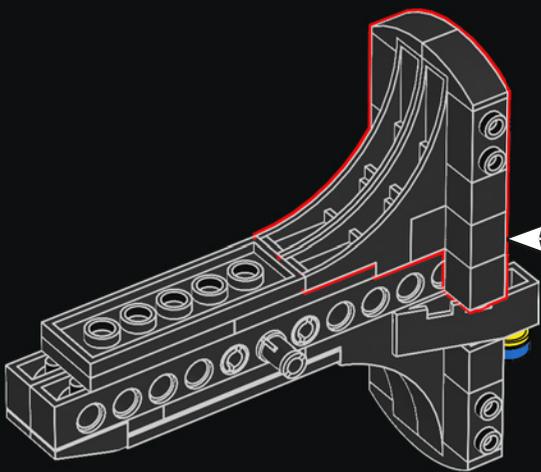
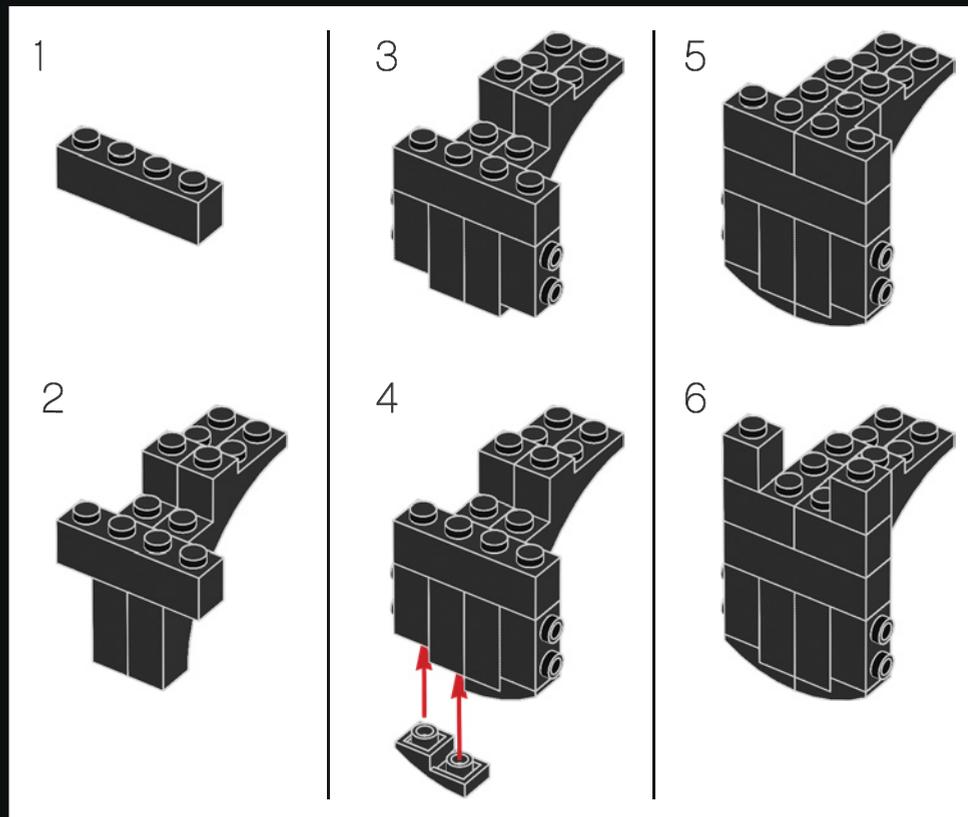


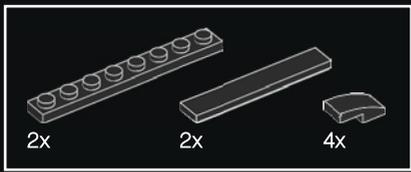
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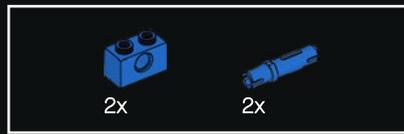
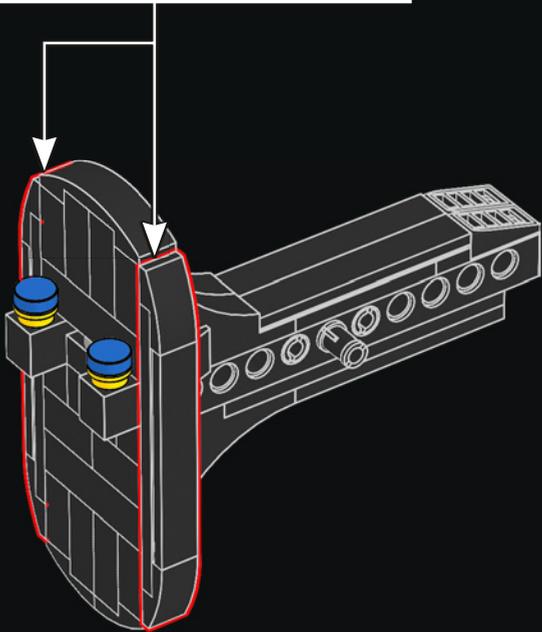
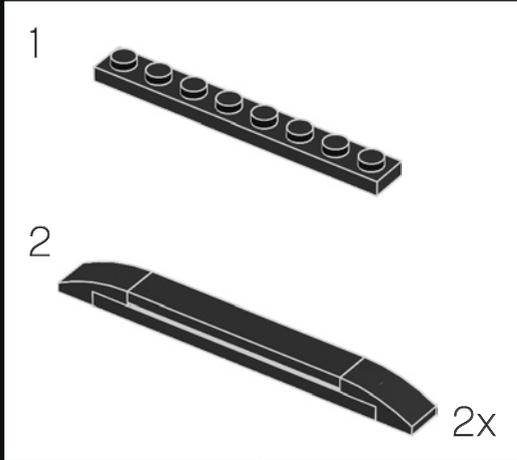


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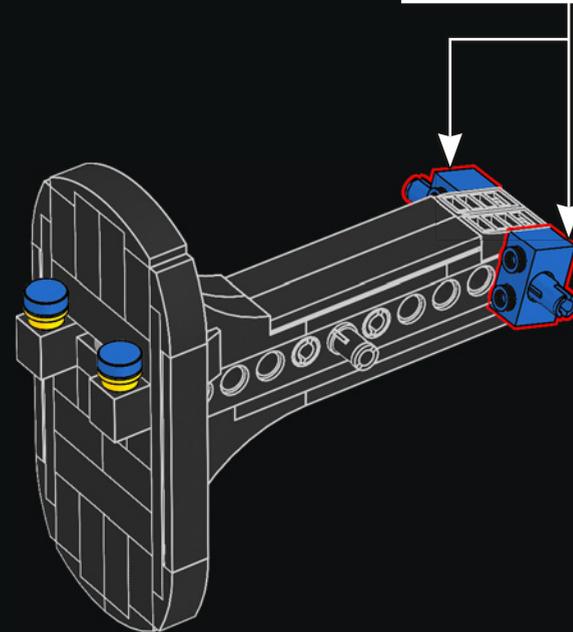
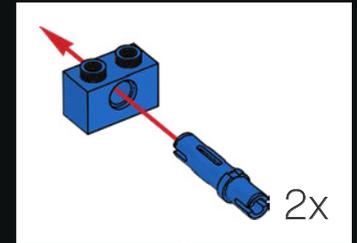


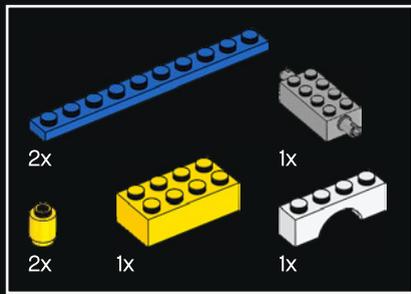


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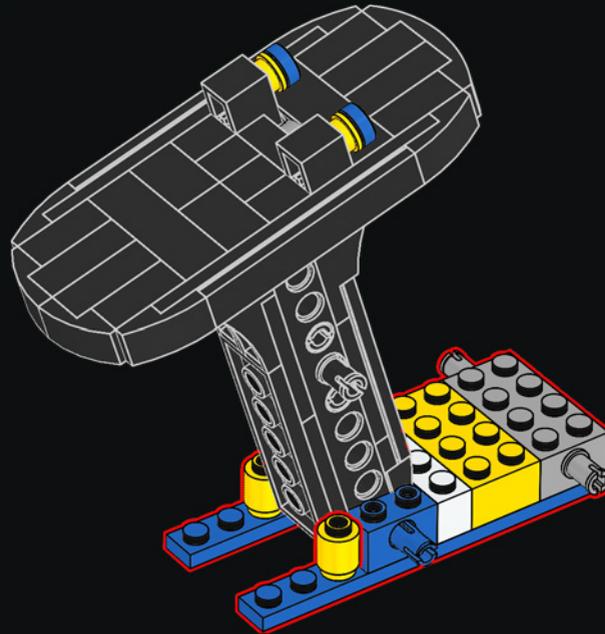
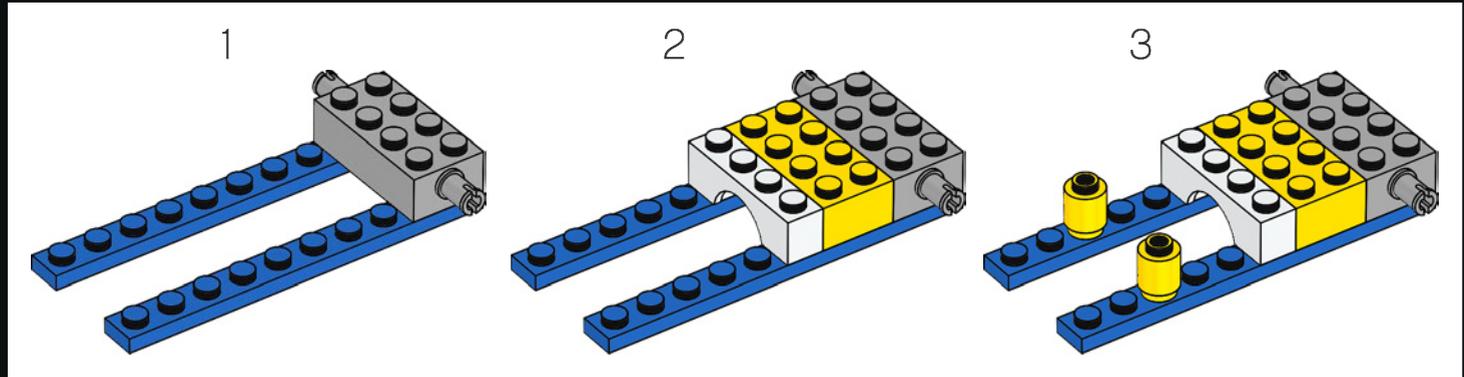


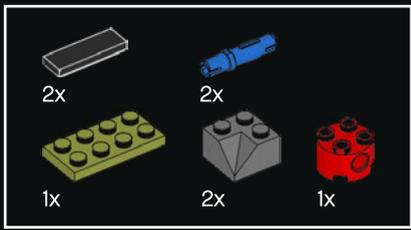
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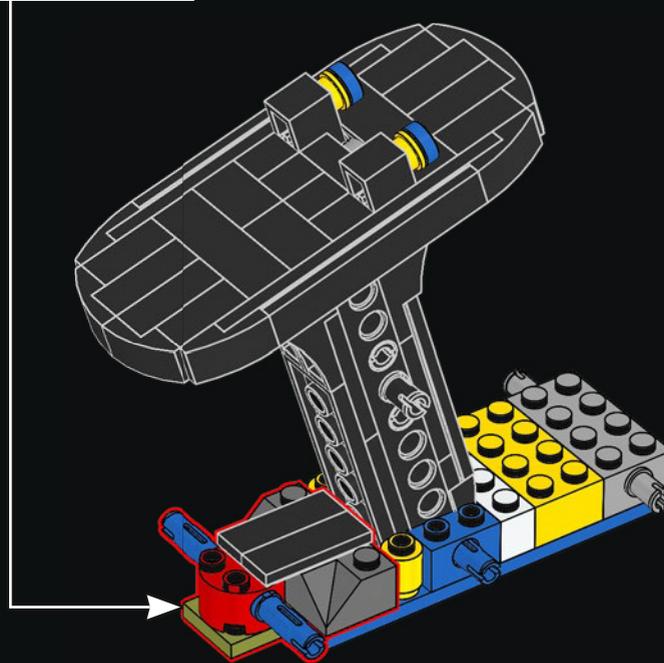
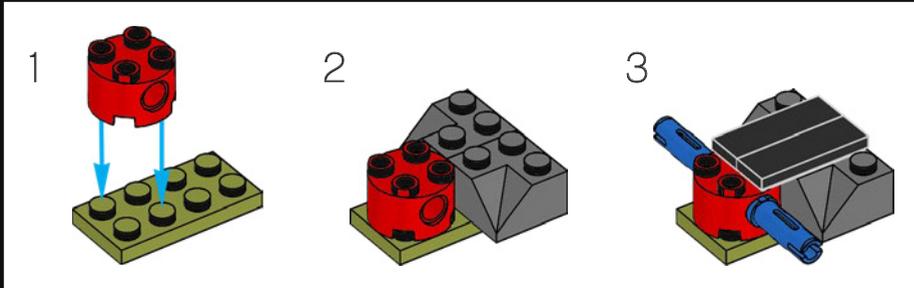


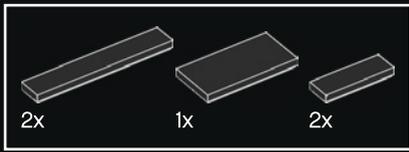
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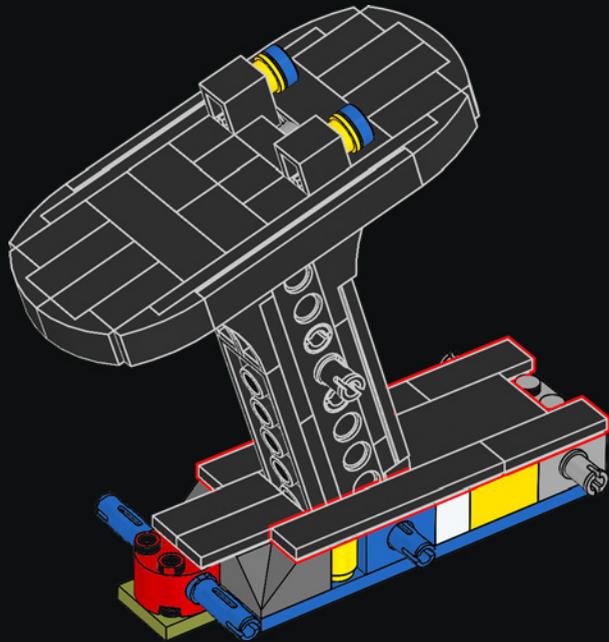


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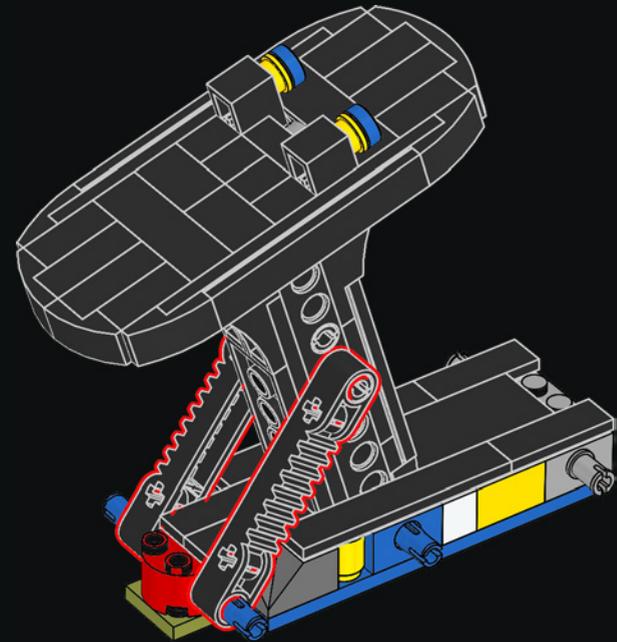


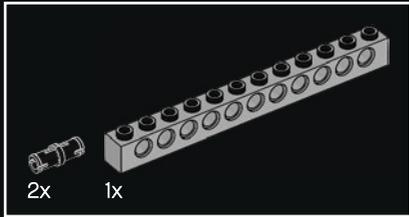
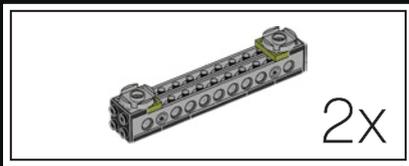


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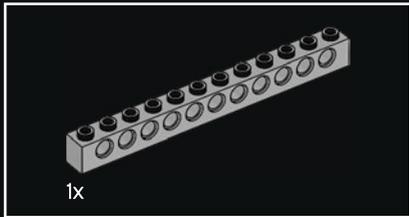
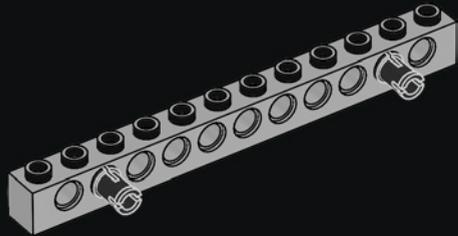


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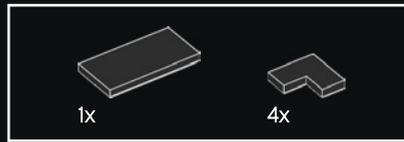
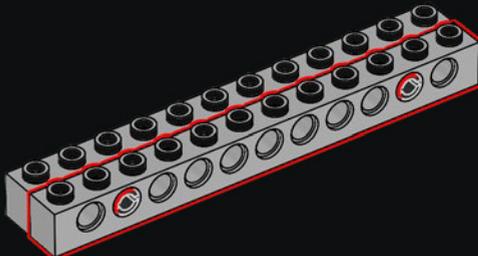




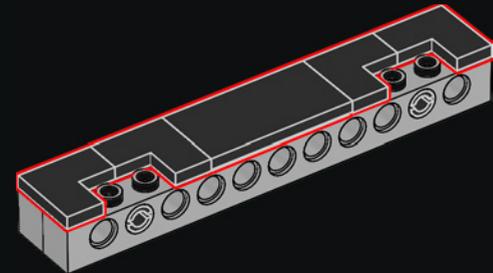
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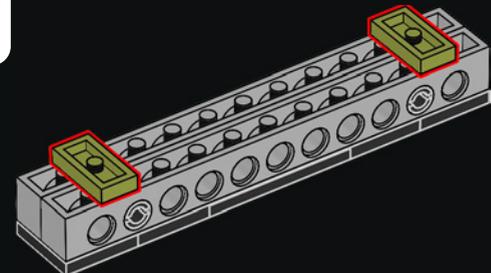
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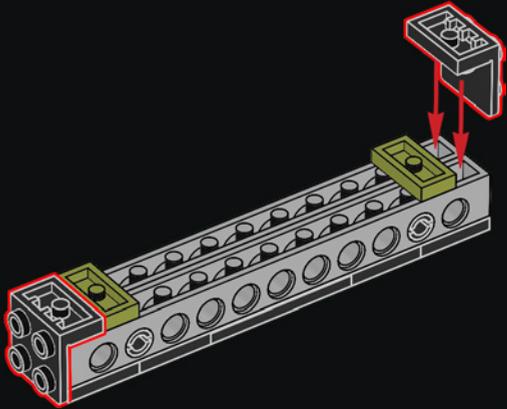


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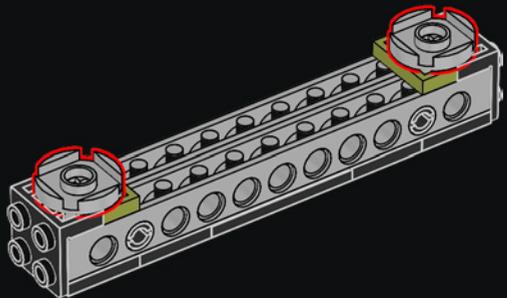




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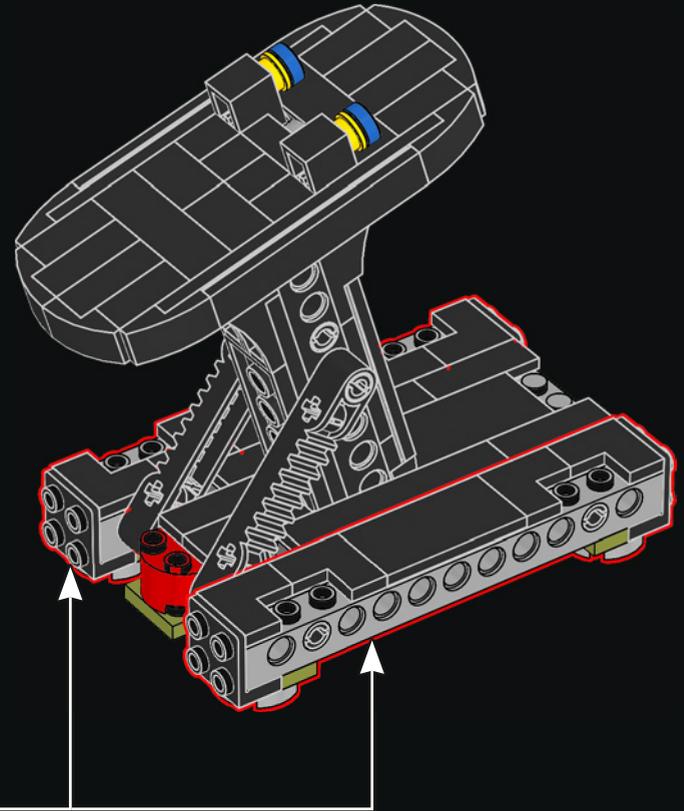


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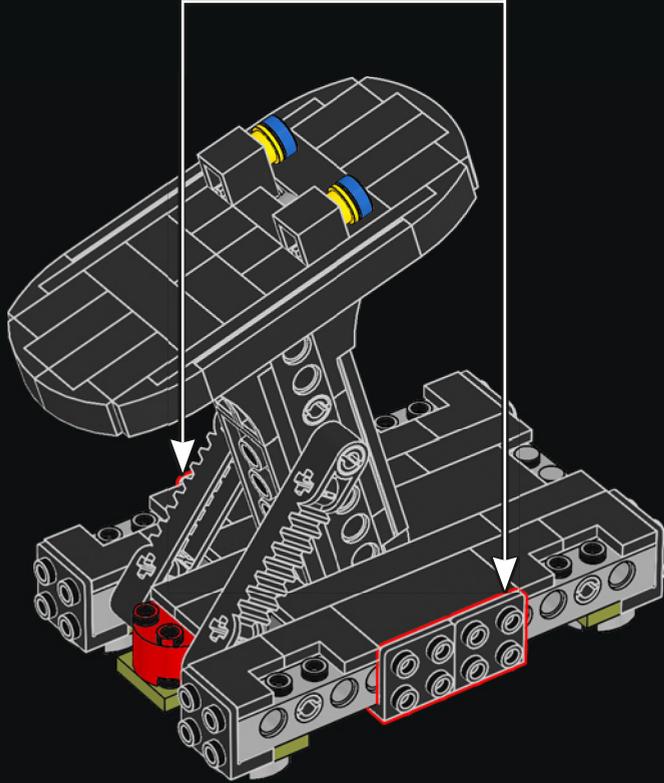
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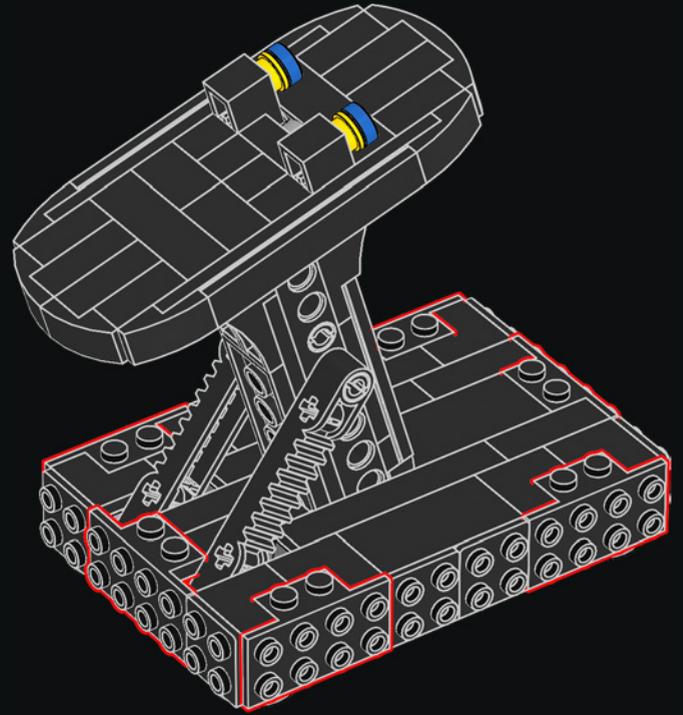


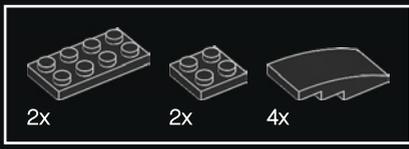


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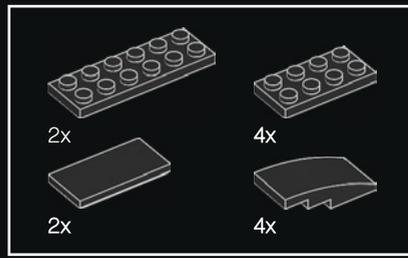
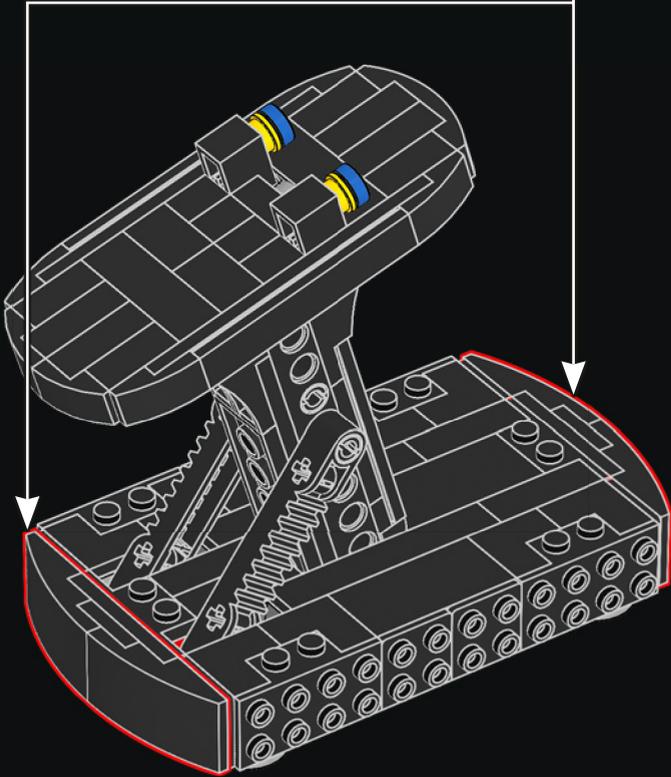
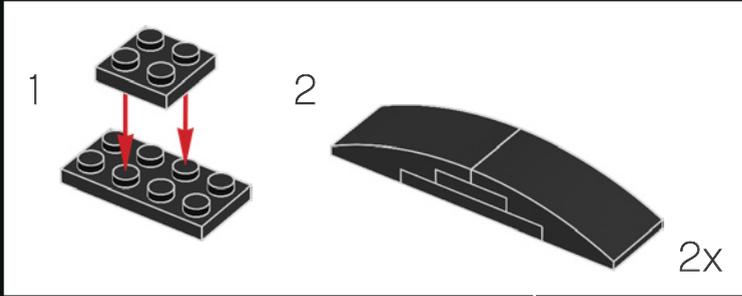


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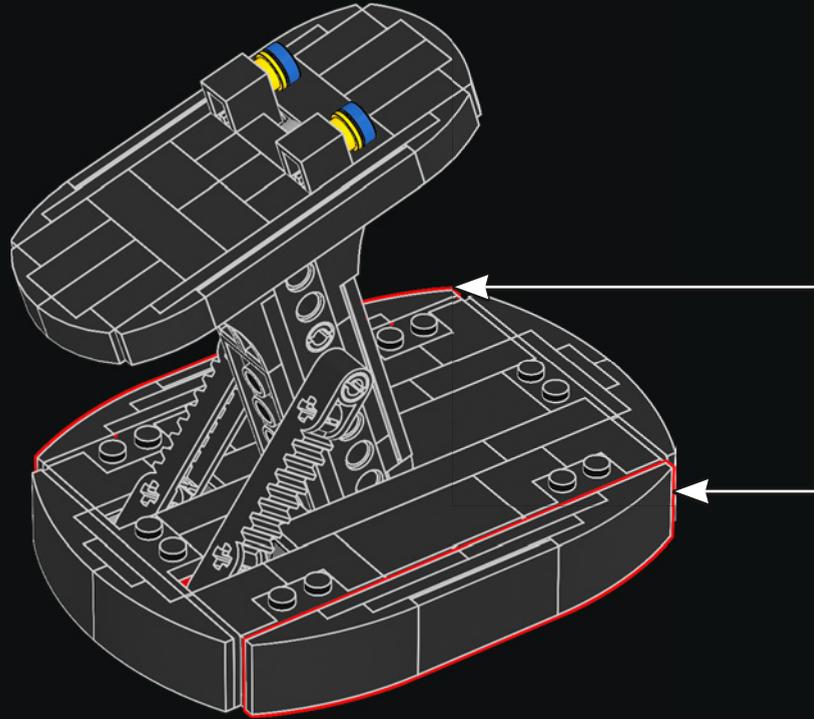
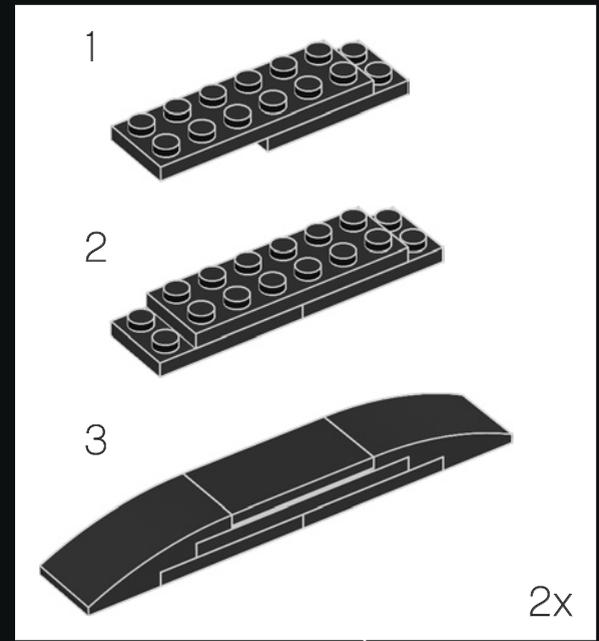


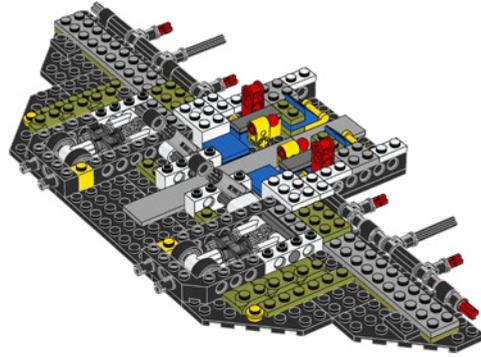
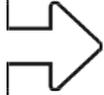


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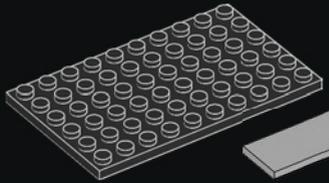
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SCHON GEWUSST?

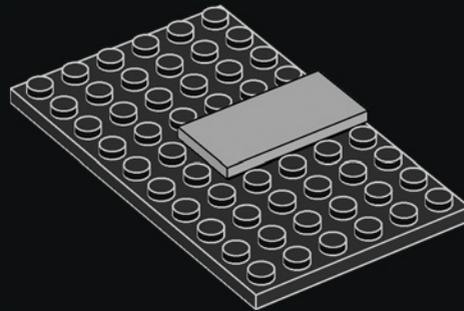
Die Discovery beförderte insgesamt 222 Personen ins All – und somit mehr als jedes andere Spaceshuttle.

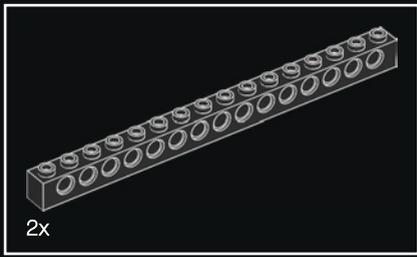


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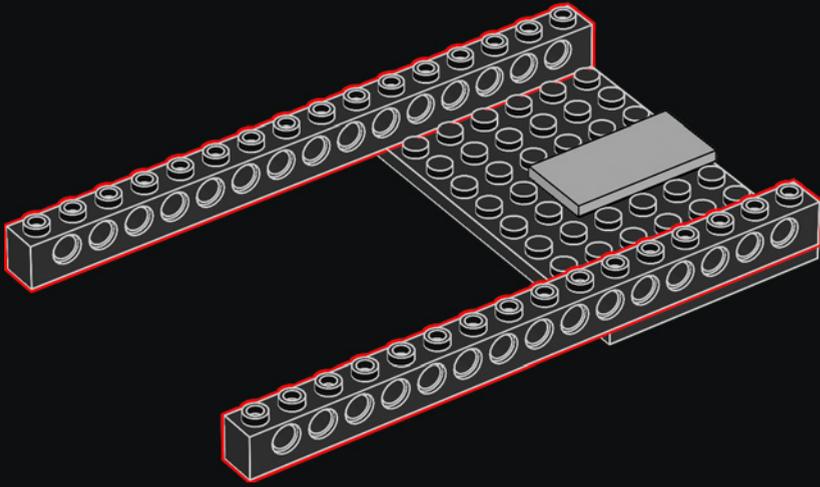
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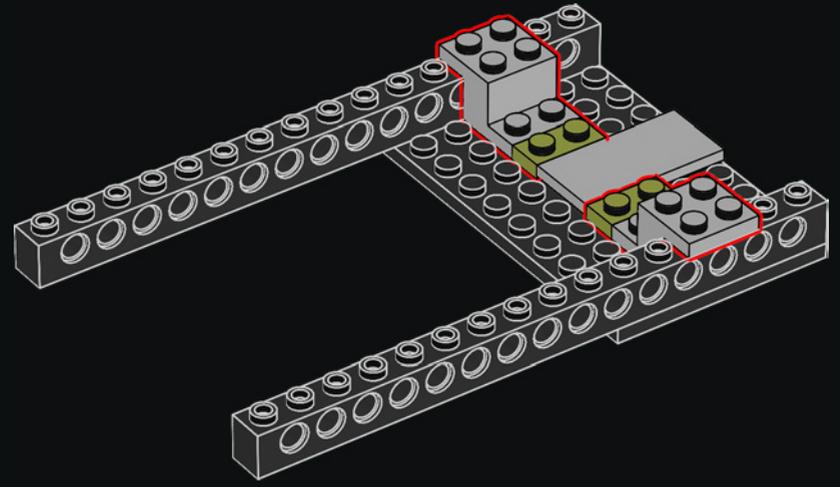


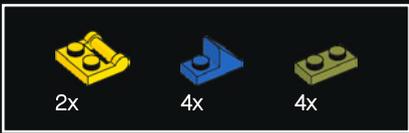


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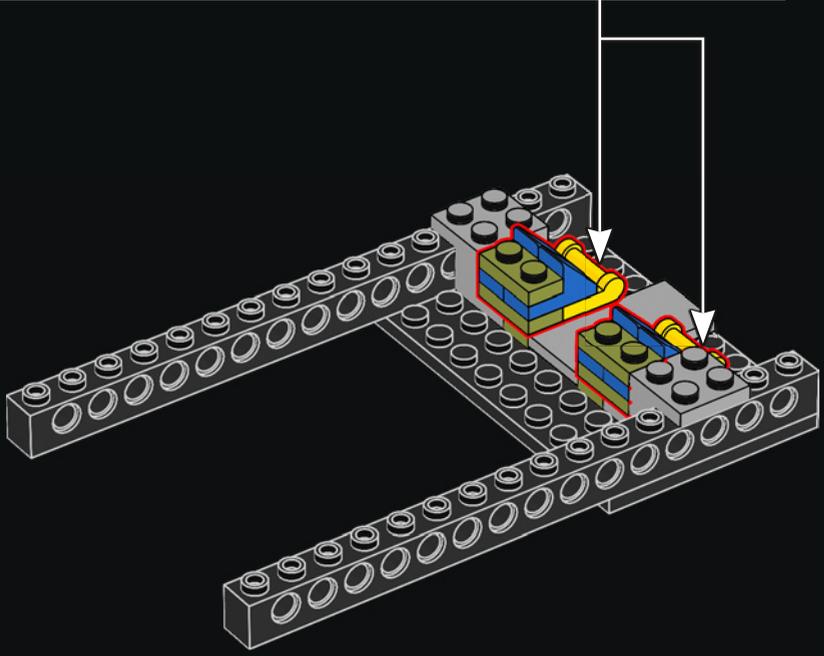
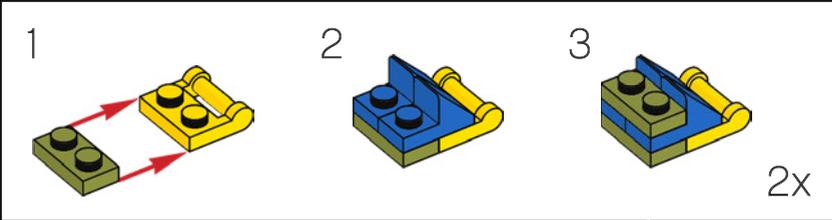


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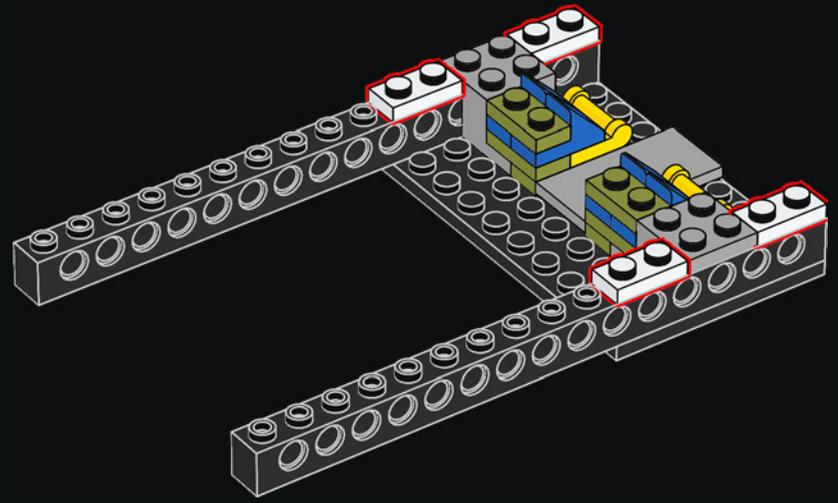




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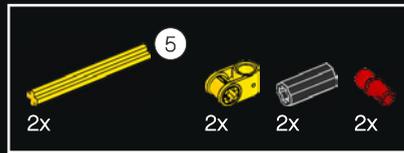
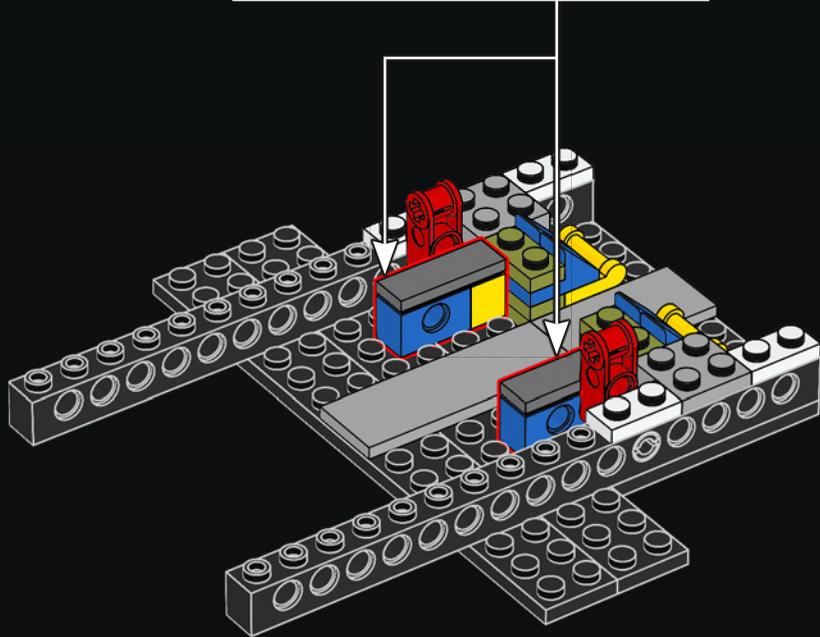
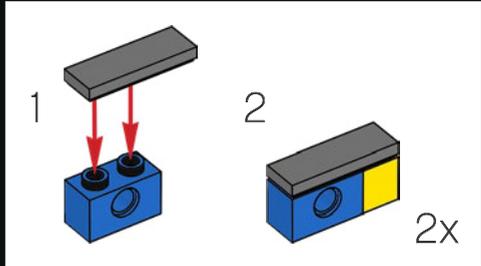


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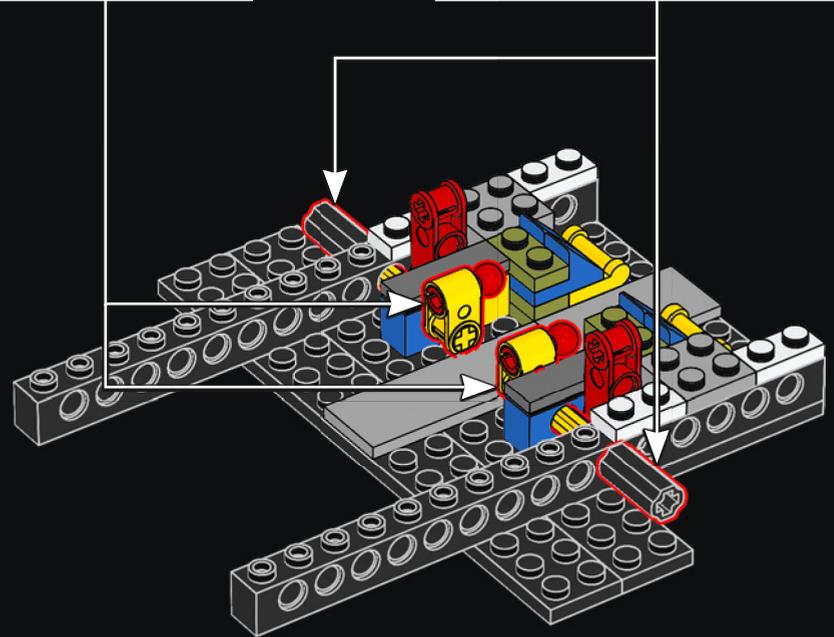
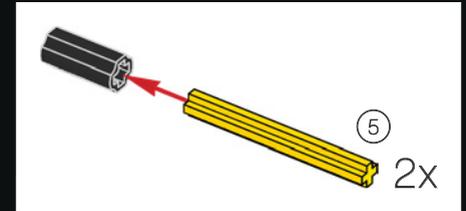
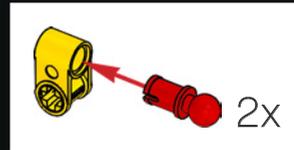


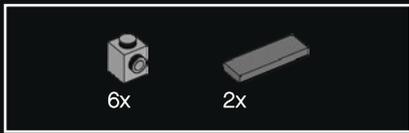


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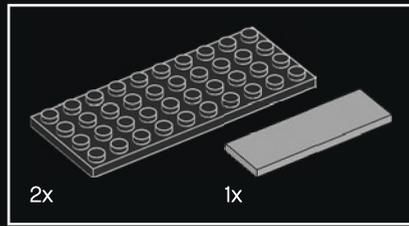
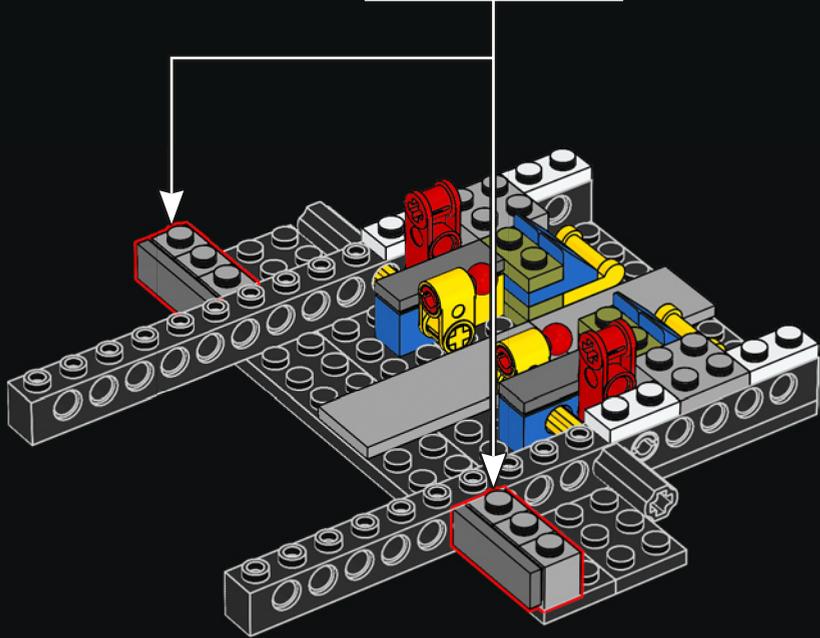
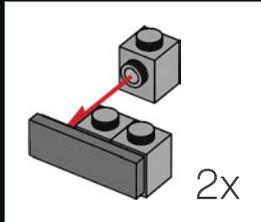


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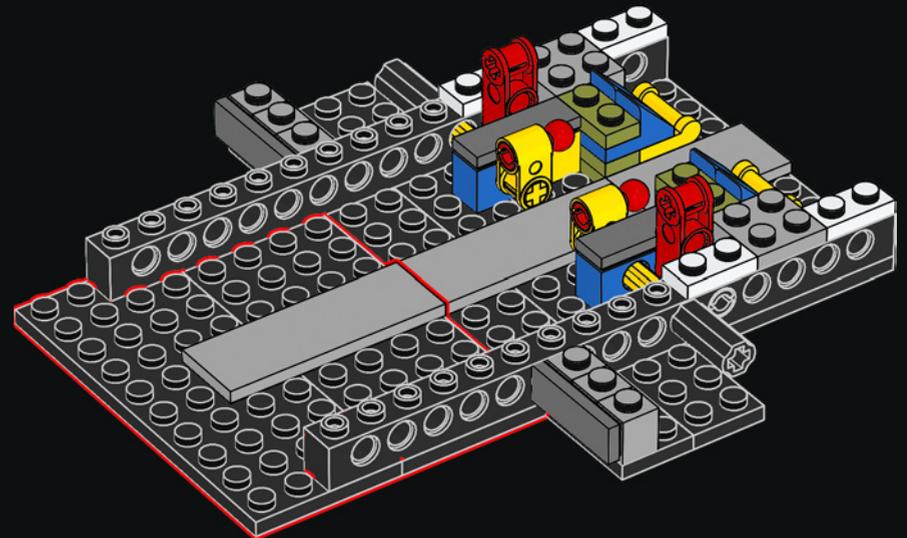


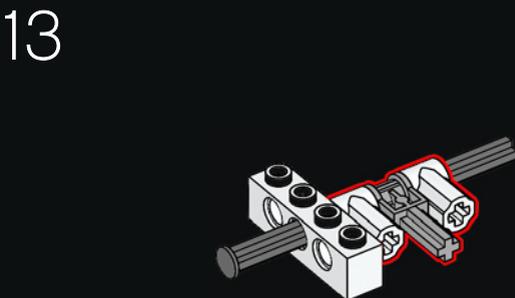
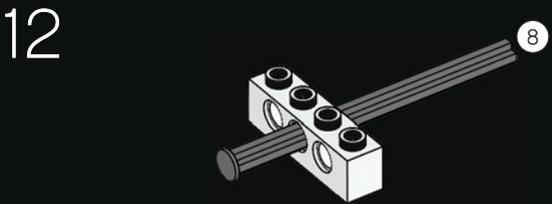
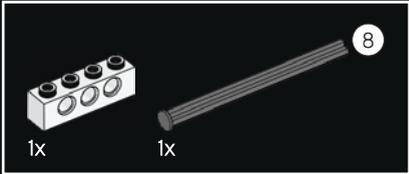
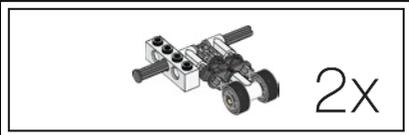


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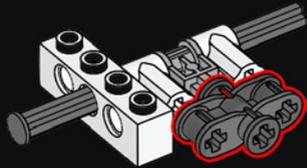


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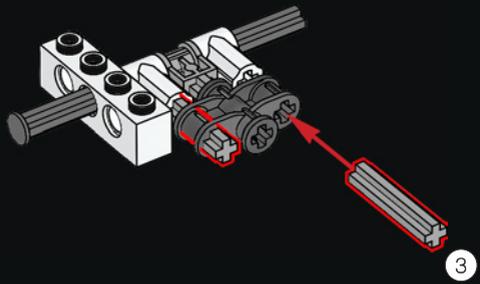




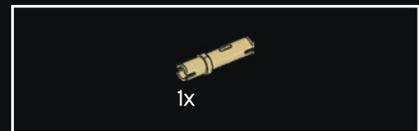
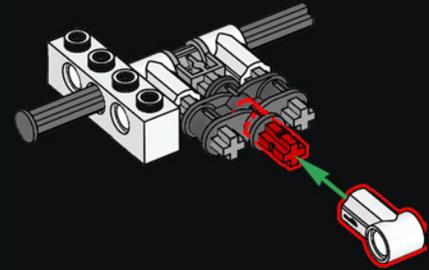
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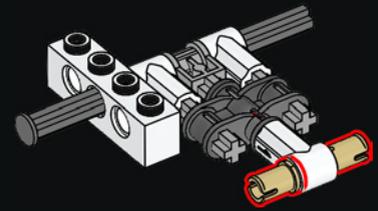
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16

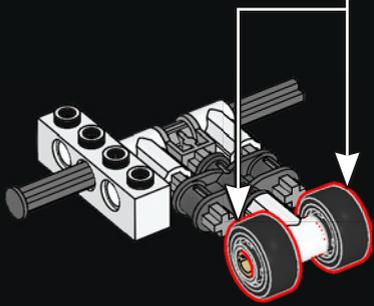
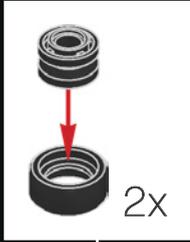


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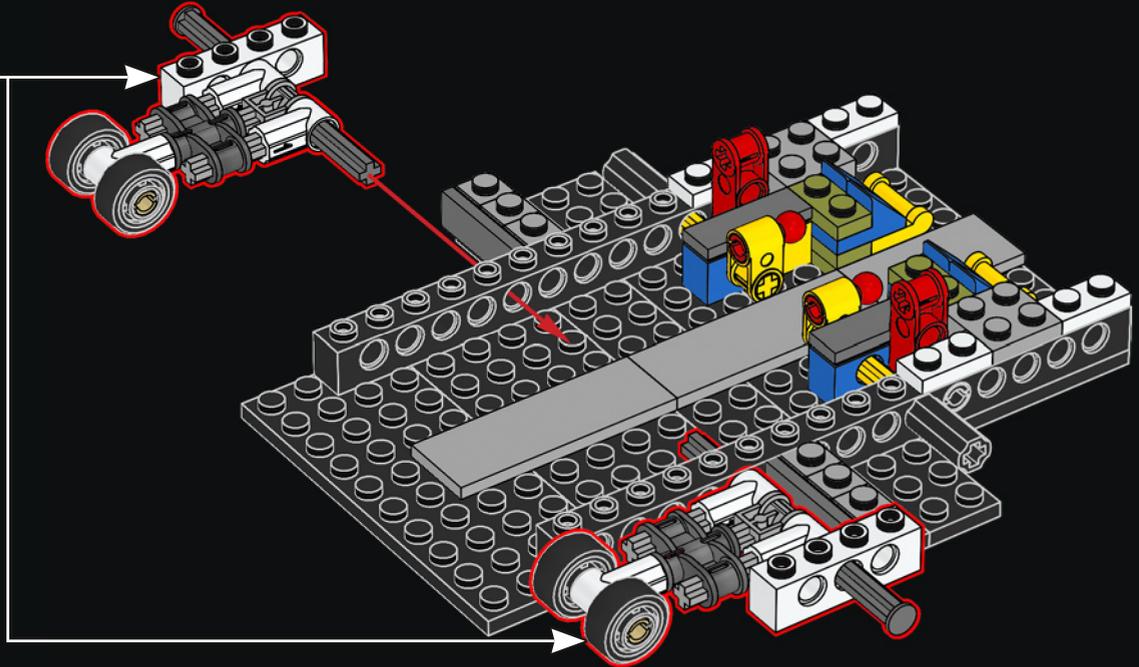




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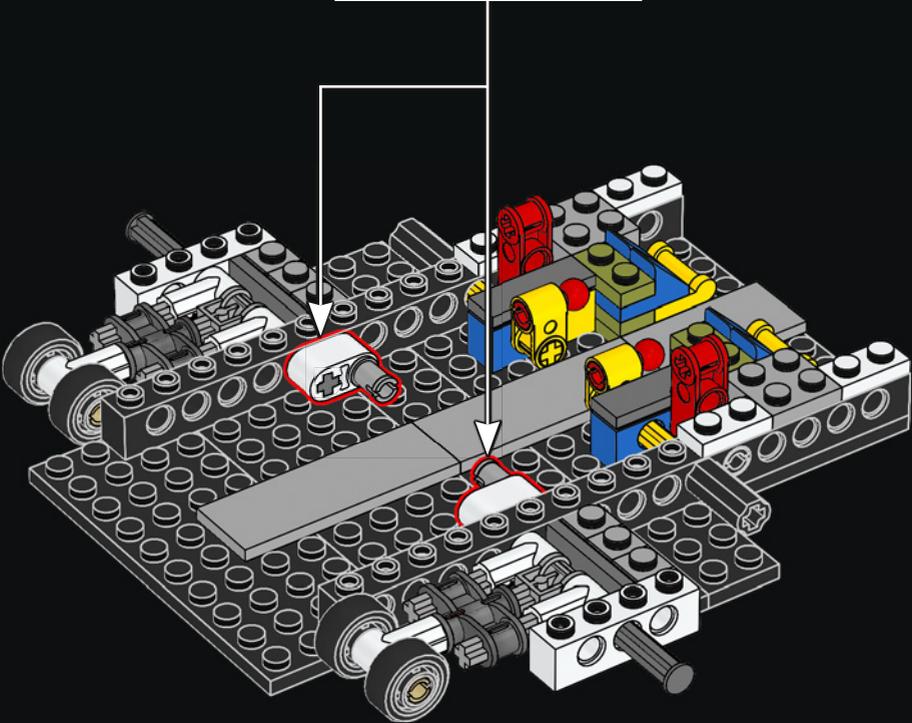
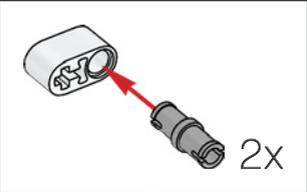


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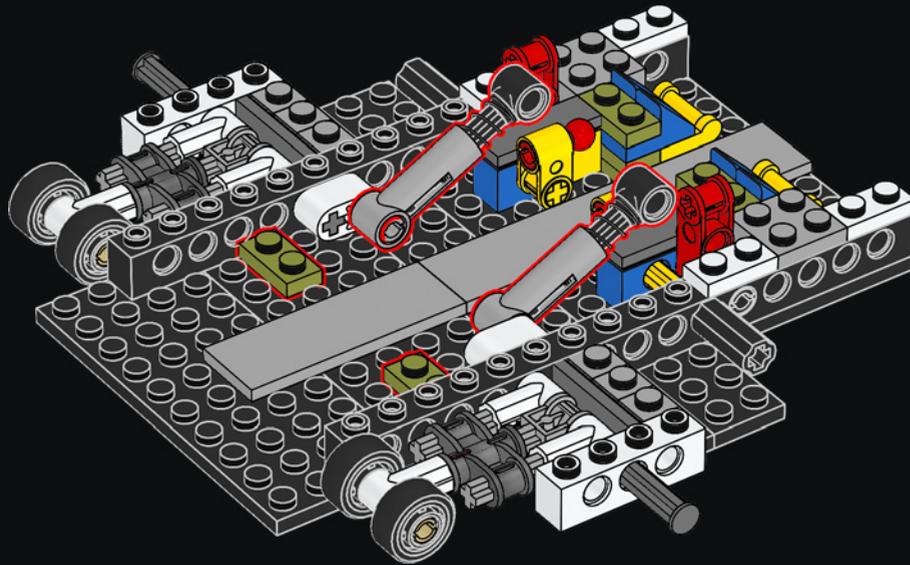


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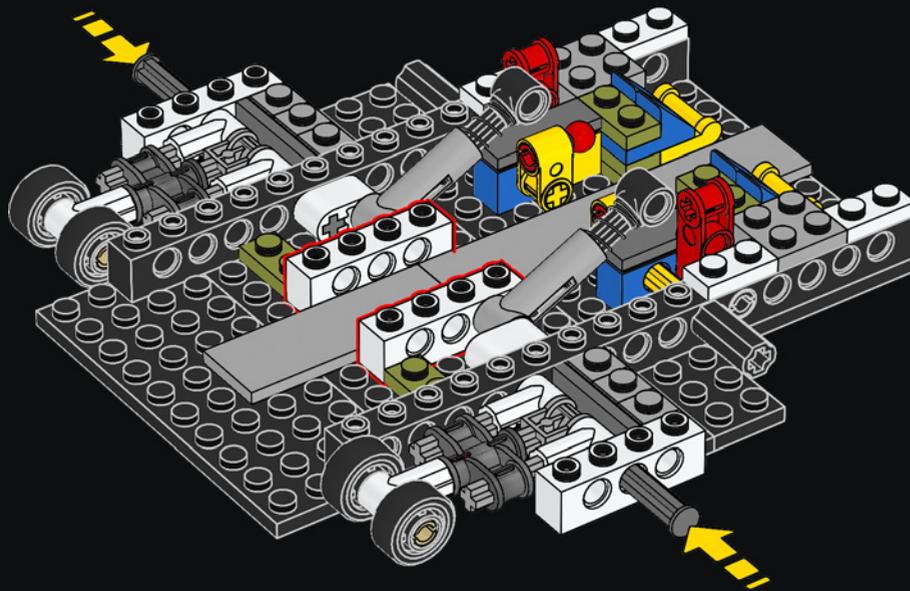


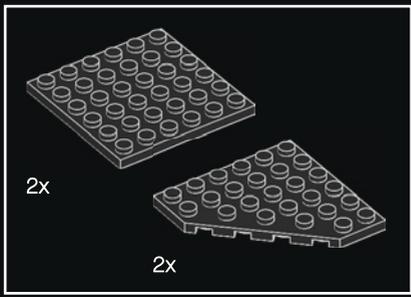


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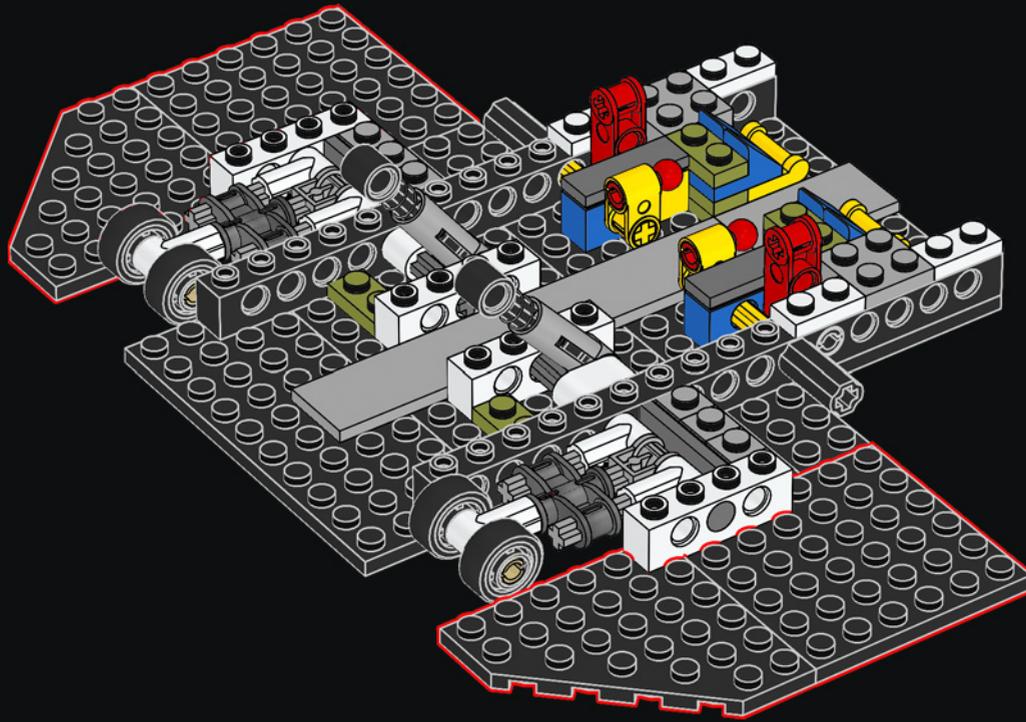


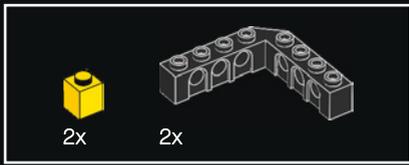
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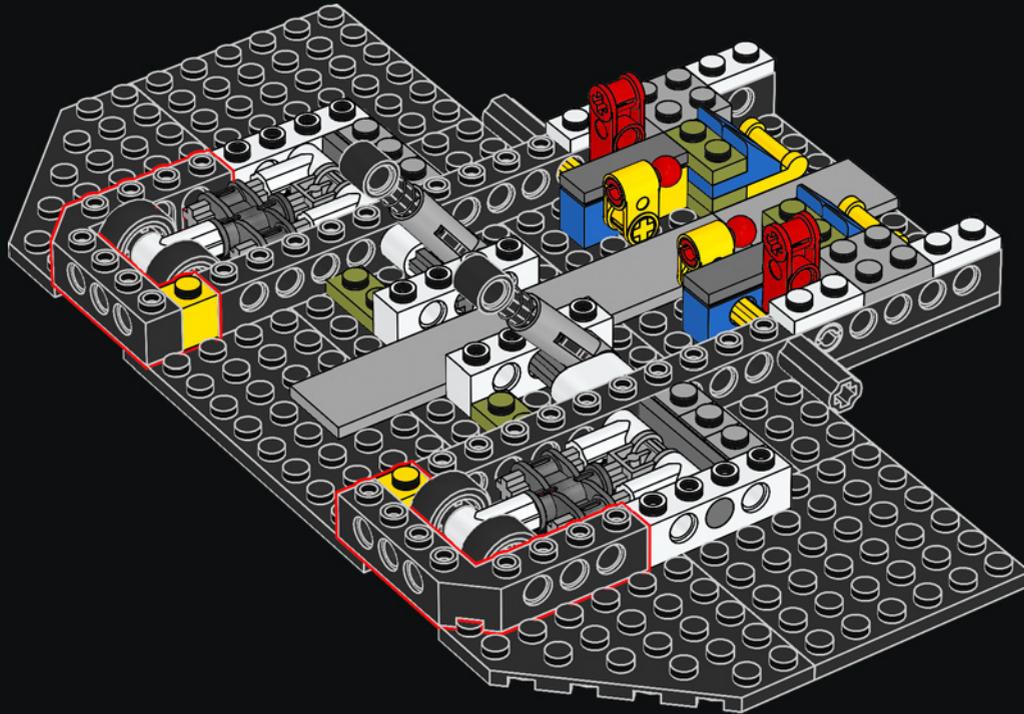


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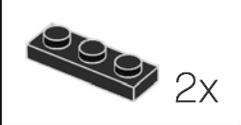
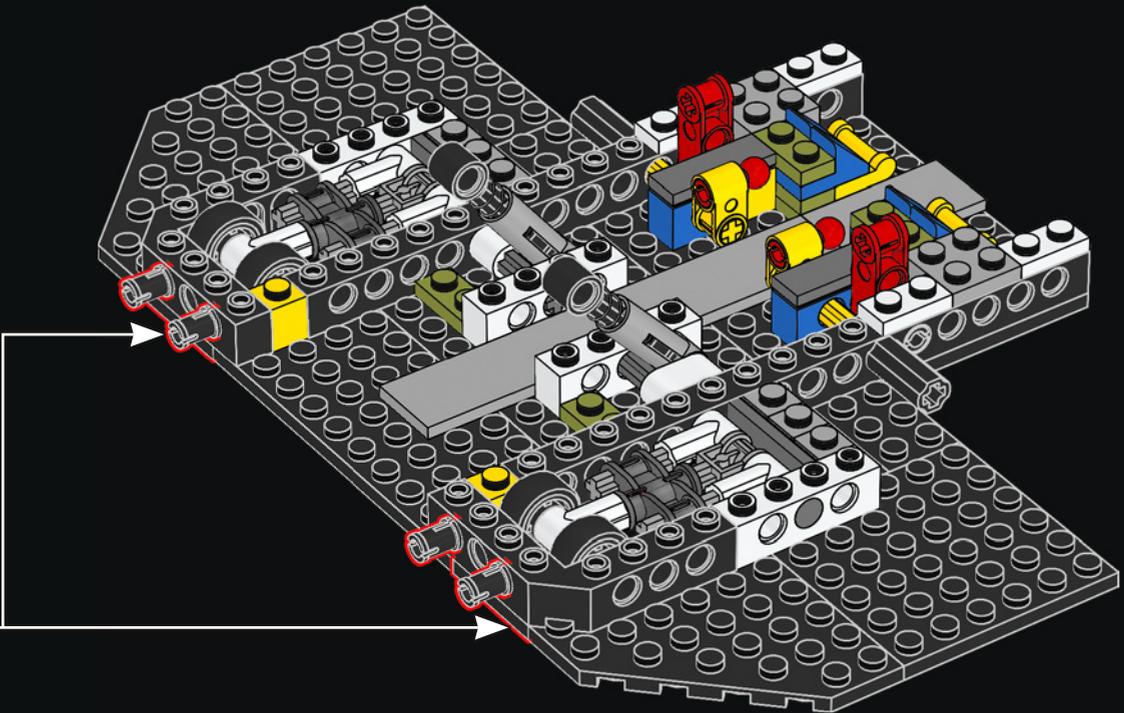


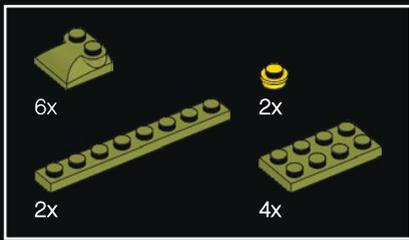
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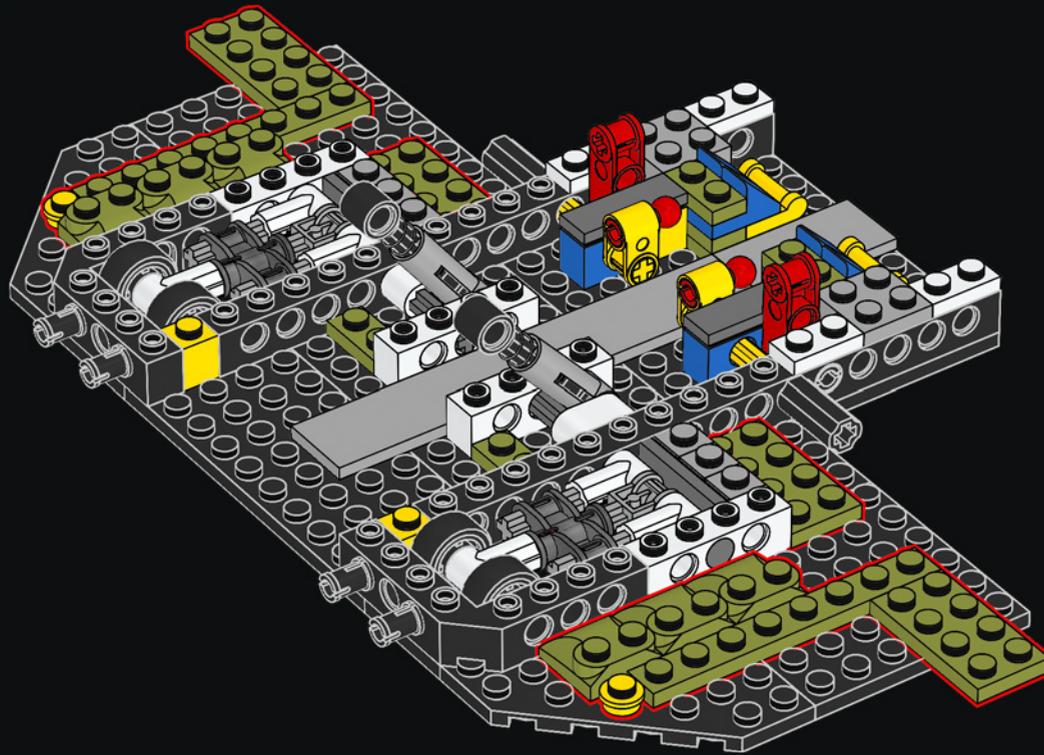


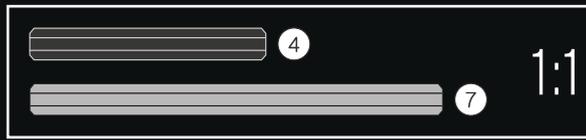
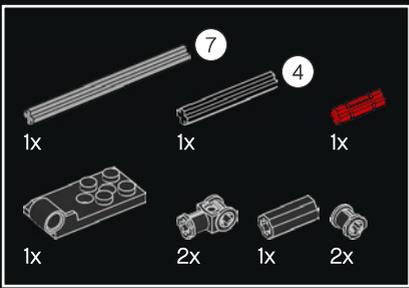
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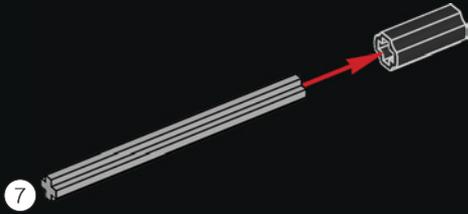
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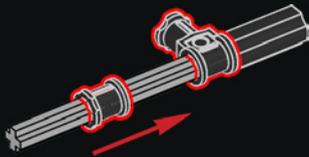


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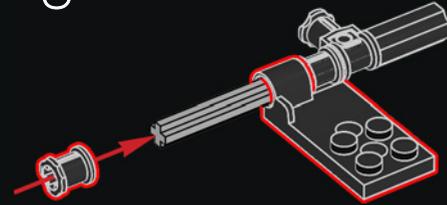
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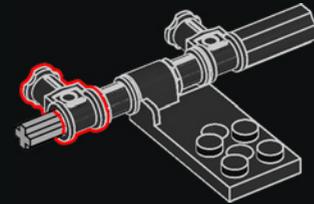
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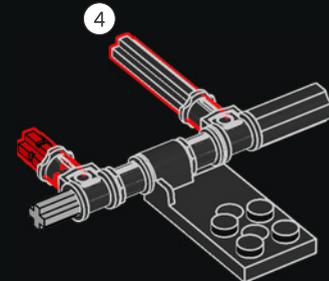
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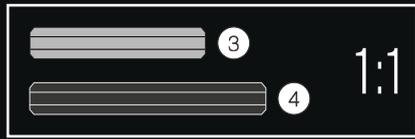
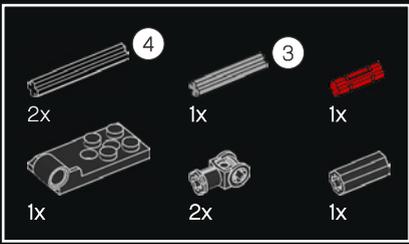


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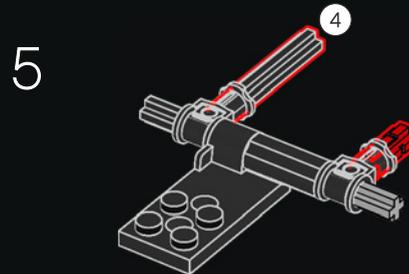
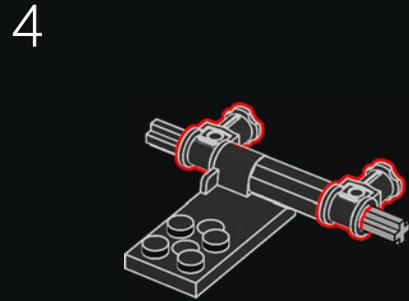
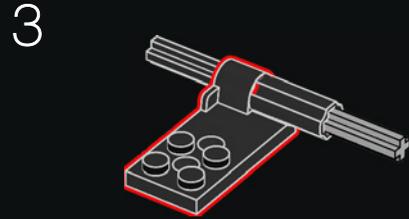
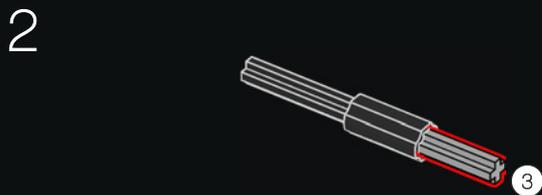
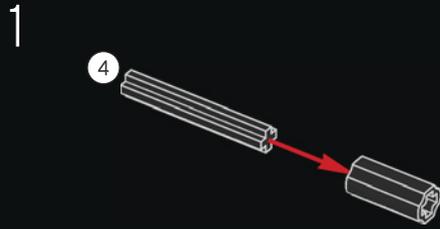


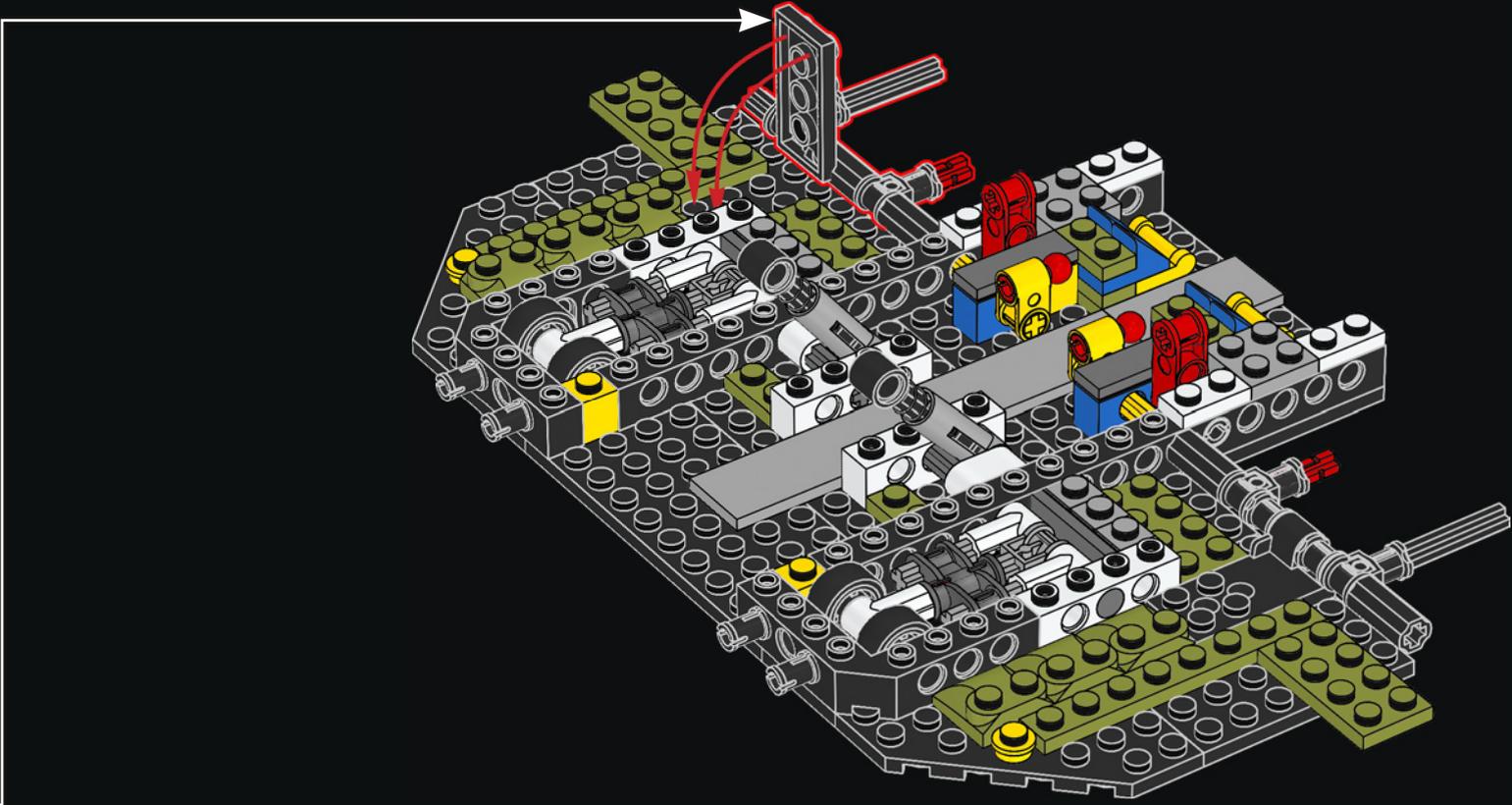
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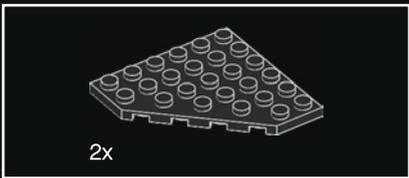




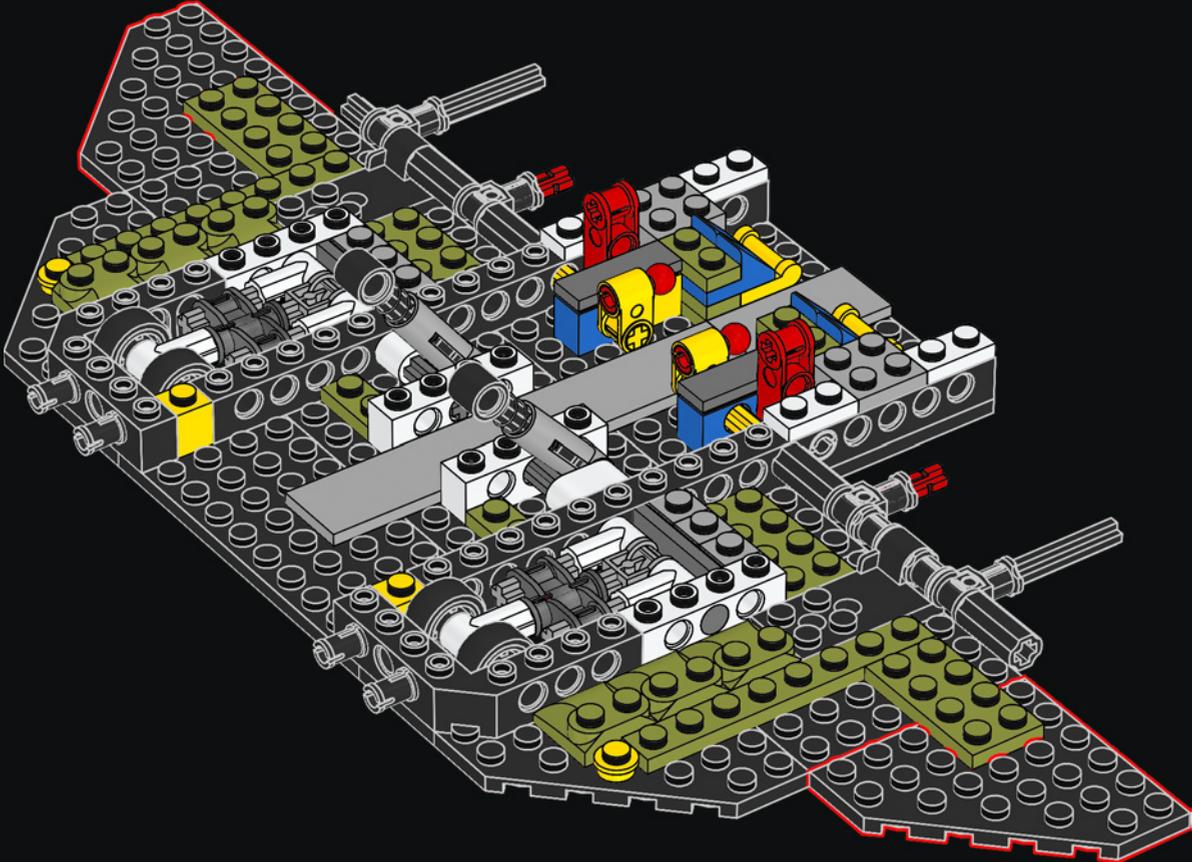
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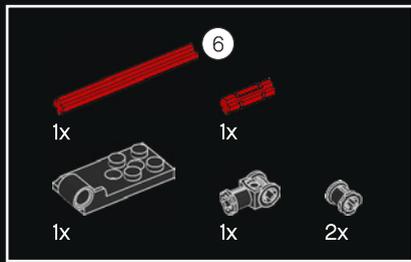




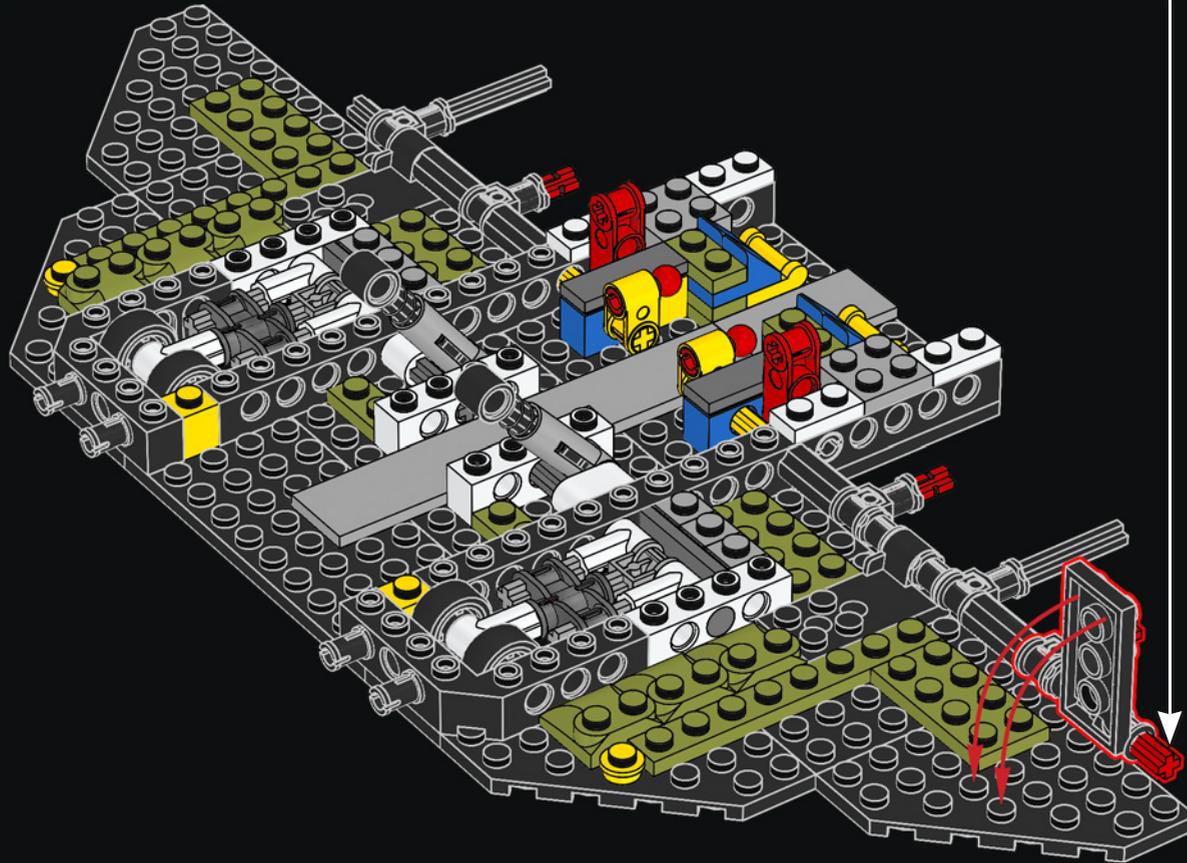
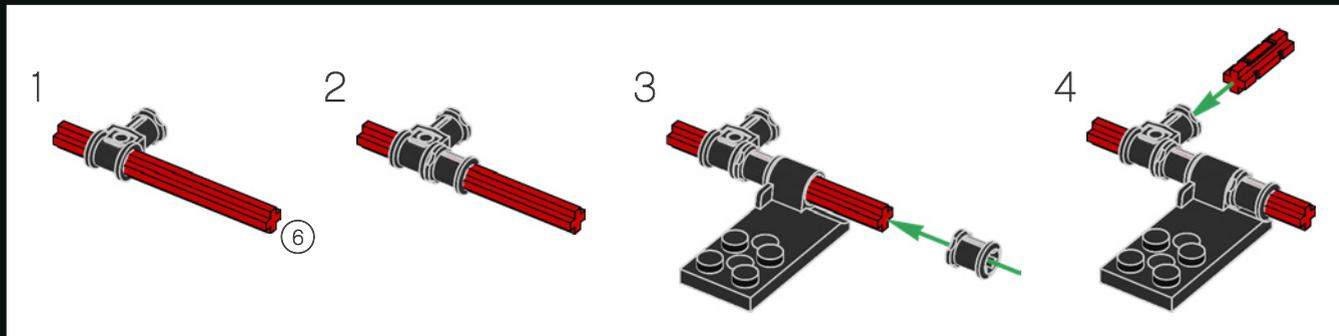


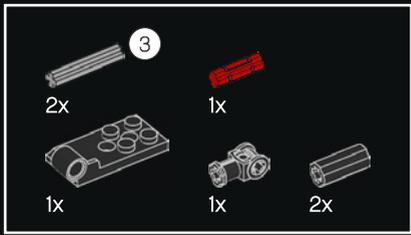
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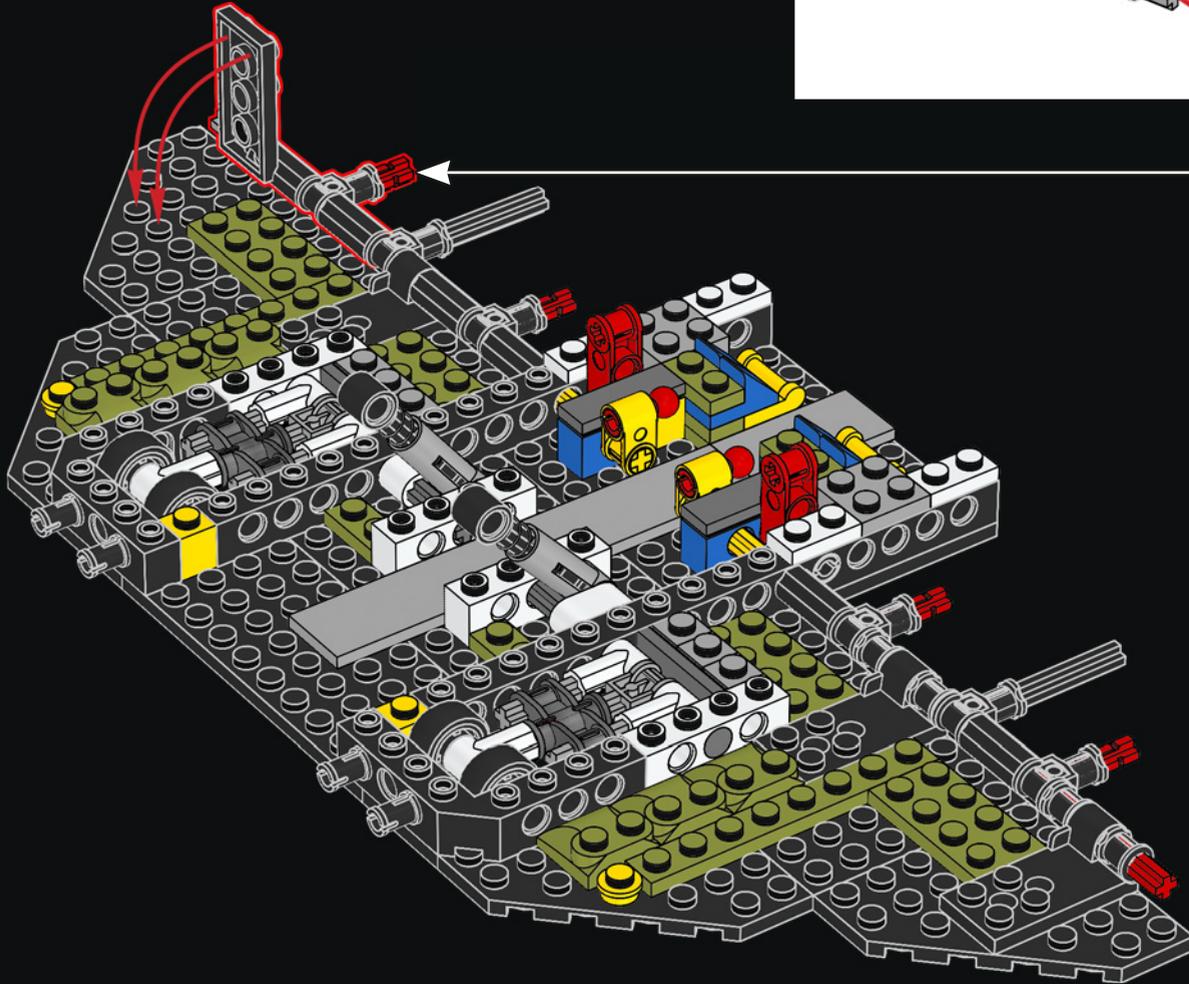
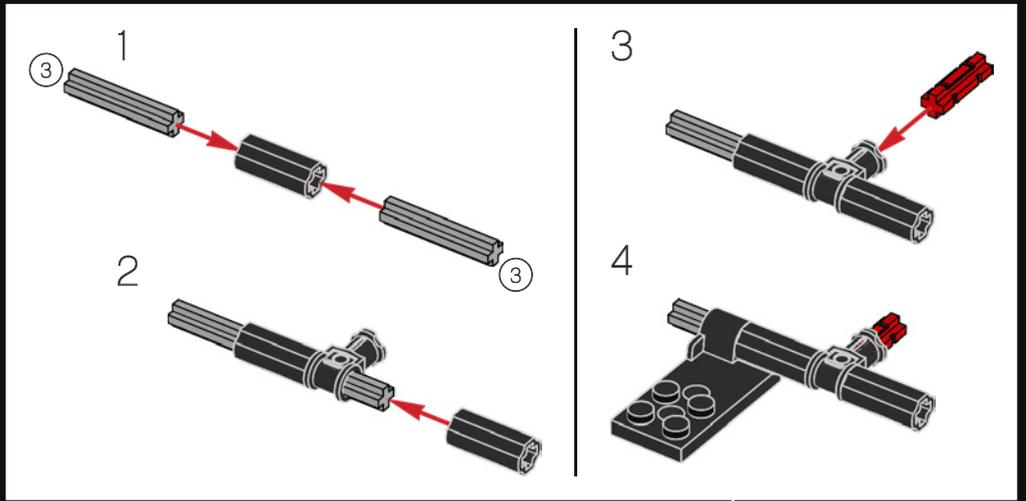


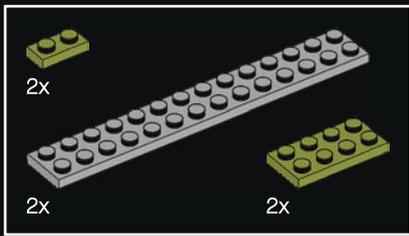
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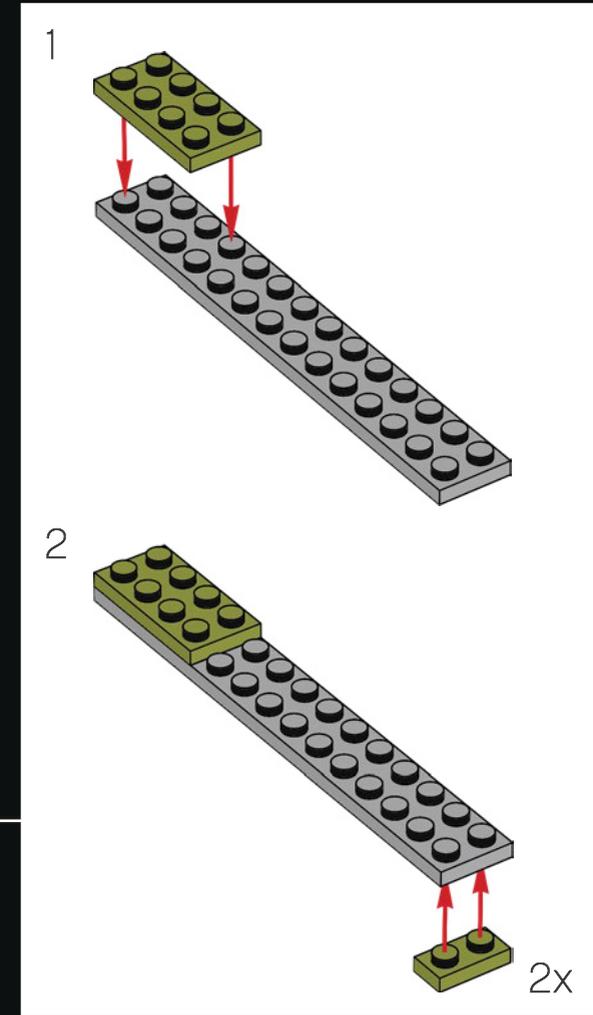
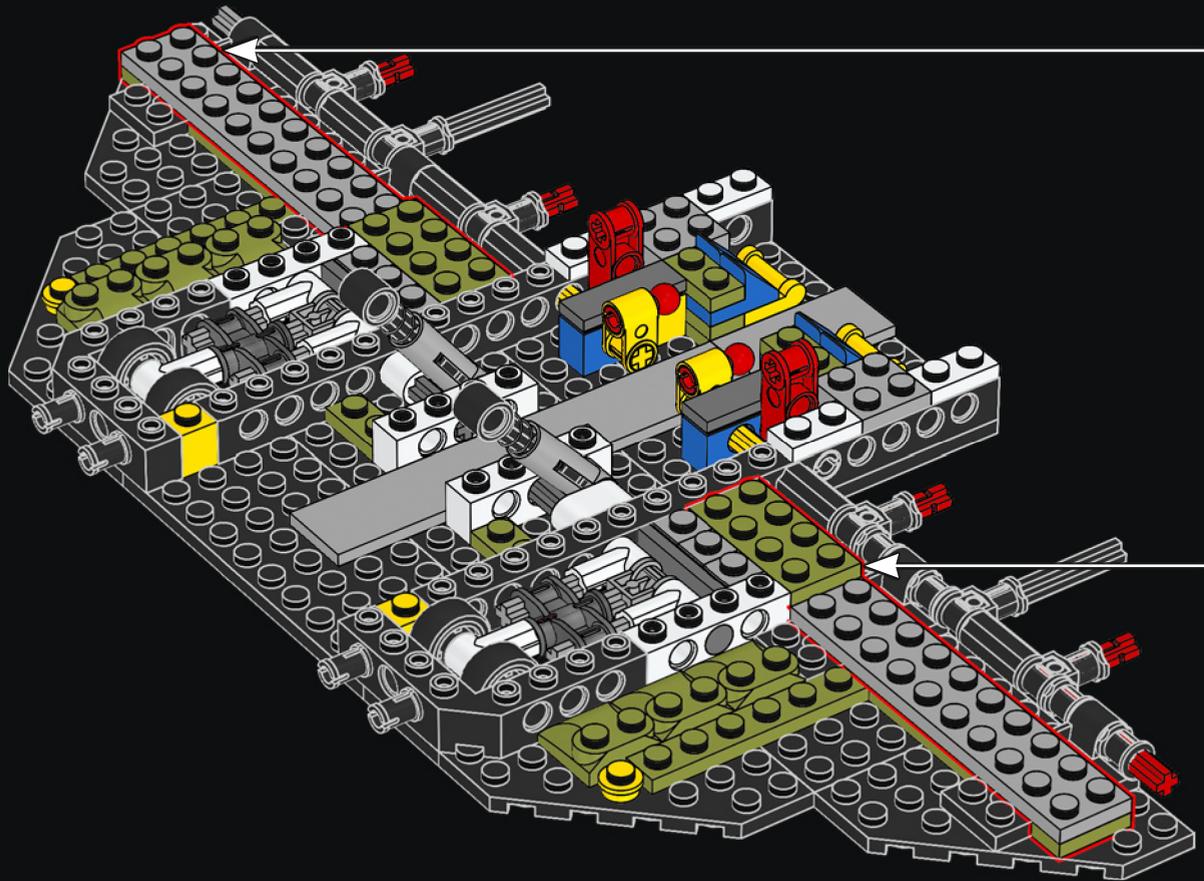


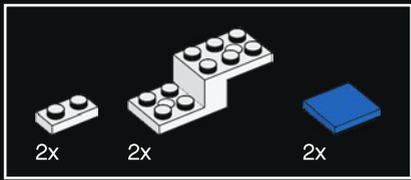
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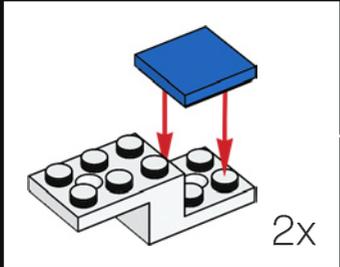
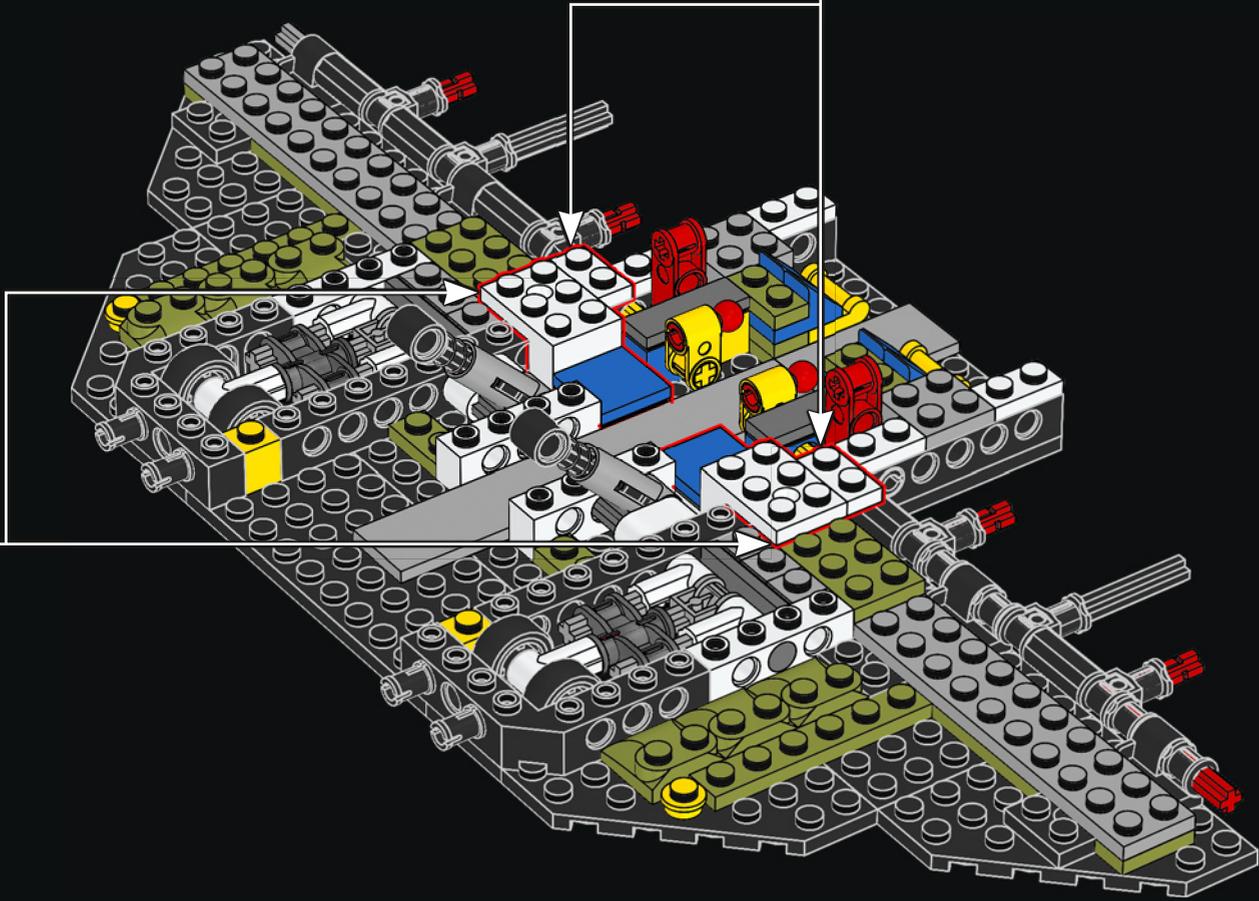


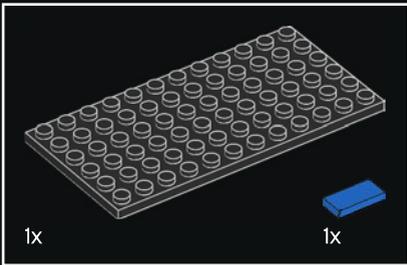
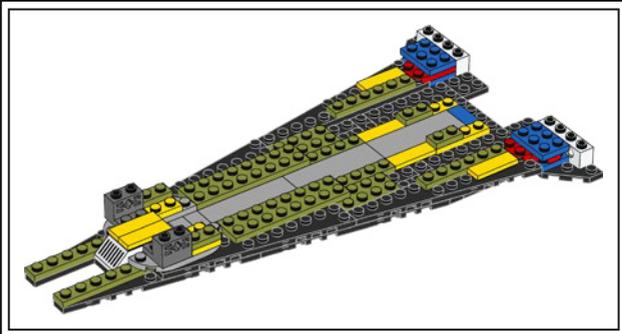
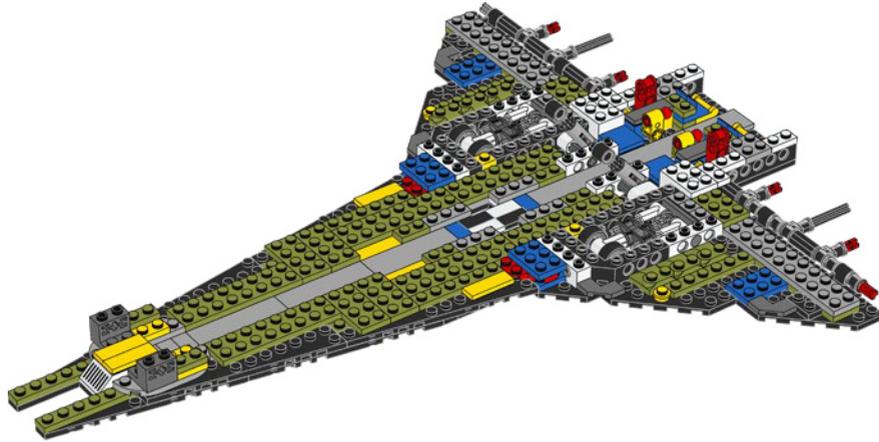
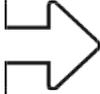
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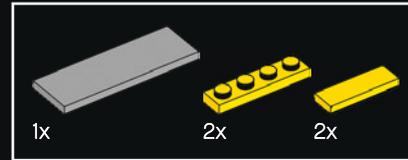
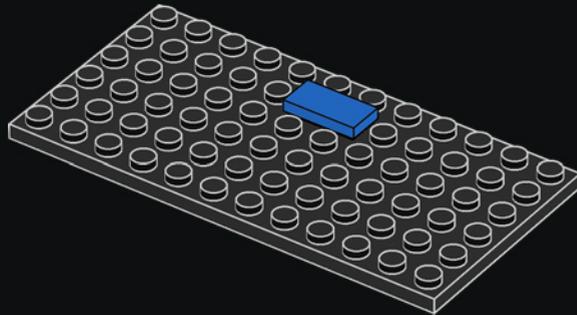


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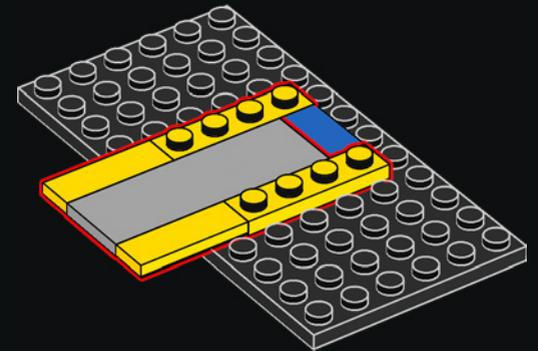


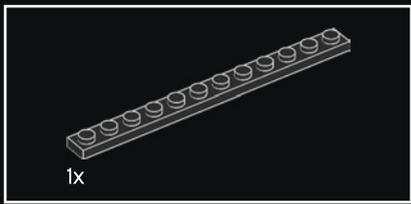


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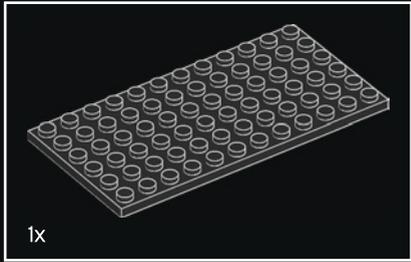
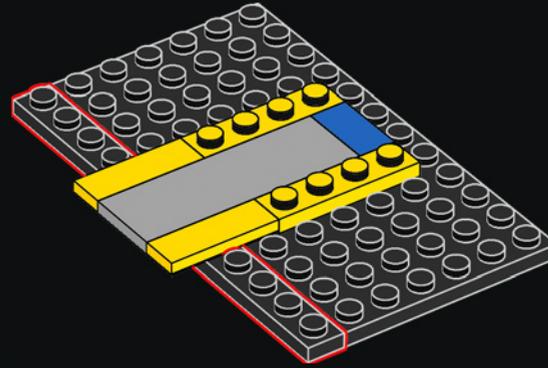


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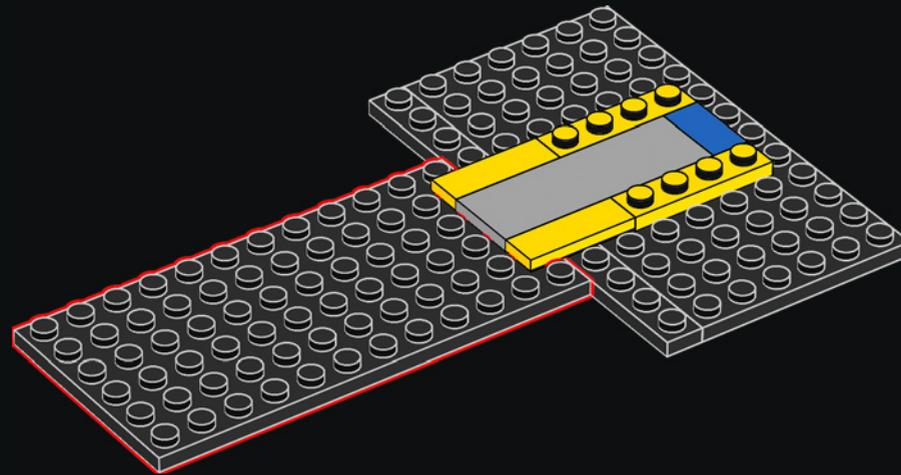


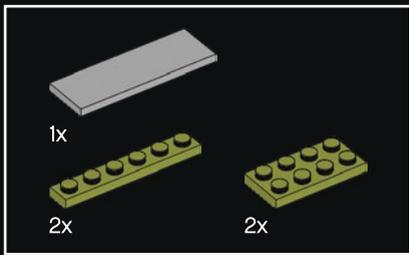


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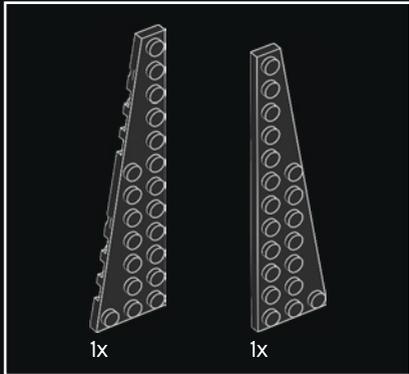
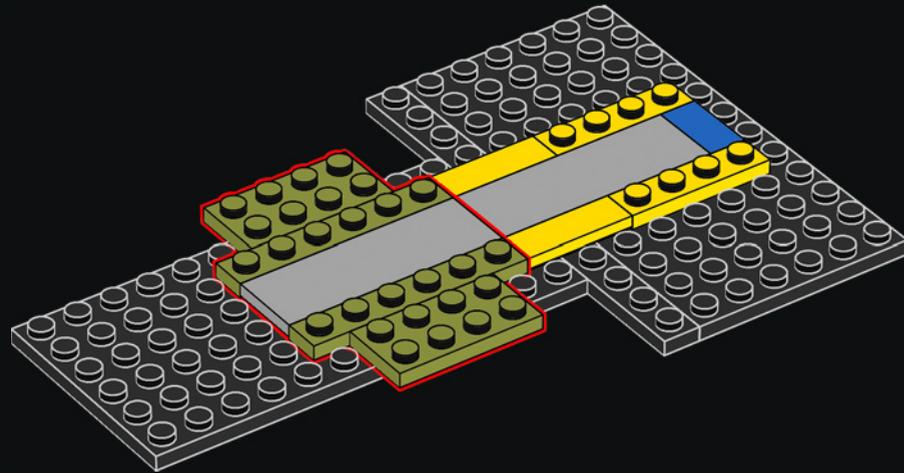


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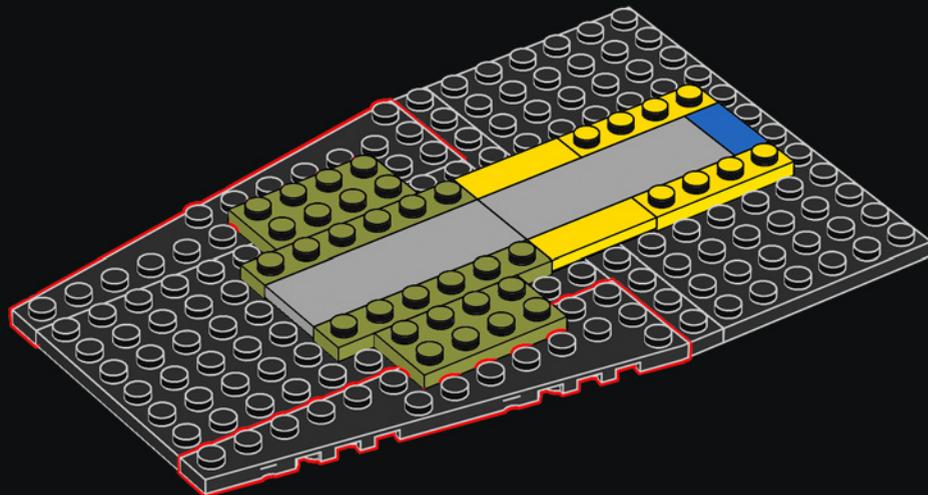


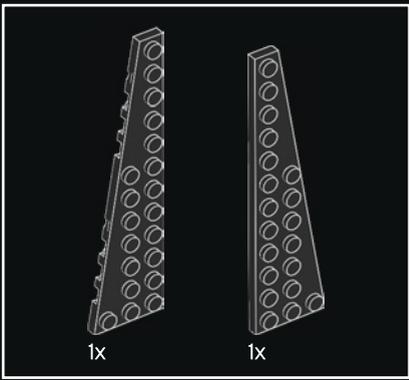


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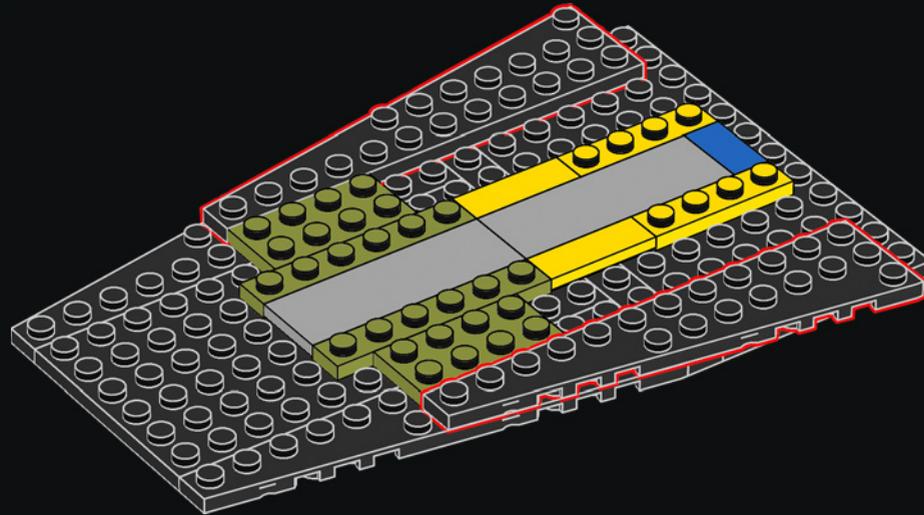


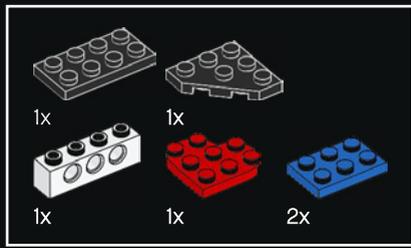


SCHON GEWUSST?

