AH-64D Apache

Designed By
Lennart Cort
AKA Everblack

INSTRUCTION BY
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Boeing AH-64 Apache

From Wikipedia, the free encyclopedia

In 1981, three pre-production AH-64As were handed over to the U.S. Army for Operational Test II. The Army testing was successful, but afterward it was decided to upgrade to the more powerful T700-GE-701 version of engine, rated at 1,690 shp (1,260 kW). The AH-64 was named the Apache in late 1981, keeping with the Army's traditional use of American Indian tribal names for its helicopters and it was approved for full scale production in 1982. In 1983, the first production helicopter was rolled out at Hughes Helicopter's facility at Mesa, Arizona. Hughes Helicopters was purchased by McDonnell Douglas for $470 million in 1984. The helicopter unit later became part of The Boeing Company with the merger of Boeing and McDonnell Douglas in August 1997. In 1986, the incremental or flyaway cost for the AH-64A was $7M and the average unit cost was approximately $13.9M based on total costs.

In the mid-1980s, McDonnell Douglas studied an improved "AH-64B" design with an updated cockpit, new fire control system and other upgrades. In 1988 funding was approved for a multi-stage upgrade program to improve sensor and weapon avionic systems and incorporate some digital systems. However, rapidly improving technology led to the upgrade program being canceled in favor of more ambitious changes. Development of the more advanced AH-64D Apache Longbow was approved by the Defense Acquisition Board in August 1990. The first AH-64D prototype flew on 15 April 1992, testing of the prototypes ended in April 1995. During the testing, six AH-64D helicopters were pitted against a numerically superior group of AH-64A helicopters; the results demonstrated that AH-64D has a seven times increase in survivability and four times increase in lethality compared to the AH-64A. On 13 October 1995 full-scale production of the Apache Longbow was approved, and a $1.9-billion five-year contract was signed in August 1996 to upgrade and rebuild 232 existing AH-64A Apaches. The first production AH-64D flew on 17 March 1997 and was delivered on 31 March. The cost of the AH-64D program totaled $11bn through 2007.

In April 2006, Boeing was awarded a $67.6M fixed-price contract for the remanufacture of several existing U.S. AH-64As to the AH-64D configuration; between May 2009 and July 2011, a further five contracts were issued to remanufacture batches of AH-64As to the upgraded D variant. Since 2008, nations operating the older AH-64A have been urged to undertake modernization programs to become AH-64Ds, as Boeing and the U.S. Army plans to terminate support for the A-variants in the near future. The Apache's effectiveness against ground forces and in urban warfare operations was bolstered by the addition of the AGM-114N – a Hellfire missile fitted with a thermobaric warhead; the AGM-114N was approved for full production in 2005. The use of thermobaric "enhanced blast" weapons has been a point of controversy.

DESIGN

The AH-64 Apache has a four-blade main rotor and a four-blade tail rotor. The crew sits in tandem, with the pilot sitting behind and above the copilot/gunner. Both crew members are capable of flying the aircraft and performing methods of weapon engagements independently. The AH-64 is powered by two General Electric T700 turboshaft engines with high-mounted exhausts on either side of the fuselage. Various models of engines have been used on the Apache; those in British service use engines from Rolls-Royce instead of General Electric. In 2004, General Electric Aviation began producing more powerful T700-GE-701D engines, rated at 2,000 shp (1,500 kW) for AH-64Ds.

The crew compartment has shielding between the cockpits, such that at least one crew member can survive hits. The compartment and the rotor blades are designed to sustain a hit from 23 mm (0.91 in) rounds. The airframe includes some 2,500 lb (1,100 kg) of protection and has a self-sealing fuel system to protect against ballistic projectiles. The aircraft was designed to meet the crashworthiness requirements of MIL-STD-1290, which specifies minimum requirement for crash impact energy attenuation to minimize crew injuries and fatalities. This was achieved through incorporation of increased structural strength, crashworthy landing gear, seats and fuel system. Up to six AH-64 Apaches can be safely fitted inside the cargo hold of a USAF Lockheed C-5 Galaxy.

ARMAMENTS AND CONFIGURATIONS

The AH-64 is adaptable to numerous different roles within its context as Close Combat Attack (CCA), it has a customizable weapons loadout mounted on stub-wings for the role desired. In addition to the 30 mm M230E1 Chain Gun, the Apache carries a range of external stores on its stub-wing pylons, typically a mixture of AGM-114 Hellfire anti-tank missiles, and Hydra 70 general-purpose unguided 70 mm (2.756 in) rockets.

Starting in the late 1980s, the Stinger and AIM-9 Sidewinder air-to-air missiles and the AGM-122 Sidearm anti-radiation missile were evaluated for use upon the AH-64. The Stinger was initially selected over the AIM-9, but the U.S. Army is considering the Starstreak air-to-air missile instead. External fuel tanks can also be carried on the stub wings to increase range and mission time. The stub-wing pylons have mounting points which make maintenance easier; these mountings can be used to secure personnel to the wings for transport for emergencies. Stinger missiles are more used by non-U.S. Apaches because foreign forces don't have as many other aircraft for air superiority to control the skies.

AVIONICS AND TARGETING

One of the revolutionary features at the introduction of the Apache was its helmet mounted display, the Integrated Helmet and Display Sighting System (IHADSS); among other abilities the pilot or gunner can slave the helicopter's 30 mm automatic M230 Chain Gun to his helmet, making the gun track head movements to point at where he looks. The M230E1 can be alternatively fixed to a locked forward firing position, or controlled via the Target Acquisition and Designation System (TADS). The AH-64's standard of performance for aerial gunnery is to achieve at least 1 hit for every 30 shots fired at a wheeled vehicle at a range of 800–1,200 m (870–1,310 yd).

The AH-64 is designed to endure front-line environments and to operate during the day or night and in adverse weather via its avionics and onboard sensor suites. These systems include the Target Acquisition and Designation System, Pilot Night Vision System (TADS/PNVS), passive infrared countermeasures, GPS, and the IHADSS. A newer system that is replacing TADS/PNVS is Arrowhead (MTADS); it is manufactured by Lockheed Martin, a contract was issued in February 2005 to begin equipping all U.S. Apaches.

In August 2012, 24 AH-64D were equipped with the Ground Fire Acquisition System (GFAS); intended to detect and target ground-based weapons fire sources. The GFAS consists of two small sensor pods which home in on muzzle flashes; working with the AH-64D's own sensors, an infrared camera precisely locates present ground-based threats and relevant distance. The GFAS has a 120° field of vision and is effective in all-light conditions.

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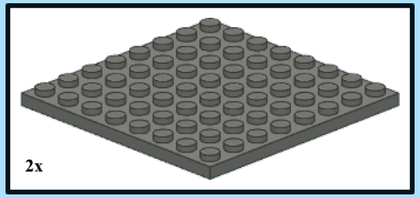

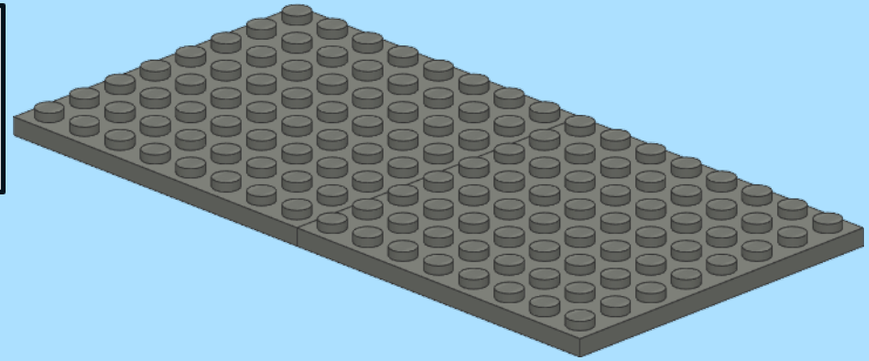

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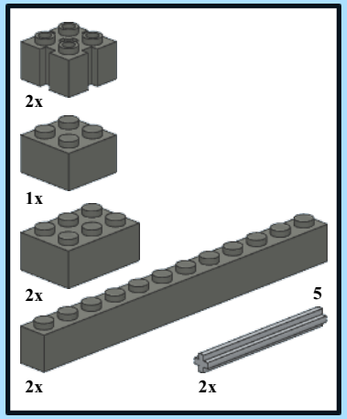

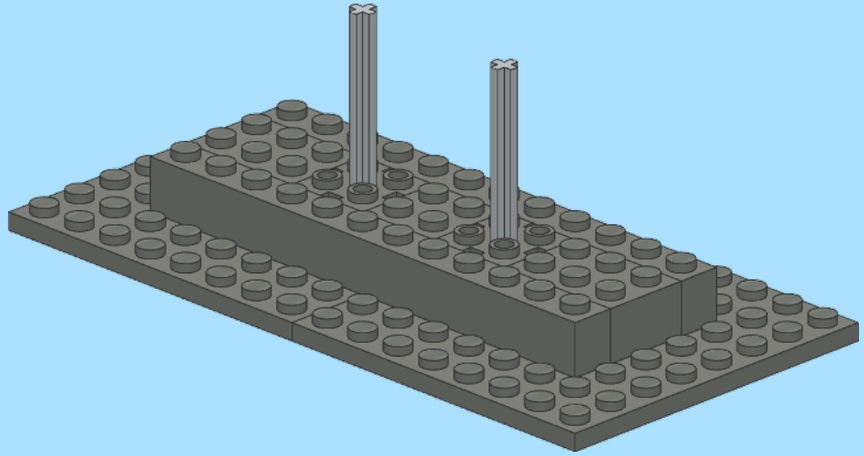

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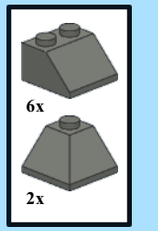