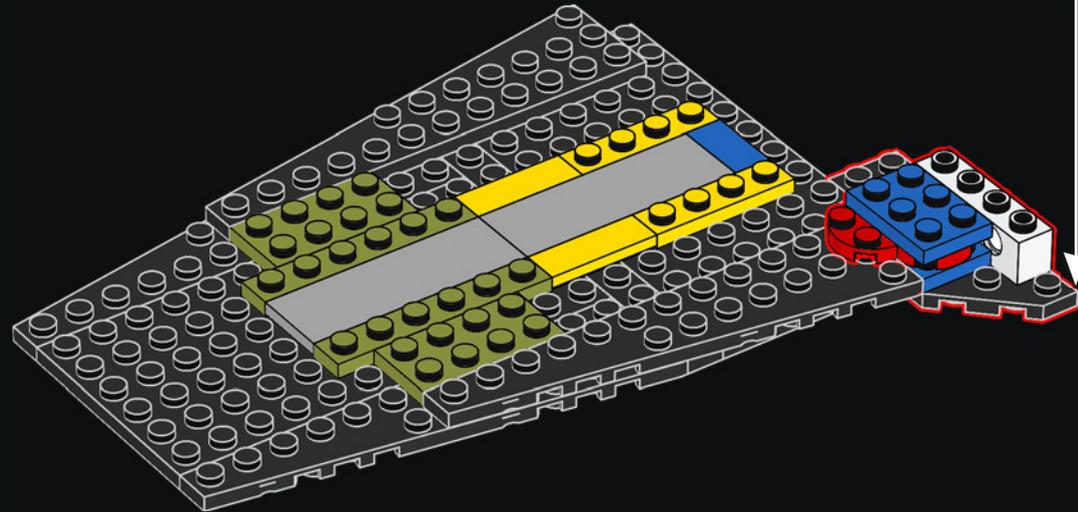
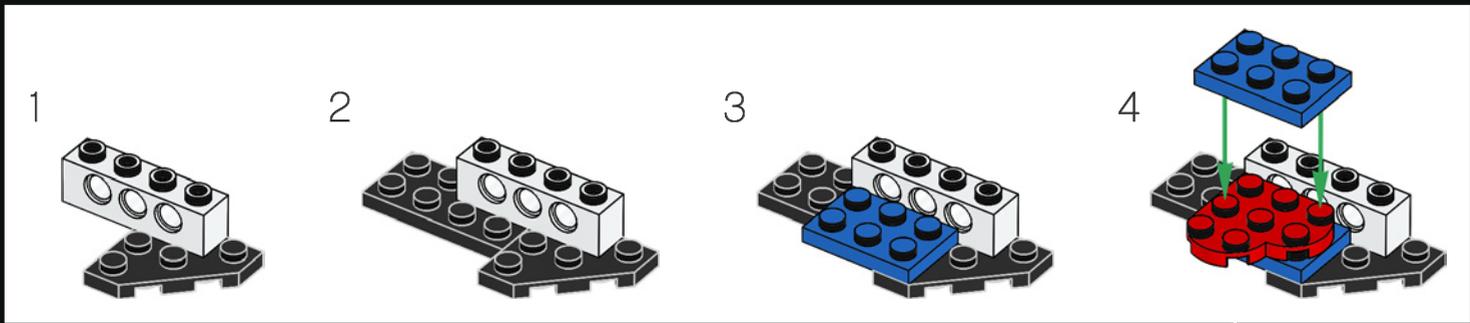
Mit einer Umlaufgeschwindigkeit von 28.158 km/h war die Spaceshuttle-Besatzung so schnell unterwegs, dass sie alle 45 Minuten einen Sonnenaufgang oder Sonnenuntergang zu sehen bekam.

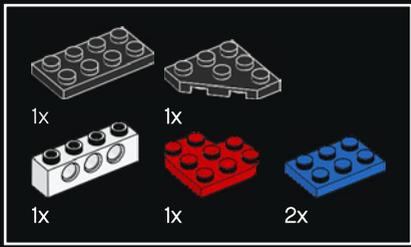
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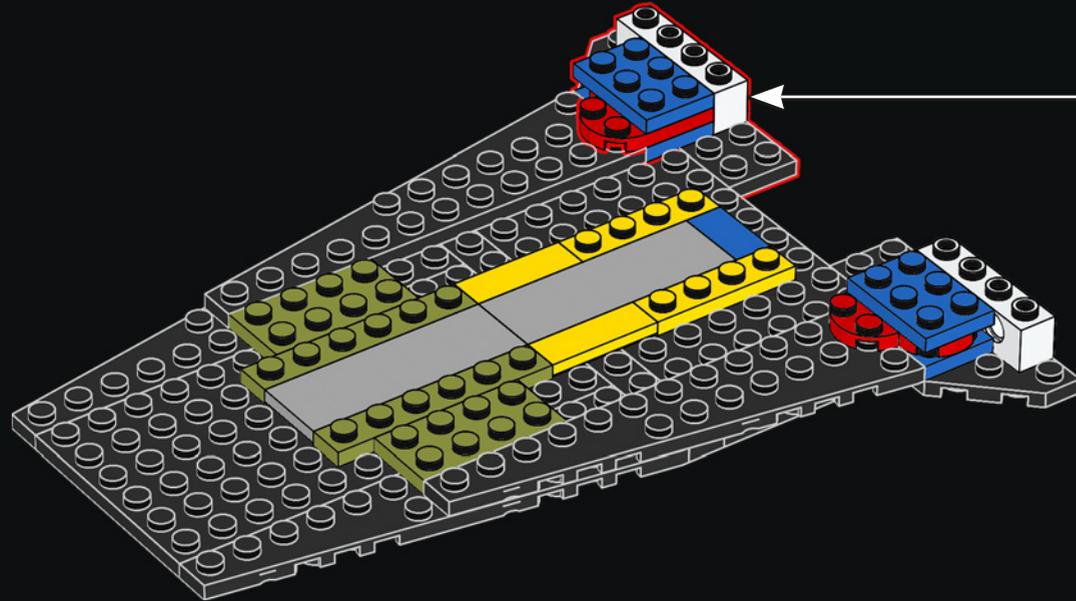
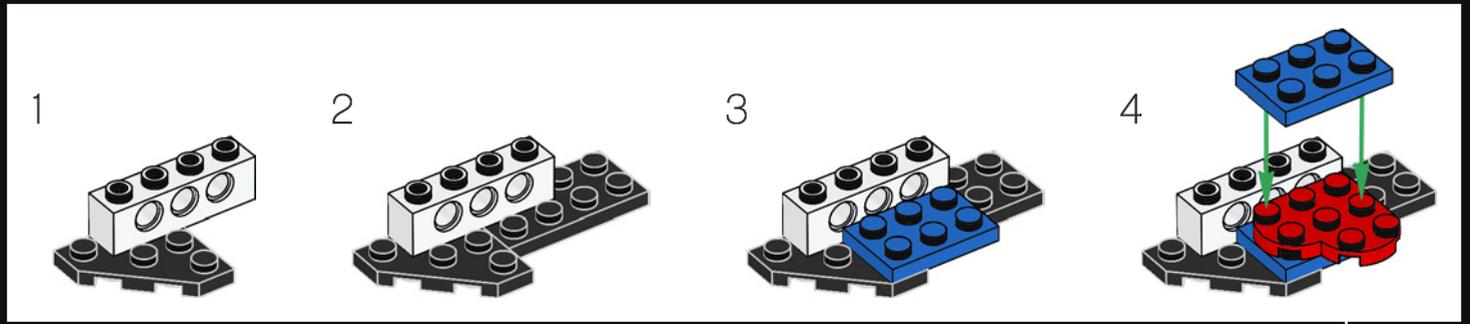


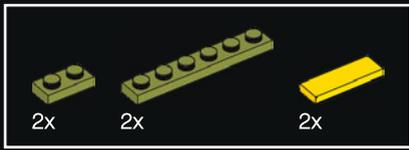
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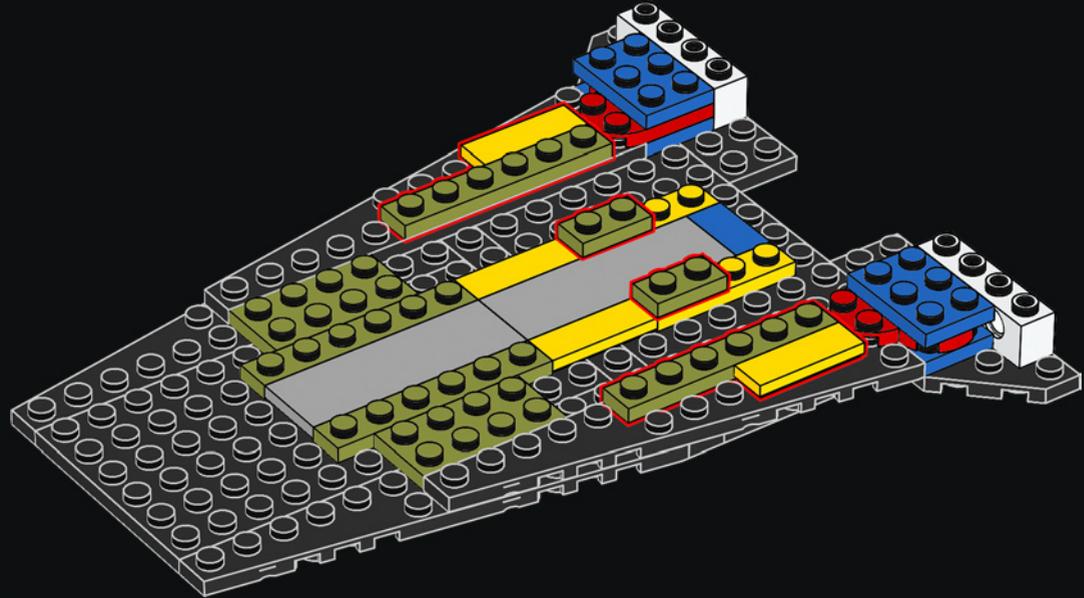


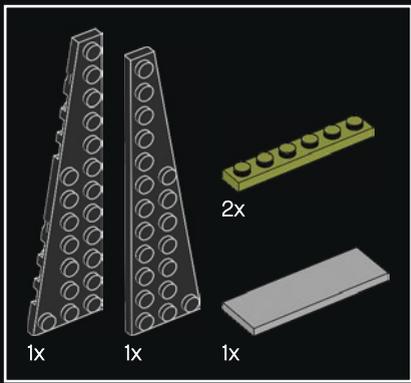
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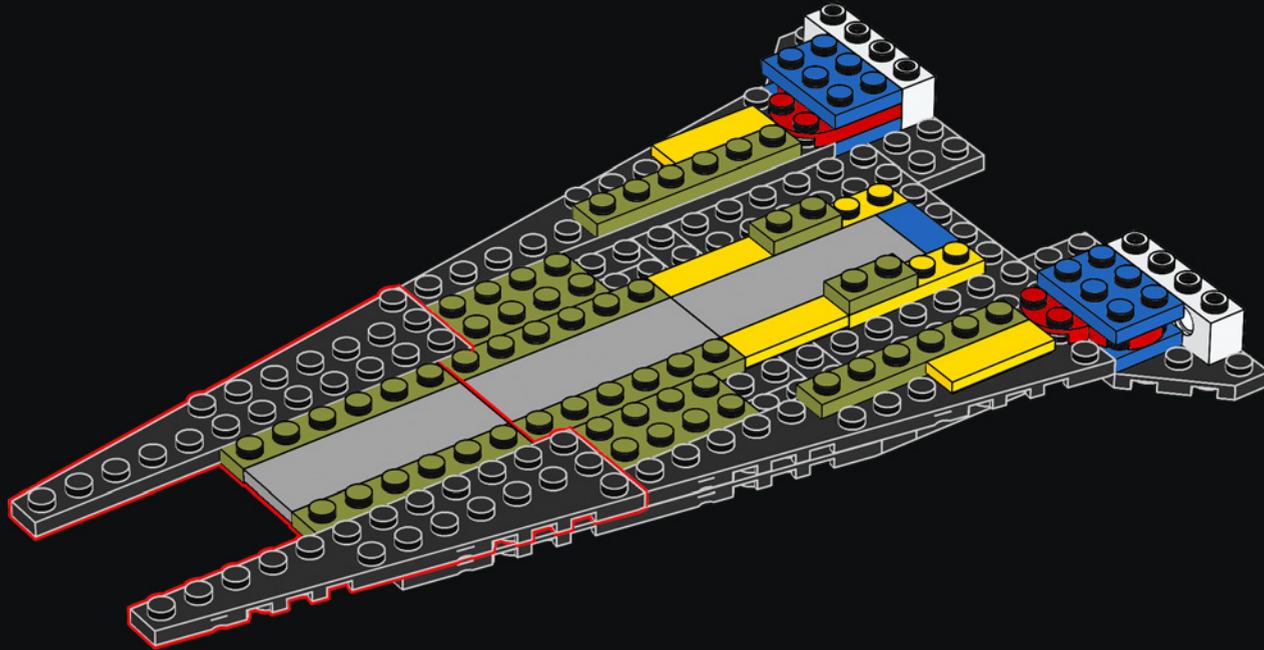


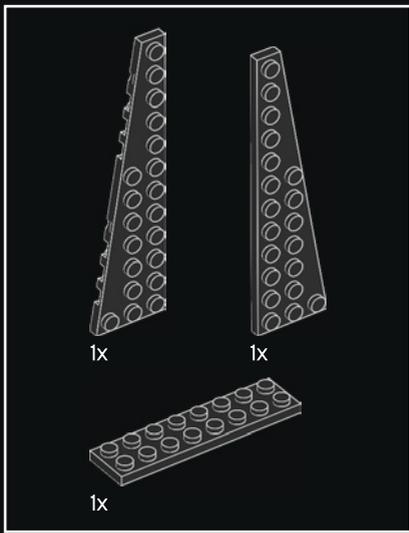
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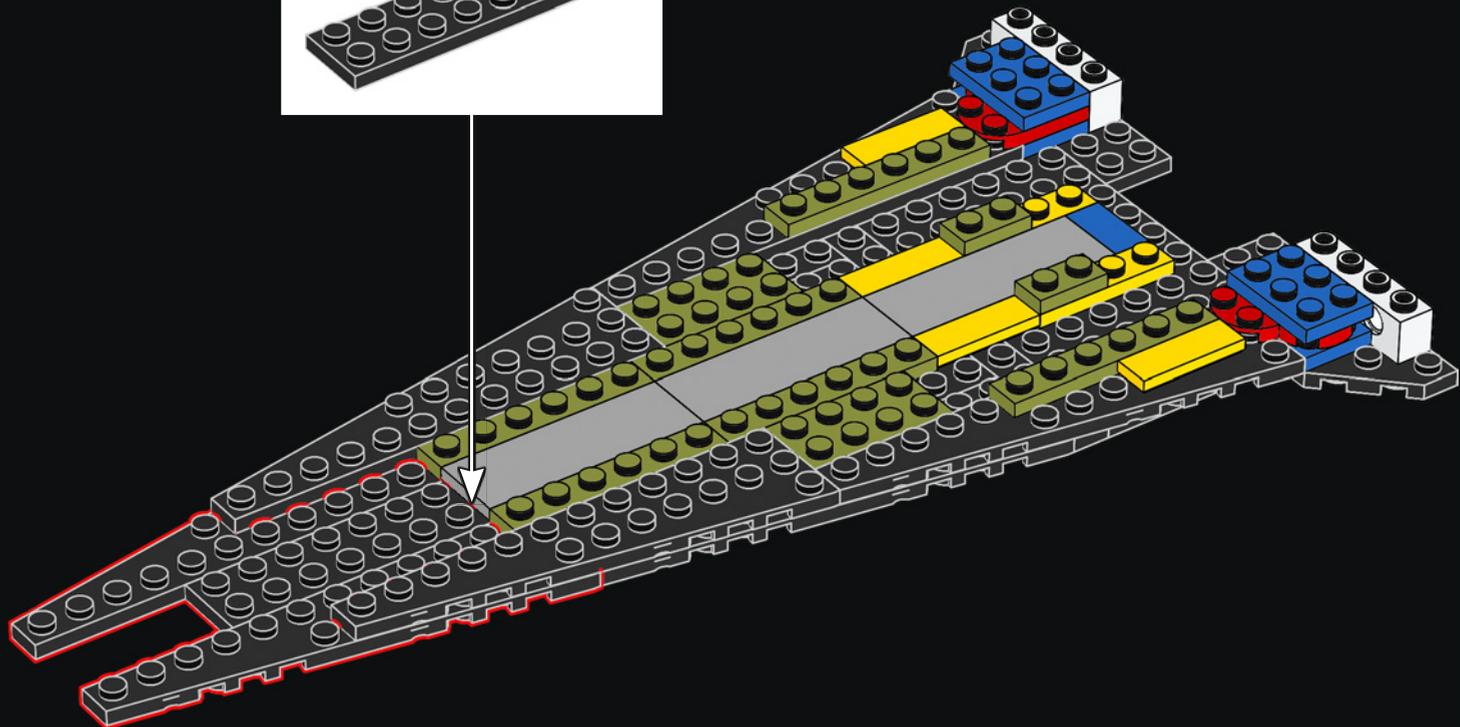
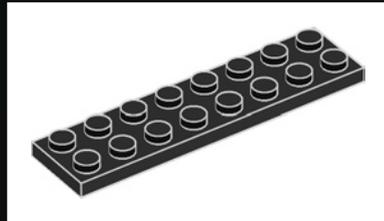


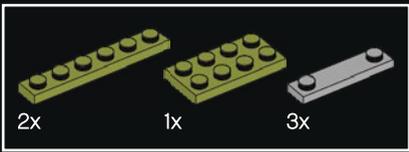
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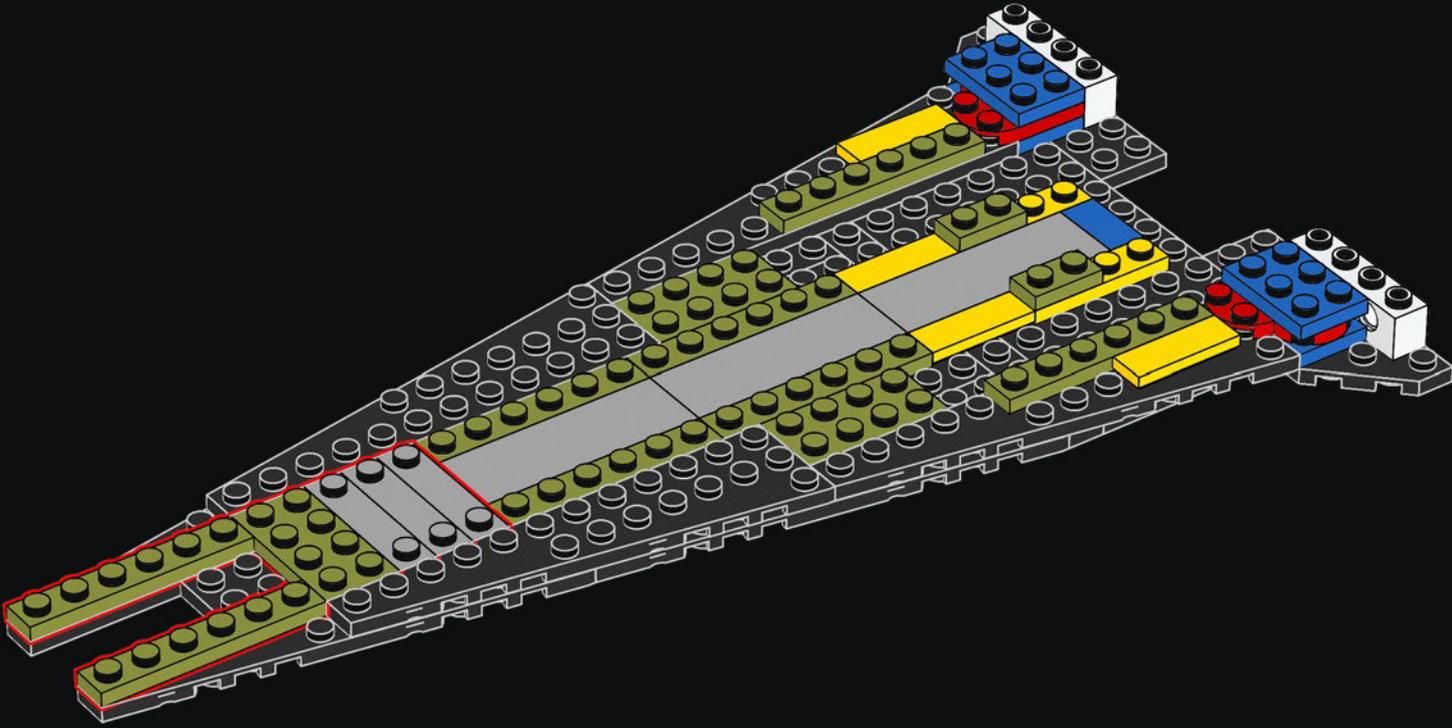


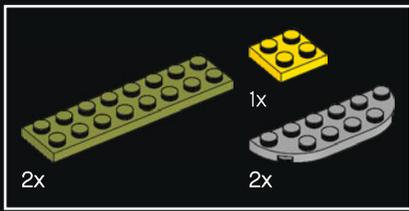
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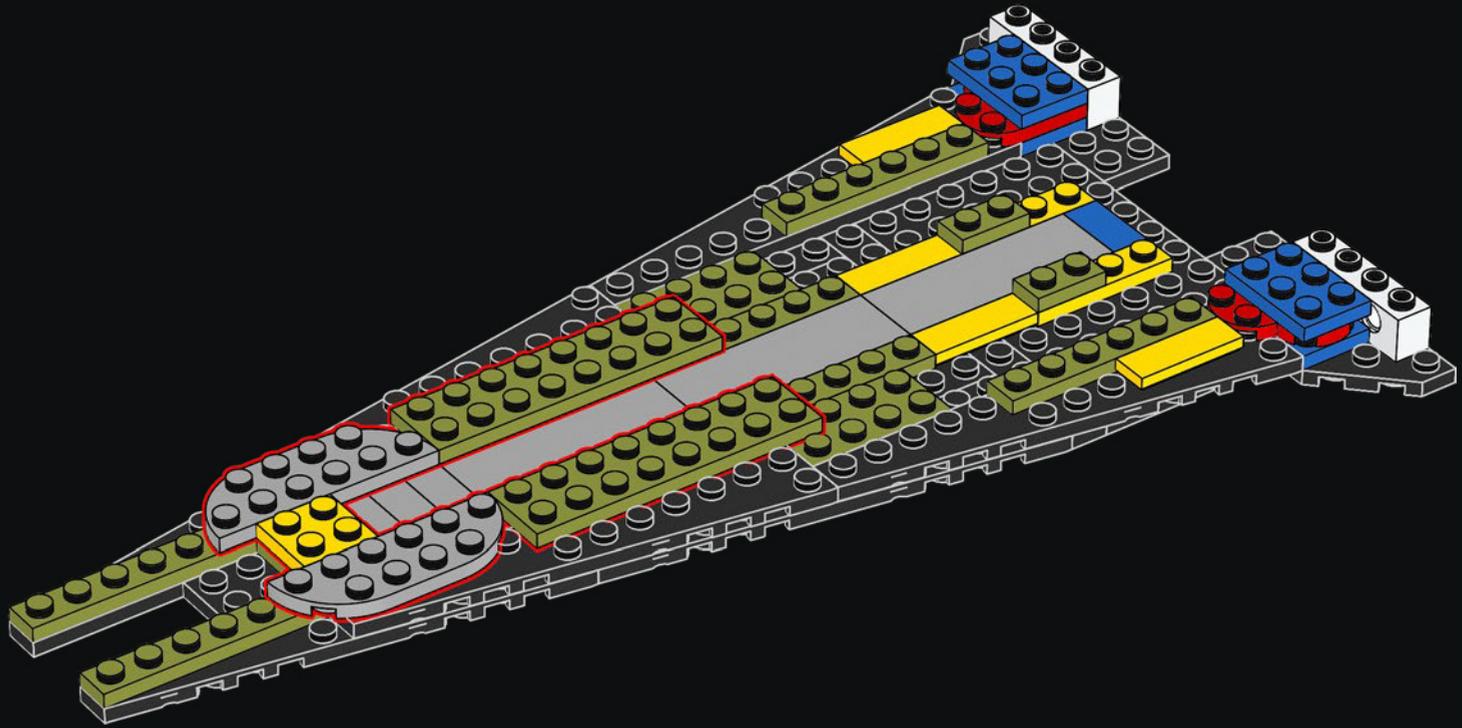


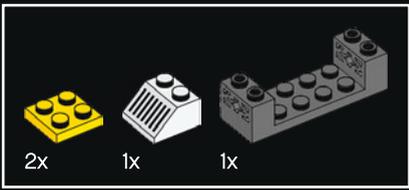
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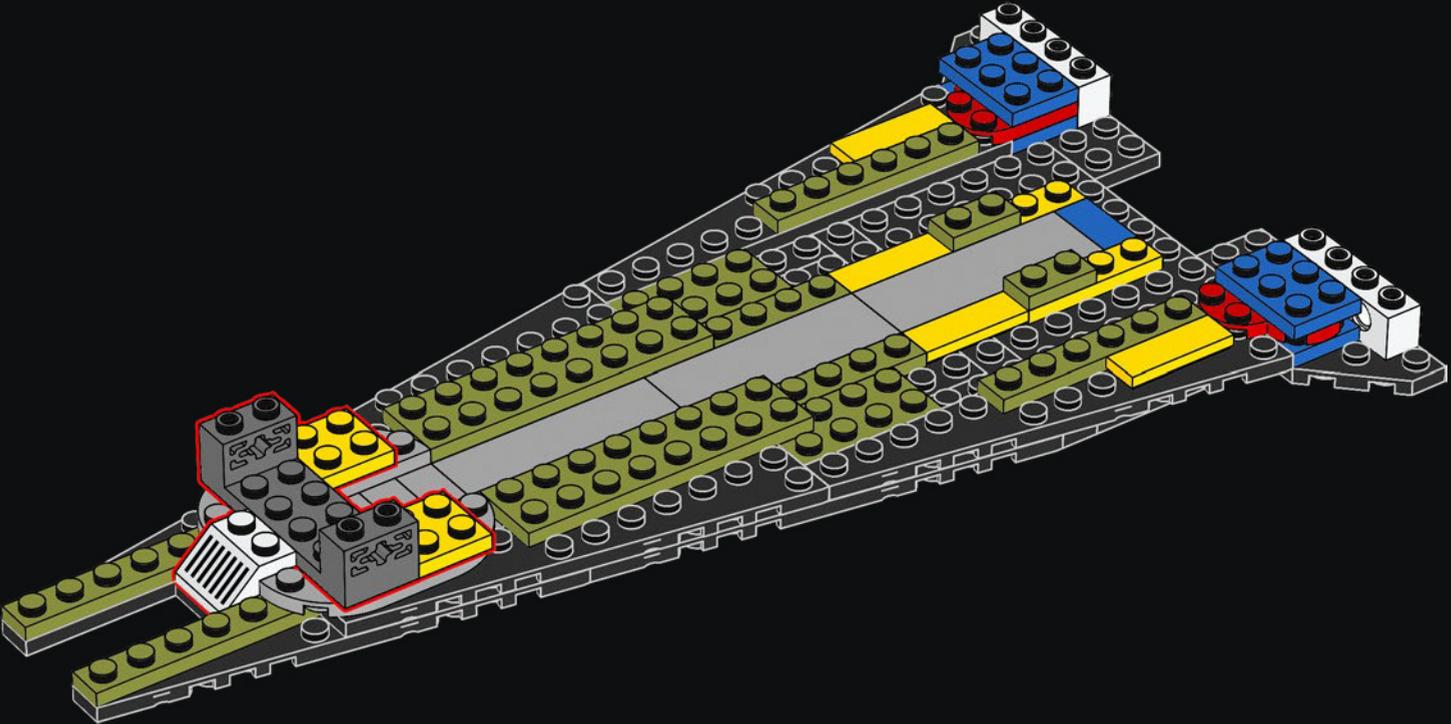


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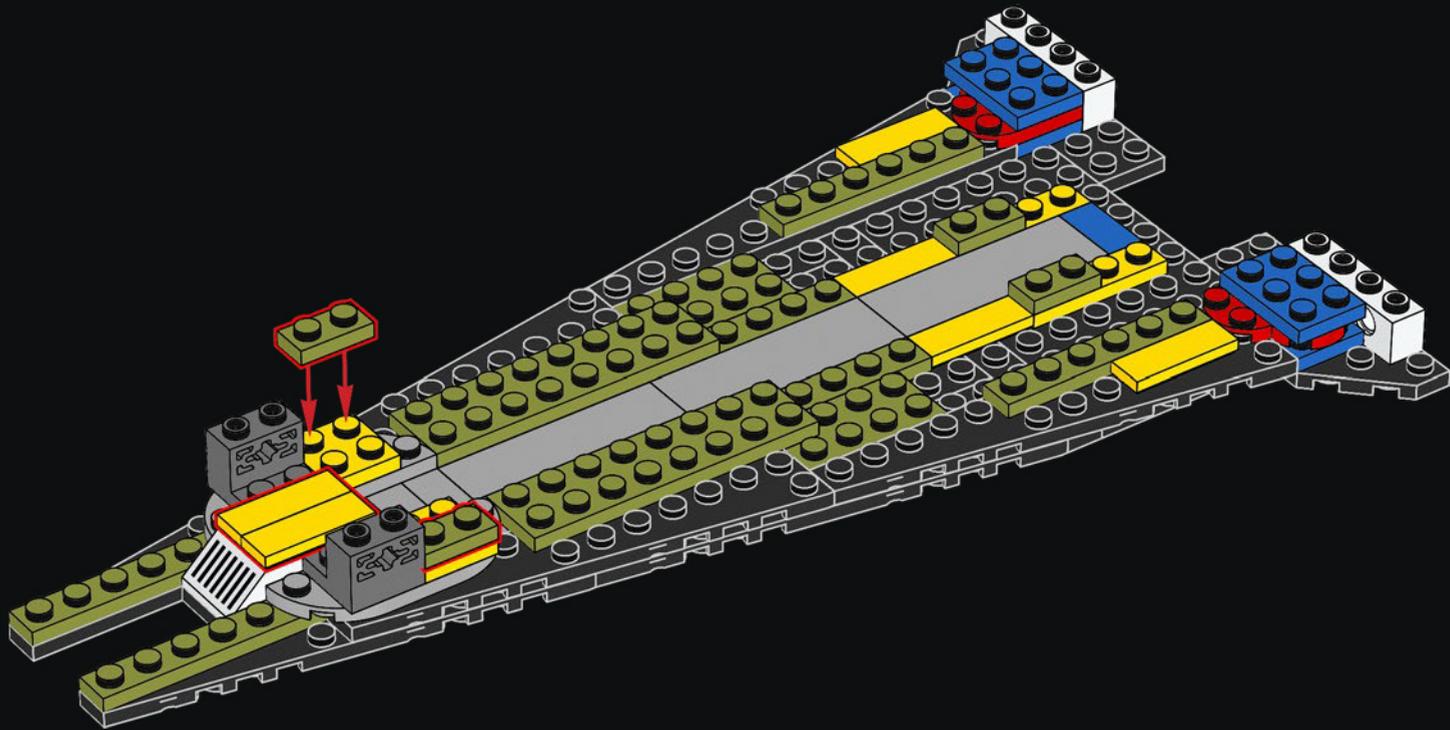


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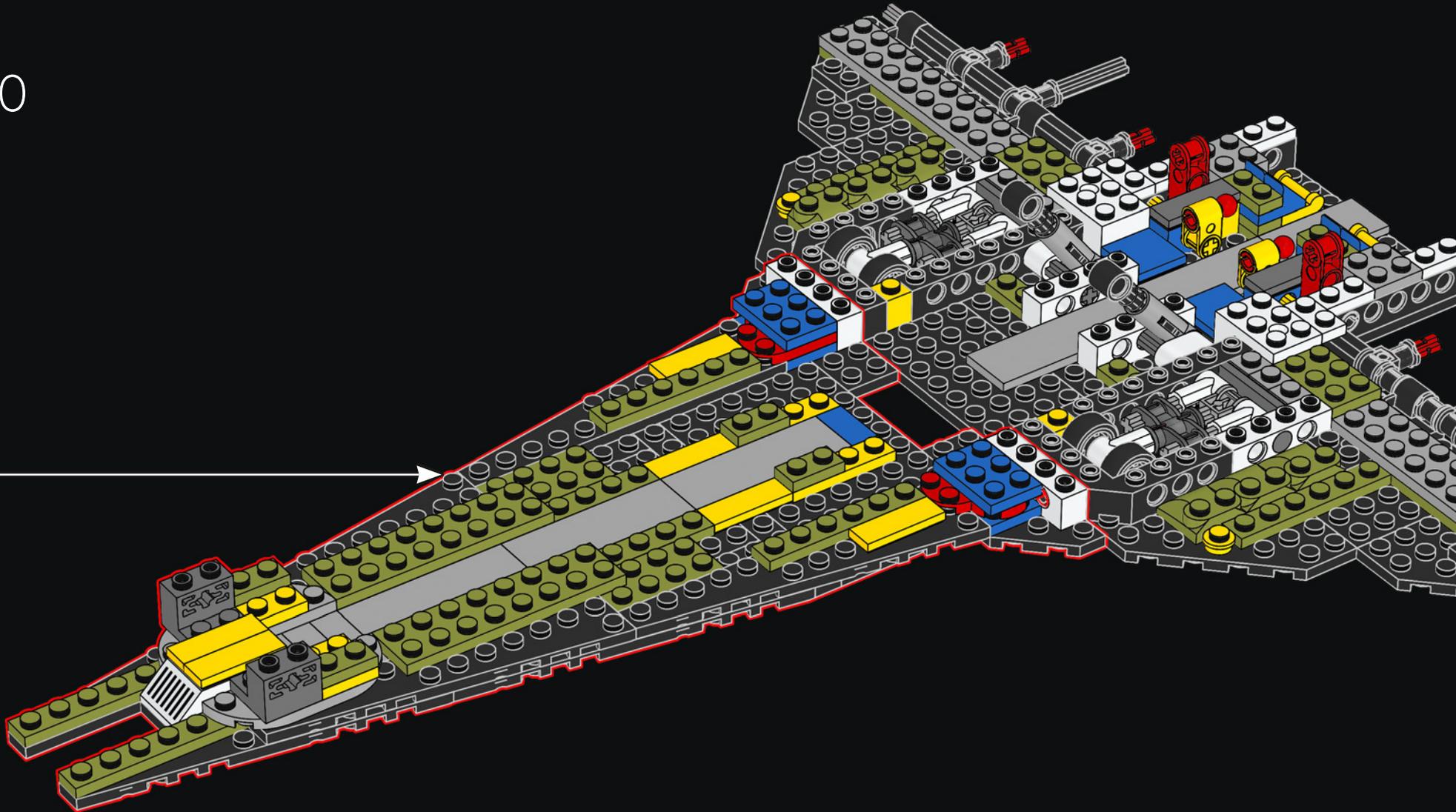


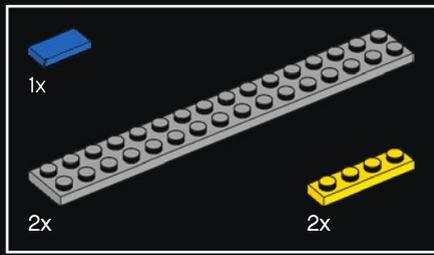


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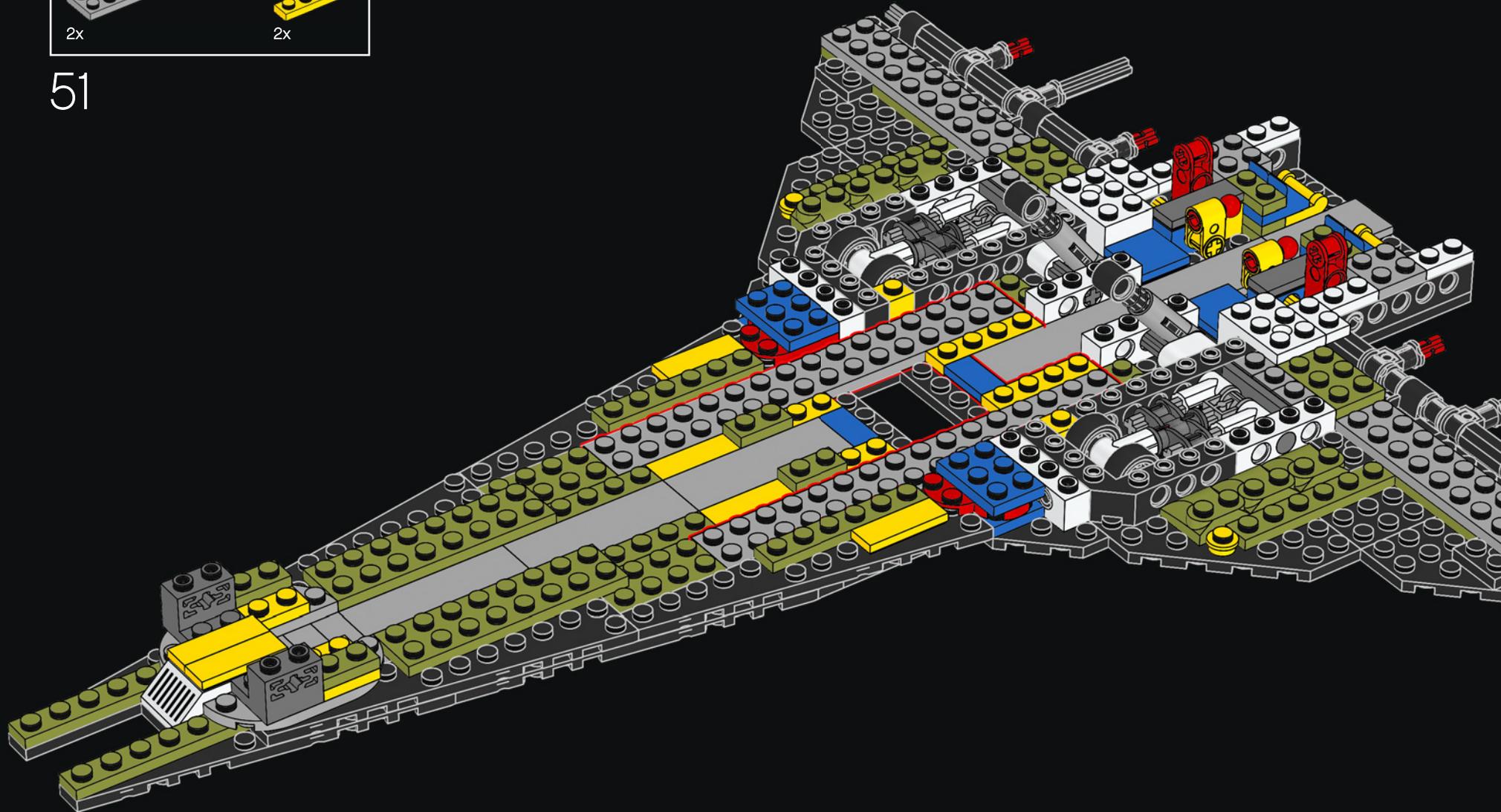


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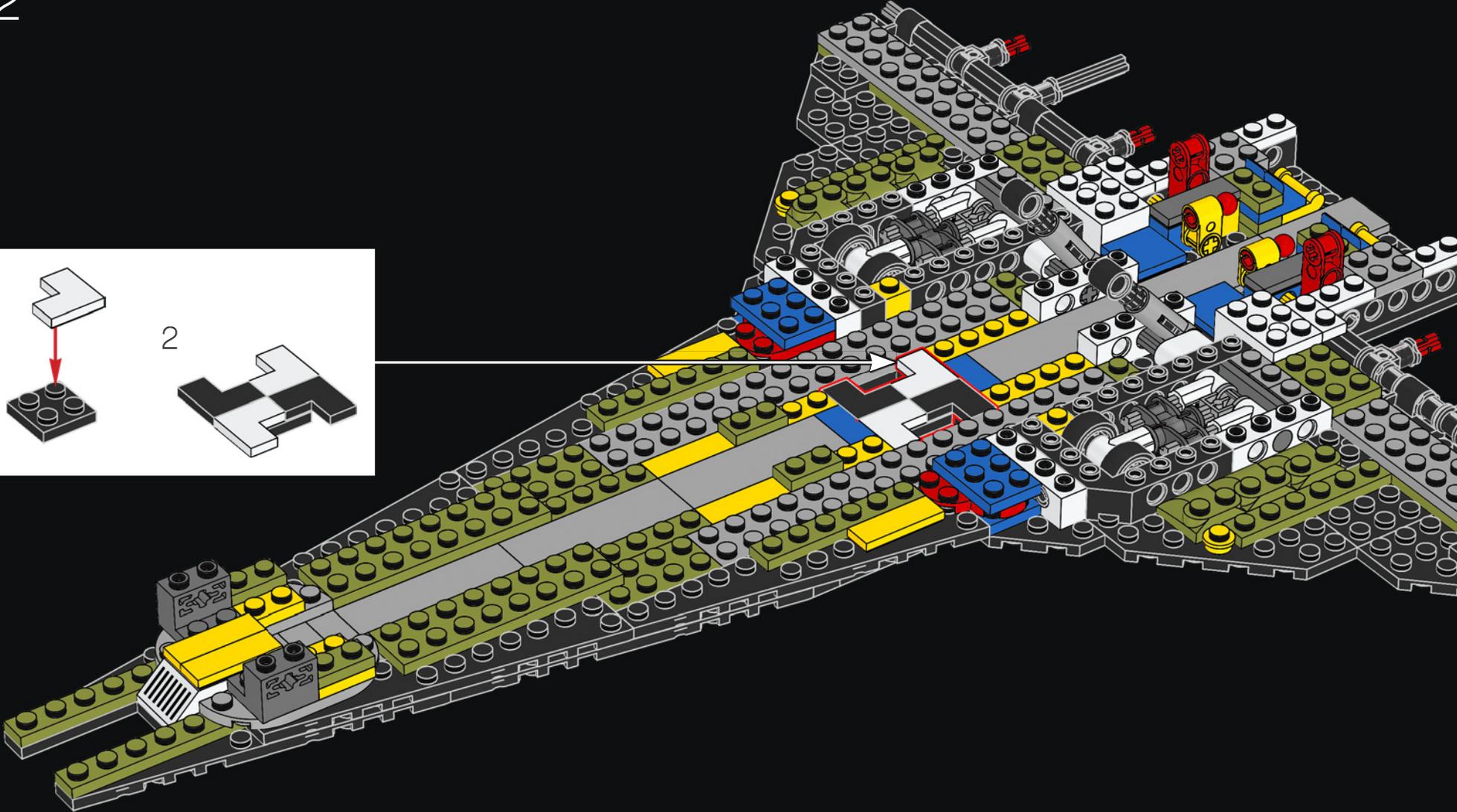
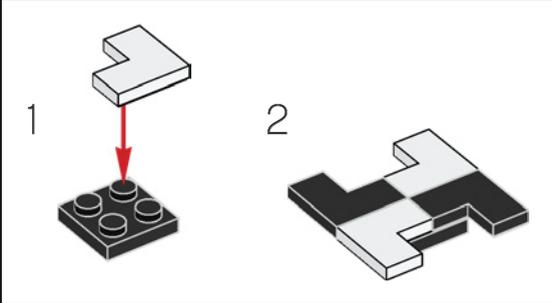


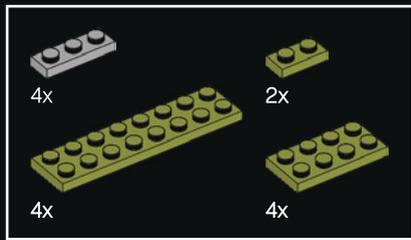
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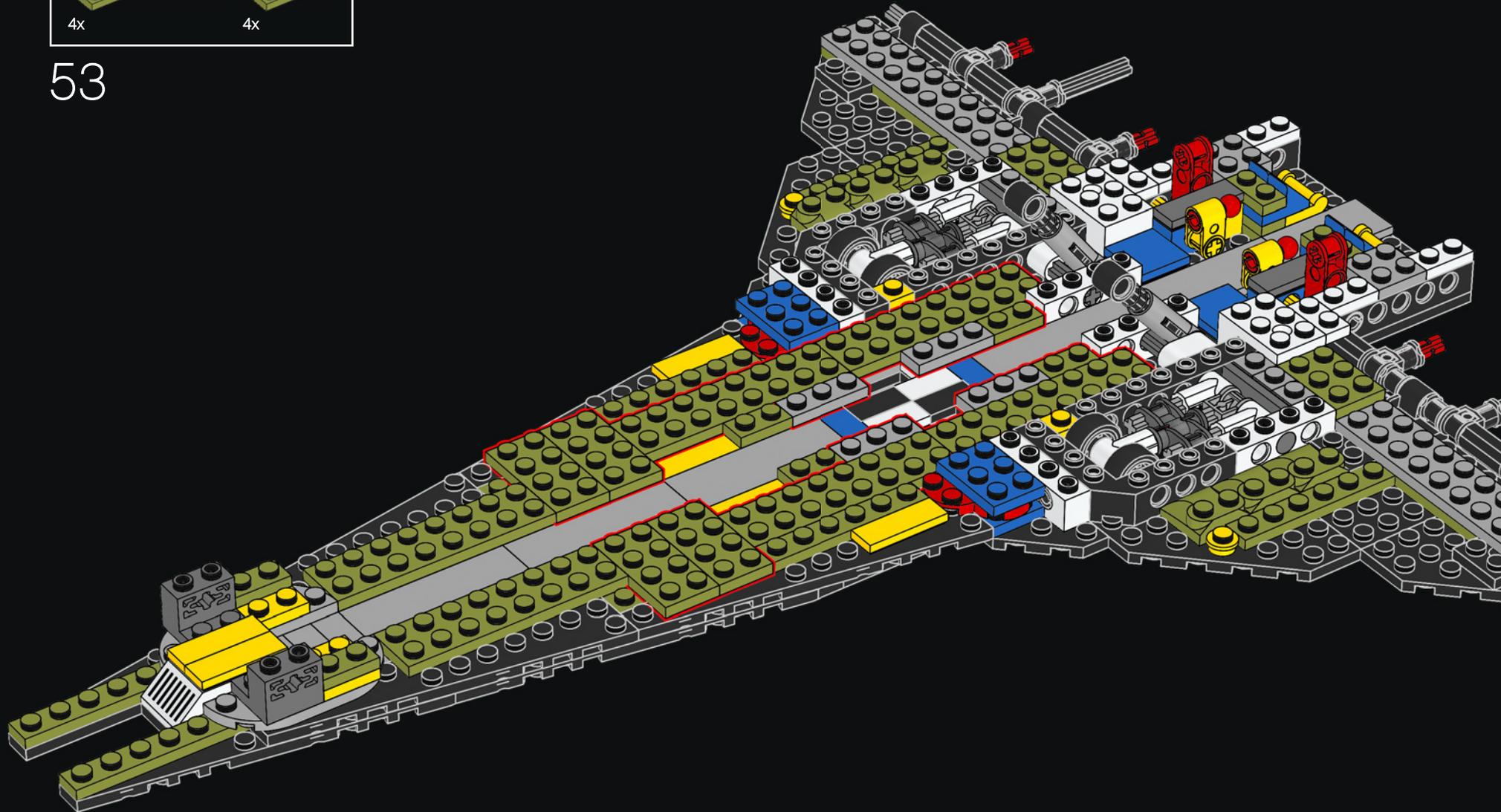


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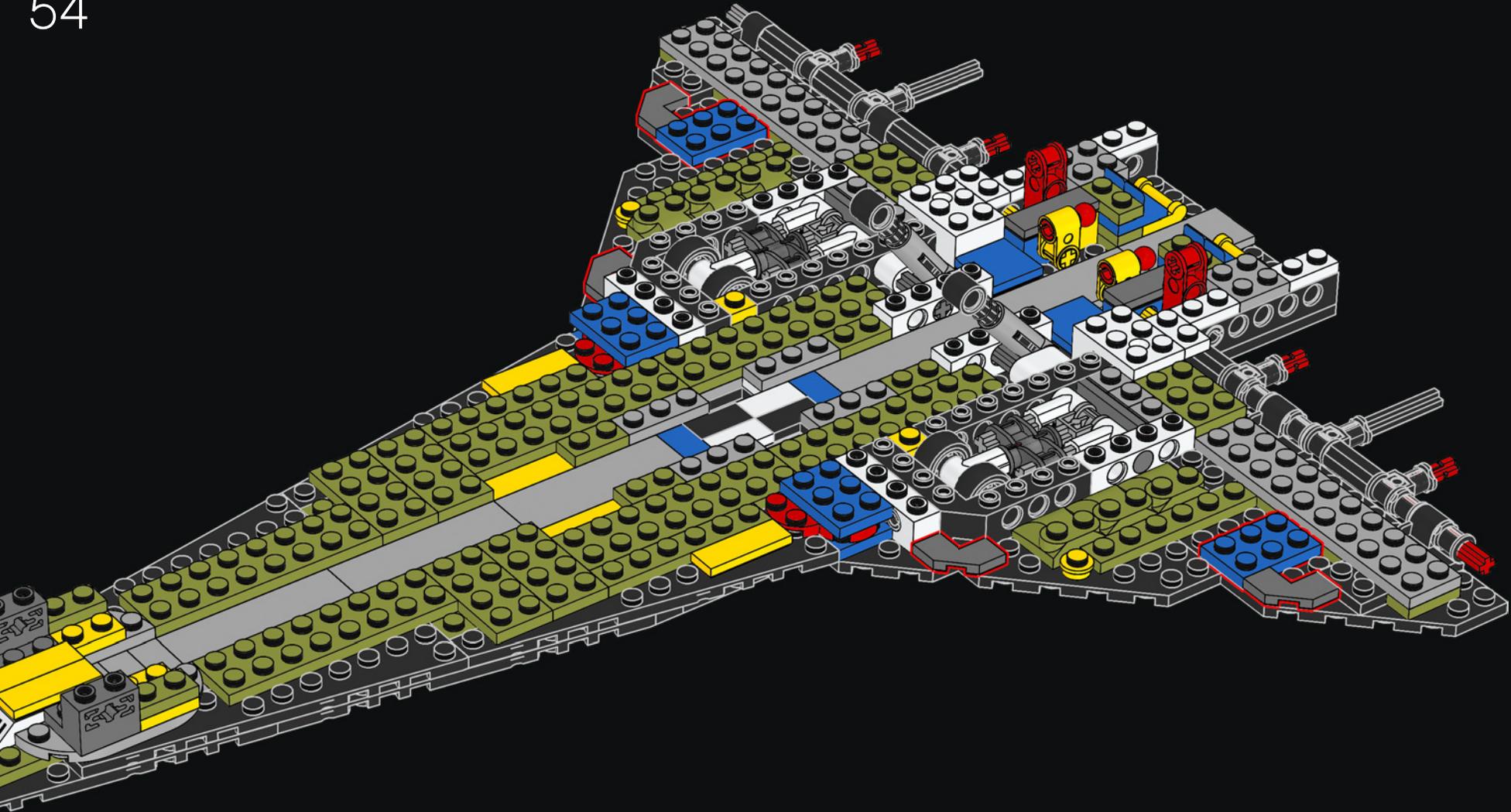


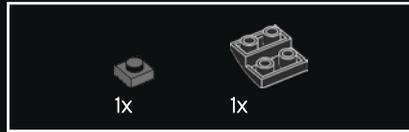
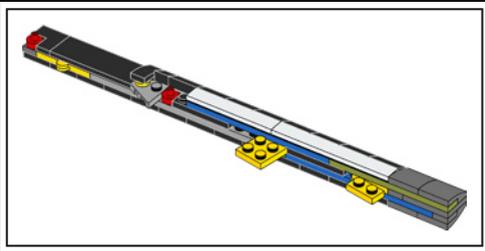
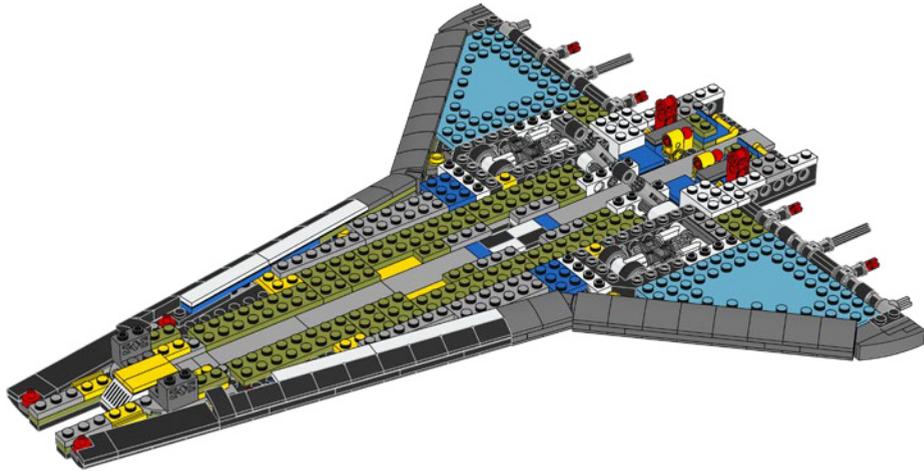
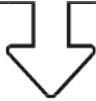
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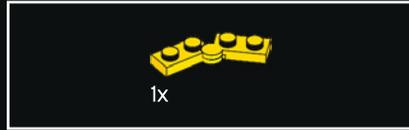
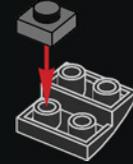


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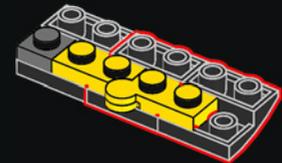
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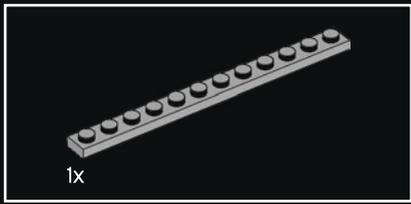


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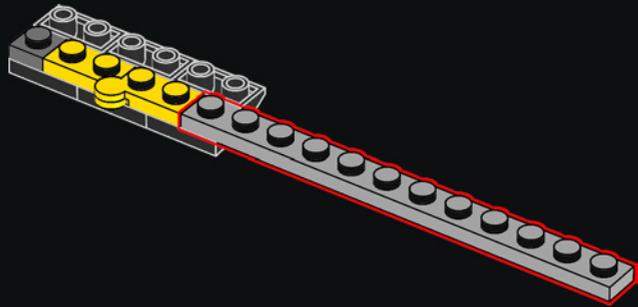


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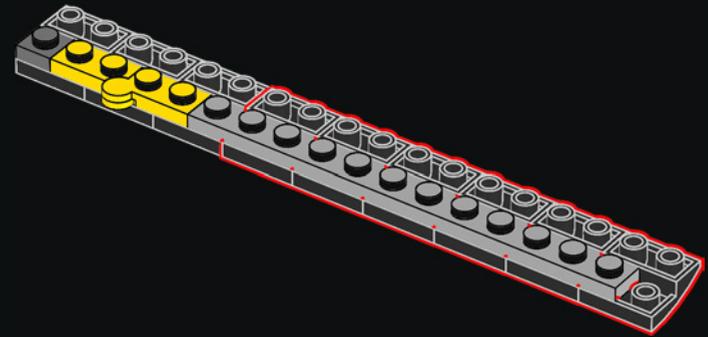


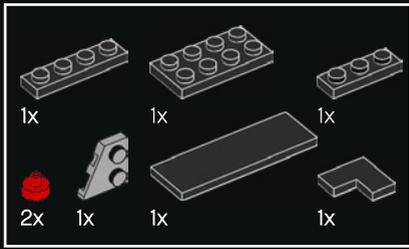


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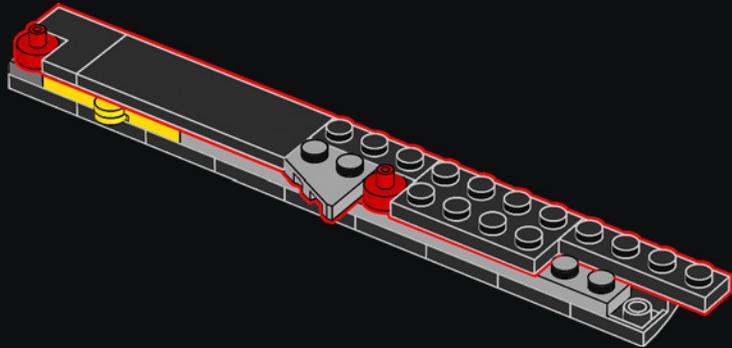


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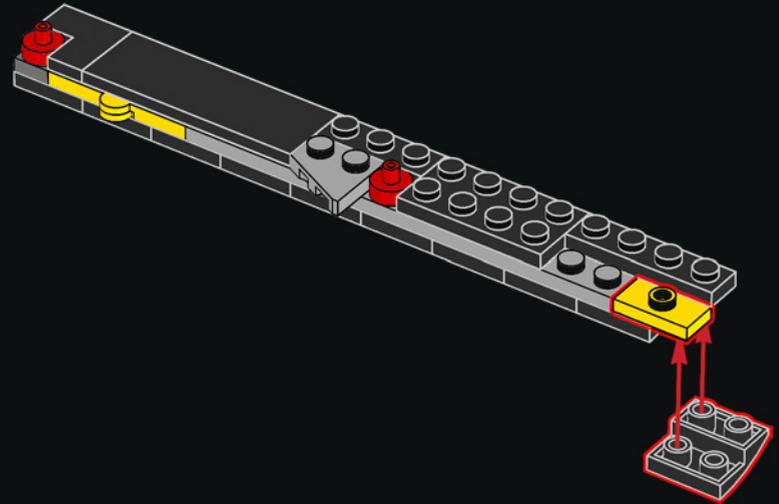


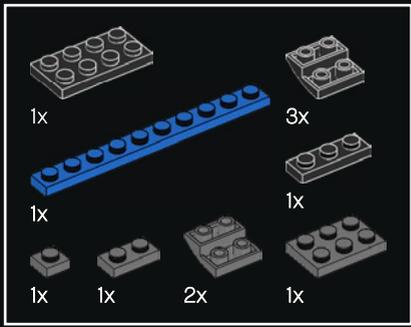


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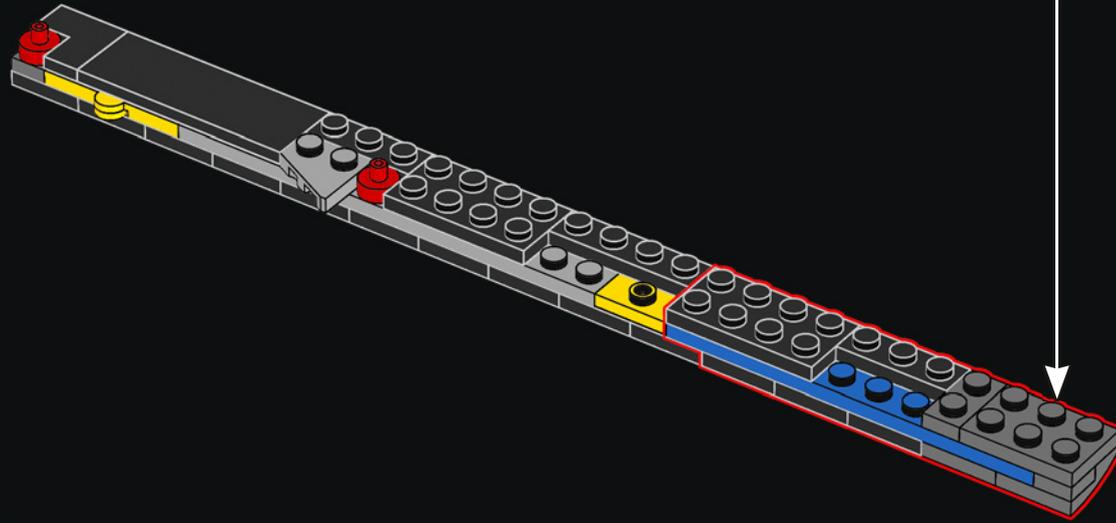
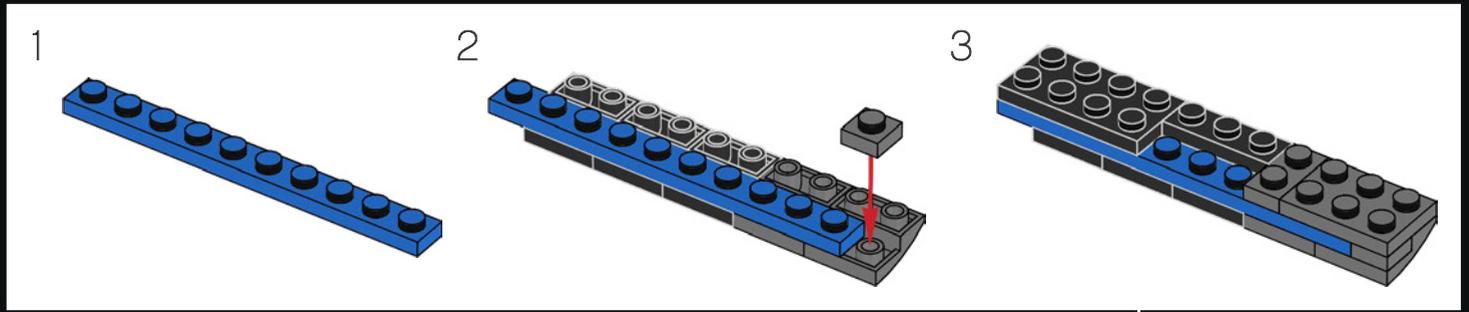


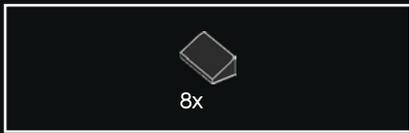
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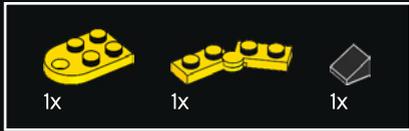
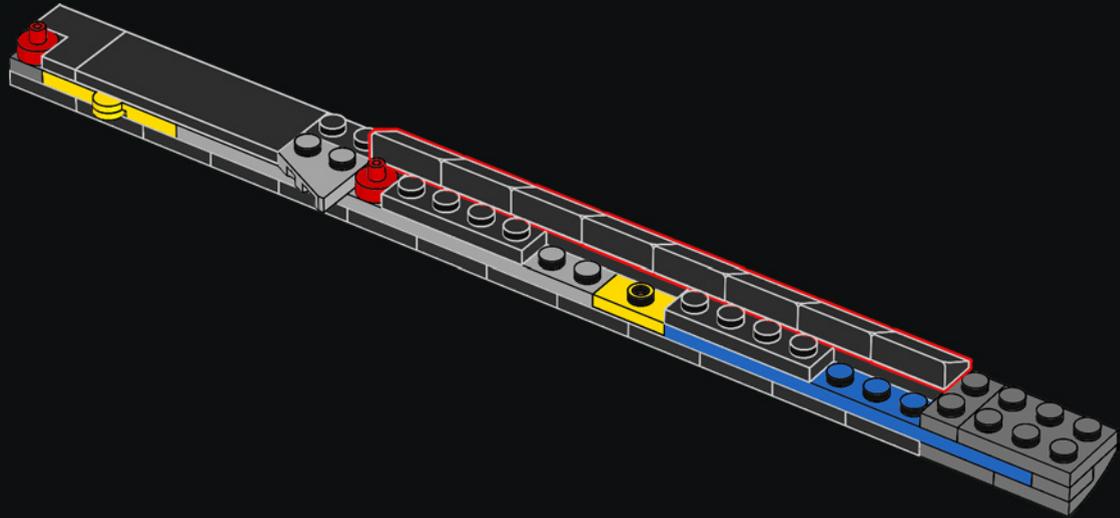


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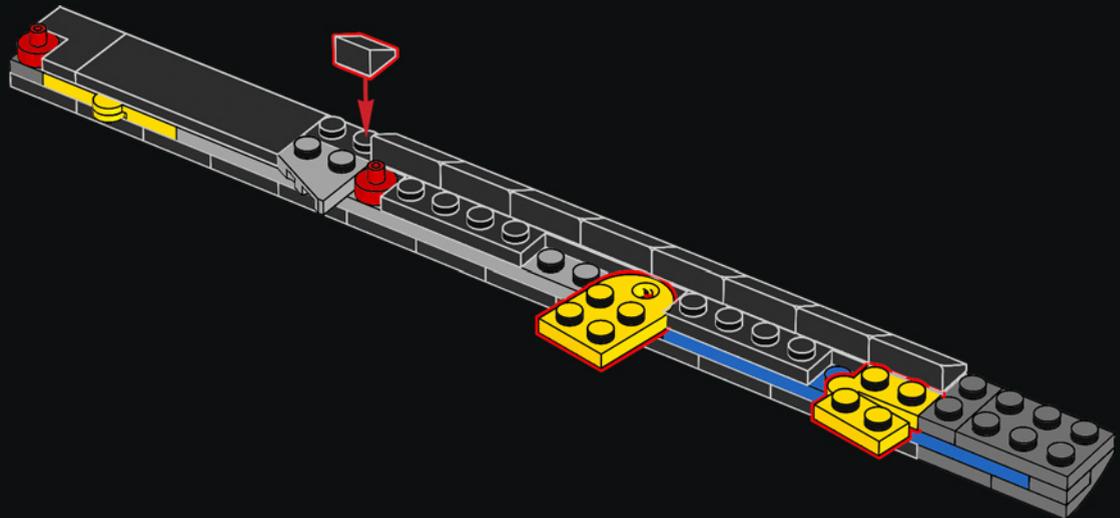


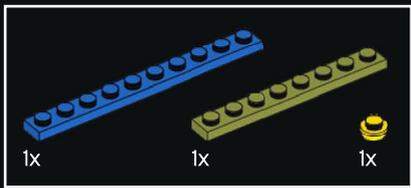


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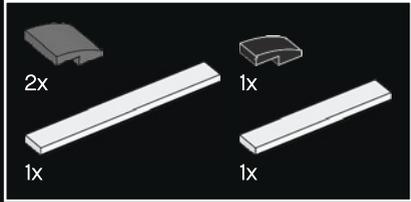
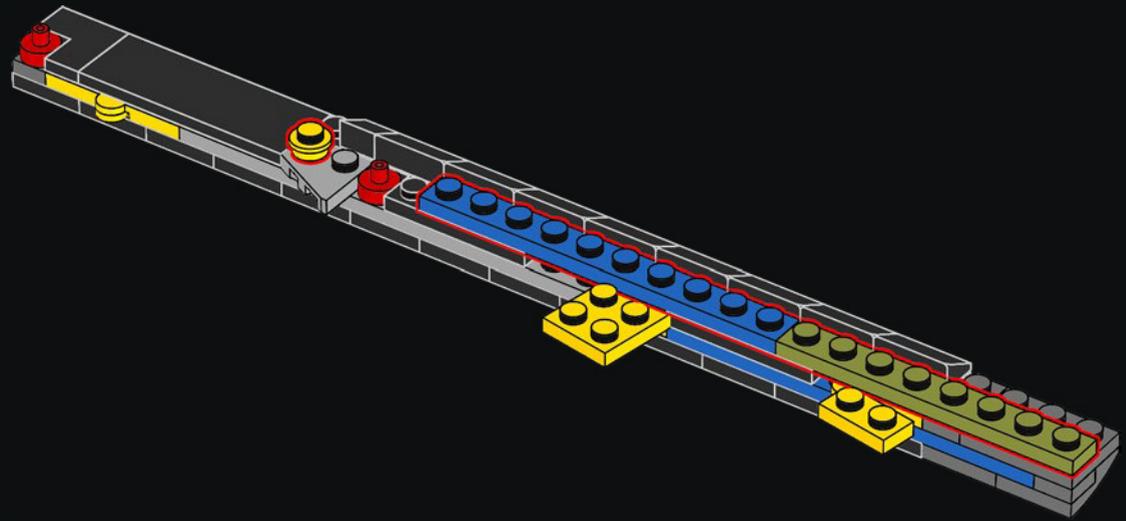


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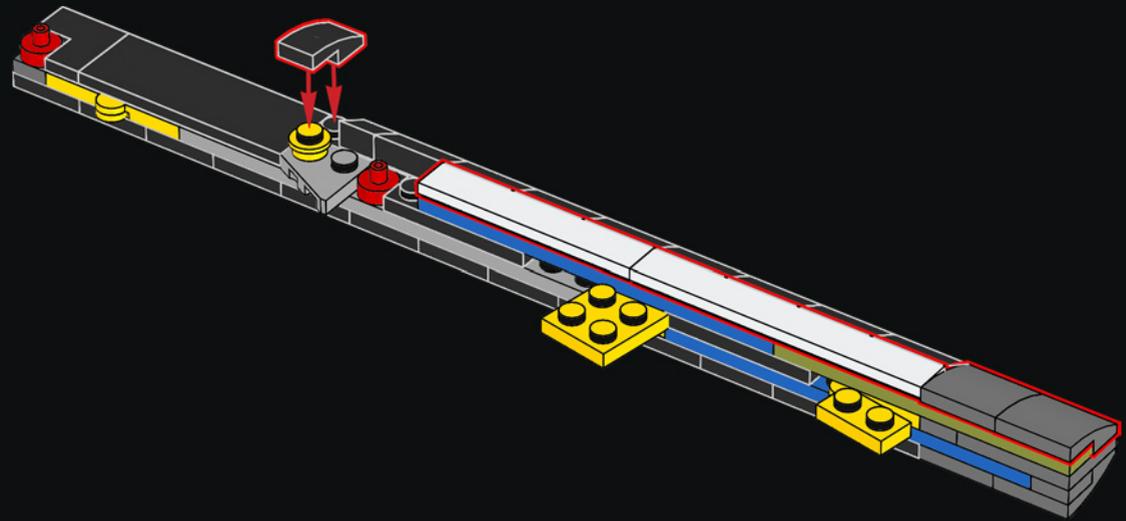




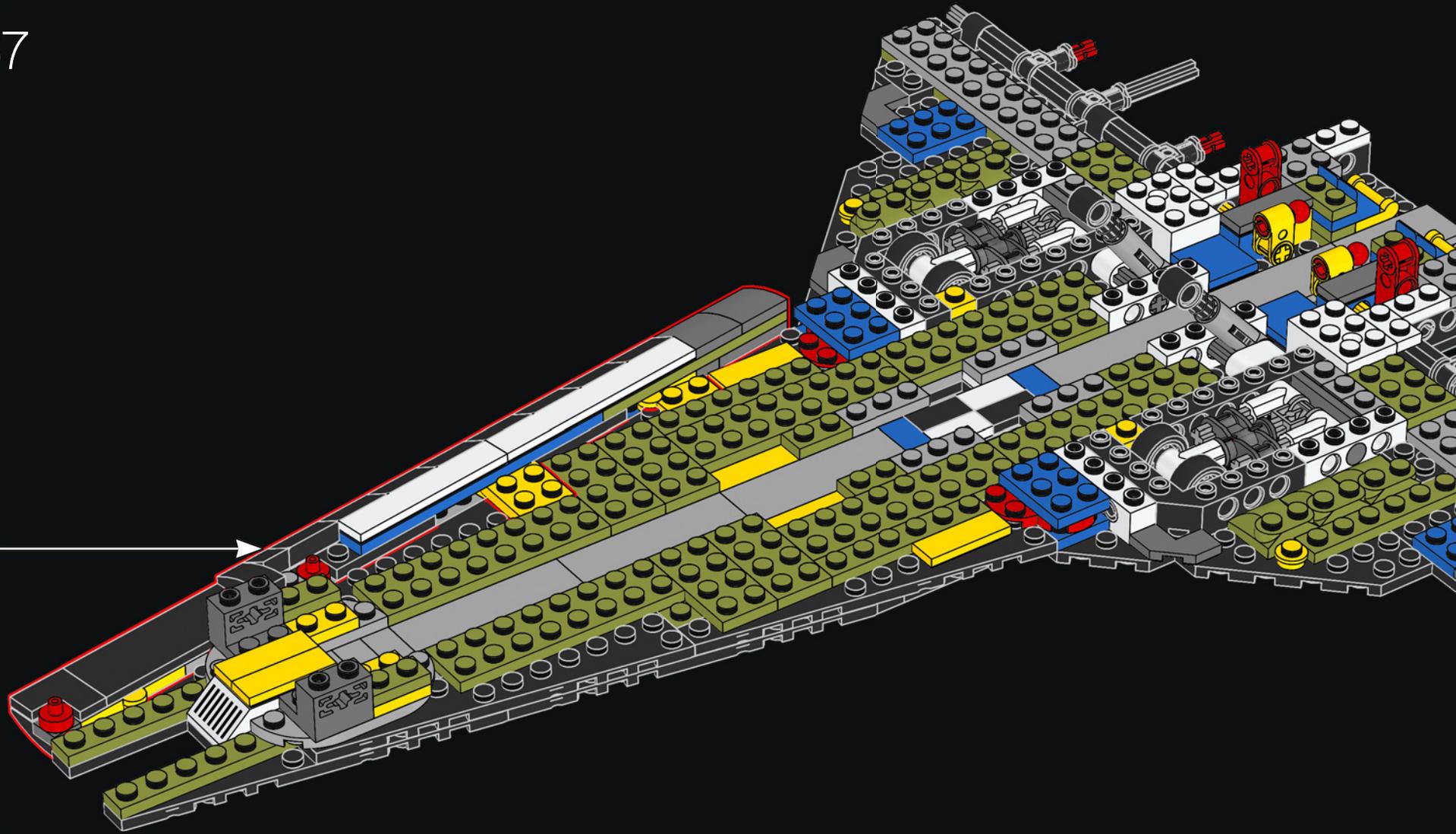
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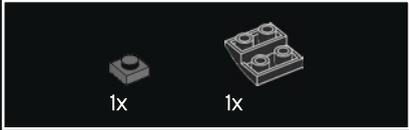
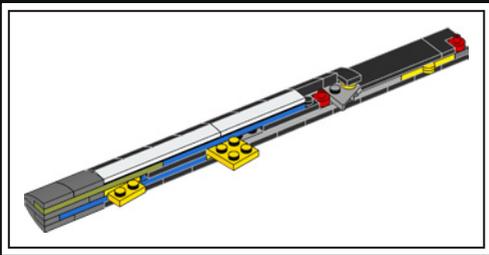


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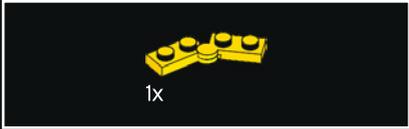
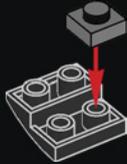


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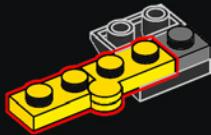




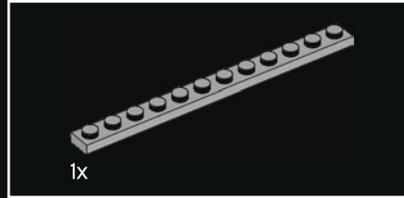
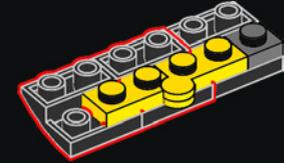
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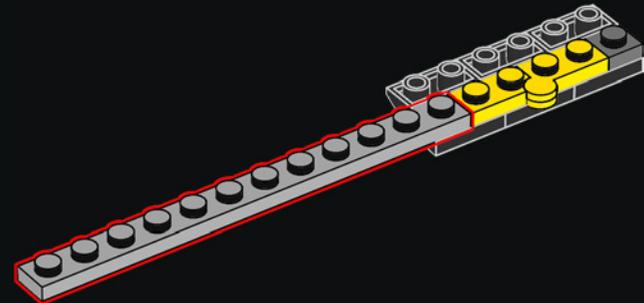
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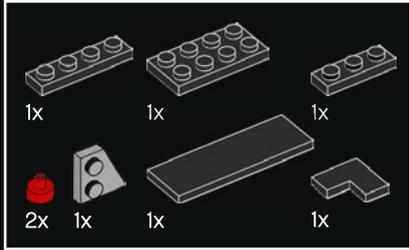
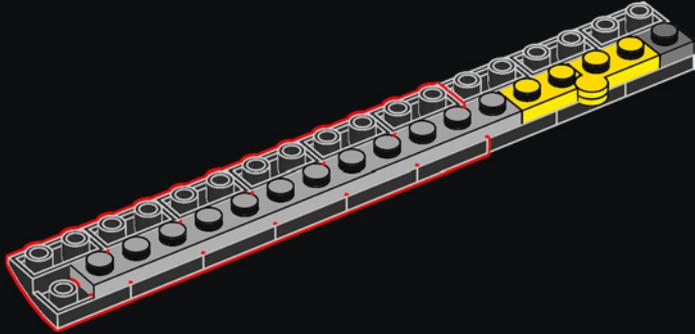


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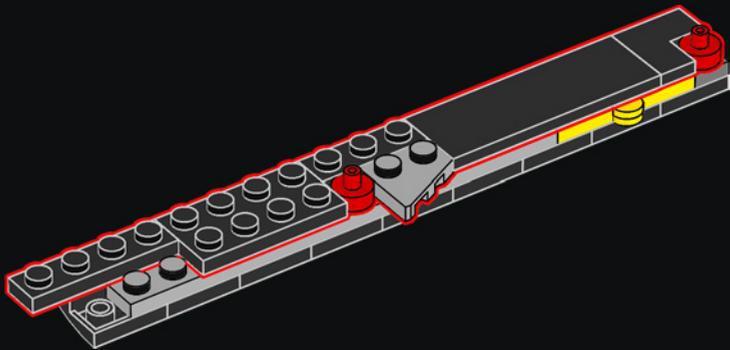




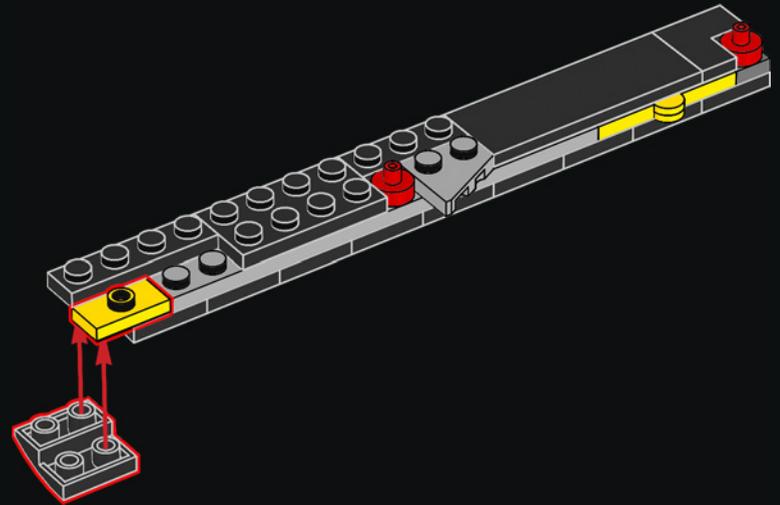
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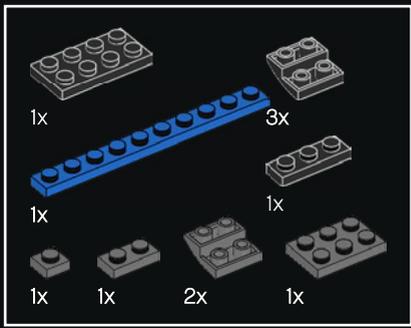


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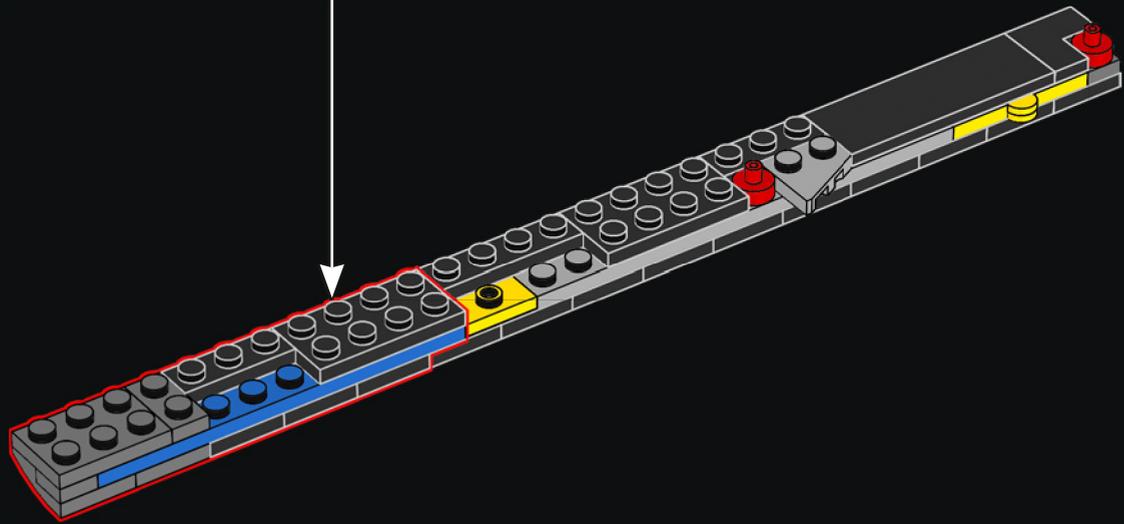
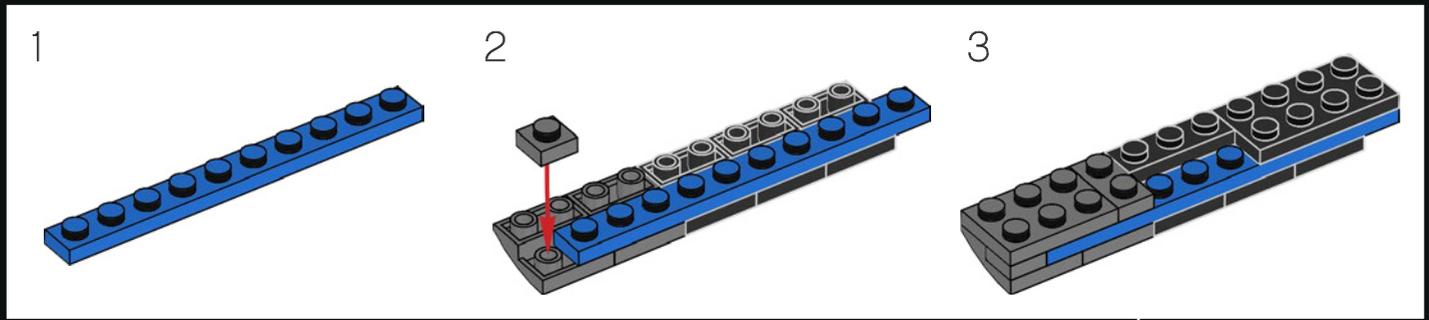


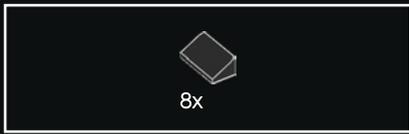
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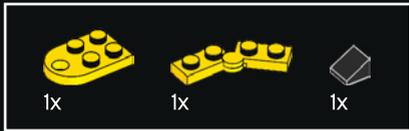
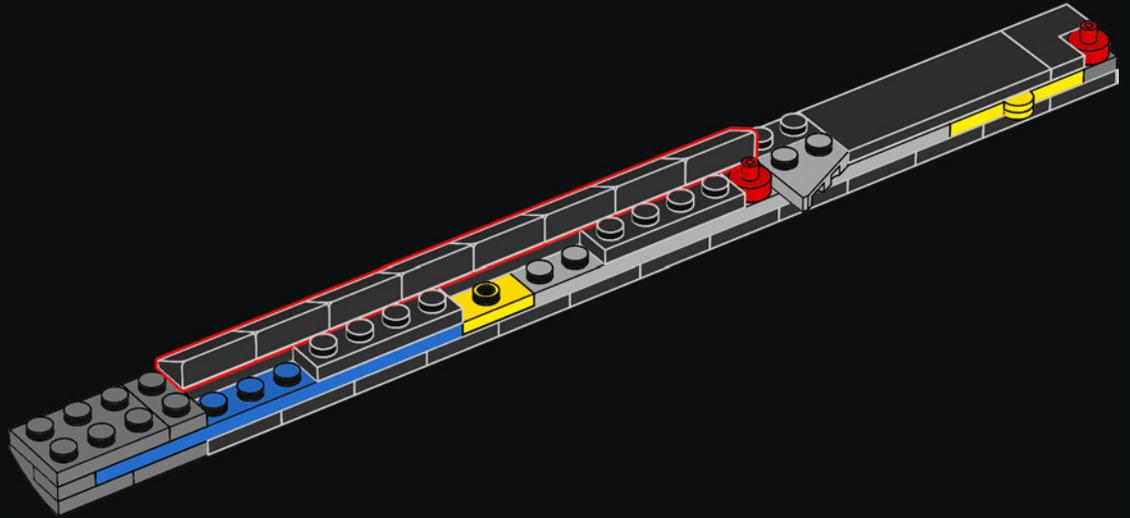


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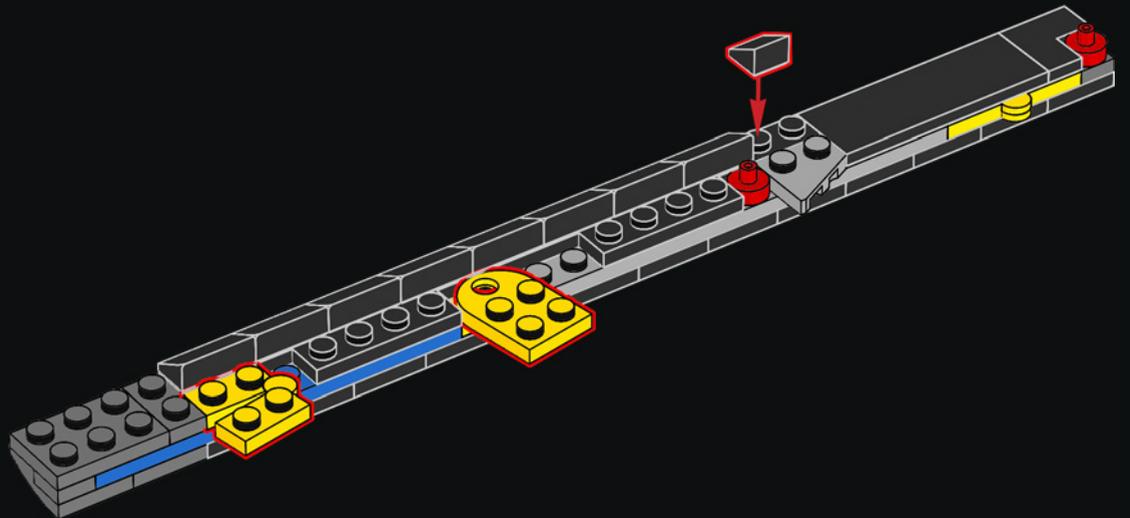




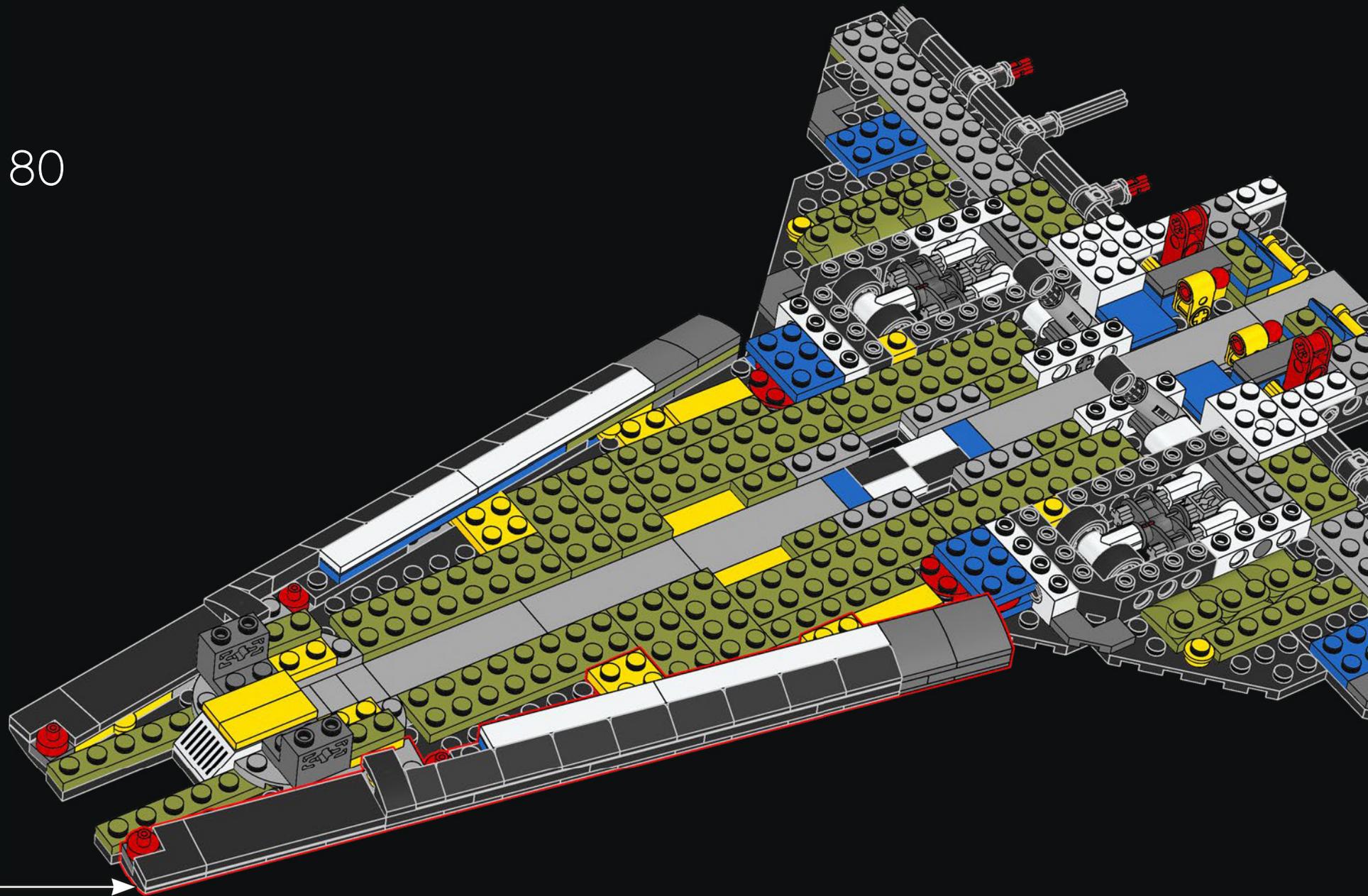
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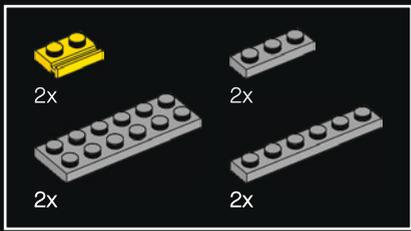


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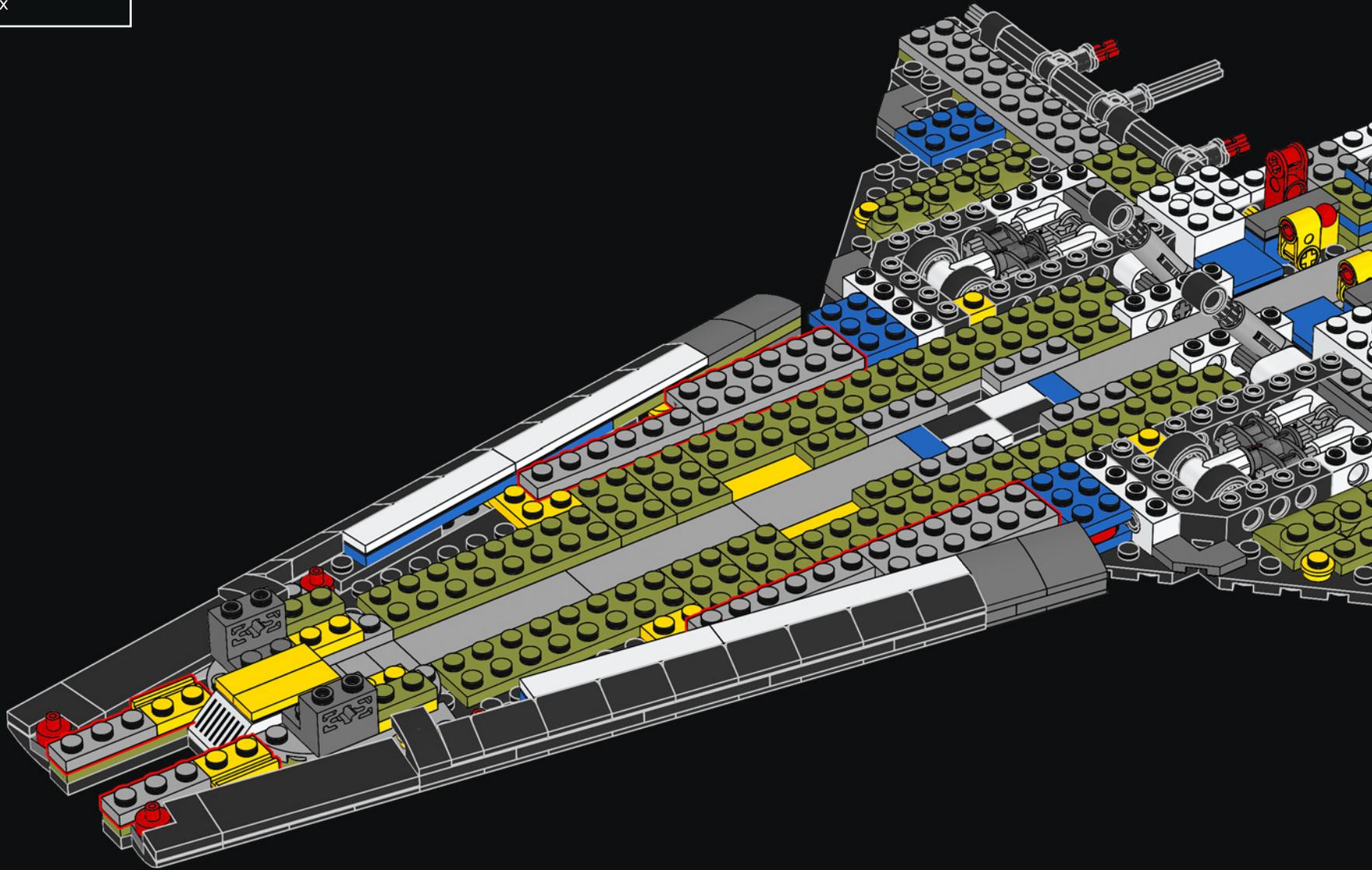


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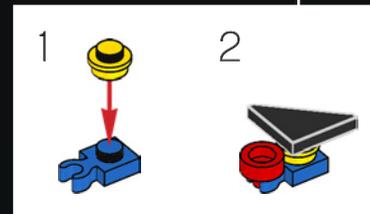
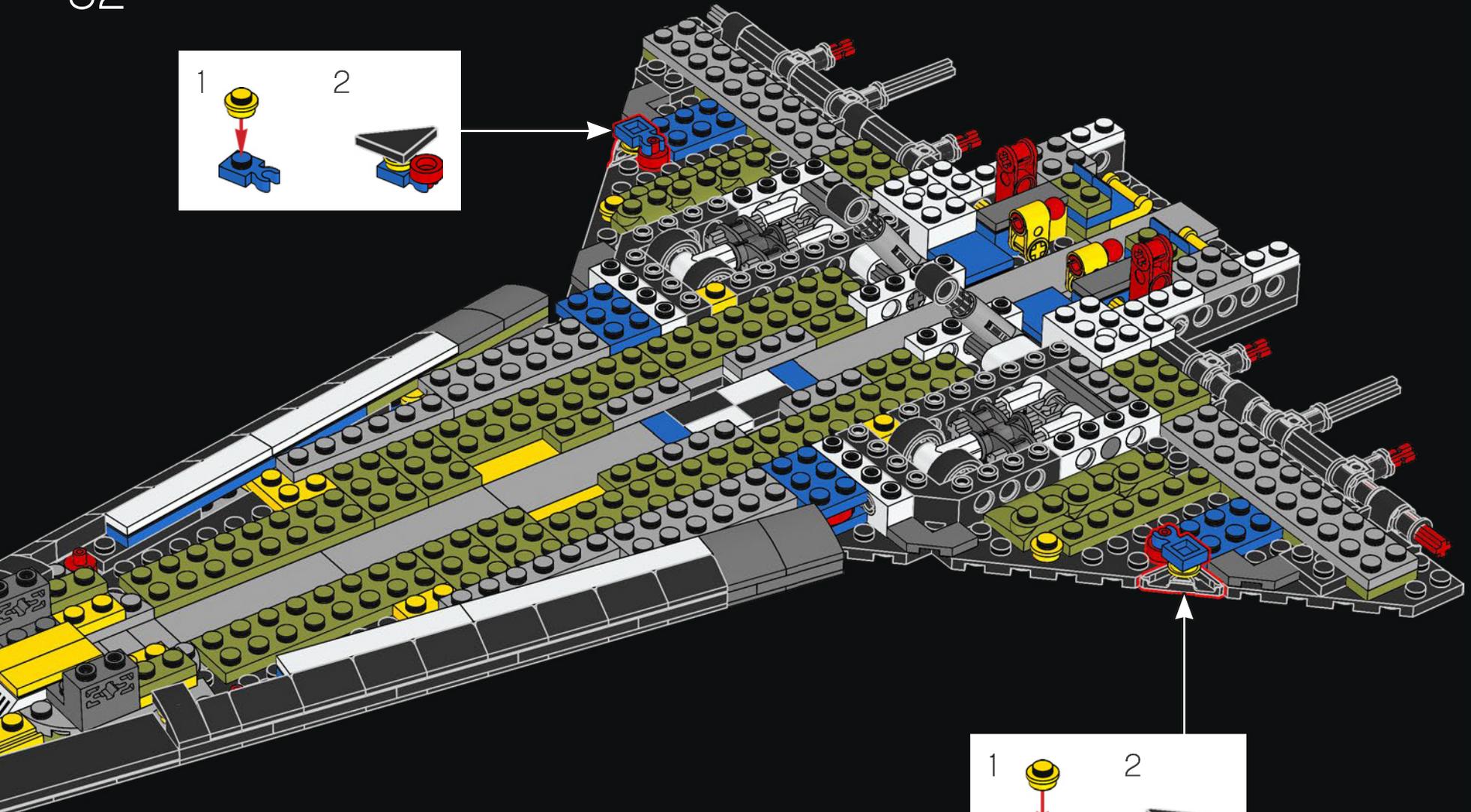
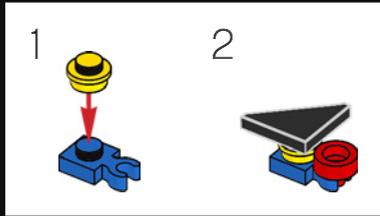


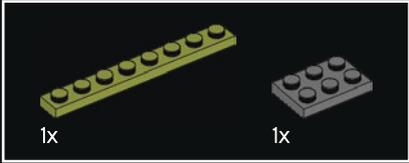
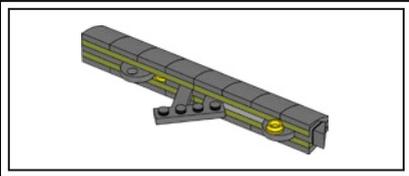
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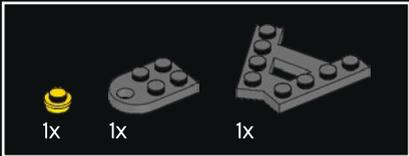
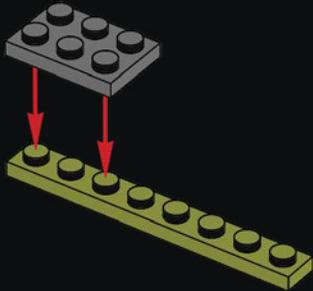
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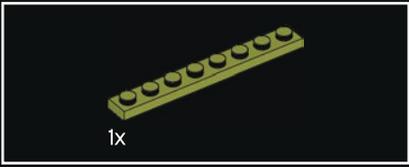
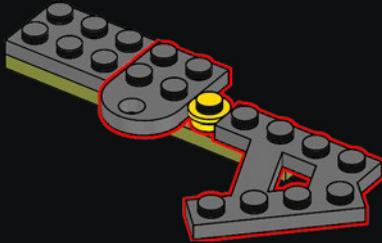




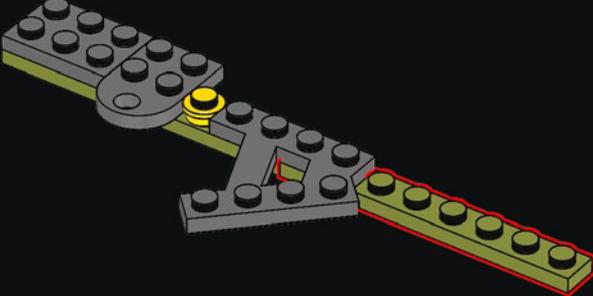
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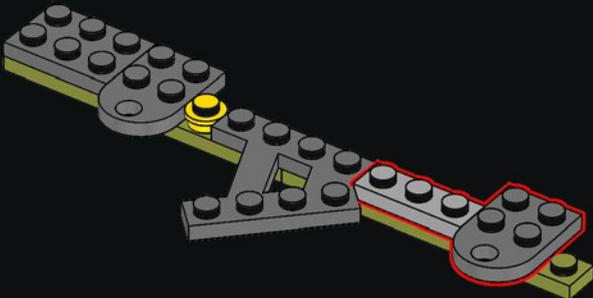
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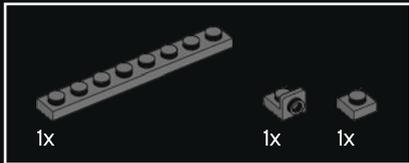
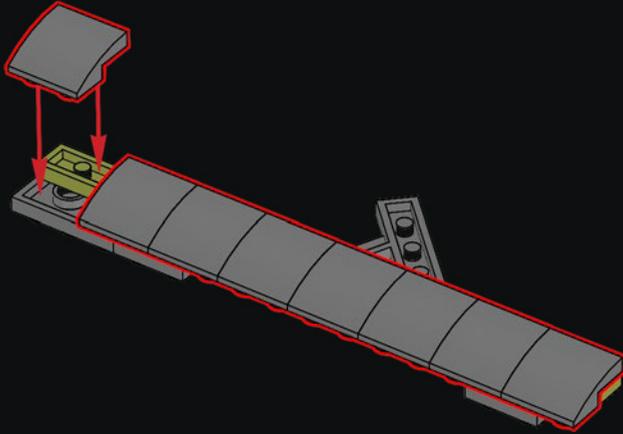


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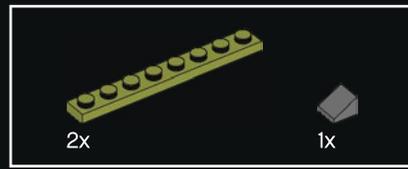
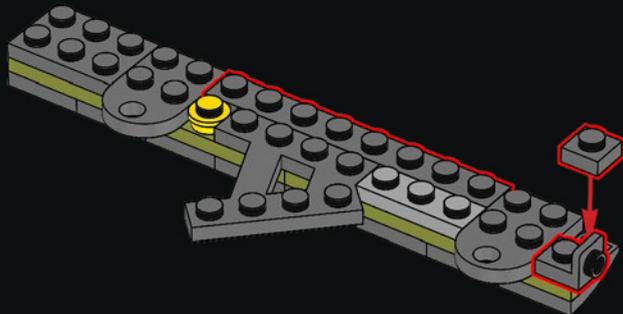




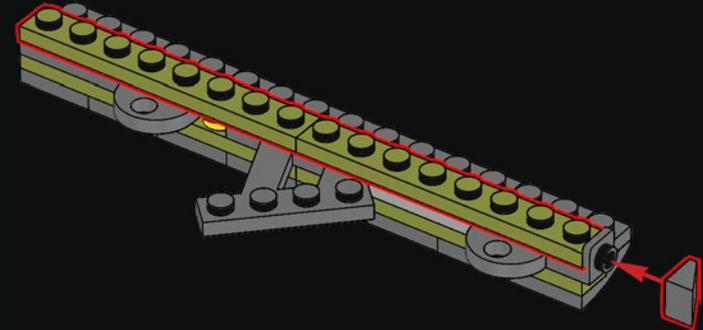
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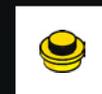
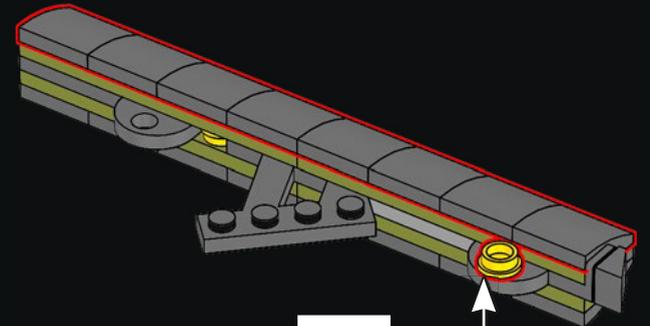
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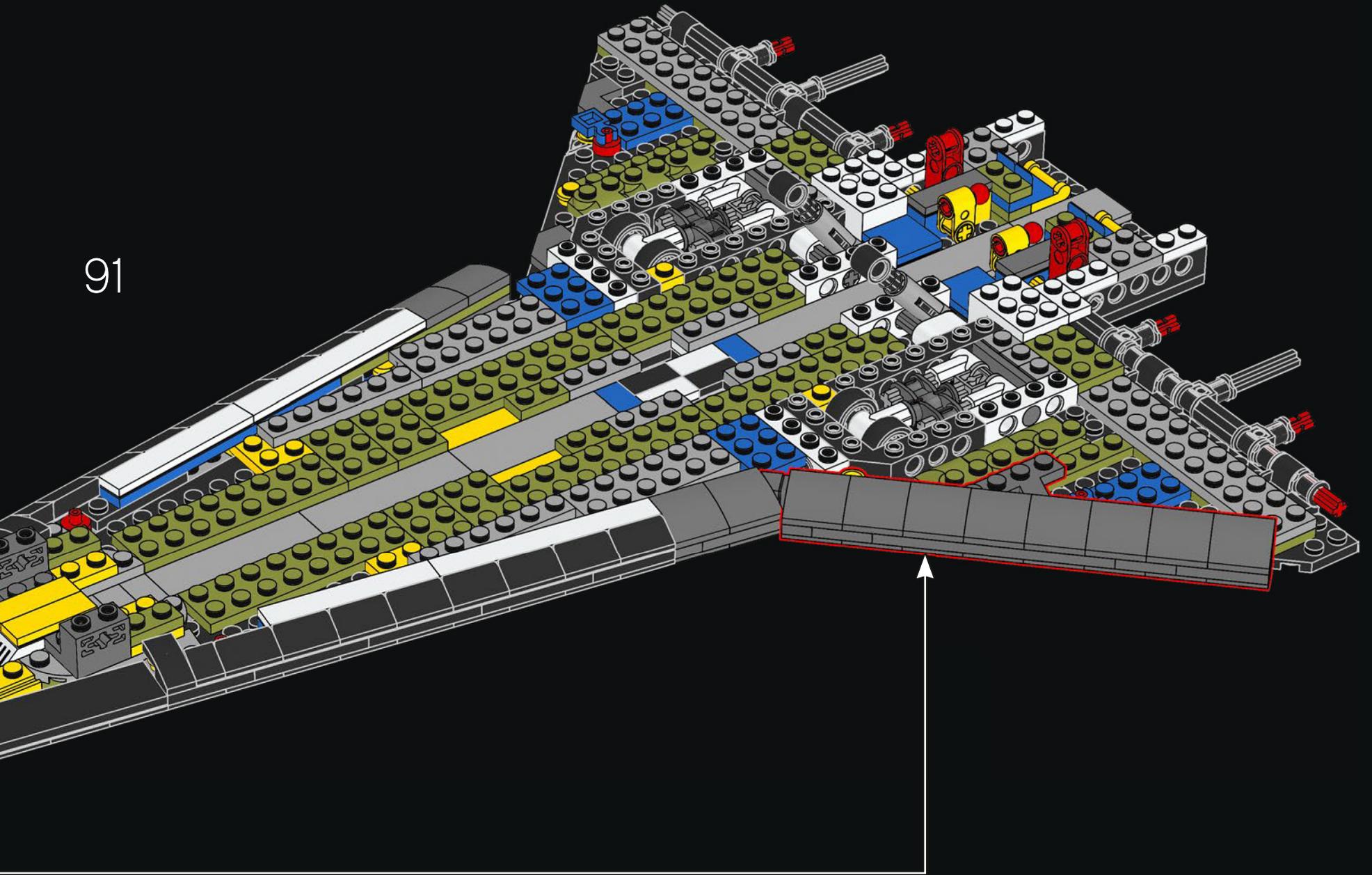
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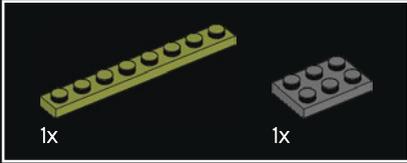
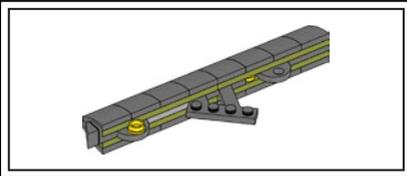


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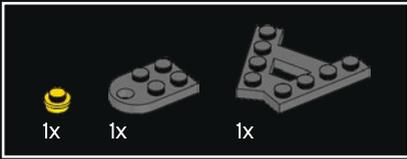
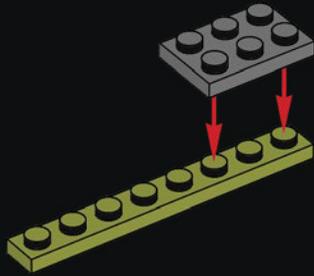


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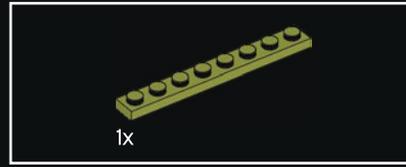
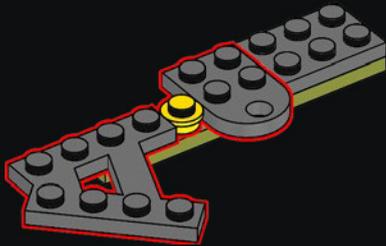




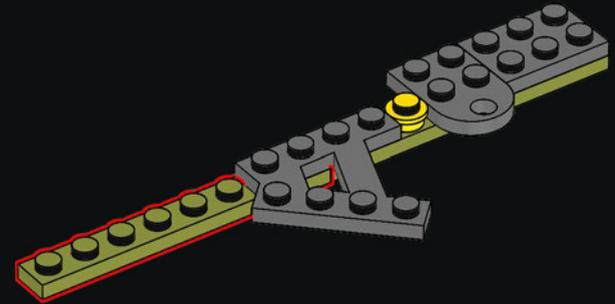
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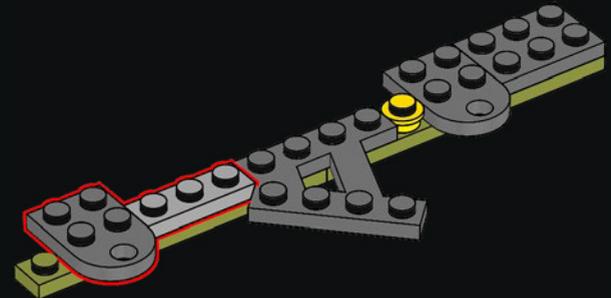
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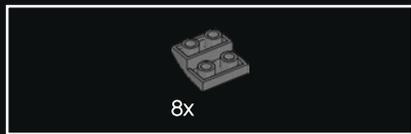


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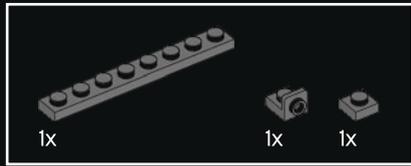
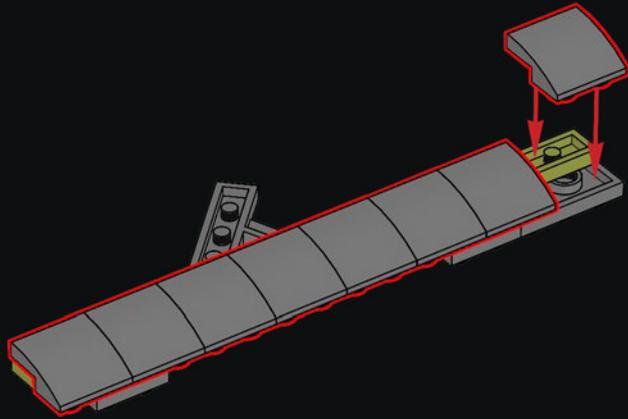


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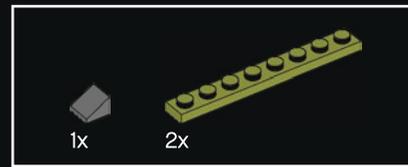
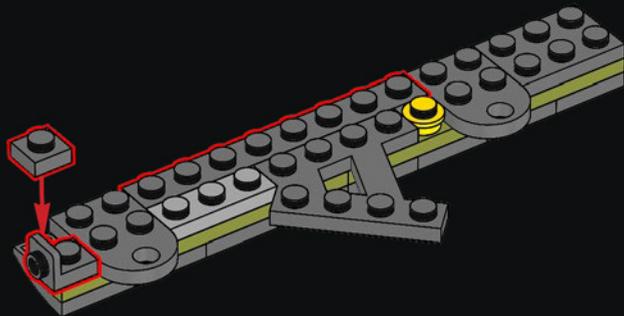




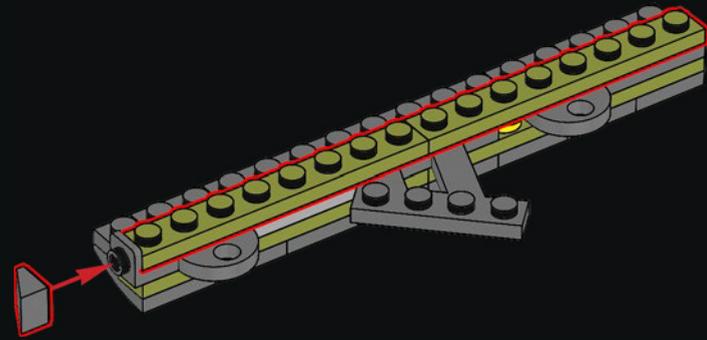
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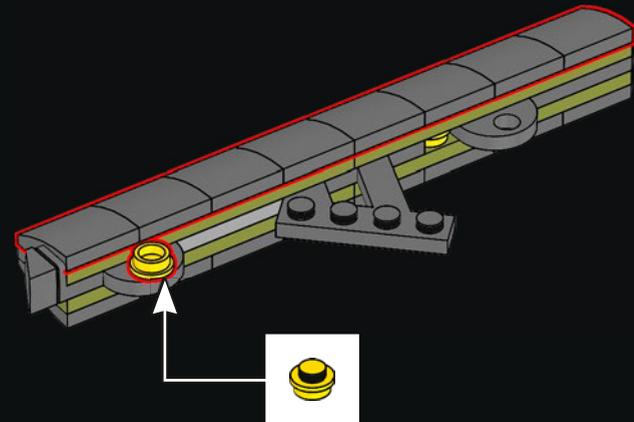
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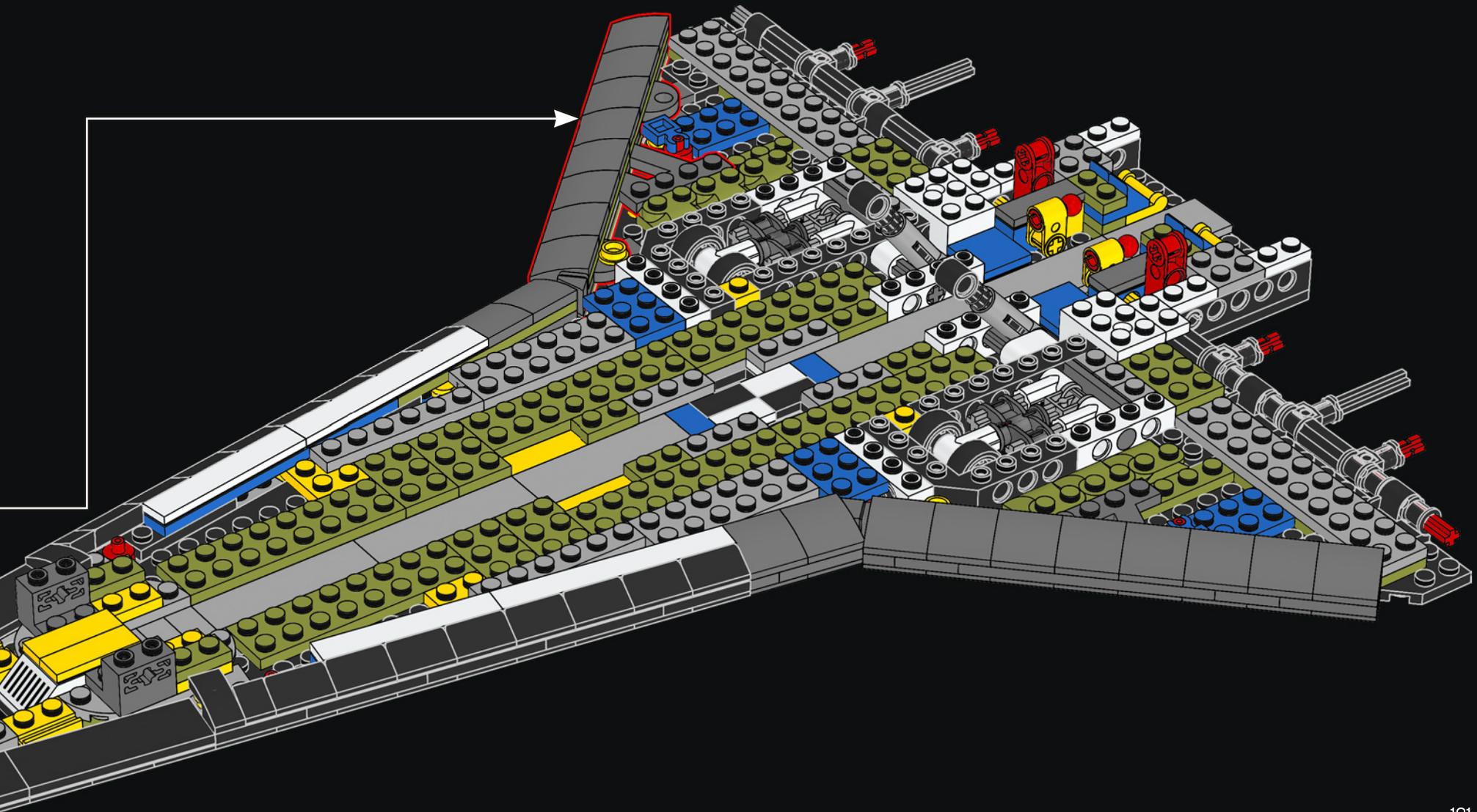
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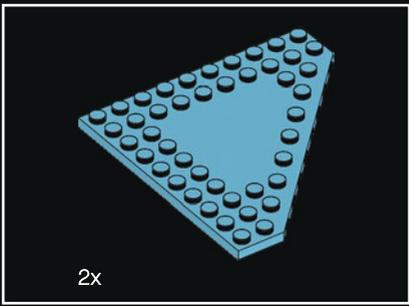


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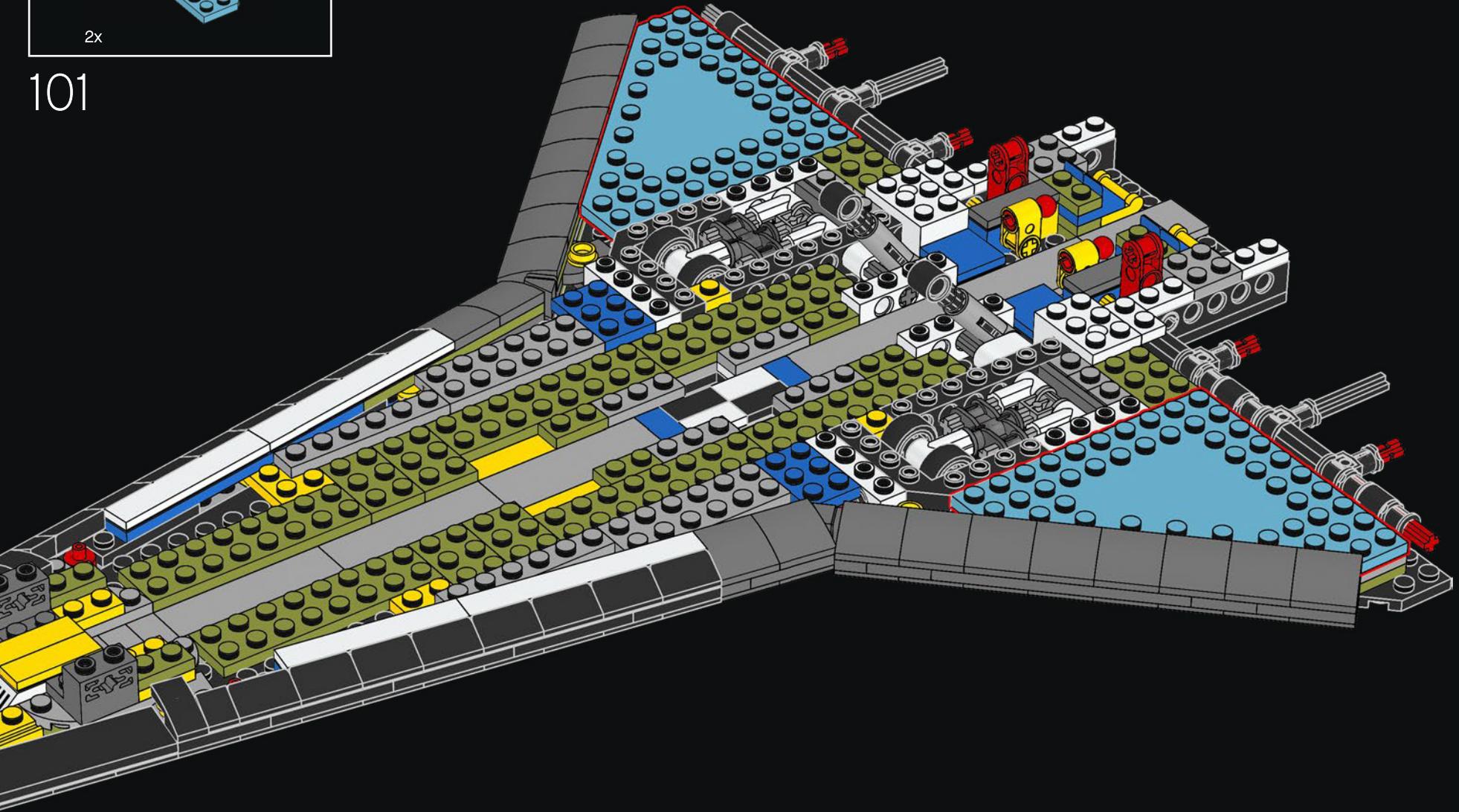


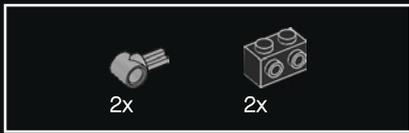
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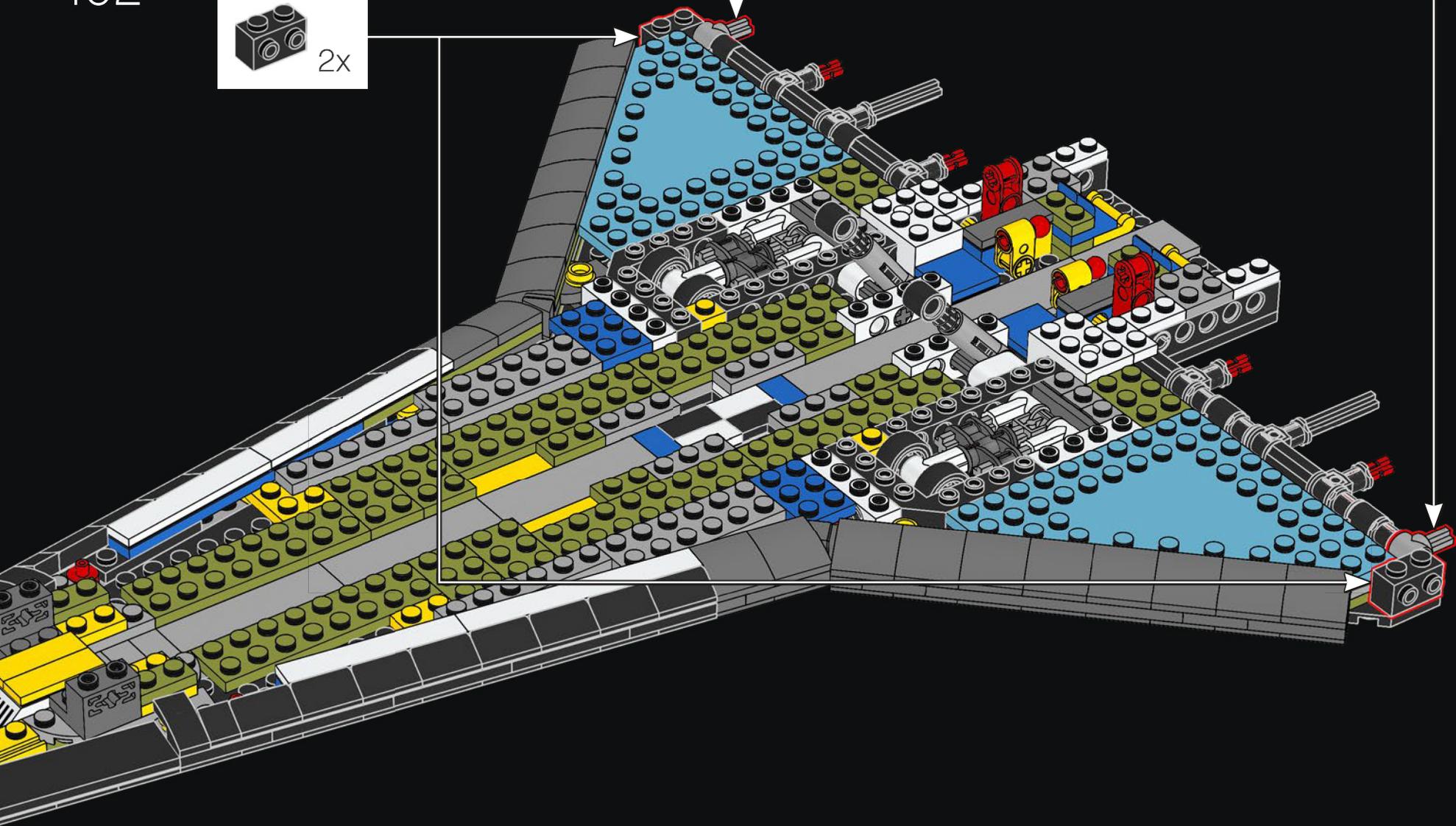
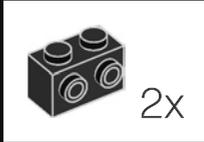


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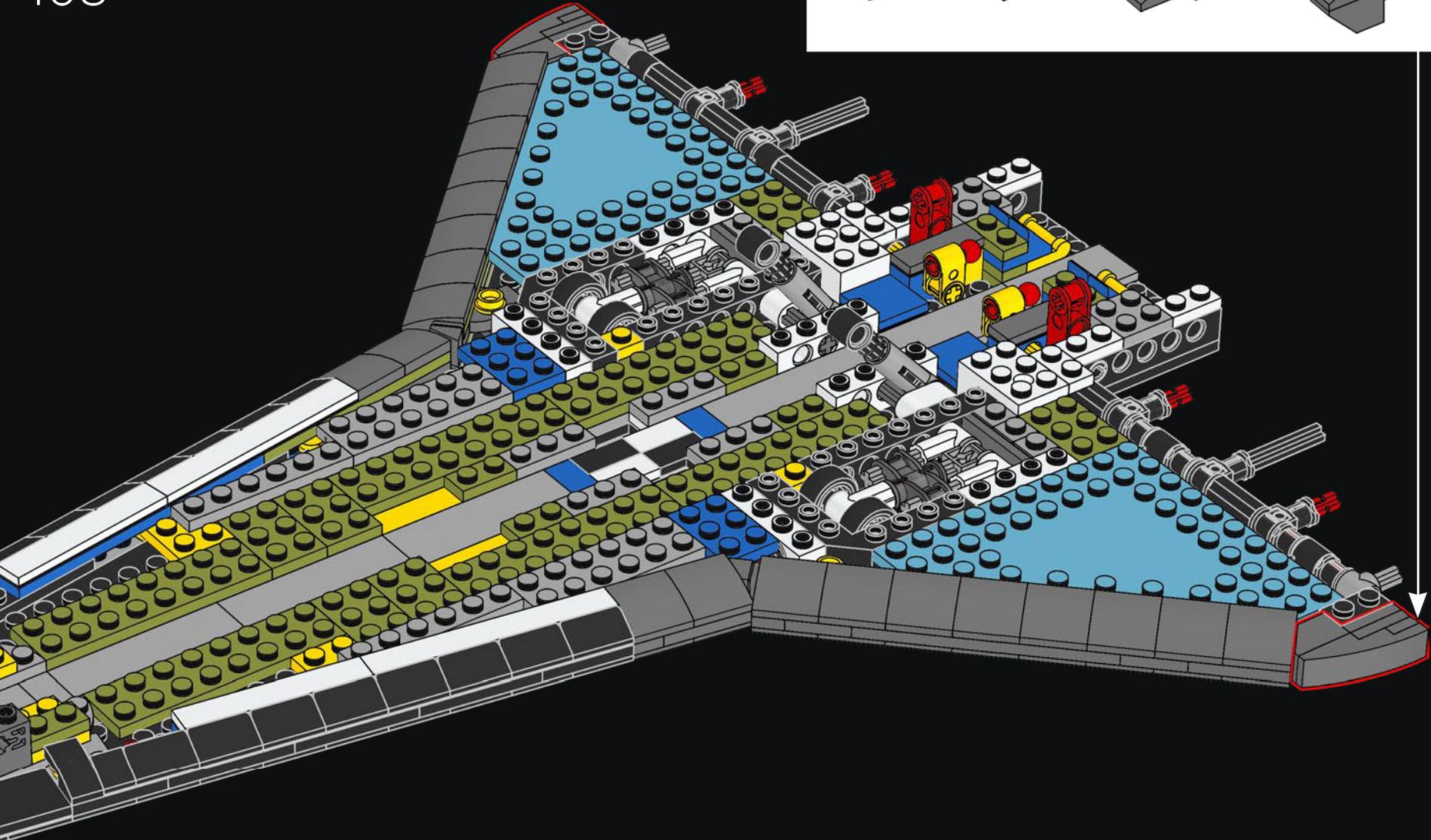
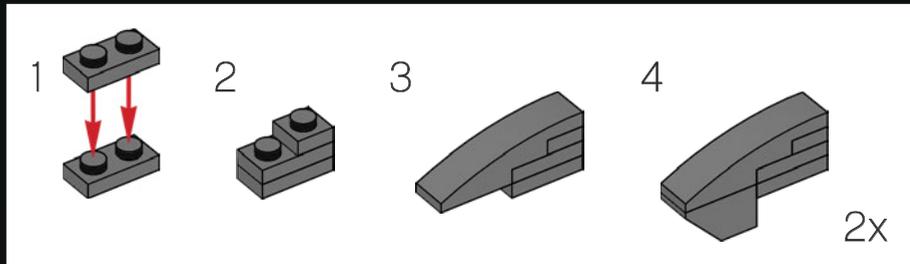


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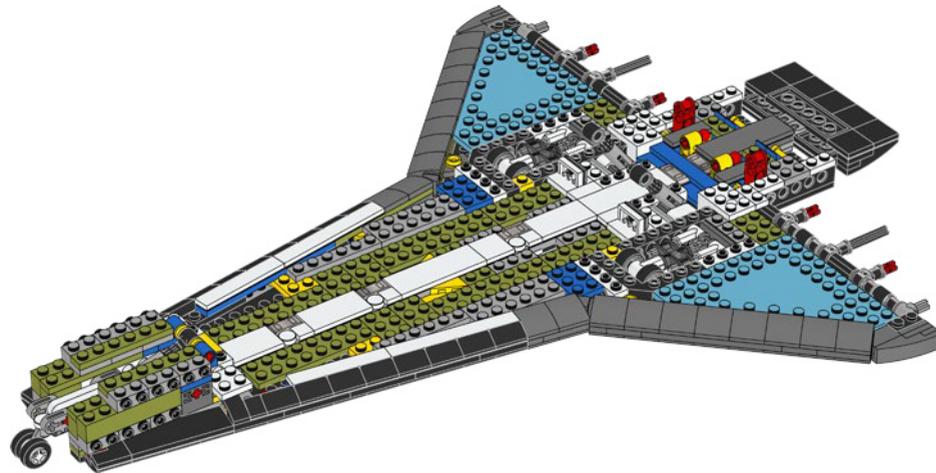
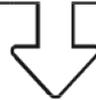


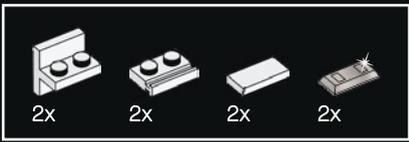
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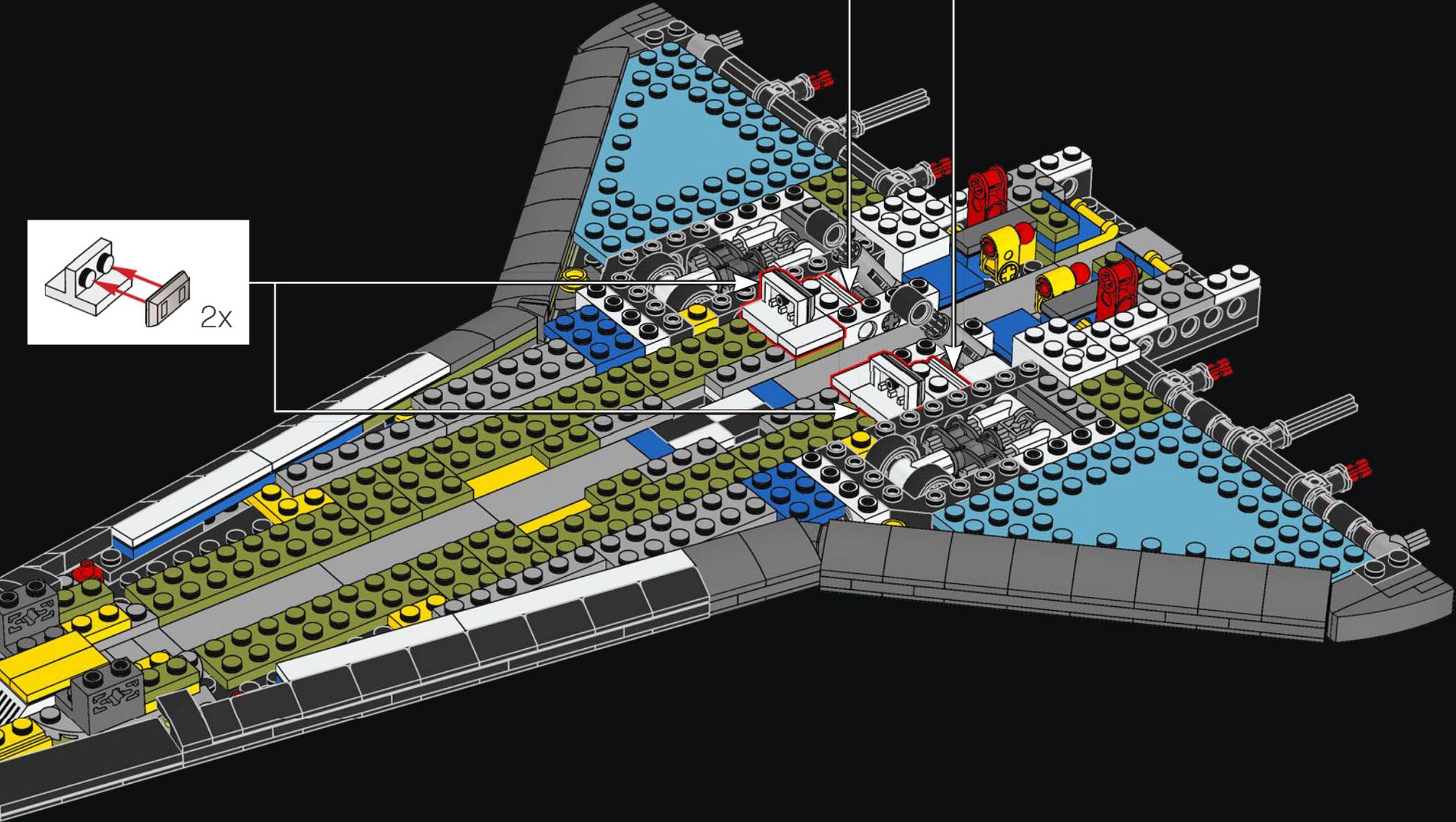
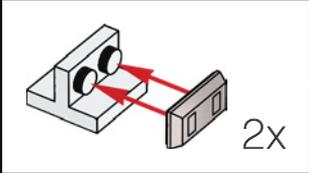
SCHON GEWUSST?

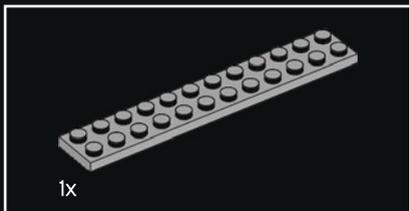
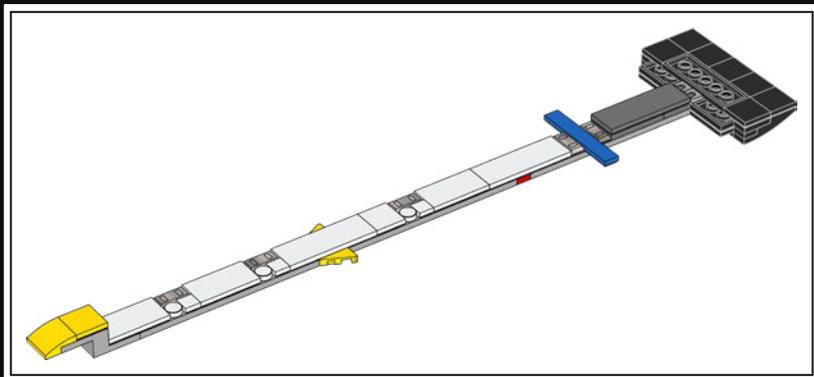
Die Nase und die Vorderkanten der Flügel bekommen die meiste Hitze beim Wiedereintritt ab
 - bis zu 1.600 Grad Celsius!





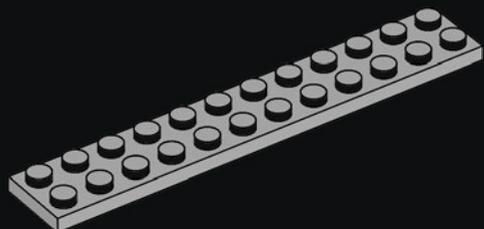
104





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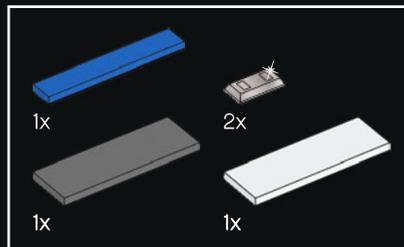
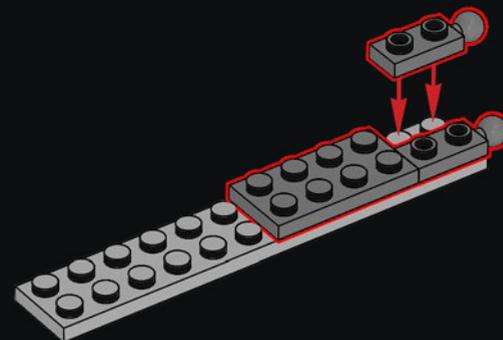
105



1x

2x

106



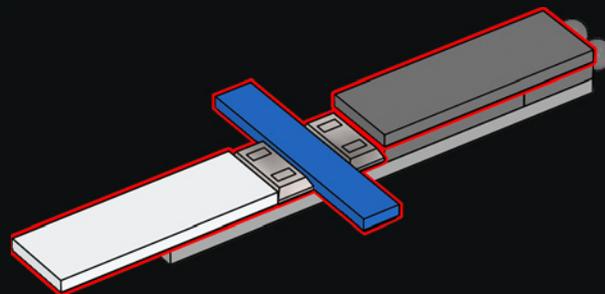
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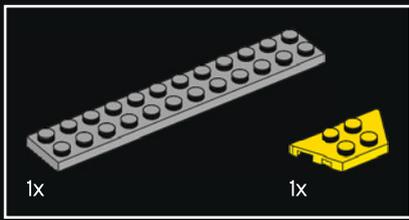
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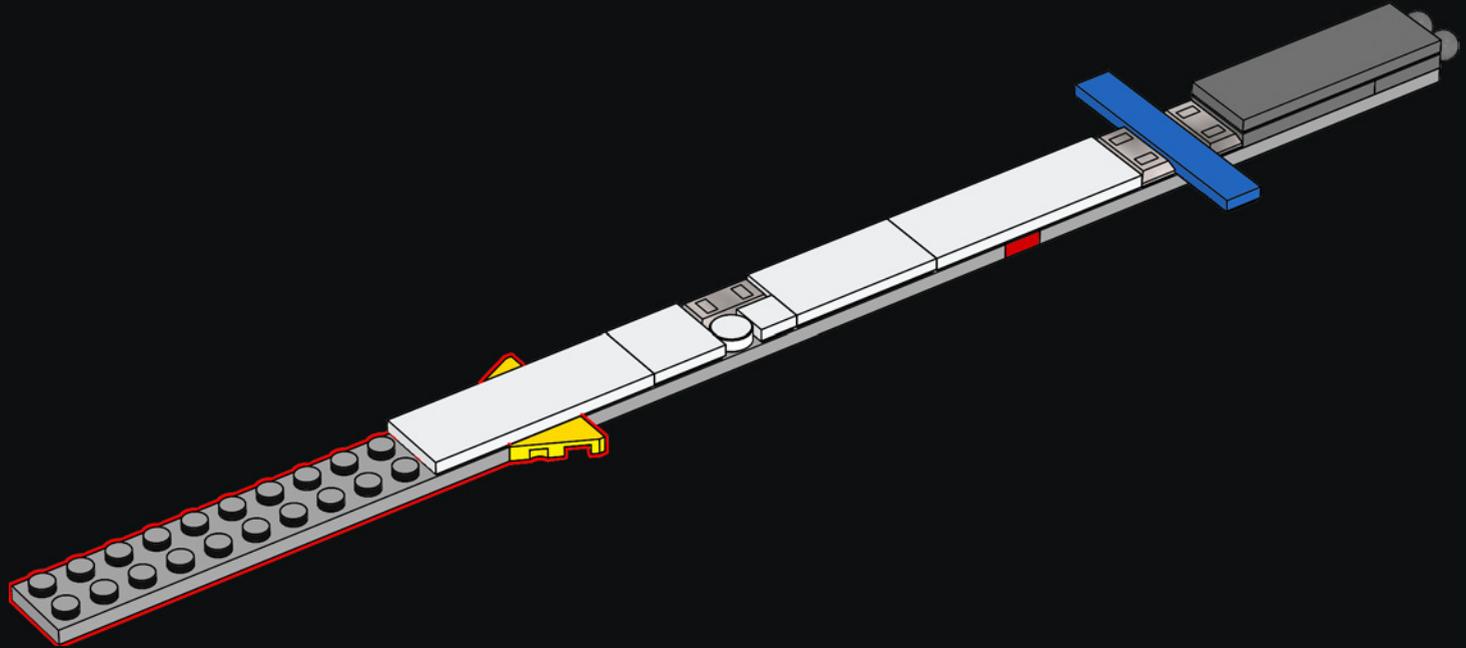
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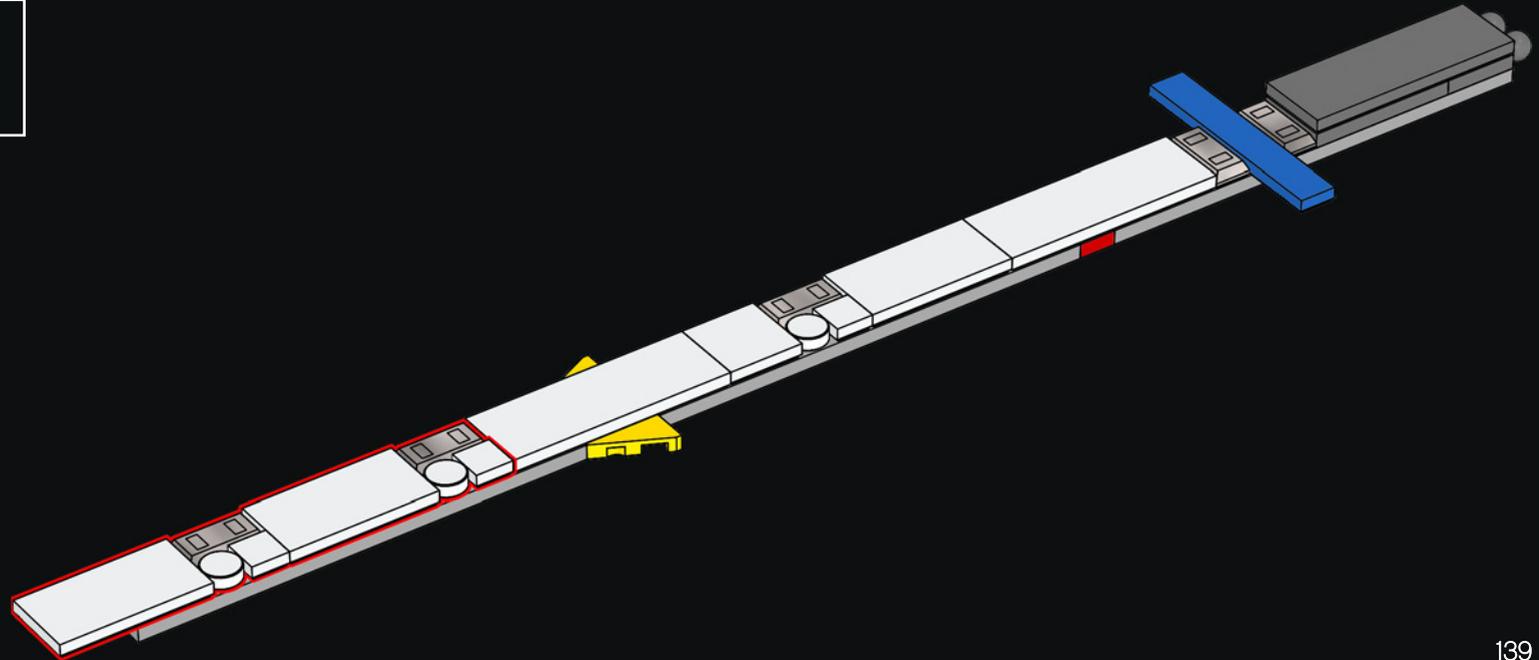


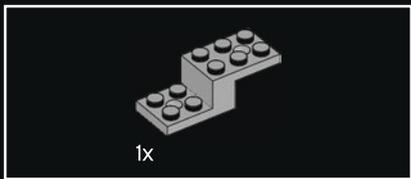


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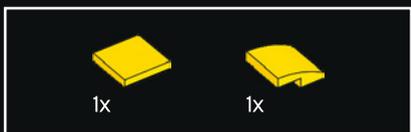
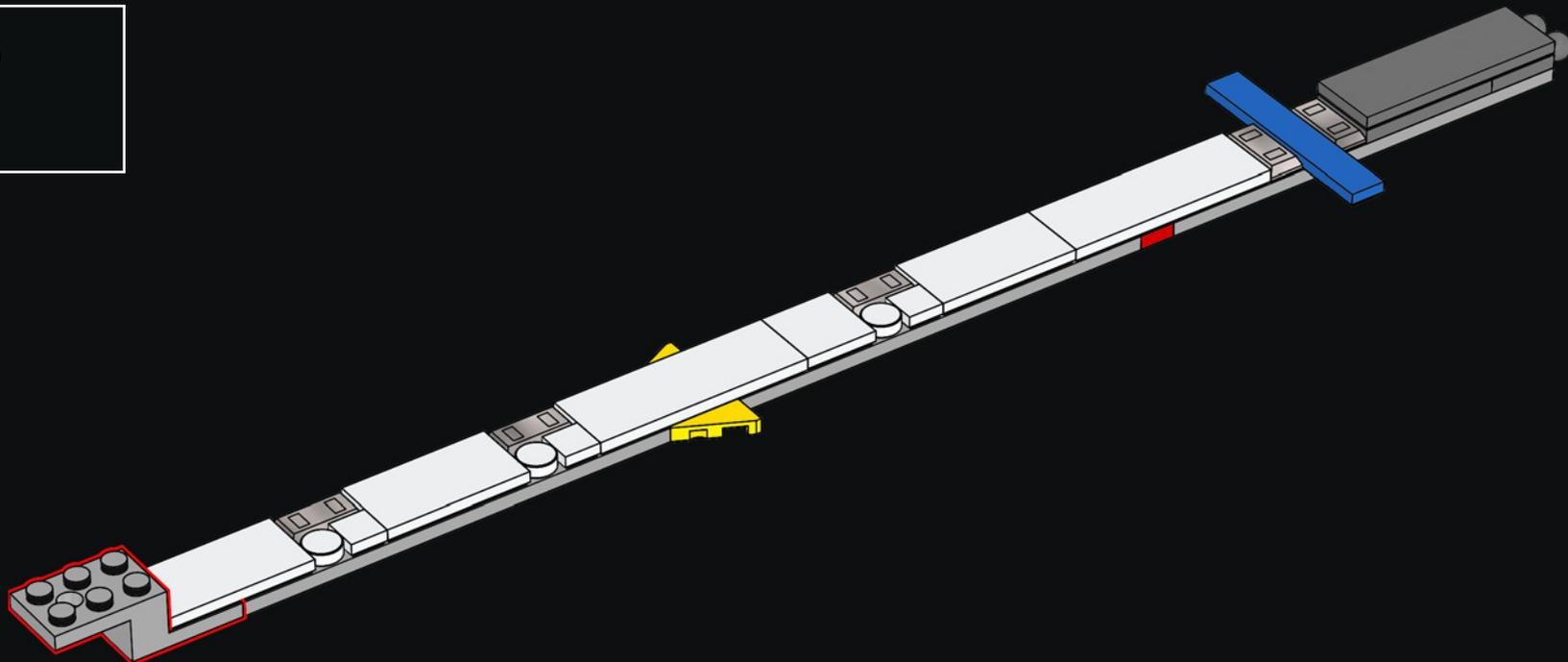


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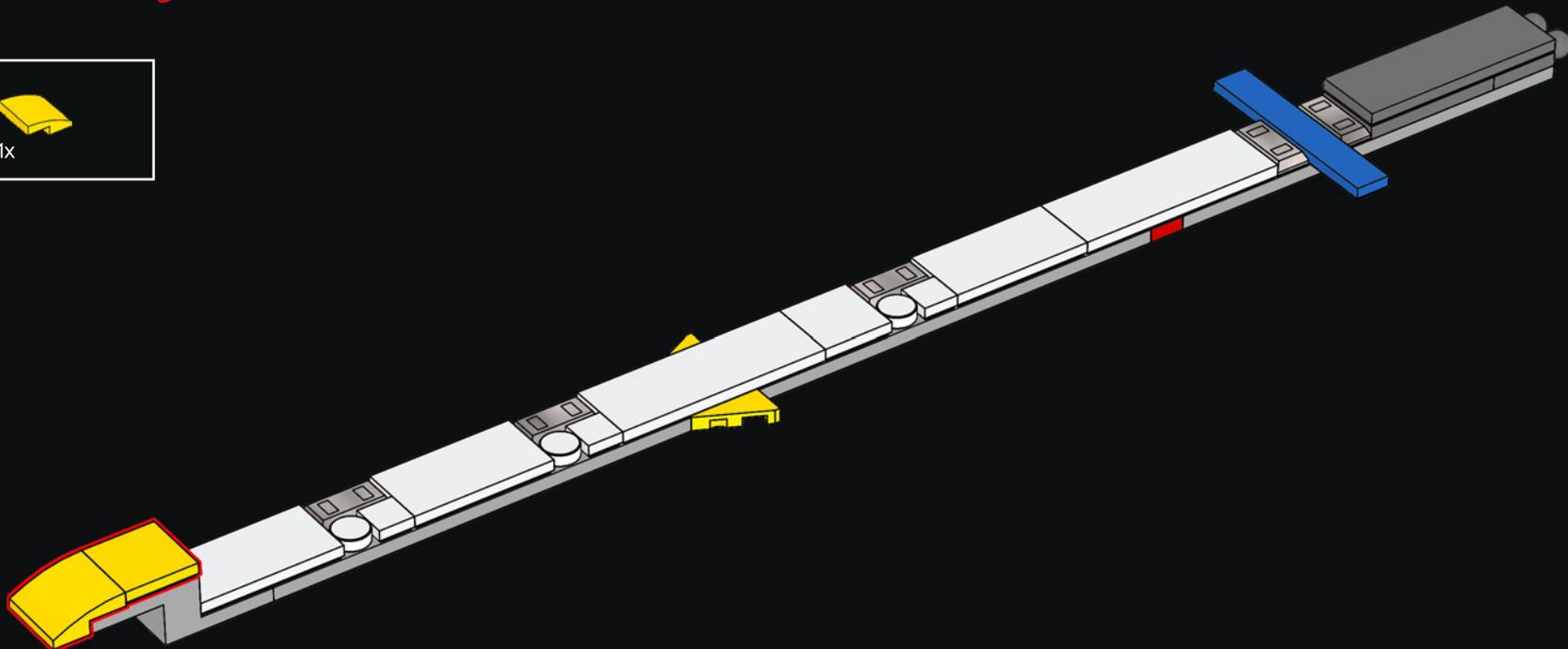


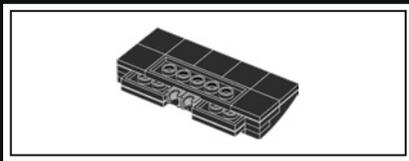


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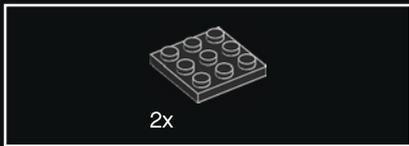


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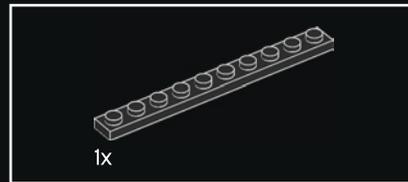
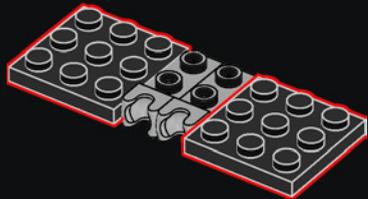




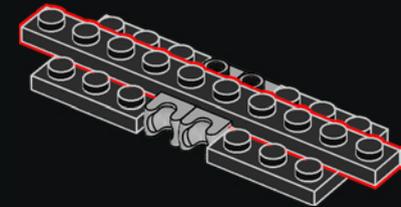
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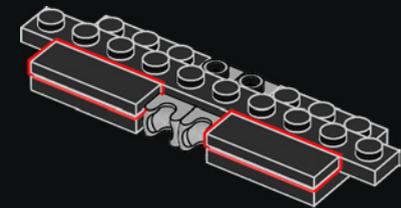
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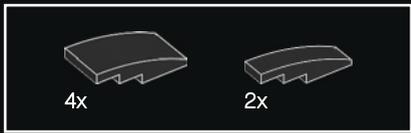


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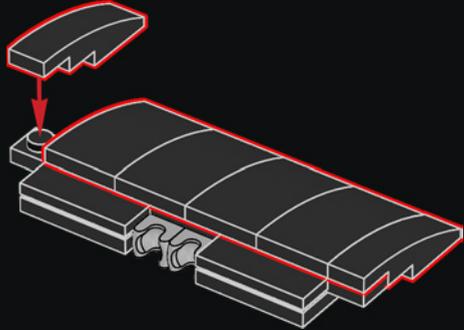


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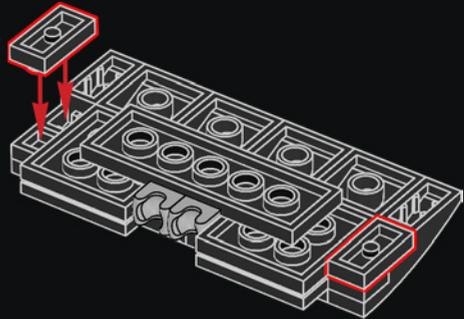




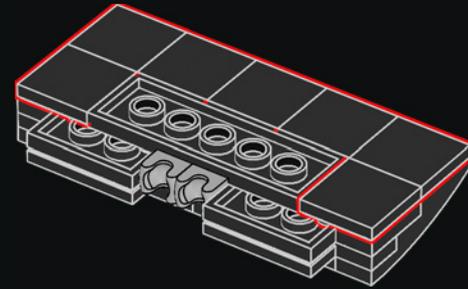
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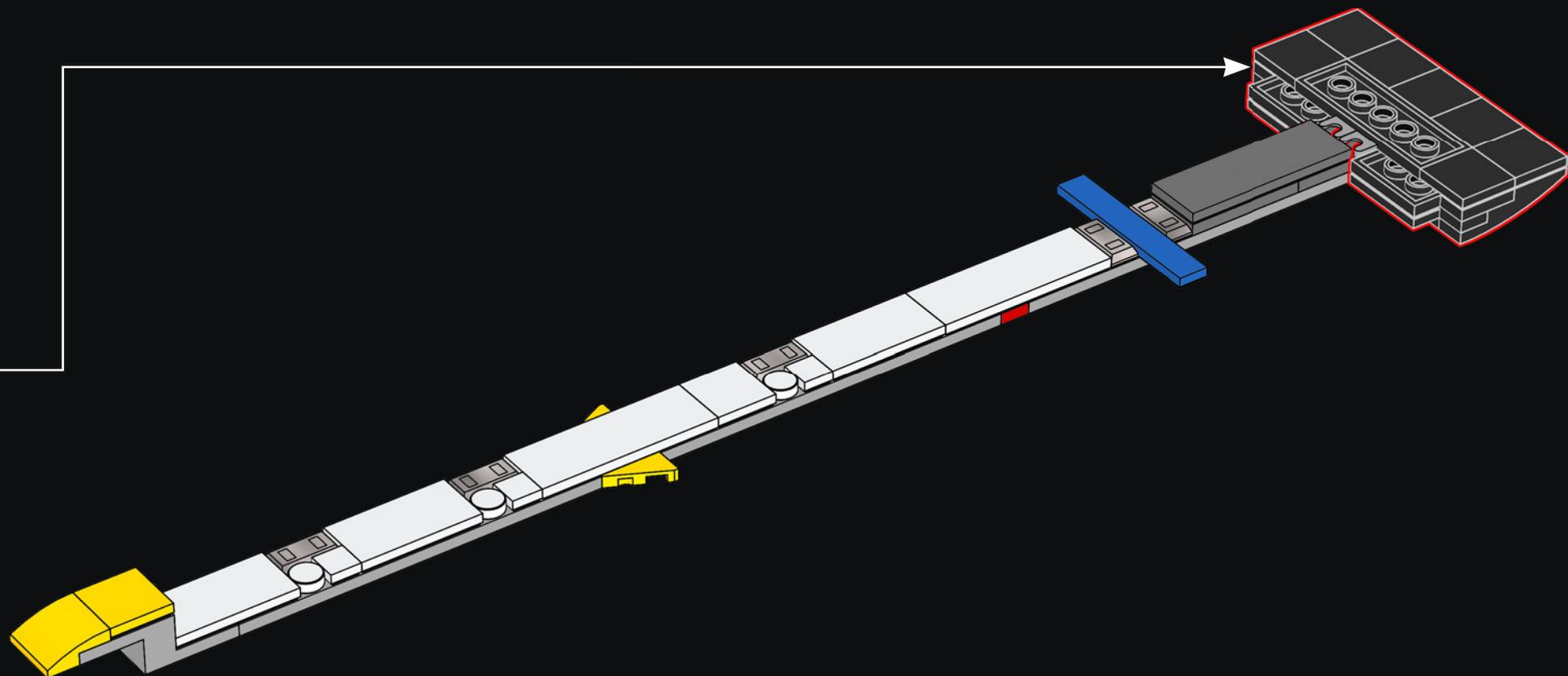
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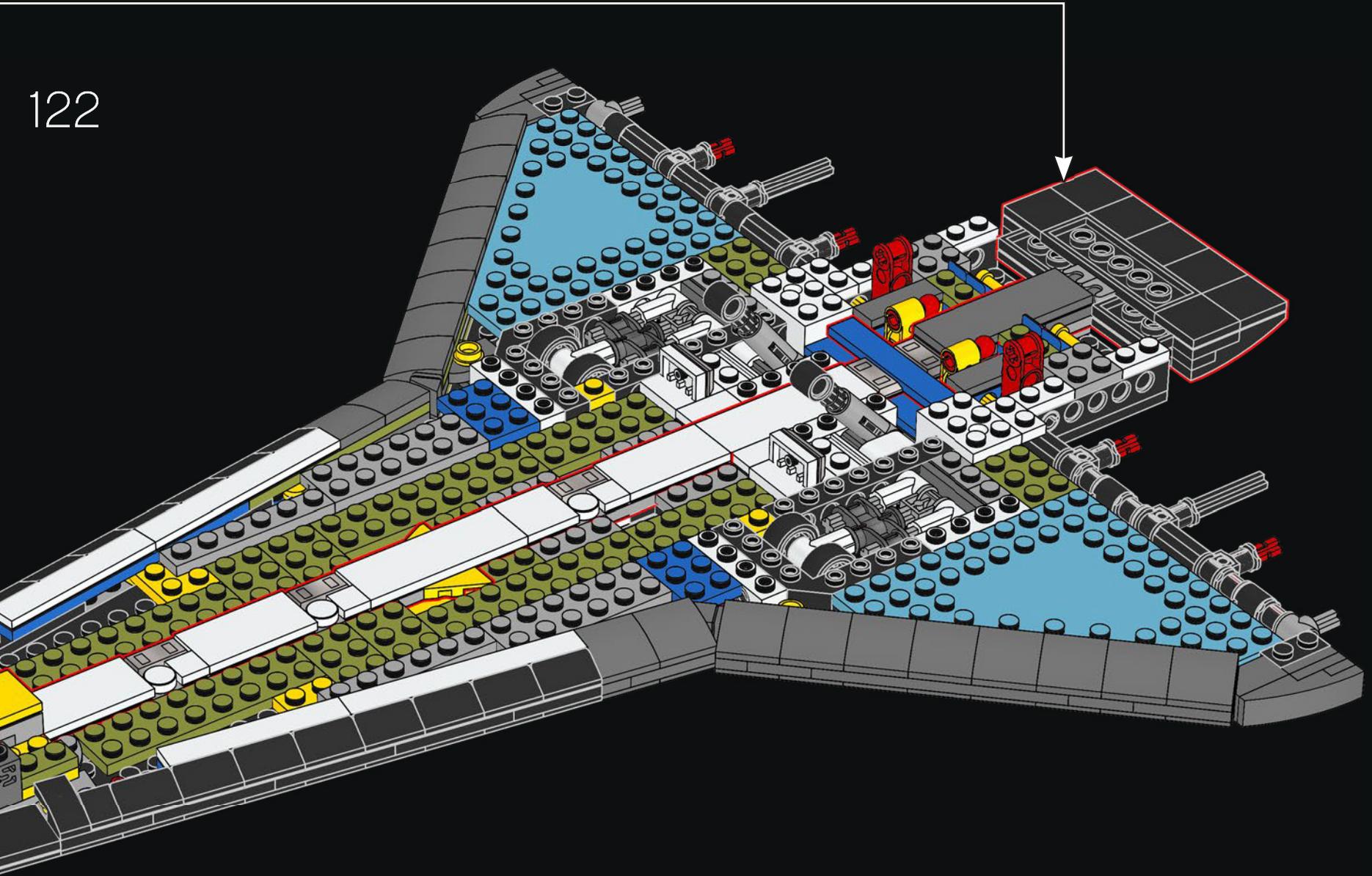
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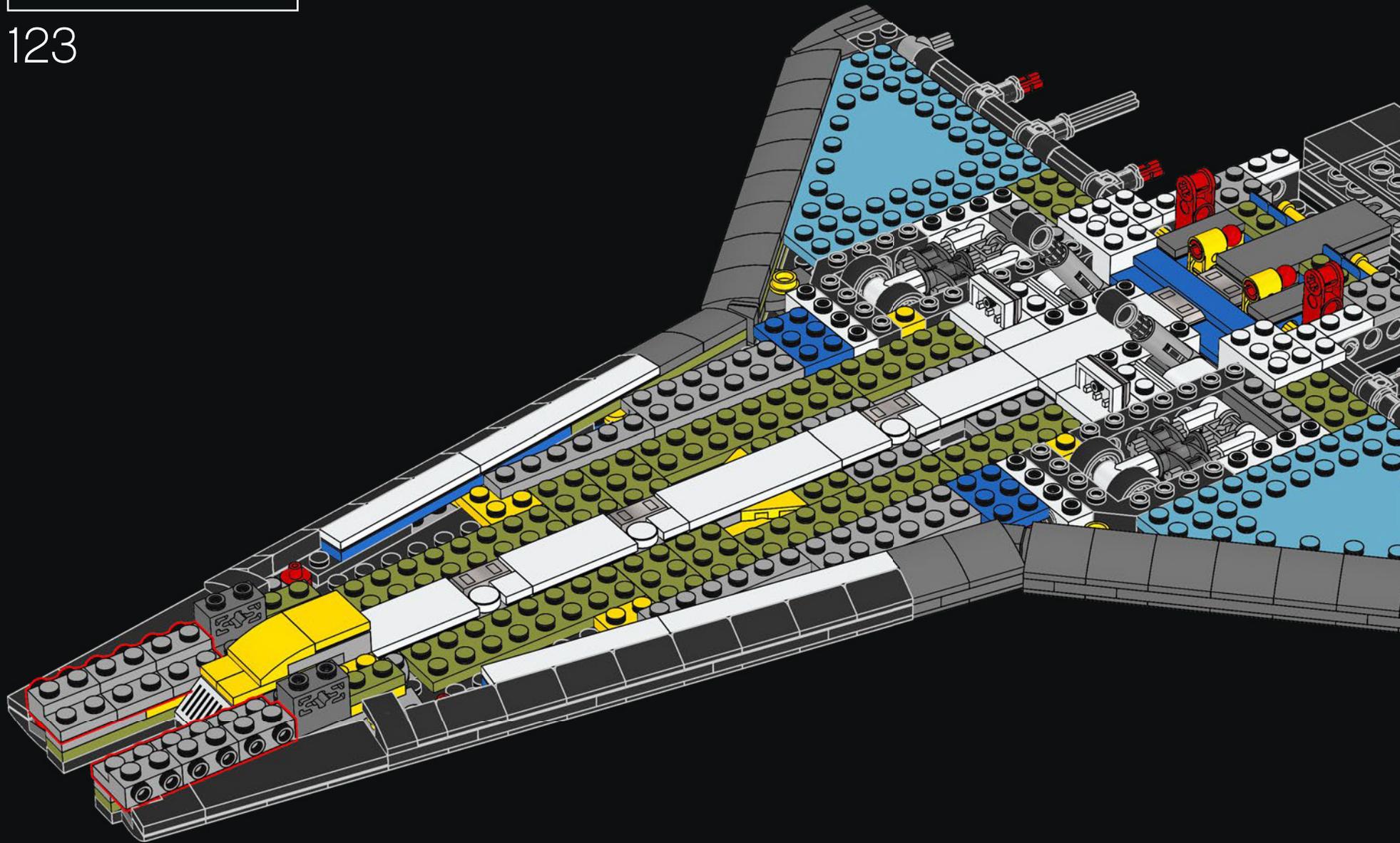


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123





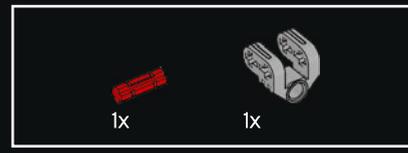
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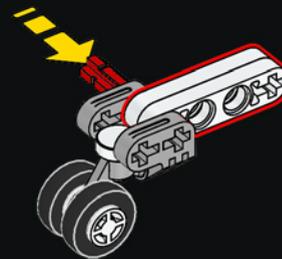
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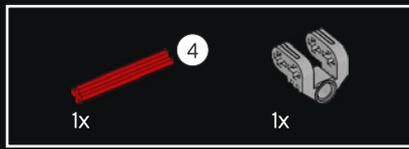


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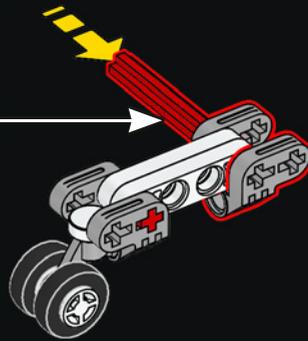
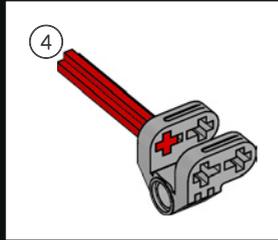


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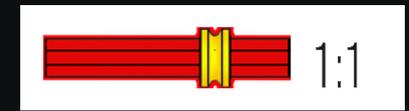
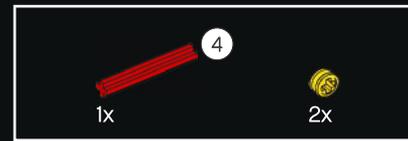
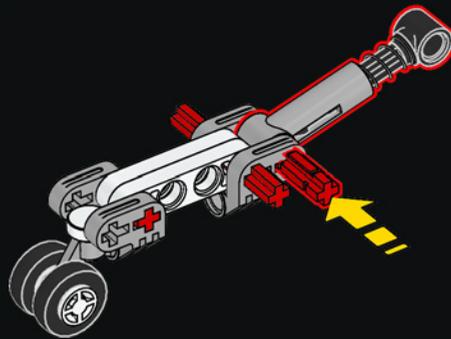




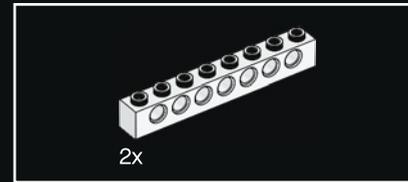
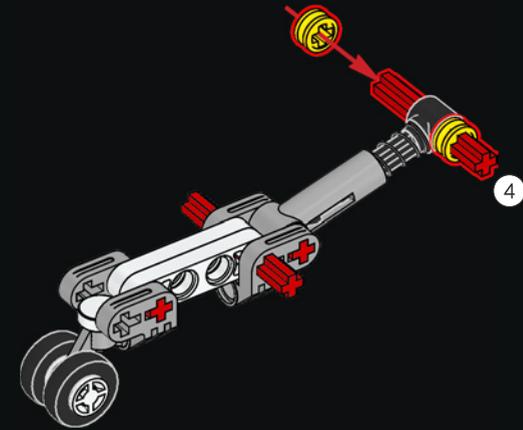
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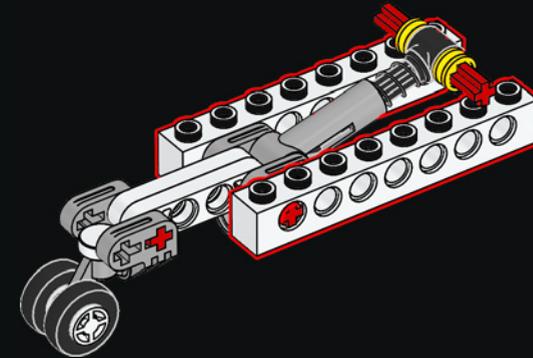
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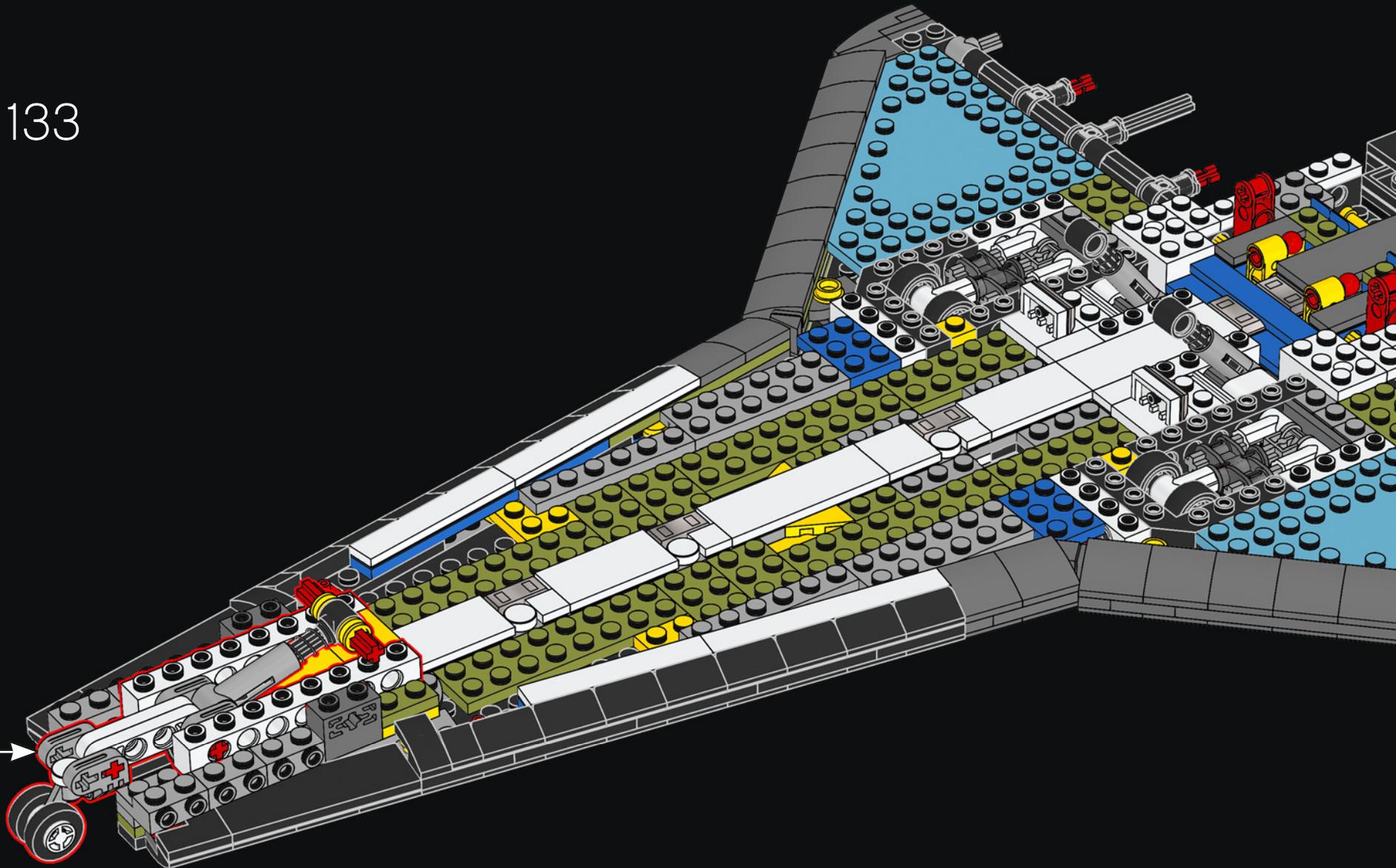
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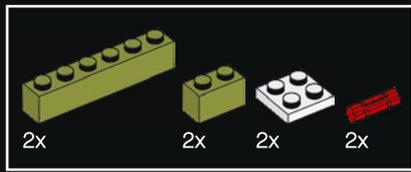


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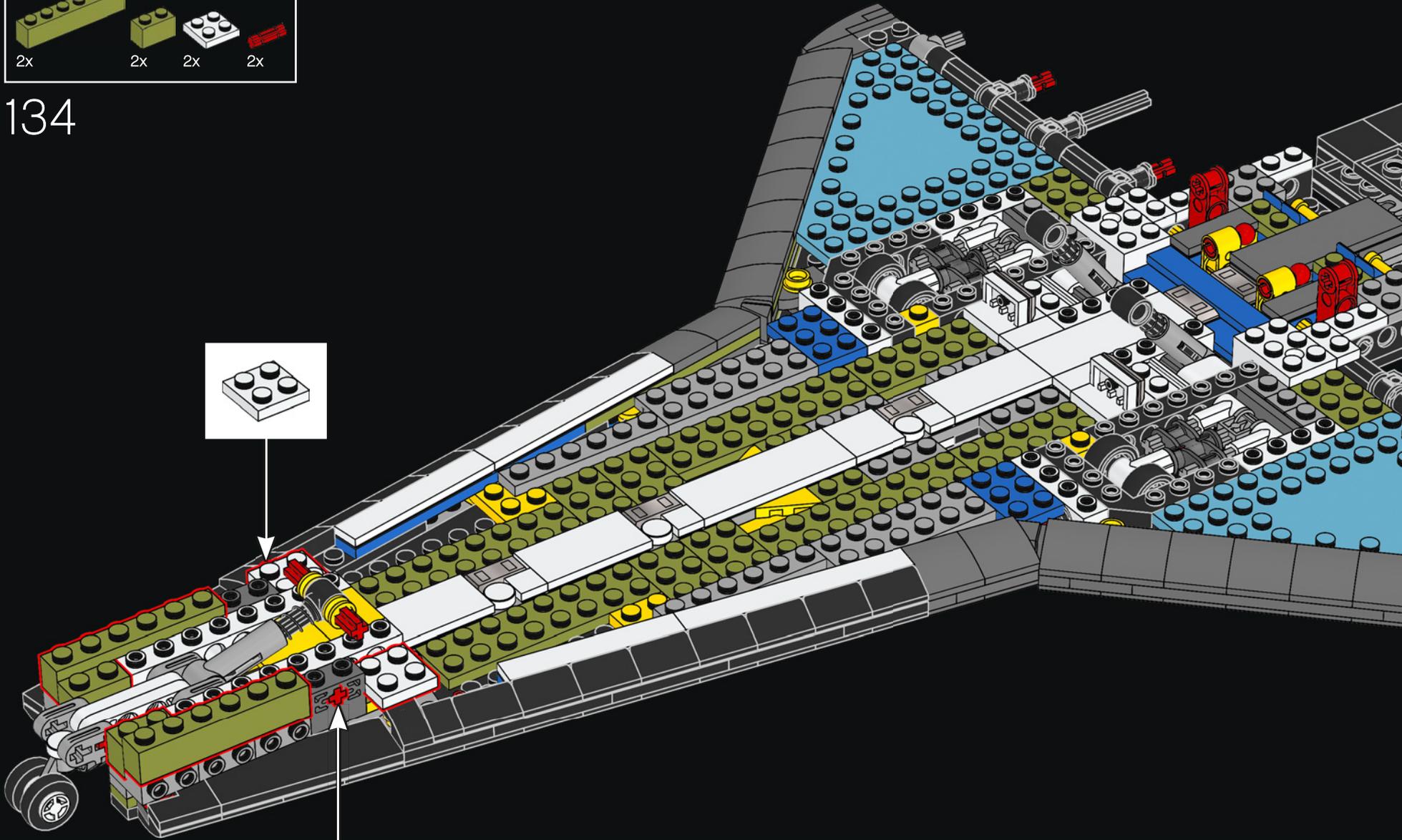


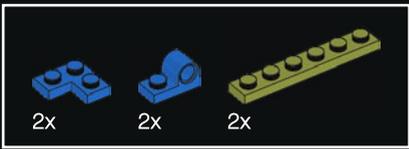
SCHON GEWUSST?

Als „Segelflugzeug“ hatte das Spaceshuttle nur einen einzigen Landeversuch. War das Fahrwerk ausgefahren, ließ es sich nicht mehr einziehen.