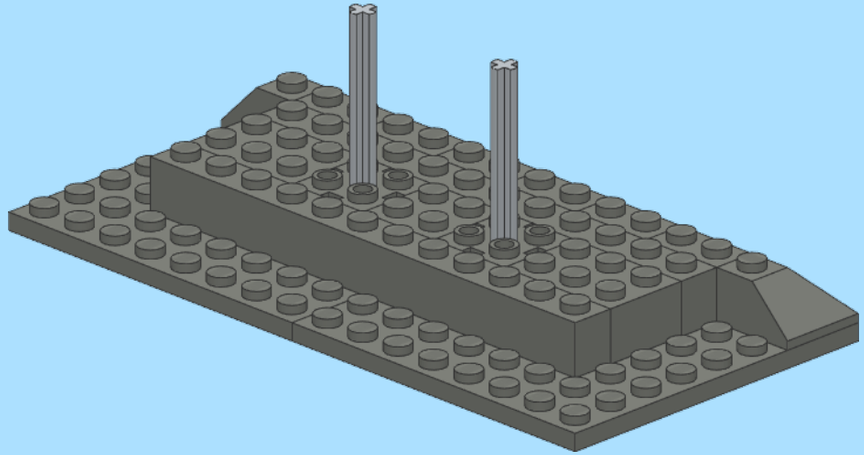

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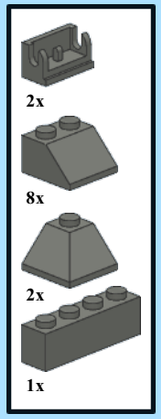

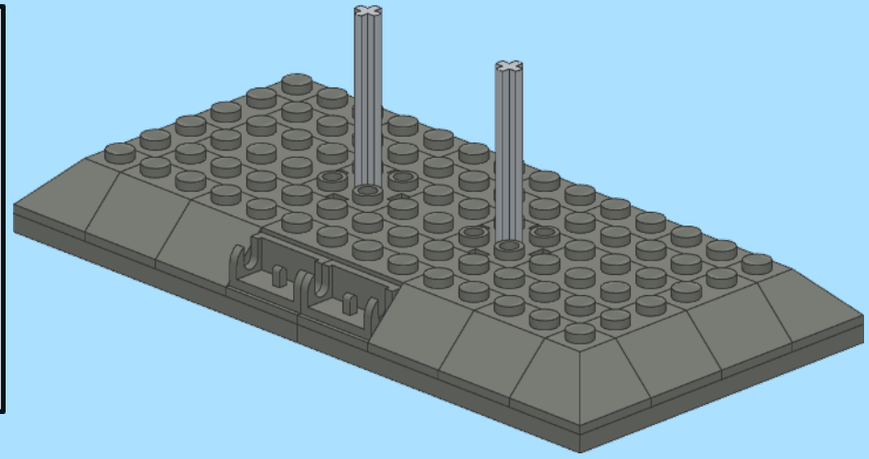

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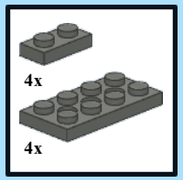

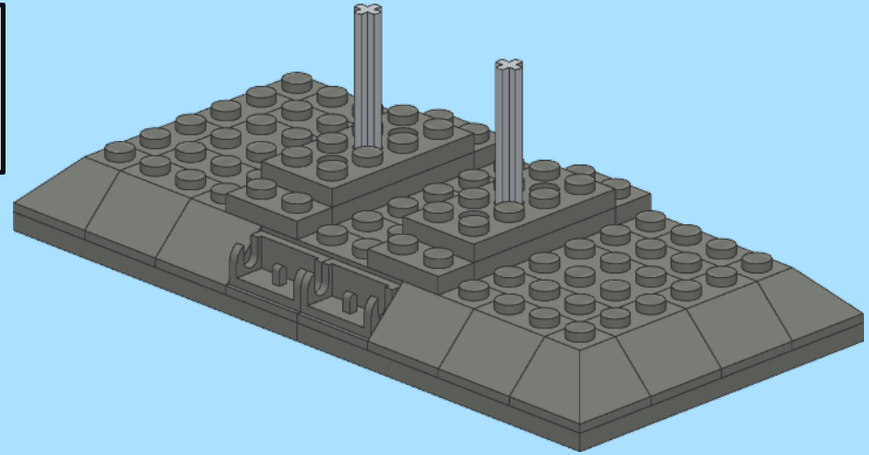

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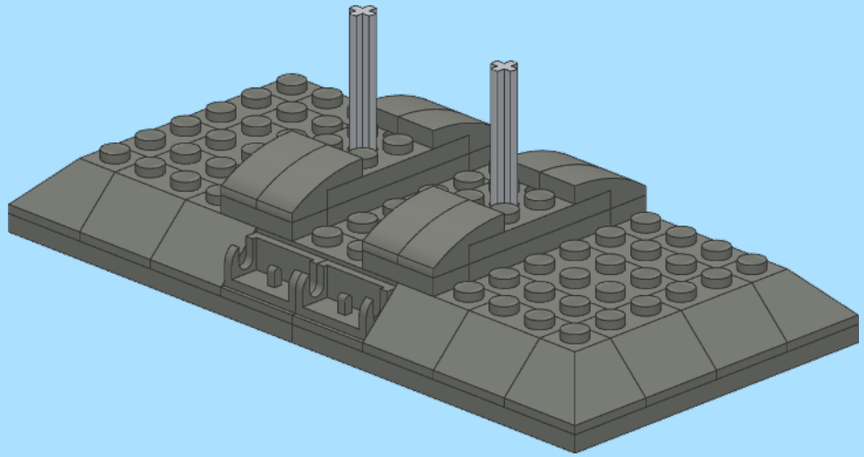

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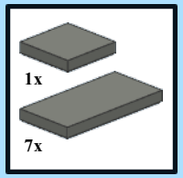

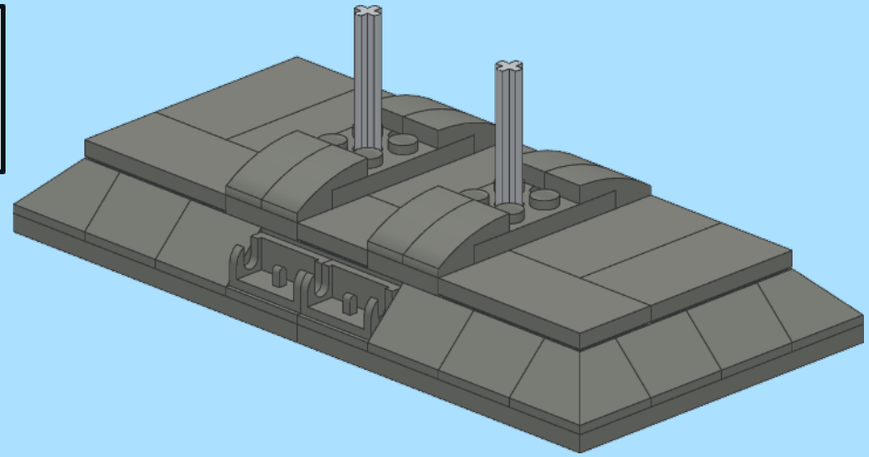

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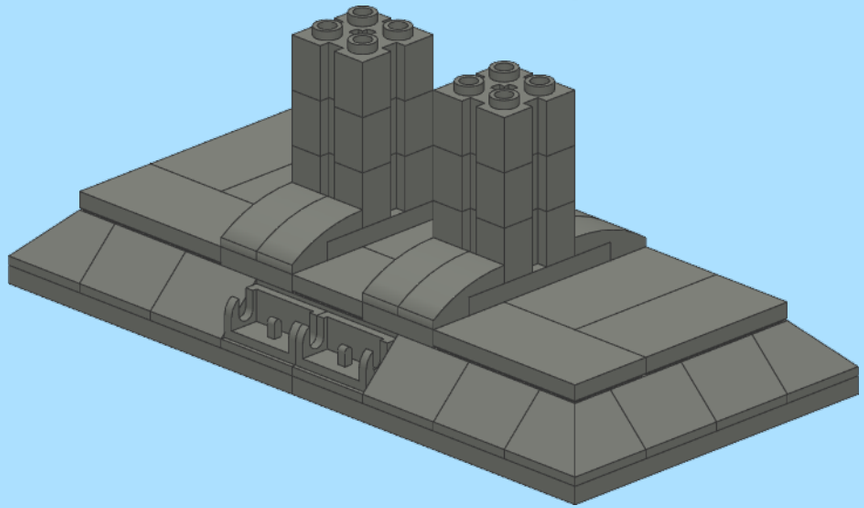

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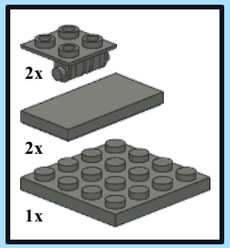