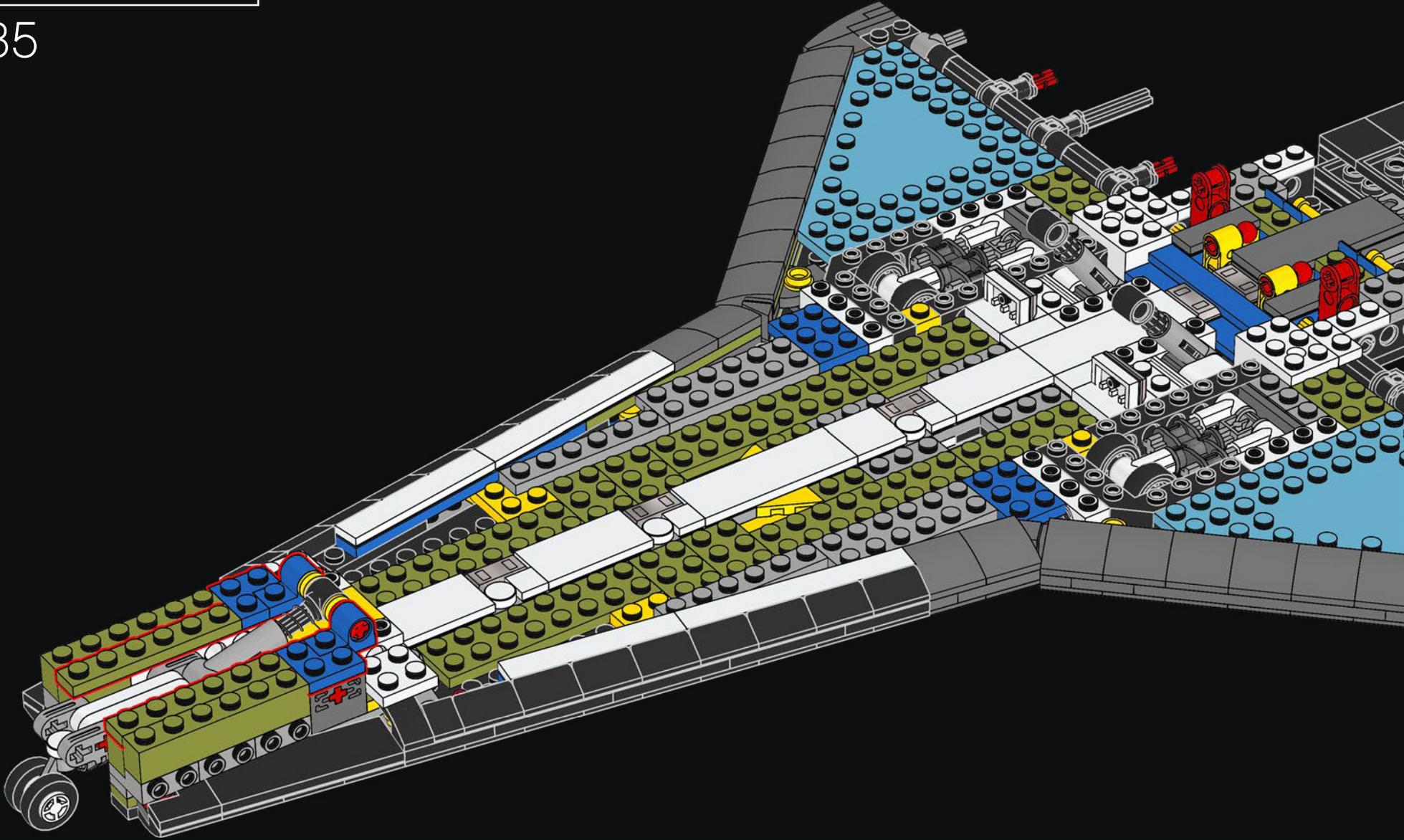


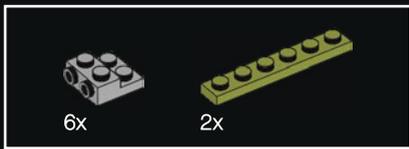
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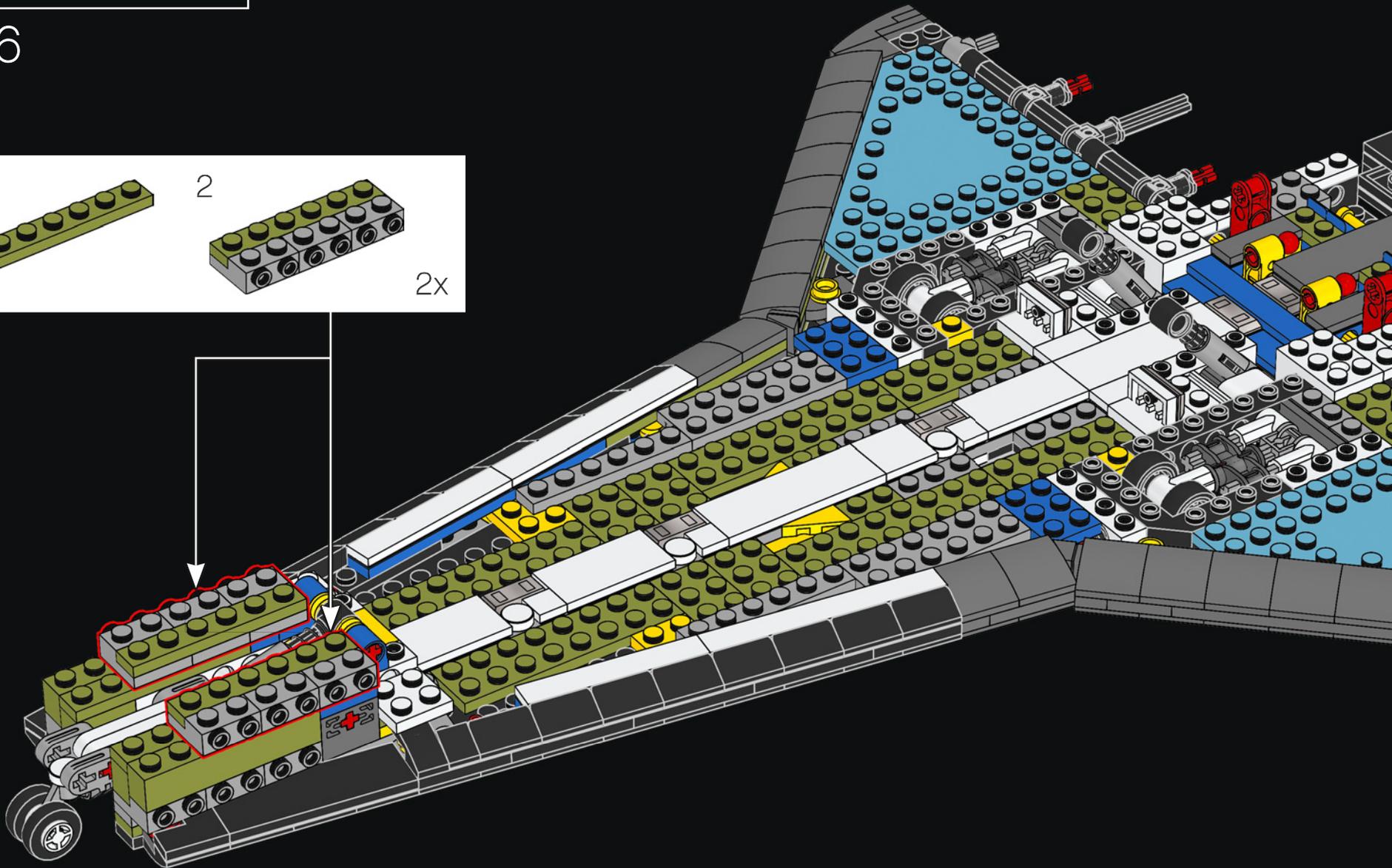
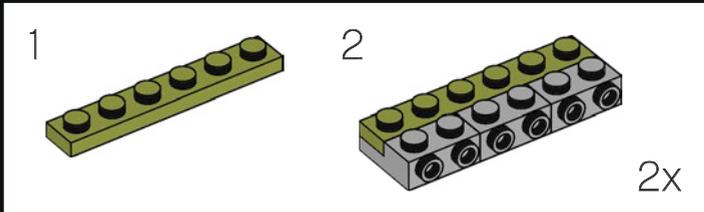


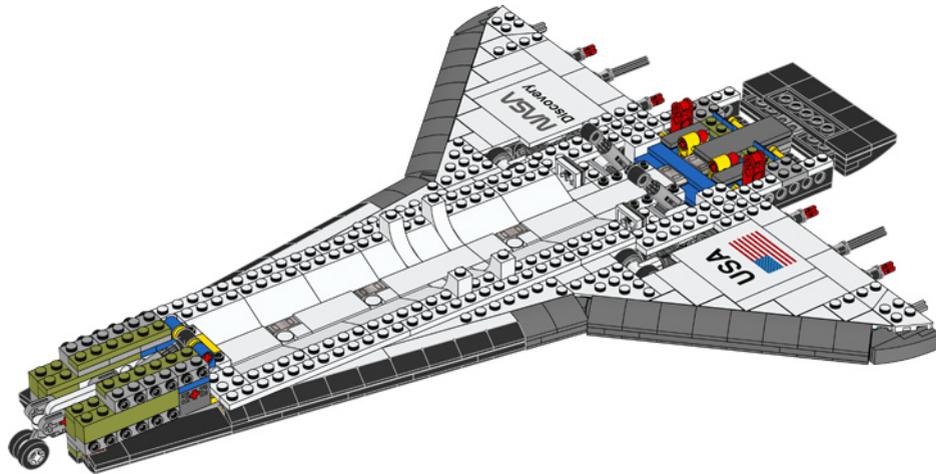
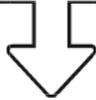
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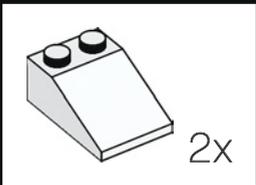
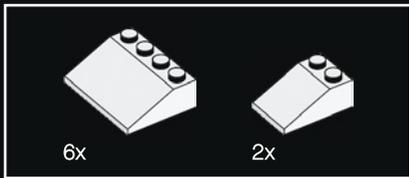




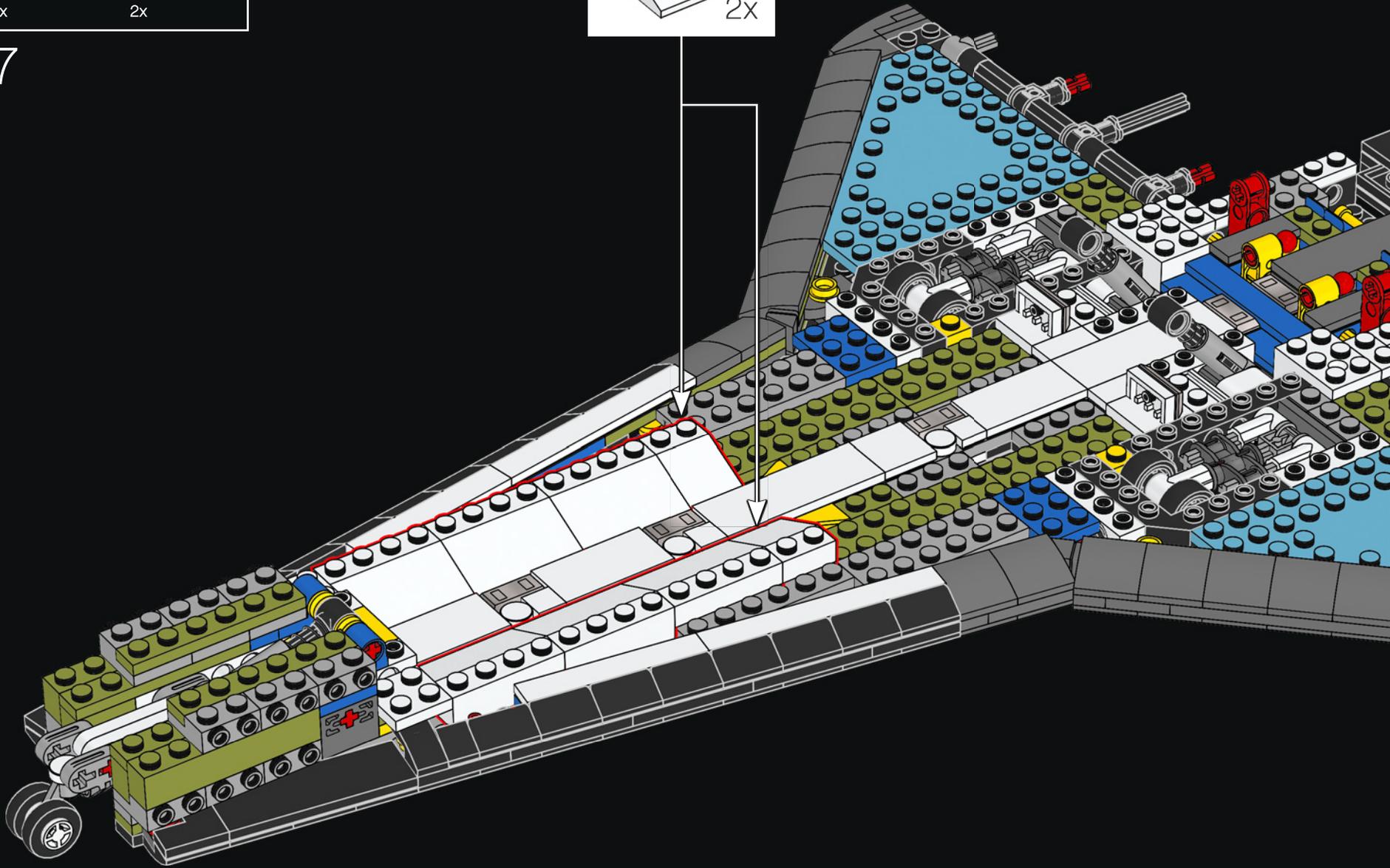
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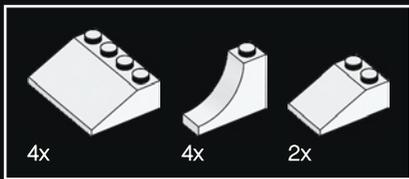




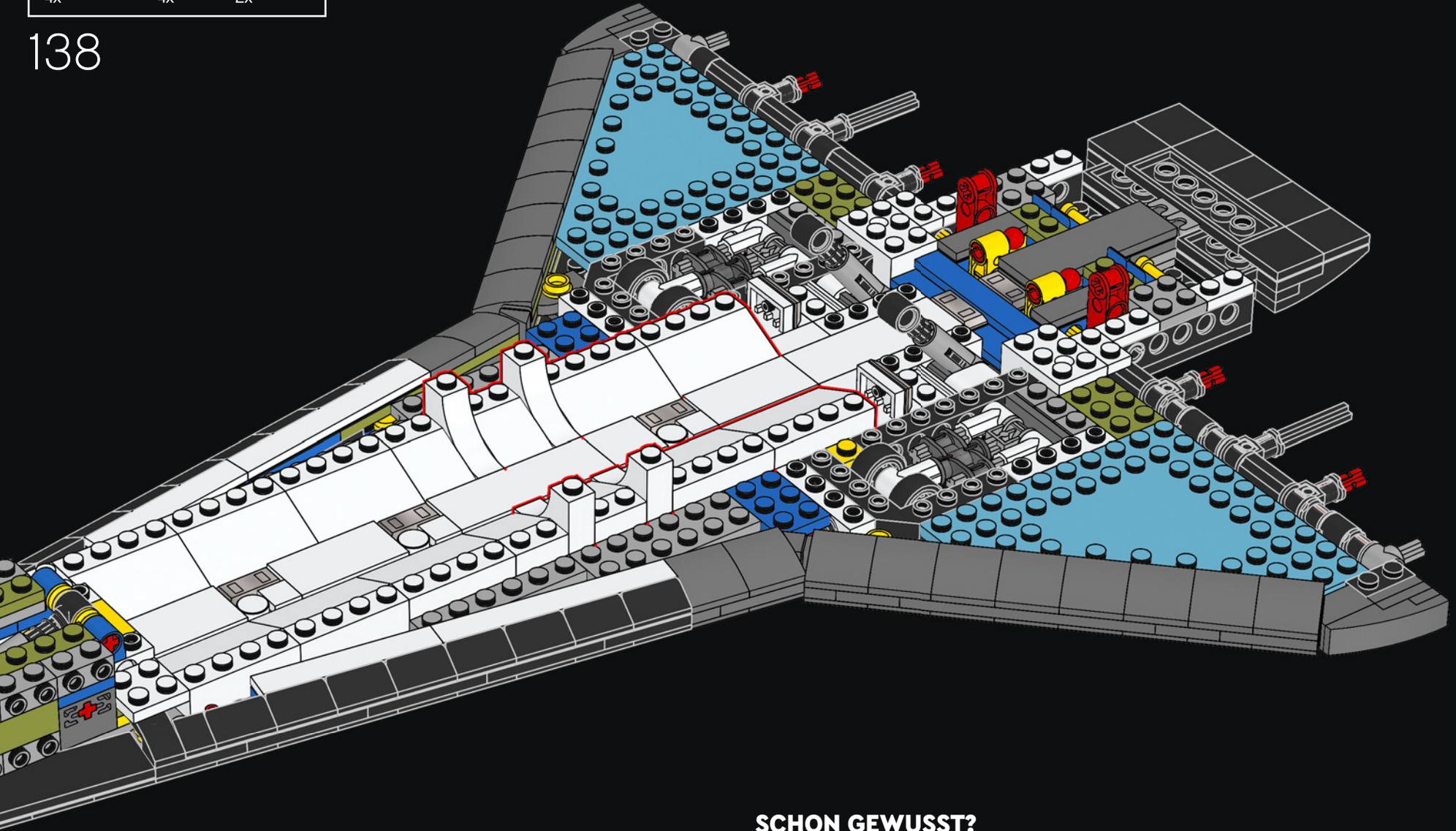


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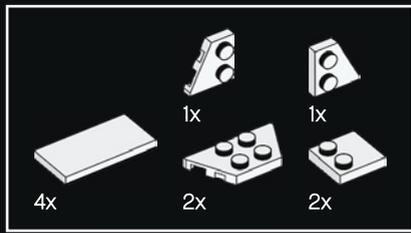


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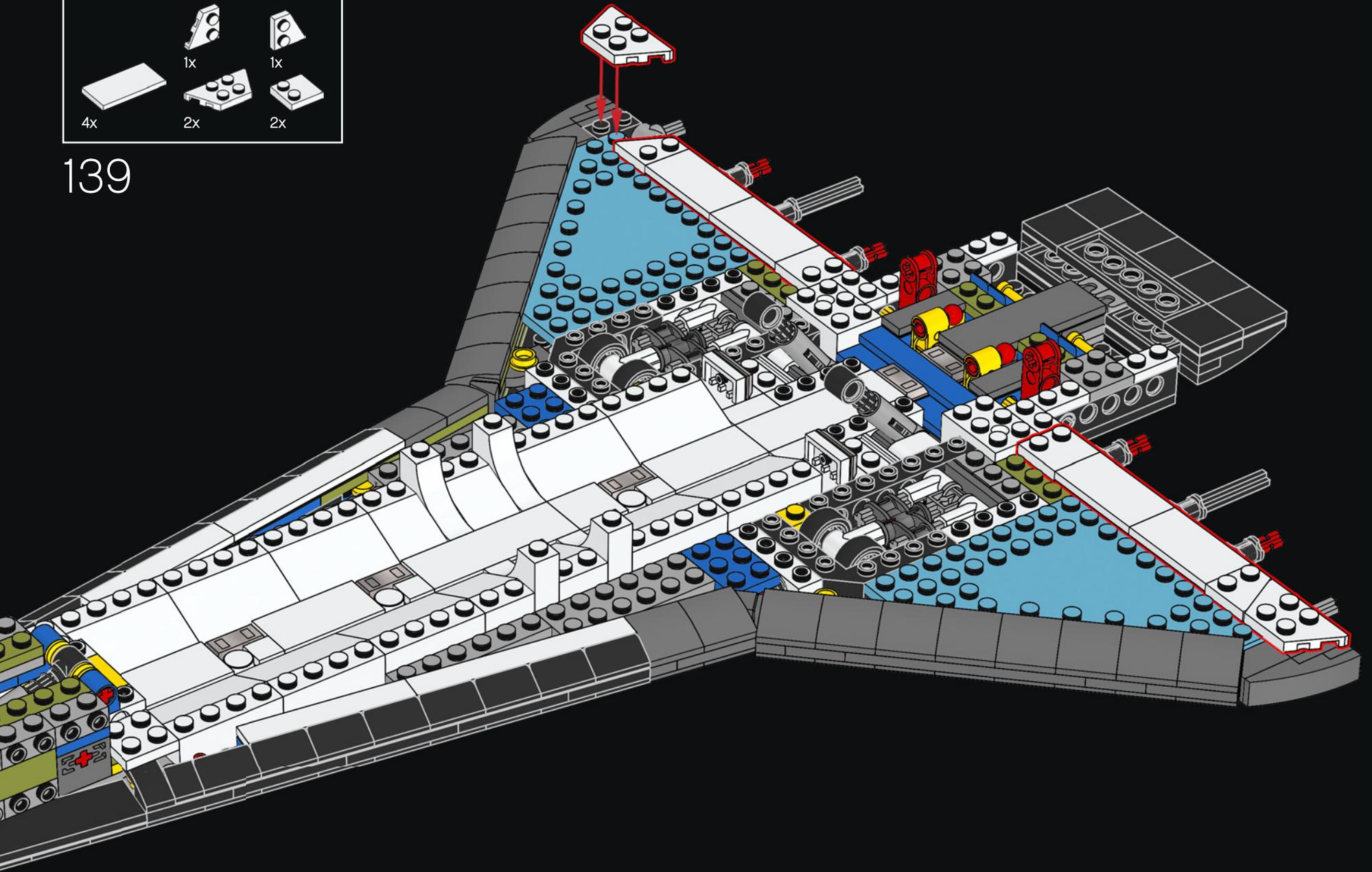


SCHON GEWUSST?

Wenn der Orbiter mit Mach 25 in die Atmosphäre eintritt, ist seine Geschwindigkeit so hoch, dass er die Umgebungsluft überhitzt und im Schein des glühenden Plasmas zur Erde zurückkehrt.

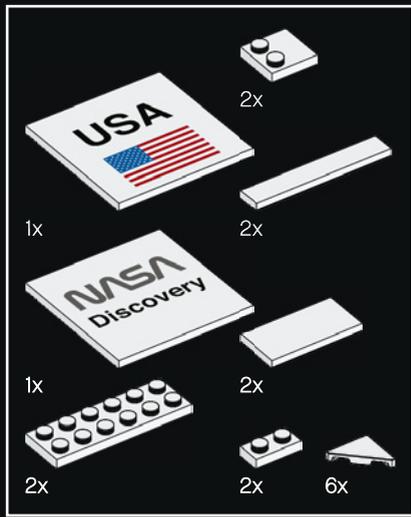


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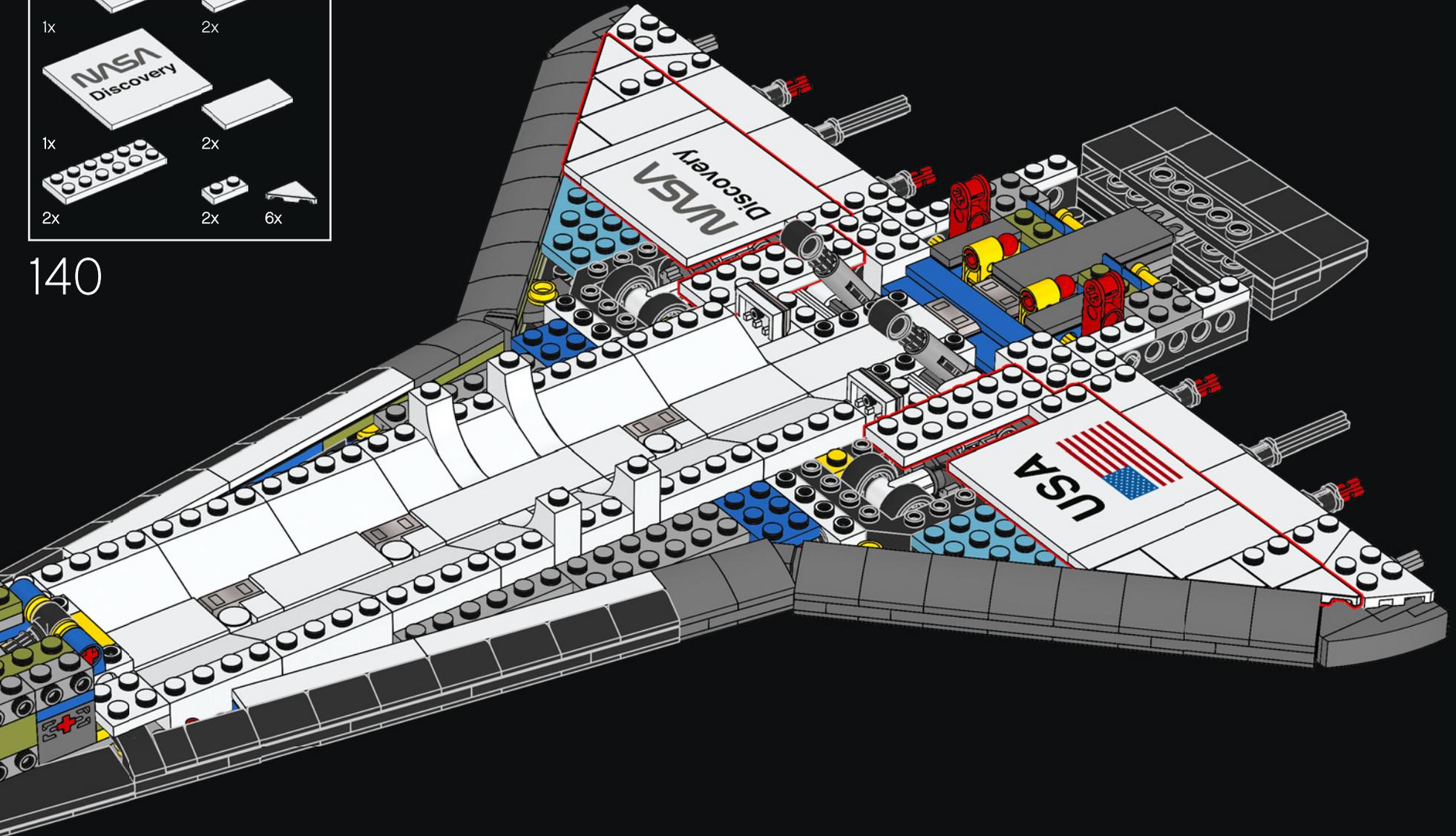


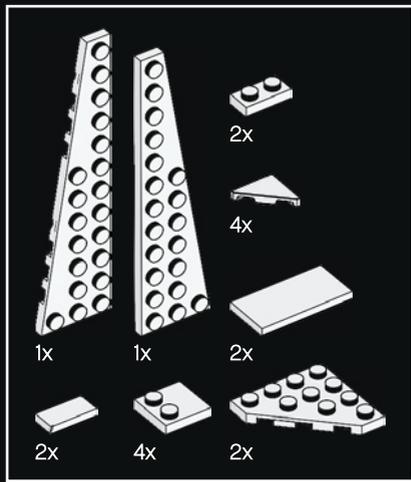
SCHON GEWUSST?

Das Spaceshuttle „Discovery“ ist mit ungefähr 23.000 Hitzeschutzkacheln aus Keramik verkleidet, die den Orbiter vor der gewaltigen Hitze beim Wiedereintritt in die Erdatmosphäre schützen sollen.

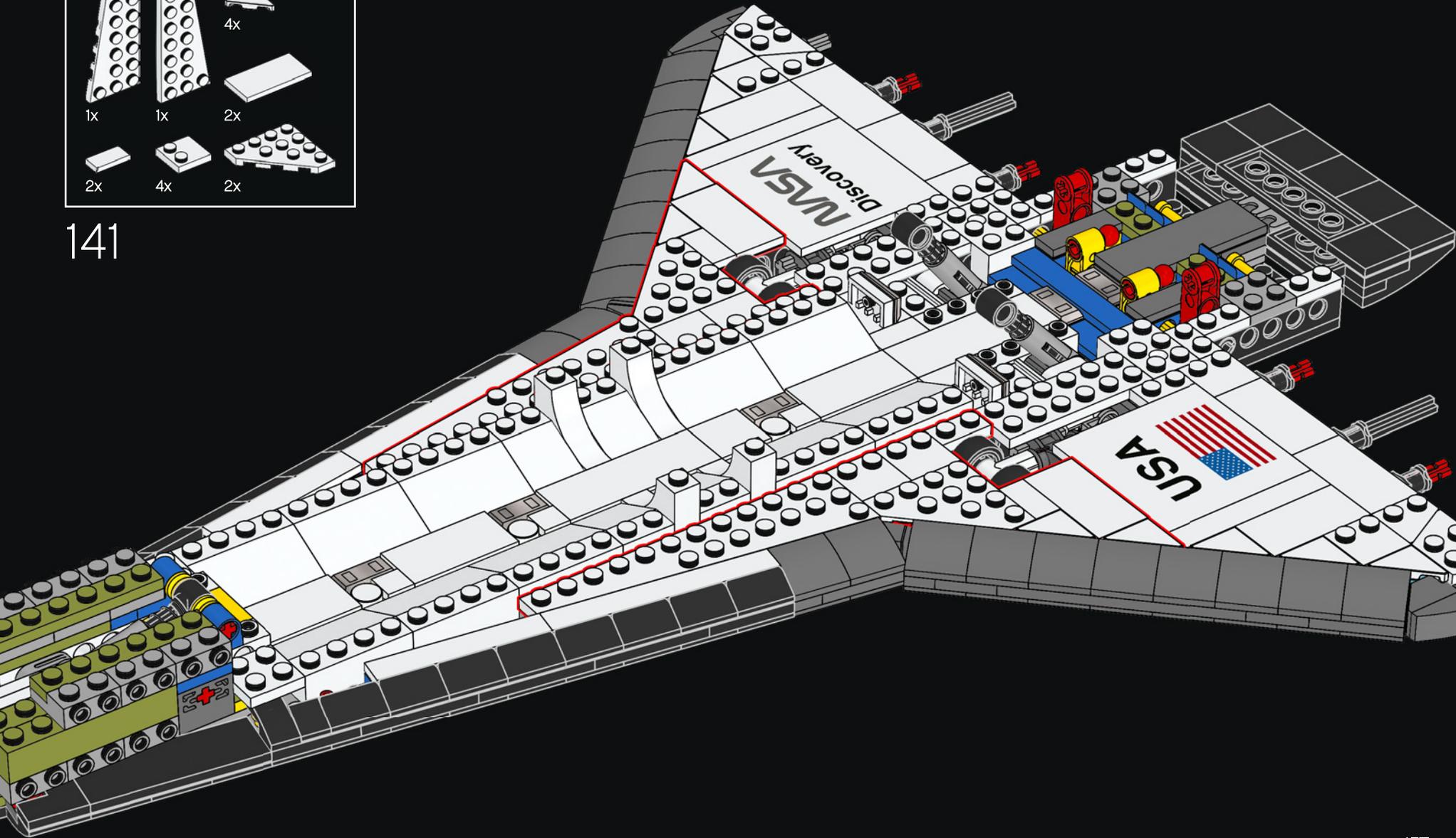


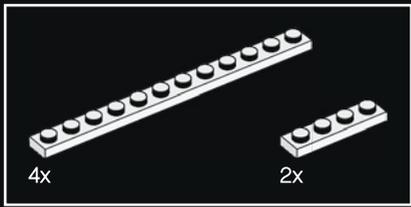
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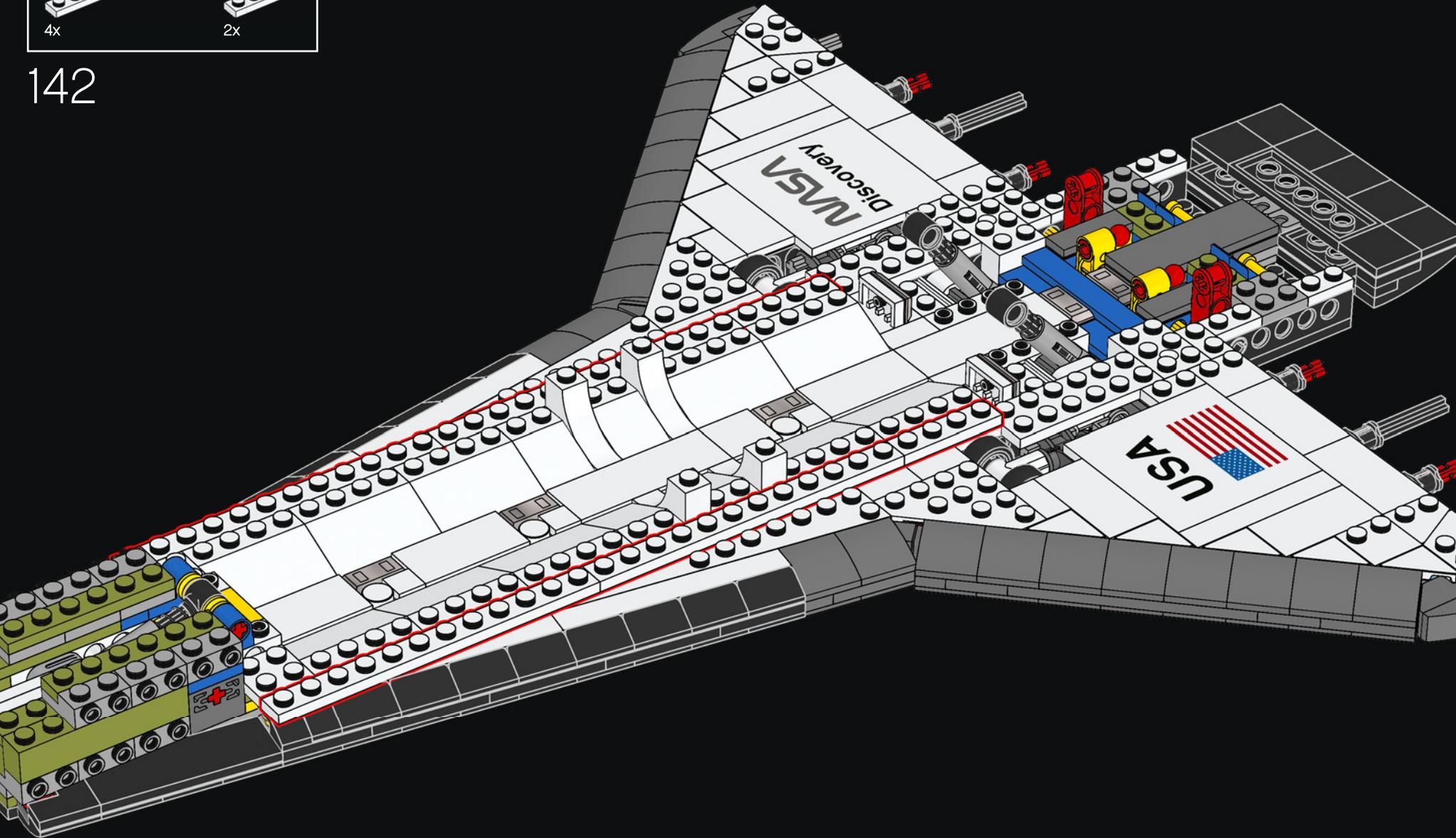


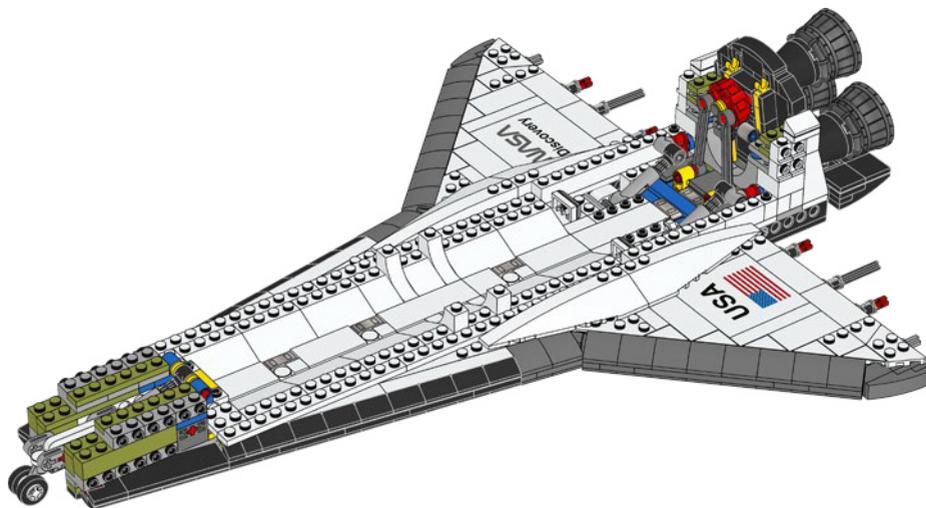
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142

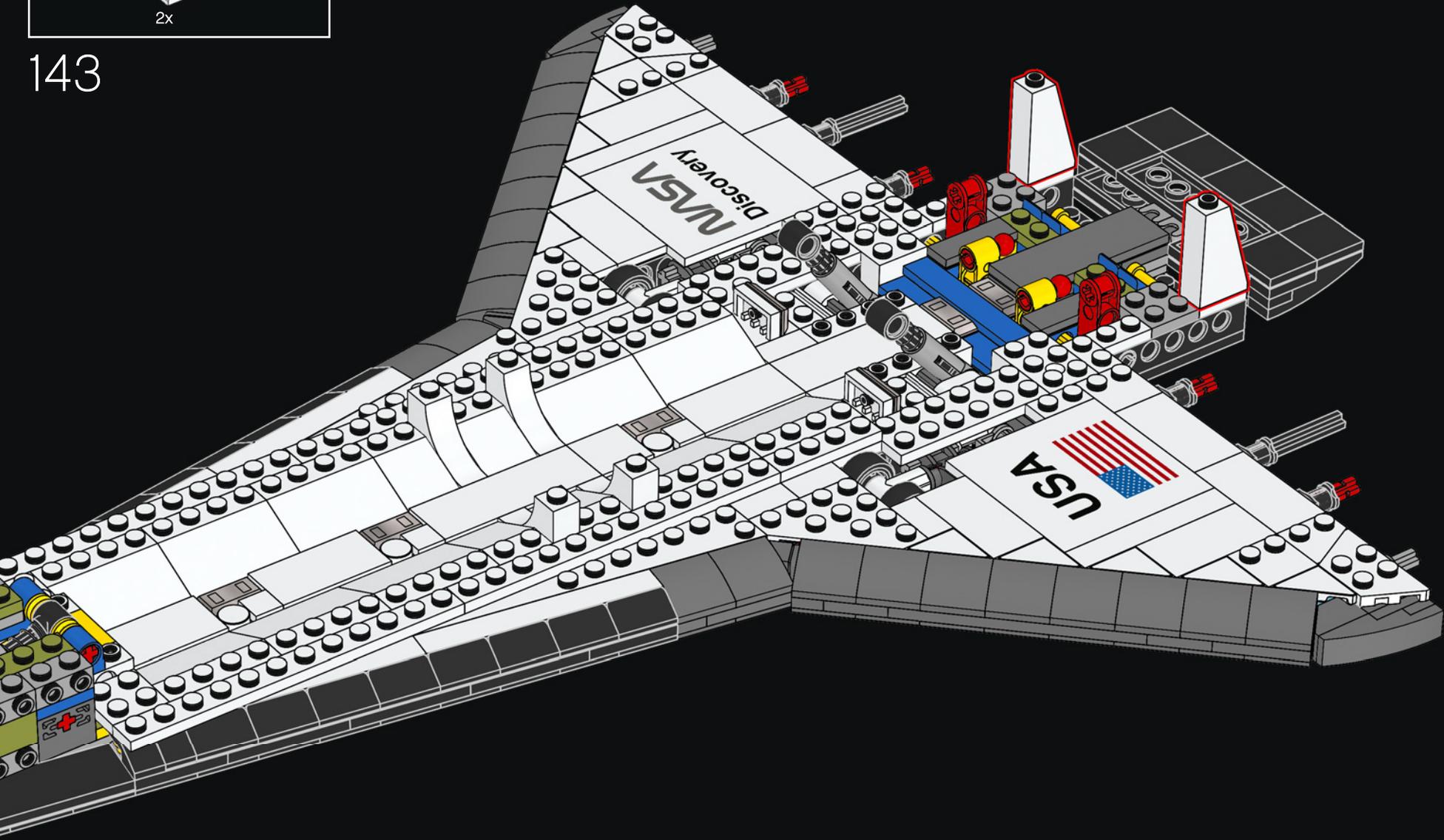






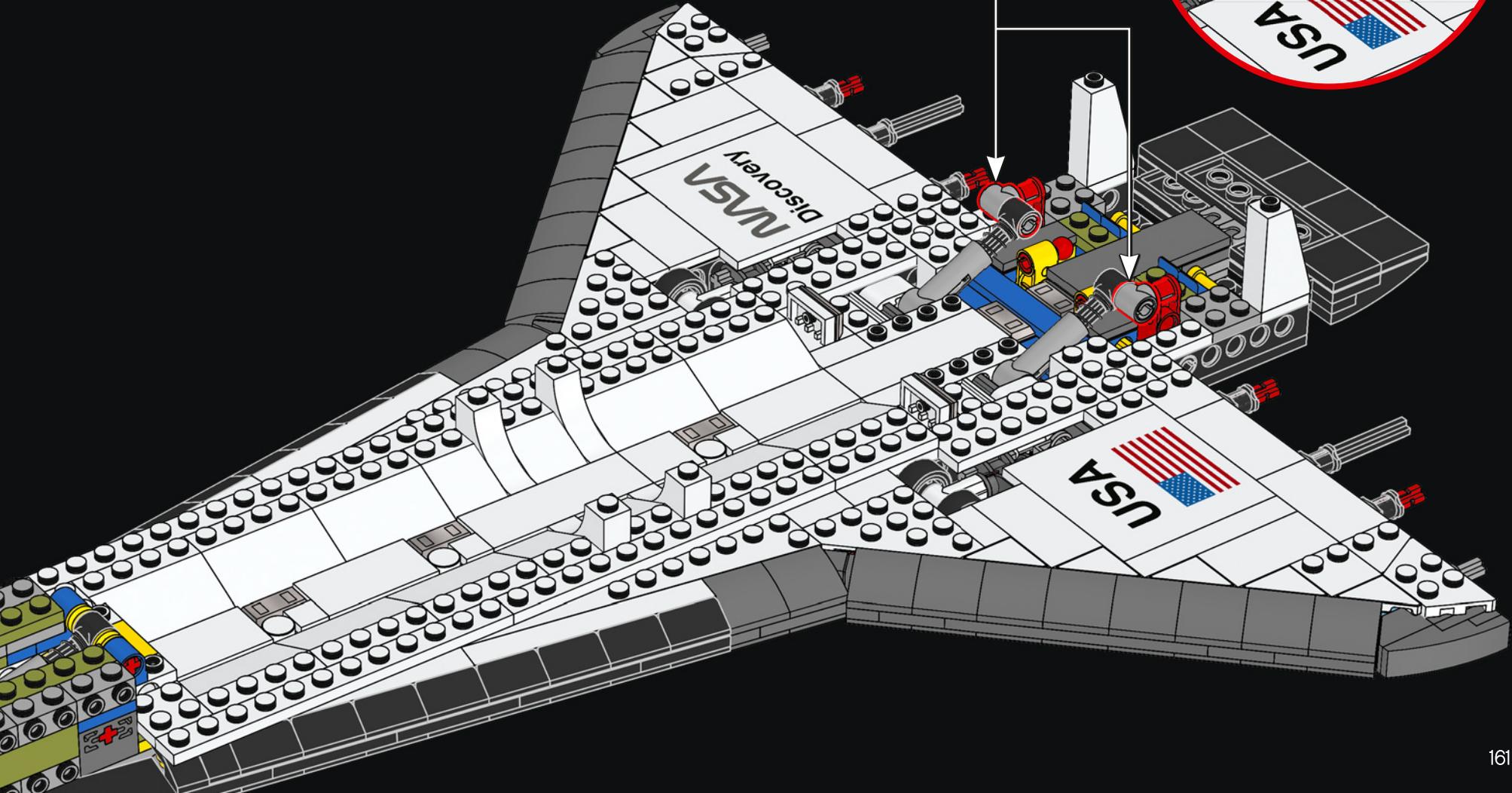
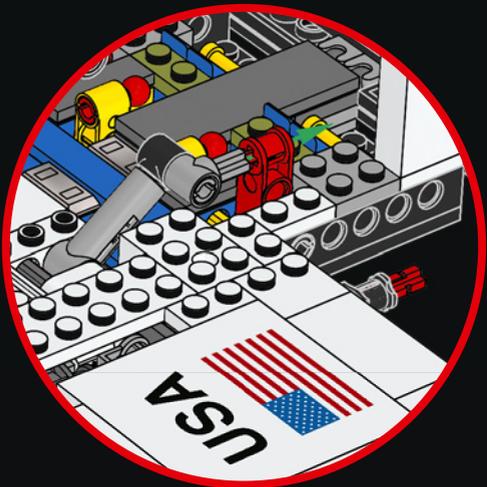
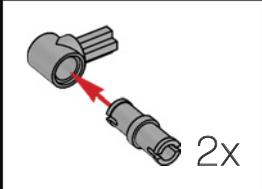
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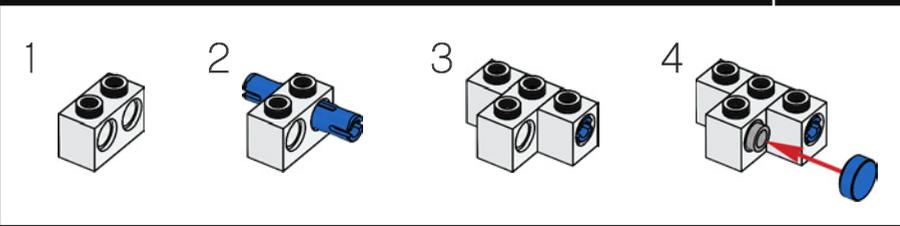
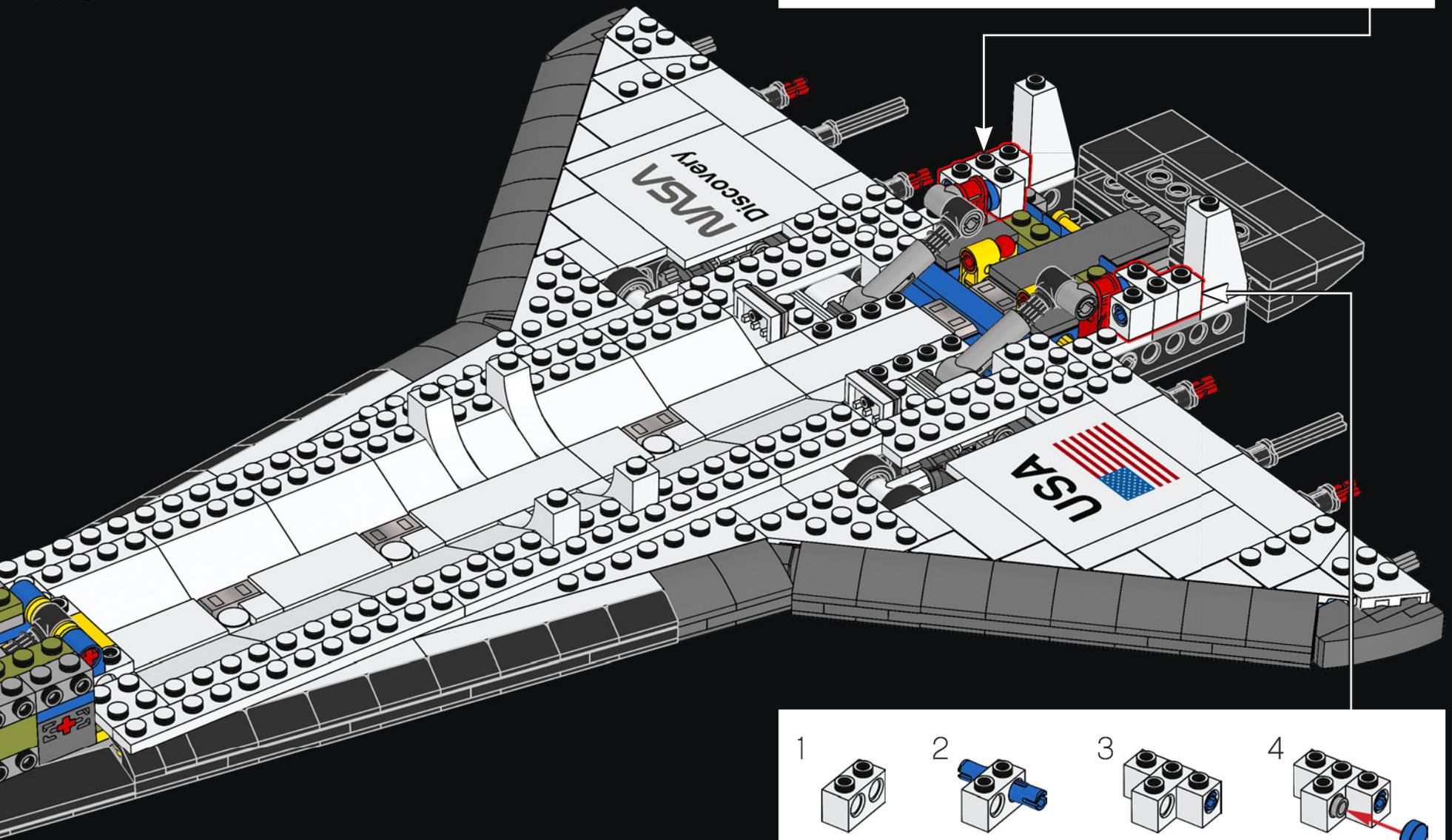
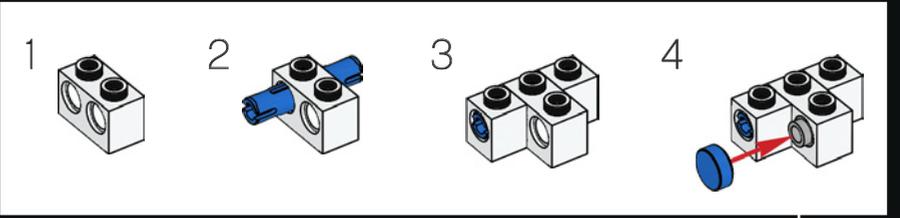


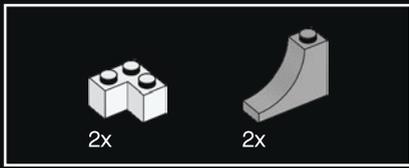
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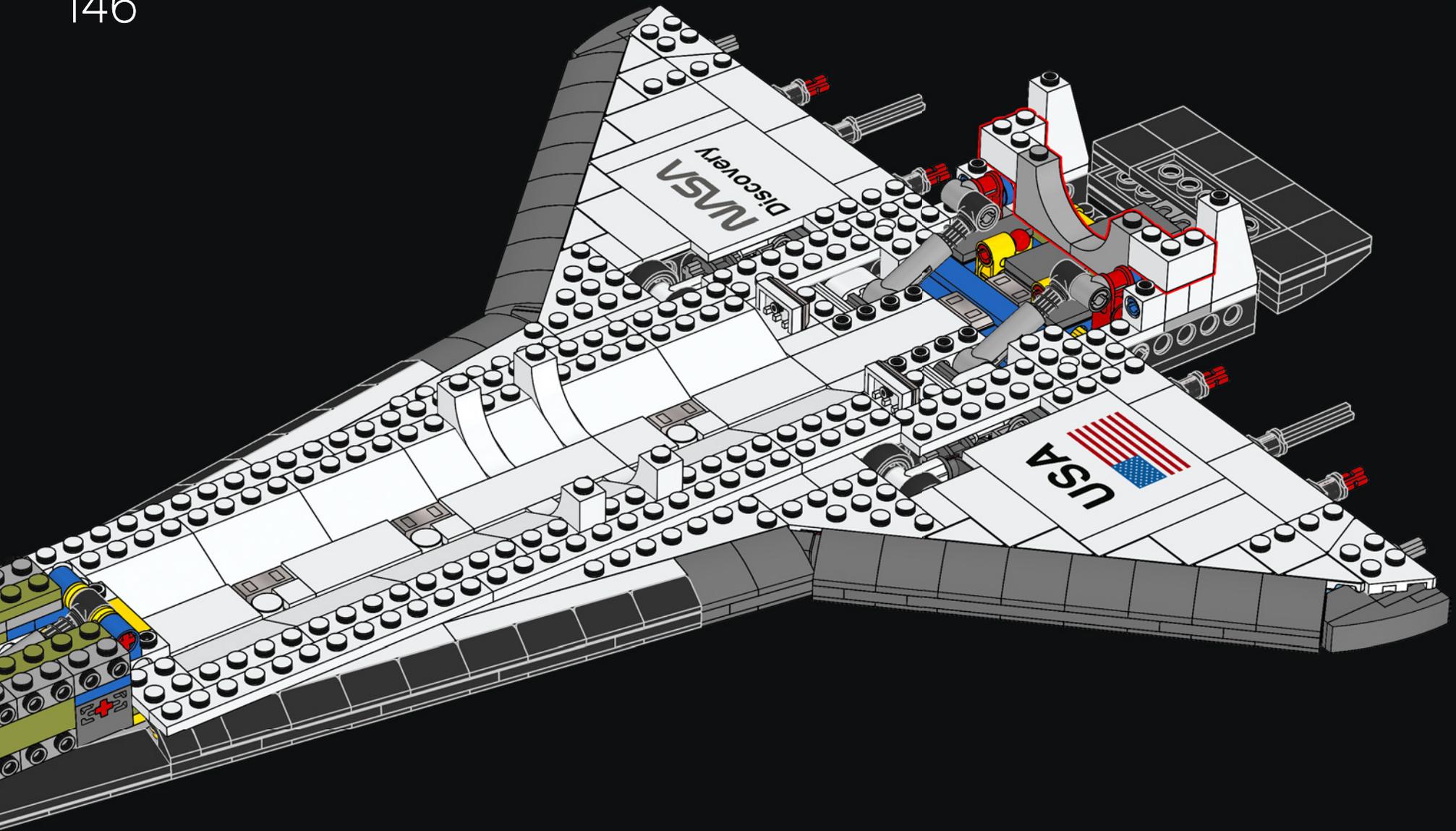


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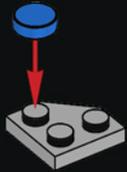


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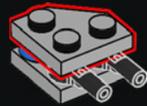
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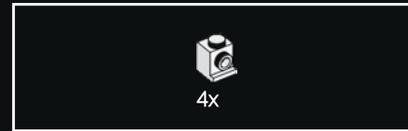
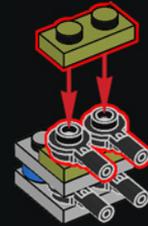
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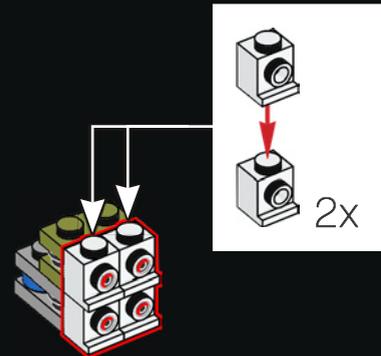
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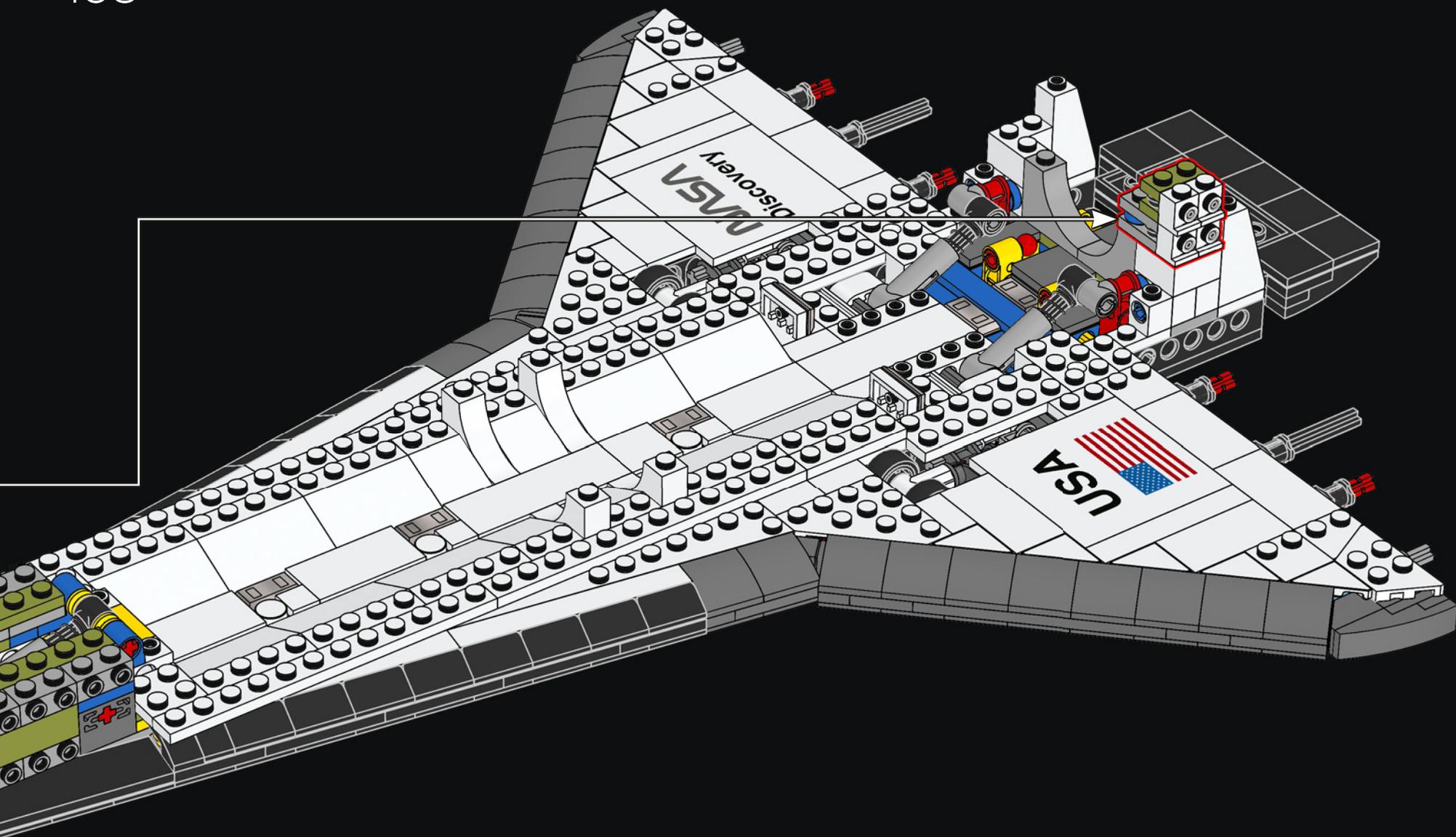


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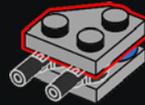
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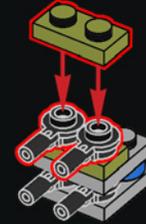
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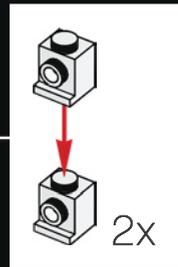
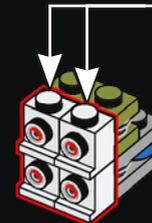
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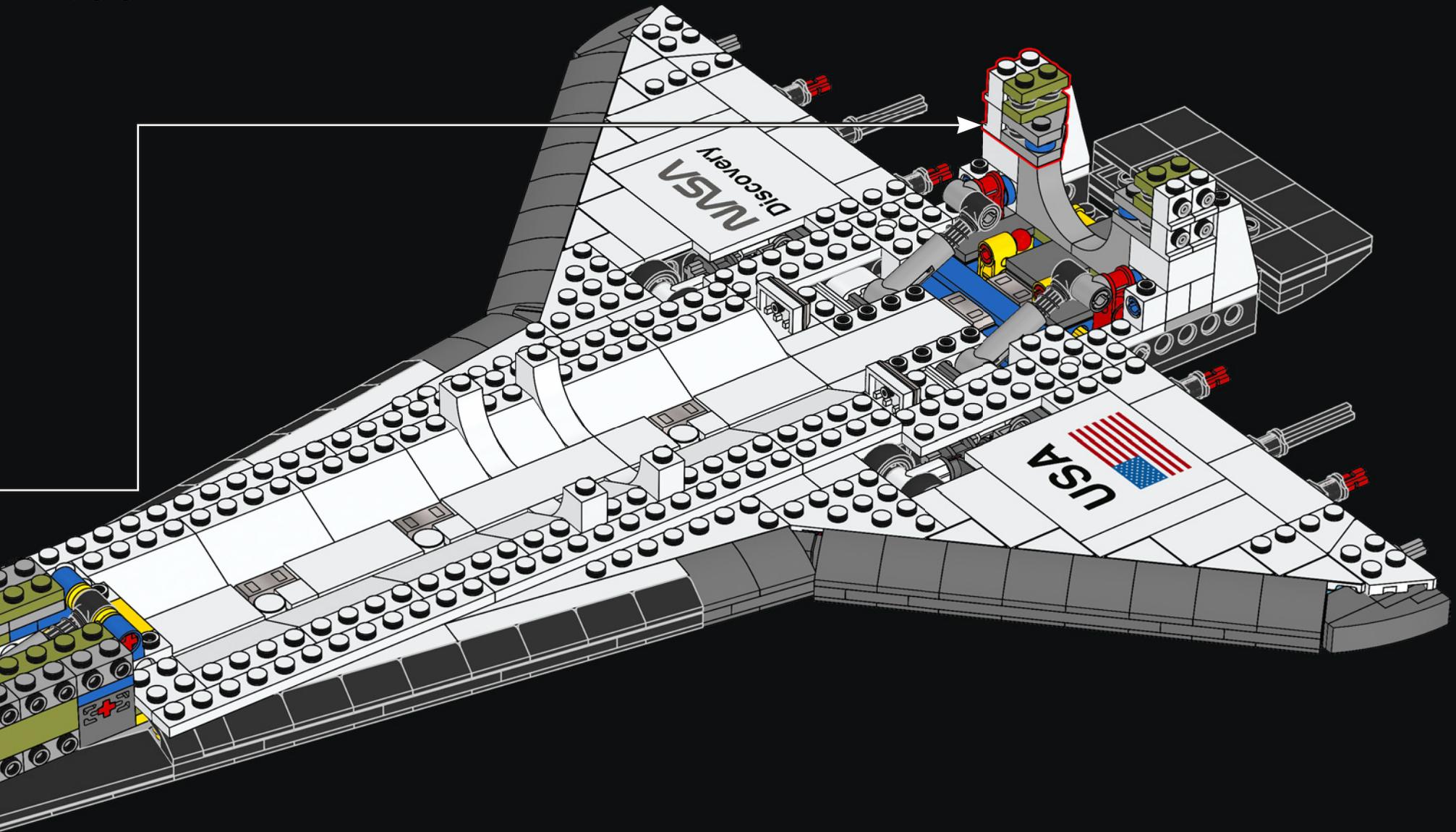


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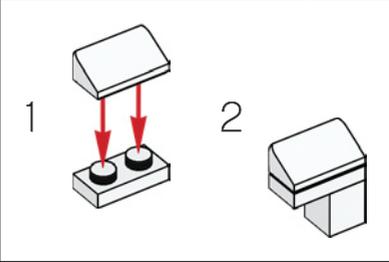
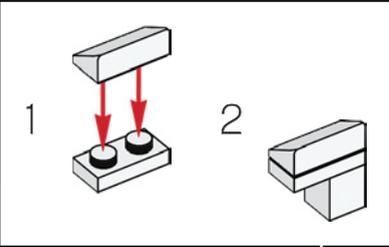
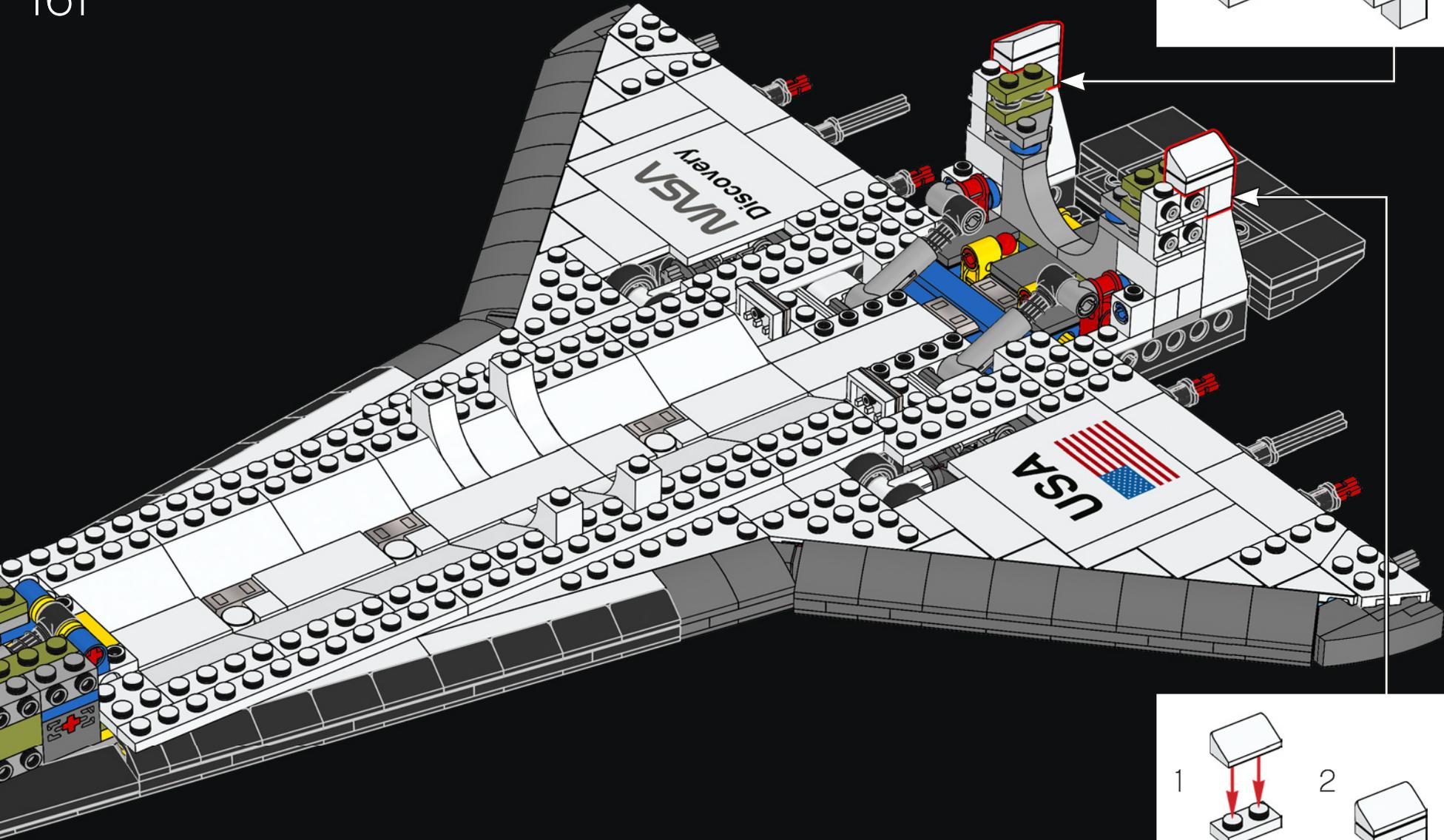
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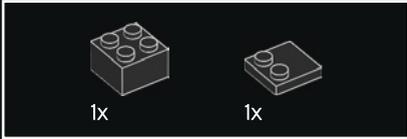
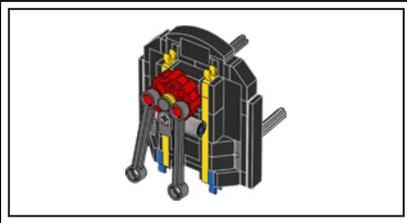




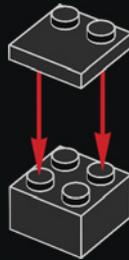


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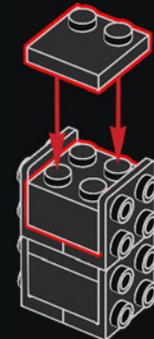
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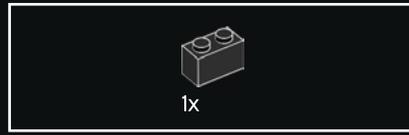
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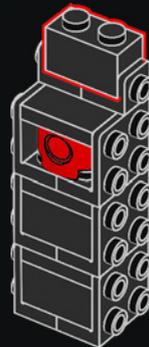
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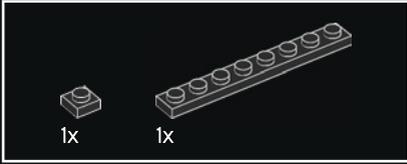
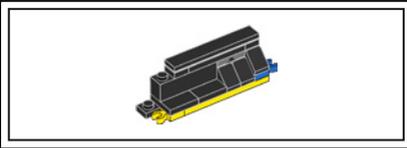


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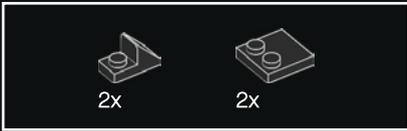
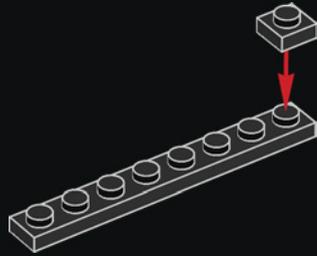


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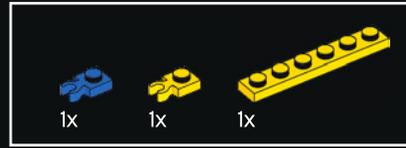
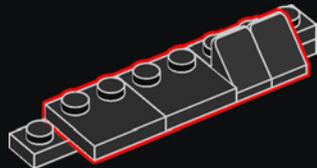




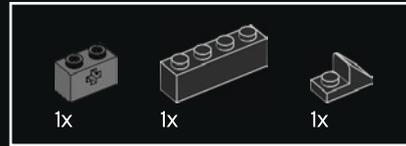
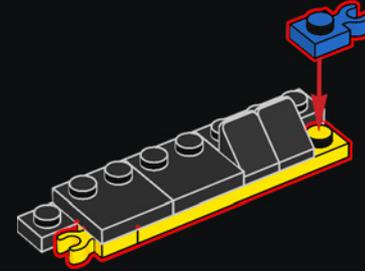
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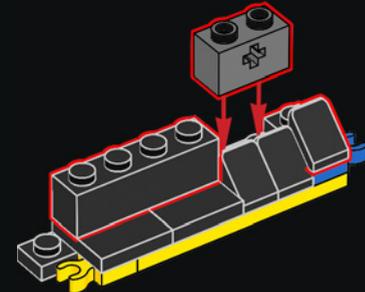
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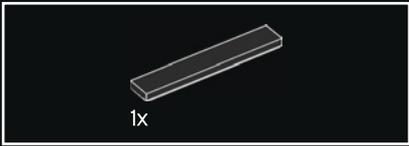
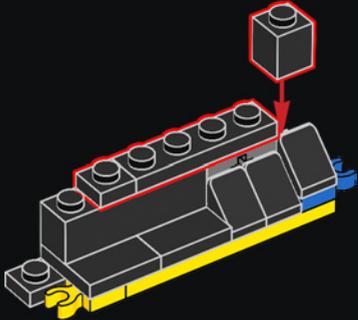


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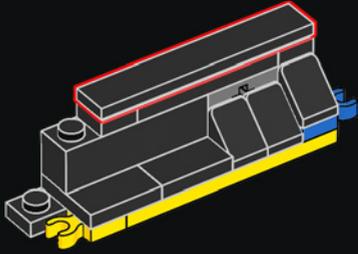




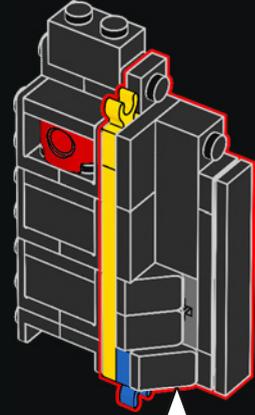
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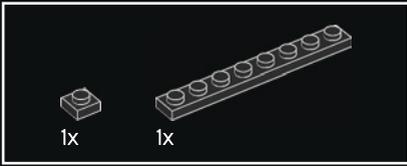
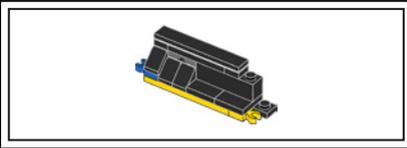


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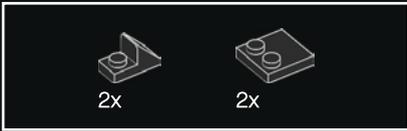
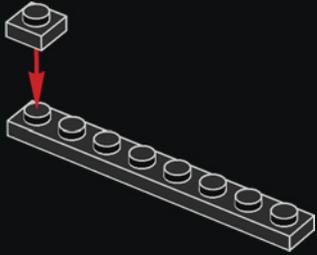


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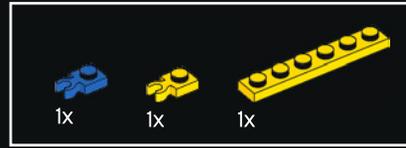
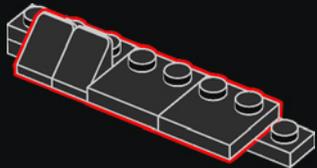




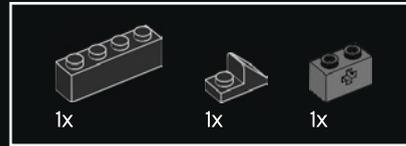
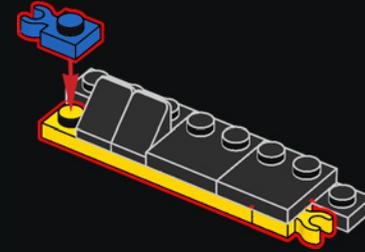
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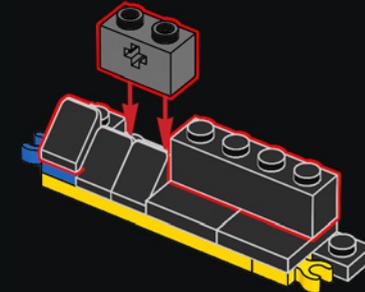
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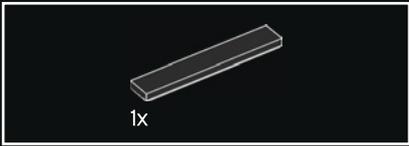
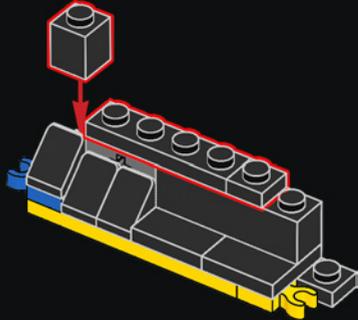


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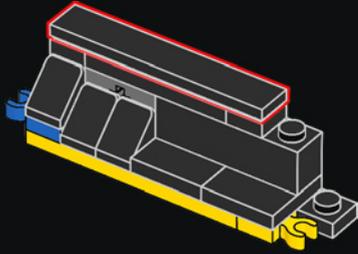




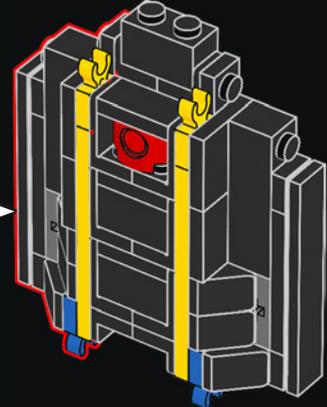
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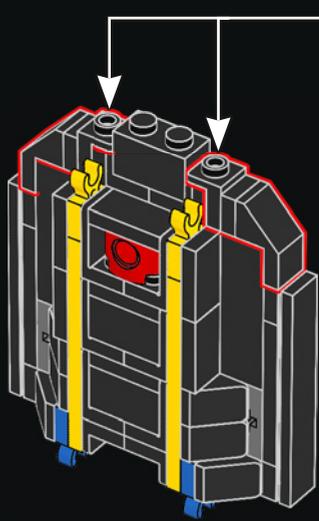
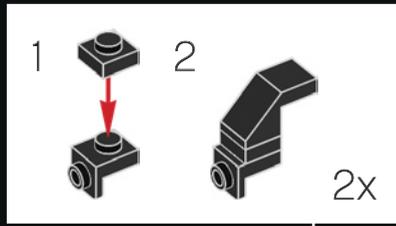


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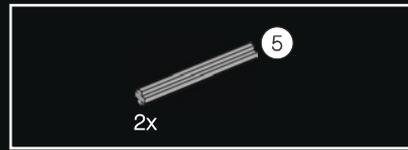
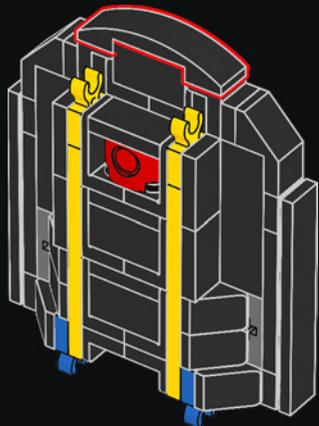




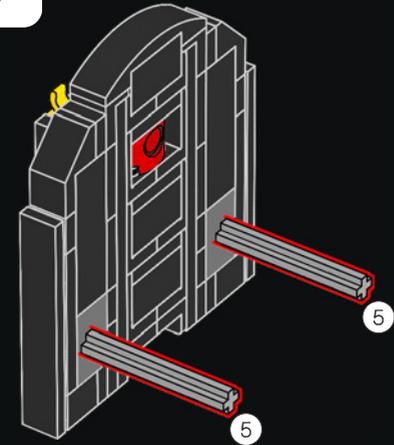
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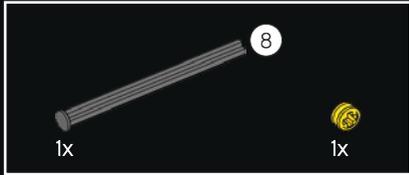
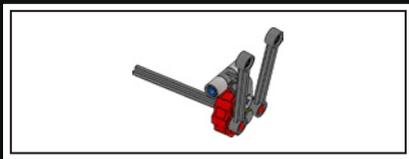


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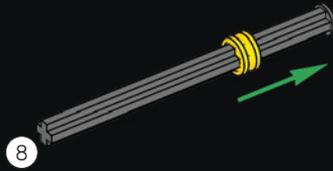


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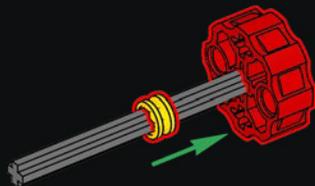




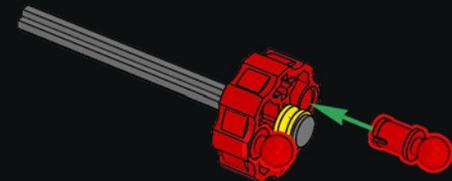
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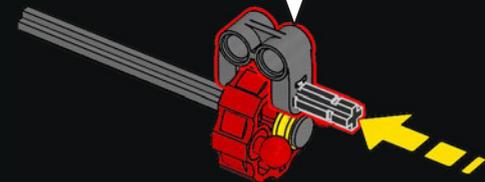
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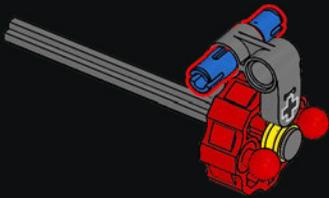


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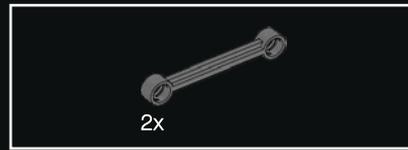
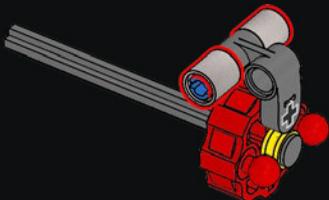




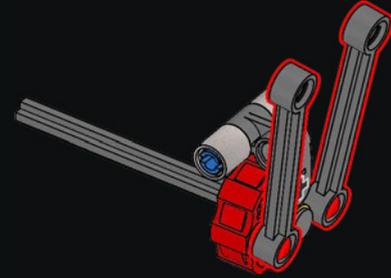
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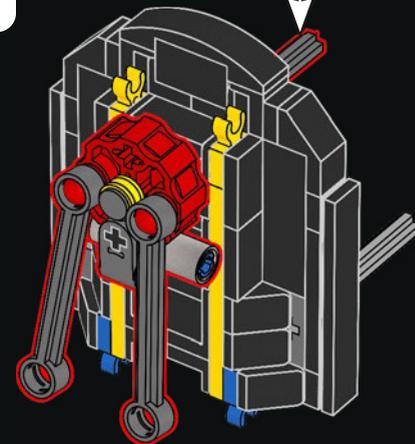
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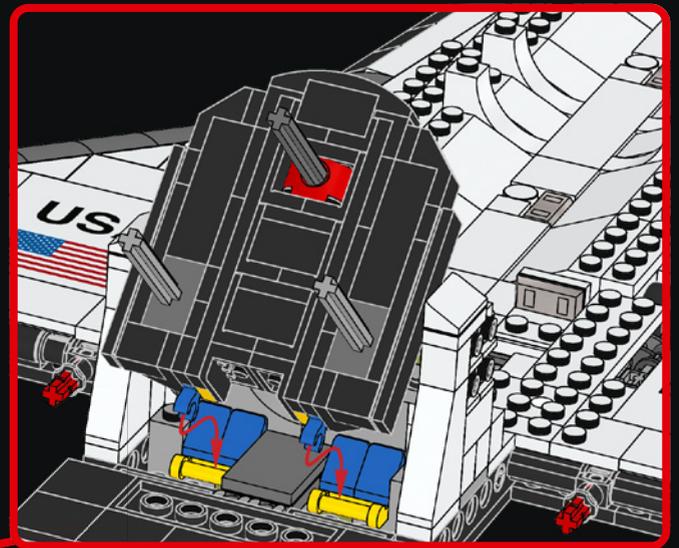
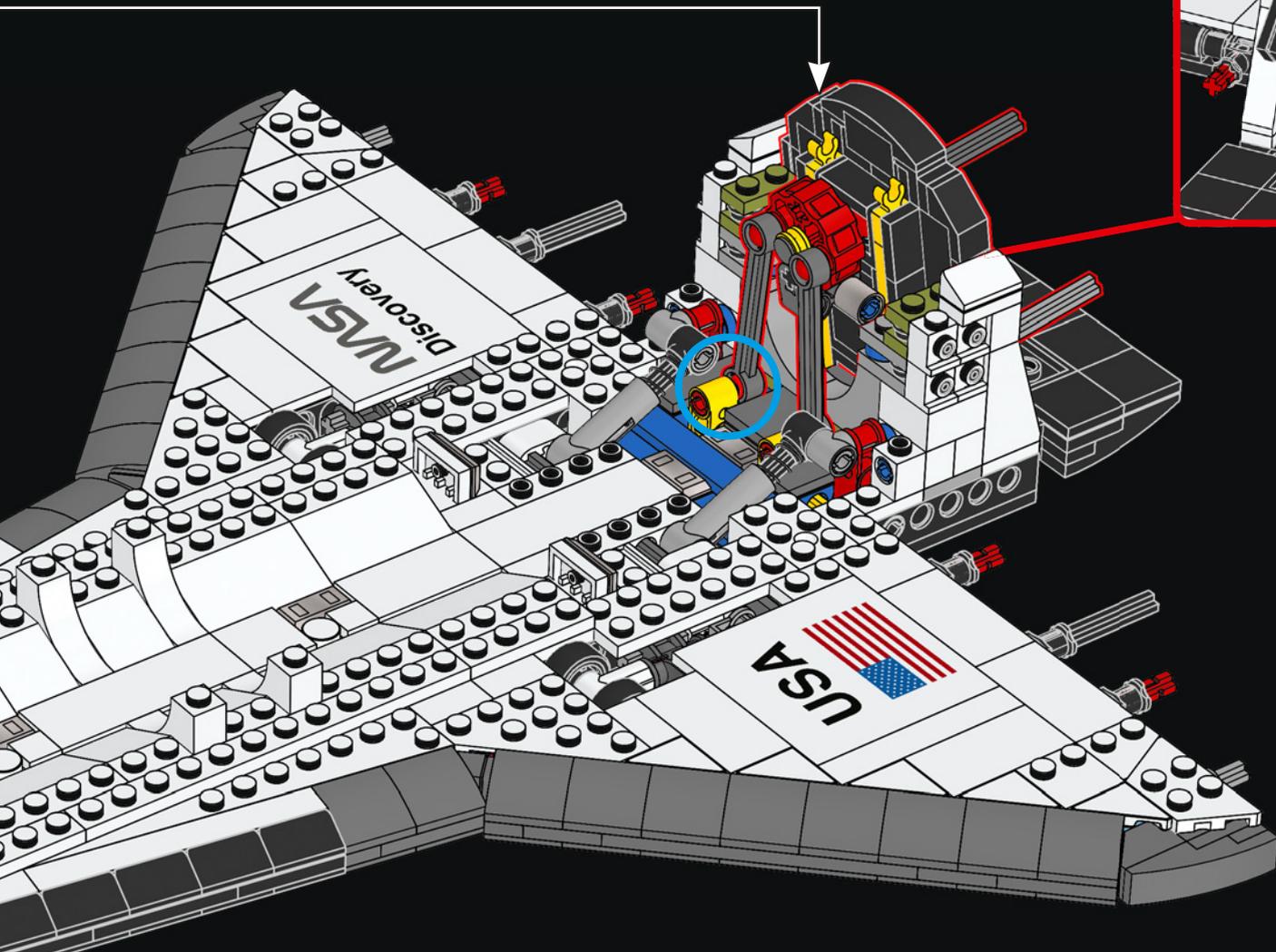


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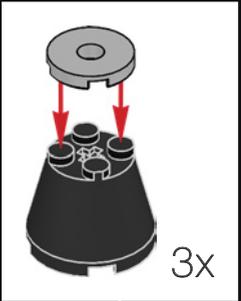
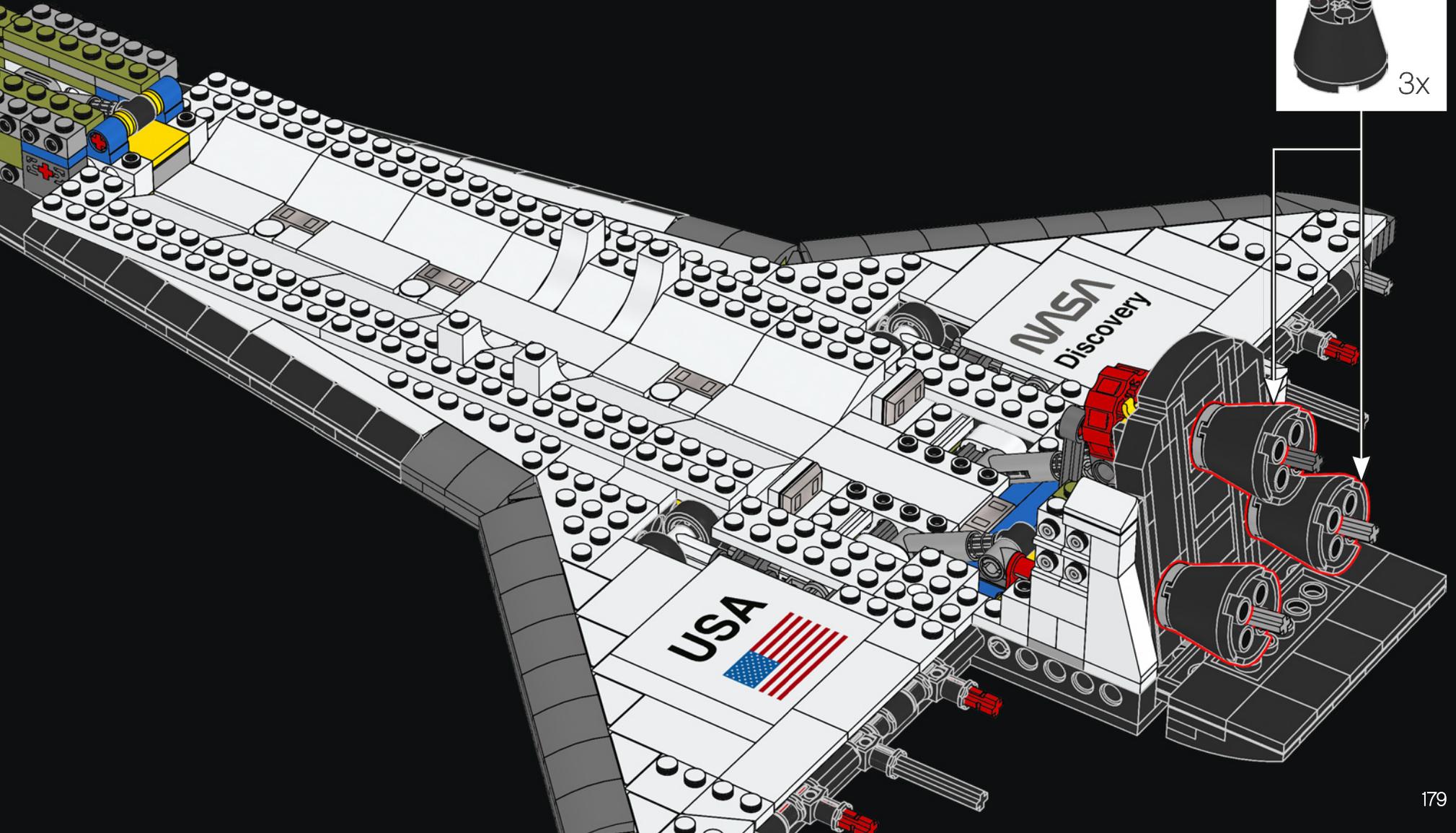
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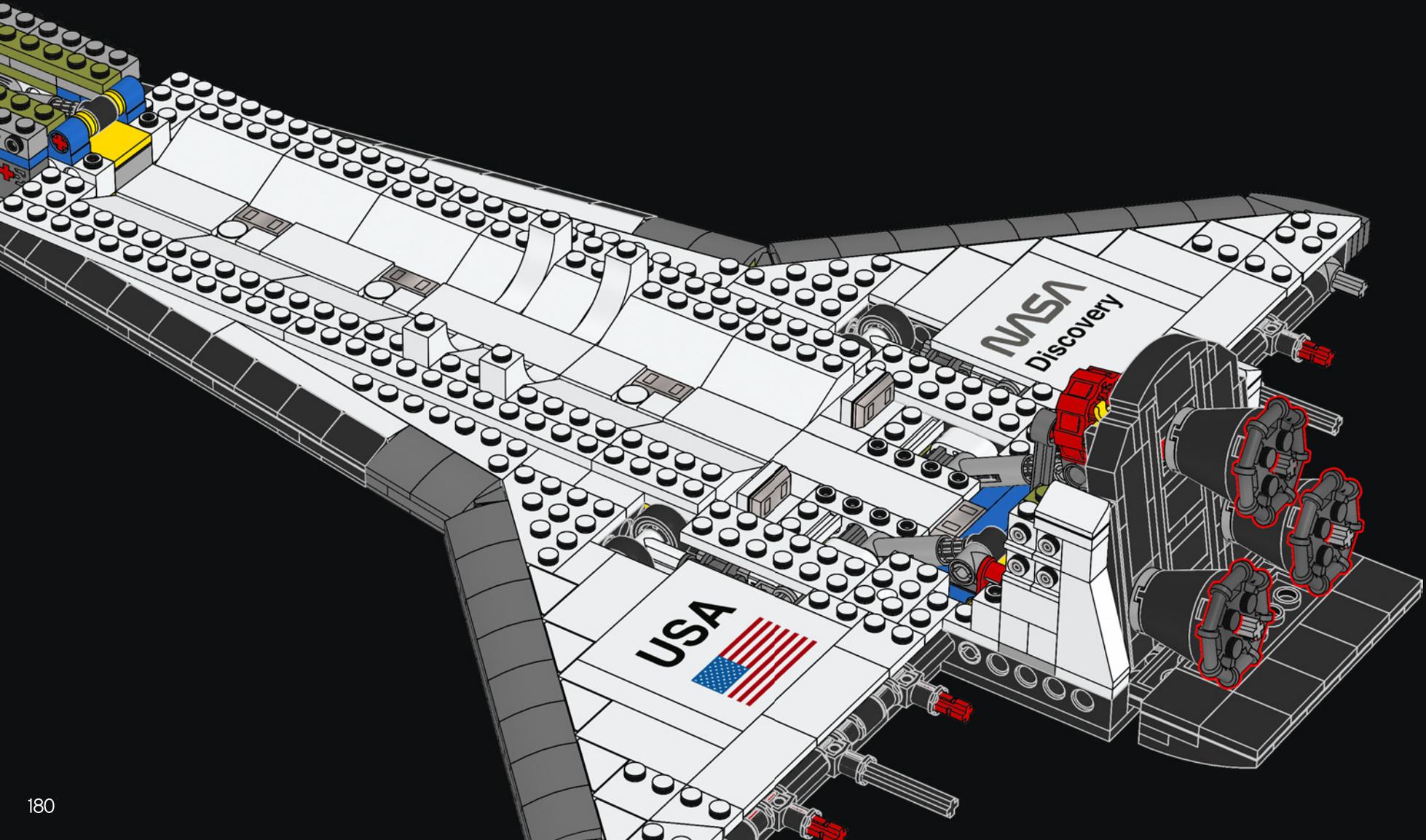


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198



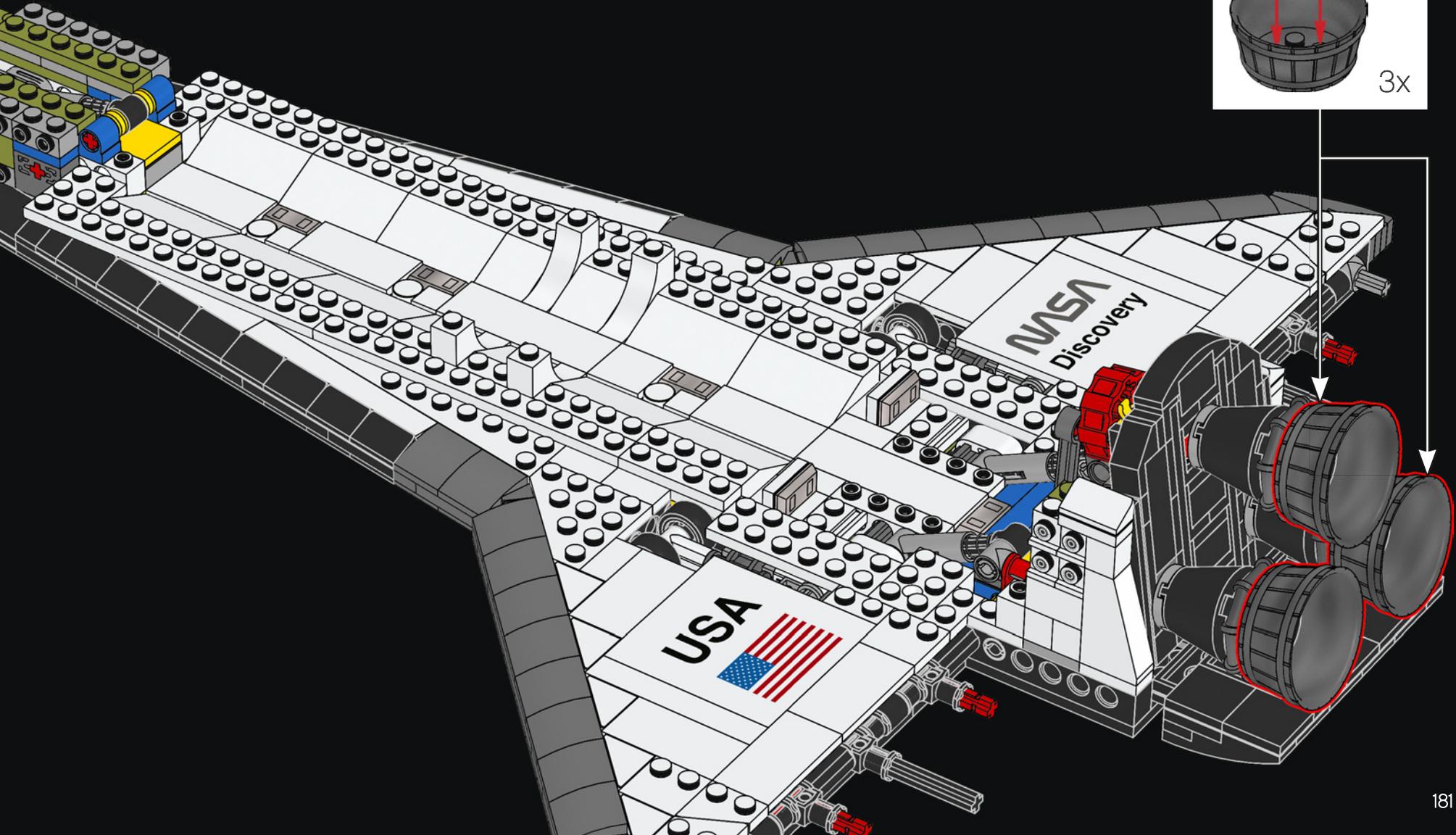
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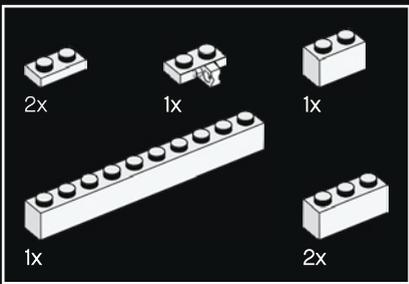


SCHON GEWUSST?

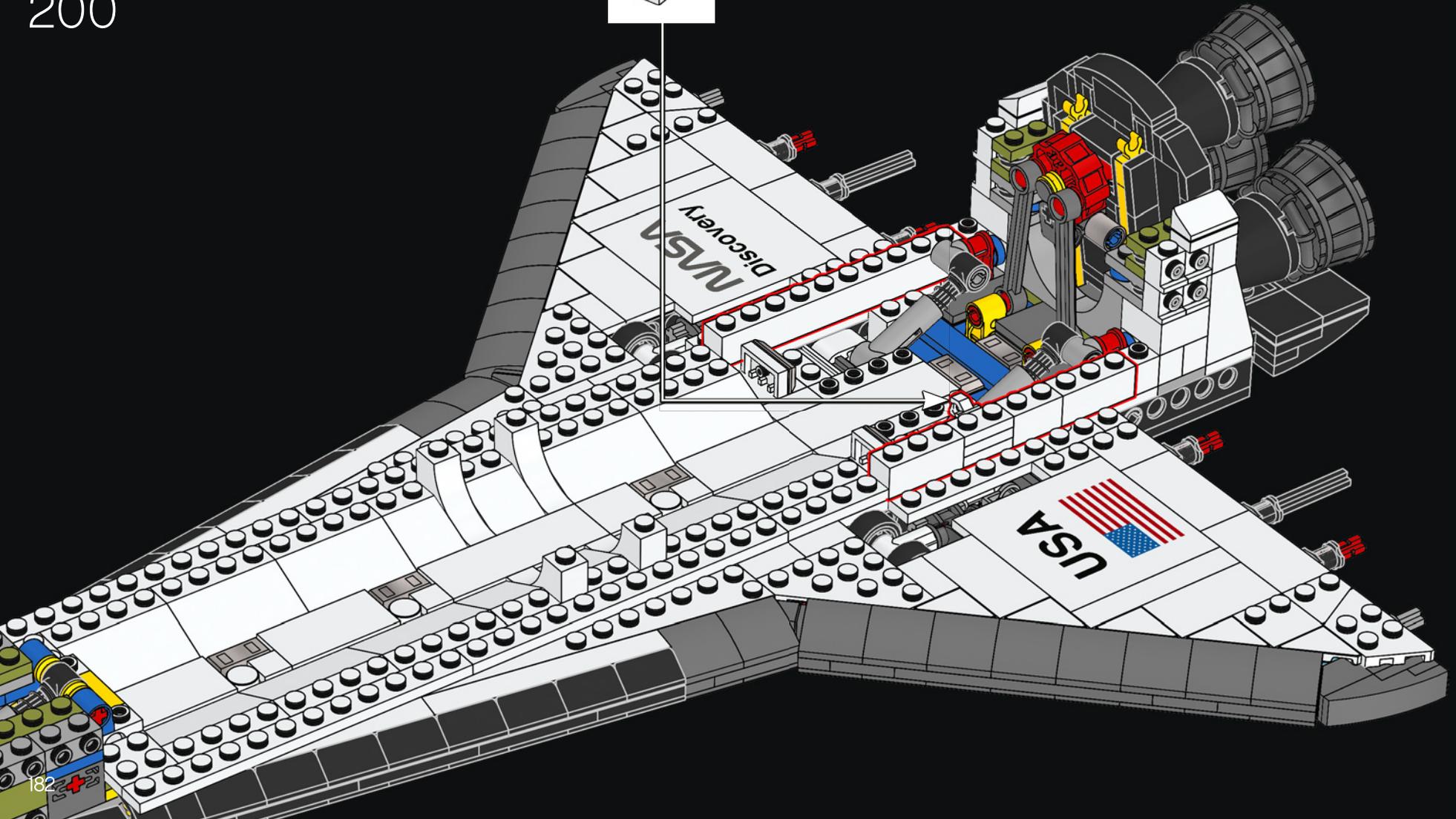
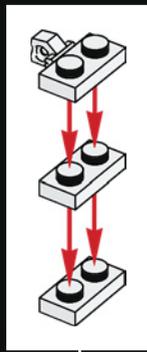
Tiefkalter Flüssigwasserstoff wird durch 1.080 Röhren in der Düsenwand gepumpt, bevor der Treibstoff in den Hauptbrennraum gelangt, um das Triebwerk auf kühlen 10 Grad Celsius zu halten.

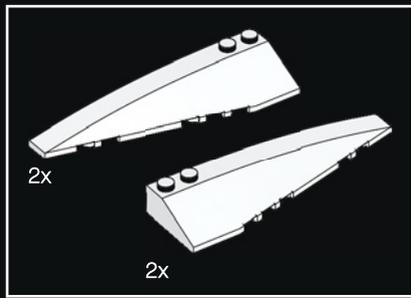
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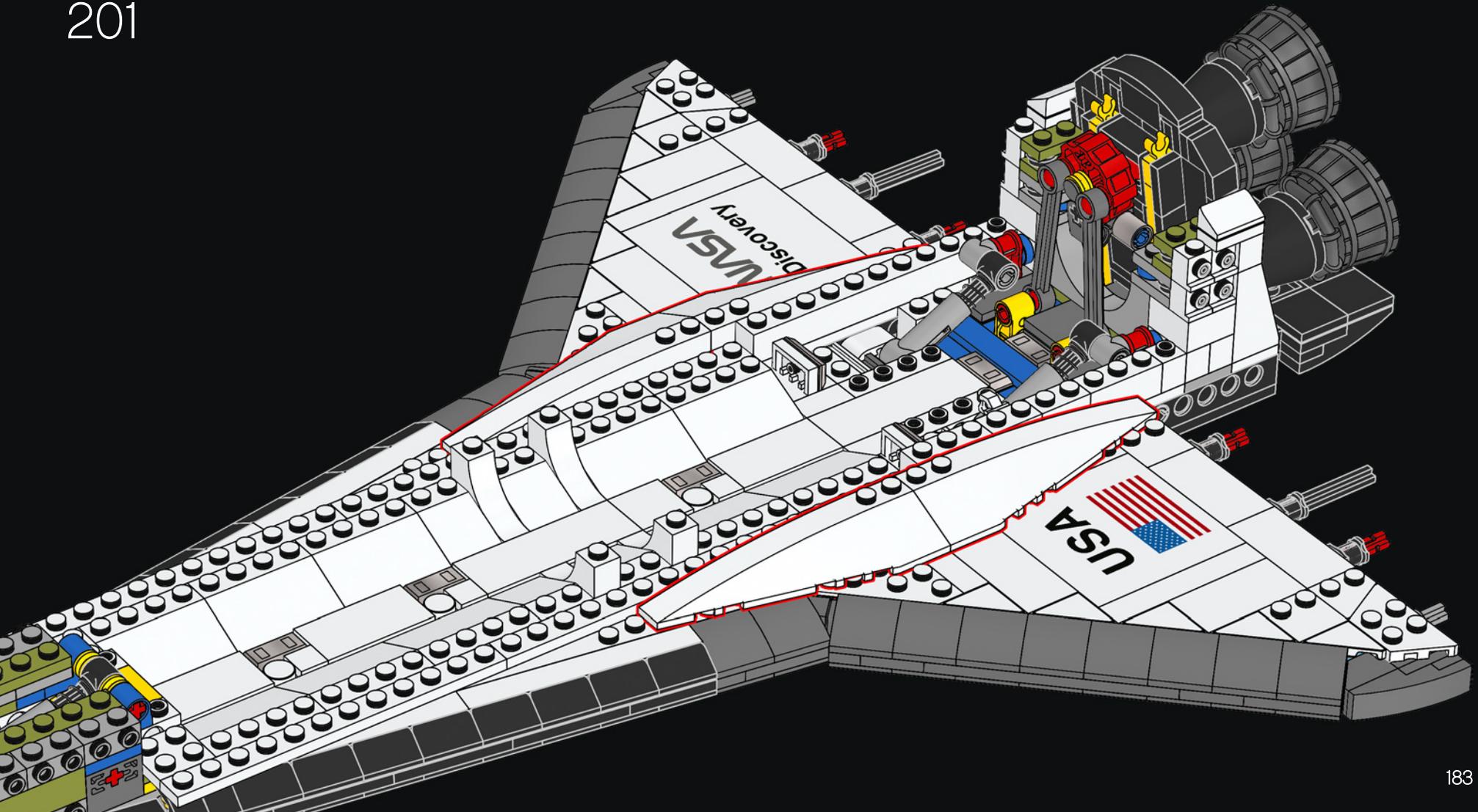


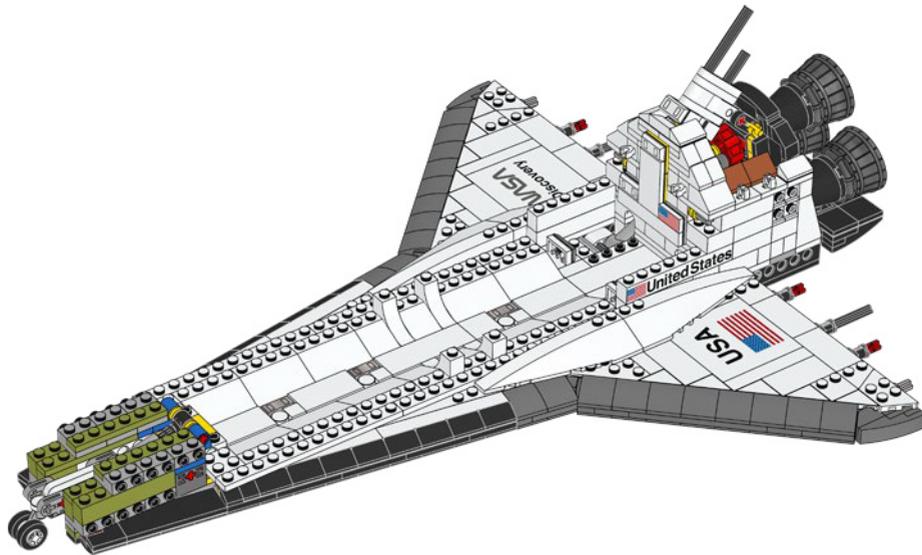
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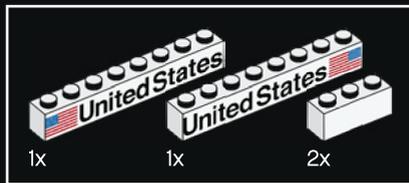




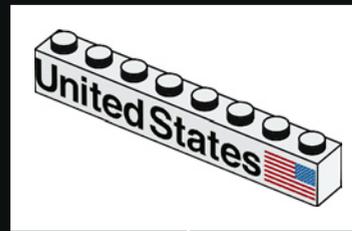
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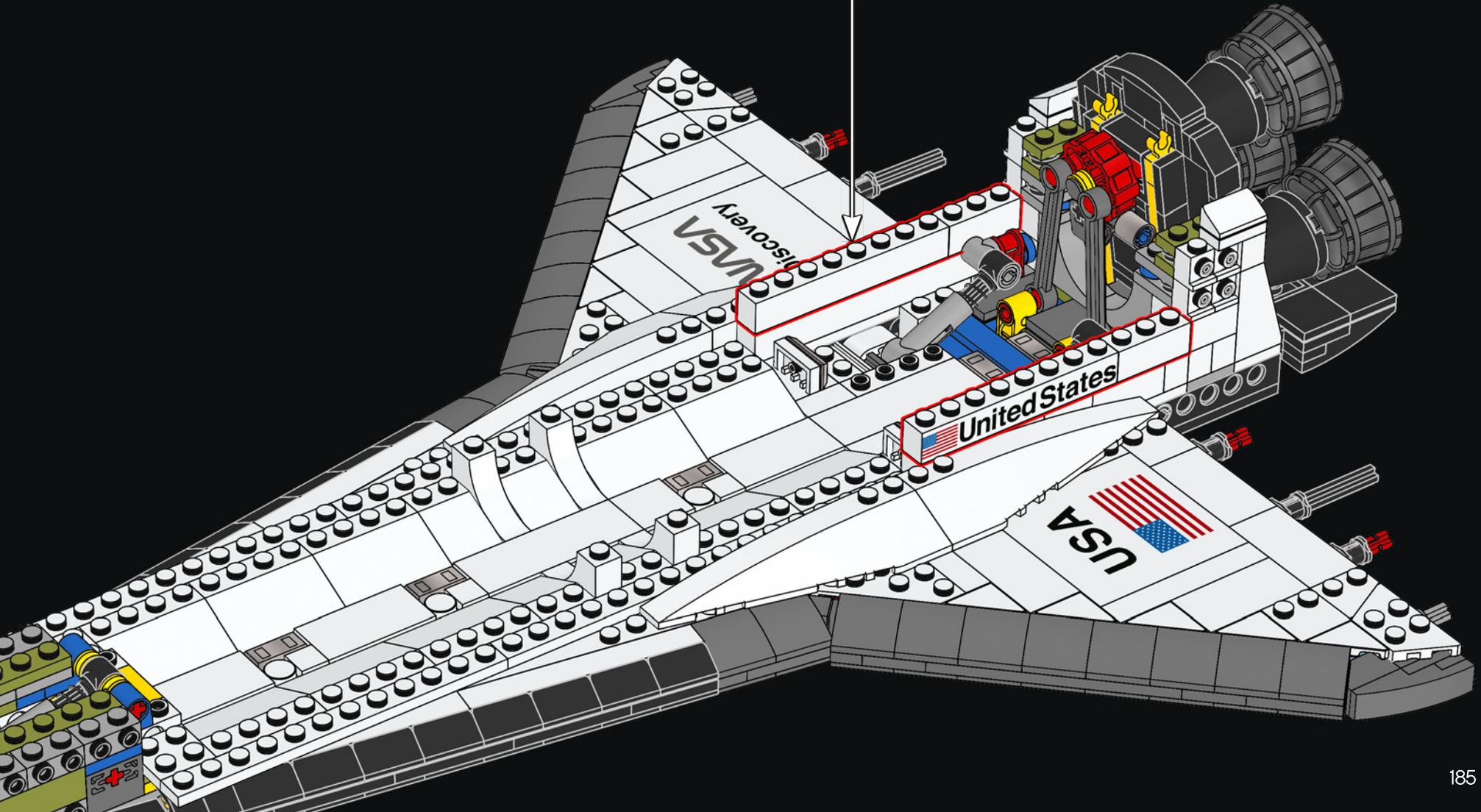


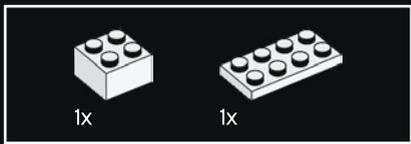
202



SCHON GEWUSST?

Eine Vorschrift besagt, dass die Sterne der amerikanischen Flagge immer nach vorne zeigen müssen, als würde die Fahne im Wind flattern. Deshalb befinden sich die Sterne an der Steuerbordseite des Rumpfes in der oberen rechten Ecke der Flagge, anstatt üblicherweise in der oberen linken Ecke.

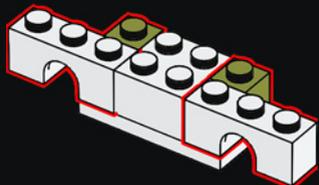




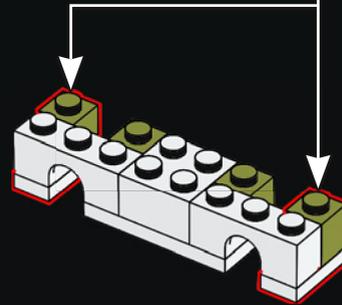
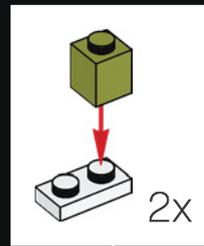
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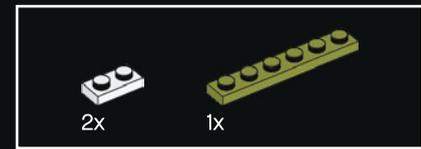
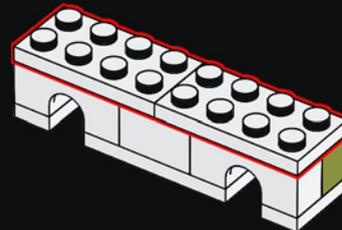
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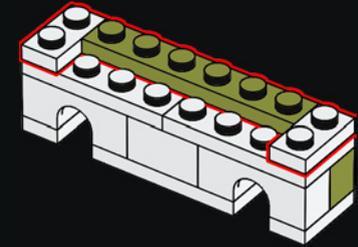
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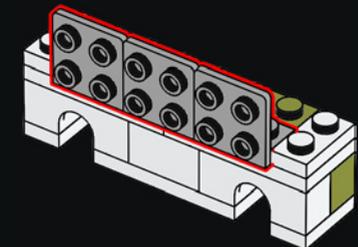
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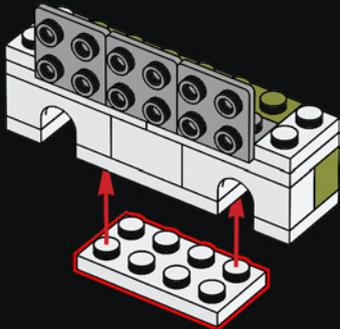


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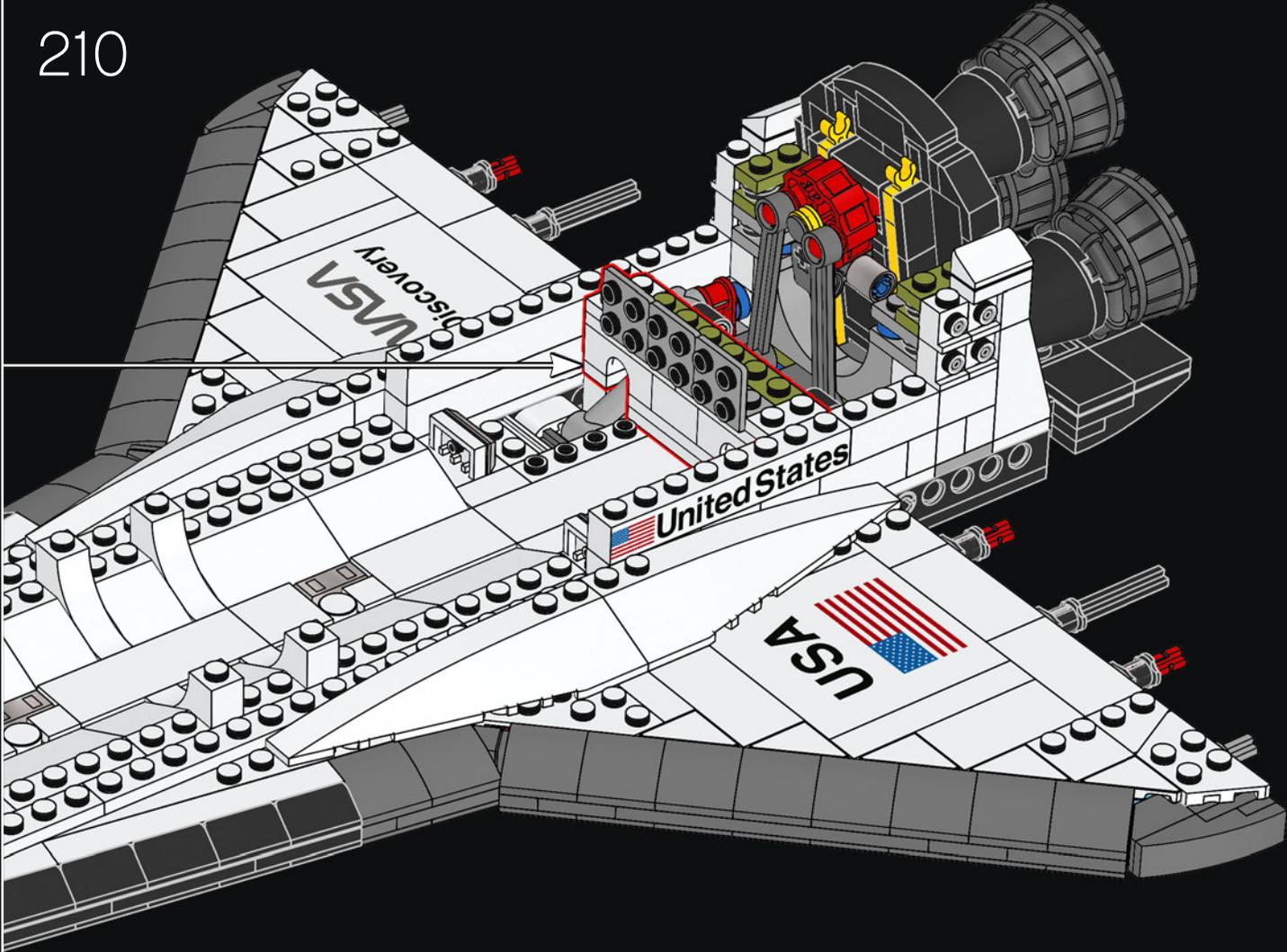


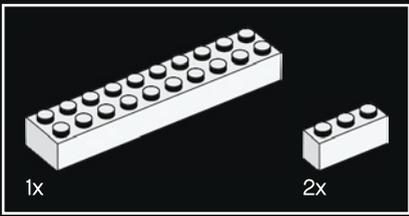


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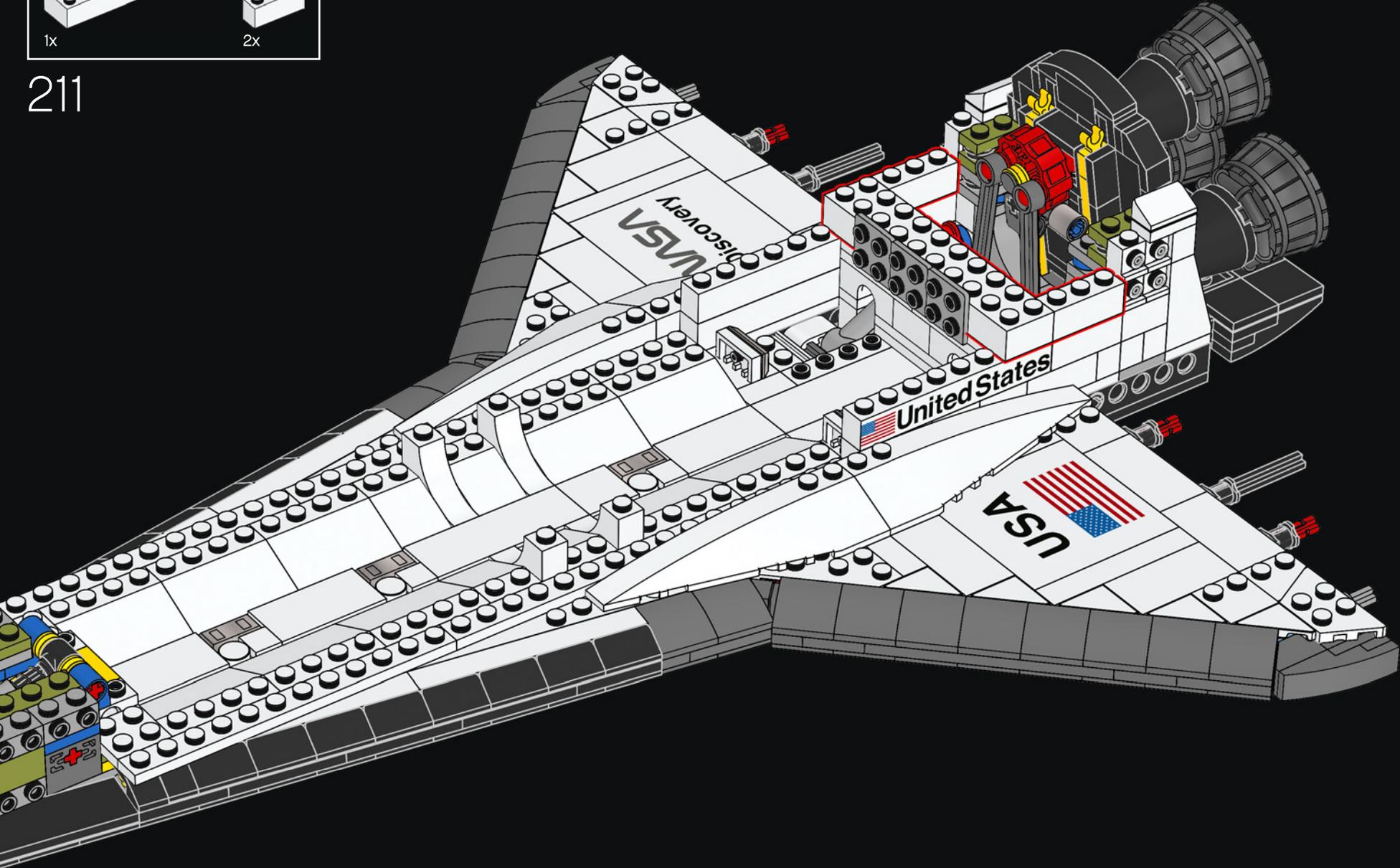


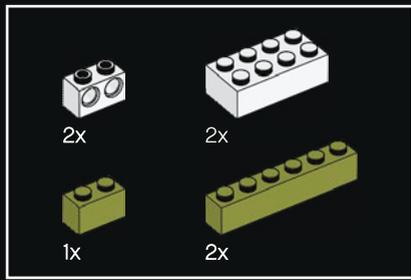
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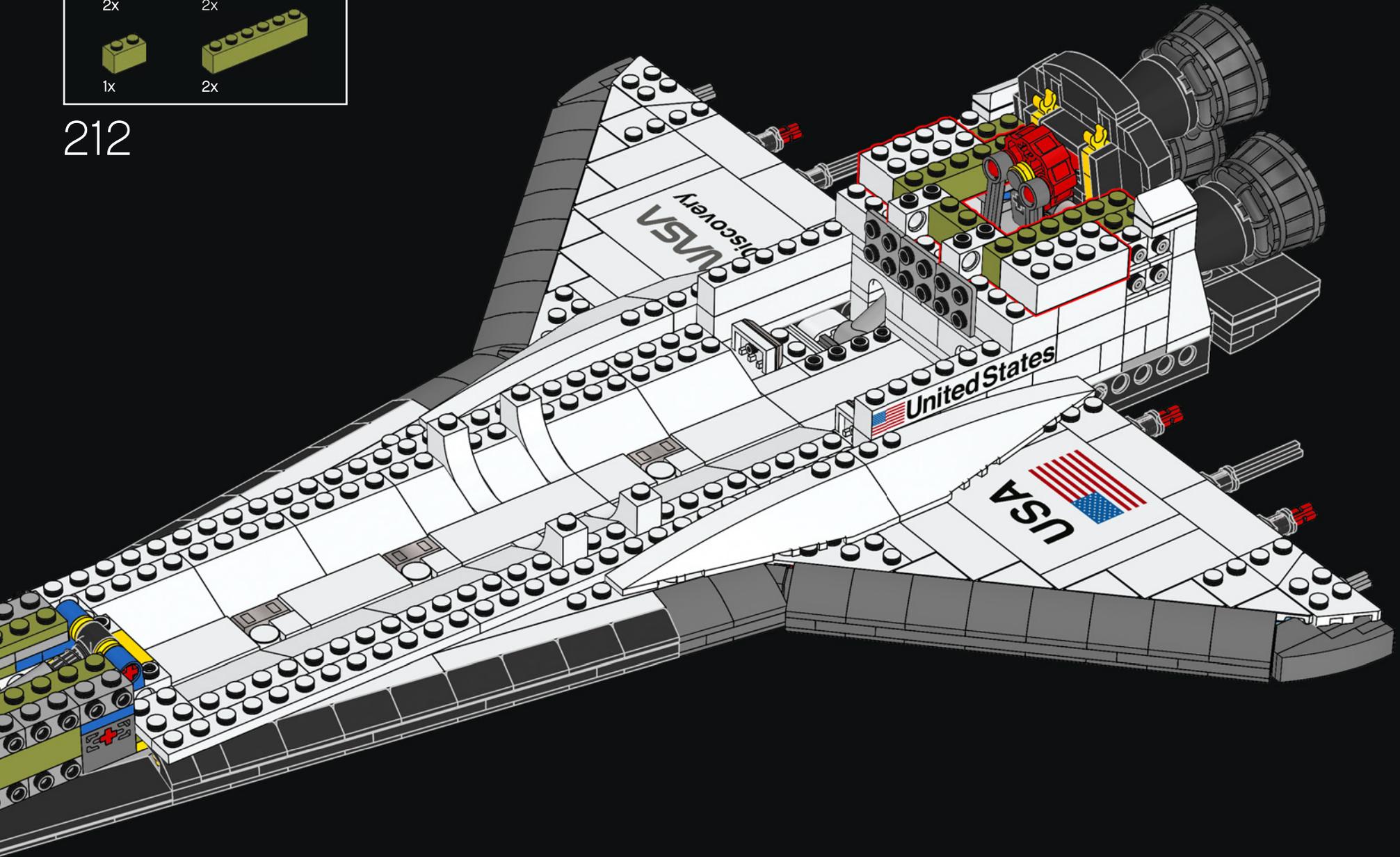


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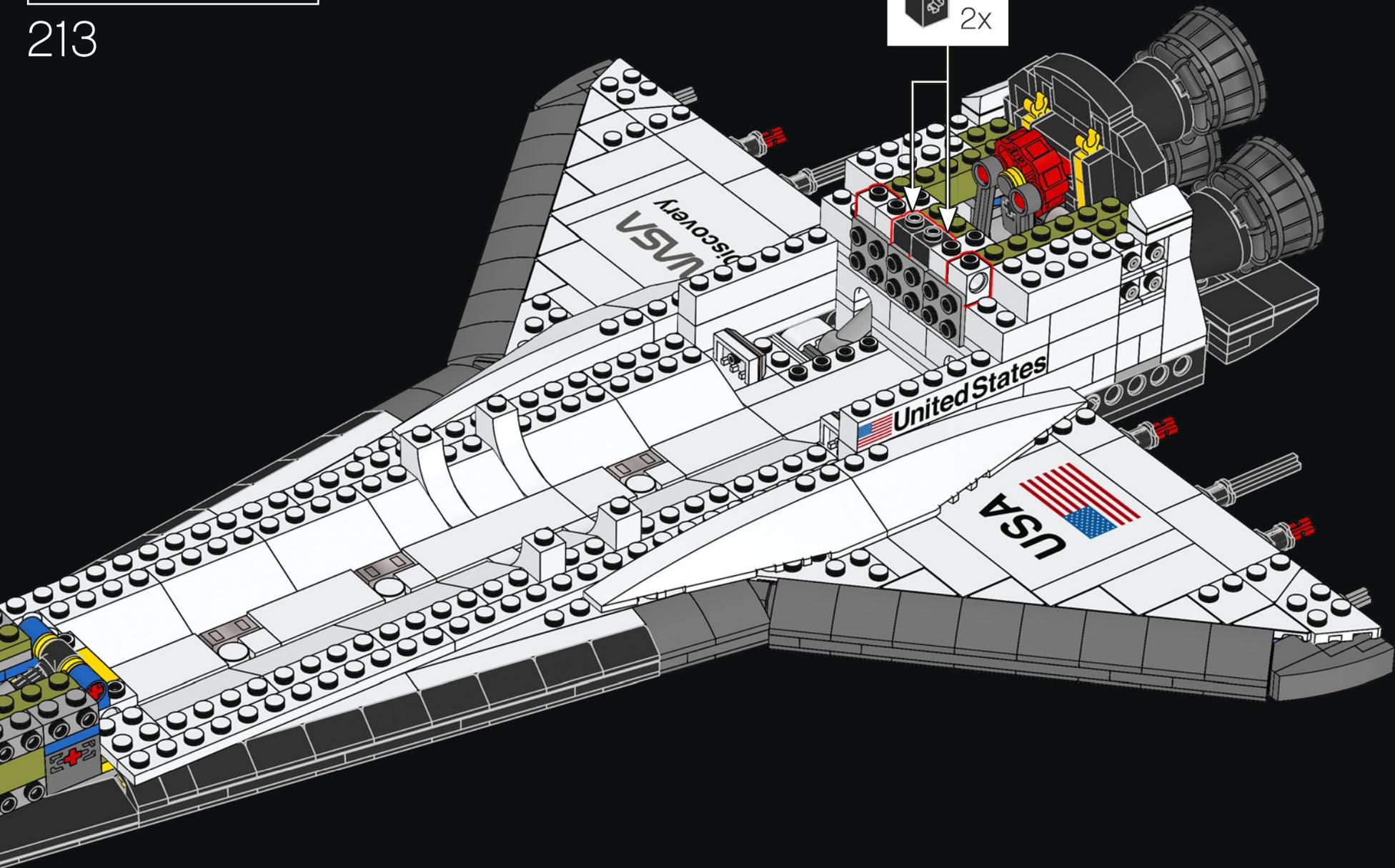
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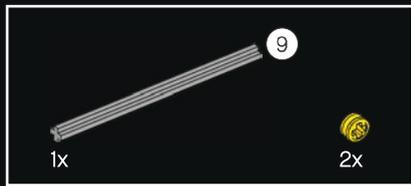


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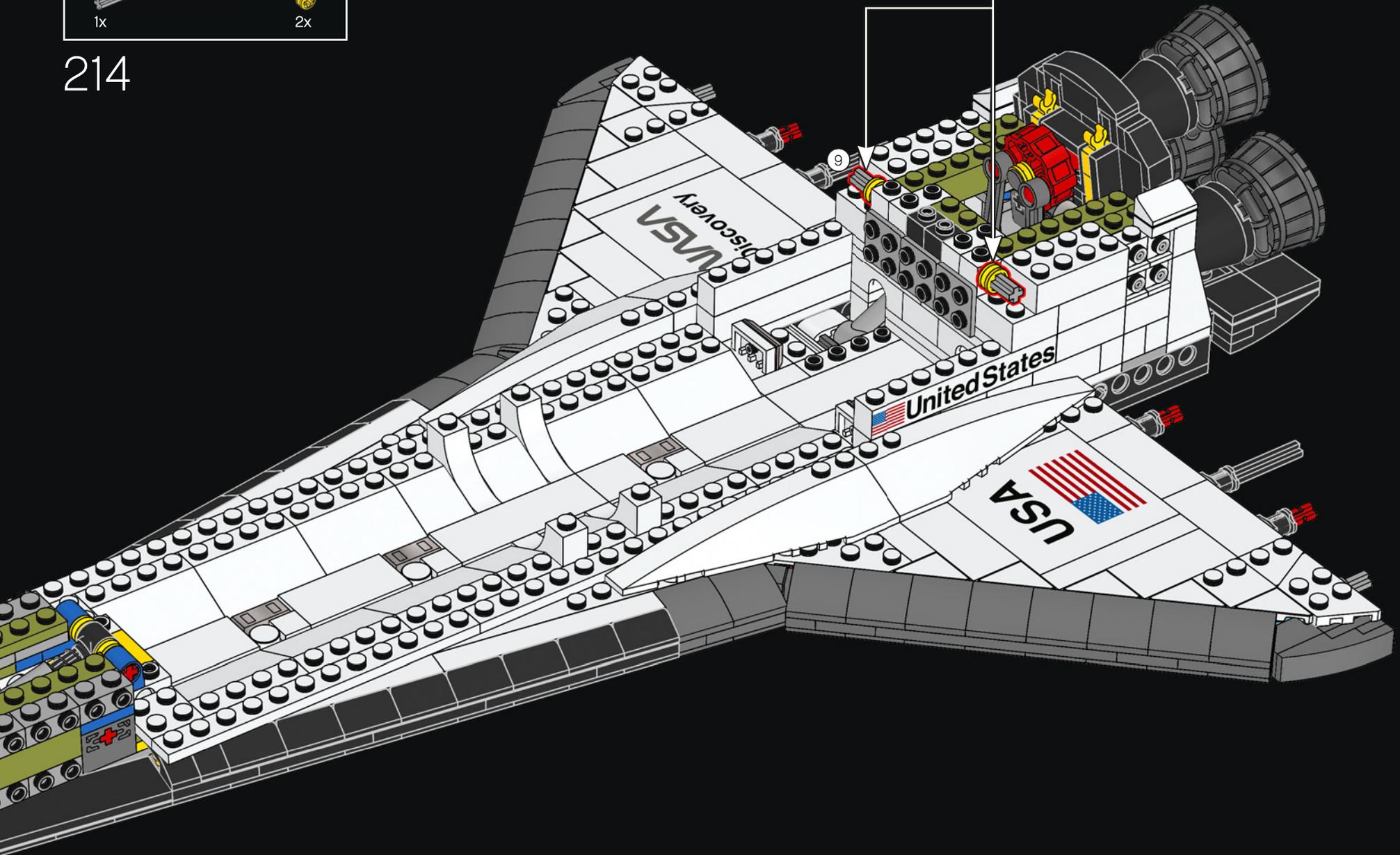
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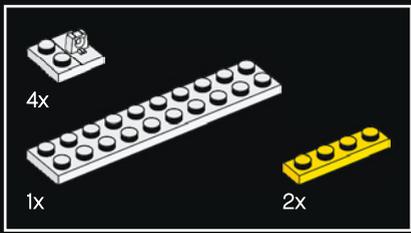
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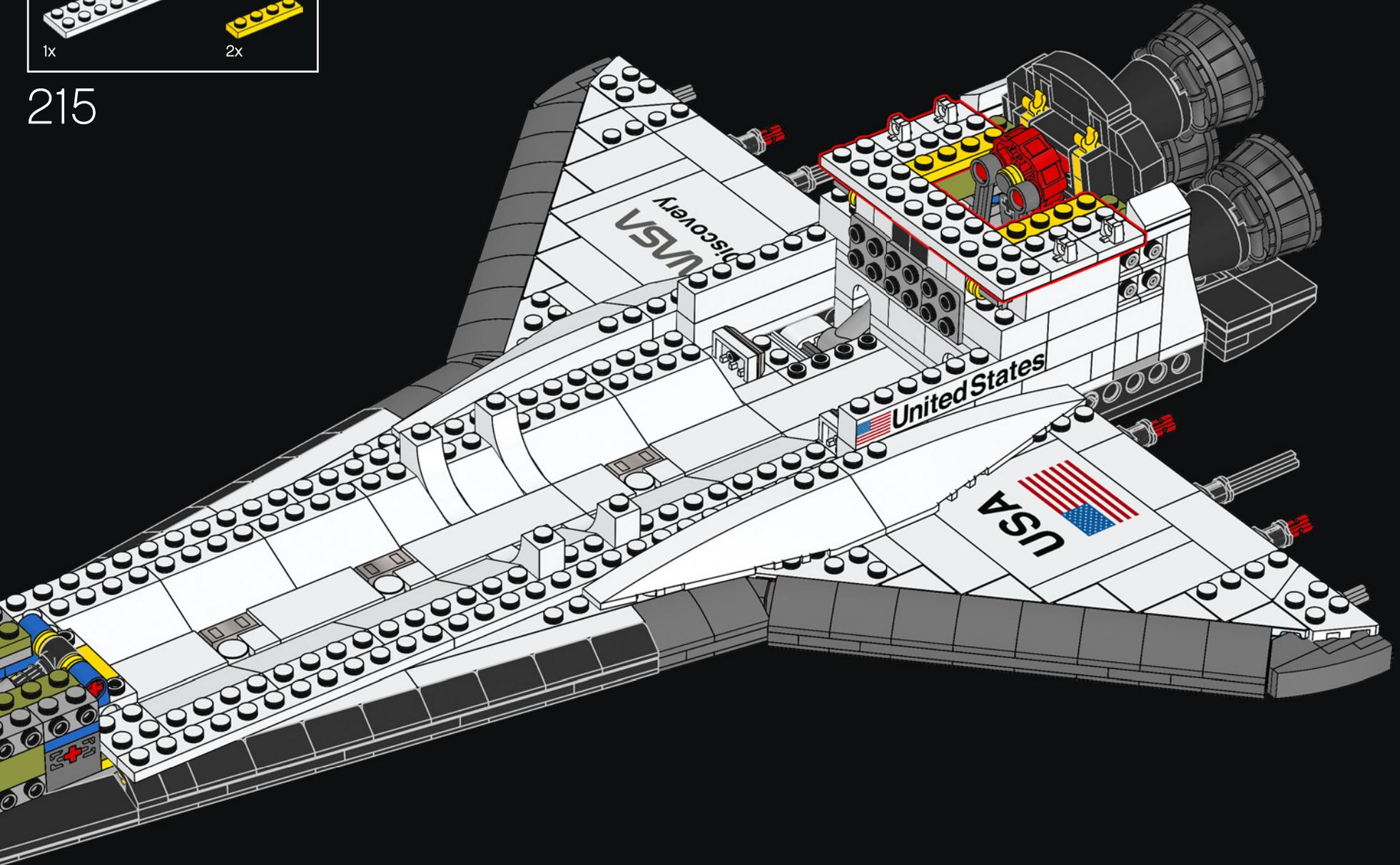


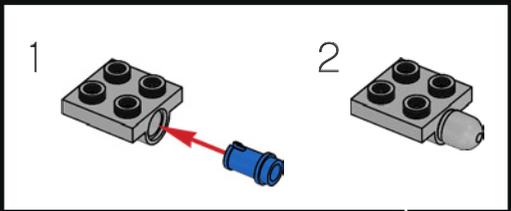
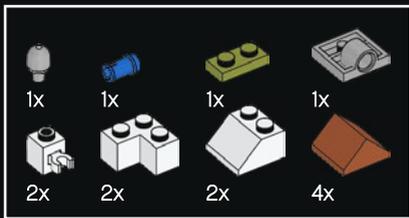
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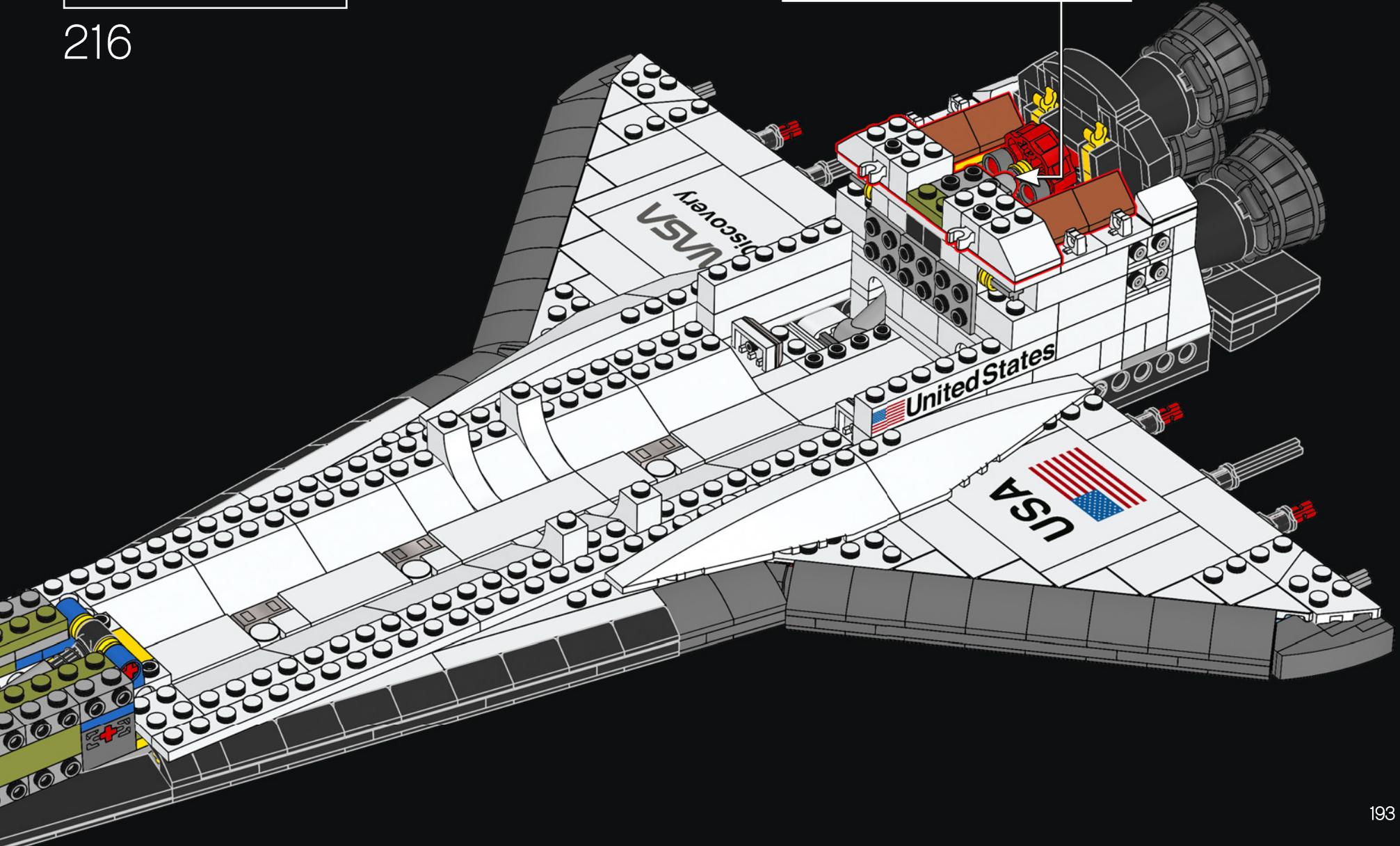


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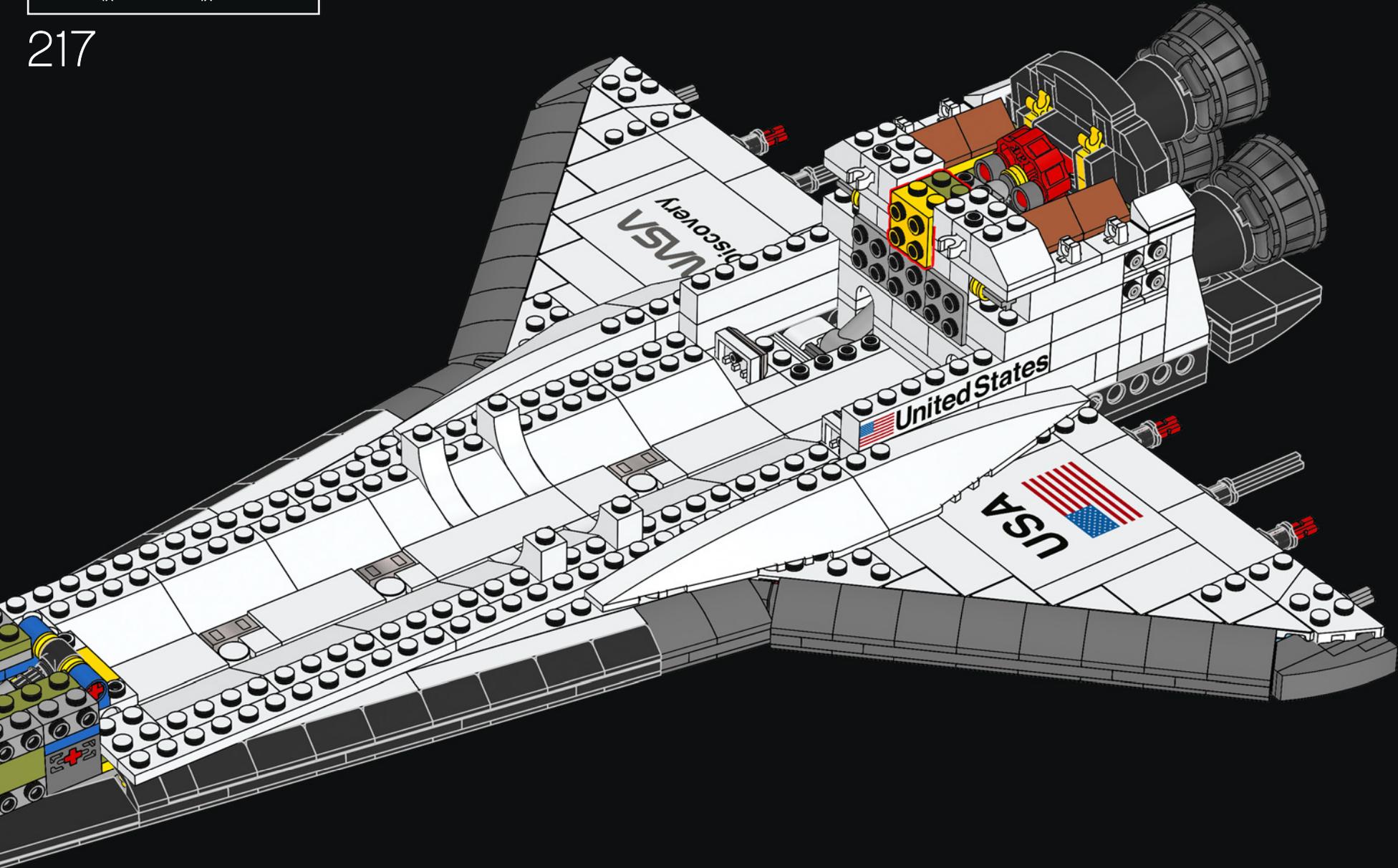


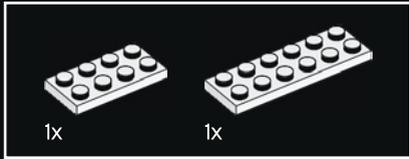
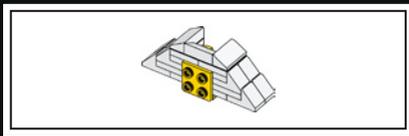
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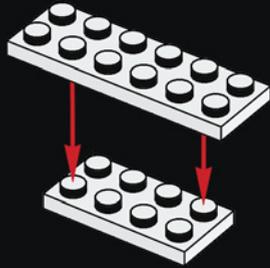


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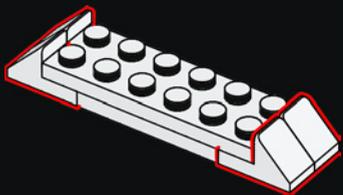




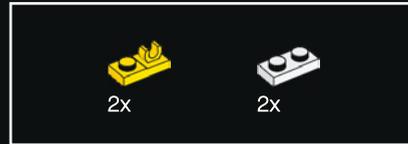
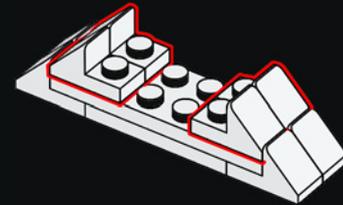
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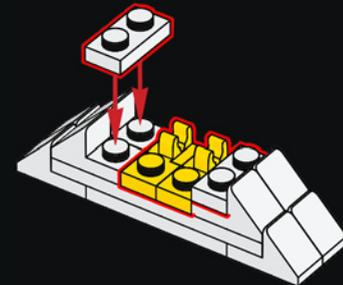
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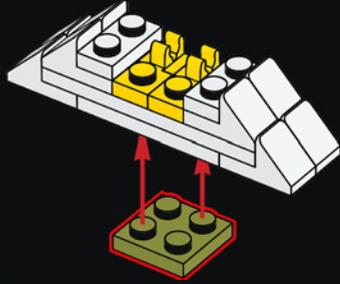


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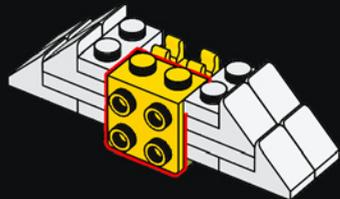




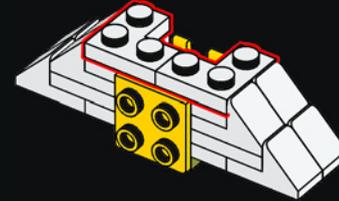
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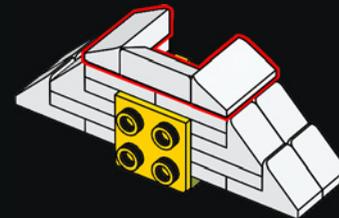
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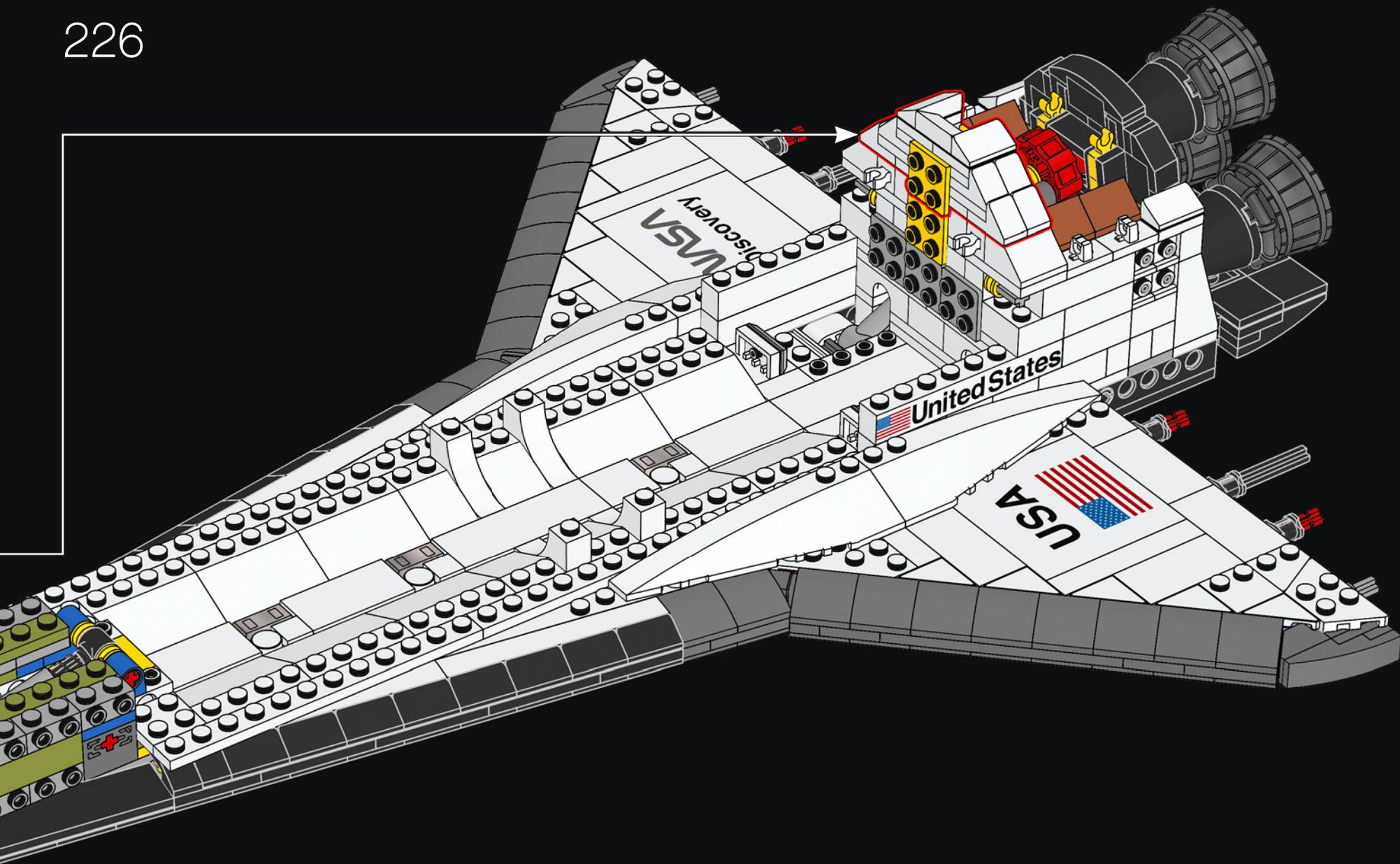
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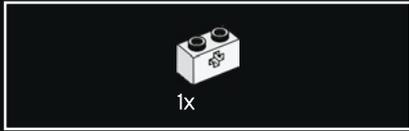
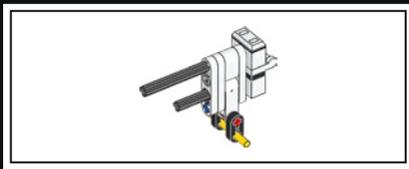


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226





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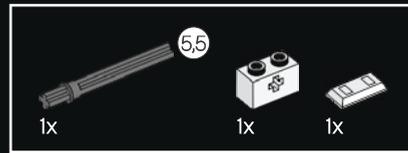
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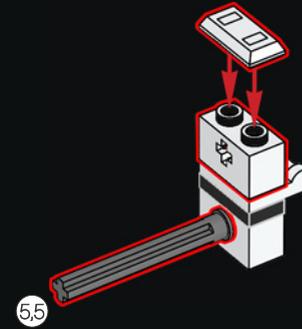


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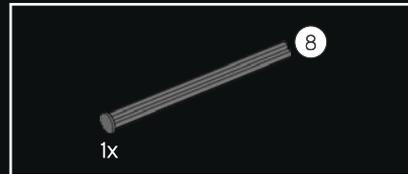
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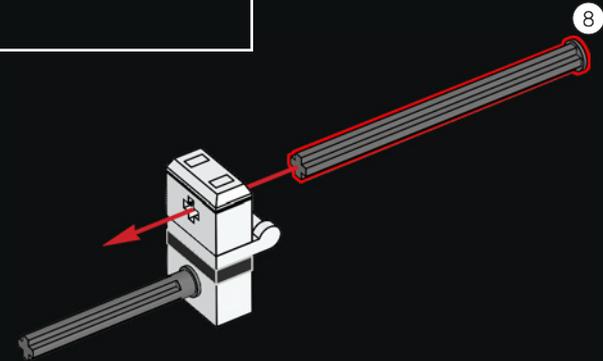
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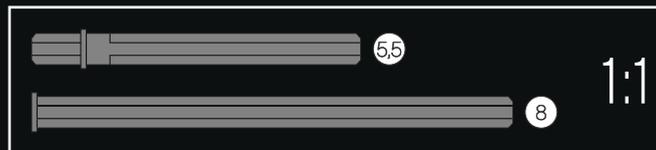
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231



8



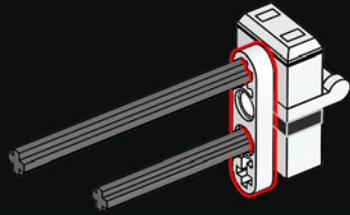
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8

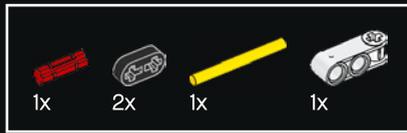
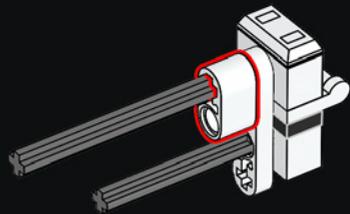
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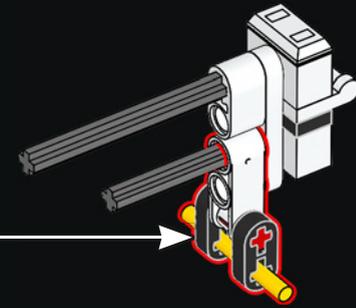
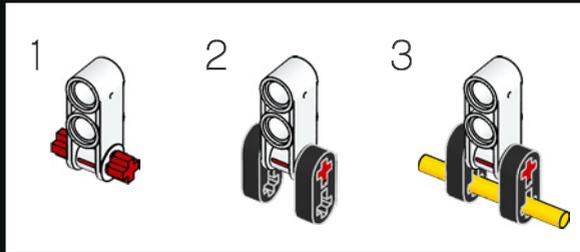
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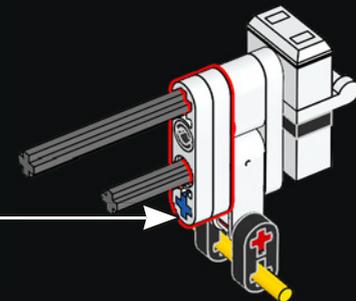
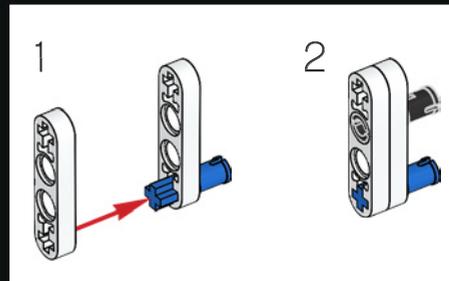
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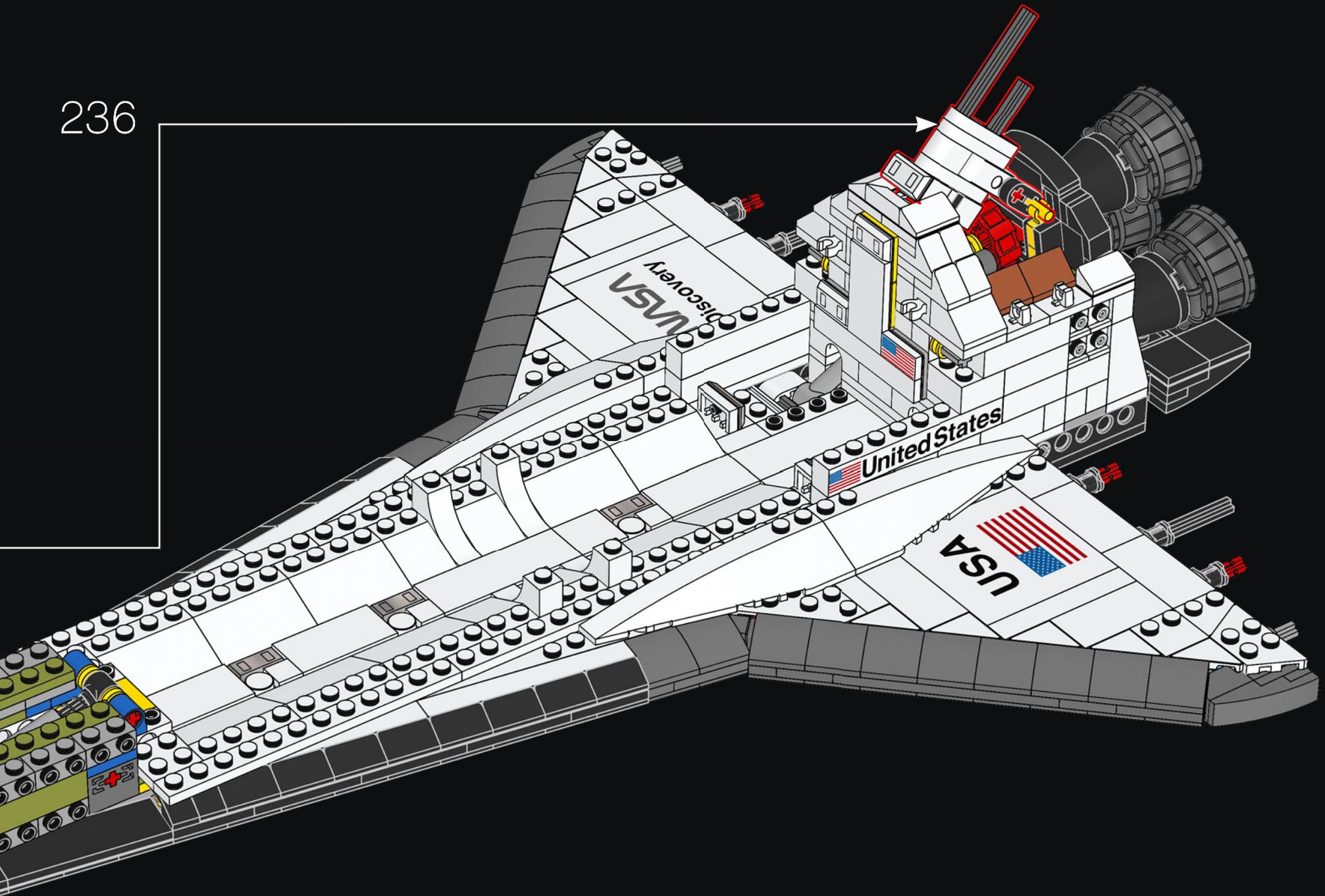
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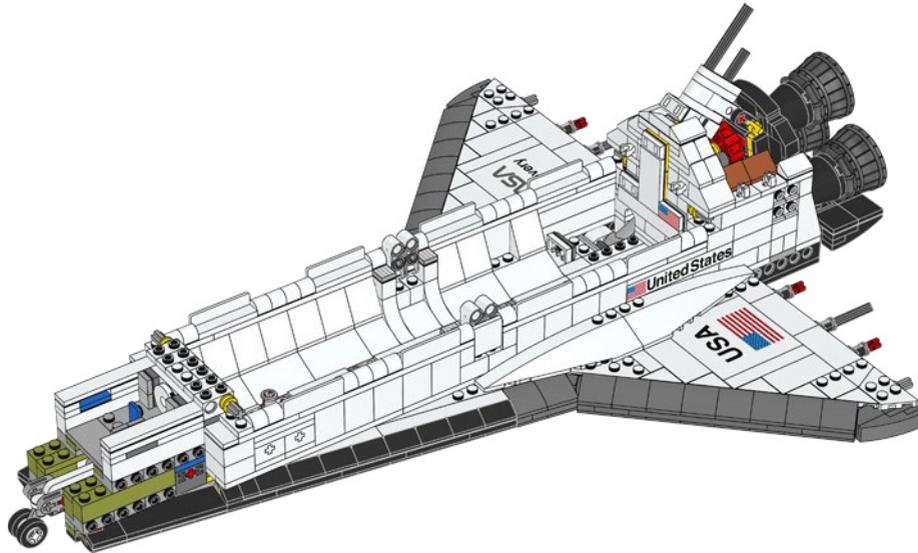
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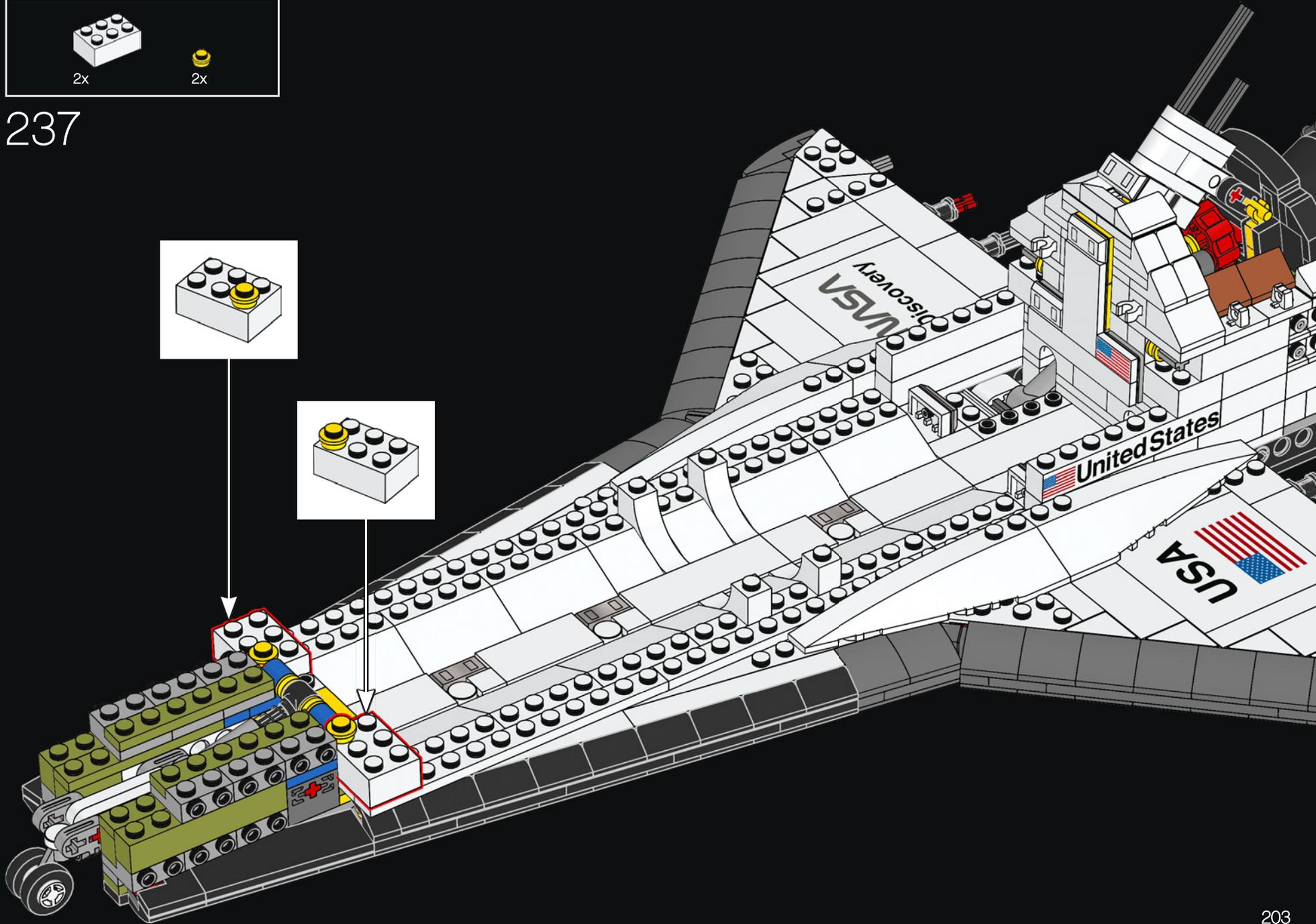
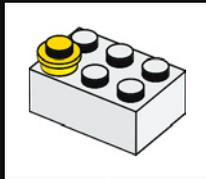
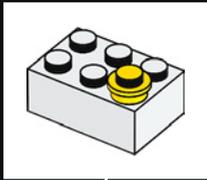


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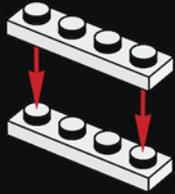


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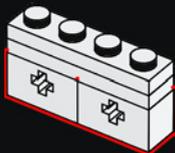




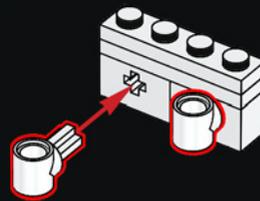
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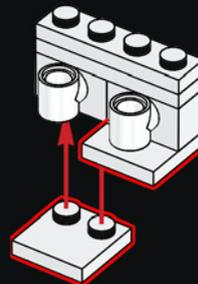
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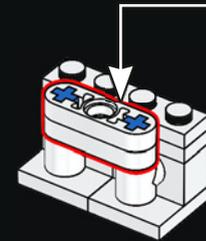
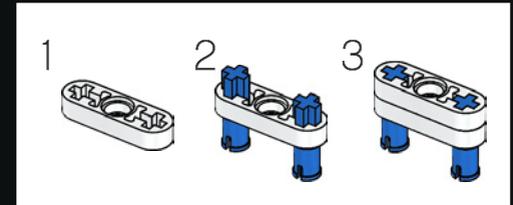
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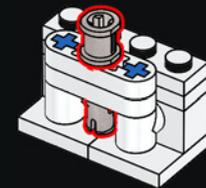
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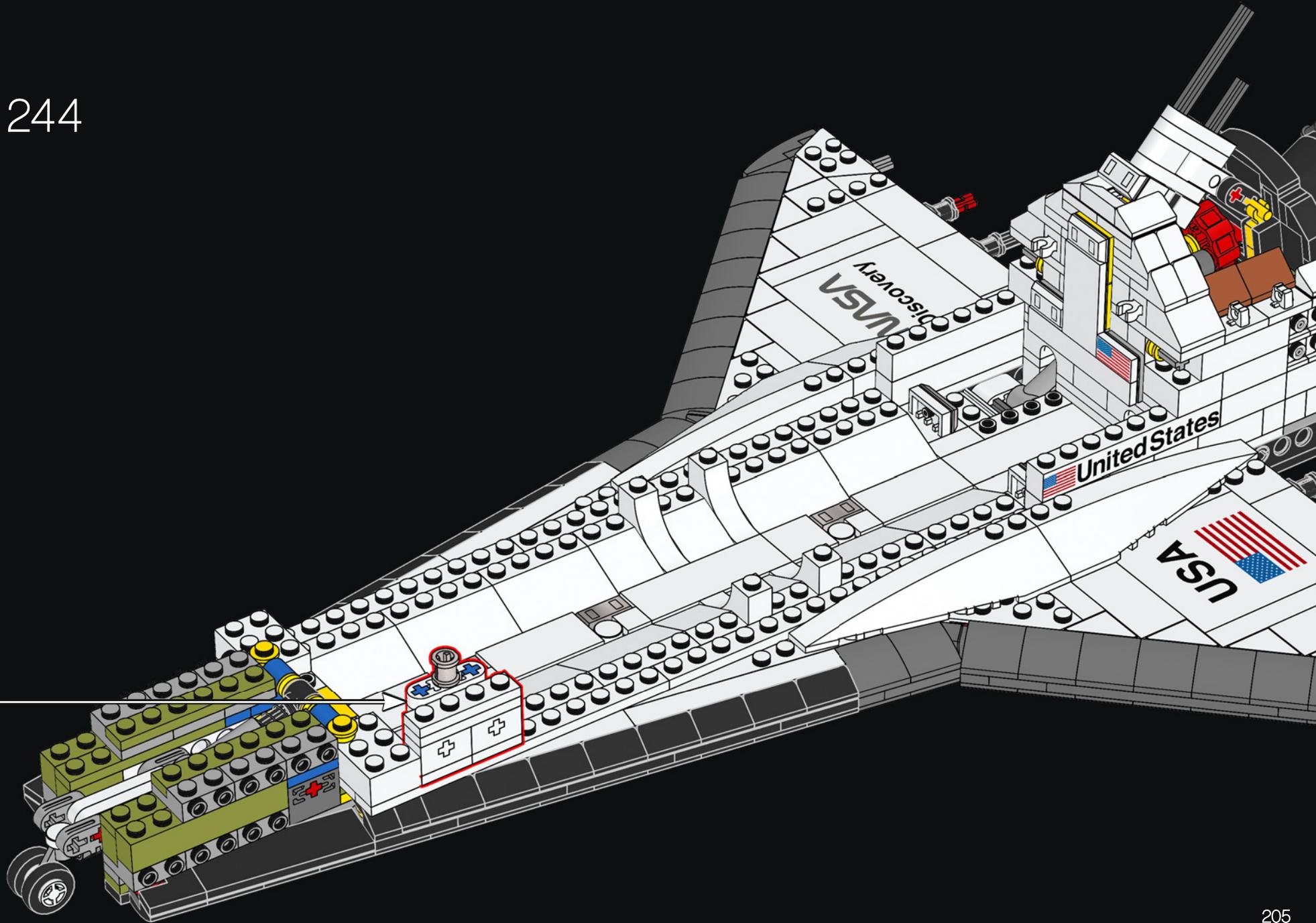


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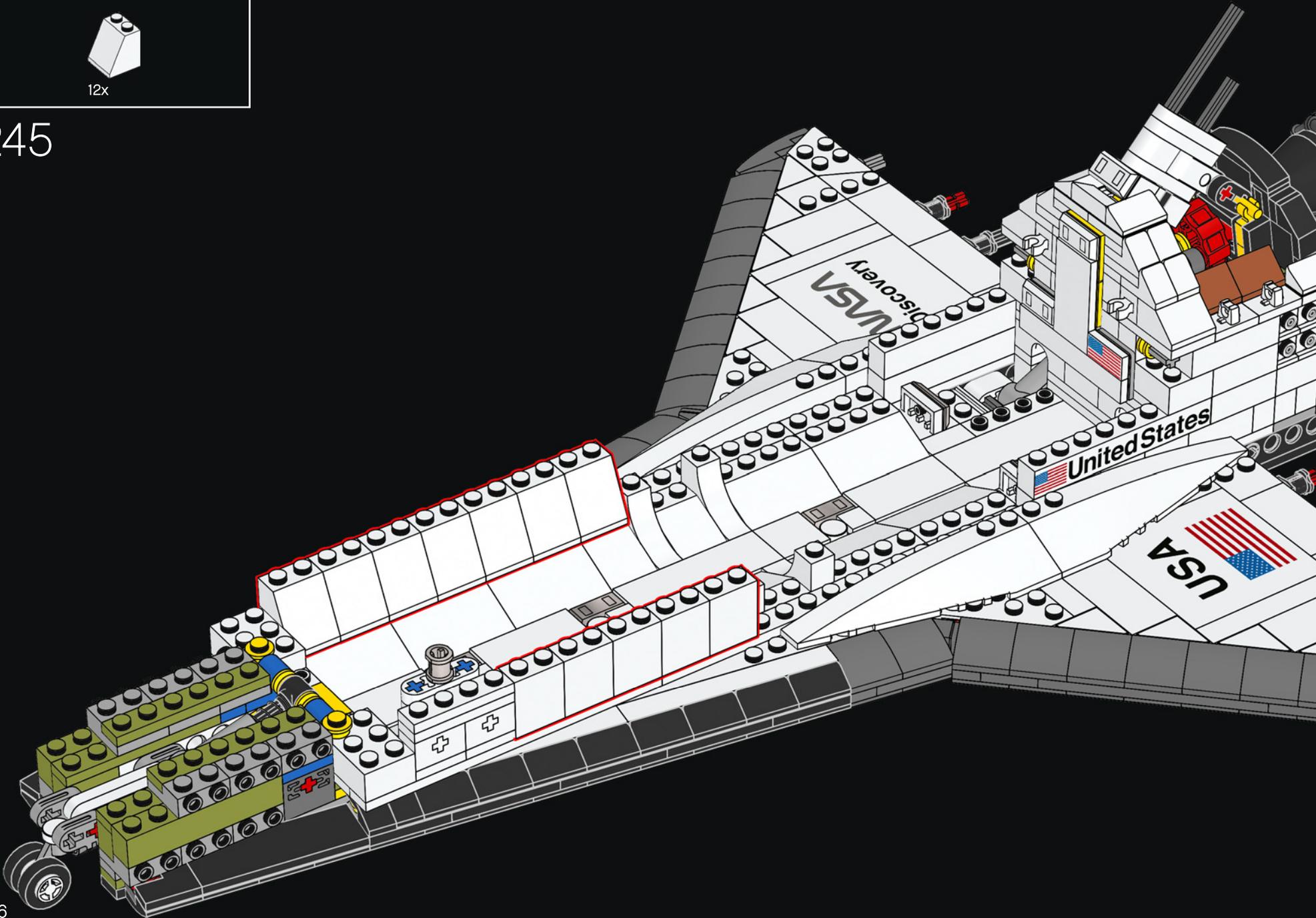
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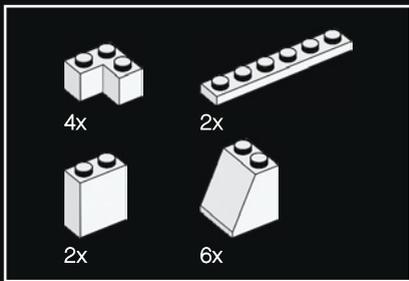




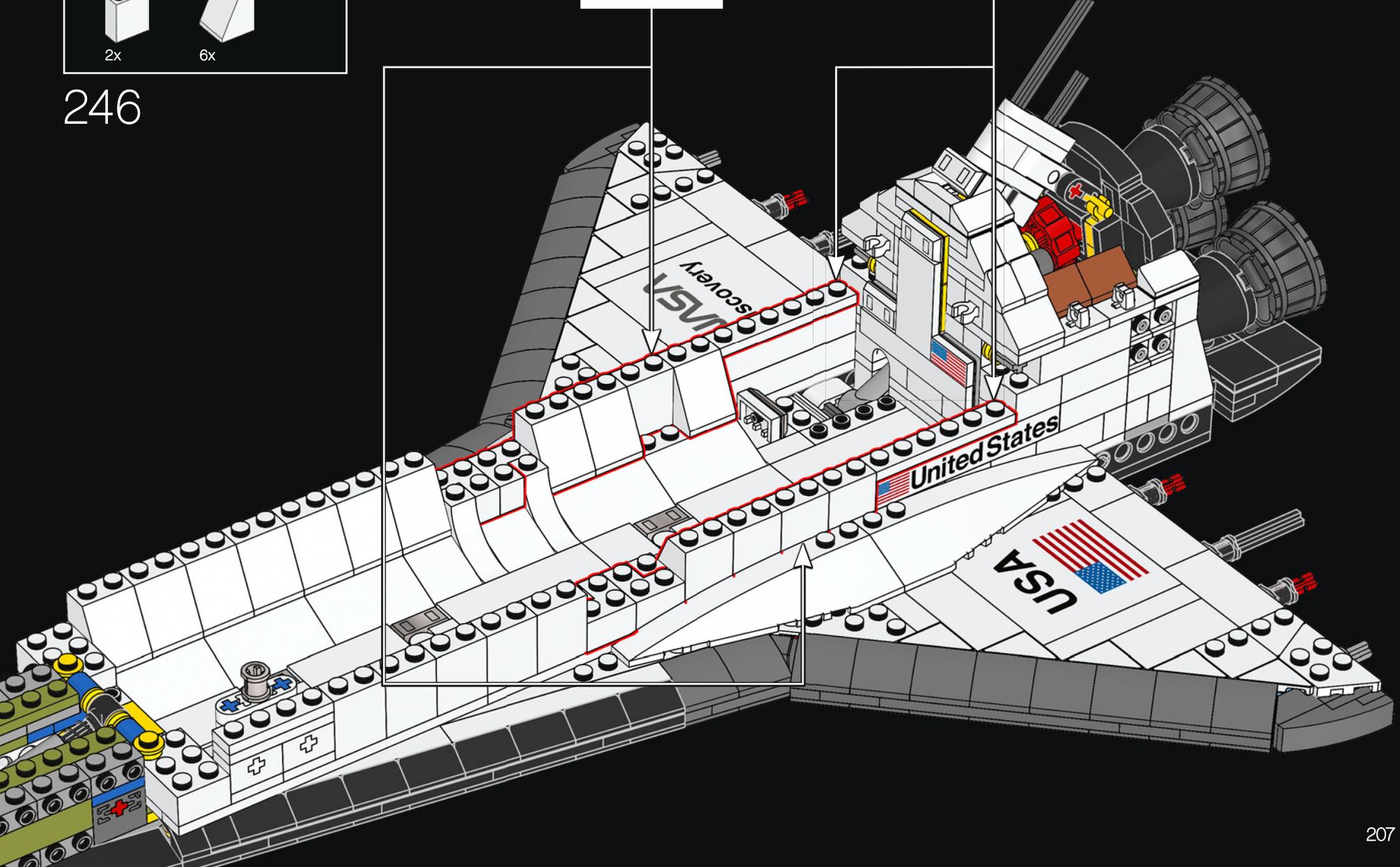
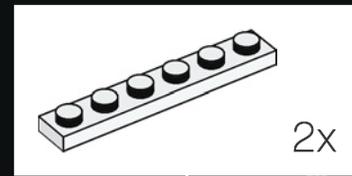
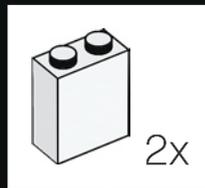


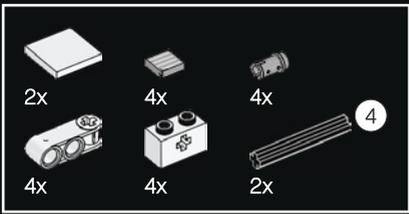
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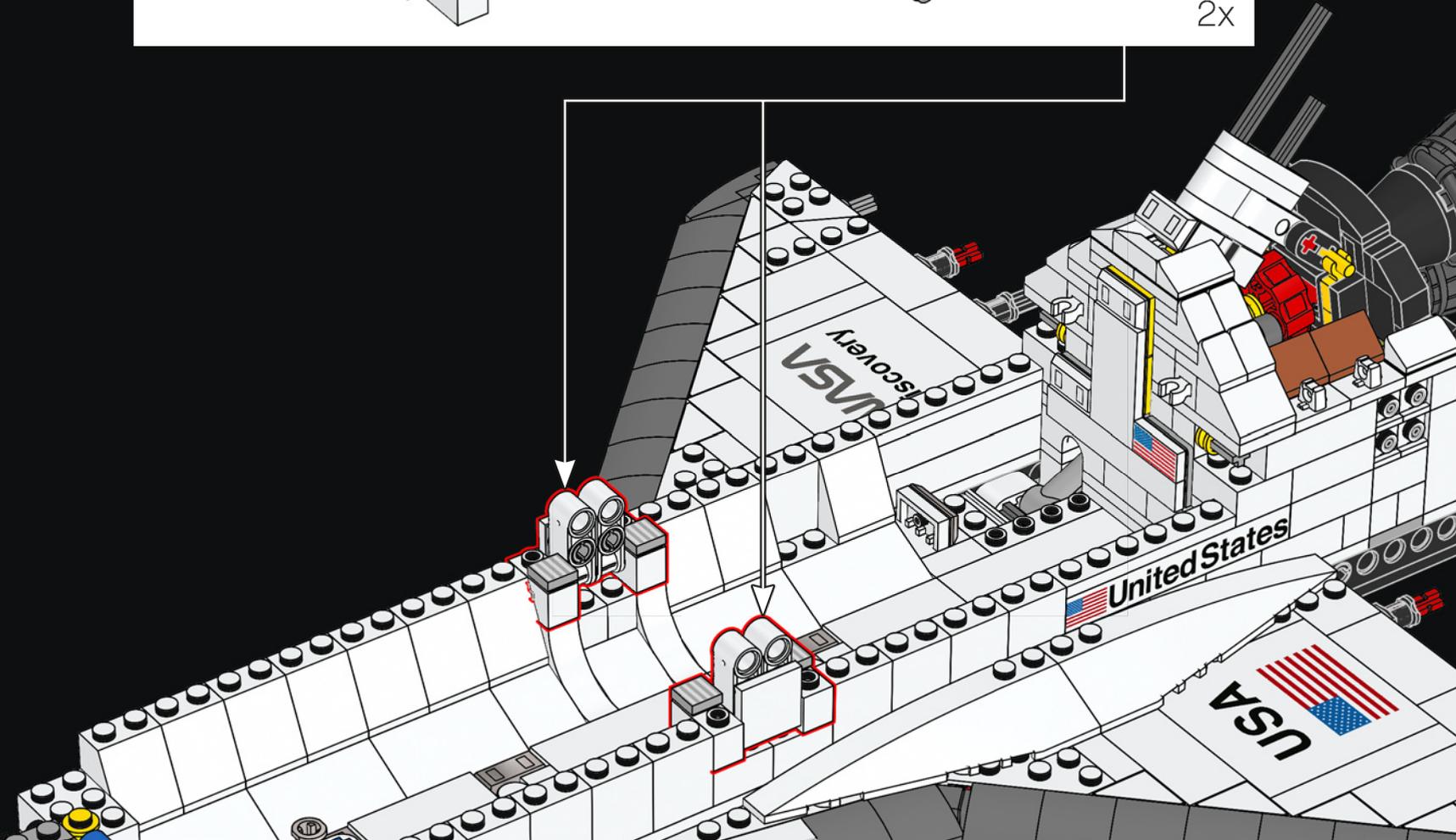
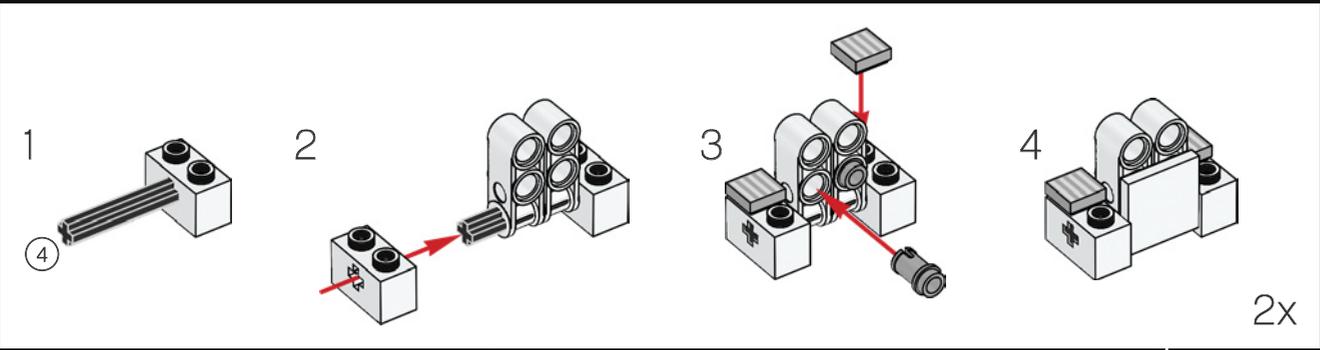


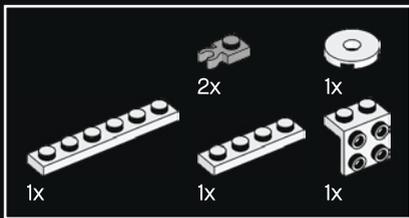
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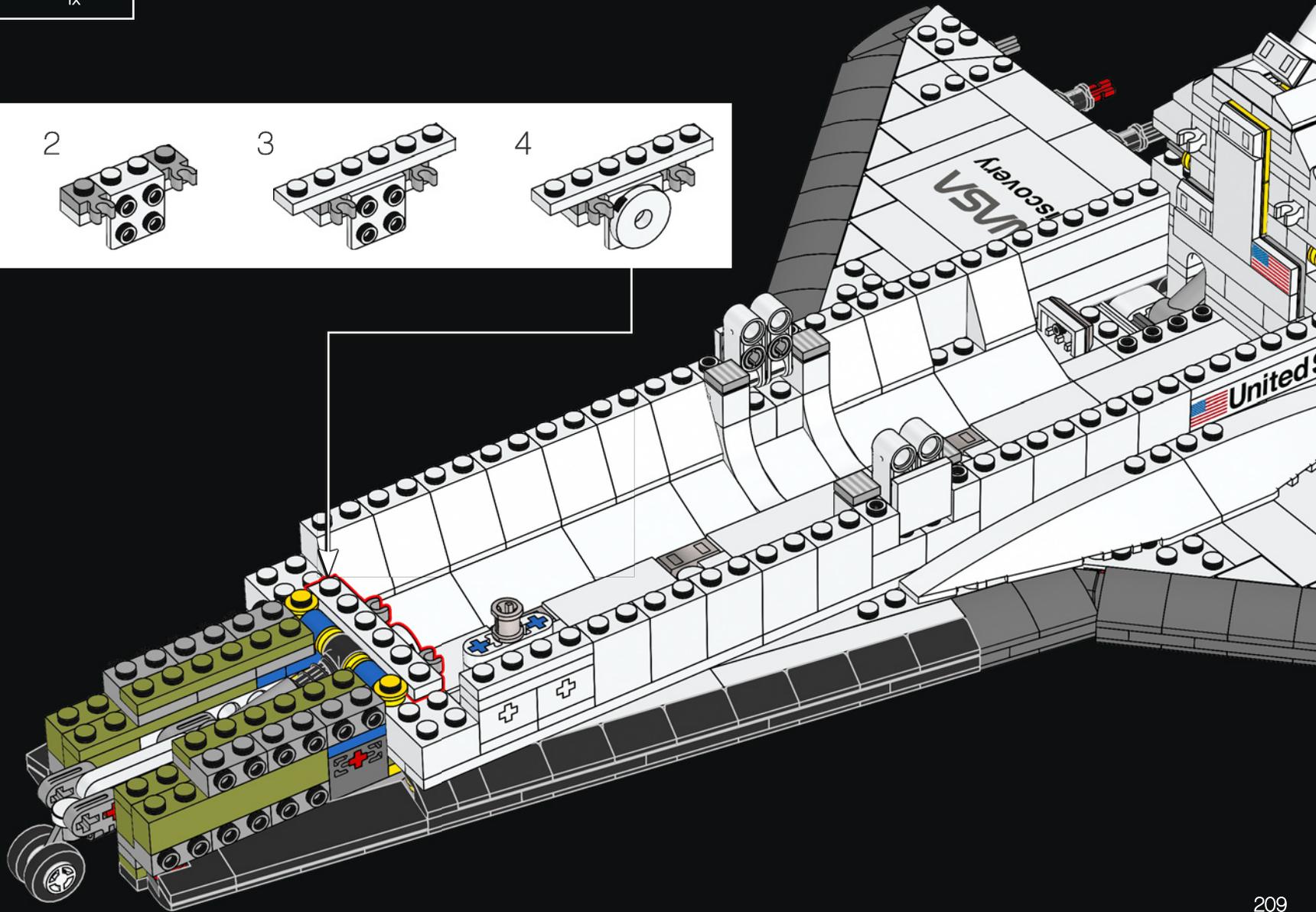
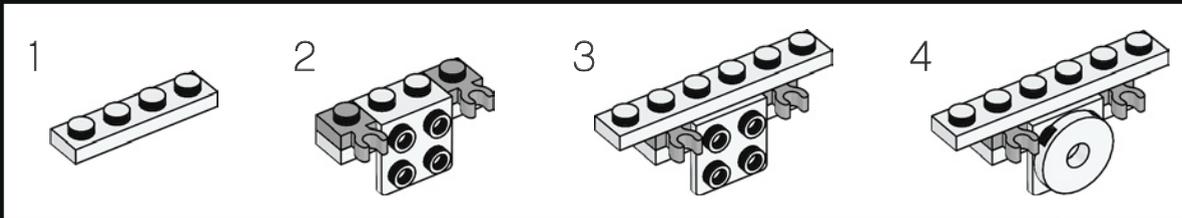


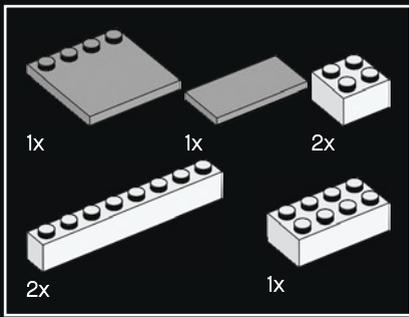
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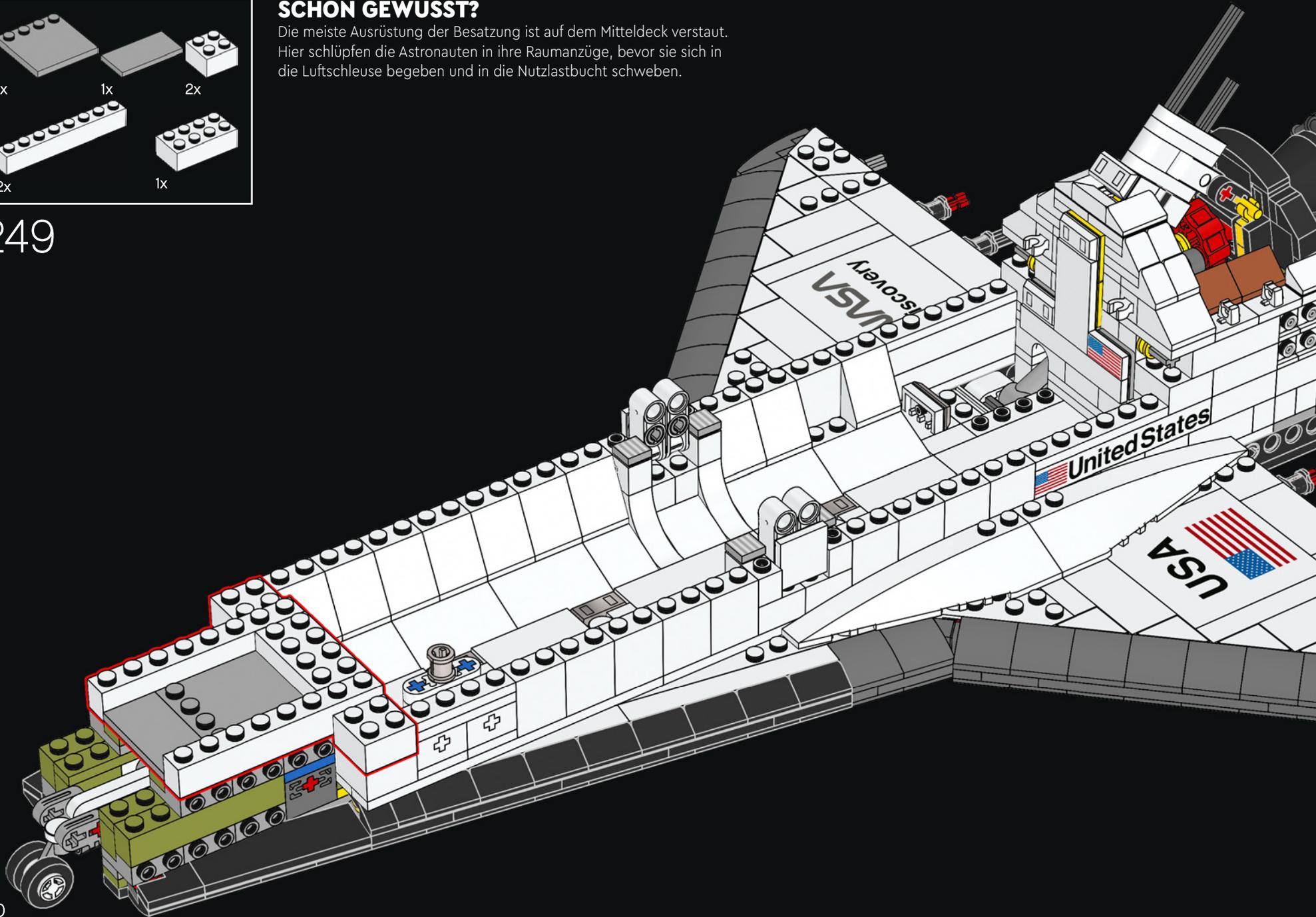


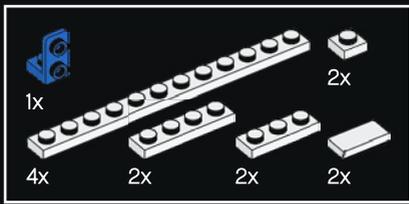


SCHON GEWUSST?

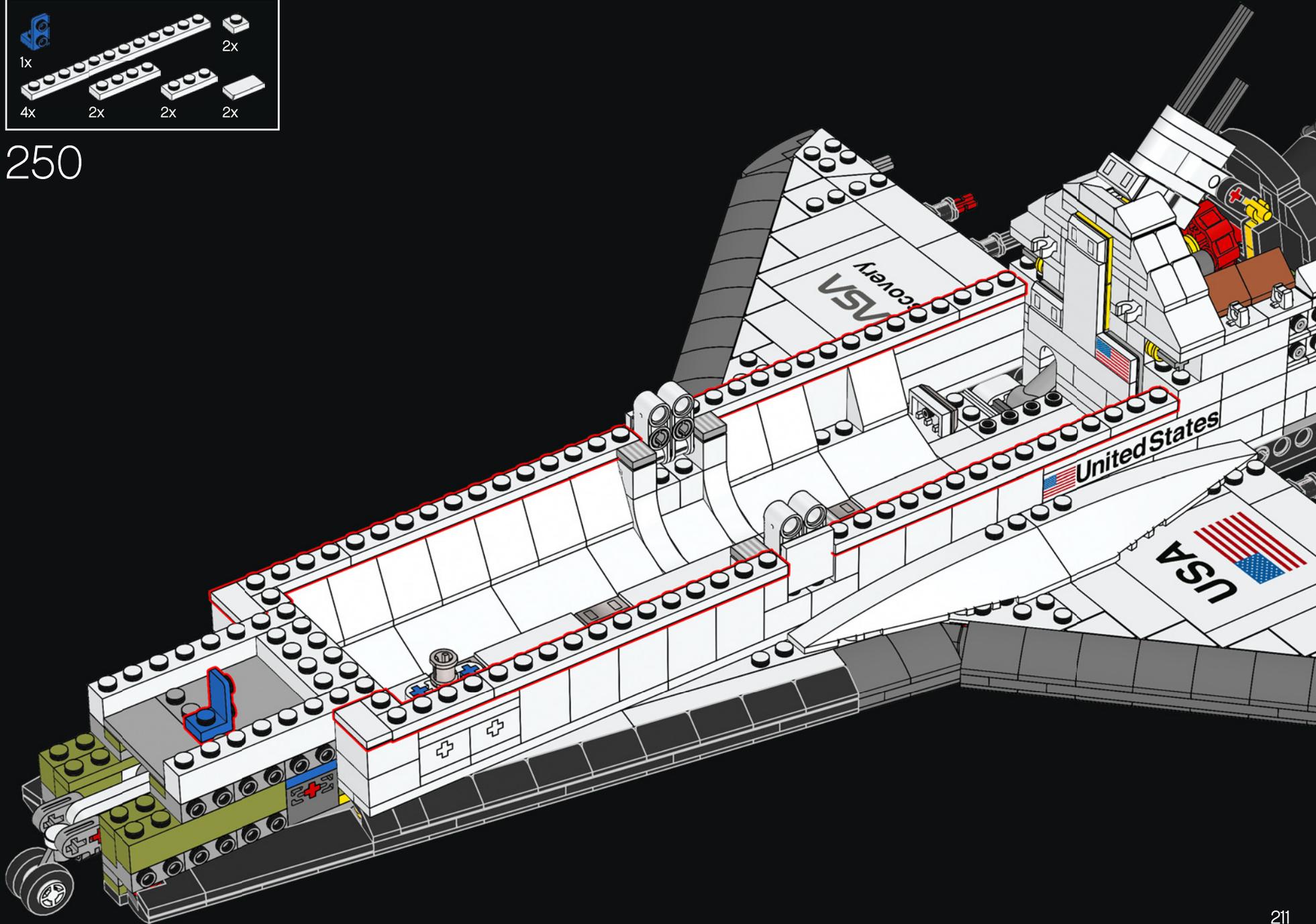
Die meiste Ausrüstung der Besatzung ist auf dem Mitteldeck verstaут. Hier schlüpfen die Astronauten in ihre Raumanzüge, bevor sie sich in die Luftschleuse begeben und in die Nutzlastbucht schweben.