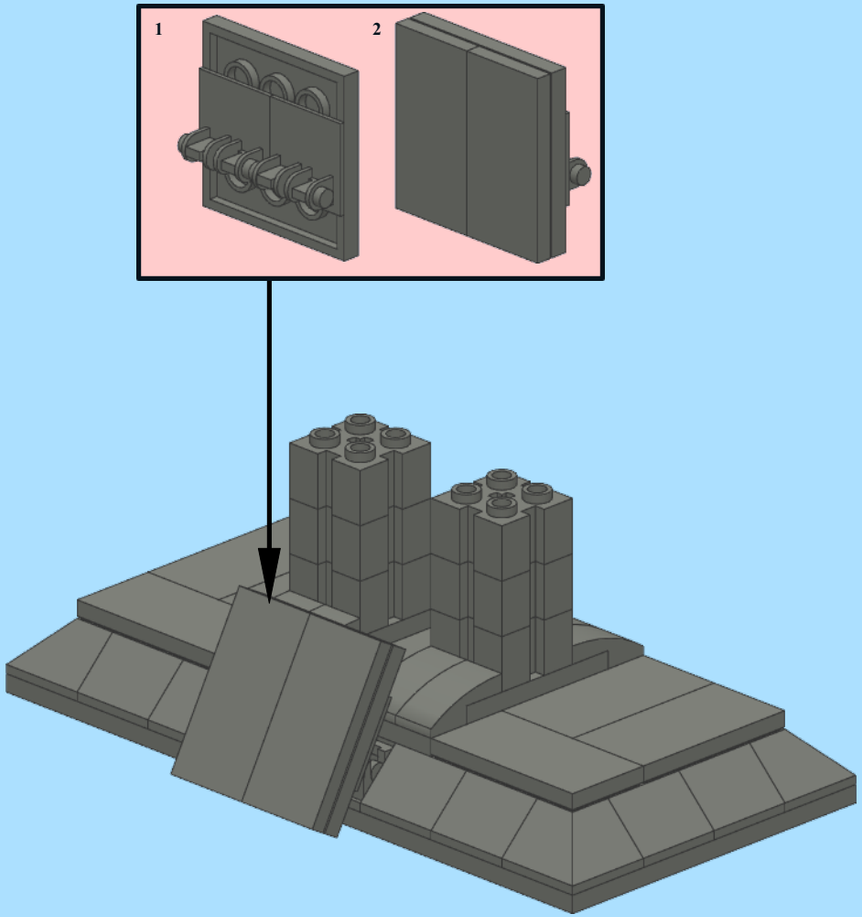

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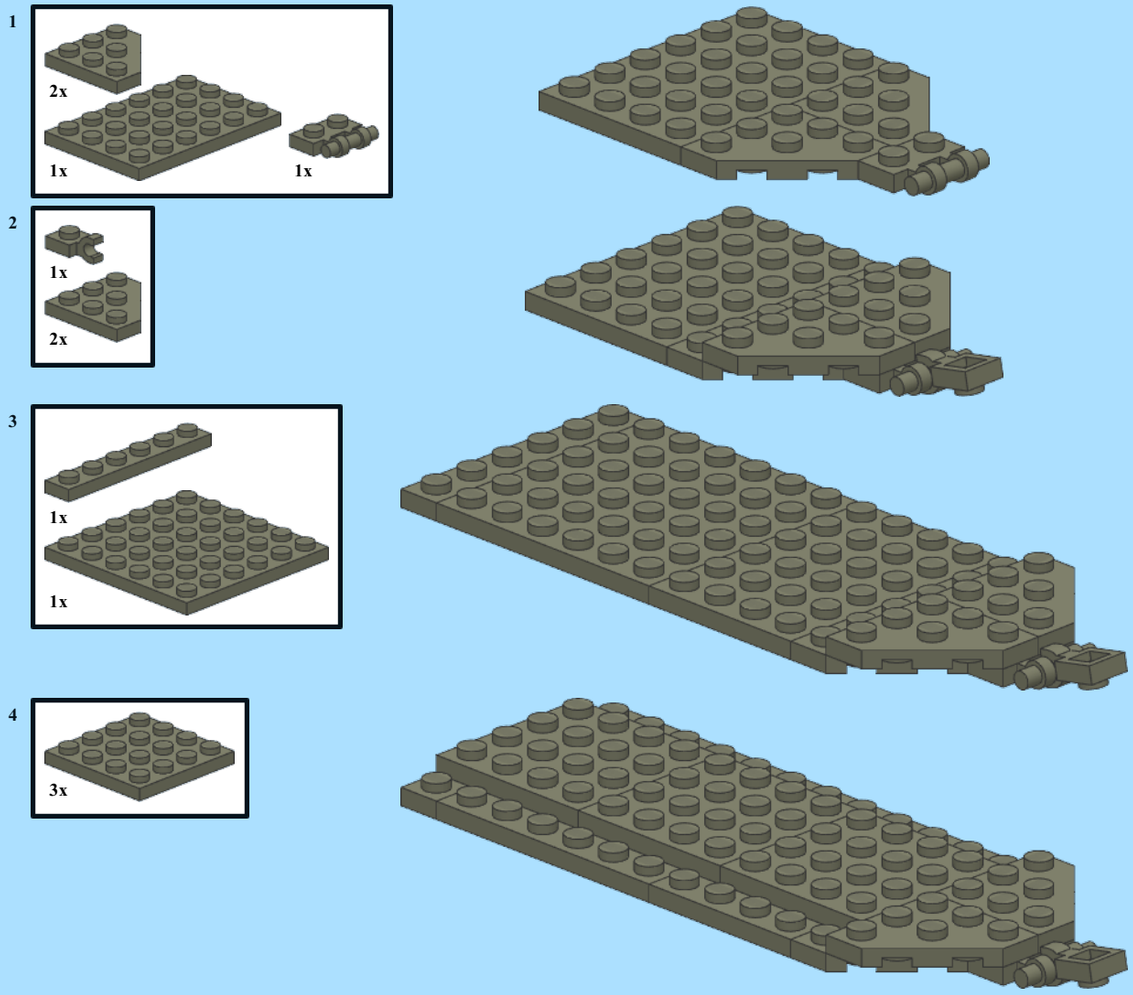

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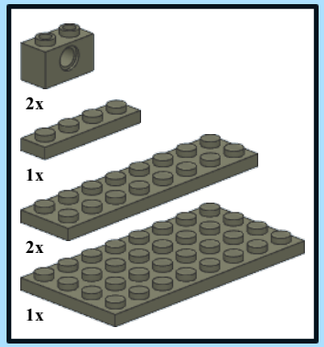

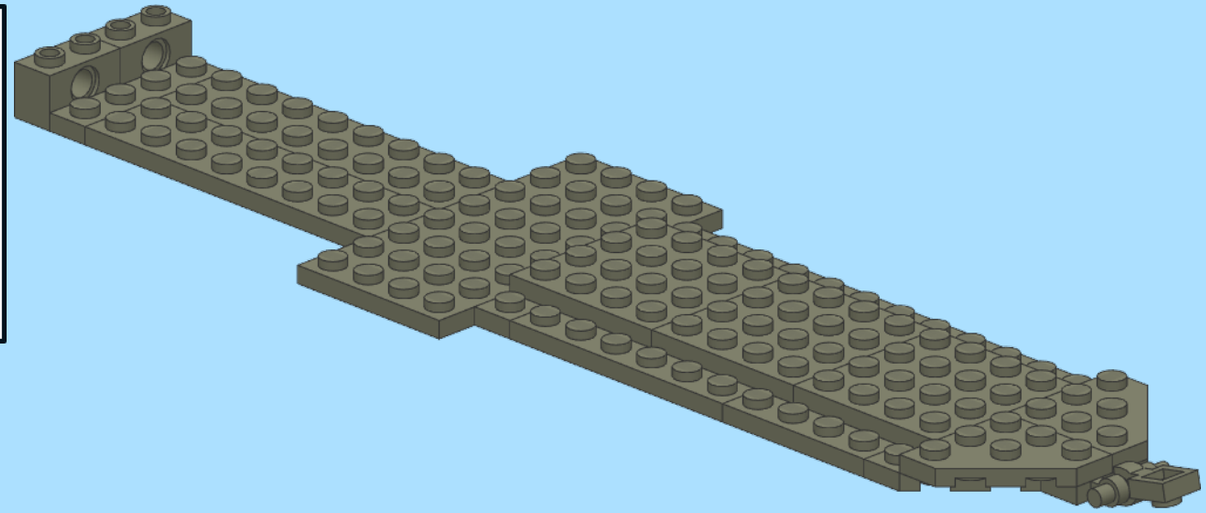

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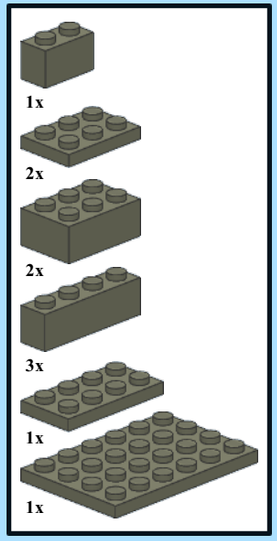