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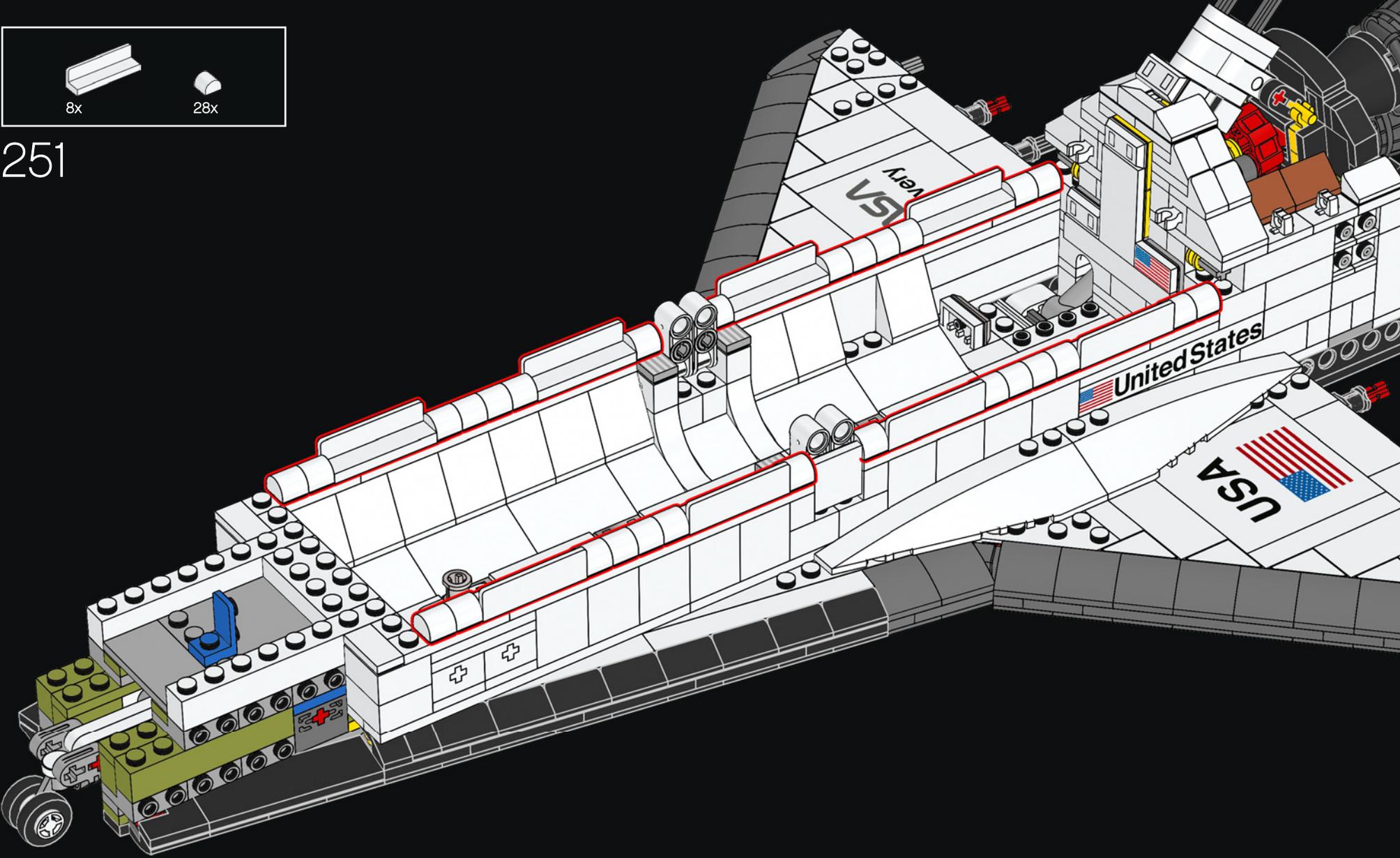


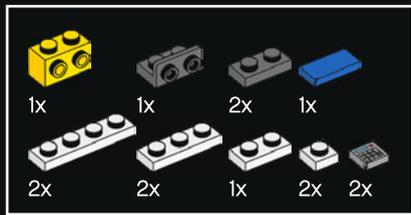
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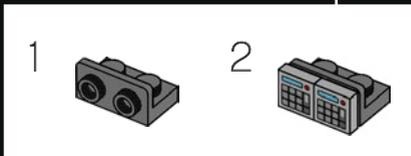
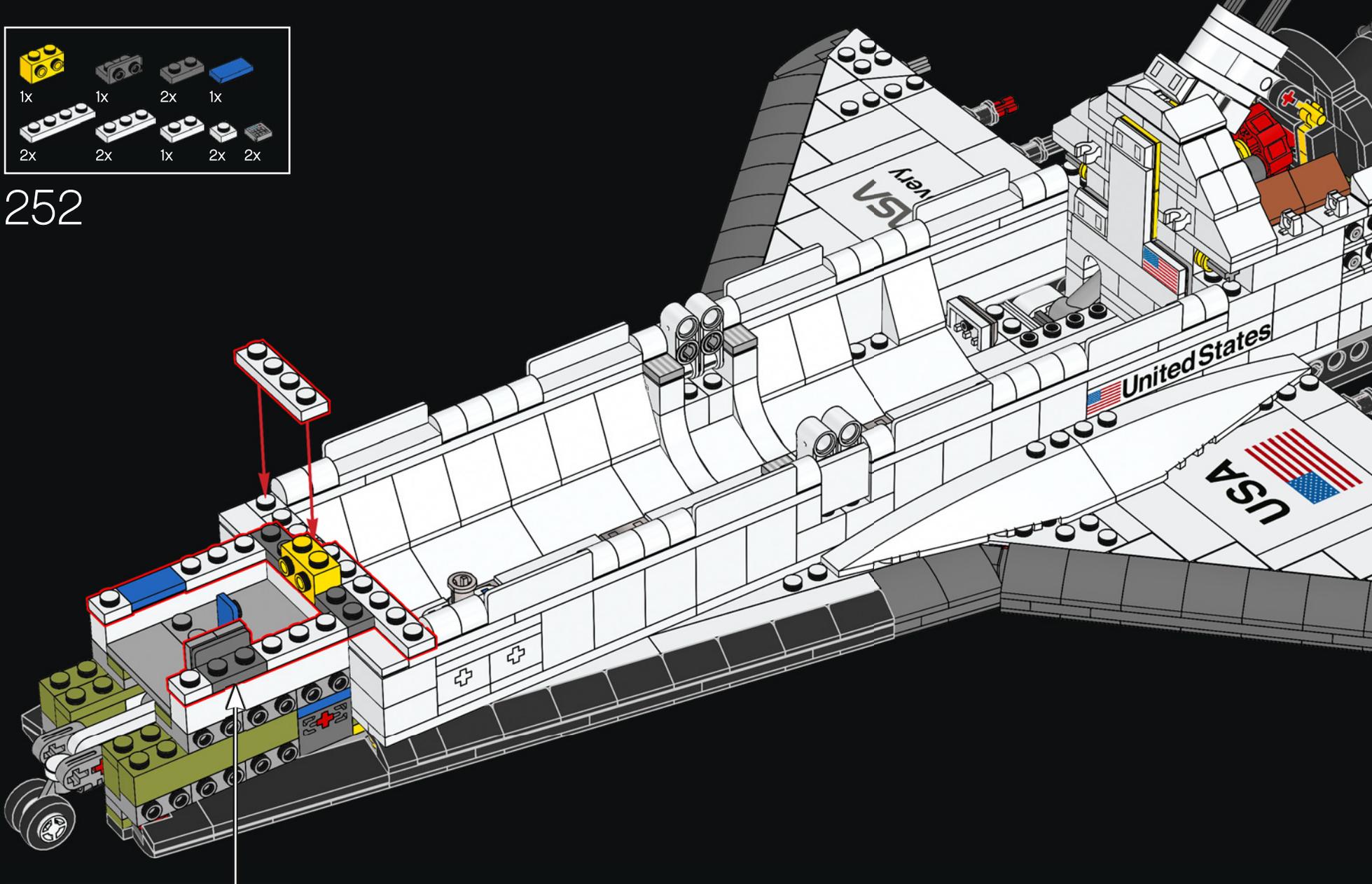


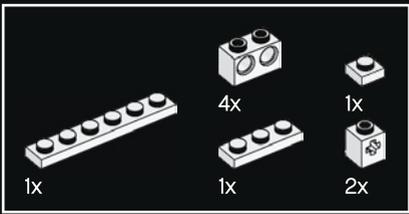
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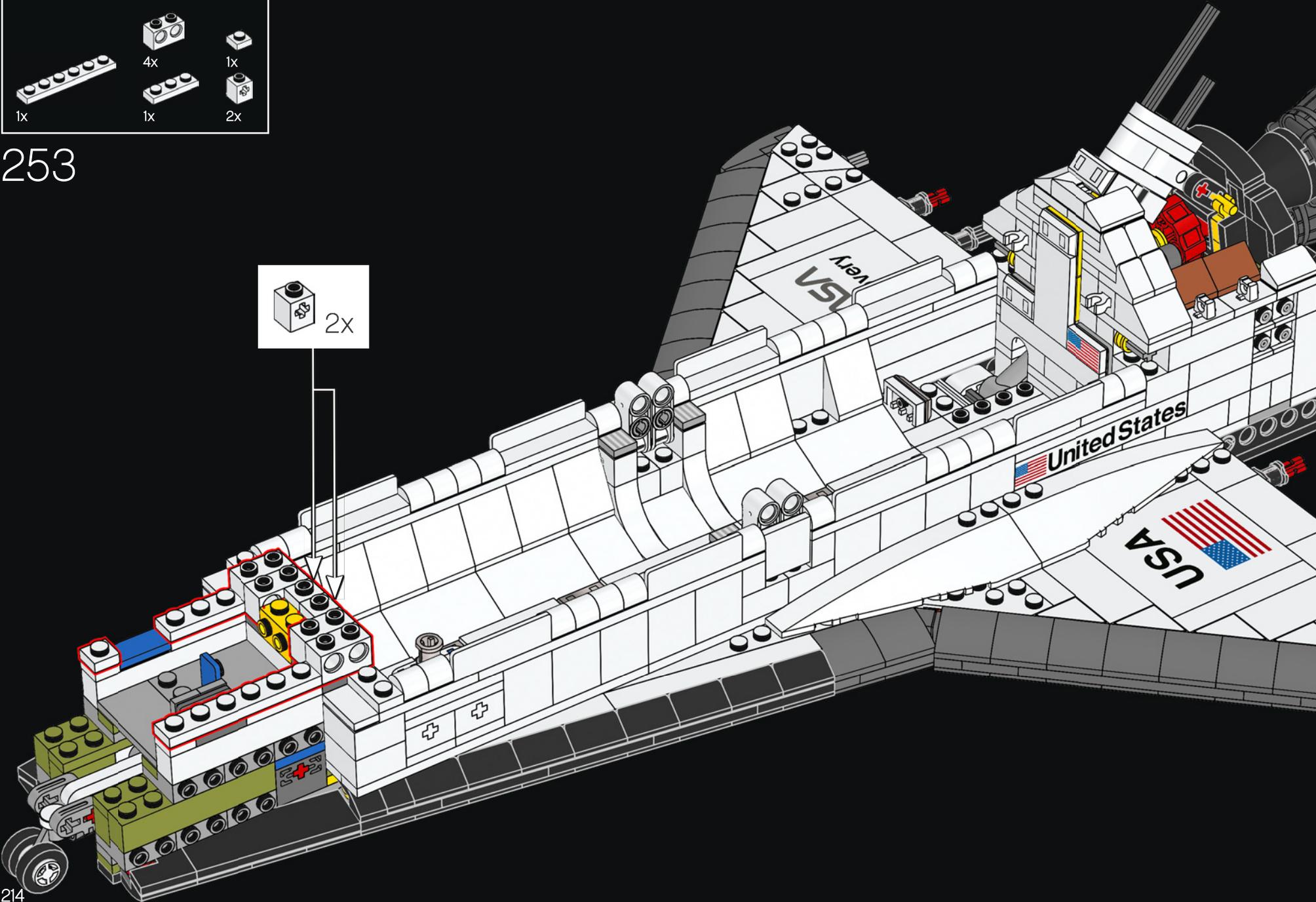


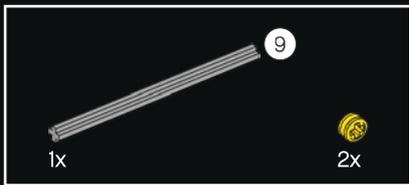
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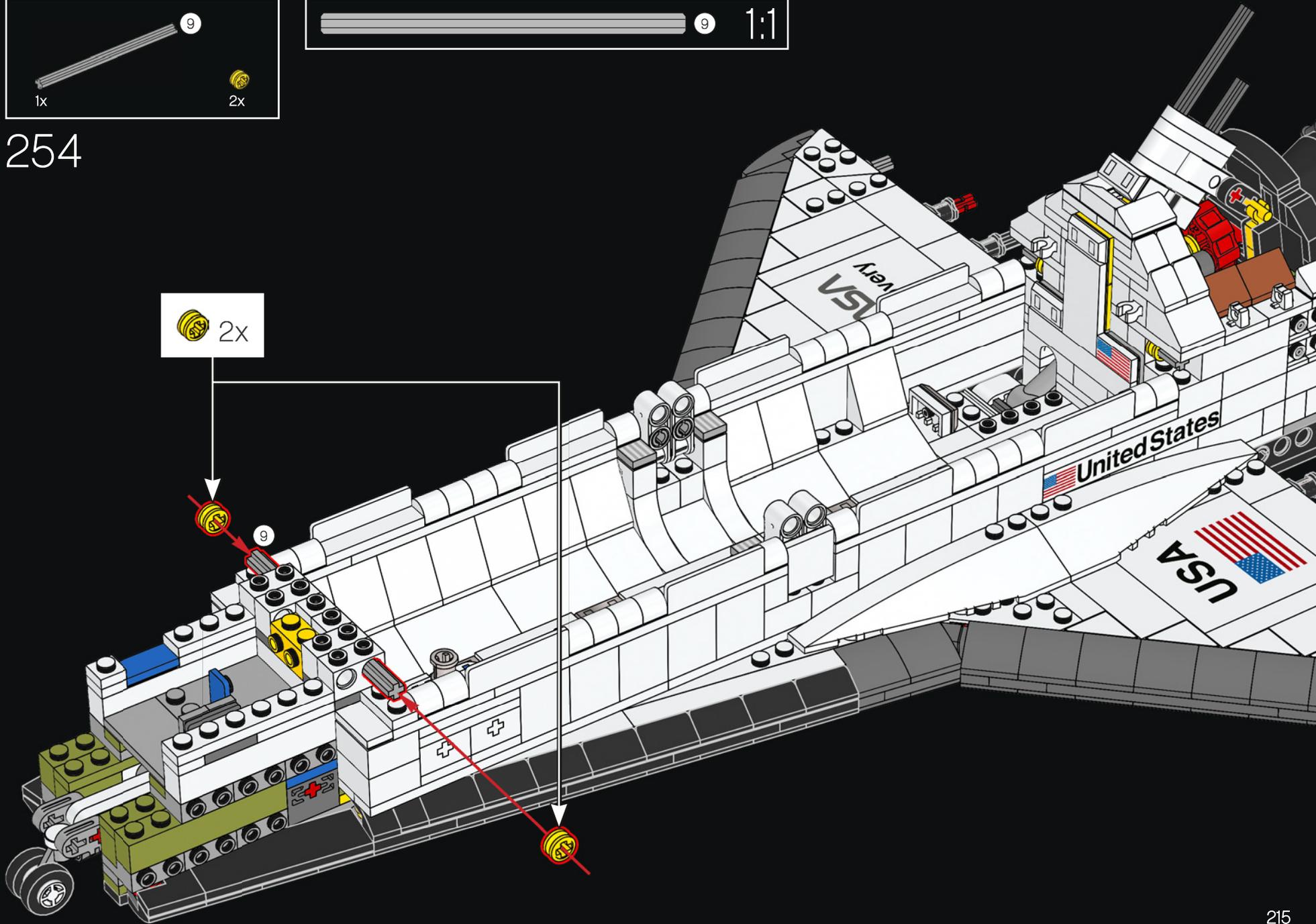


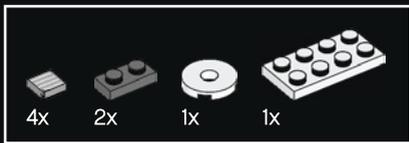
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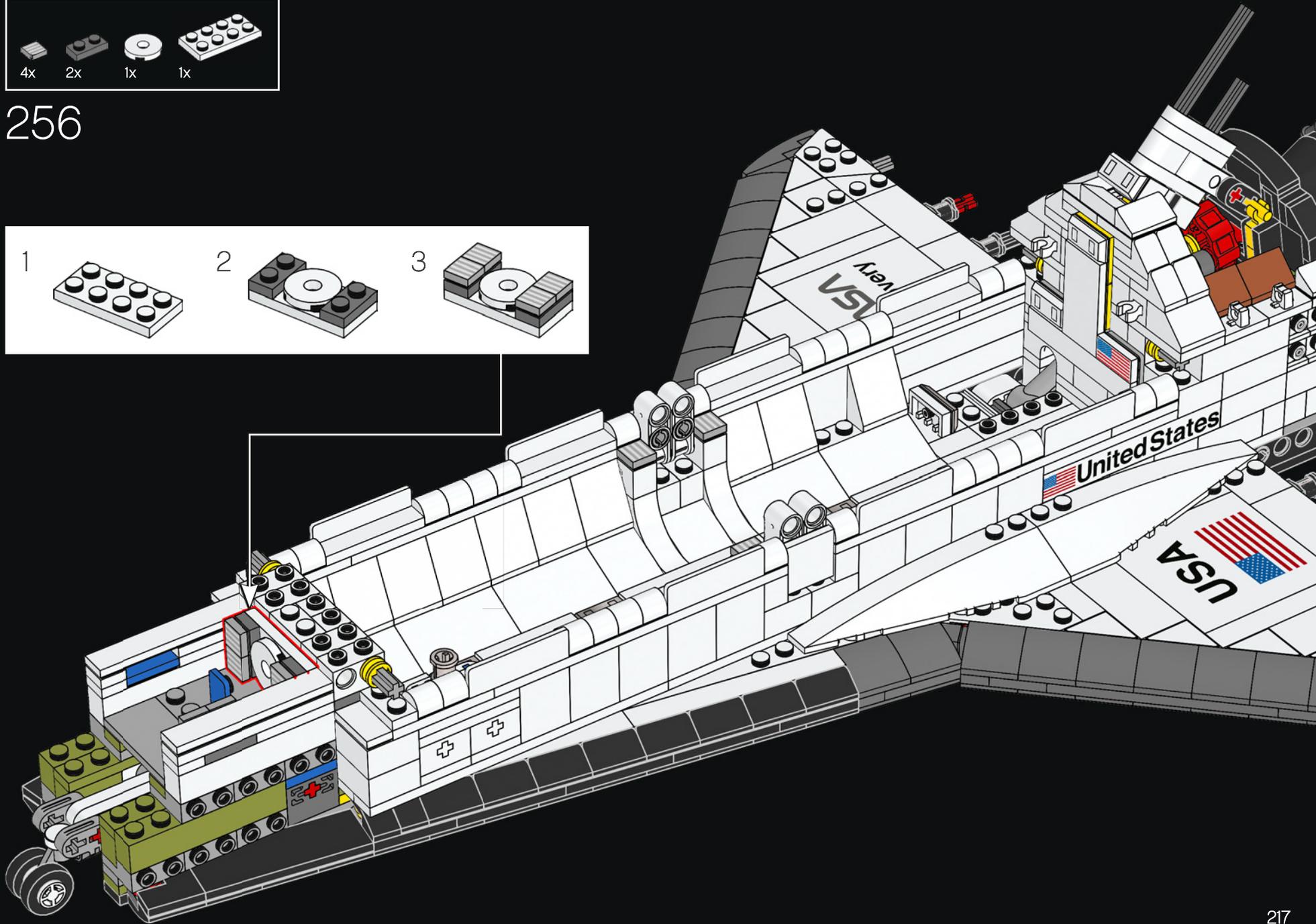
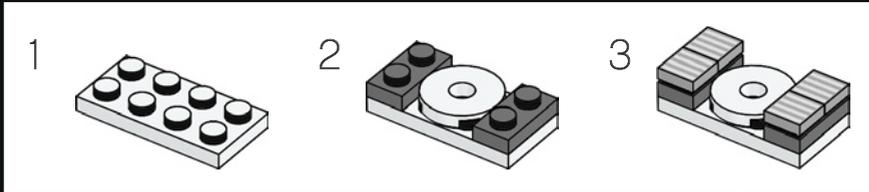


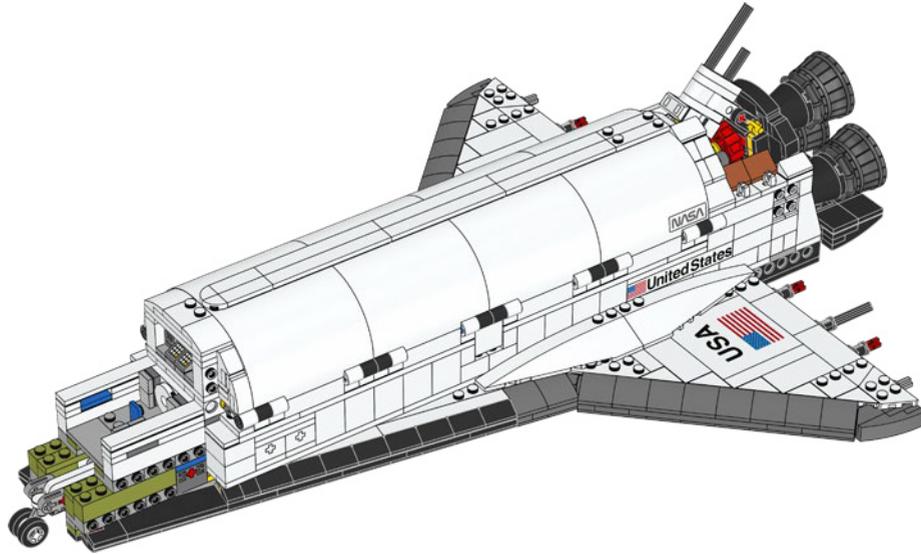
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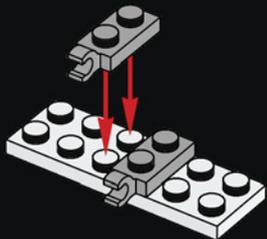


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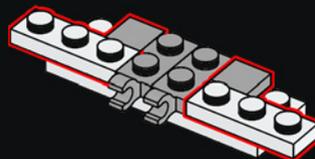




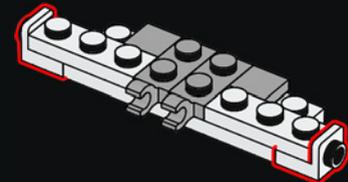
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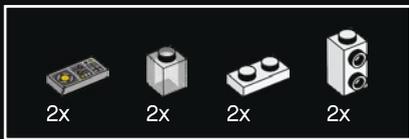
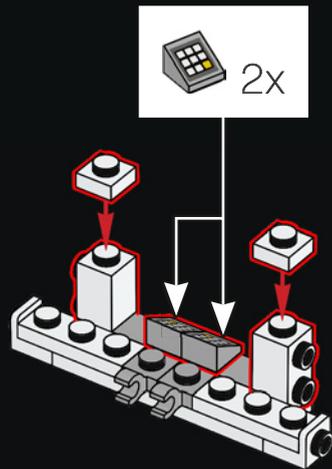


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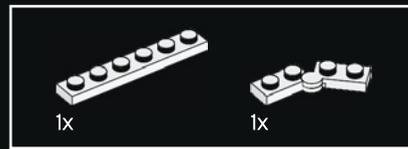
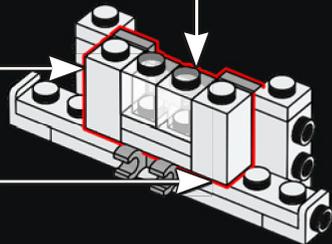
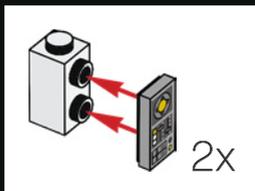
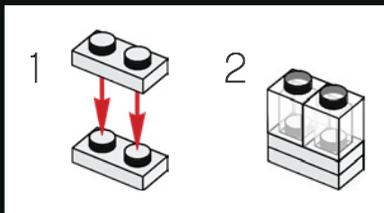




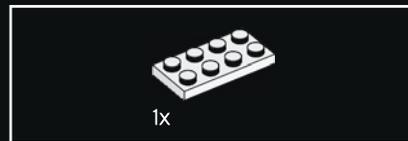
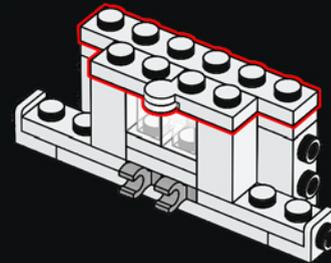
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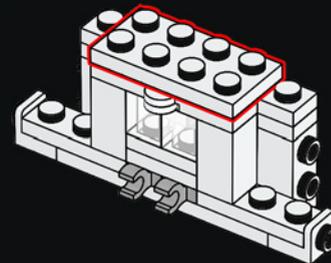
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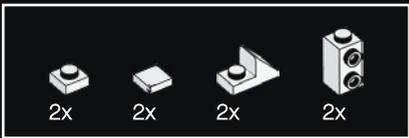
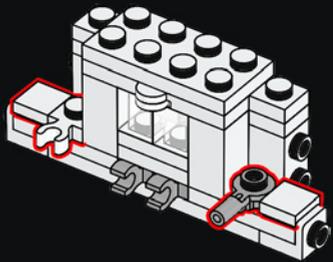


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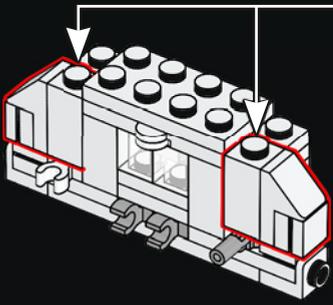
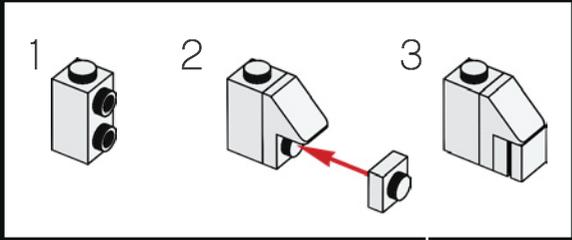




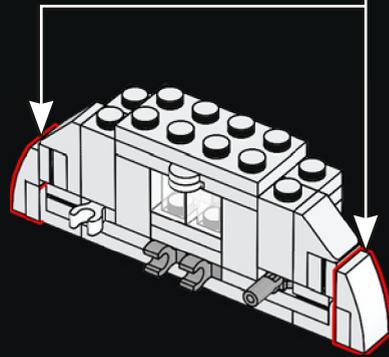
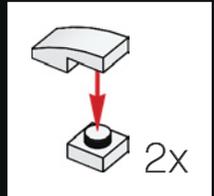
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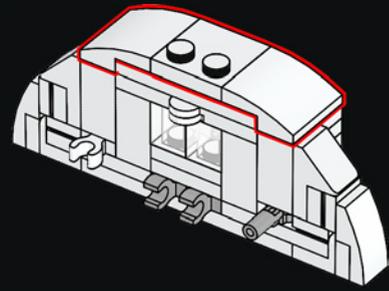
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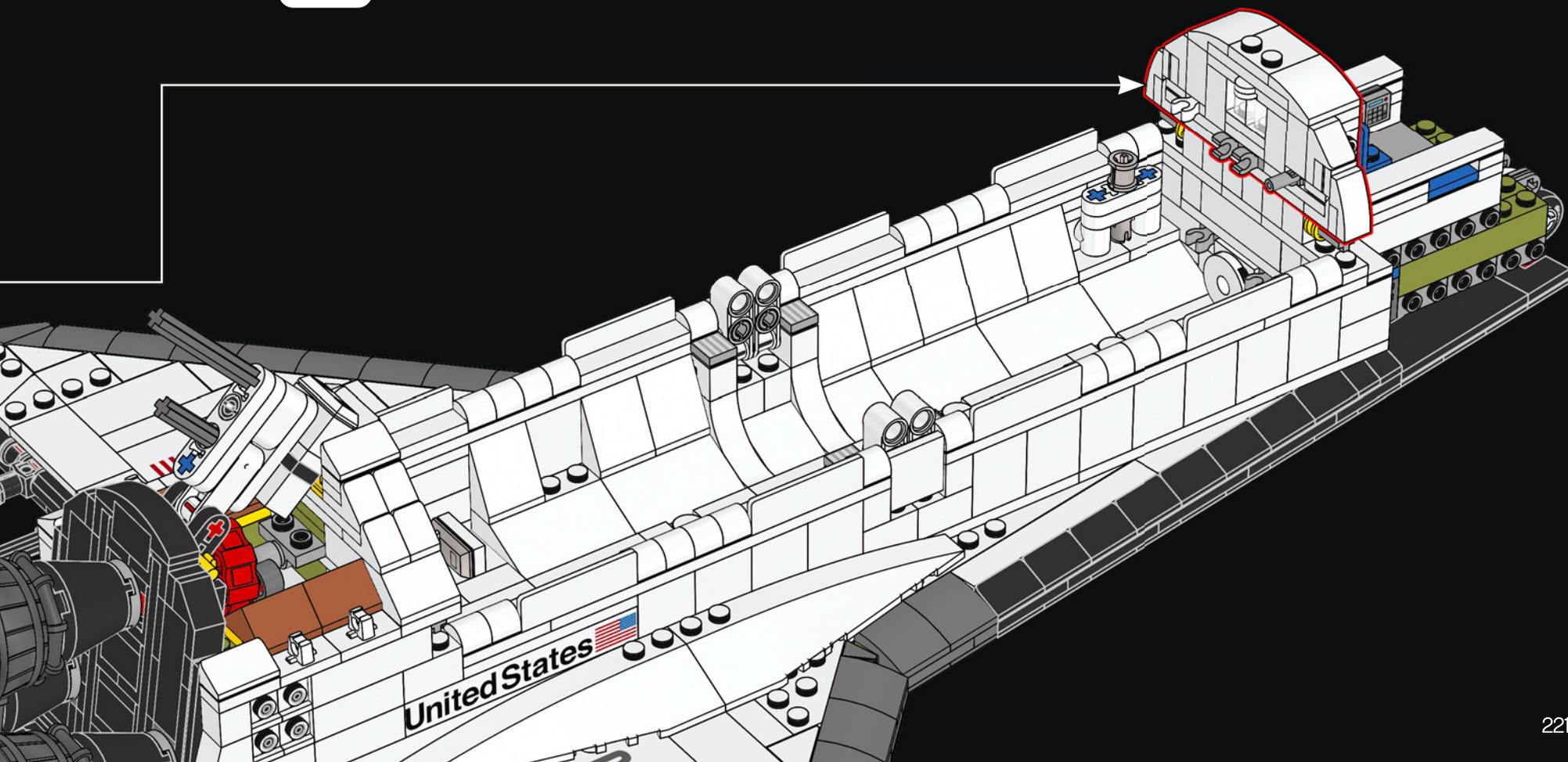


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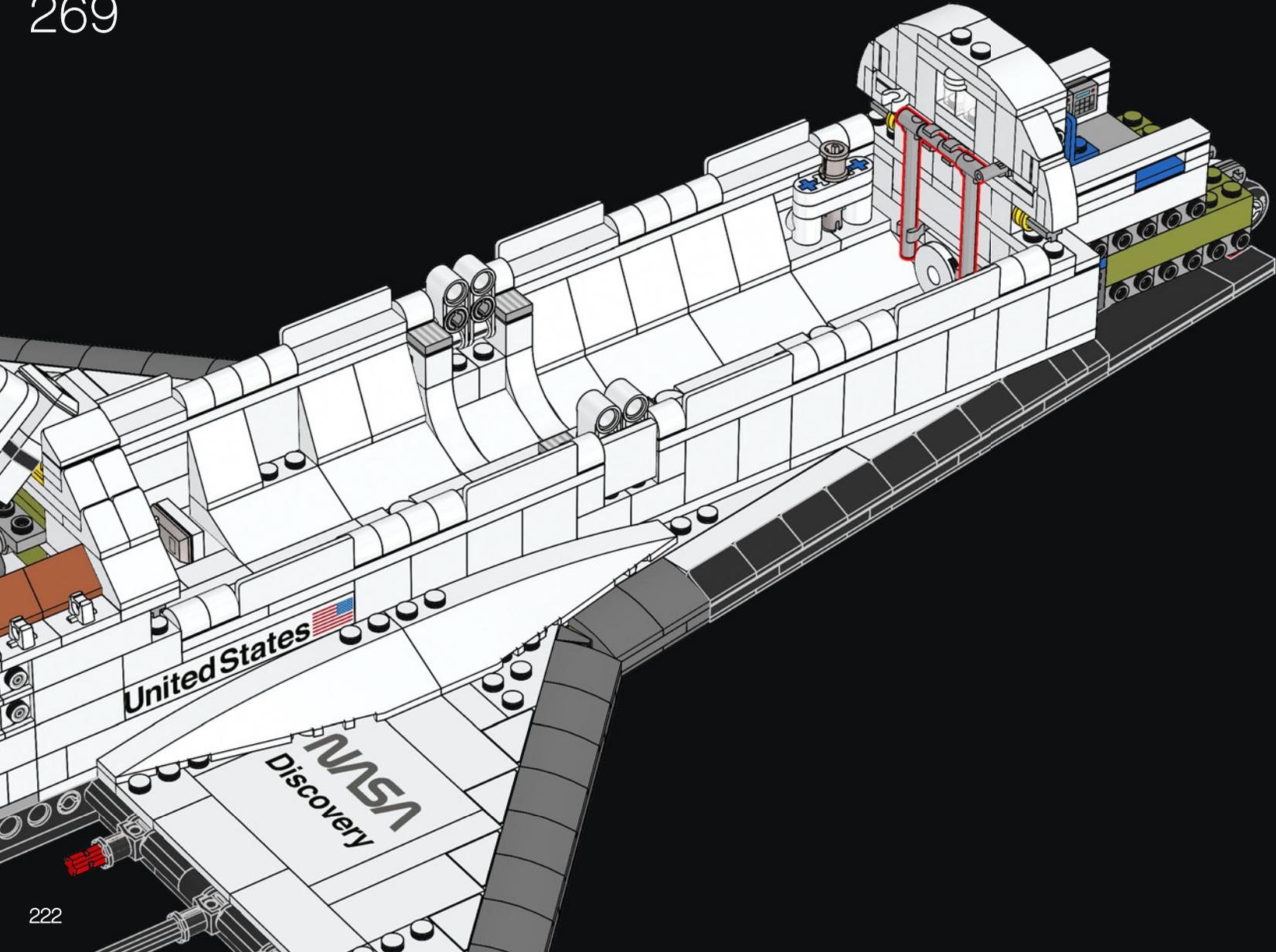
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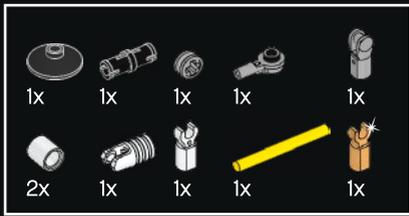




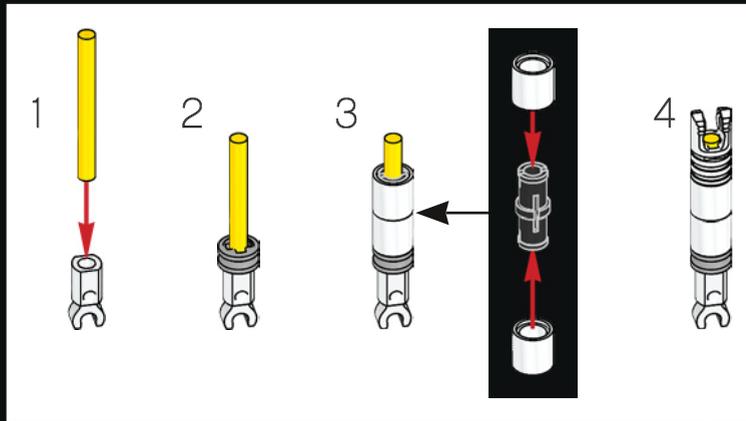
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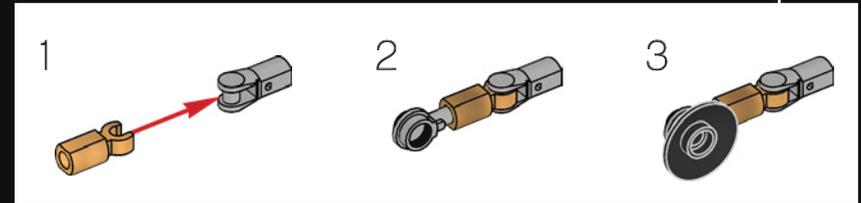
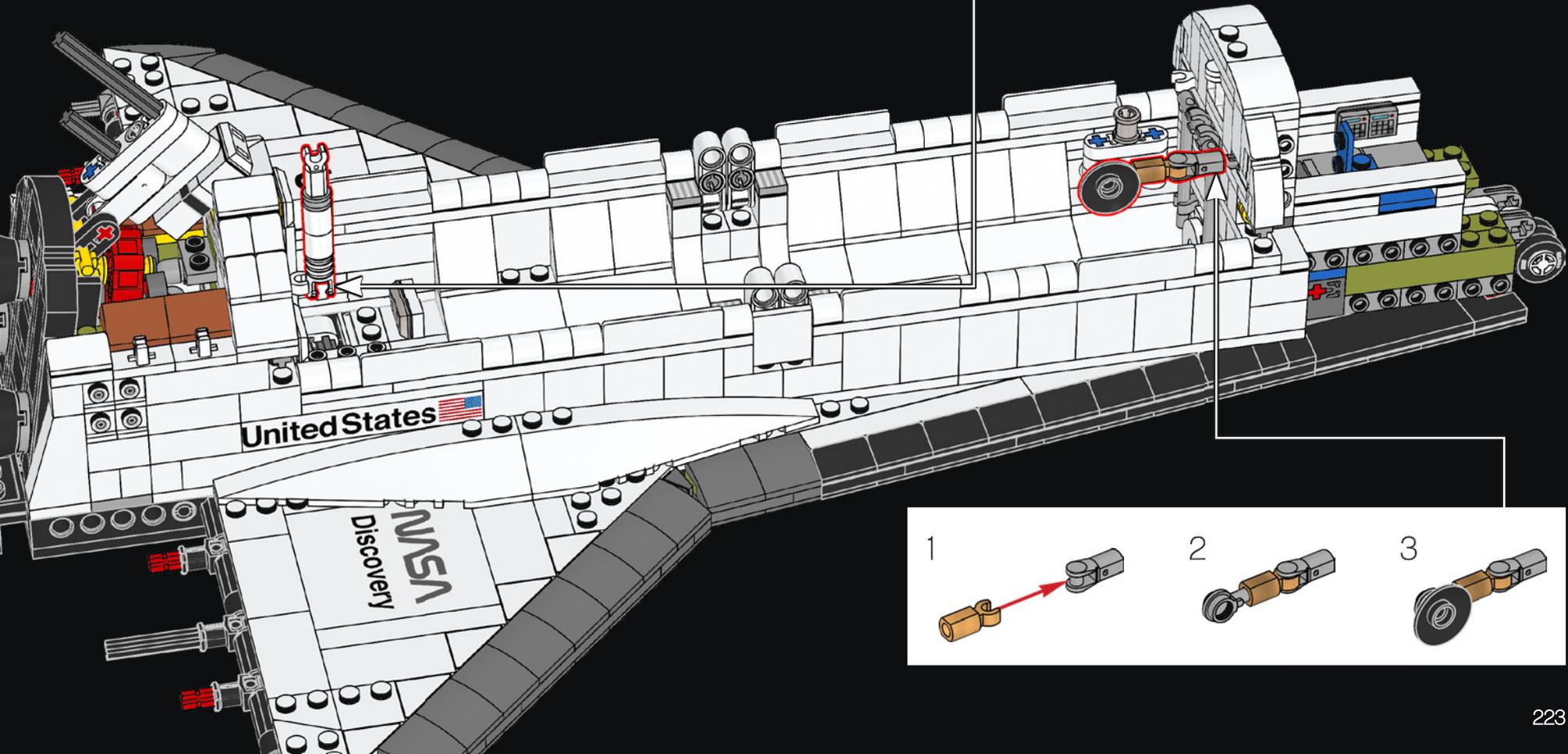


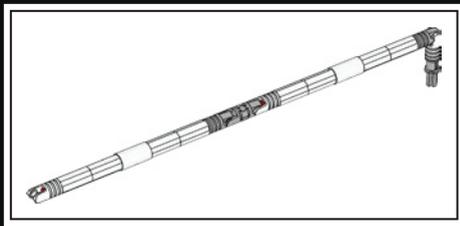
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SCHON GEWUSST?

Die Ku-Band-Antenne wird im Orbit benutzt und ermöglicht der Besatzung die Kommunikation mit dem Bodenkontrollzentrum.

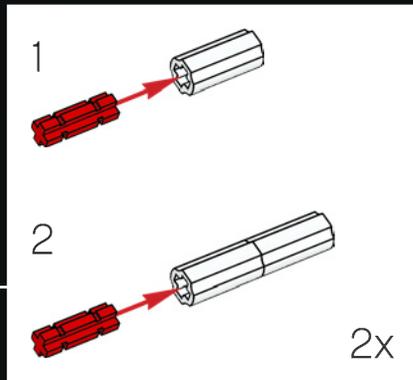
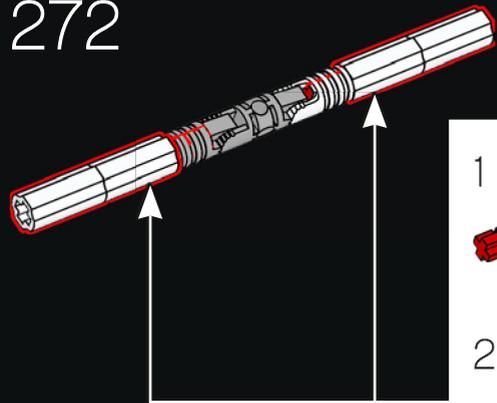




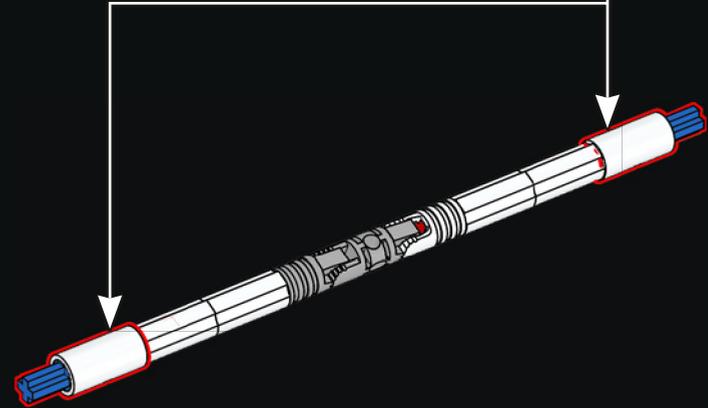
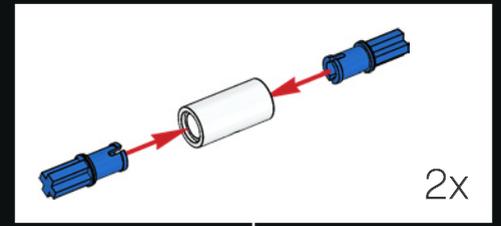
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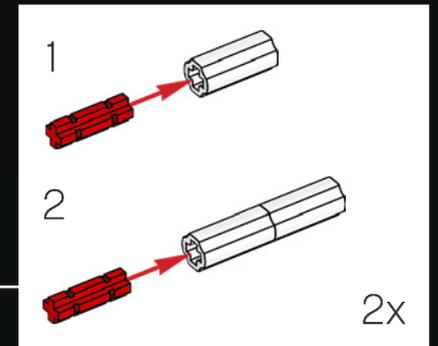
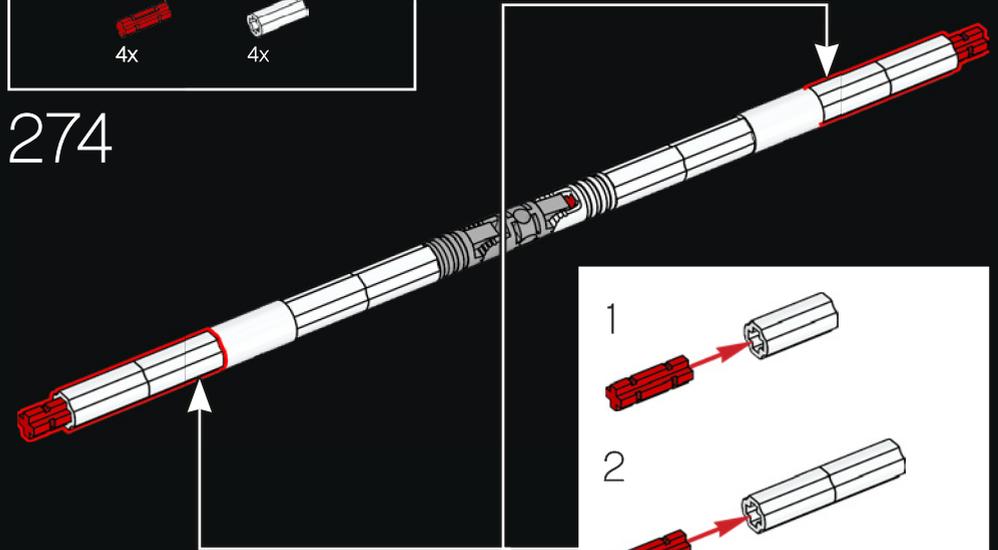
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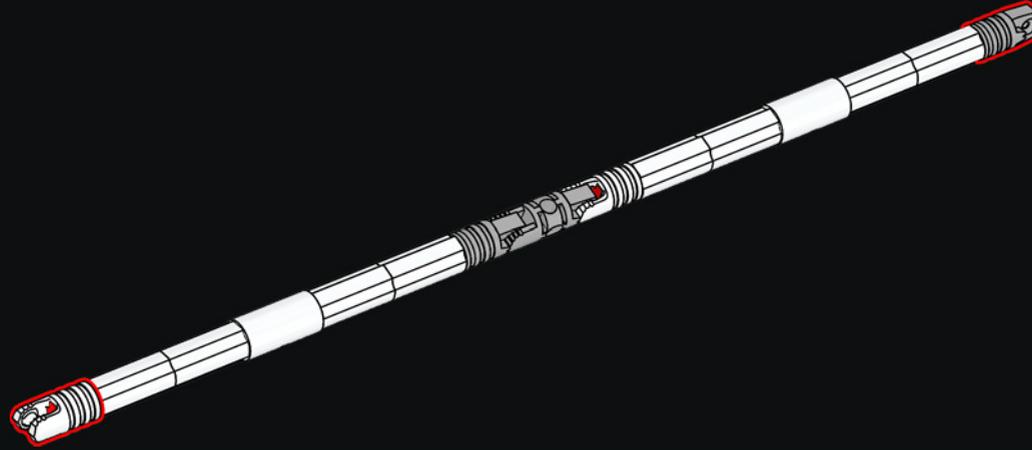


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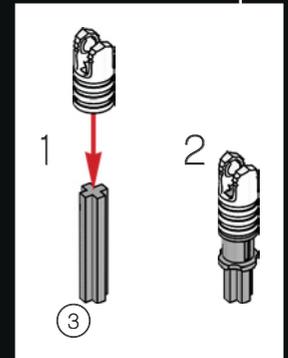
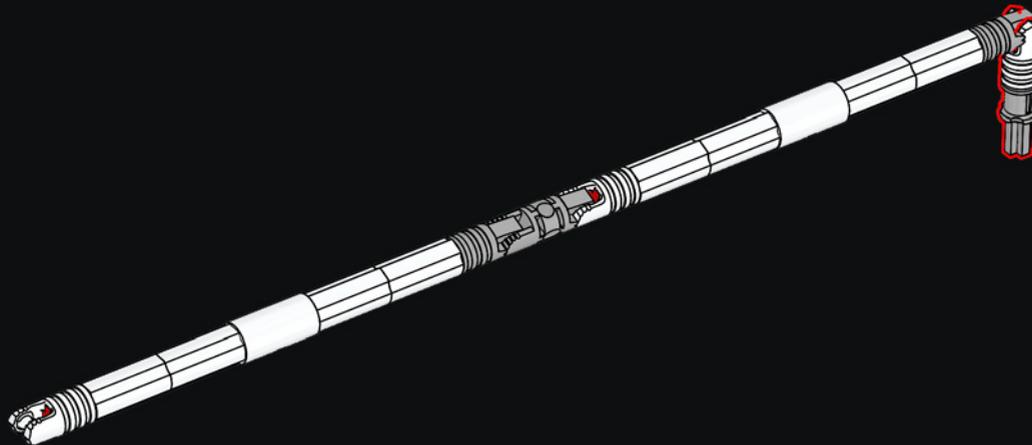




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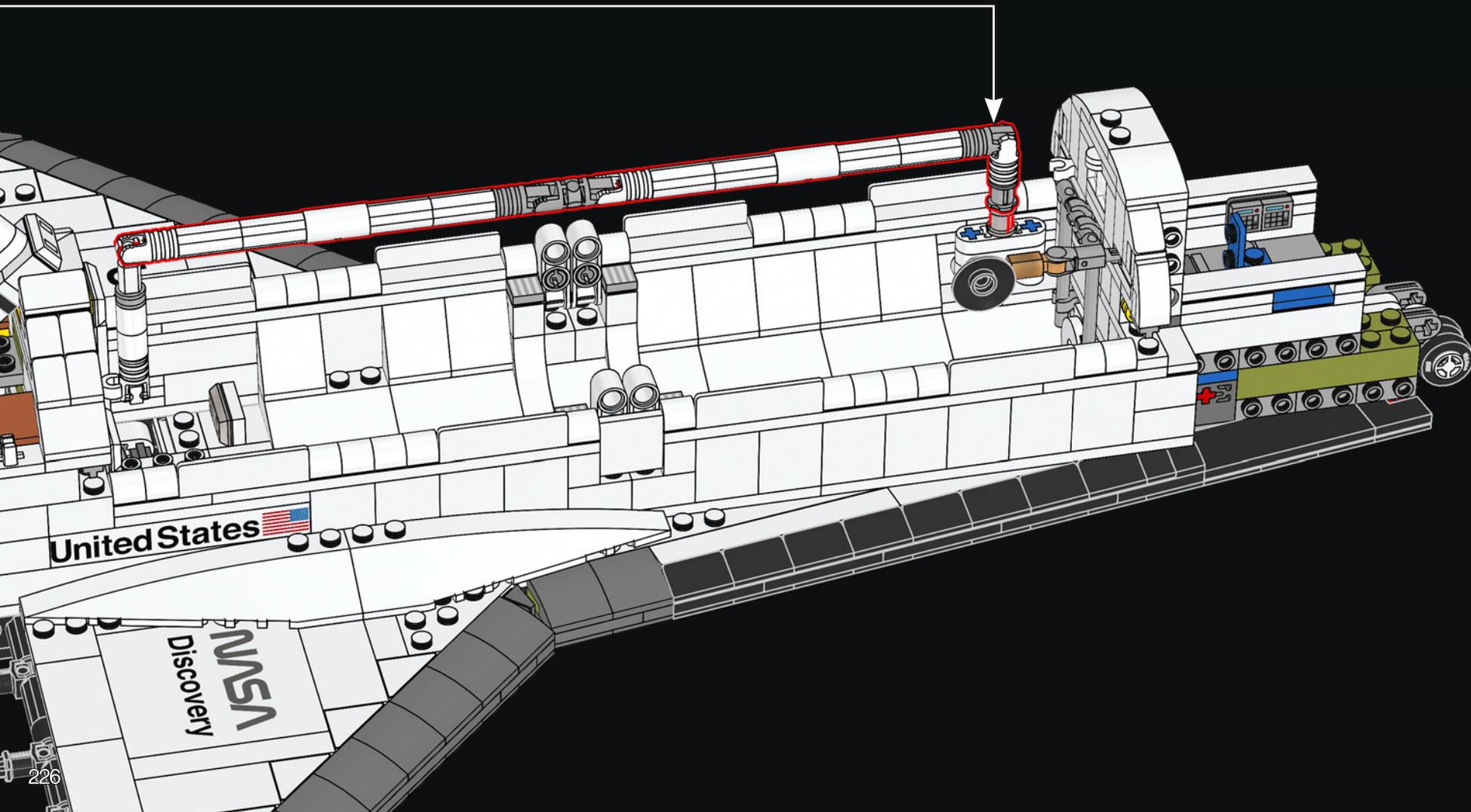
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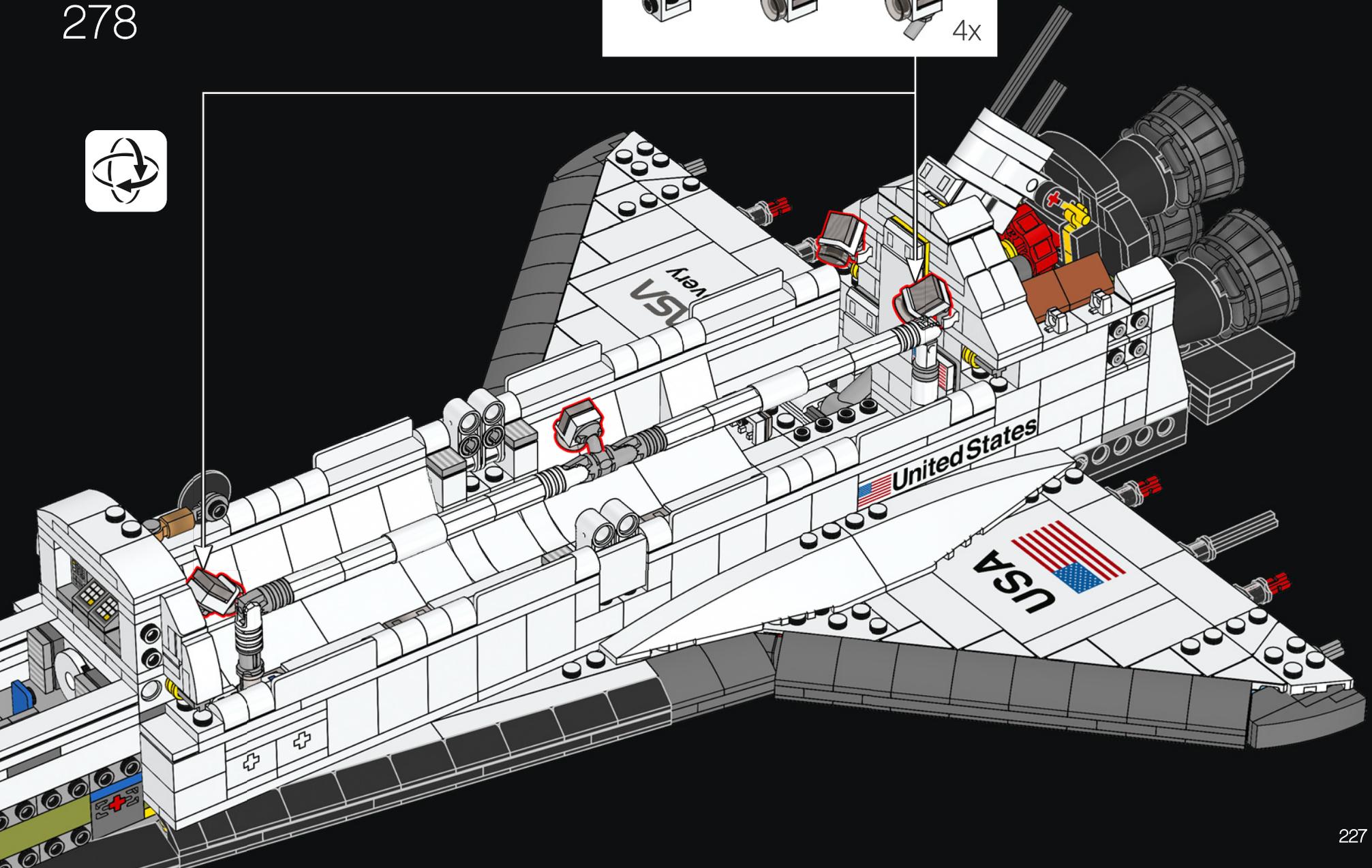
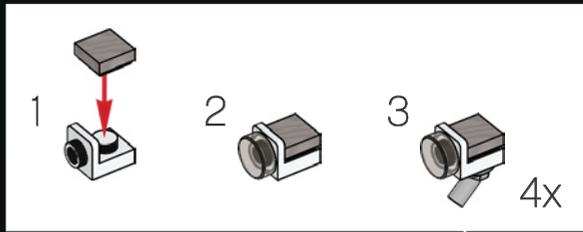
Das Remote Manipulator System (RMS) des Spaceshuttles wurde von den Astronauten an Bord verwendet, um die Fracht aus der Nutzlastbuchse ins Weltall zu bringen und die Astronauten bei ihren Weltraumspaziergängen zu manövrieren.

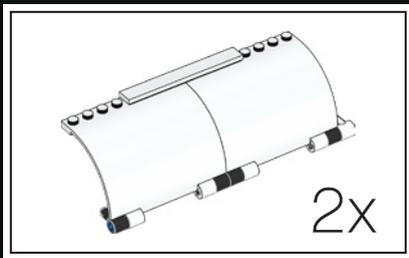
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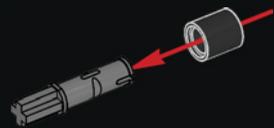


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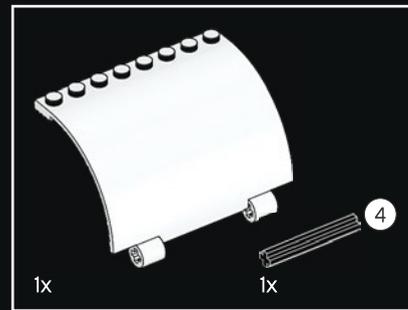




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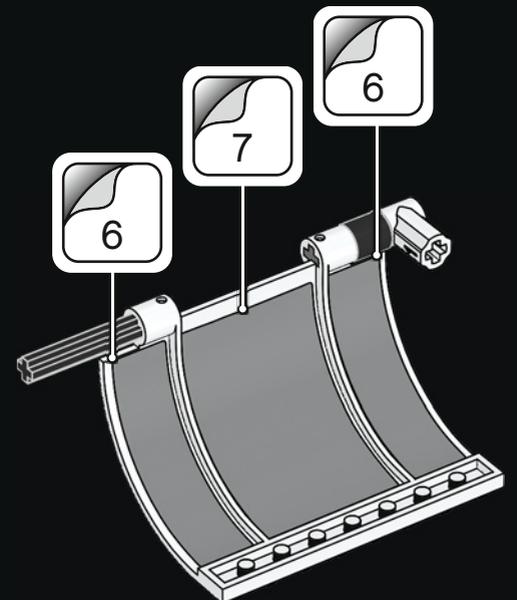
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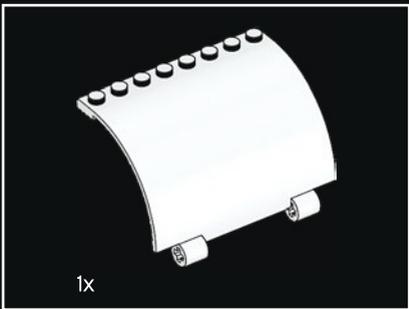
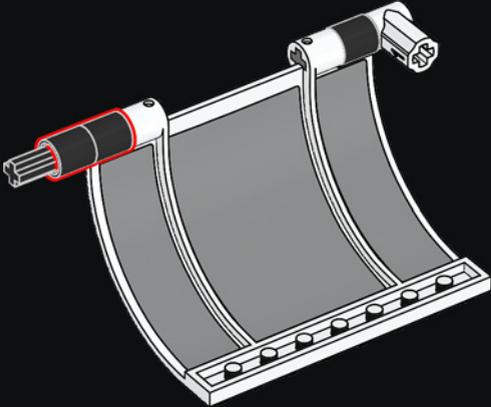


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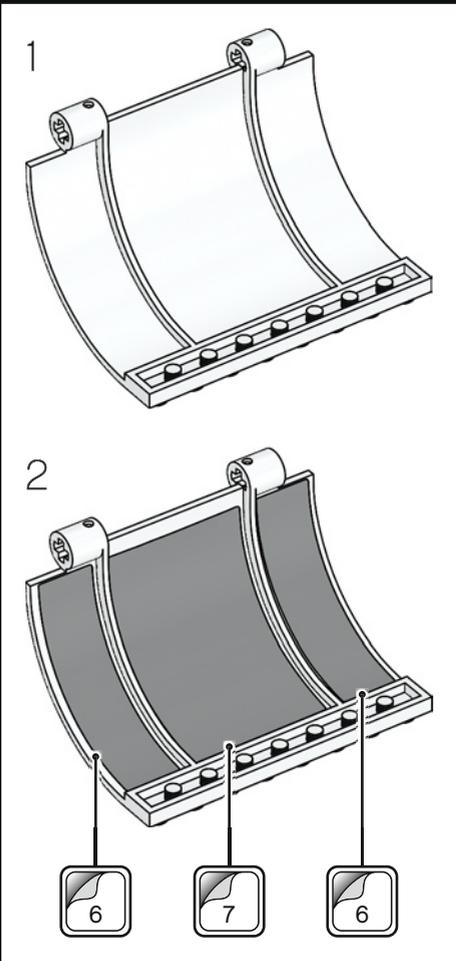
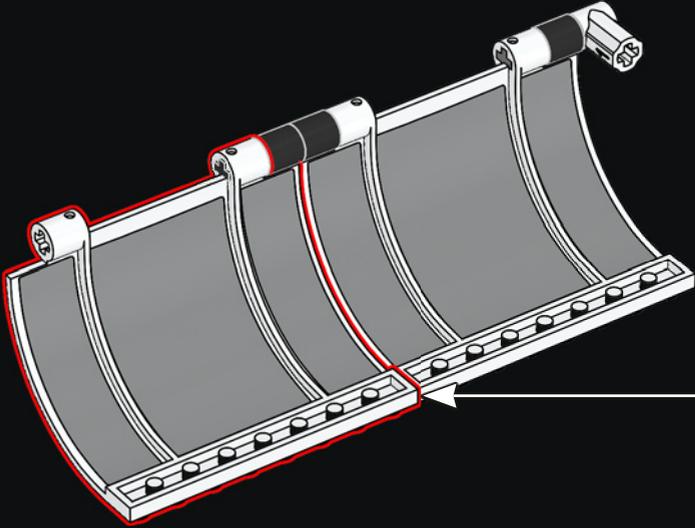




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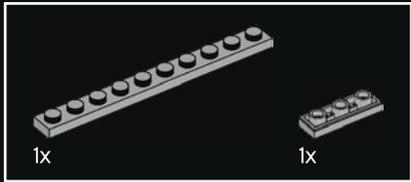
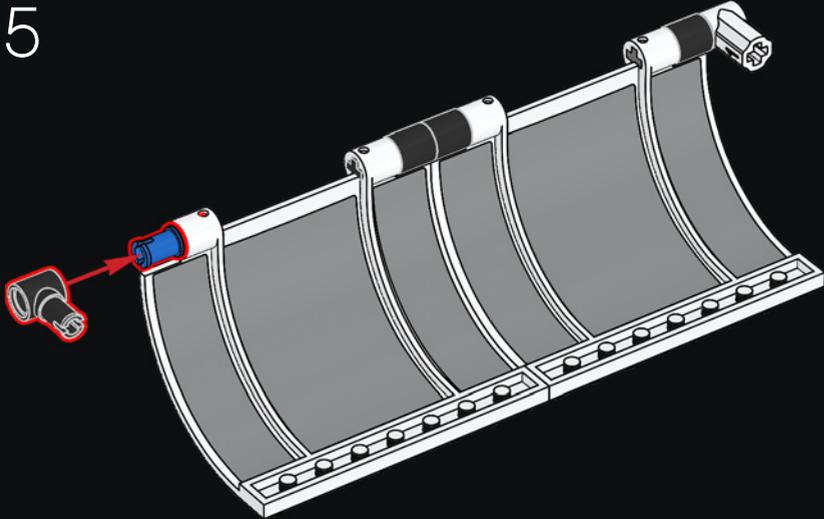


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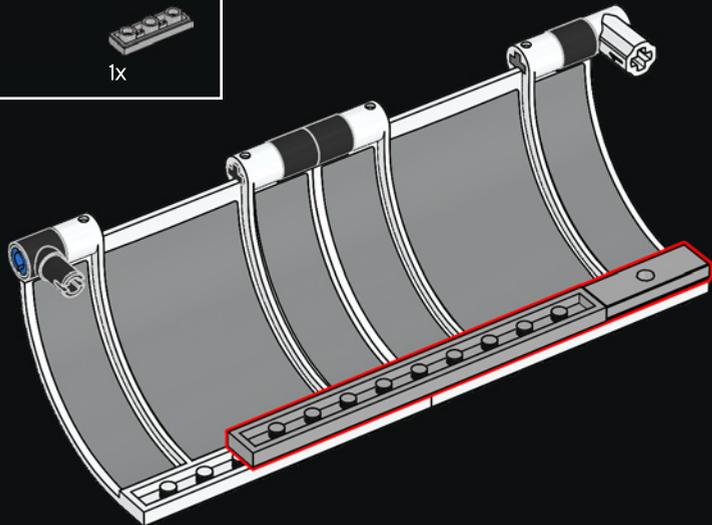




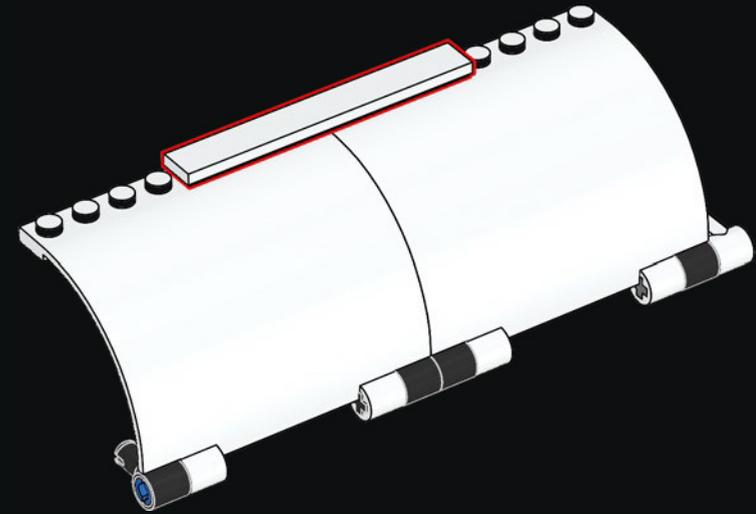
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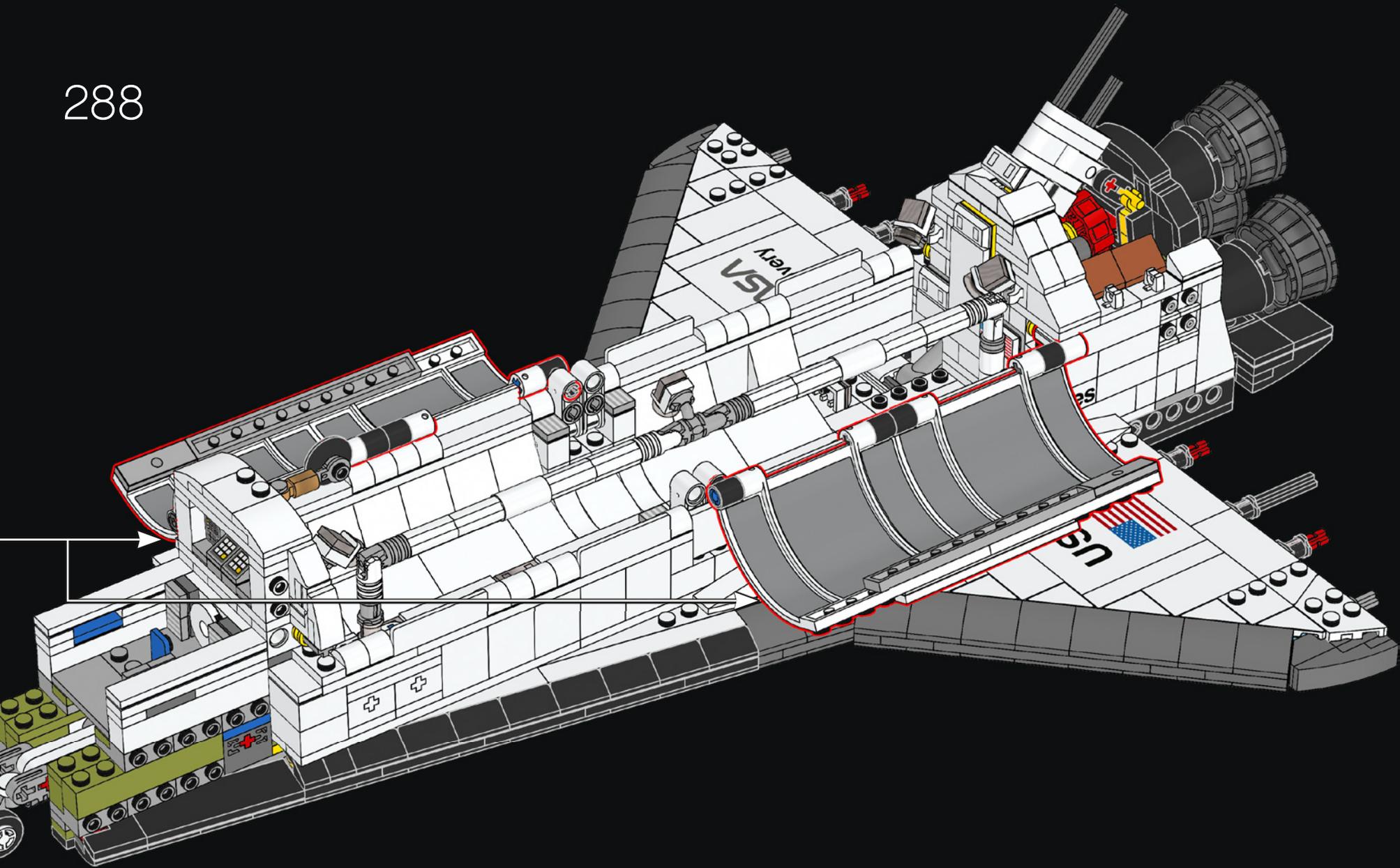
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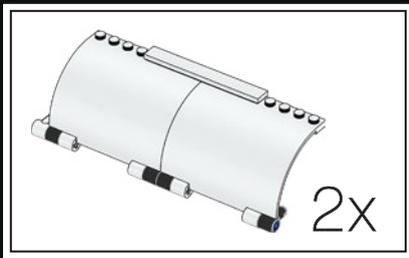


287



2x





2x



1x

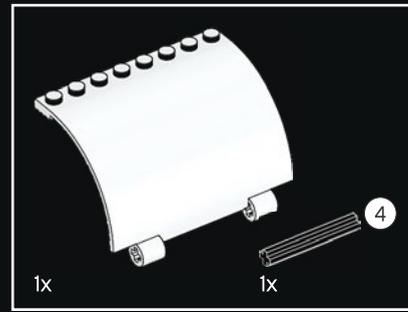
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289



1x

290



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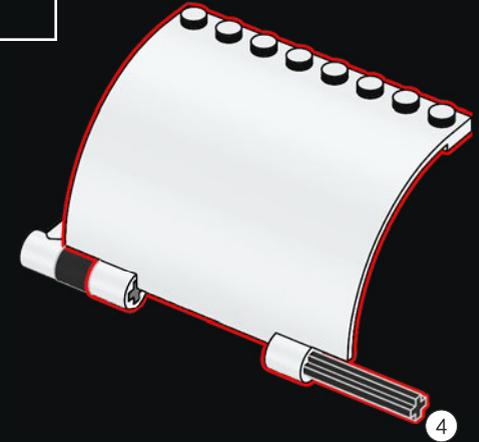
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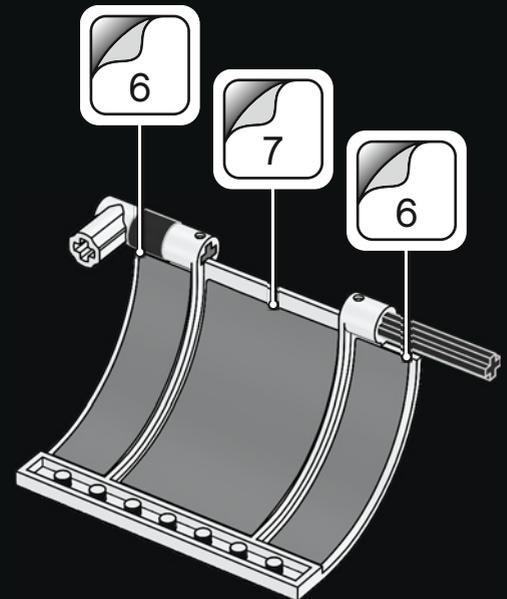
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4

292



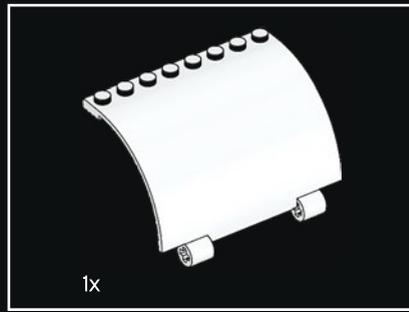
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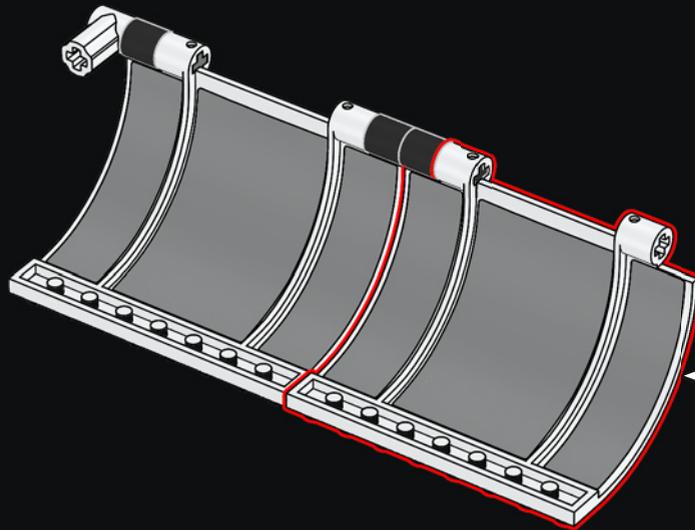
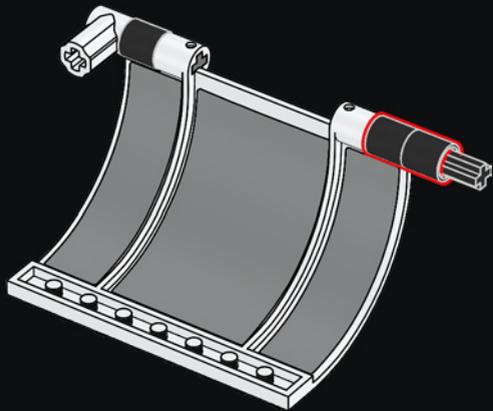
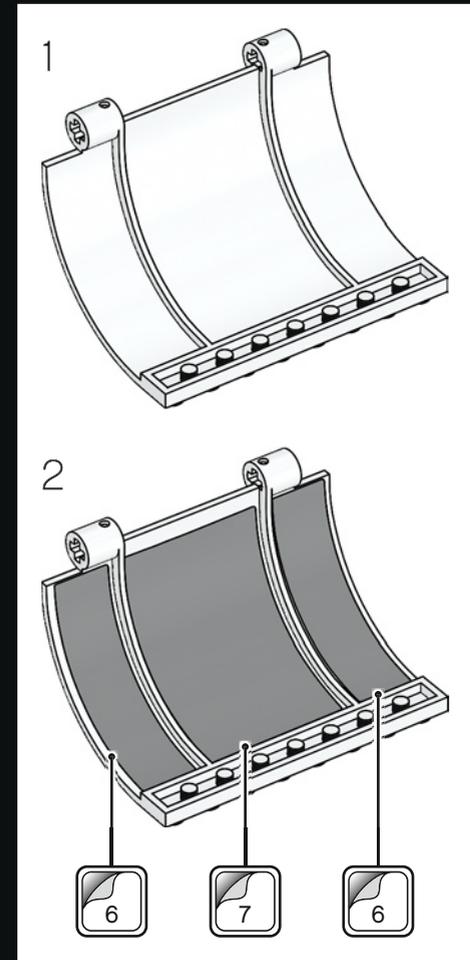
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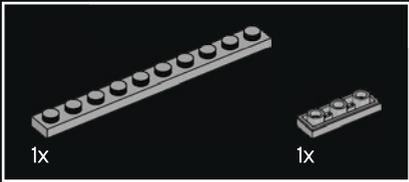
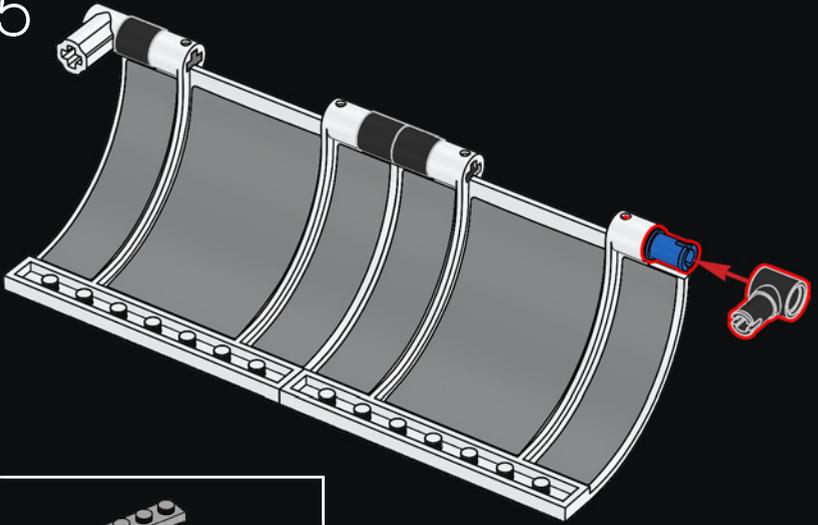


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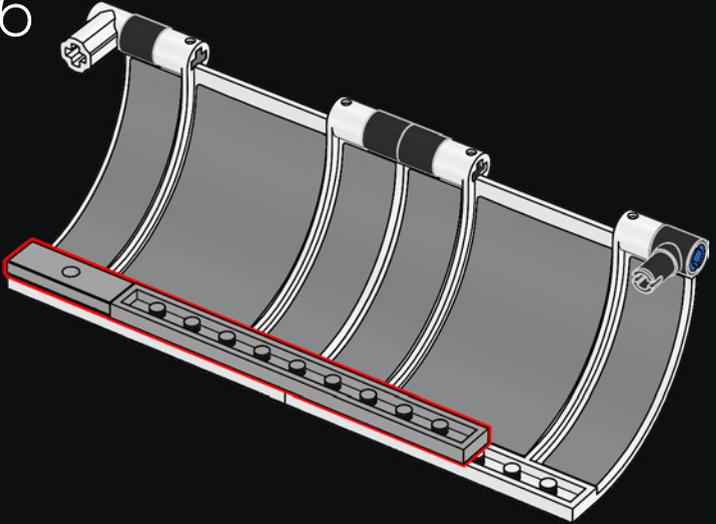




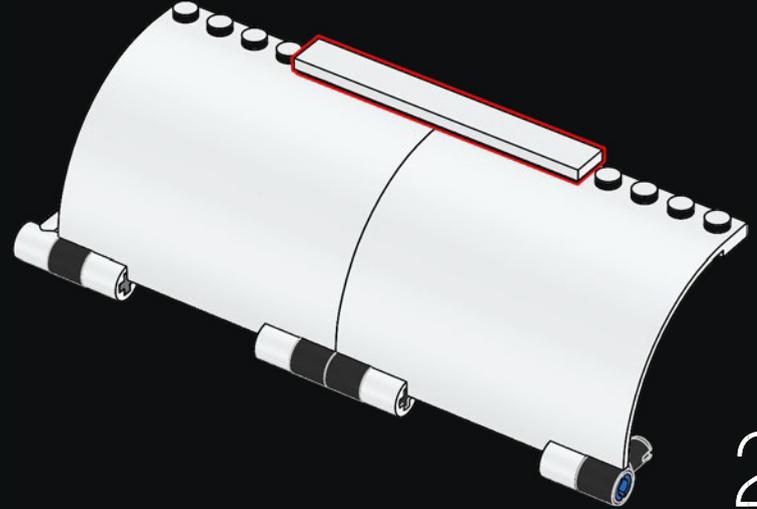
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296



297

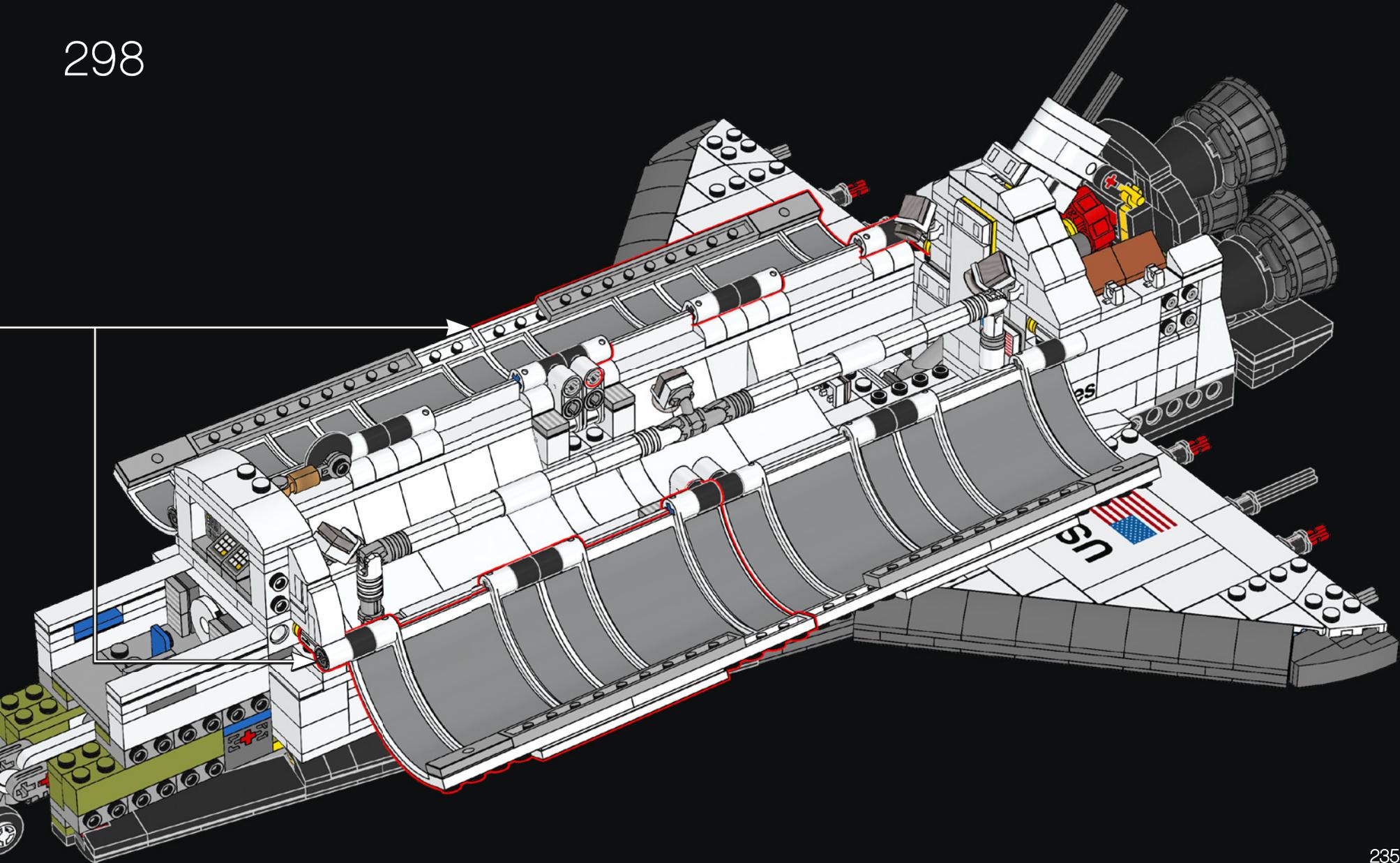


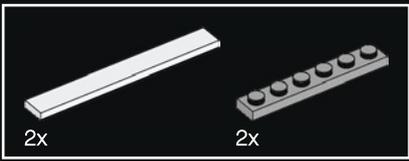
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SCHON GEWUSST?

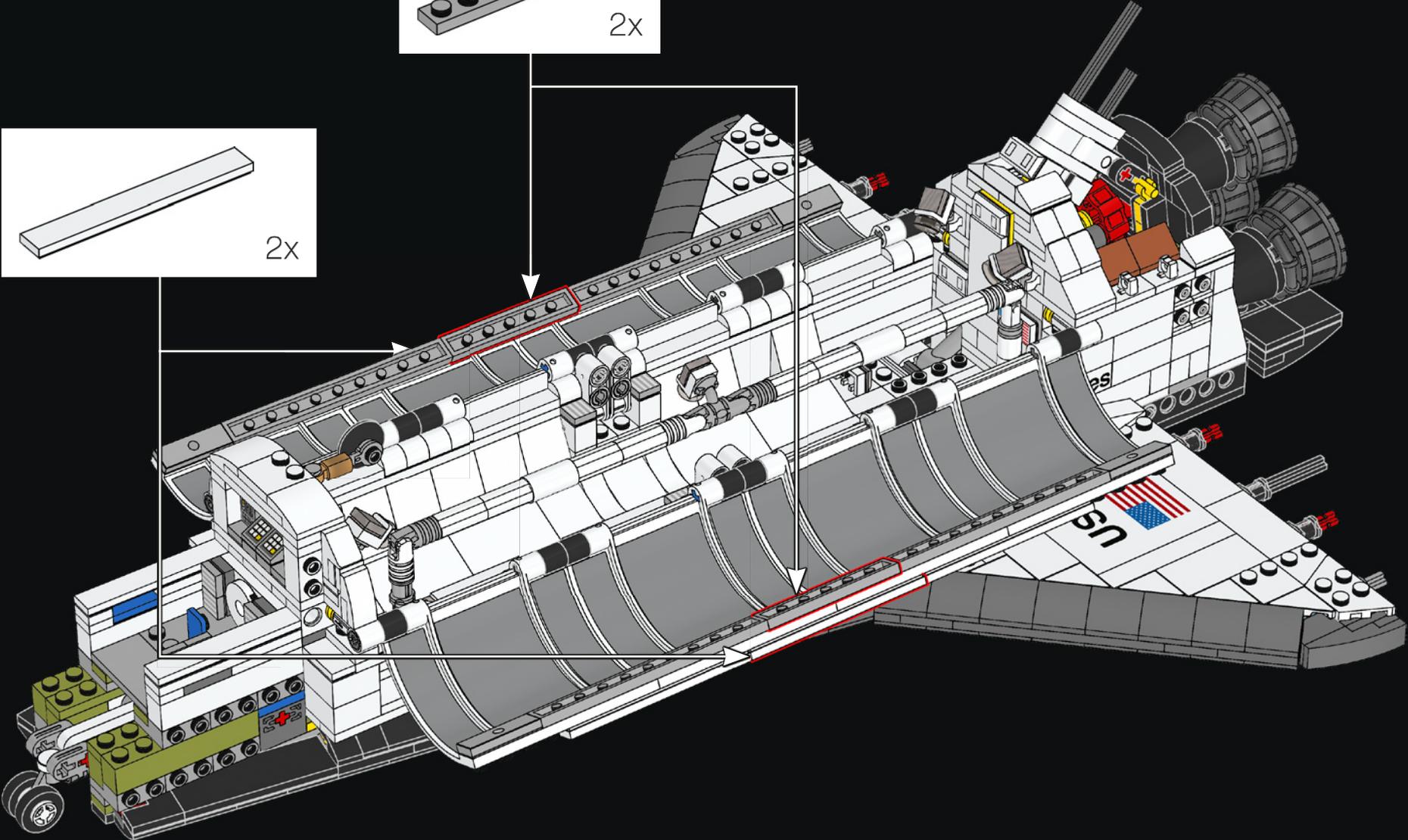
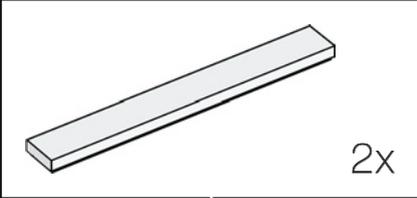
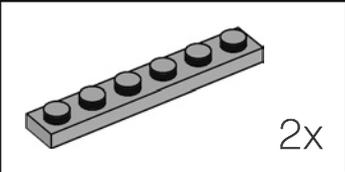
Wenn das Spaceshuttle seine Umlaufbahn erreicht hat, bleiben die 18,2 Meter langen Türen der Nutzlastbuchse immer geöffnet, damit die Radiatoren die Raumfähre kühlen können.

298



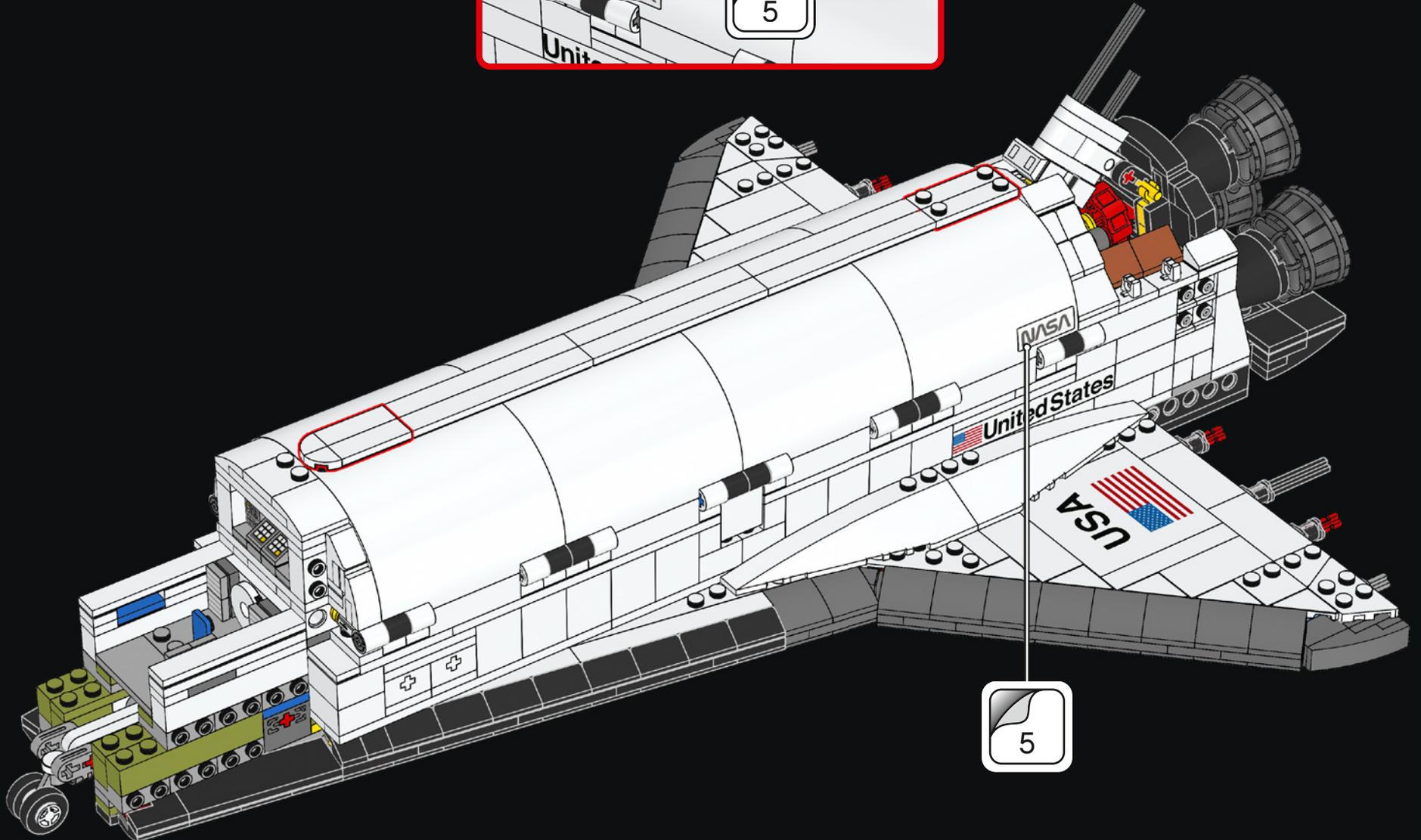
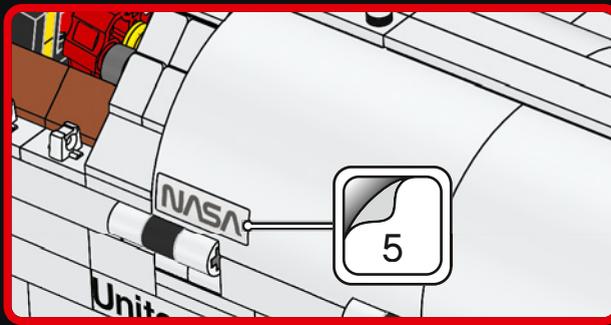


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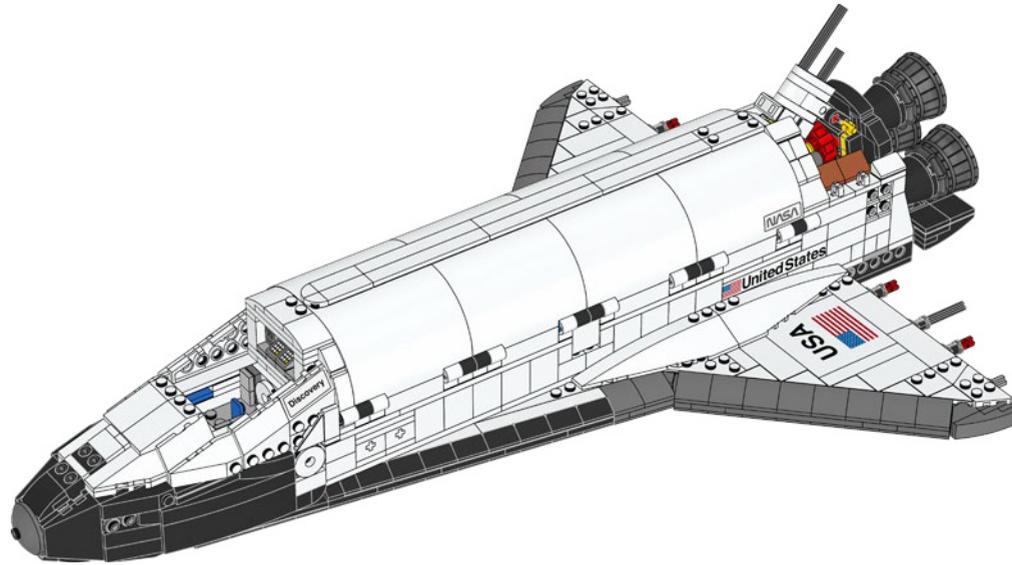


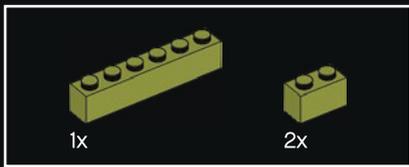


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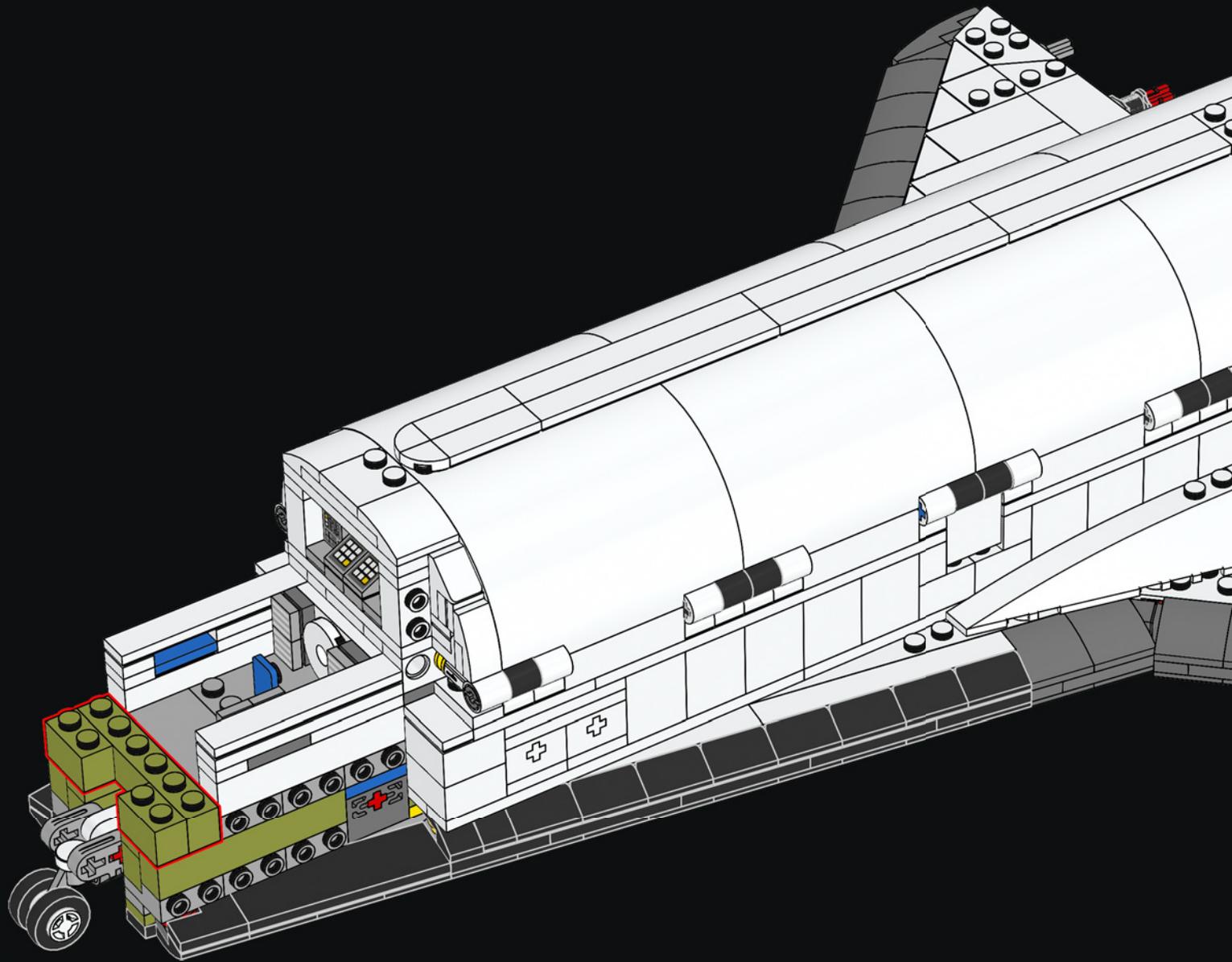


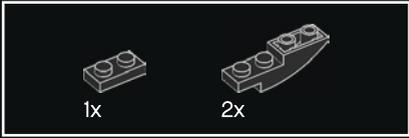
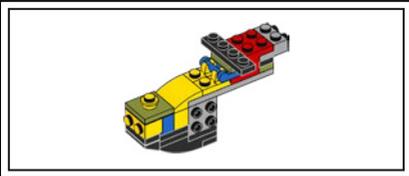
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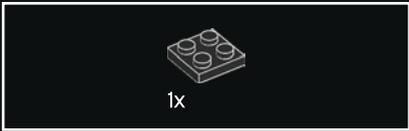
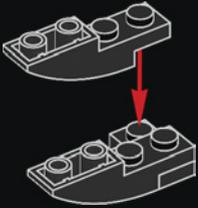


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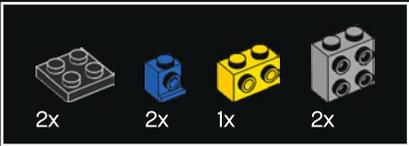
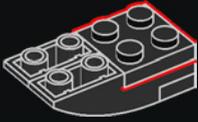




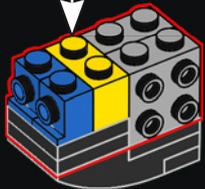
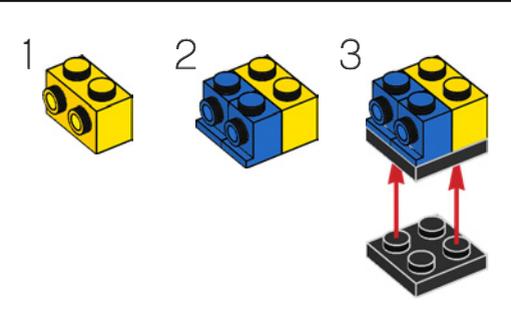
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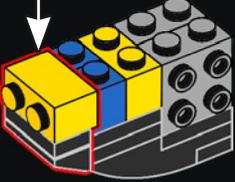
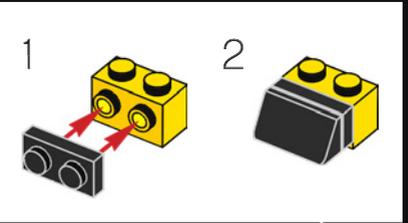
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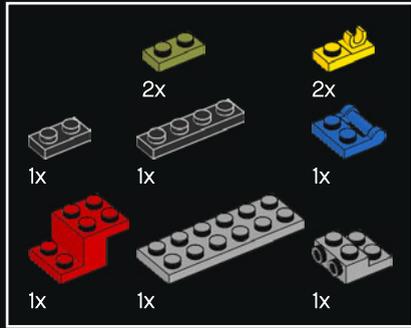


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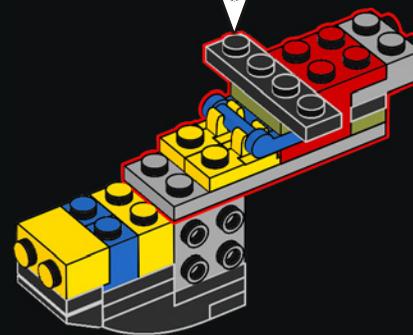
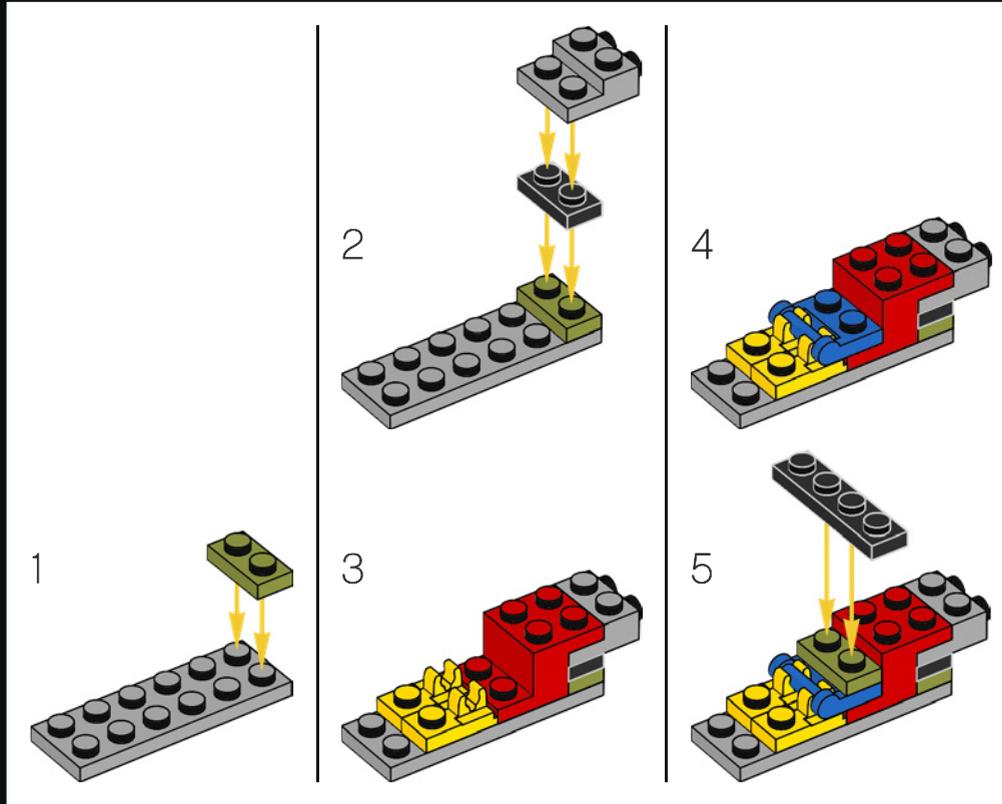


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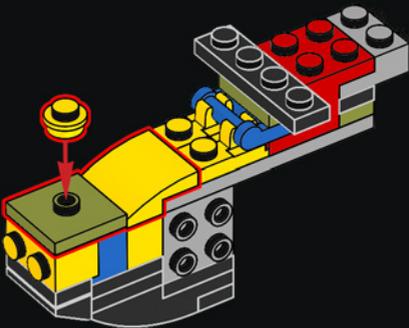


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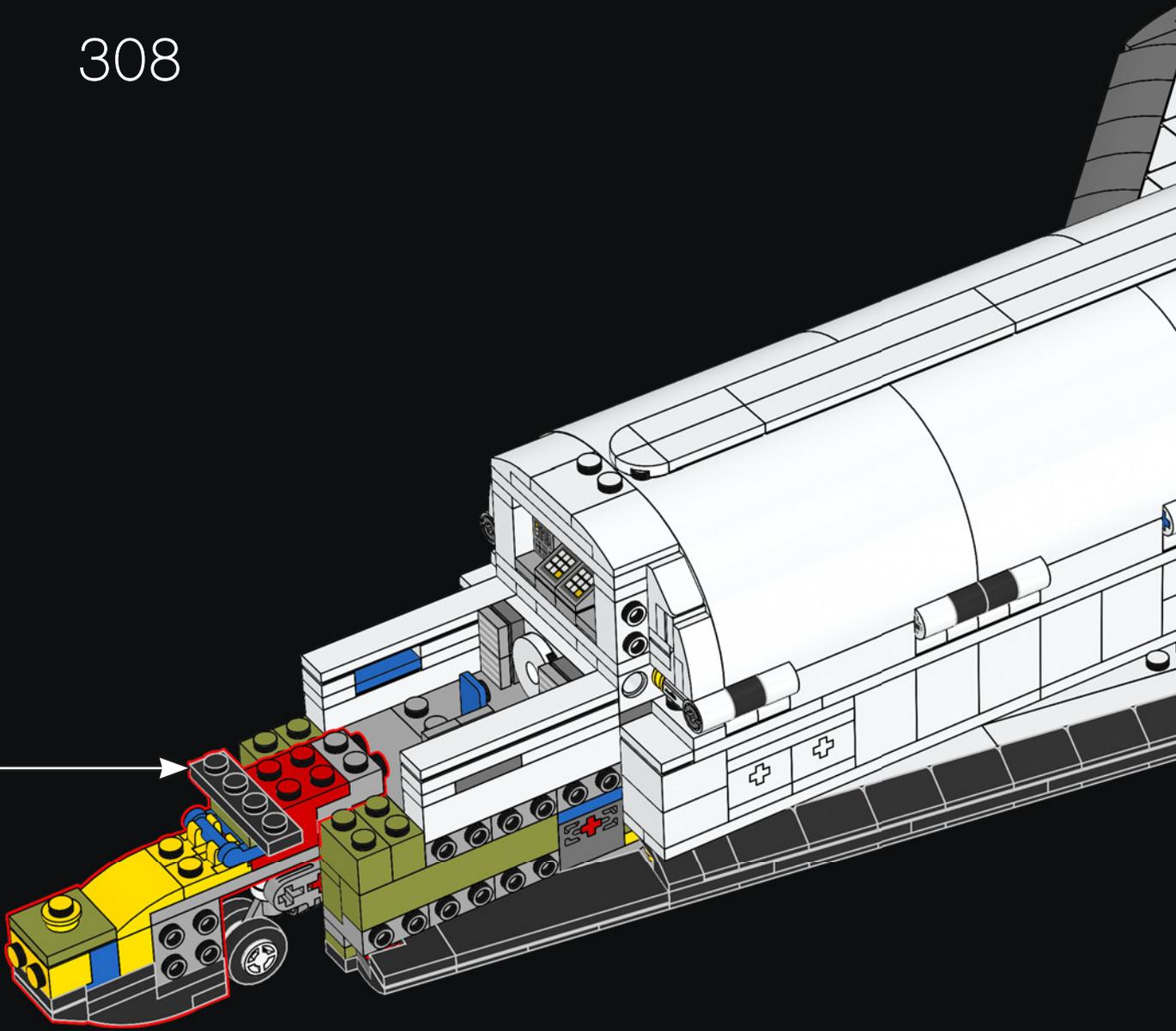


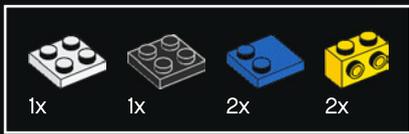


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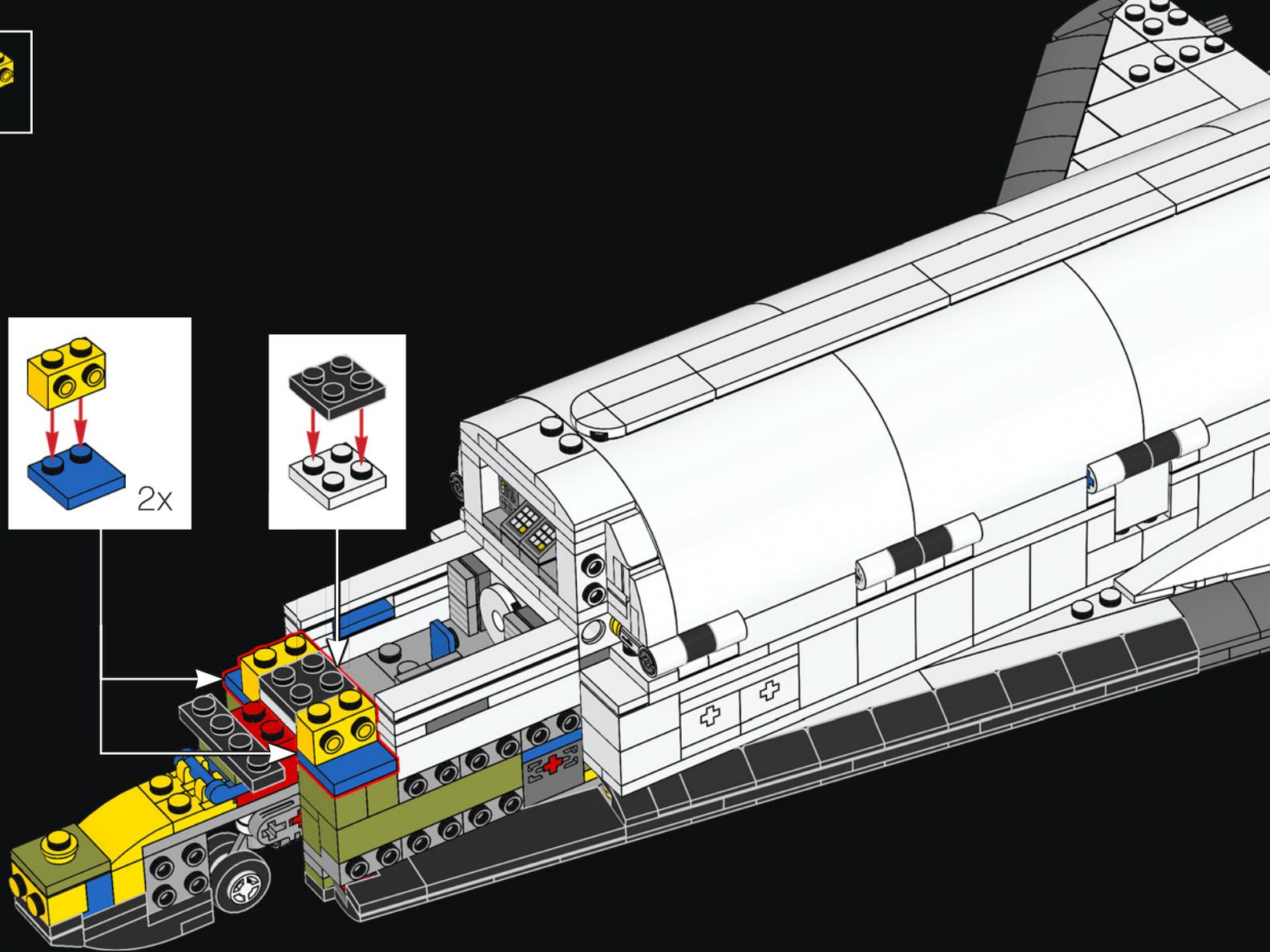
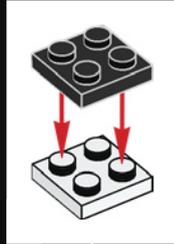
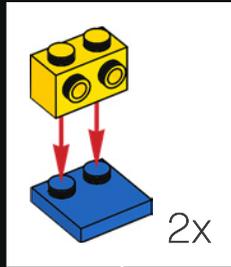


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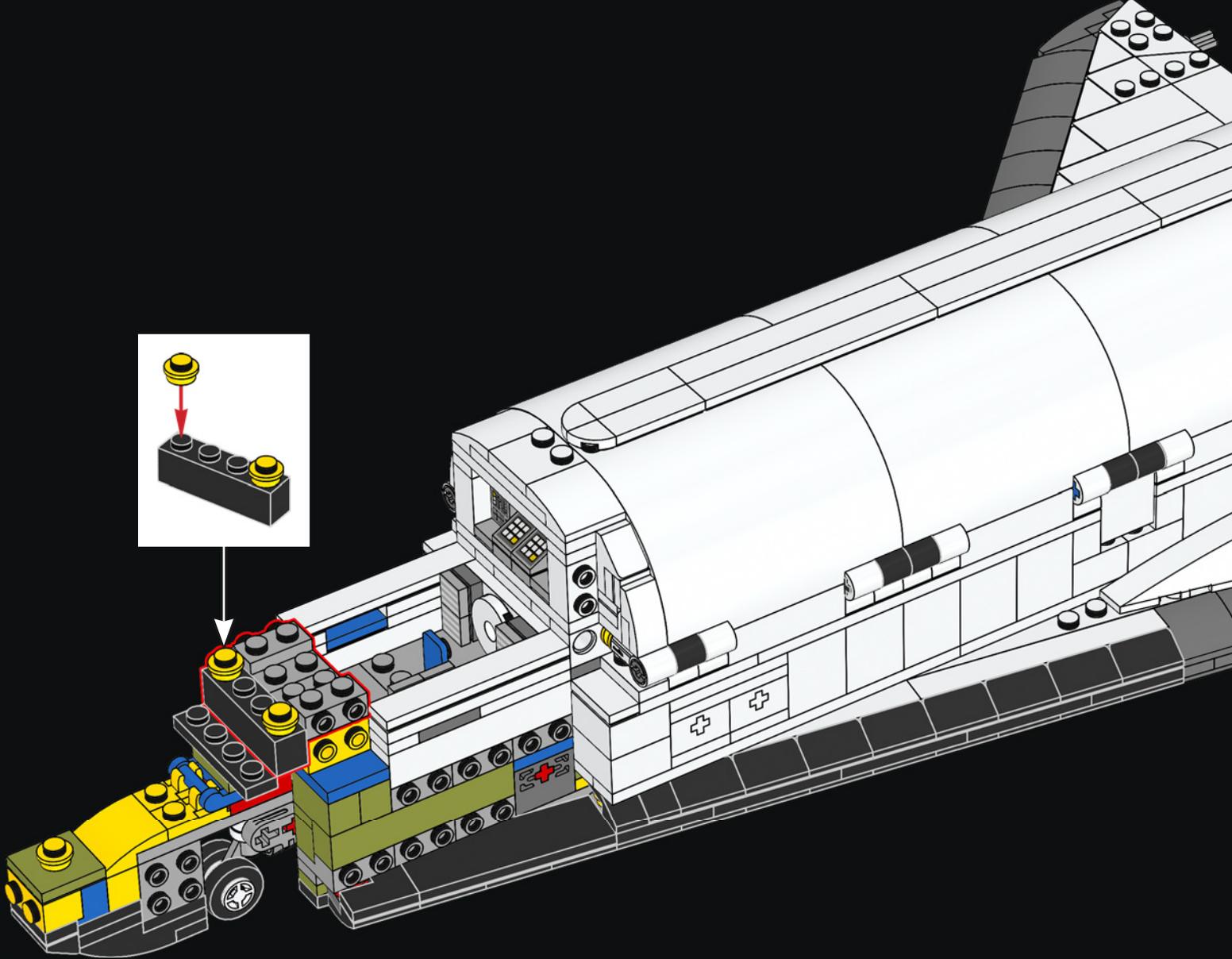
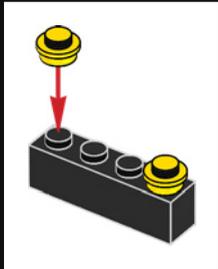


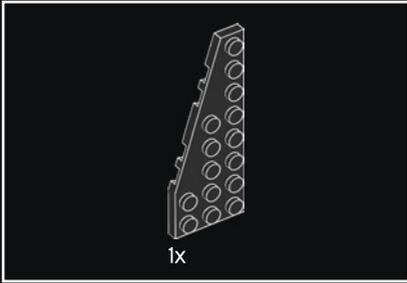
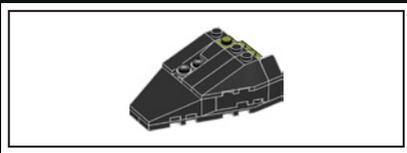
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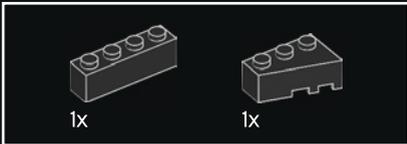
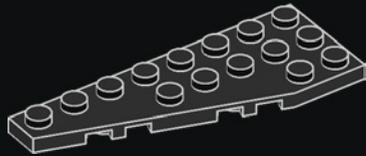


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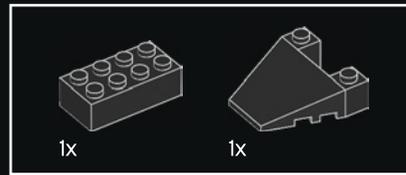
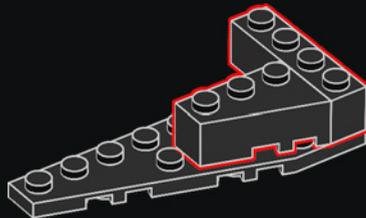




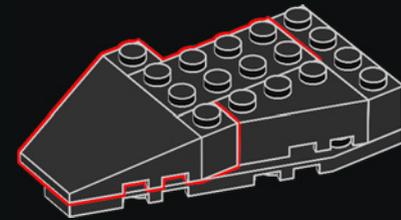
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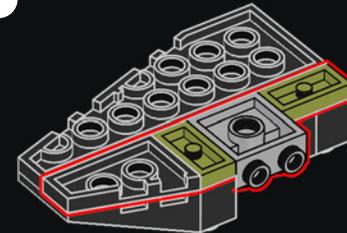
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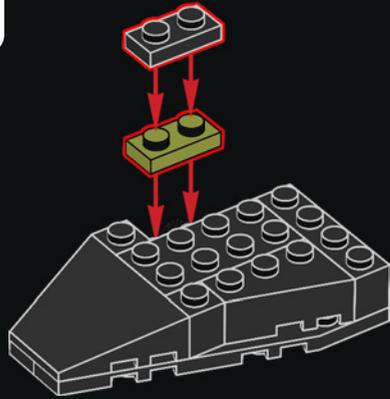


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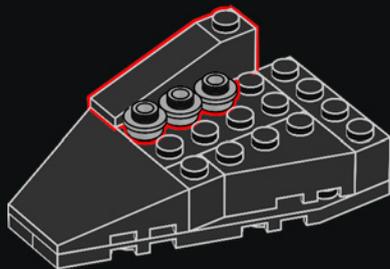




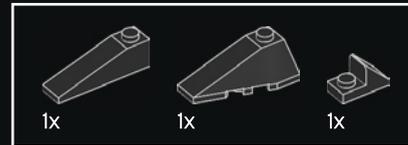
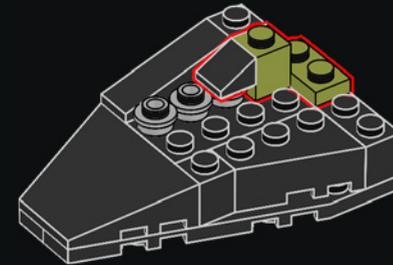
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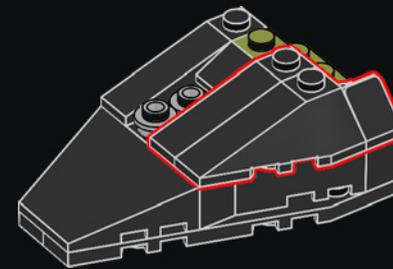
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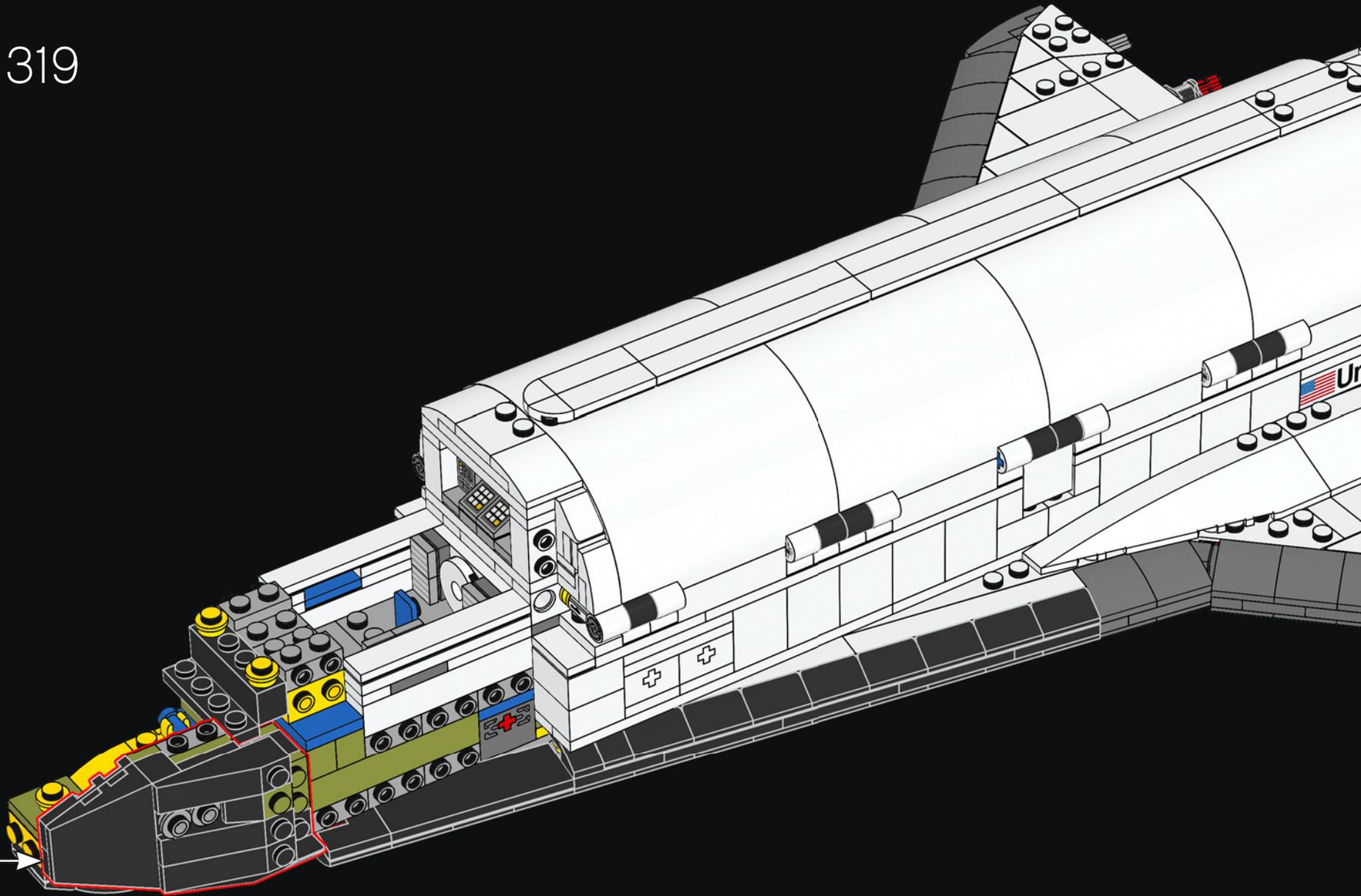
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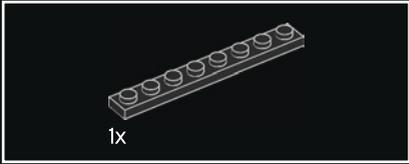
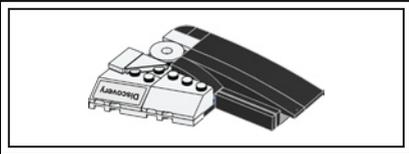


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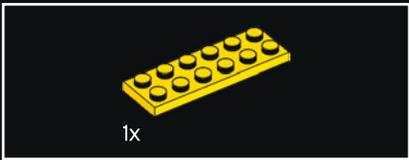
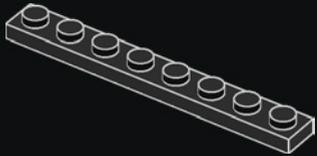


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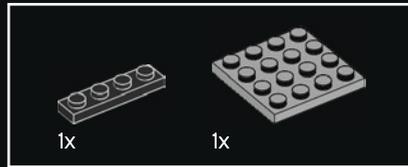
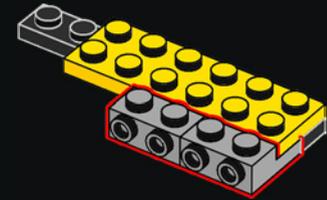
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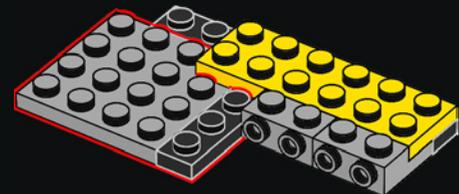
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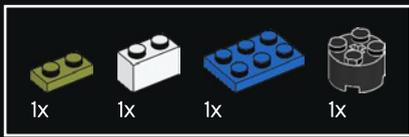


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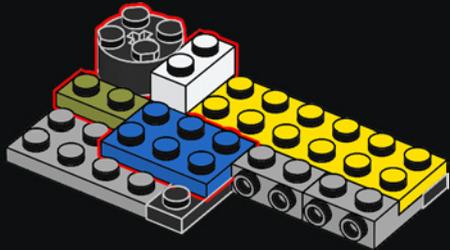


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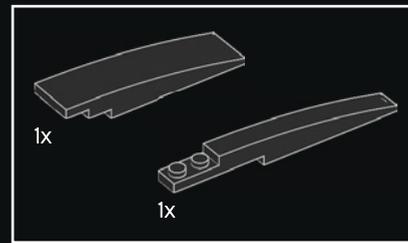
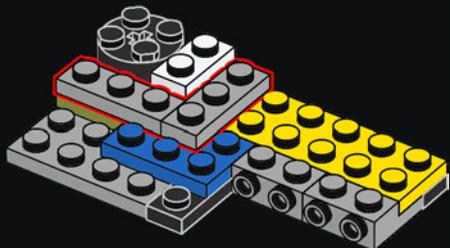




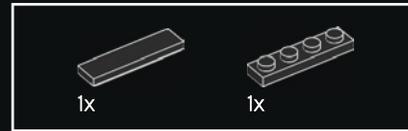
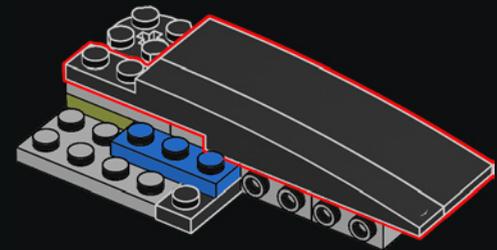
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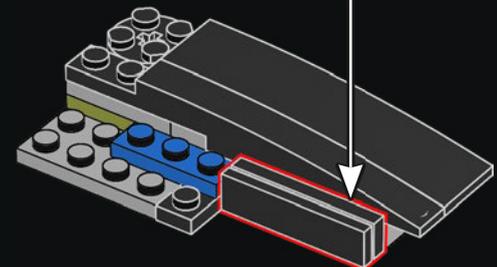
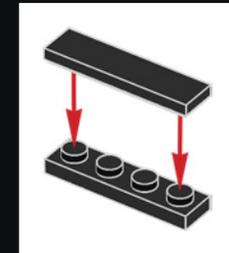
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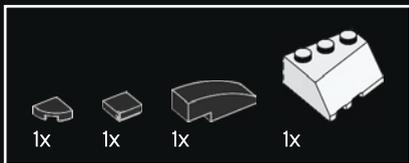
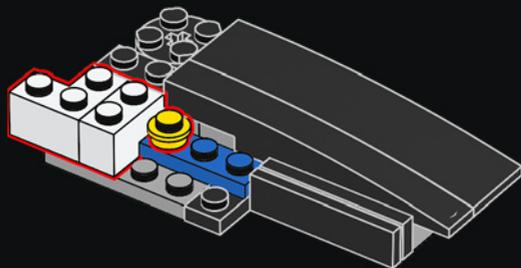


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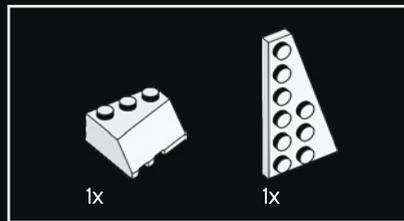
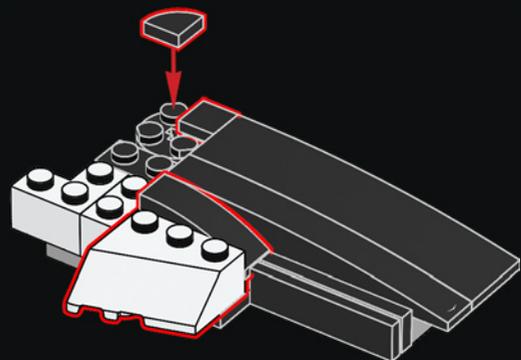




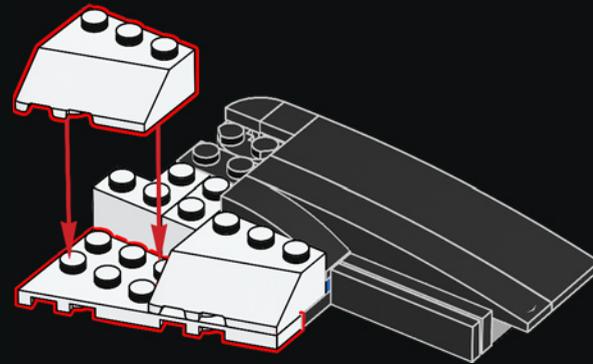
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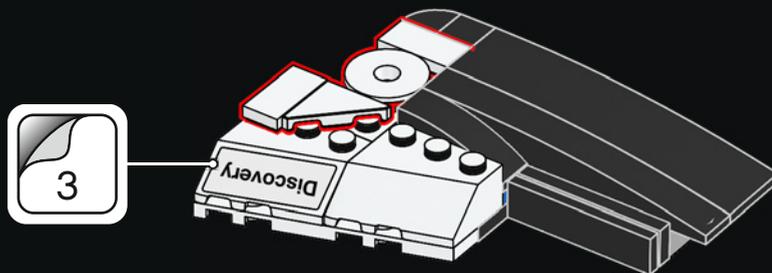
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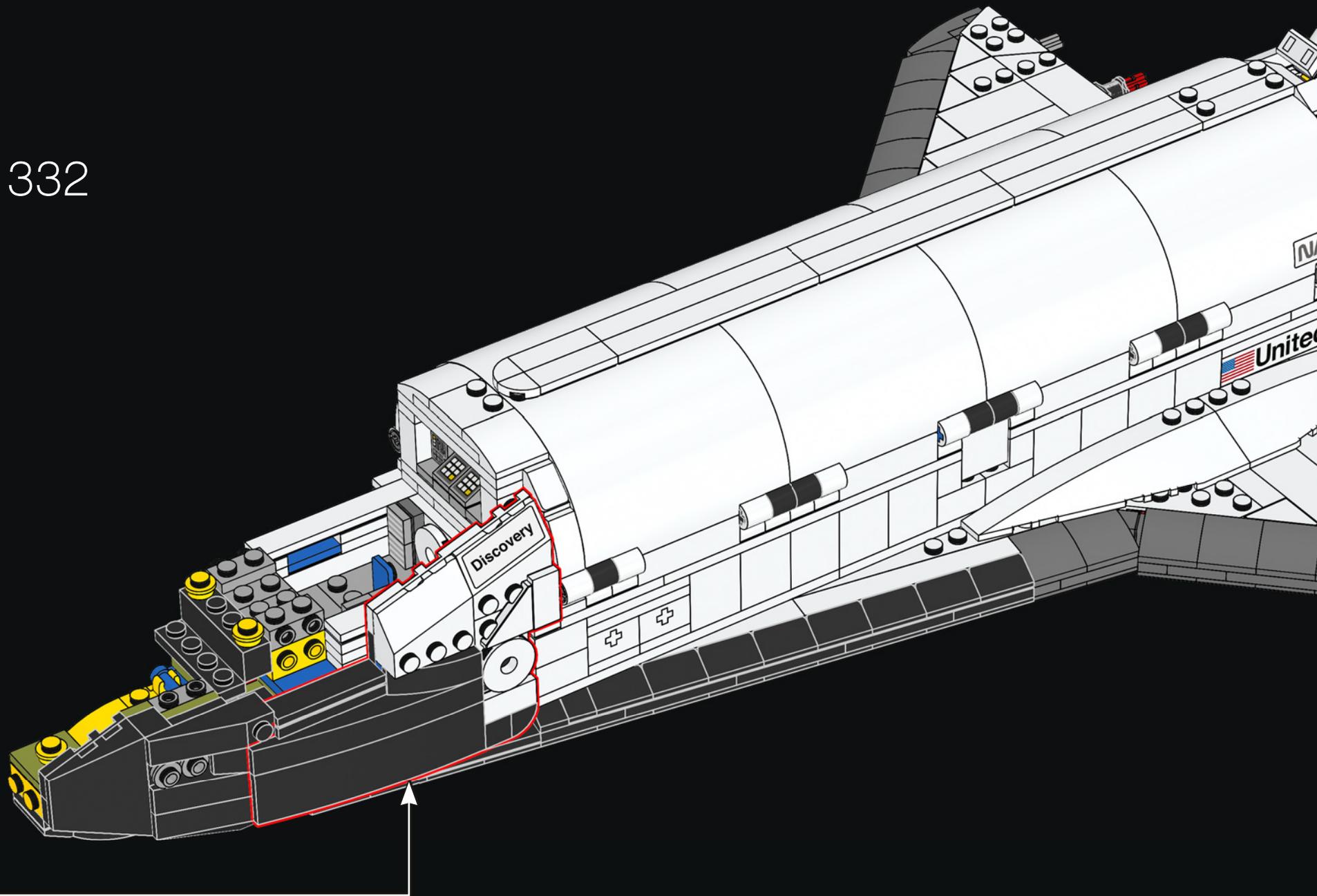
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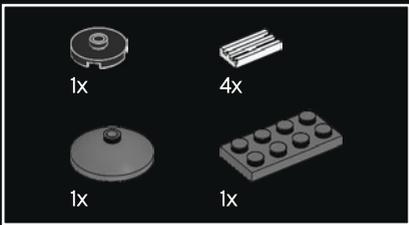


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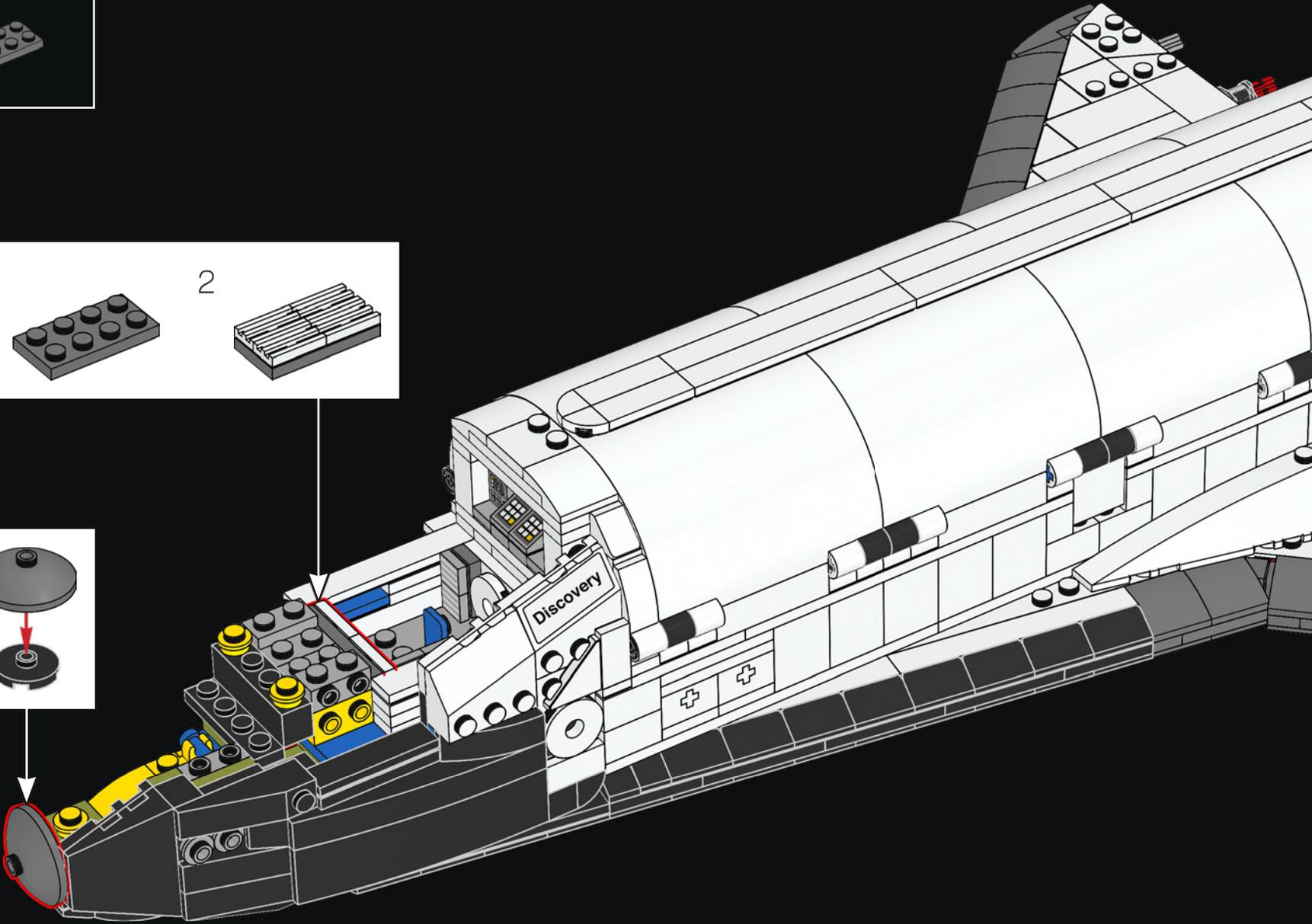
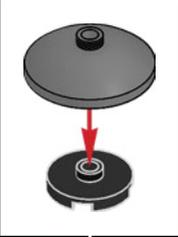
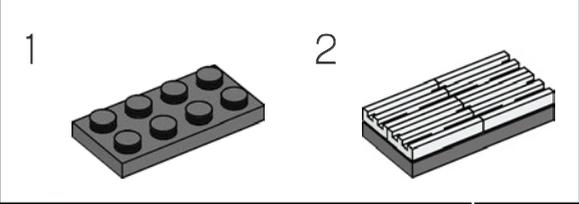


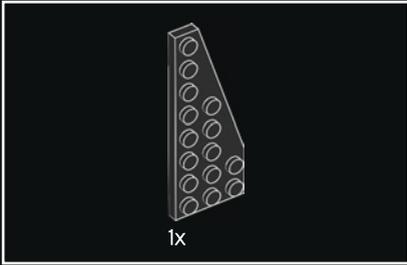
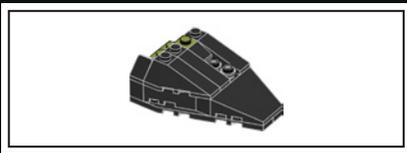
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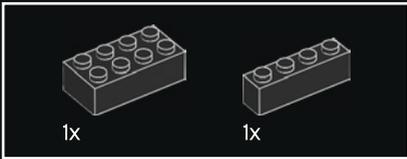
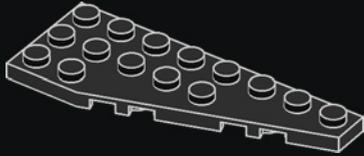
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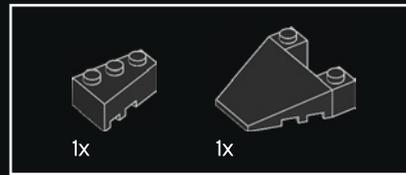
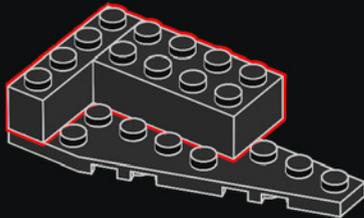
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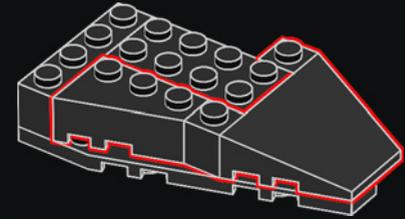
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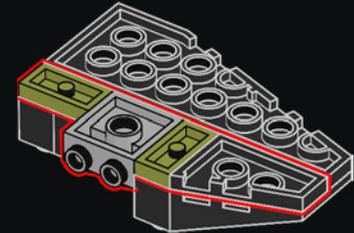


2x

1x

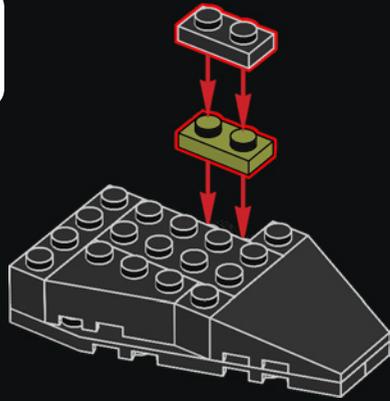
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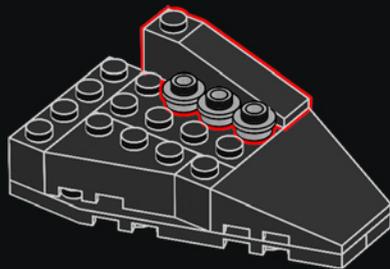




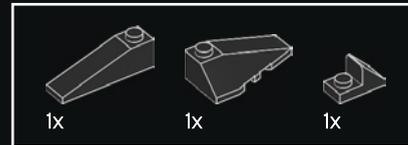
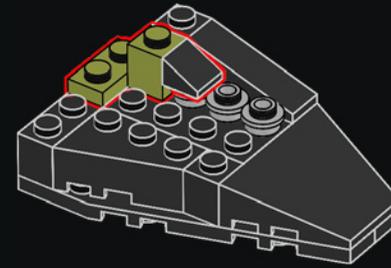
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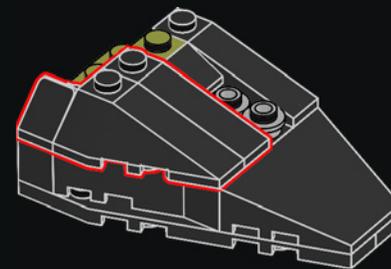
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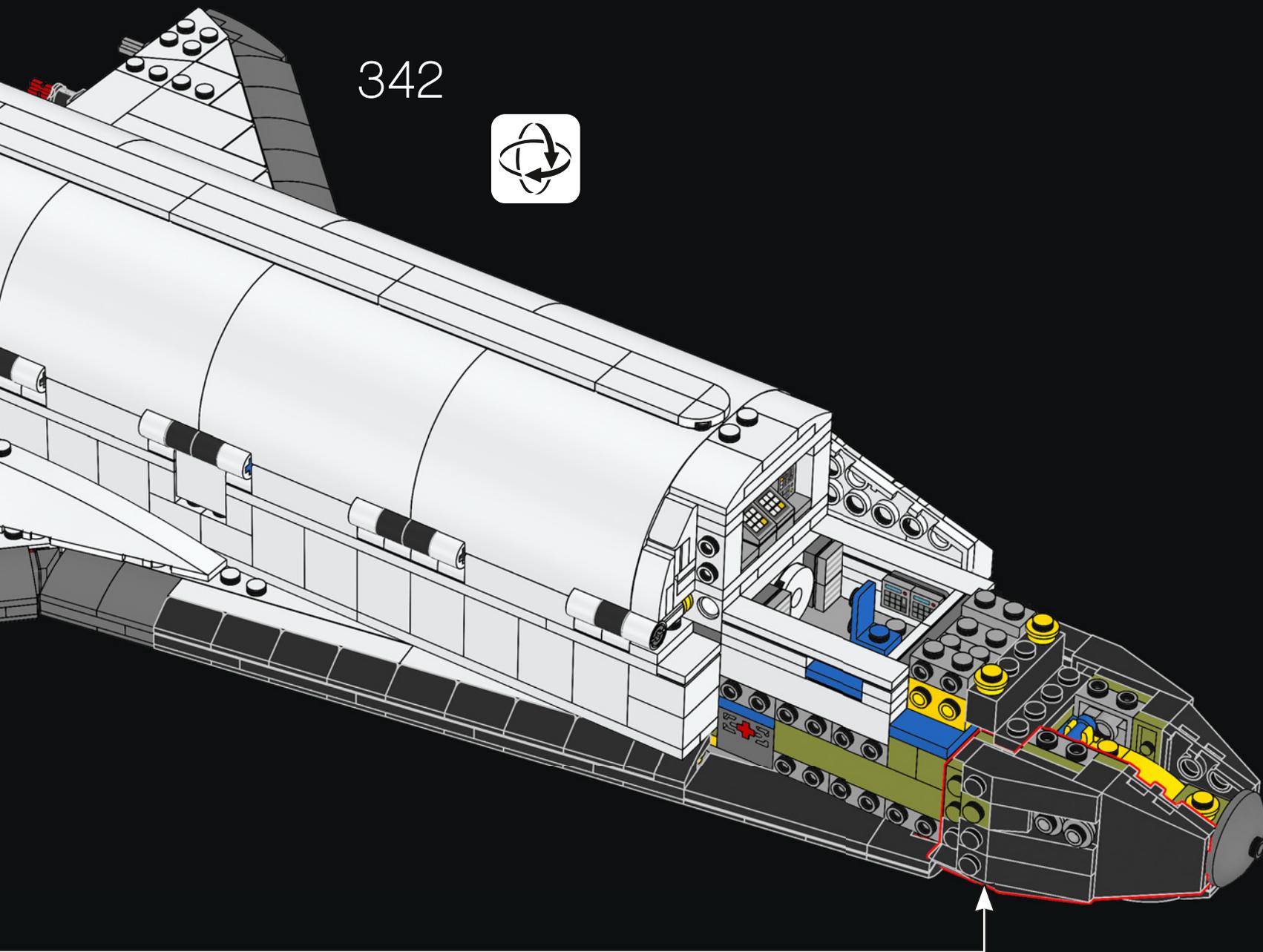
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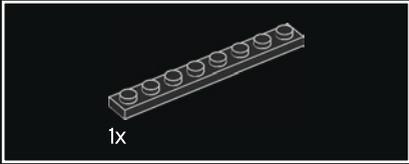
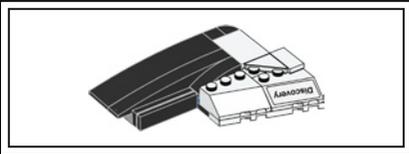


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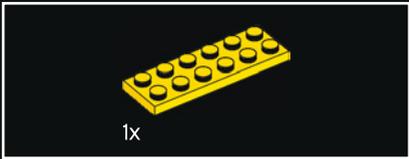
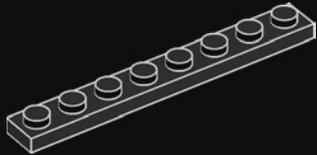


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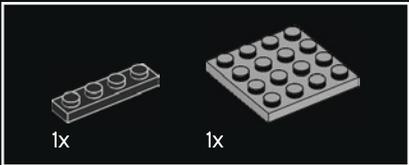
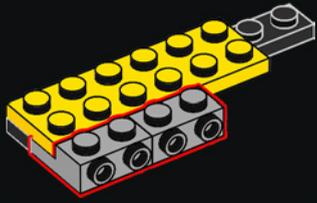


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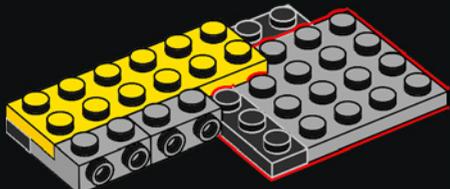
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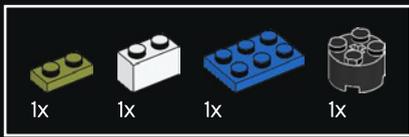


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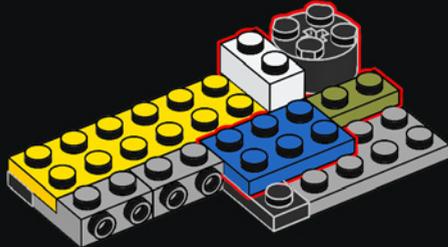
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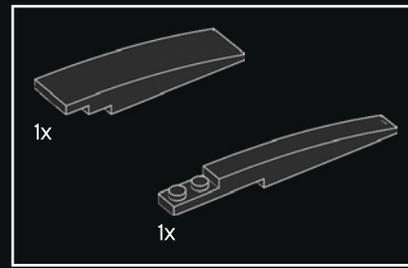
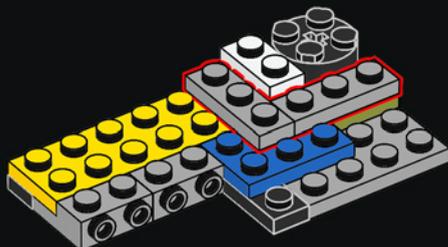




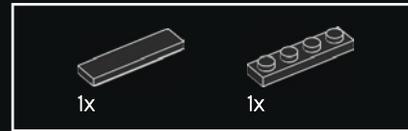
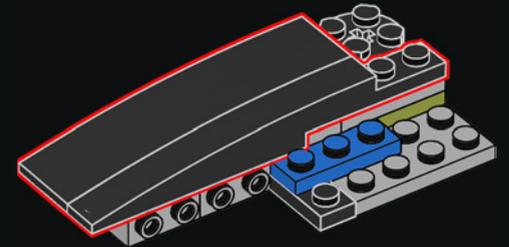
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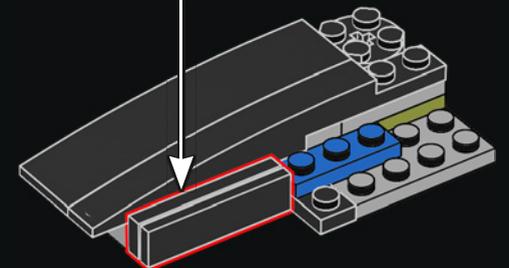
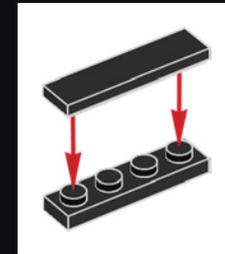
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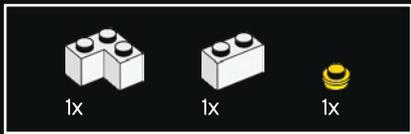


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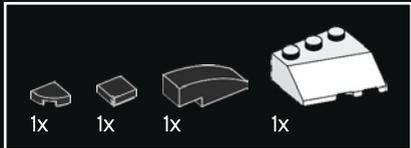
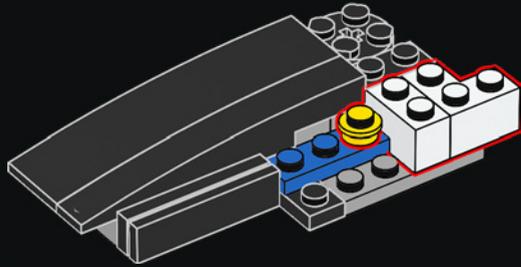


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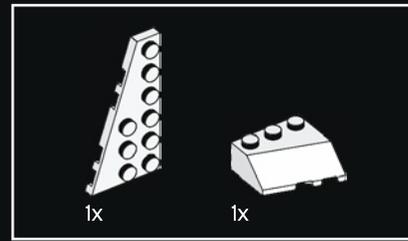
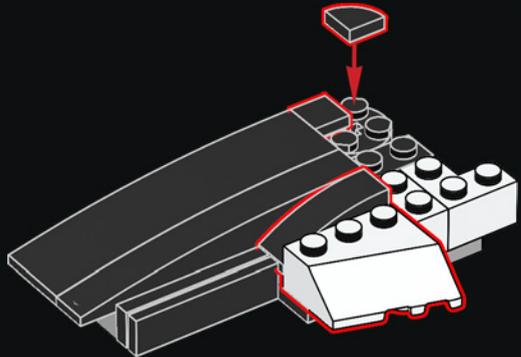




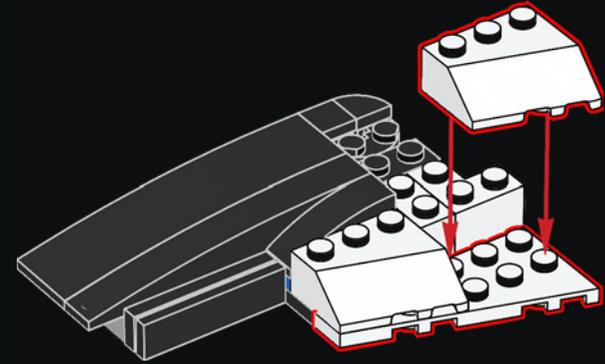
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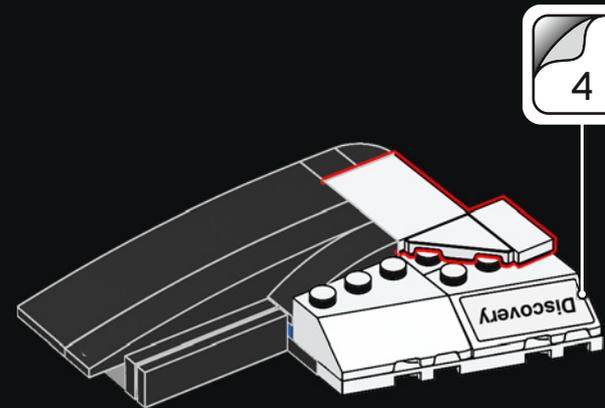
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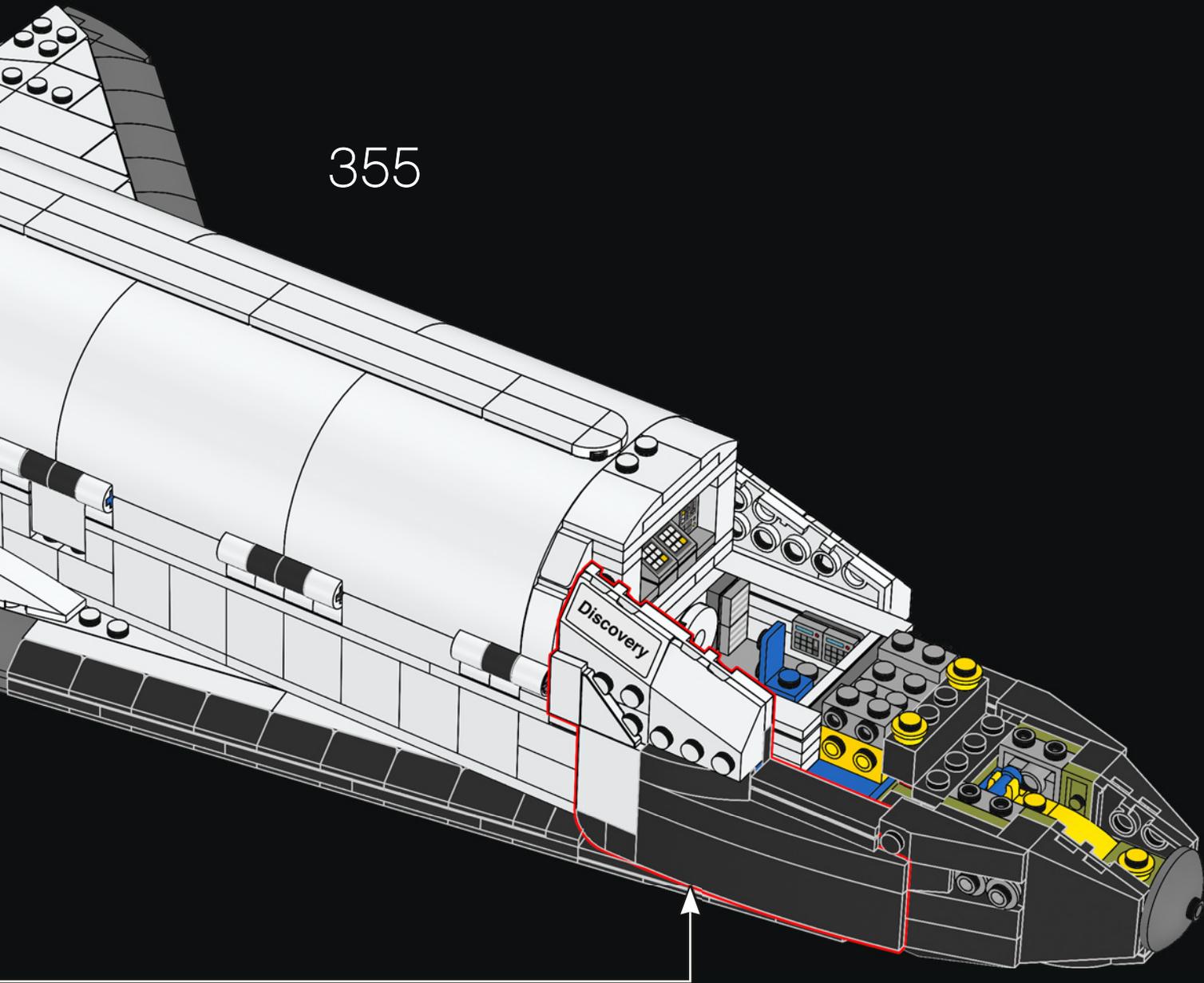


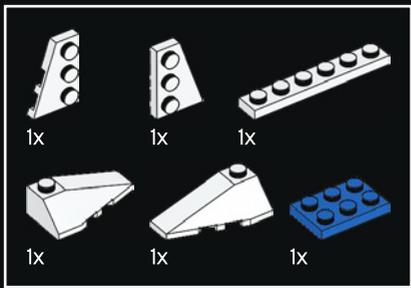
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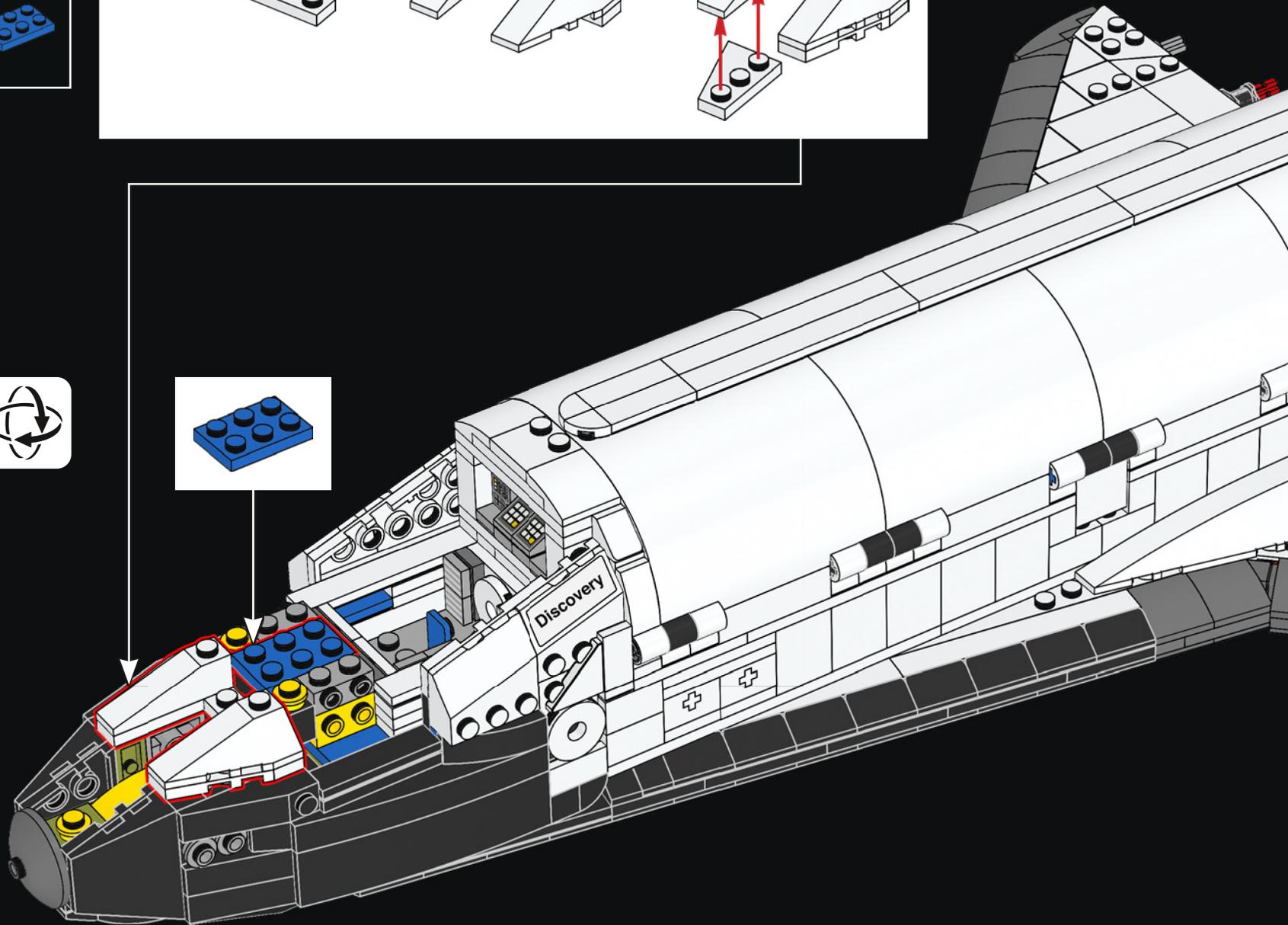
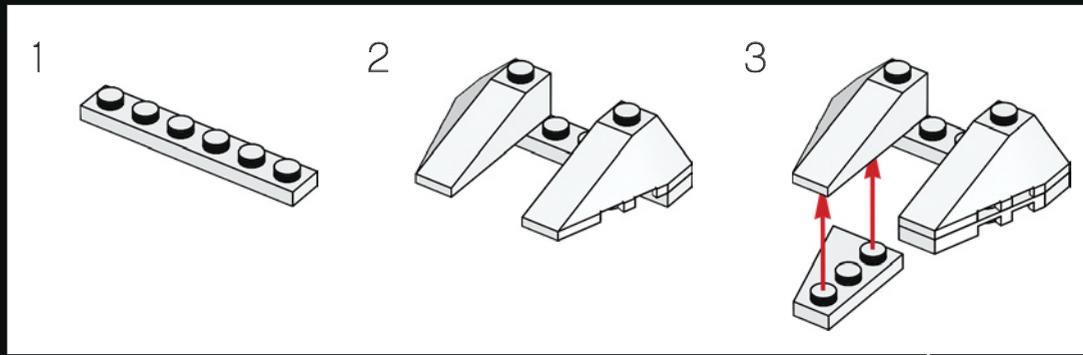
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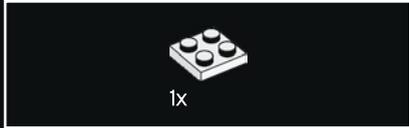
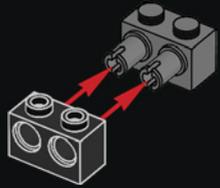


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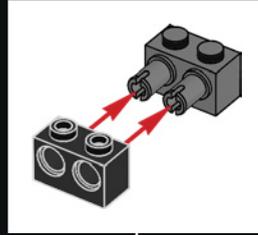
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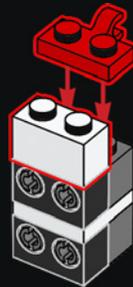
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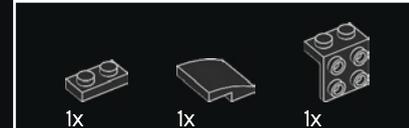
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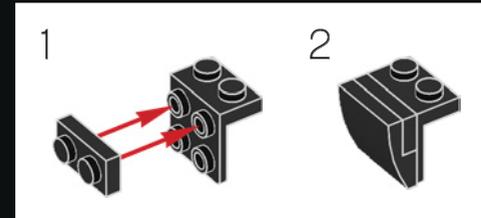
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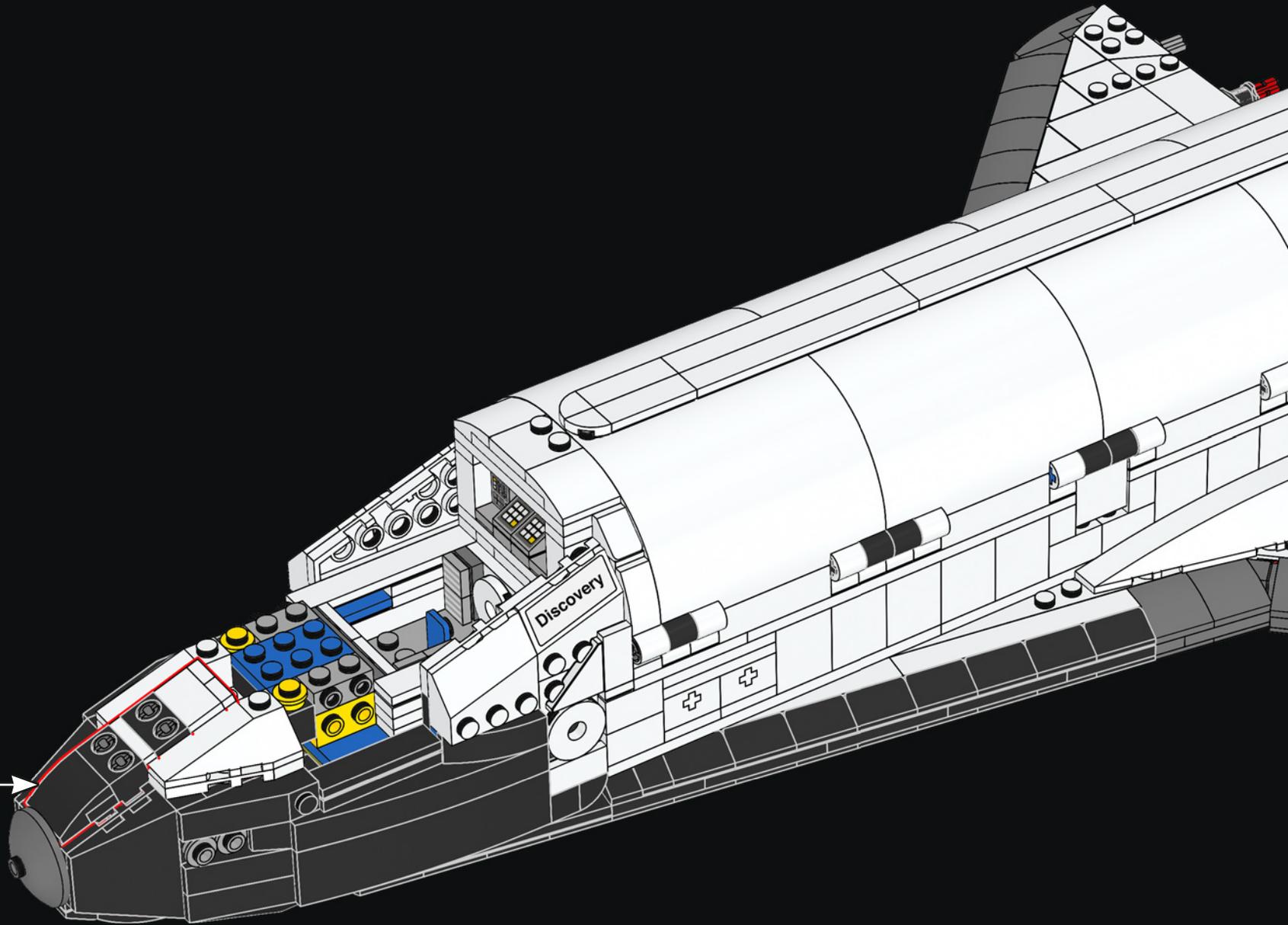
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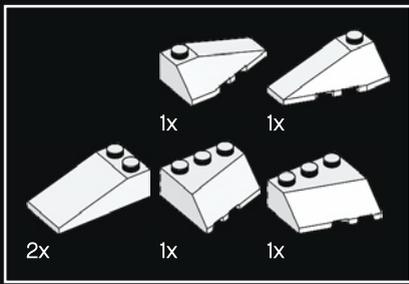


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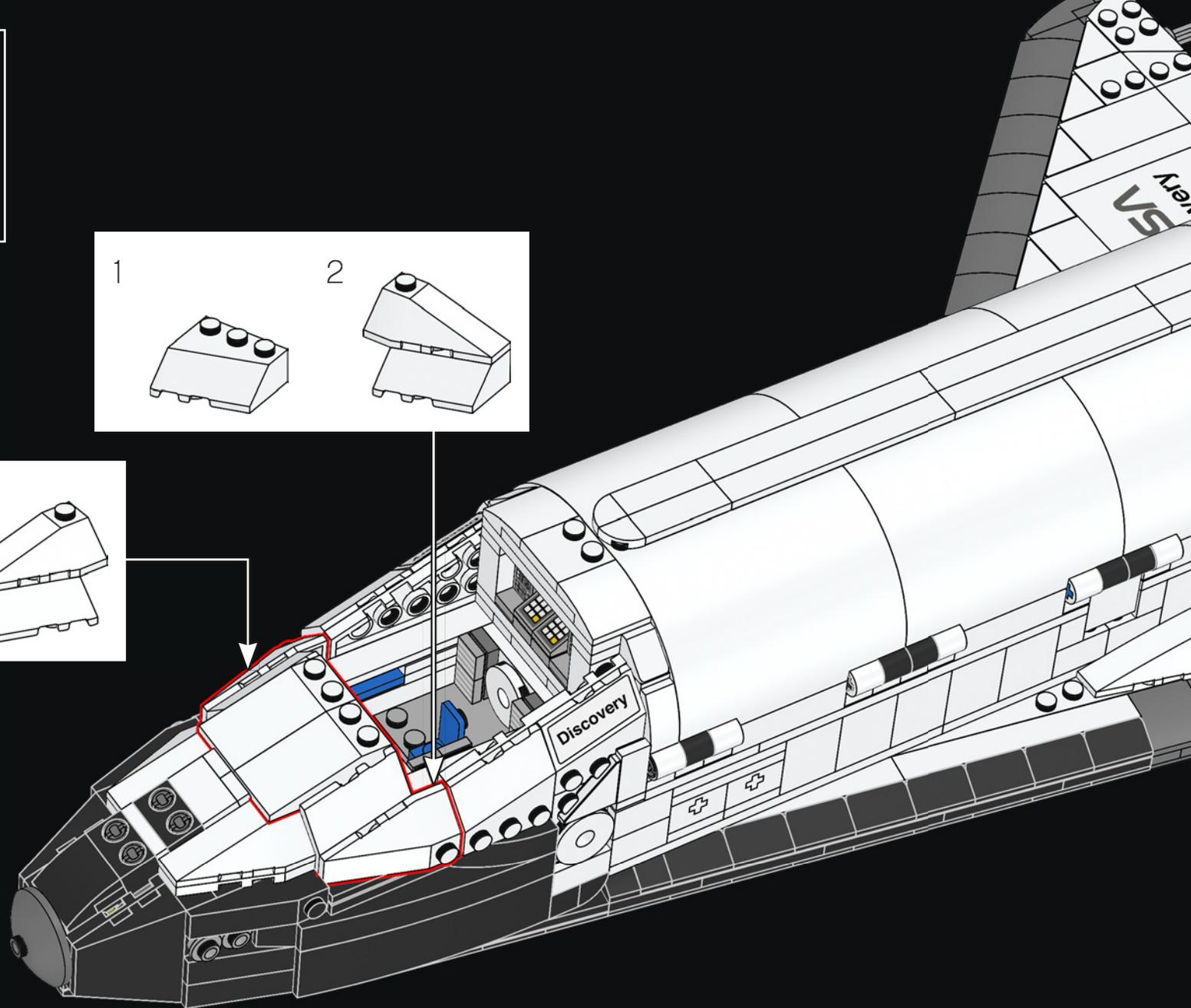
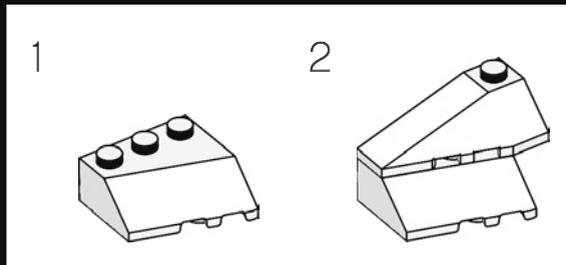
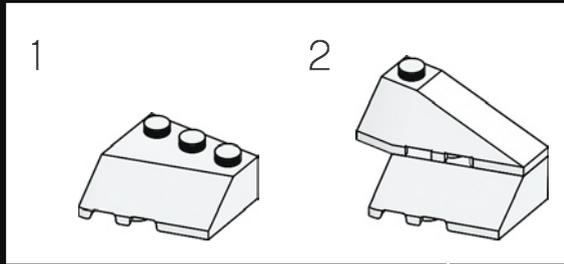


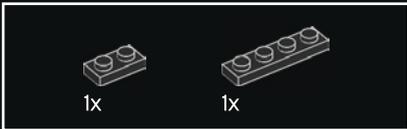
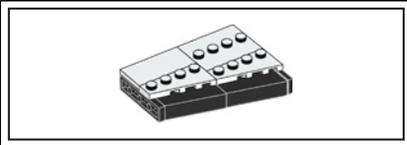
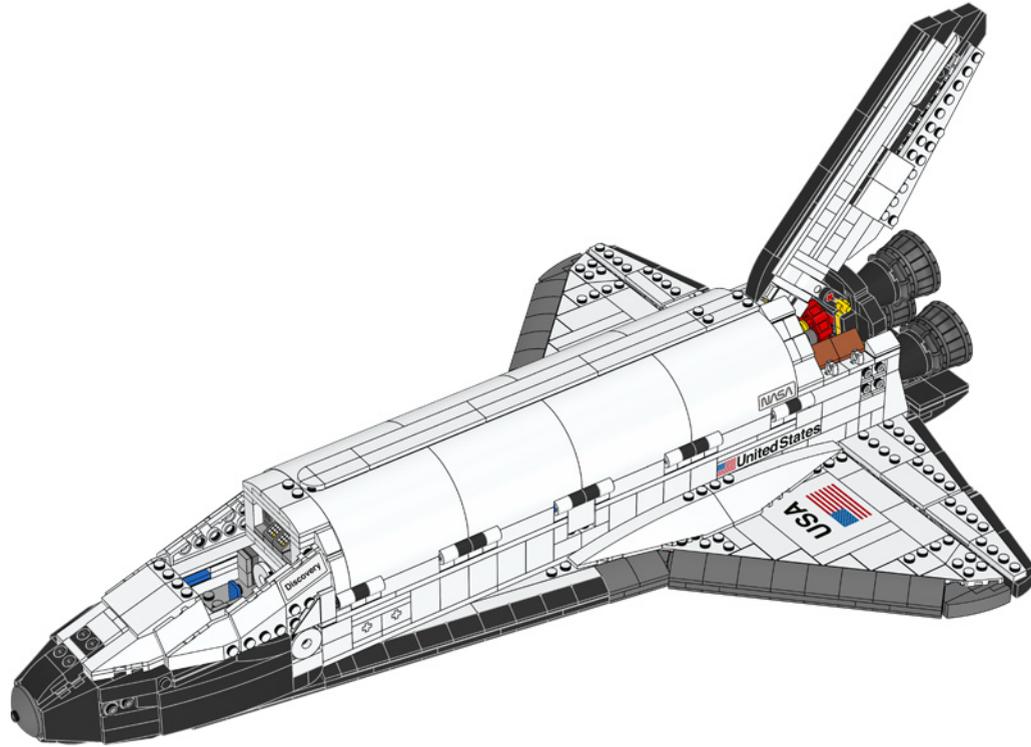
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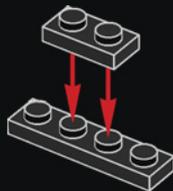


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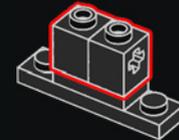




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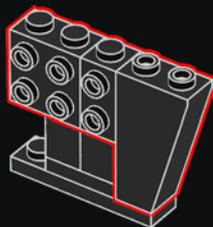


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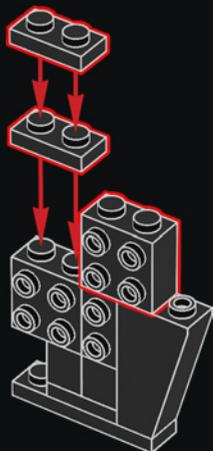




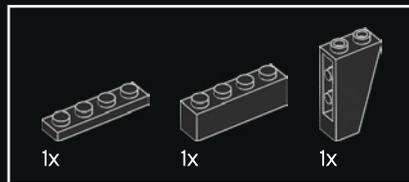
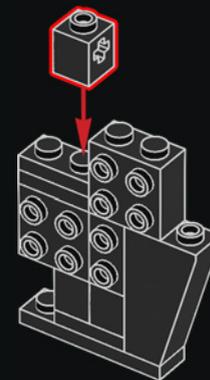
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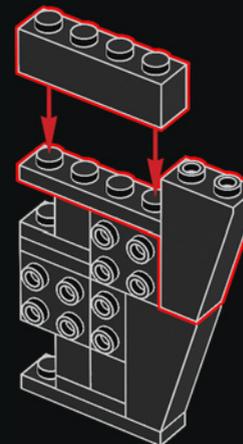
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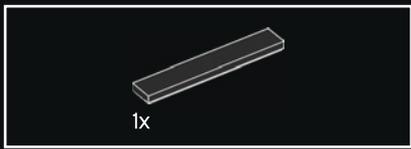


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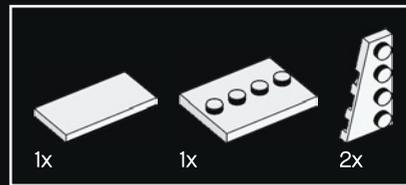
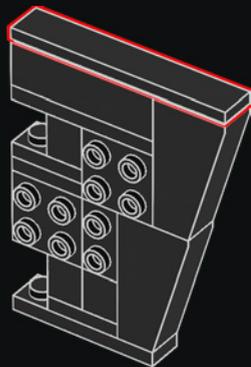


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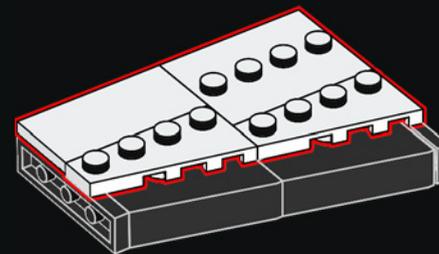




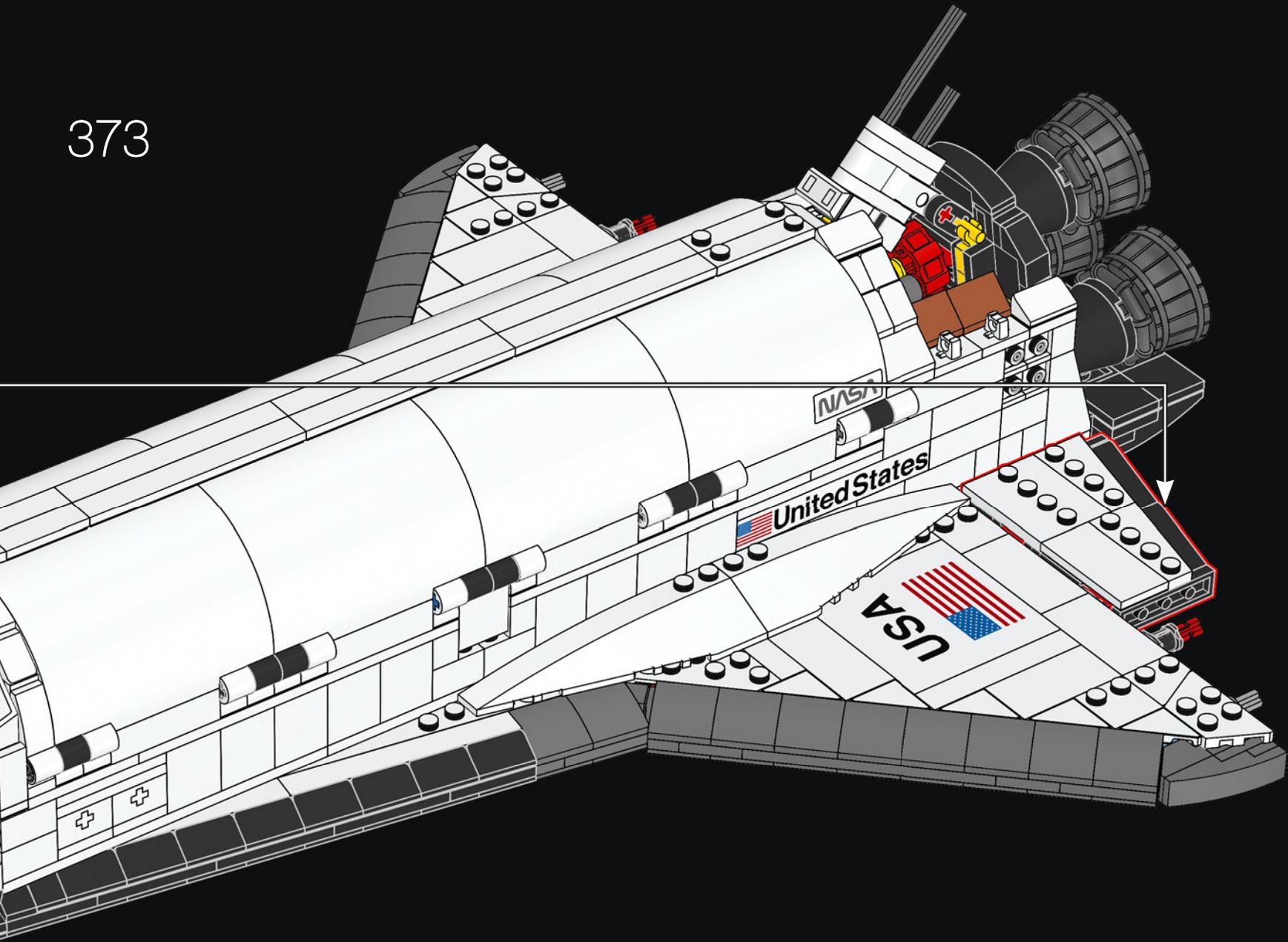
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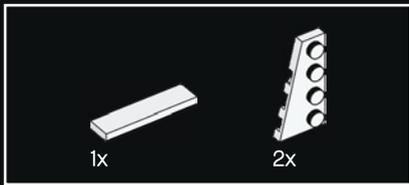


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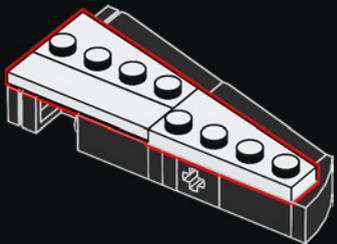


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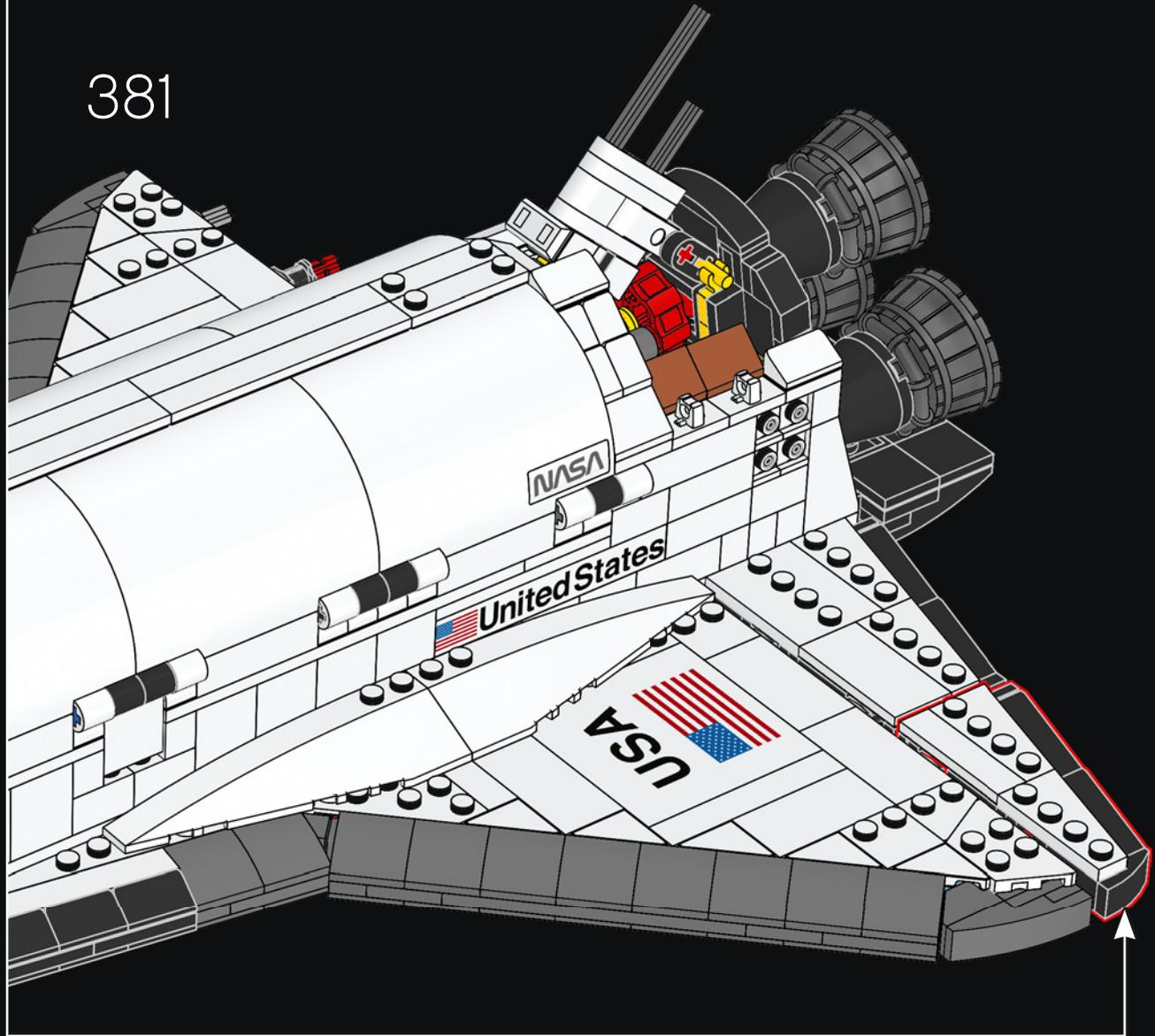


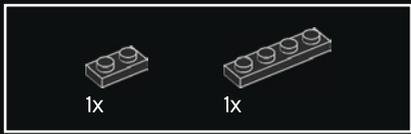


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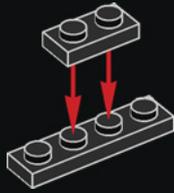


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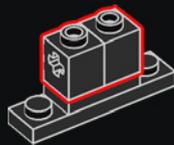




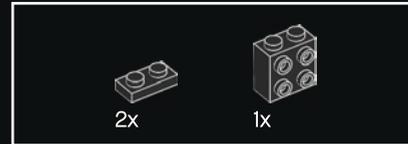
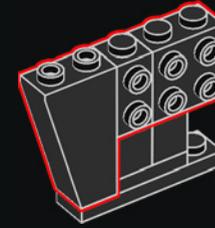
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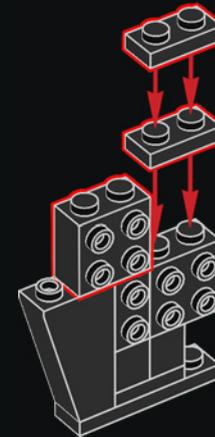
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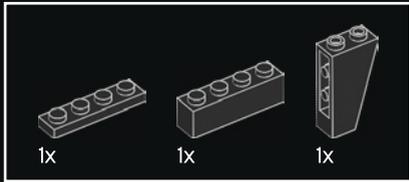
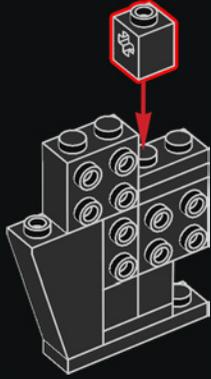


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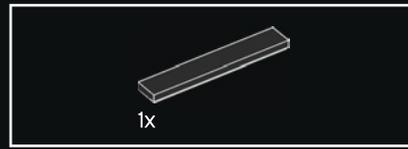
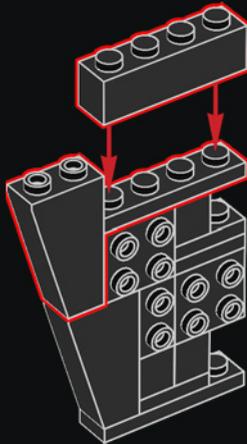




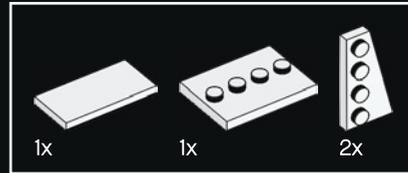
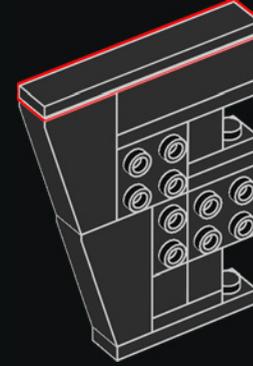
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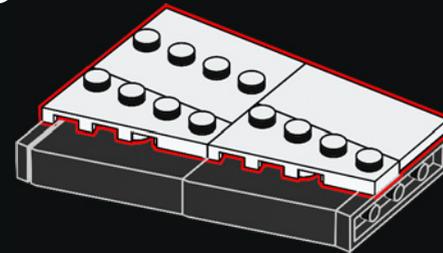
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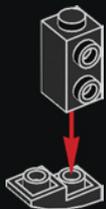


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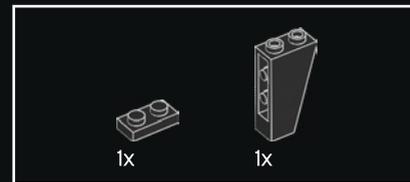
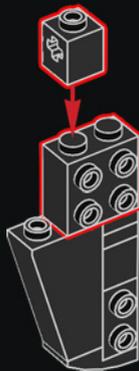
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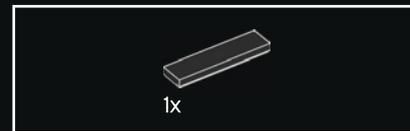
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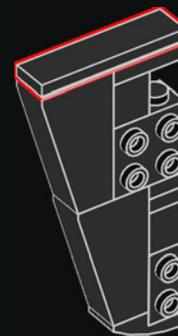
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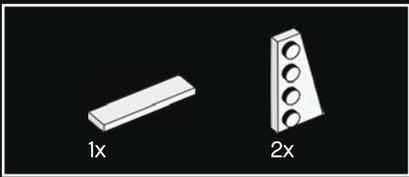


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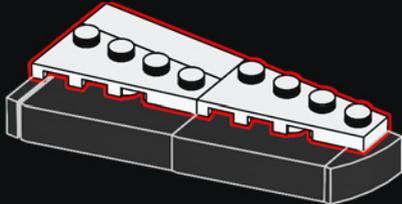


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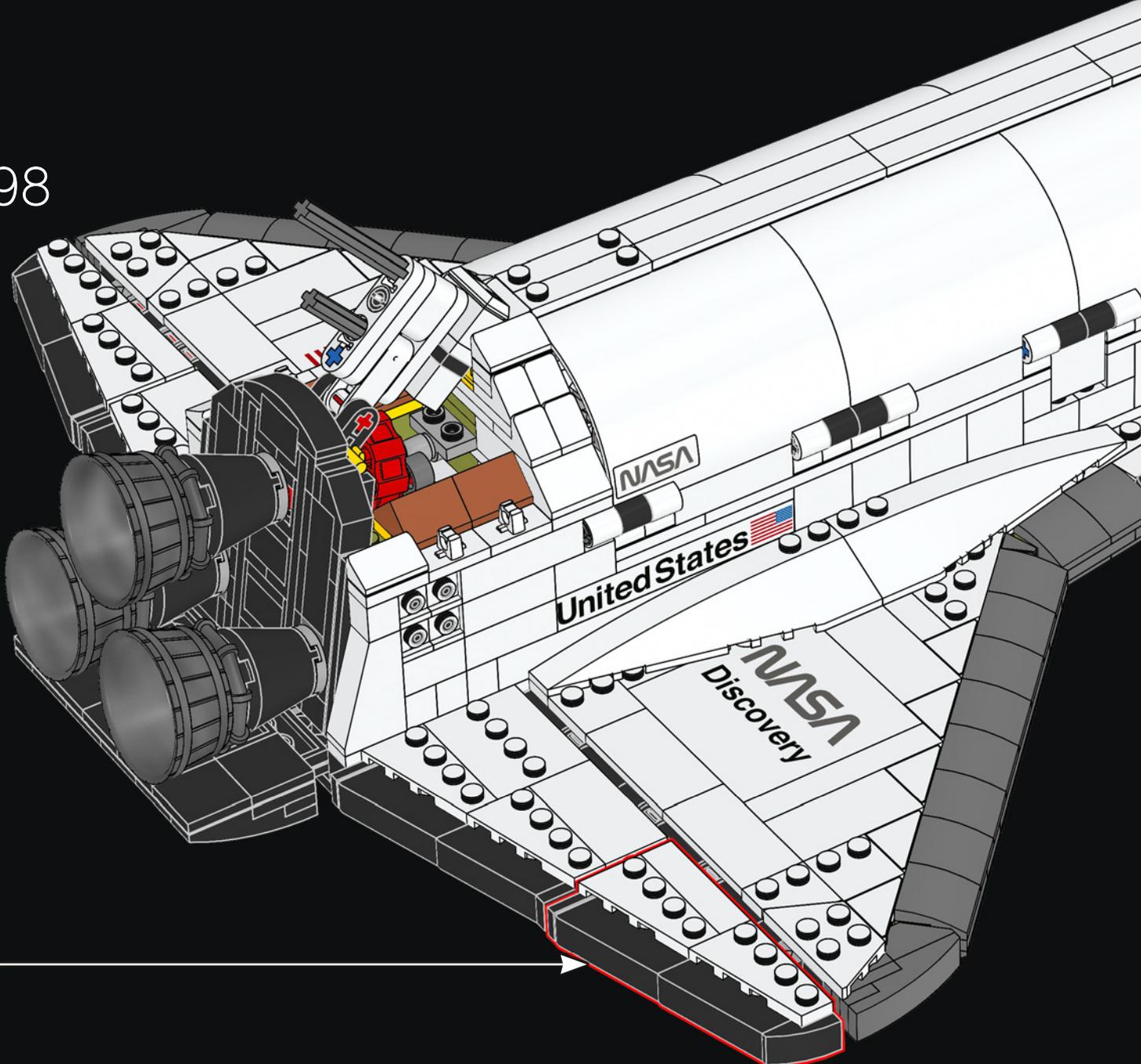


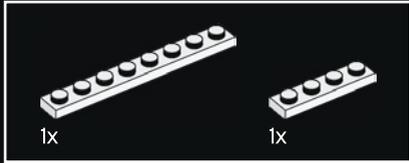
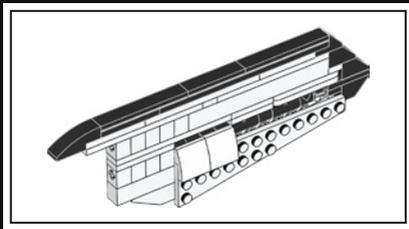


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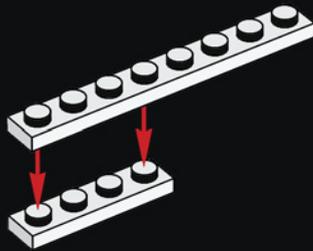


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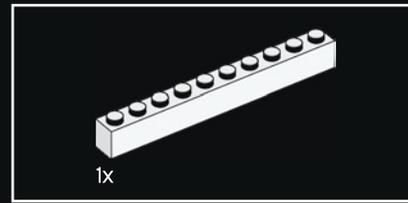
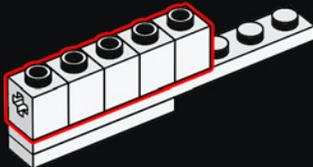




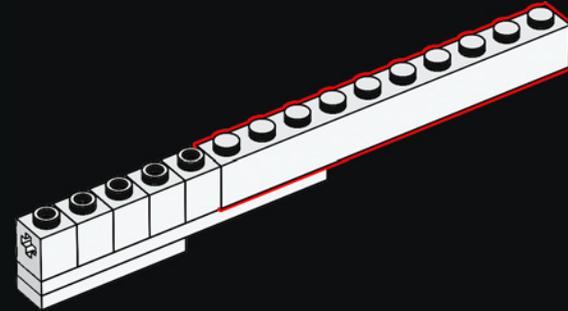
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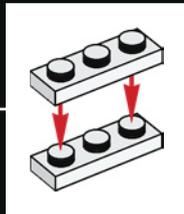
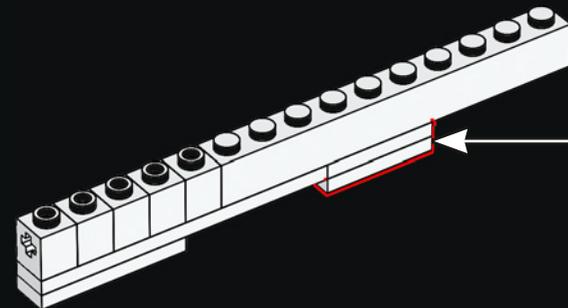
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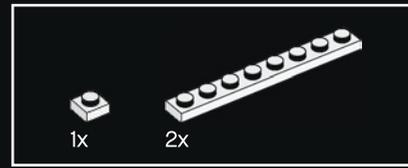
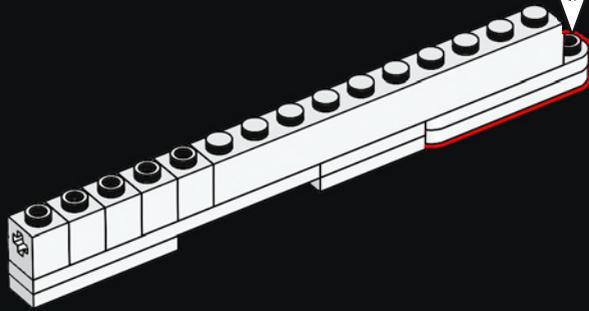
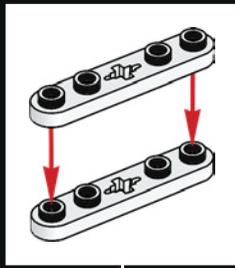
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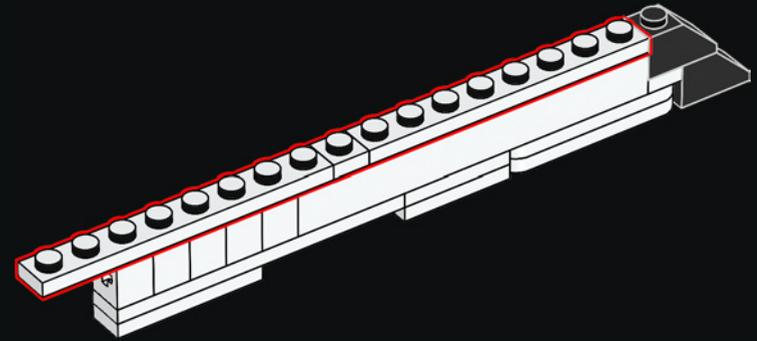
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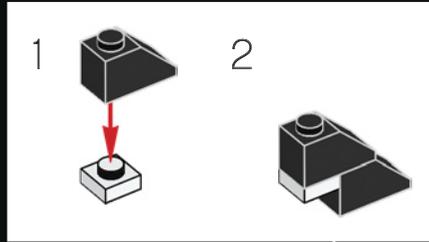
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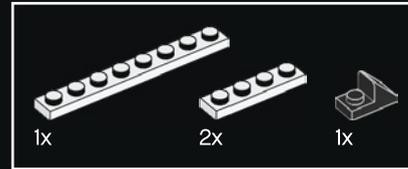
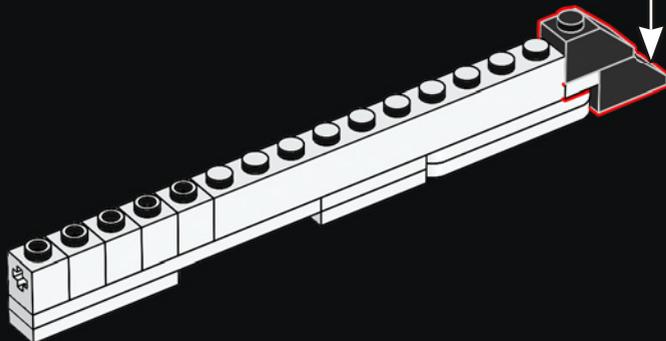
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404



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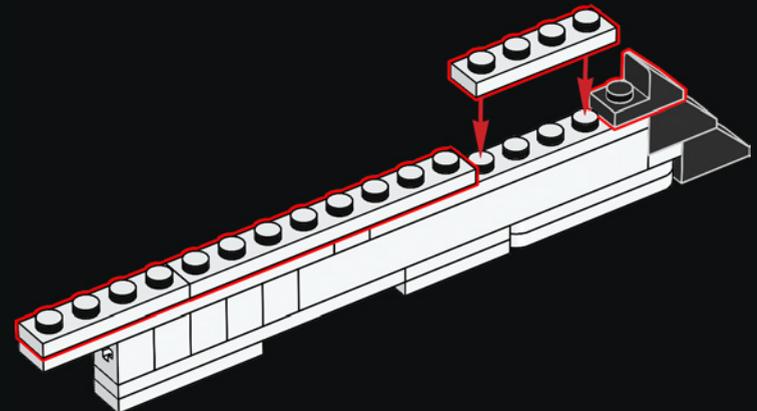