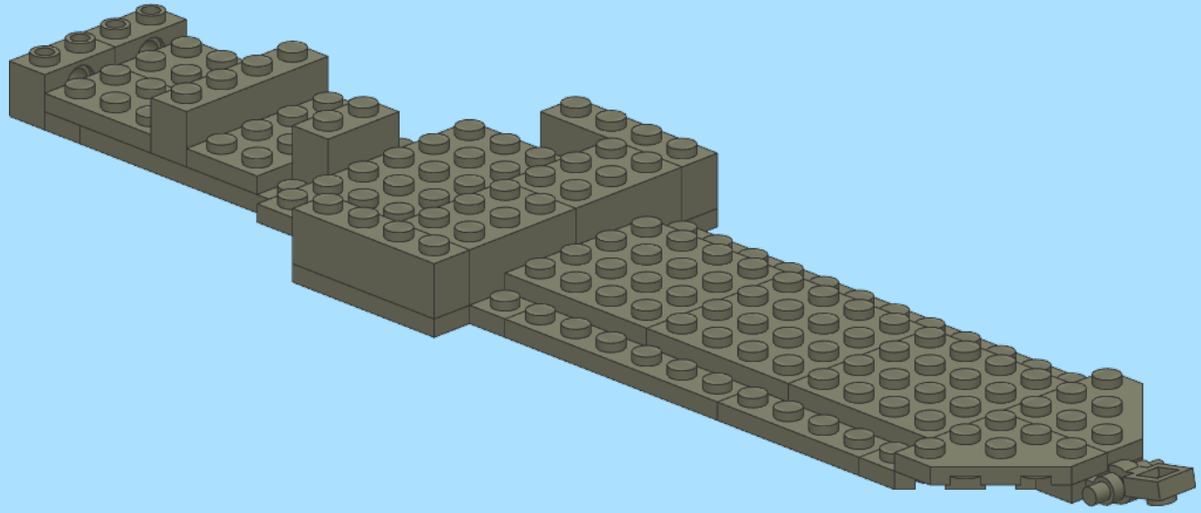

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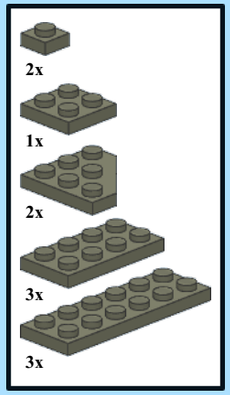

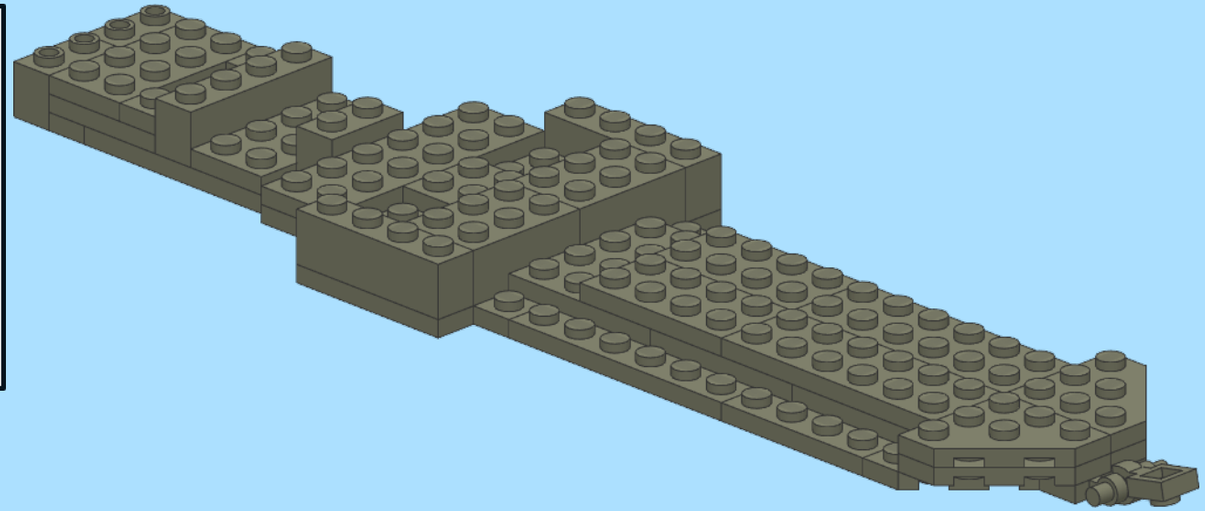

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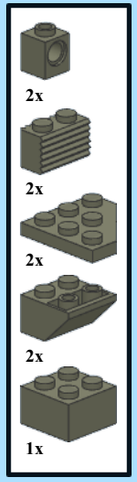

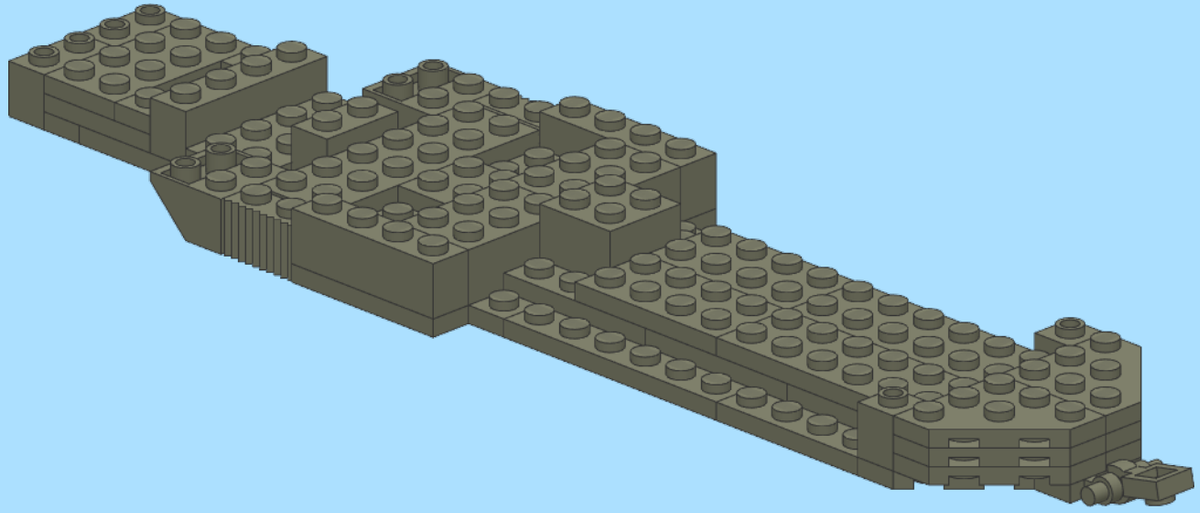

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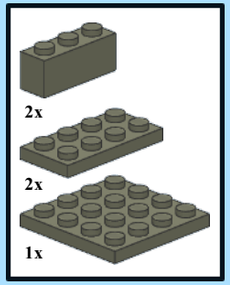

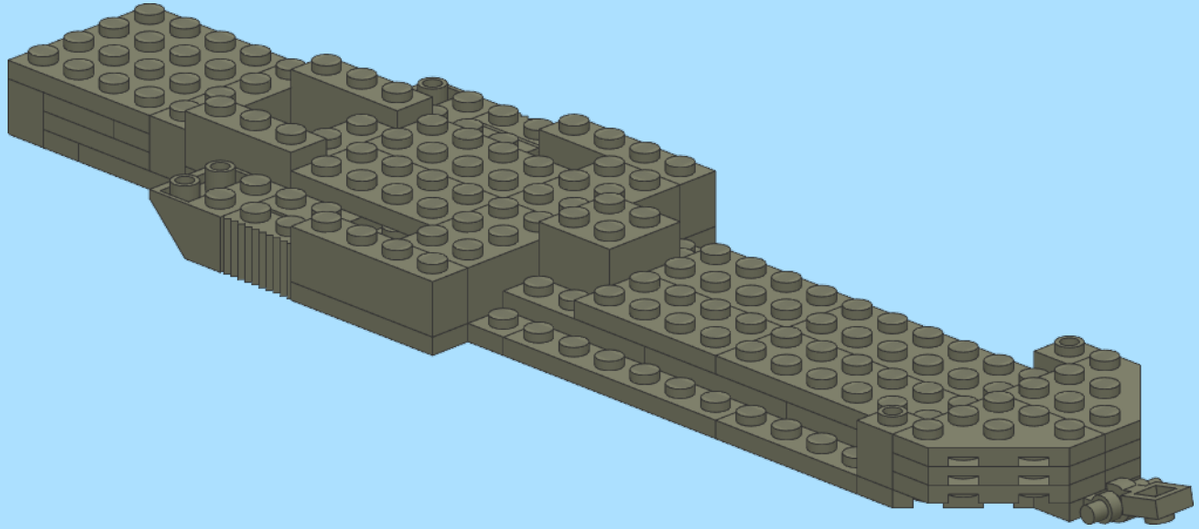

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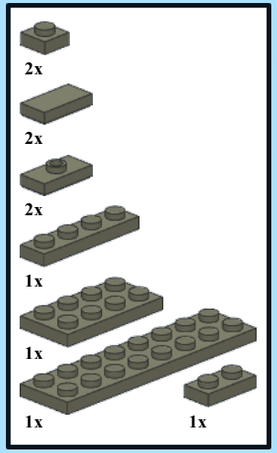

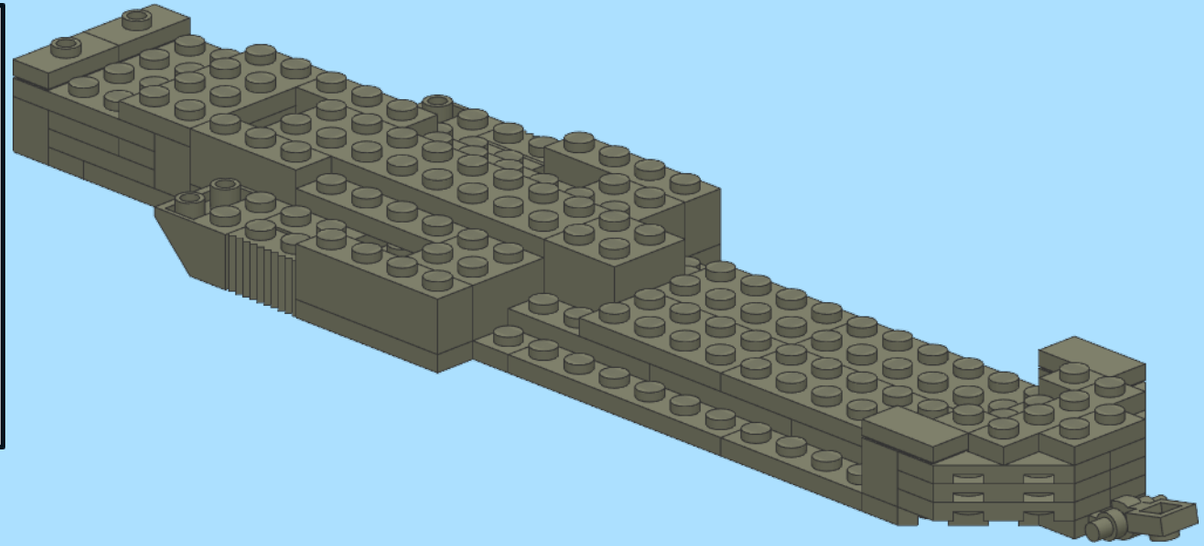

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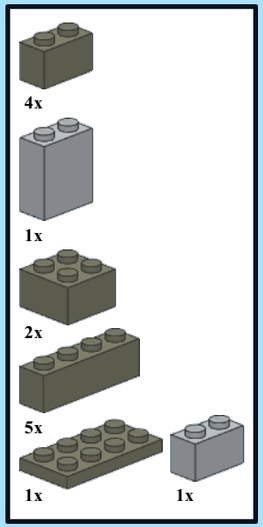

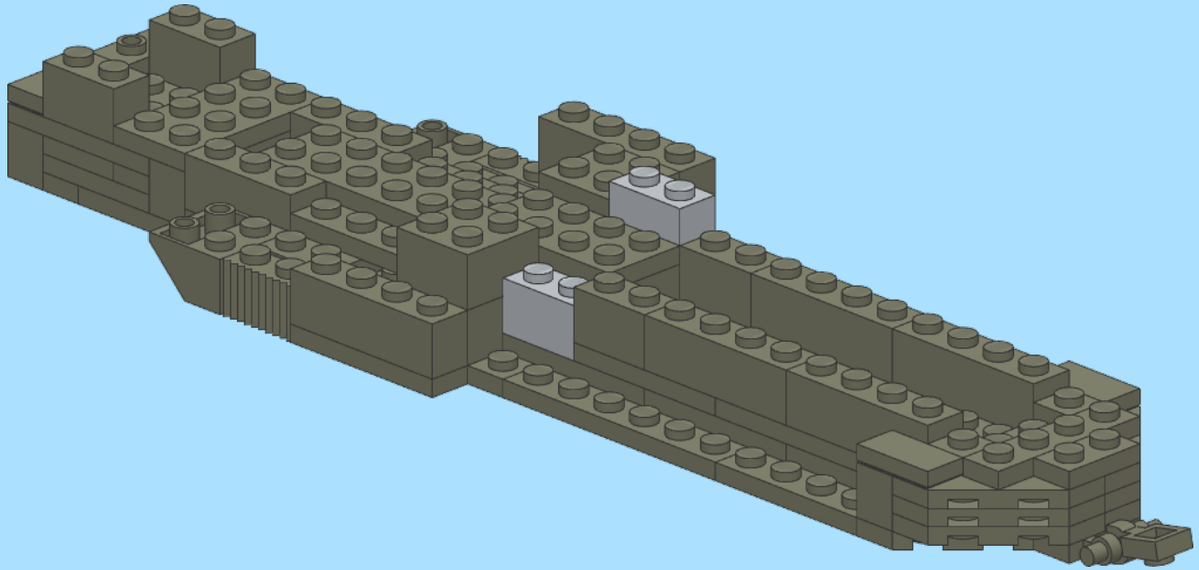

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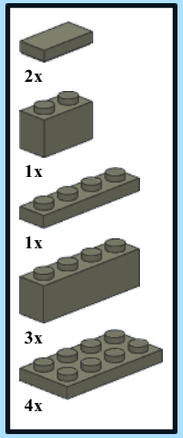

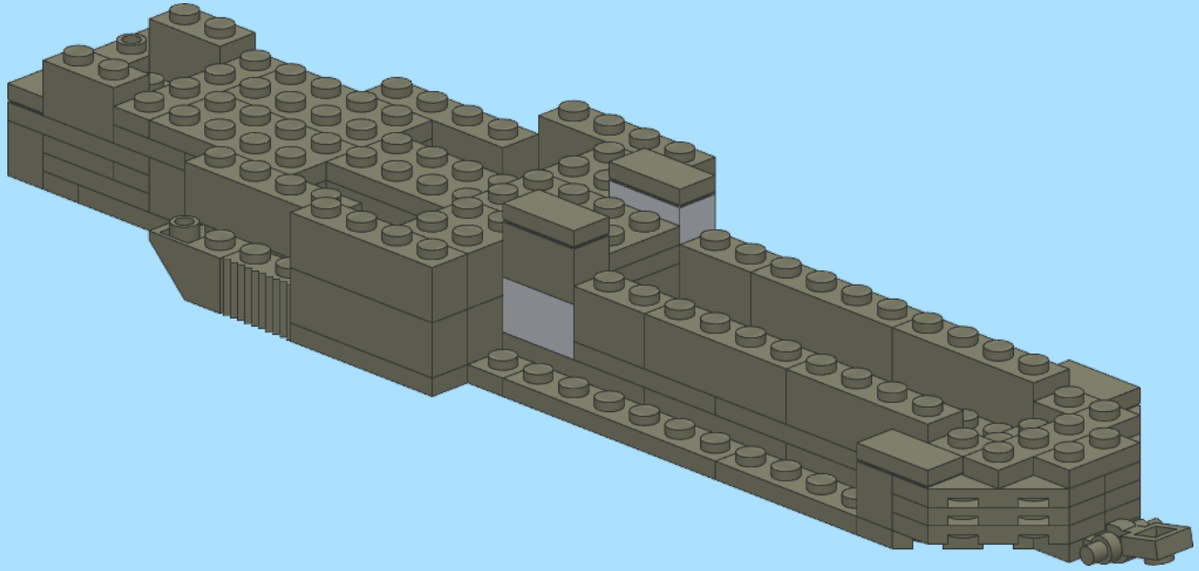

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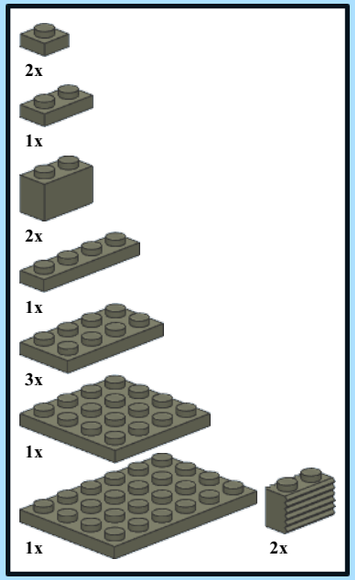

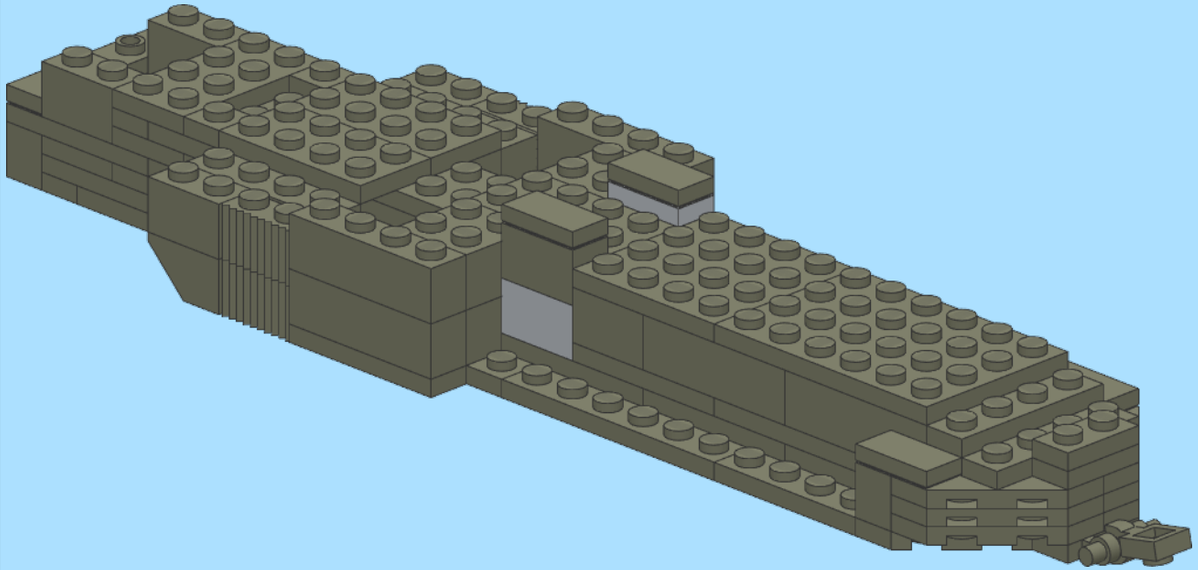

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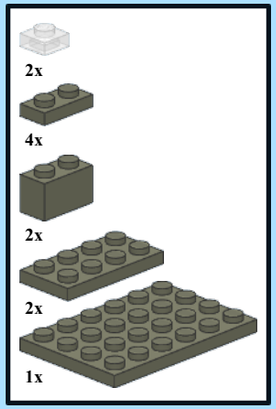