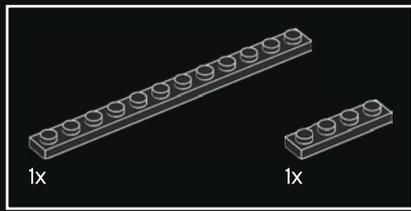
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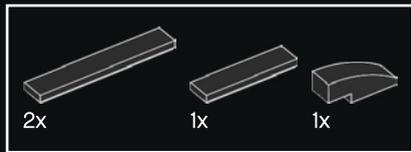
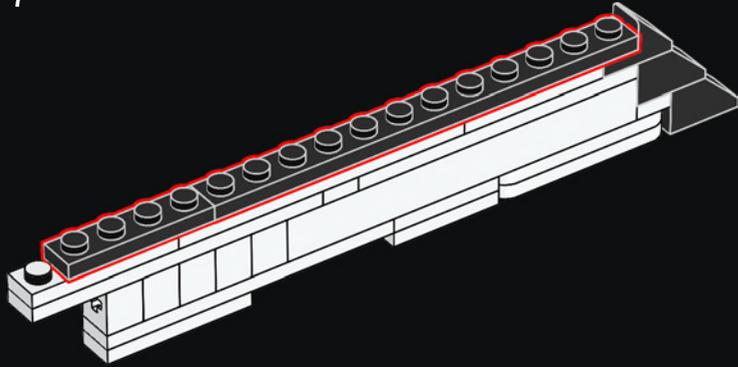
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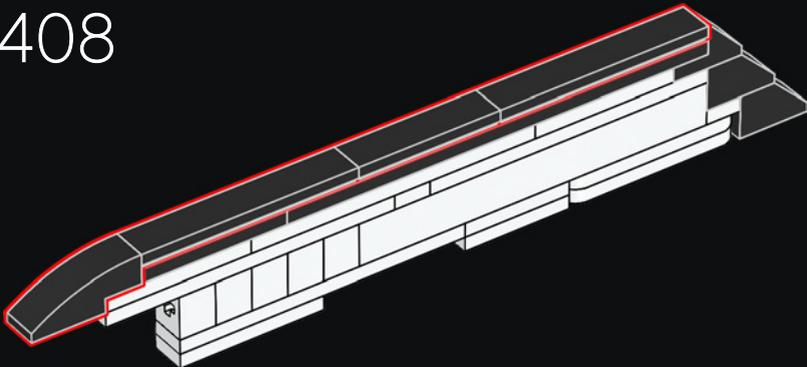




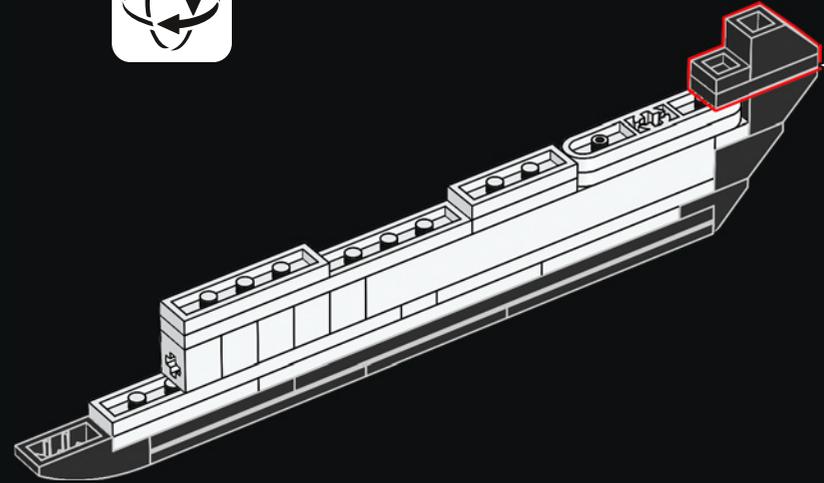
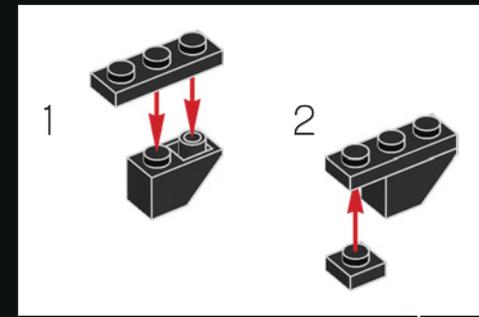
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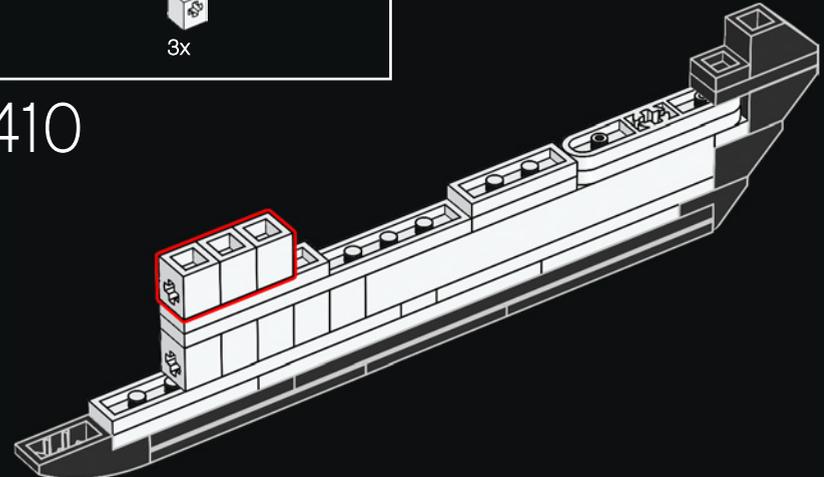
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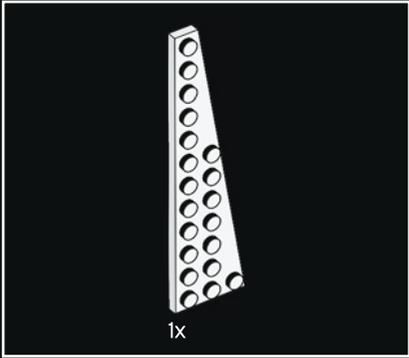
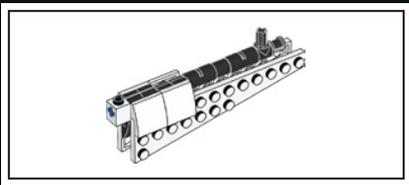


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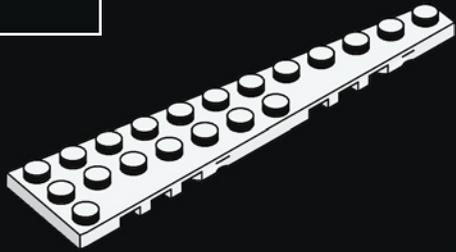


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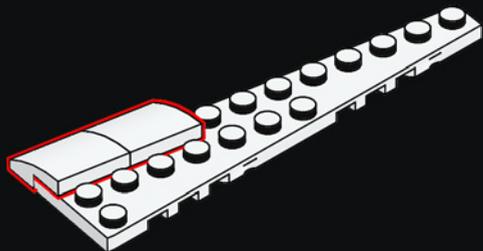




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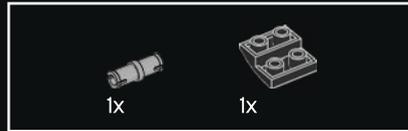
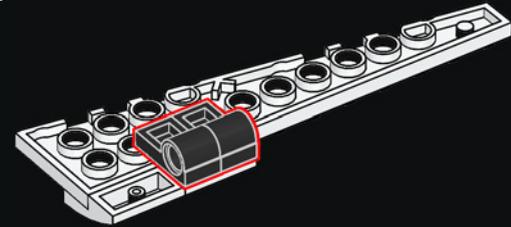


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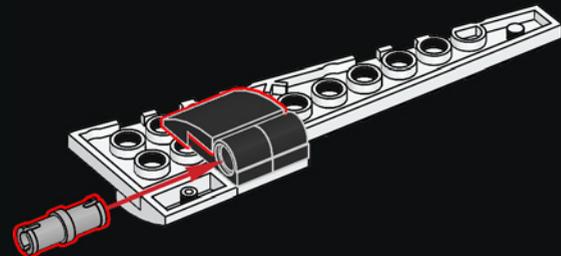
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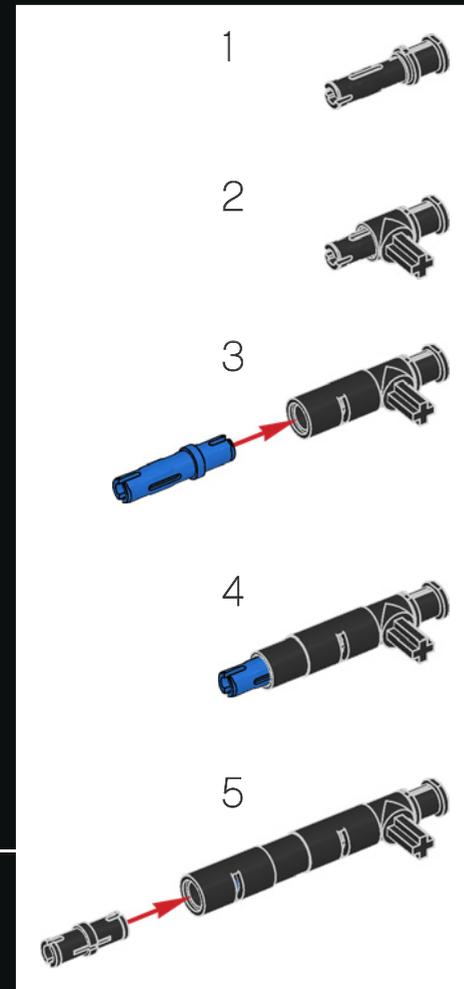
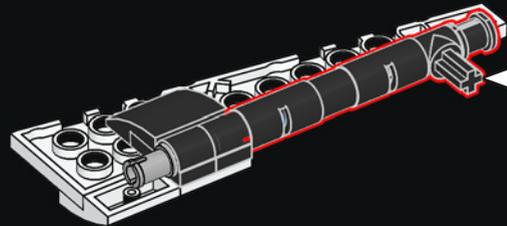
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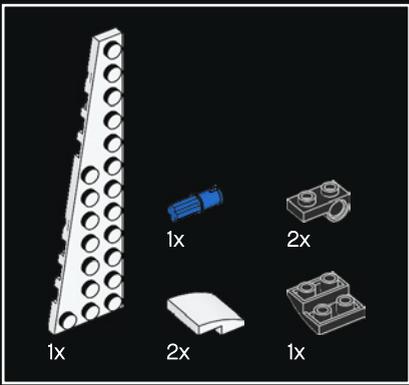
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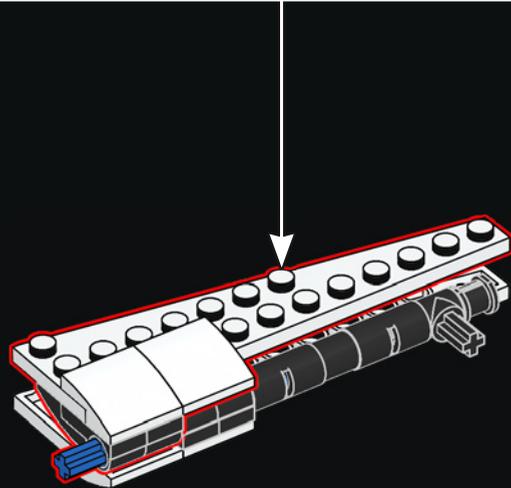
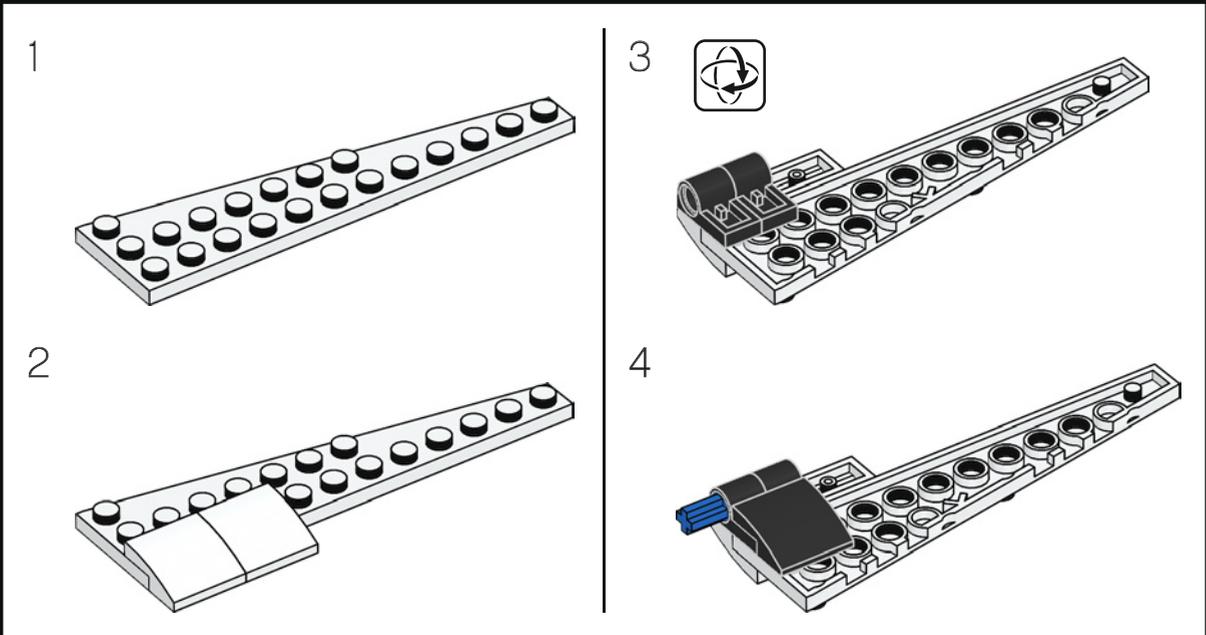


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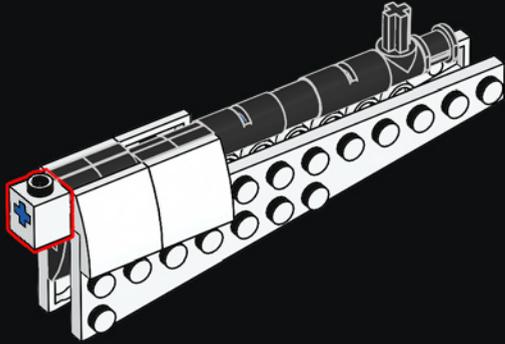


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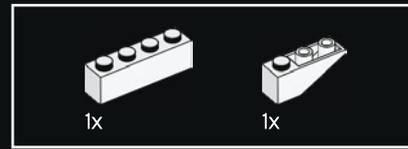
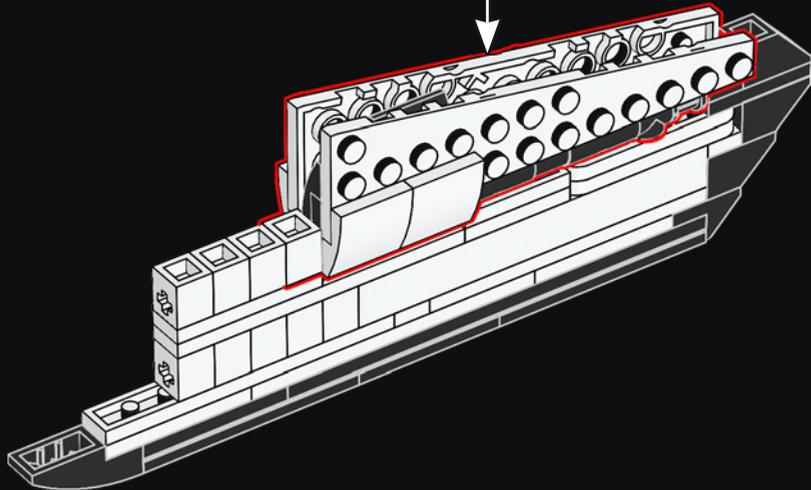




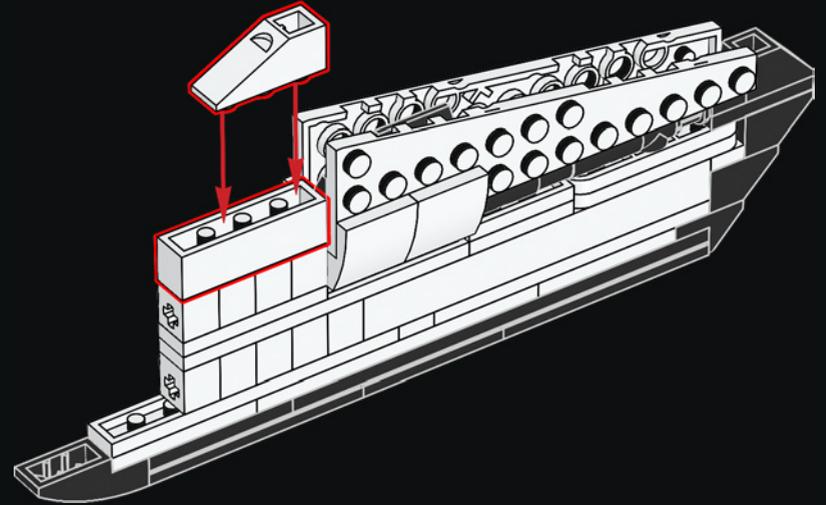
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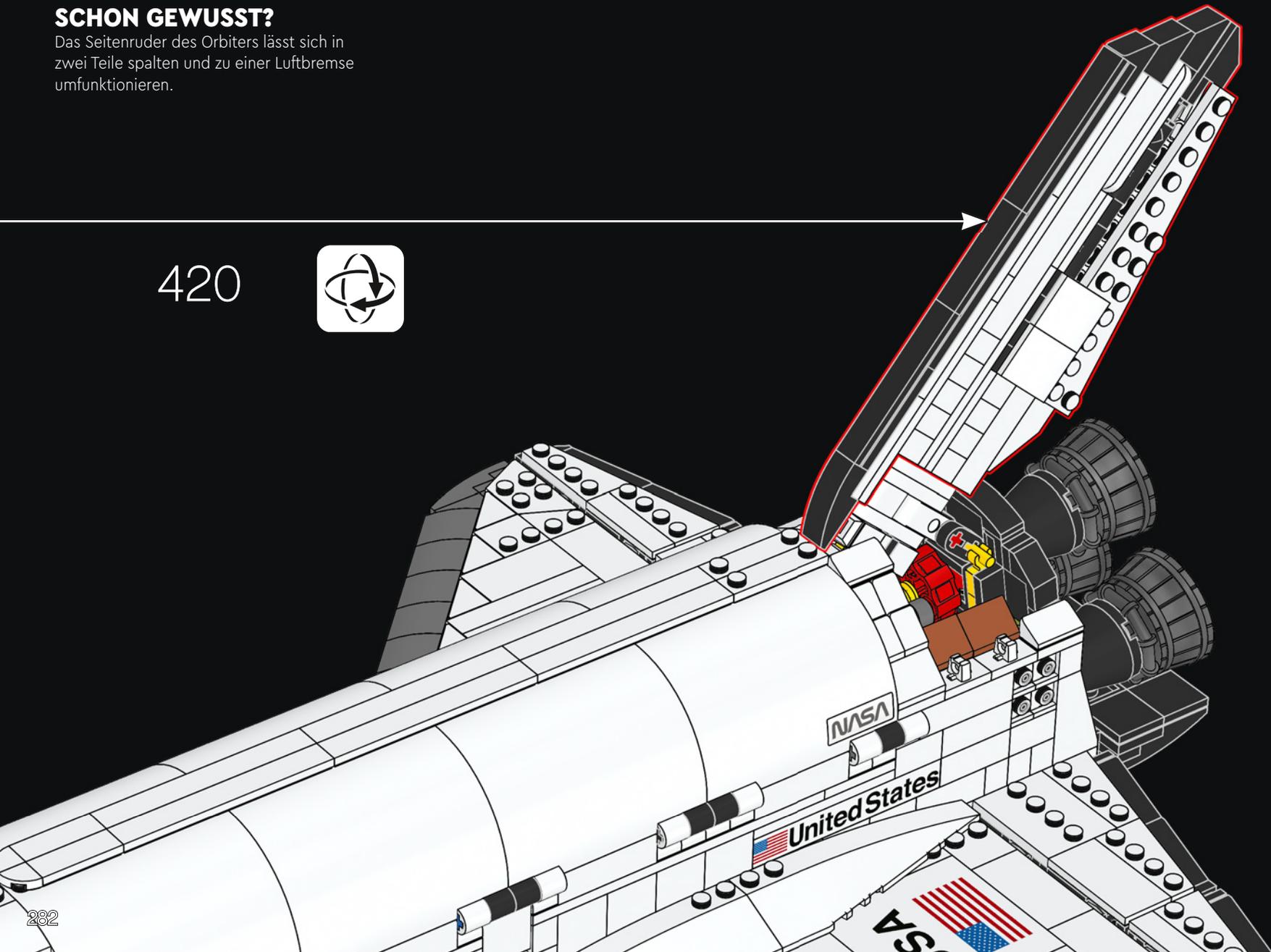
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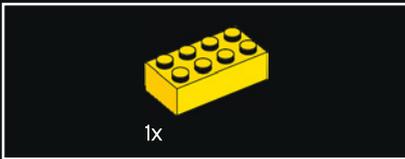
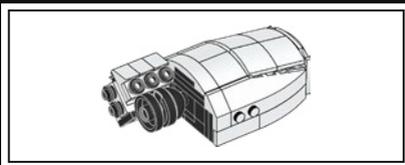
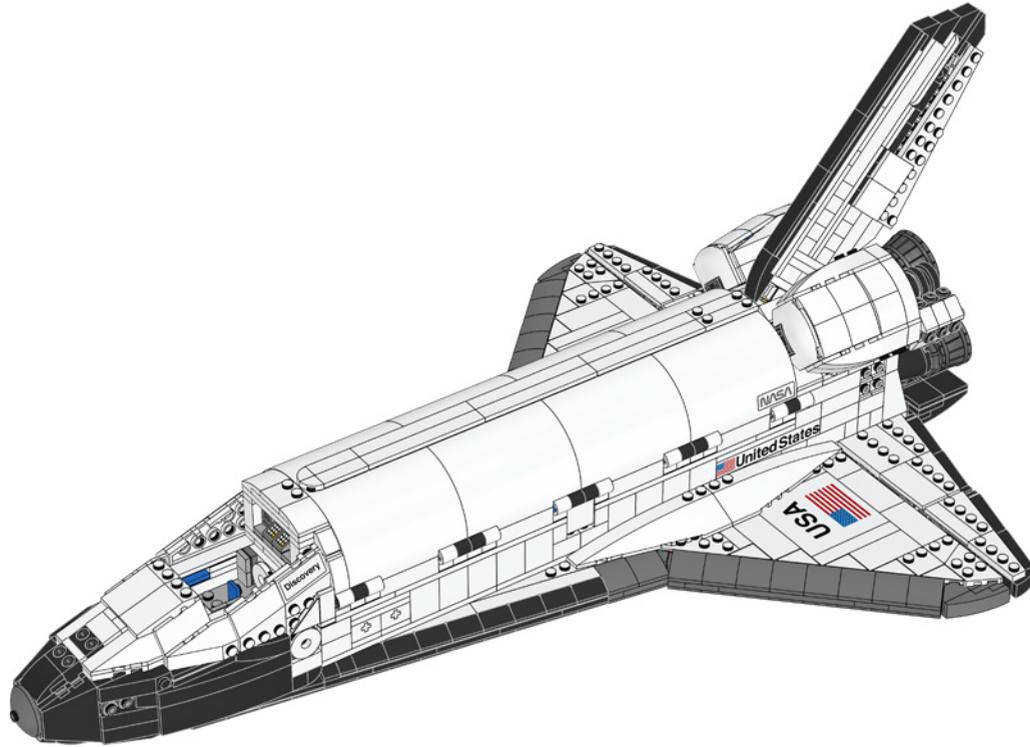


SCHON GEWUSST?

Das Seitenruder des Orbiters lässt sich in zwei Teile spalten und zu einer Luftbremse umfunktionieren.

420





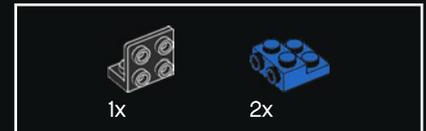
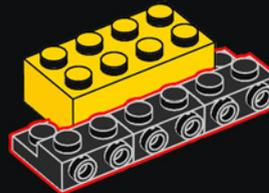
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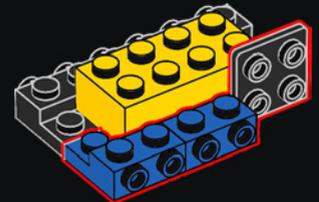
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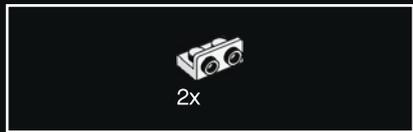
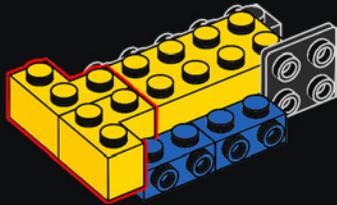
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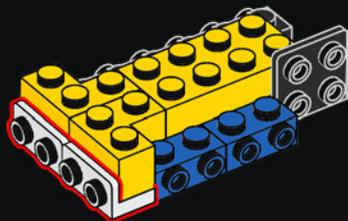




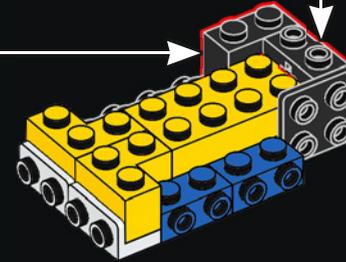
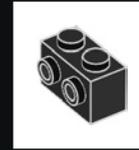
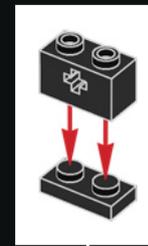
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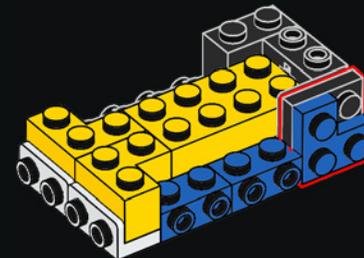
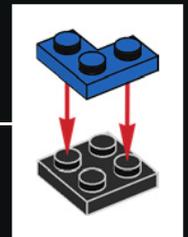
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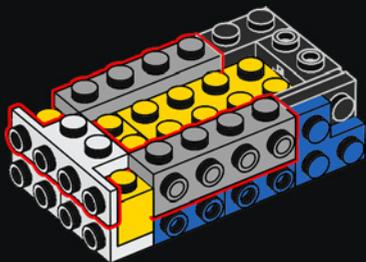


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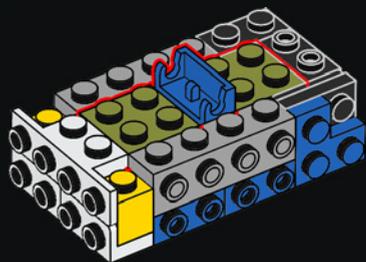




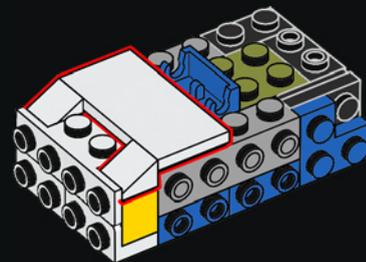
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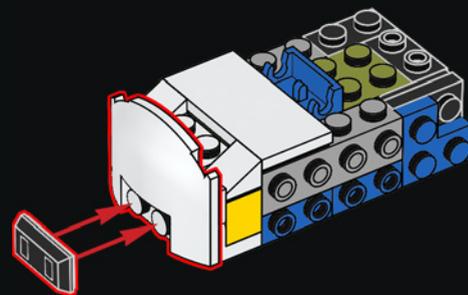
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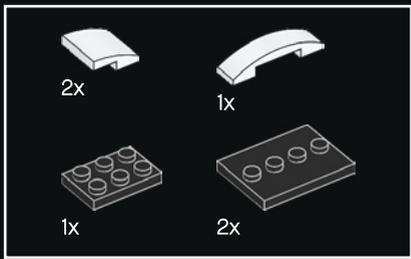


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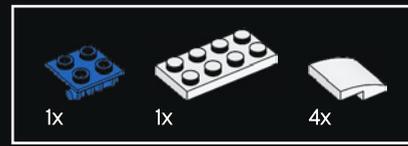
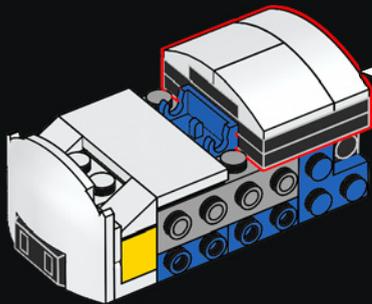
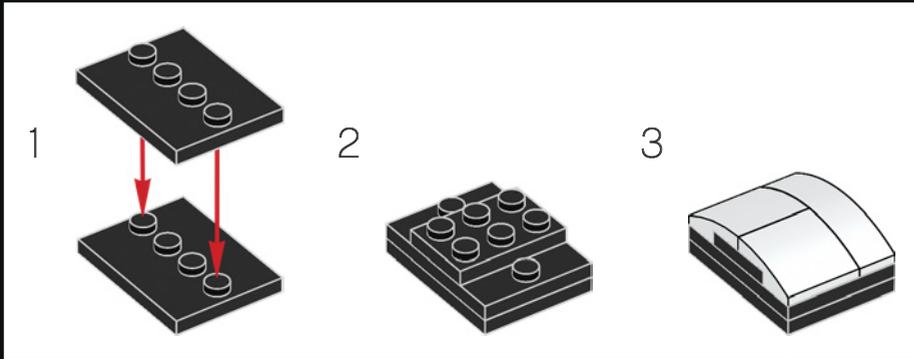


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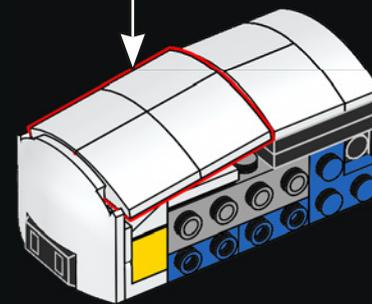
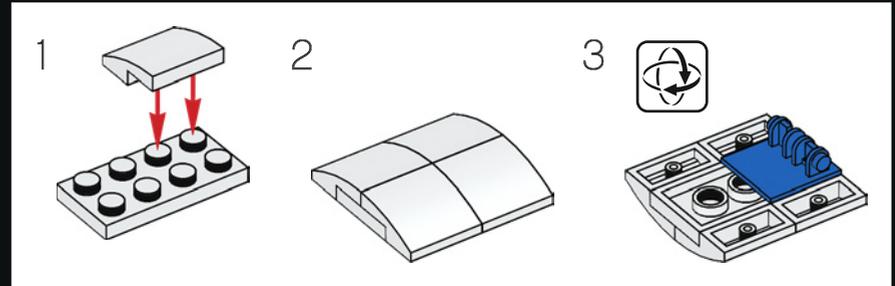




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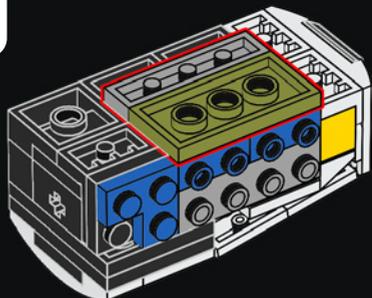


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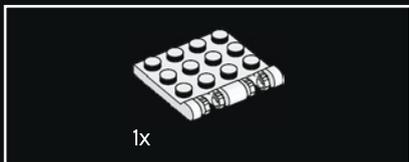
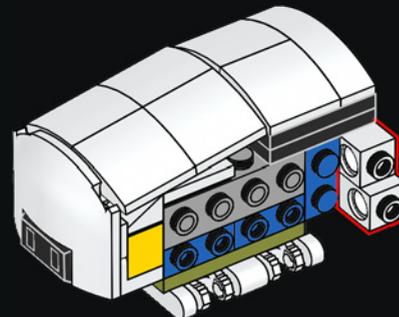




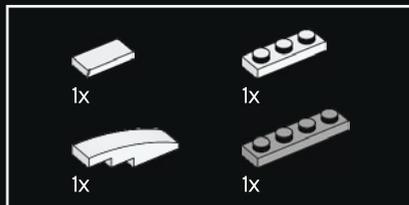
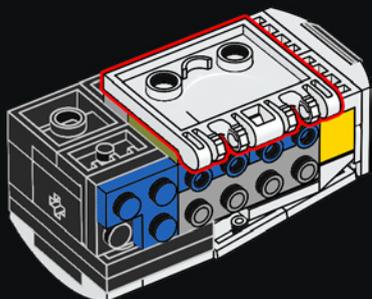
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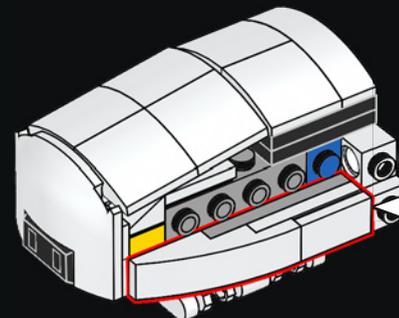
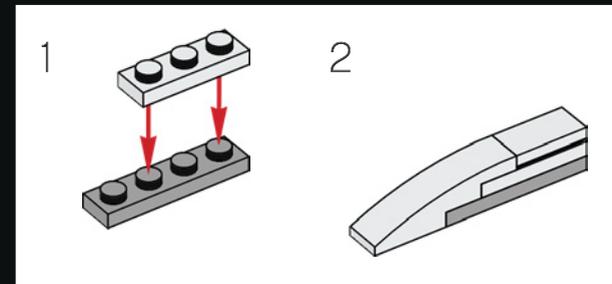
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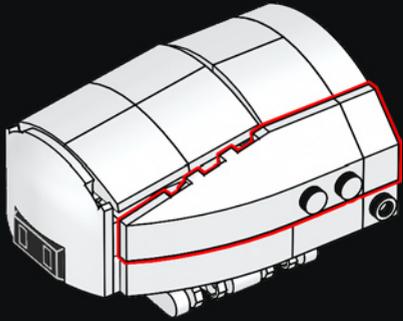


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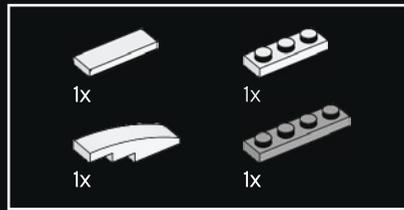
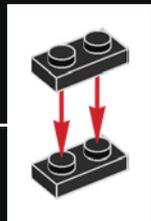
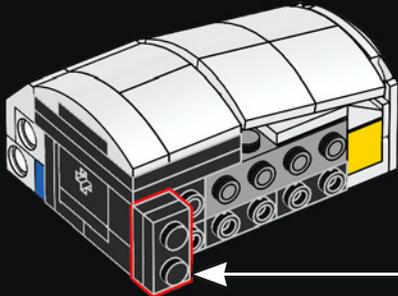




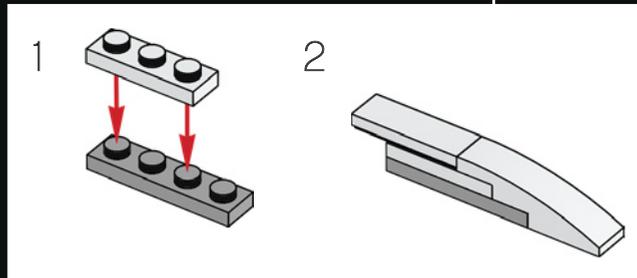
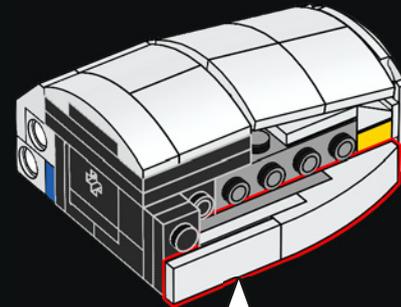
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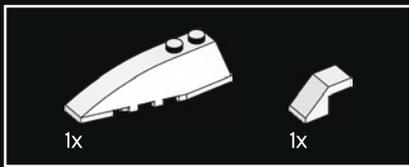


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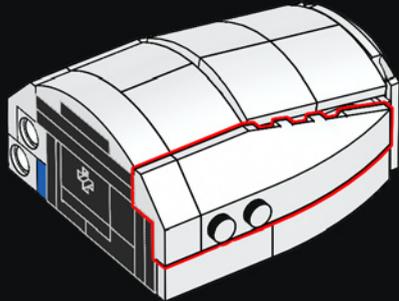


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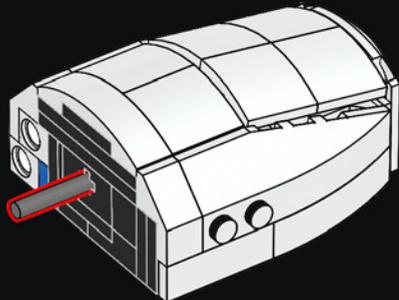




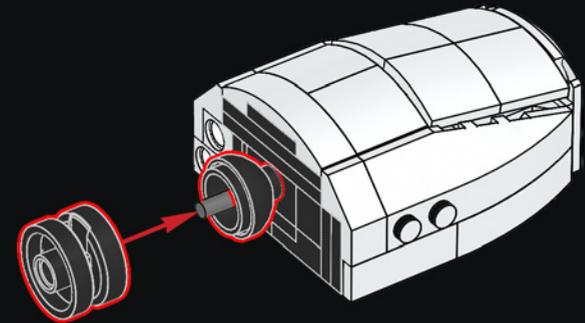
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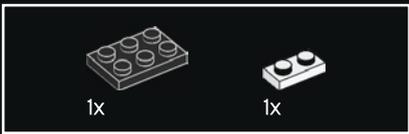


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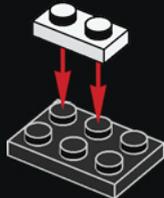


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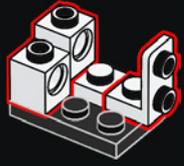




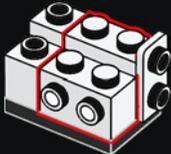
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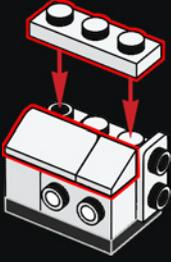
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446



447

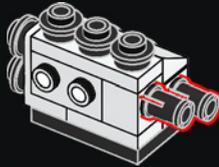




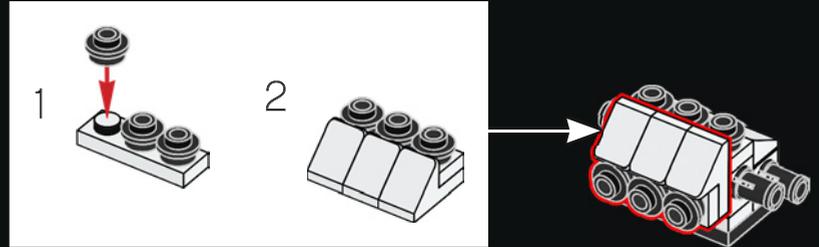
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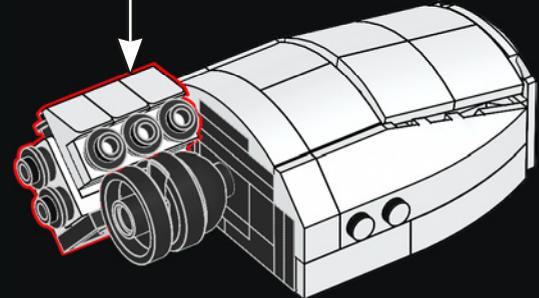
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450



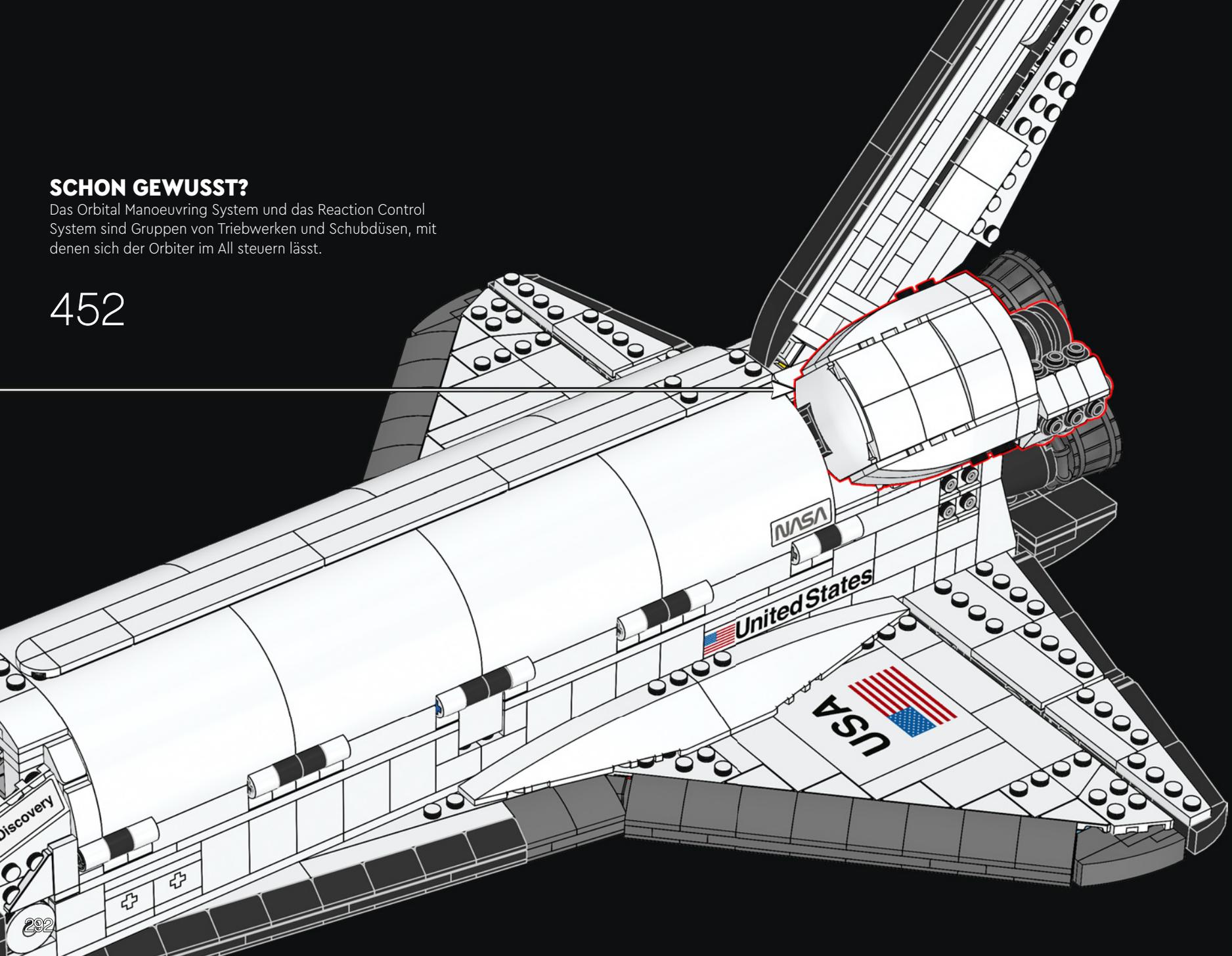
451



SCHON GEWUSST?

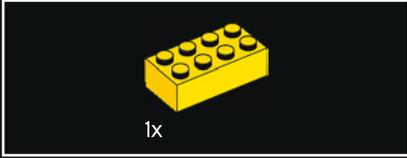
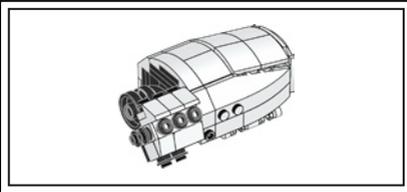
Das Orbital Manoeuvring System und das Reaction Control System sind Gruppen von Triebwerken und Schubdüsen, mit denen sich der Orbiter im All steuern lässt.

452



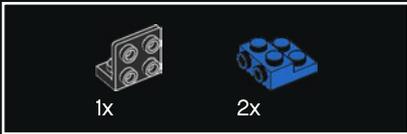
Discovery

292



1x

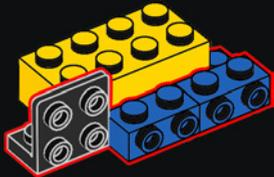
453



1x

2x

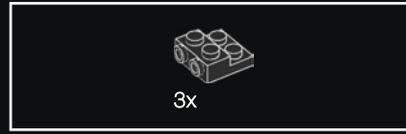
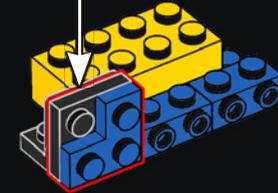
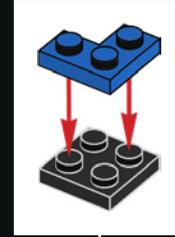
454



1x

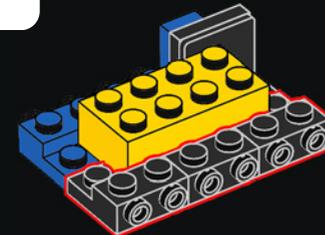
1x

455



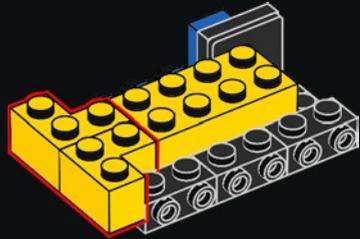
3x

456

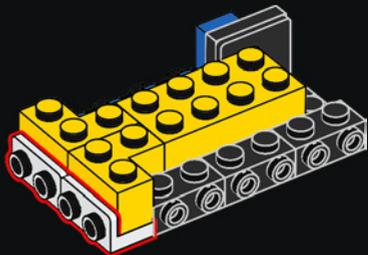




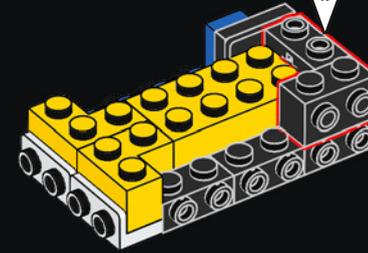
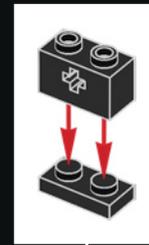
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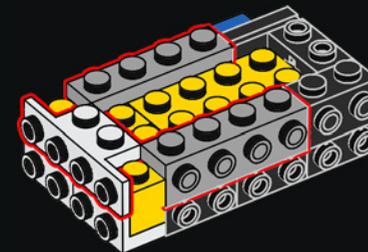
458



459

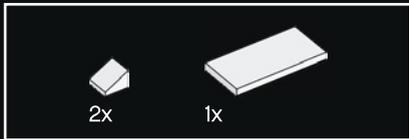
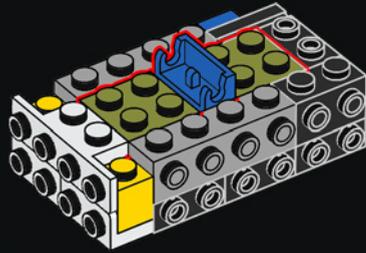


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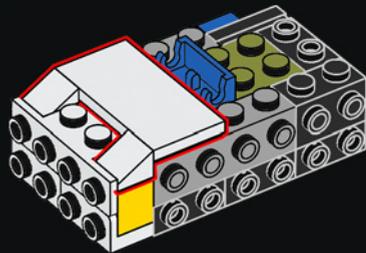




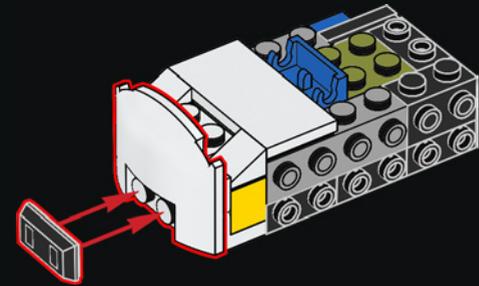
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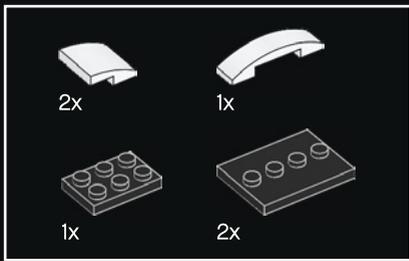


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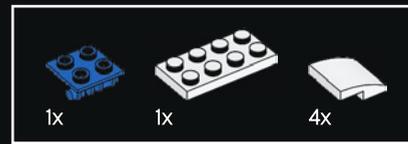
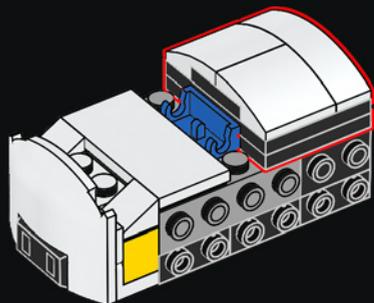
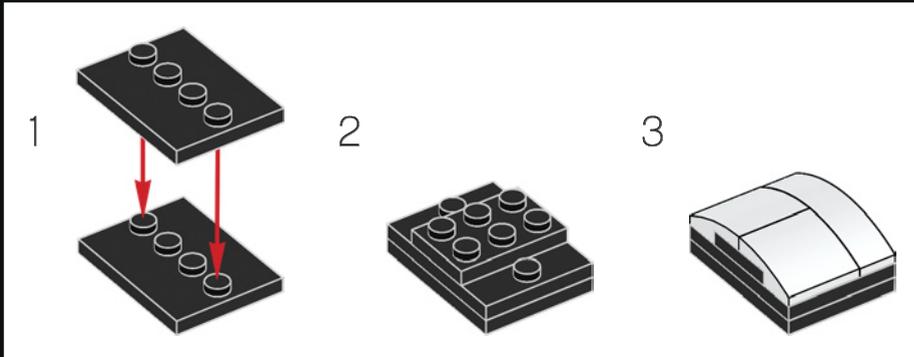


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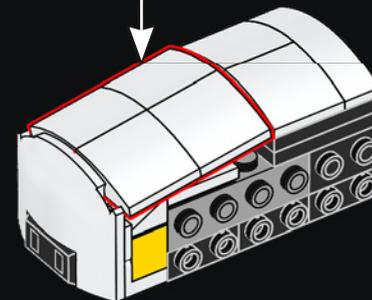
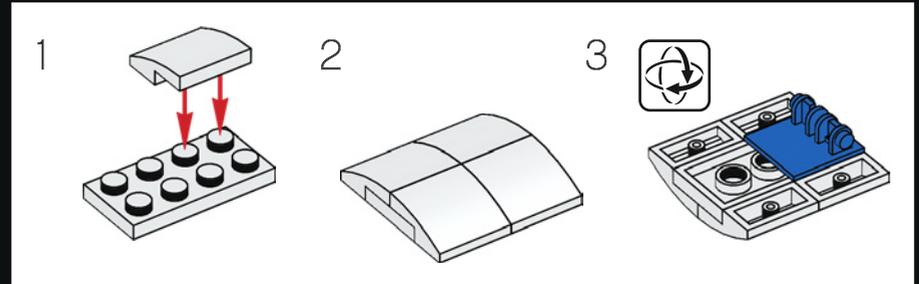




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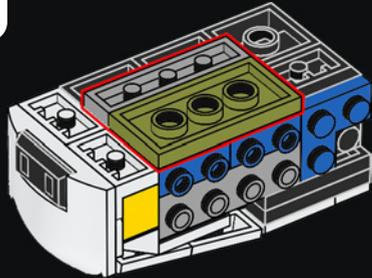


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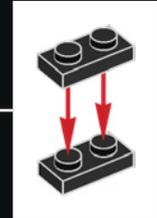
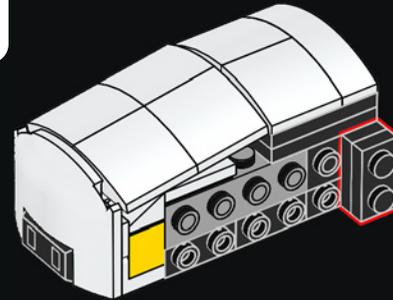




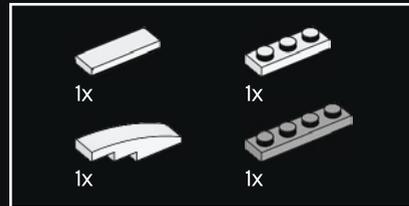
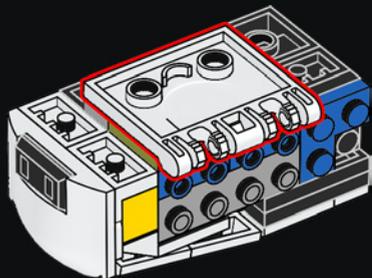
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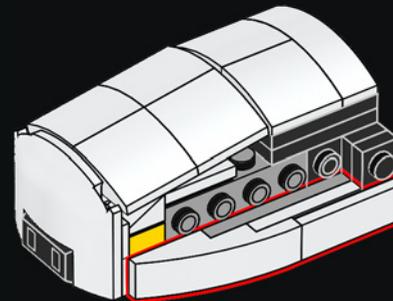
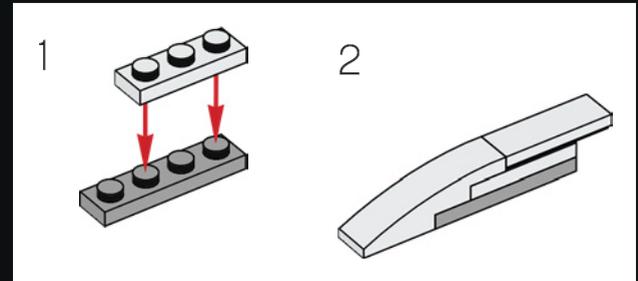
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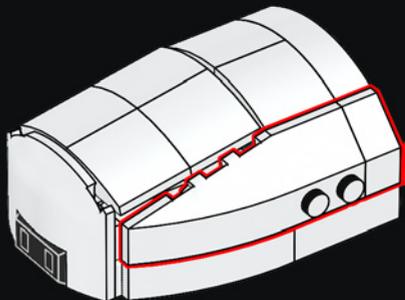


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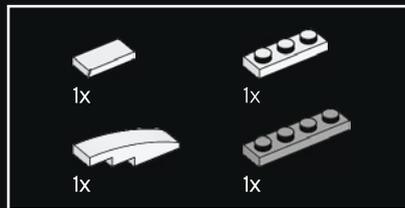
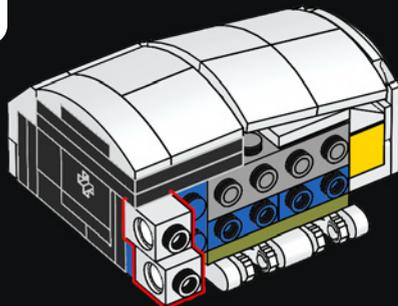




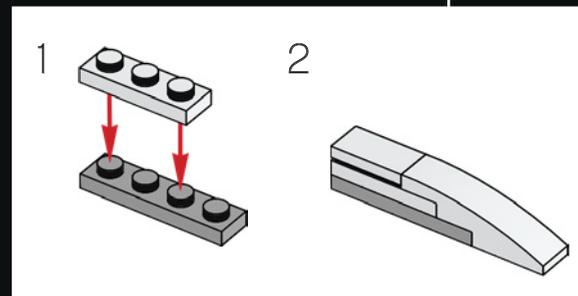
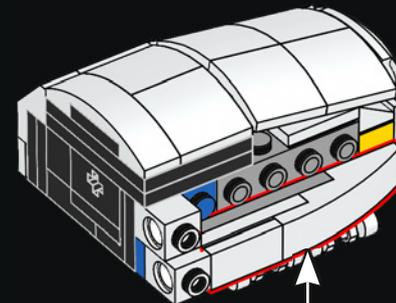
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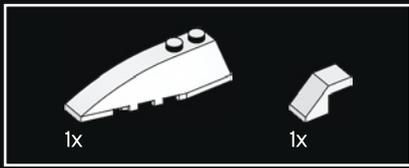


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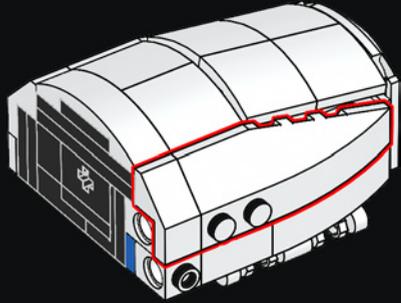


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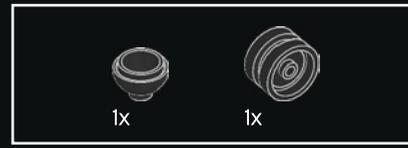
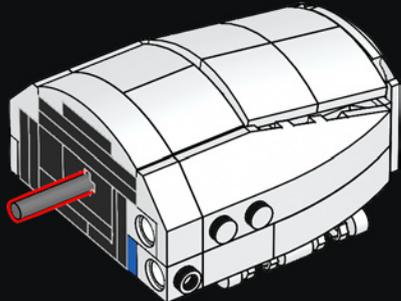




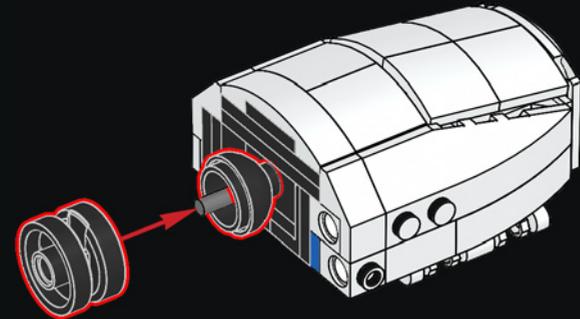
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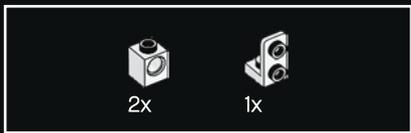
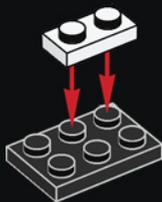


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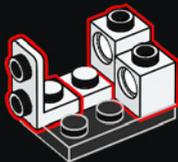




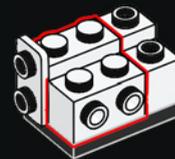
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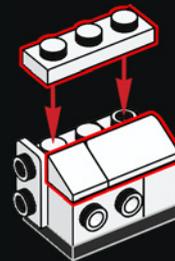
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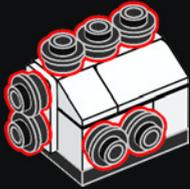


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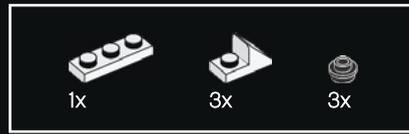
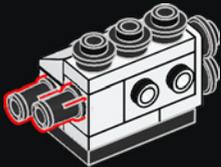




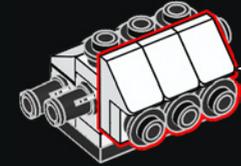
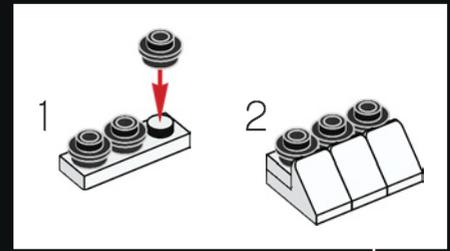
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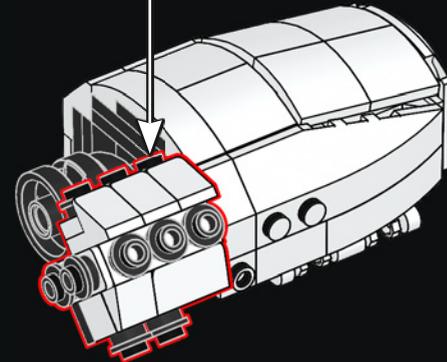
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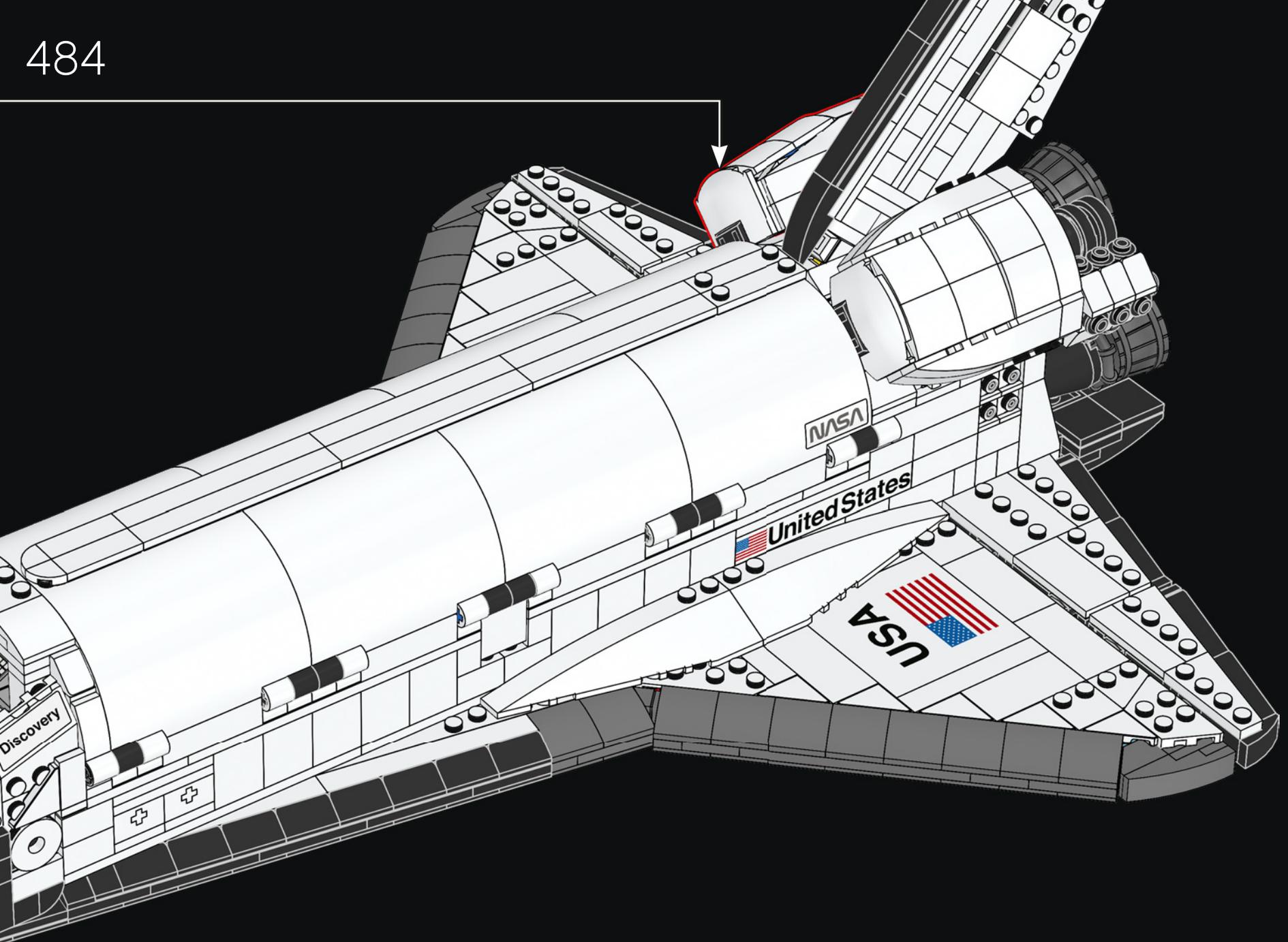


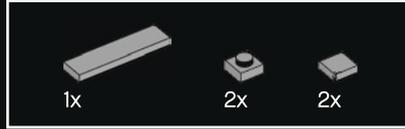
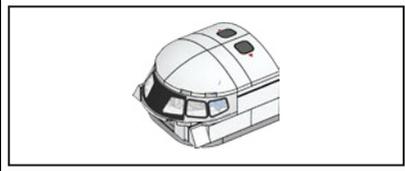
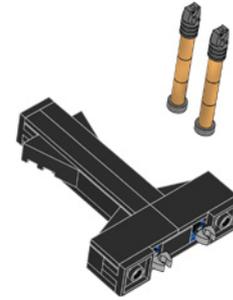
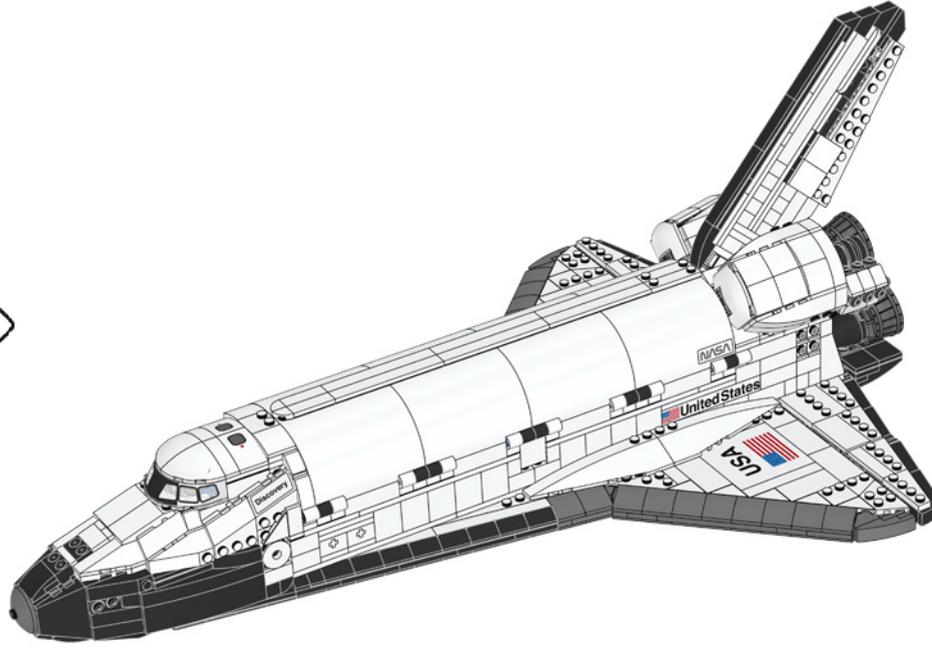
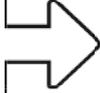
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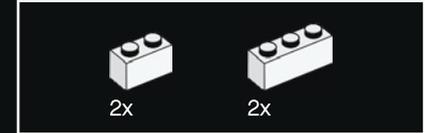
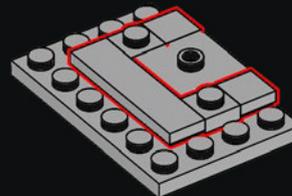
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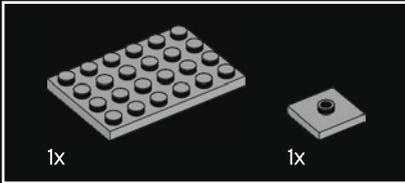
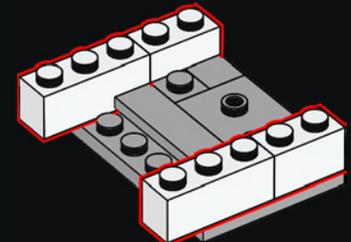




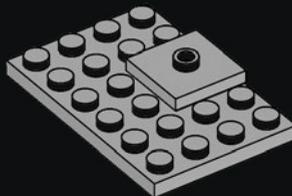
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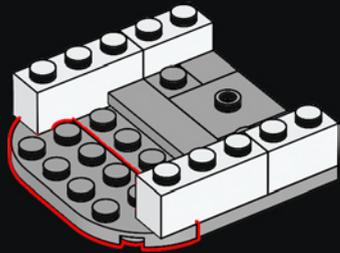


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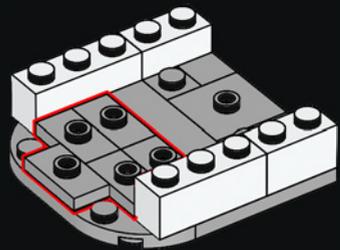




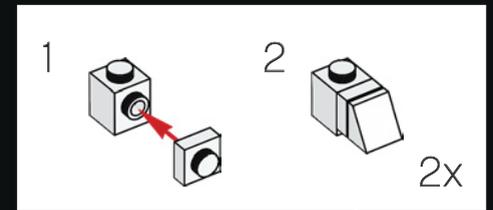
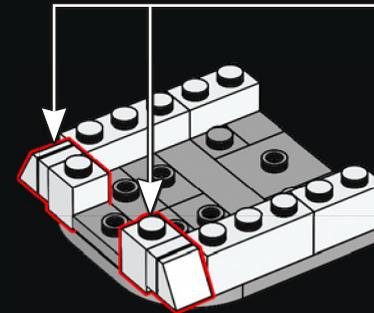
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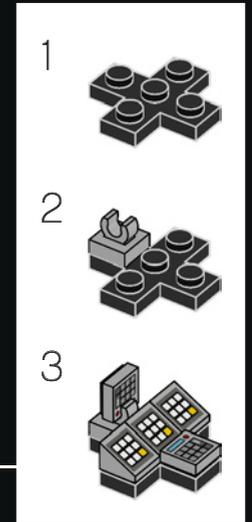
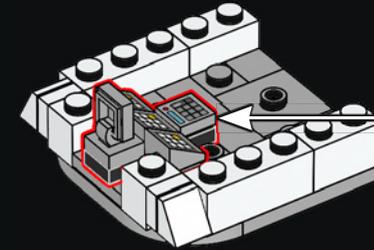
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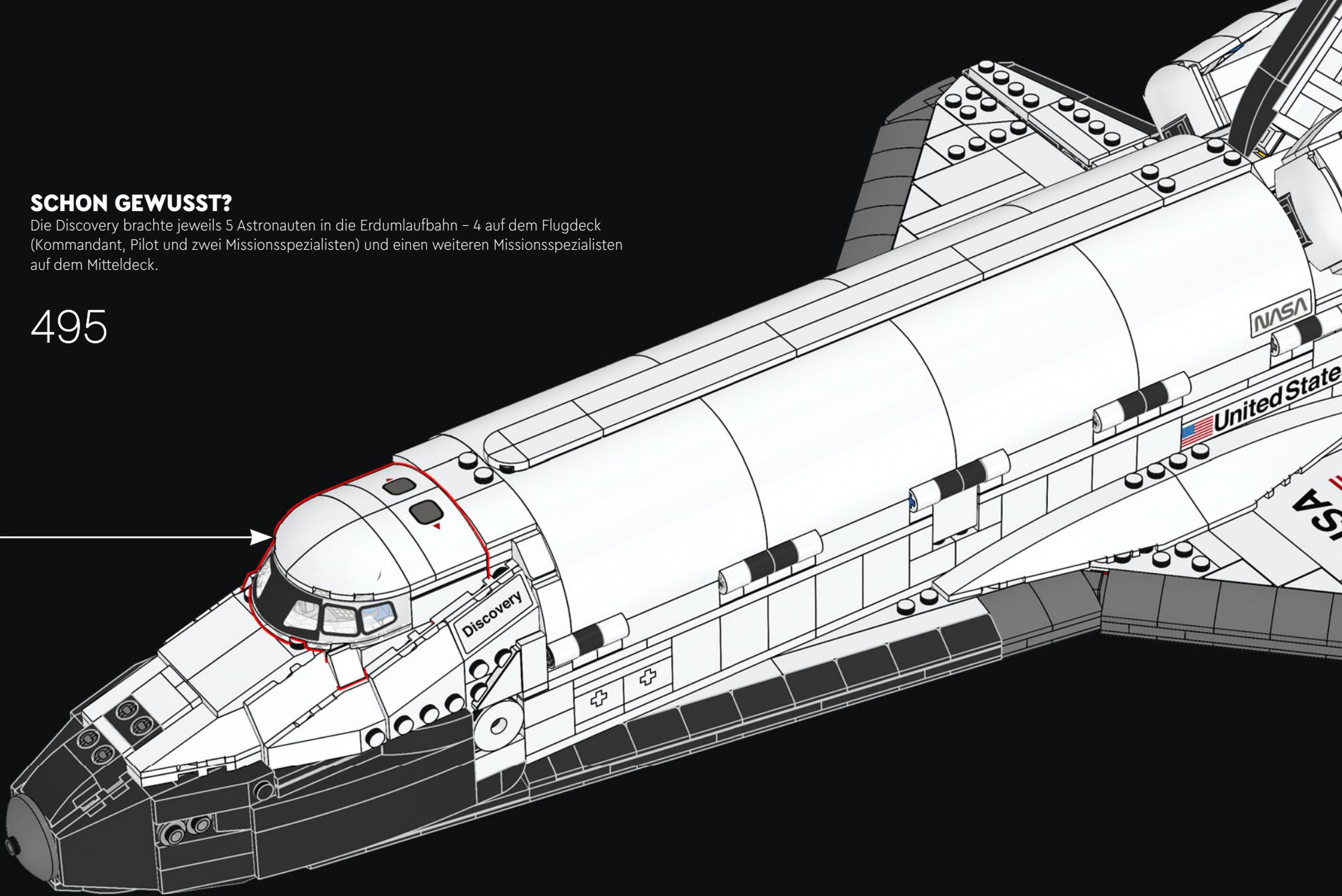
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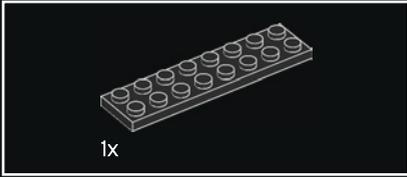
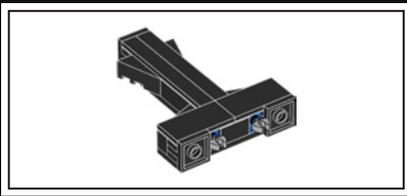


SCHON GEWUSST?

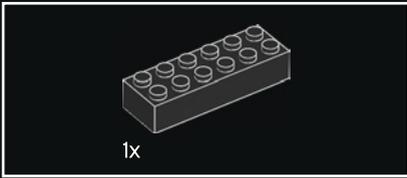
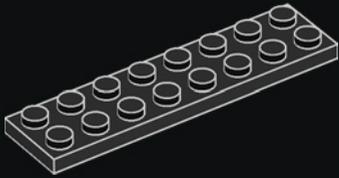
Die Discovery brachte jeweils 5 Astronauten in die Erdumlaufbahn – 4 auf dem Flugdeck (Kommandant, Pilot und zwei Missionsspezialisten) und einen weiteren Missionsspezialisten auf dem Mitteldeck.

495

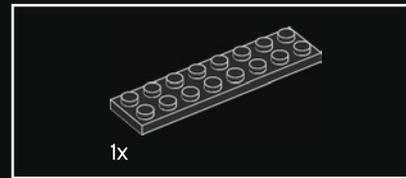
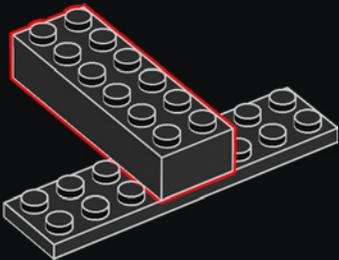




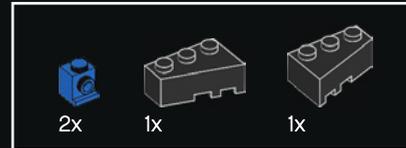
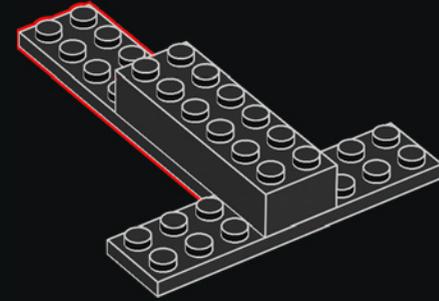
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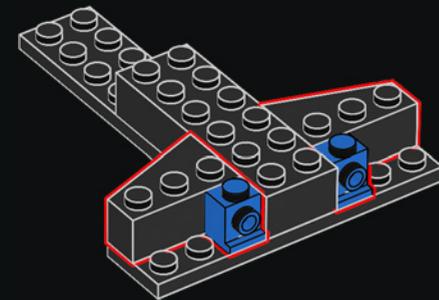
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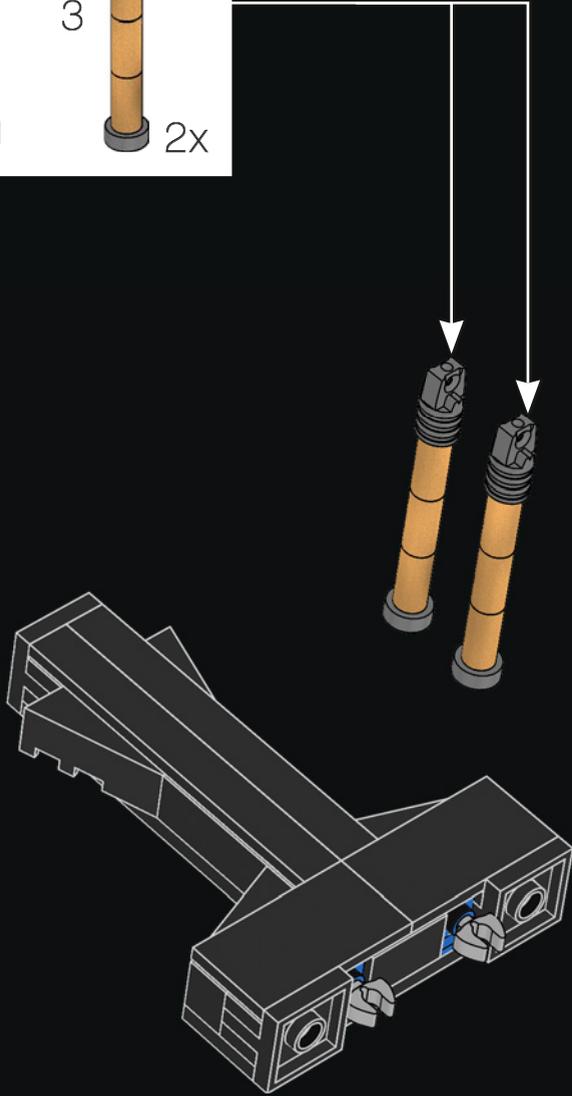
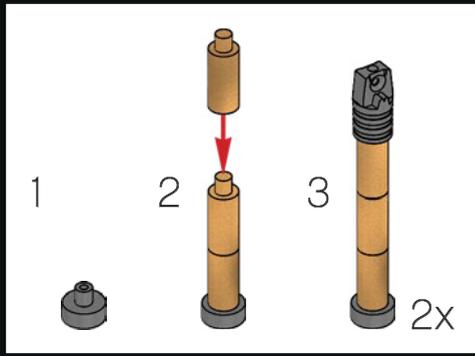


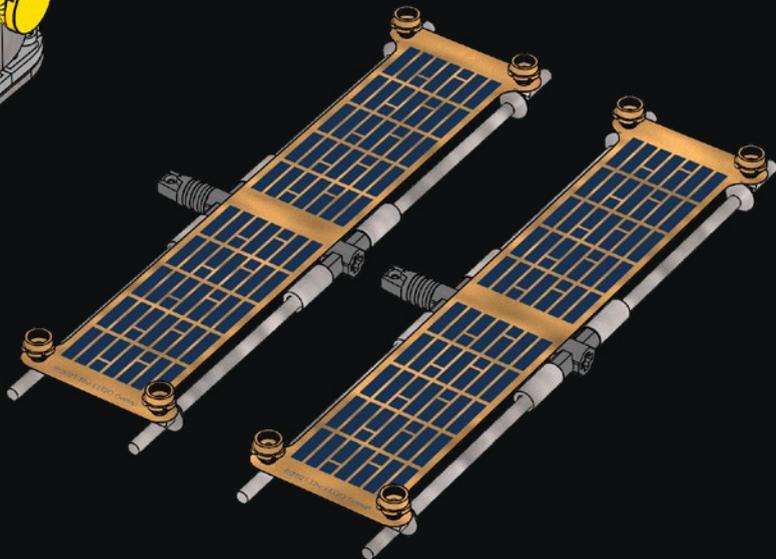
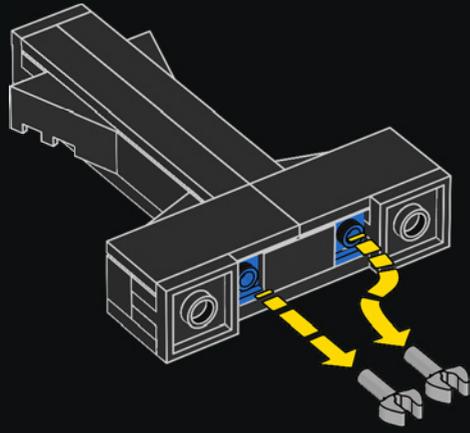
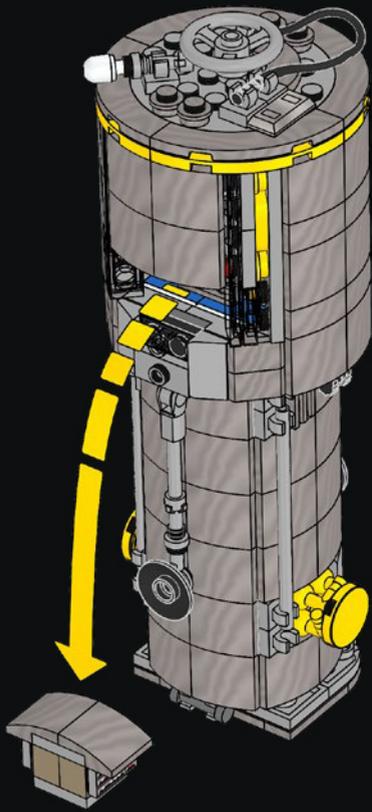
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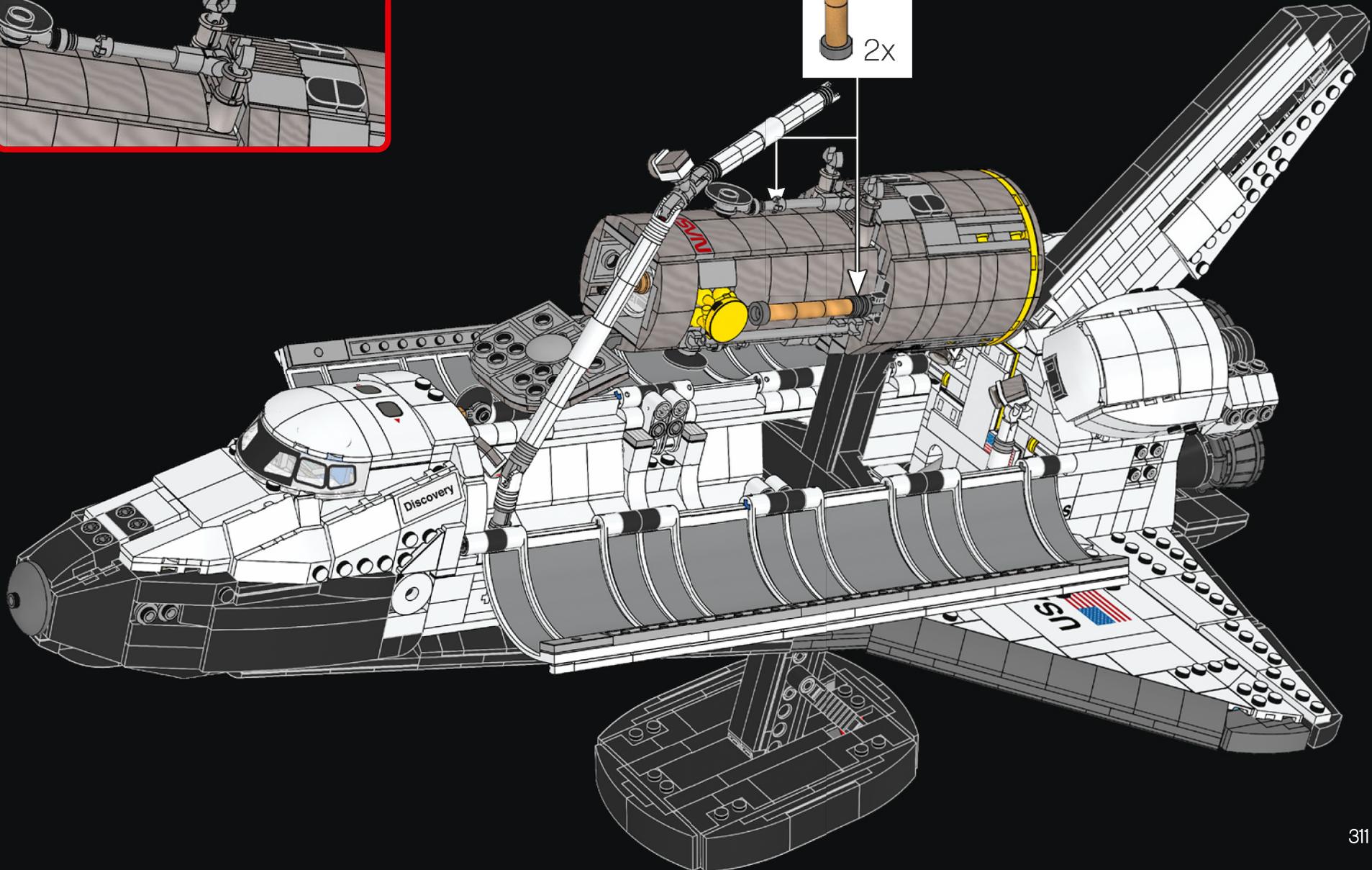
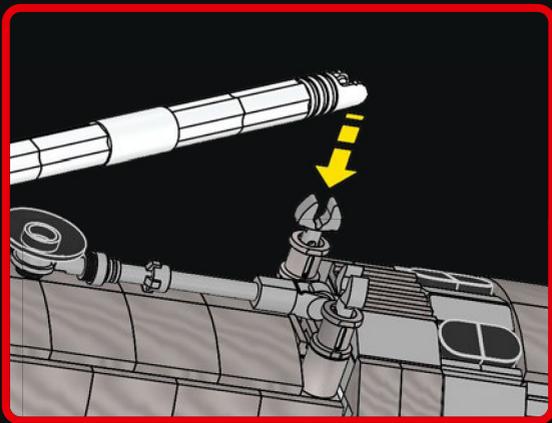


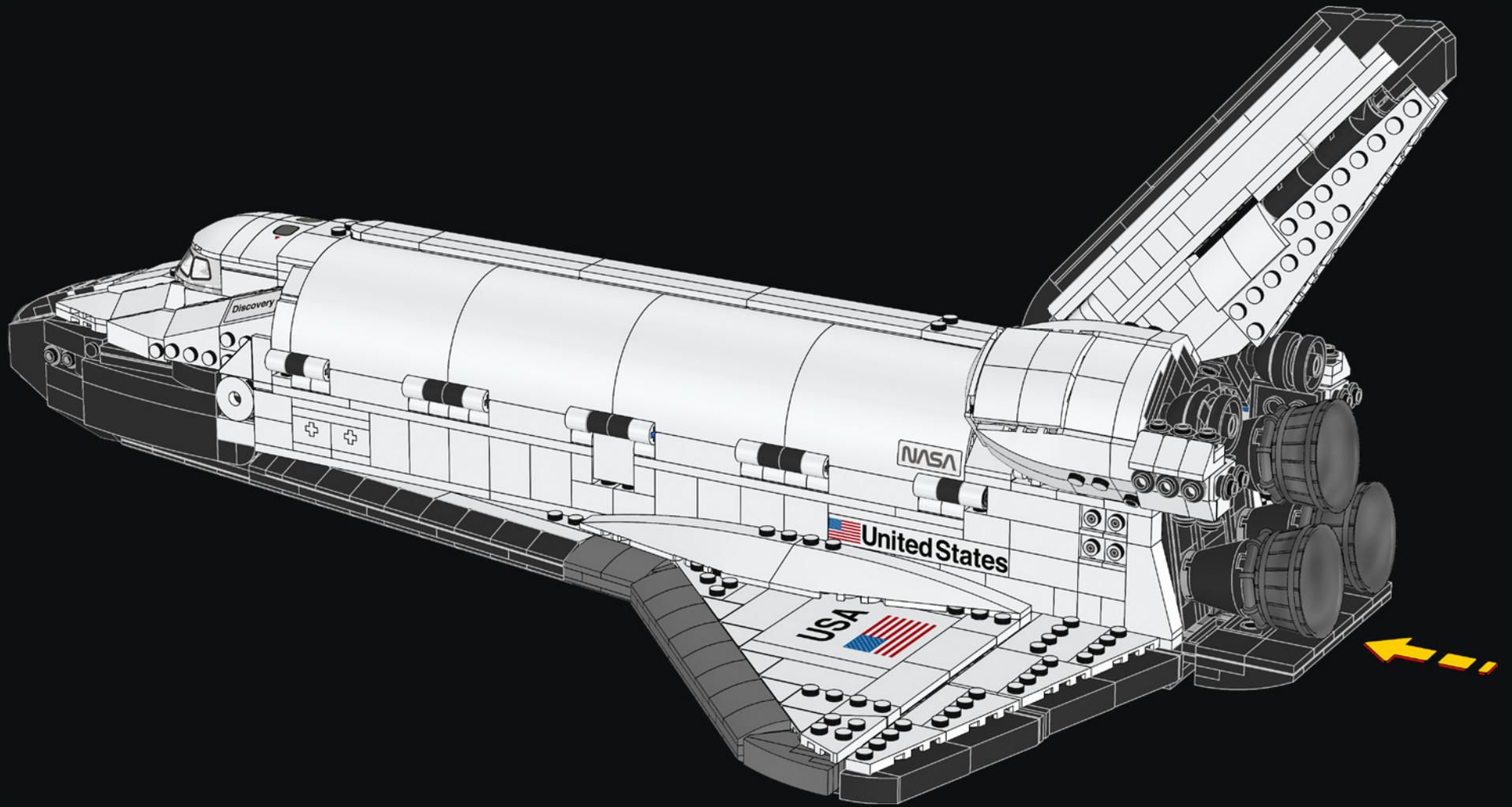


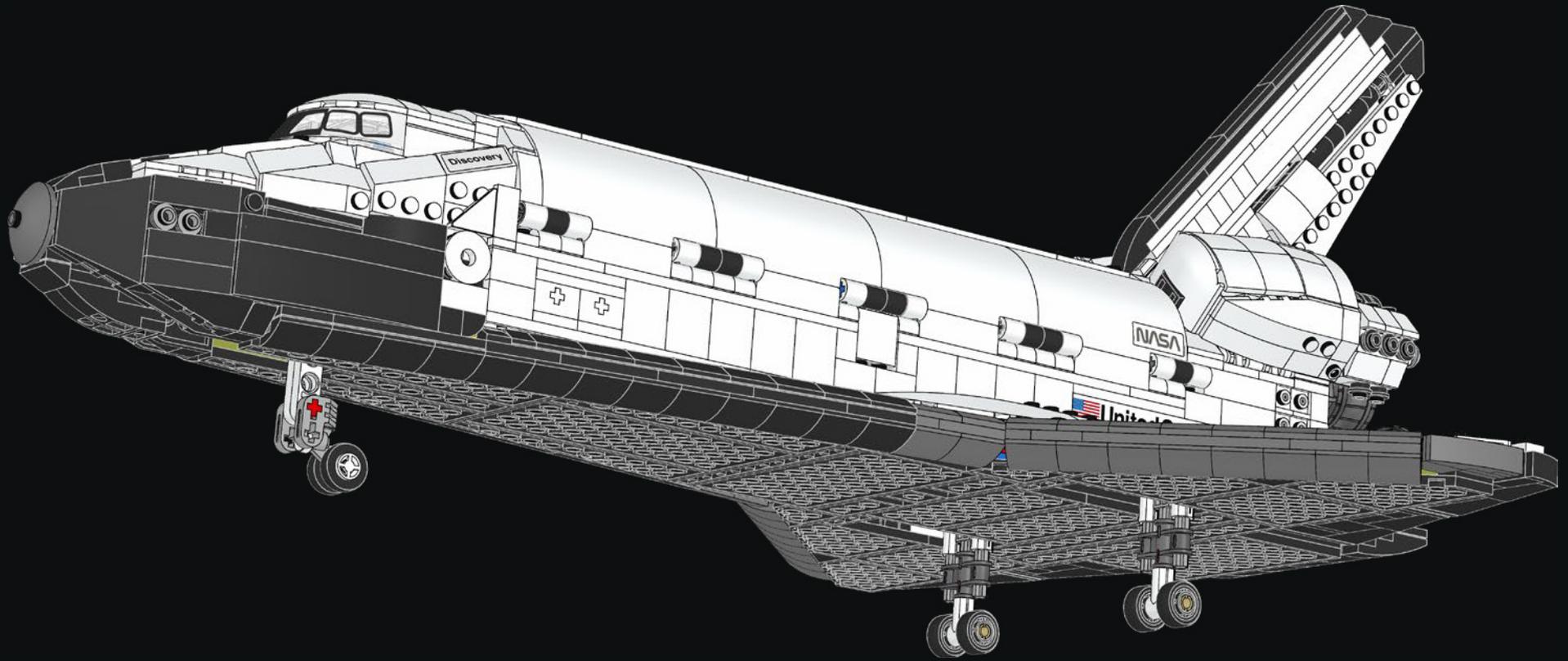
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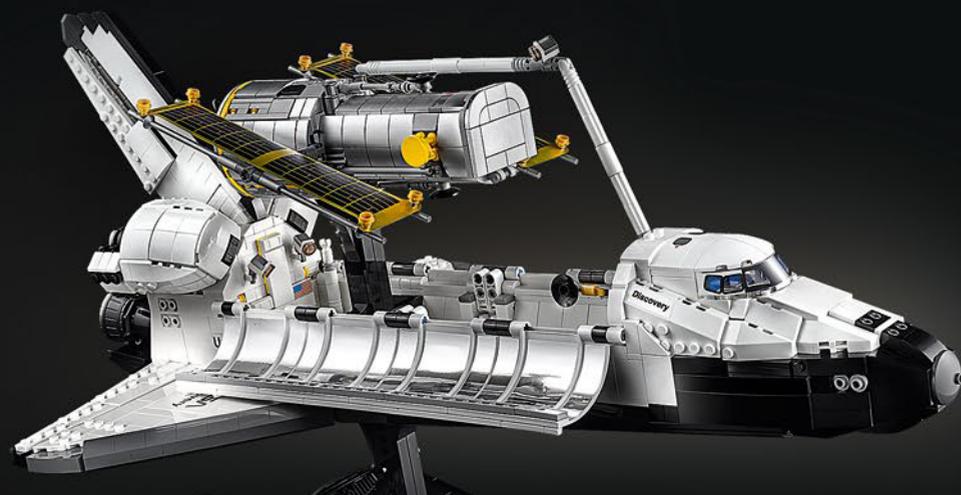
NASA
Space Shuttle Discovery STS-31

Orbiters	2
External Tanks	1
Boosters	2
Weight	24,000 lbs
Length	115.5 ft
Height	77.9 ft
Wingspan	145.6 ft
Speed	17,000 mph
Time in Space	1 year, 33 days, 14 minutes, 57 seconds



NASA **esa**
Hubble Space Telescope

Weight	11,000 kg
Length	13.2 m
Width	2.4 m
Height	7.1 m
Wingspan	12.8 m
Speed	29,000 mph
Time in Space	25 years, 15 months, 16 days, 14 hours, 56 minutes, 45 seconds



NASA **esa**
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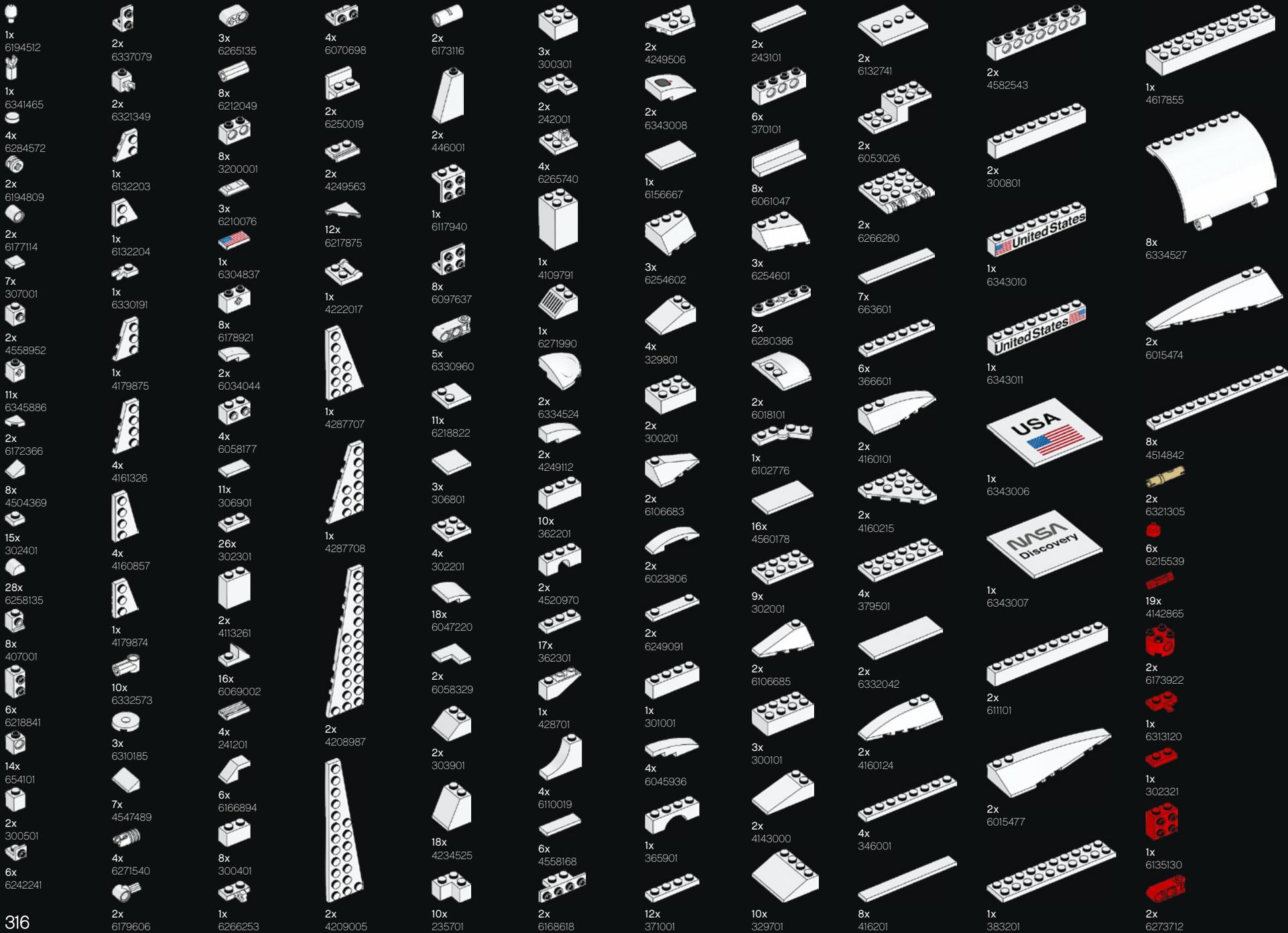
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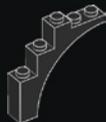
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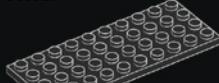
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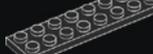
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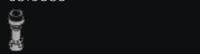
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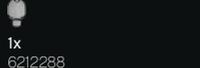
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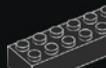
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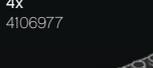
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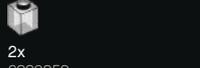
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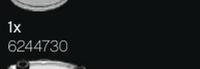
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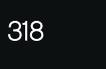
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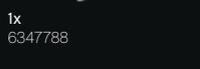
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