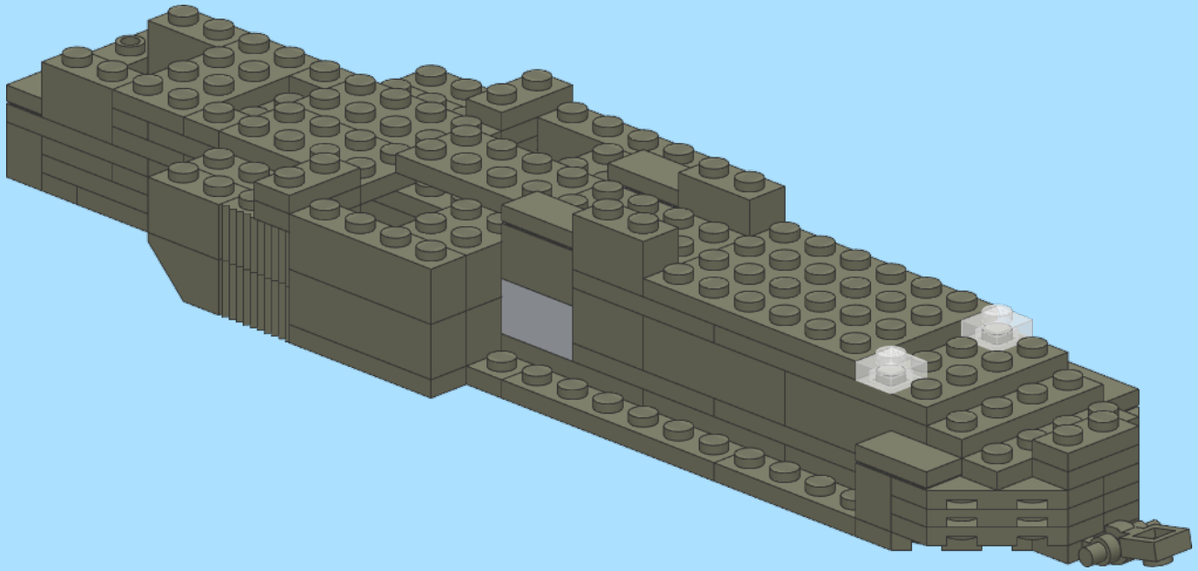

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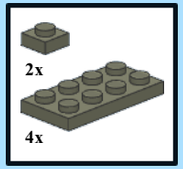

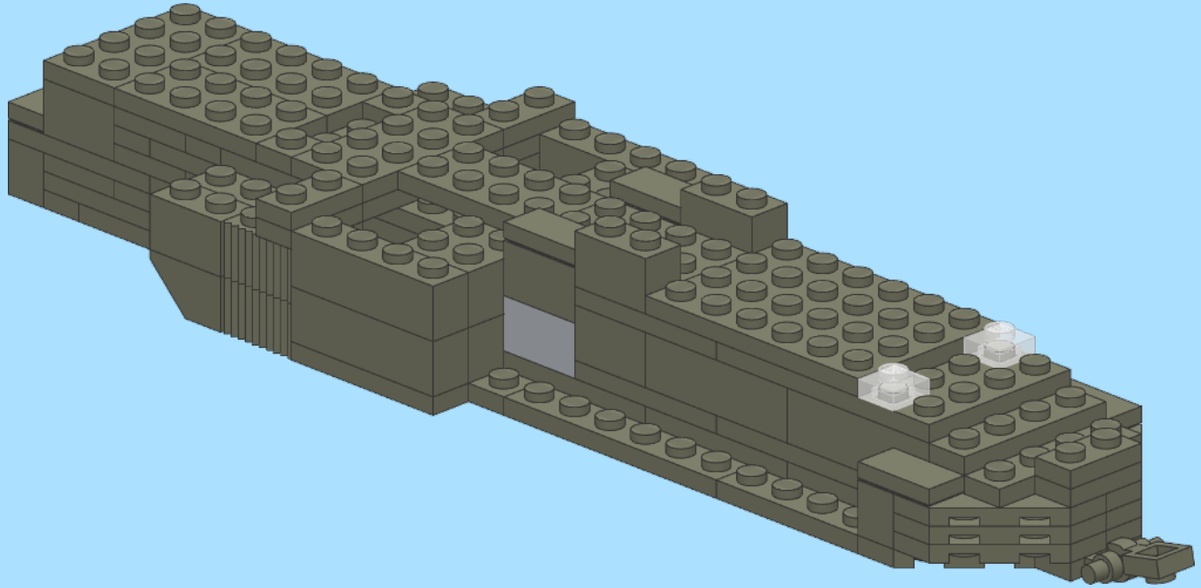

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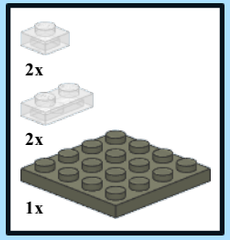

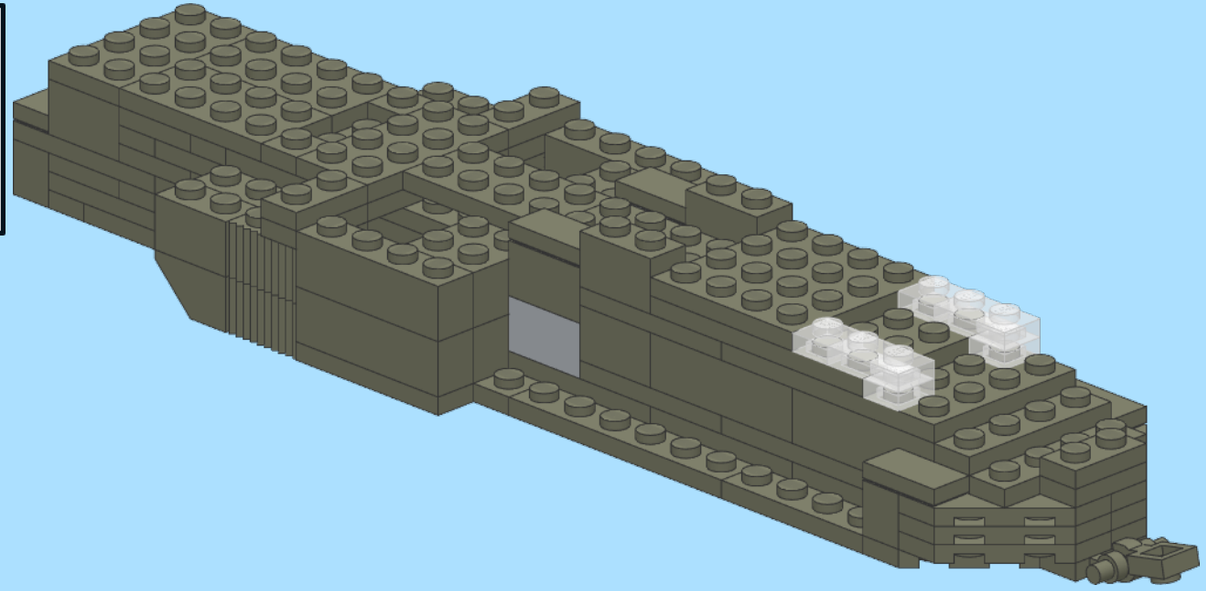

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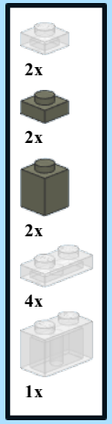

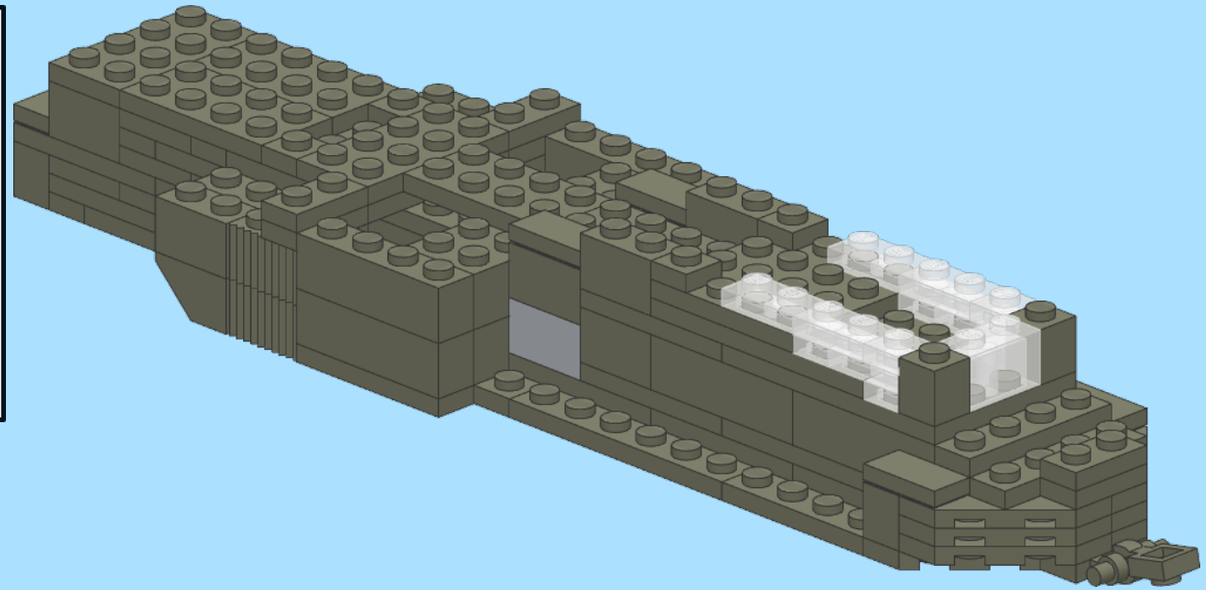

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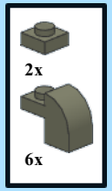

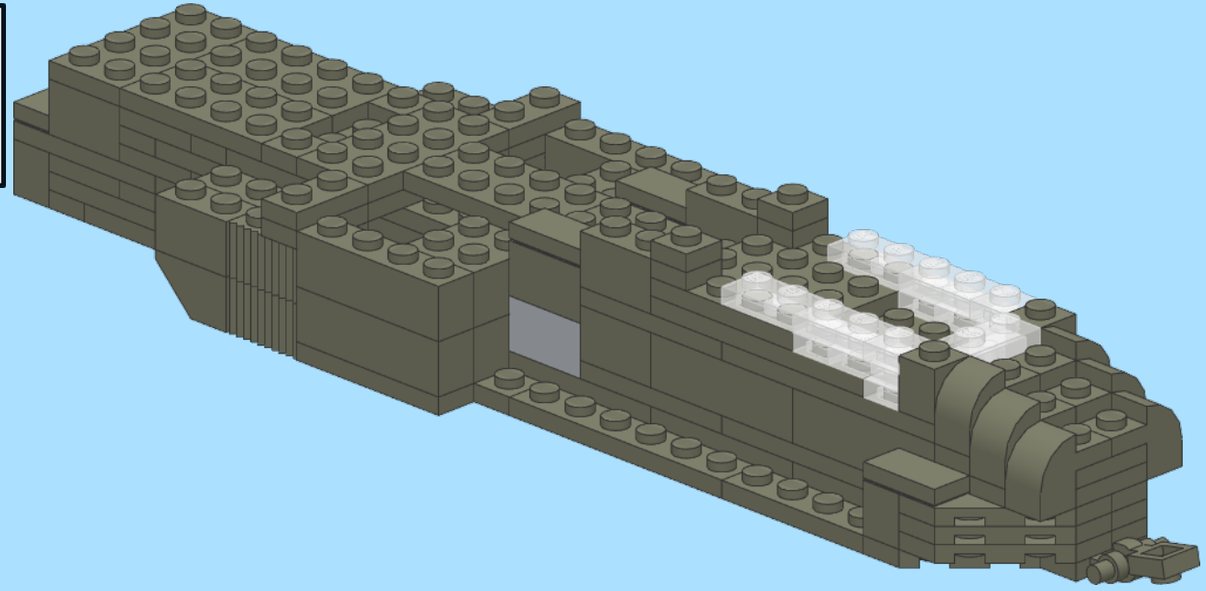

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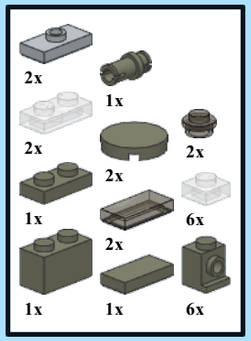

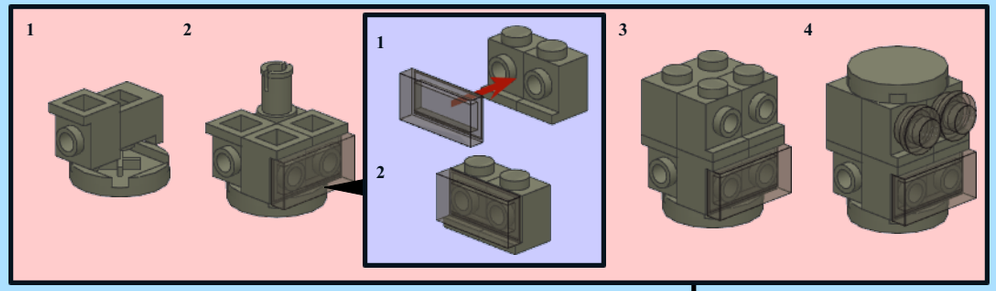

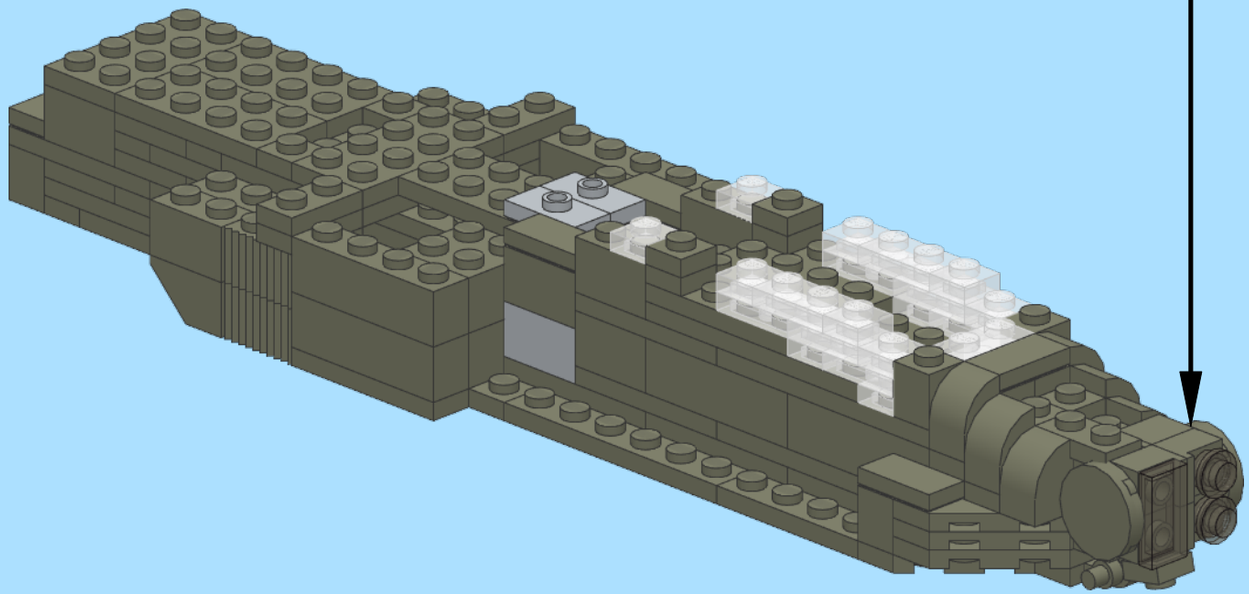

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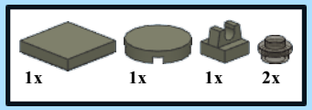

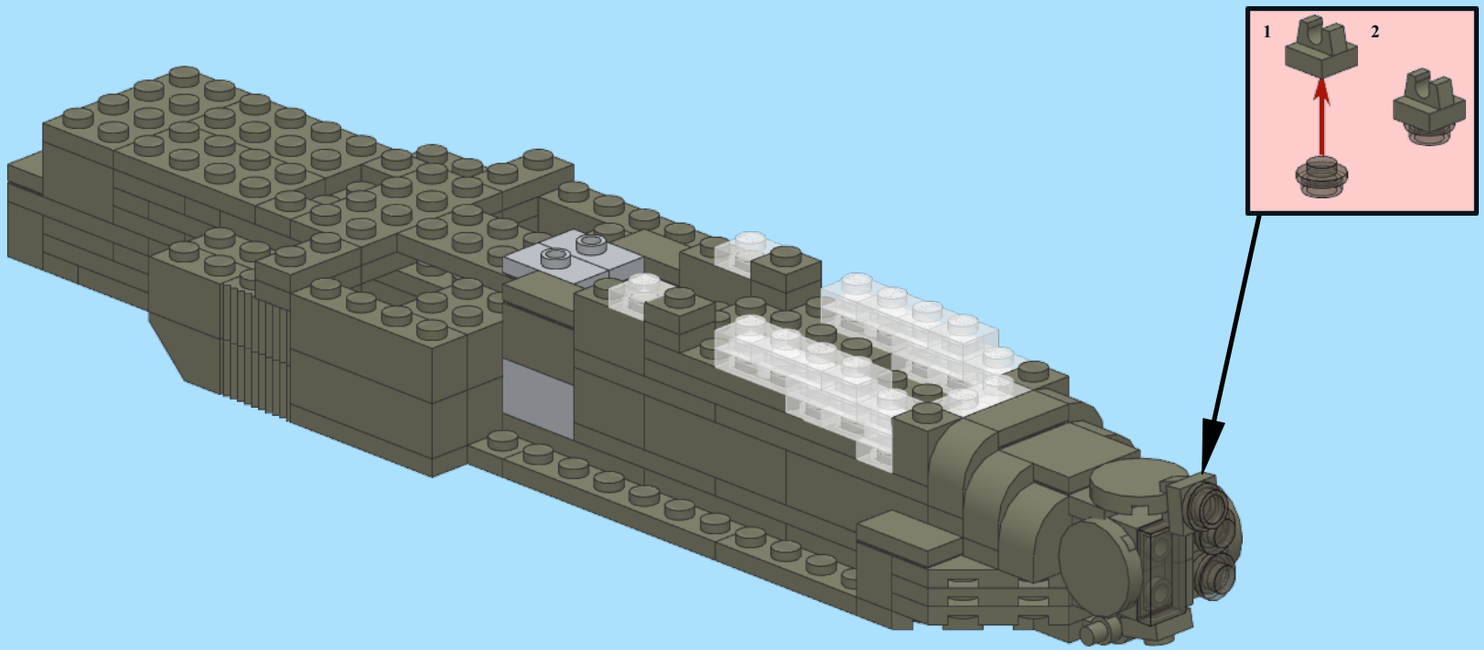

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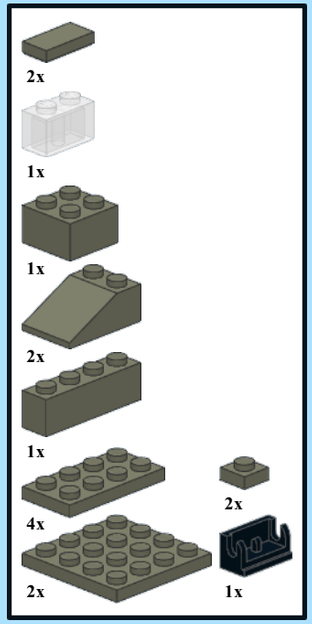

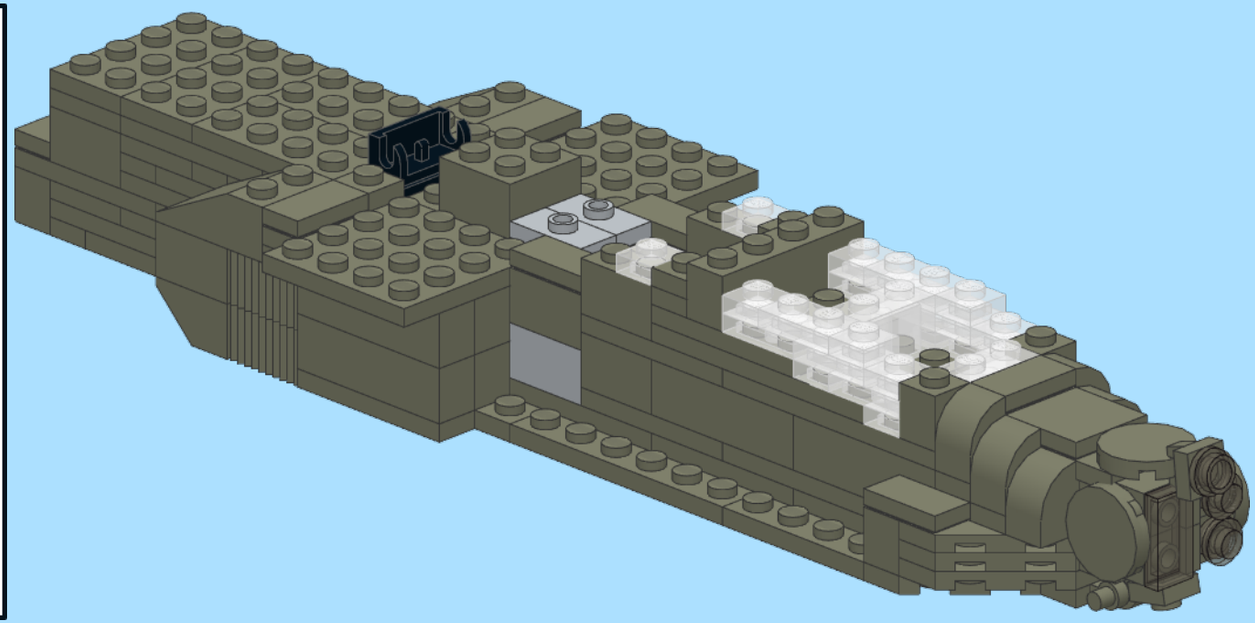

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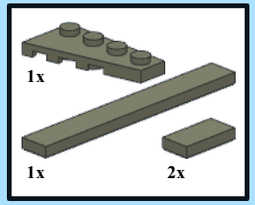

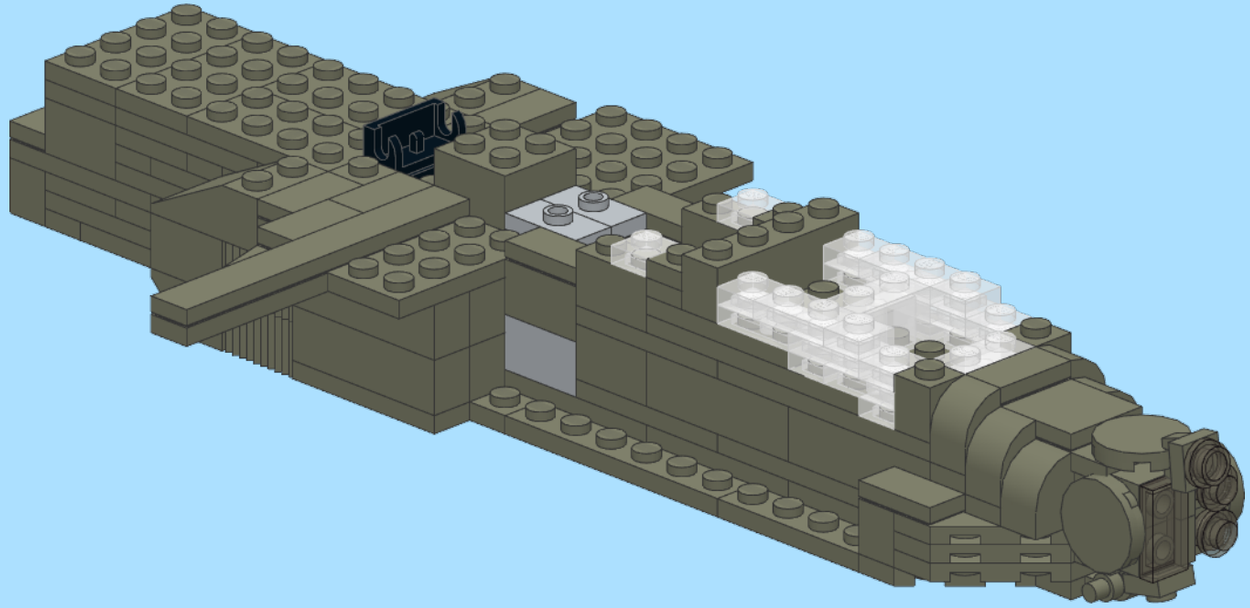

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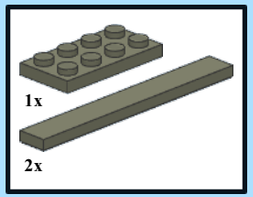

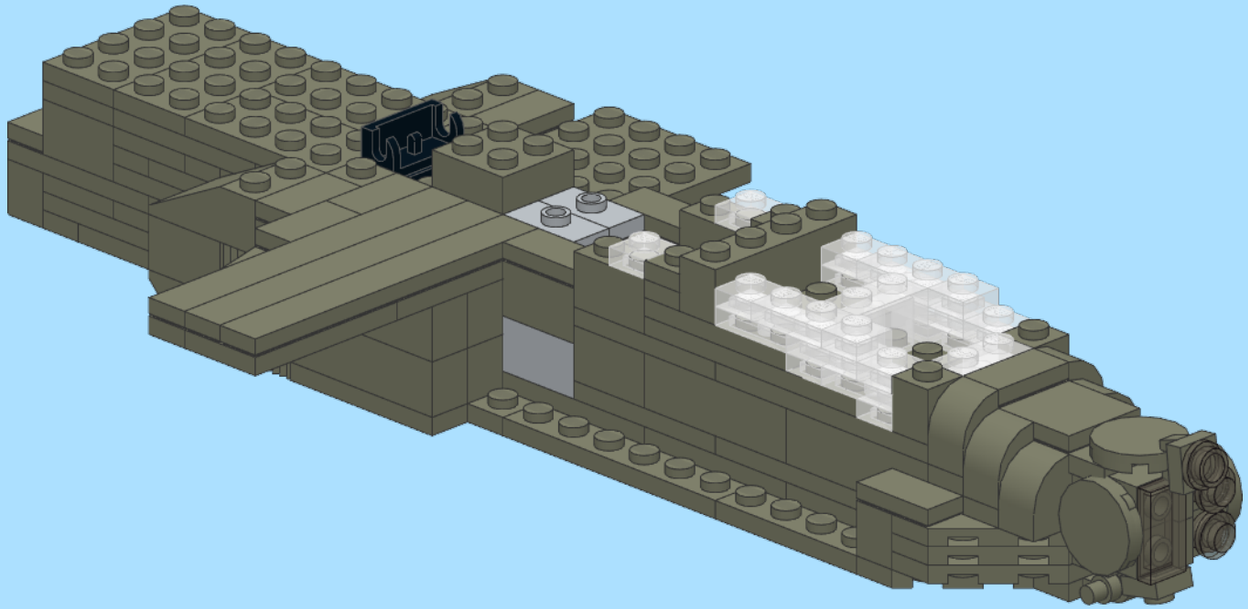

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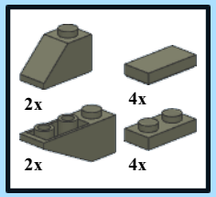

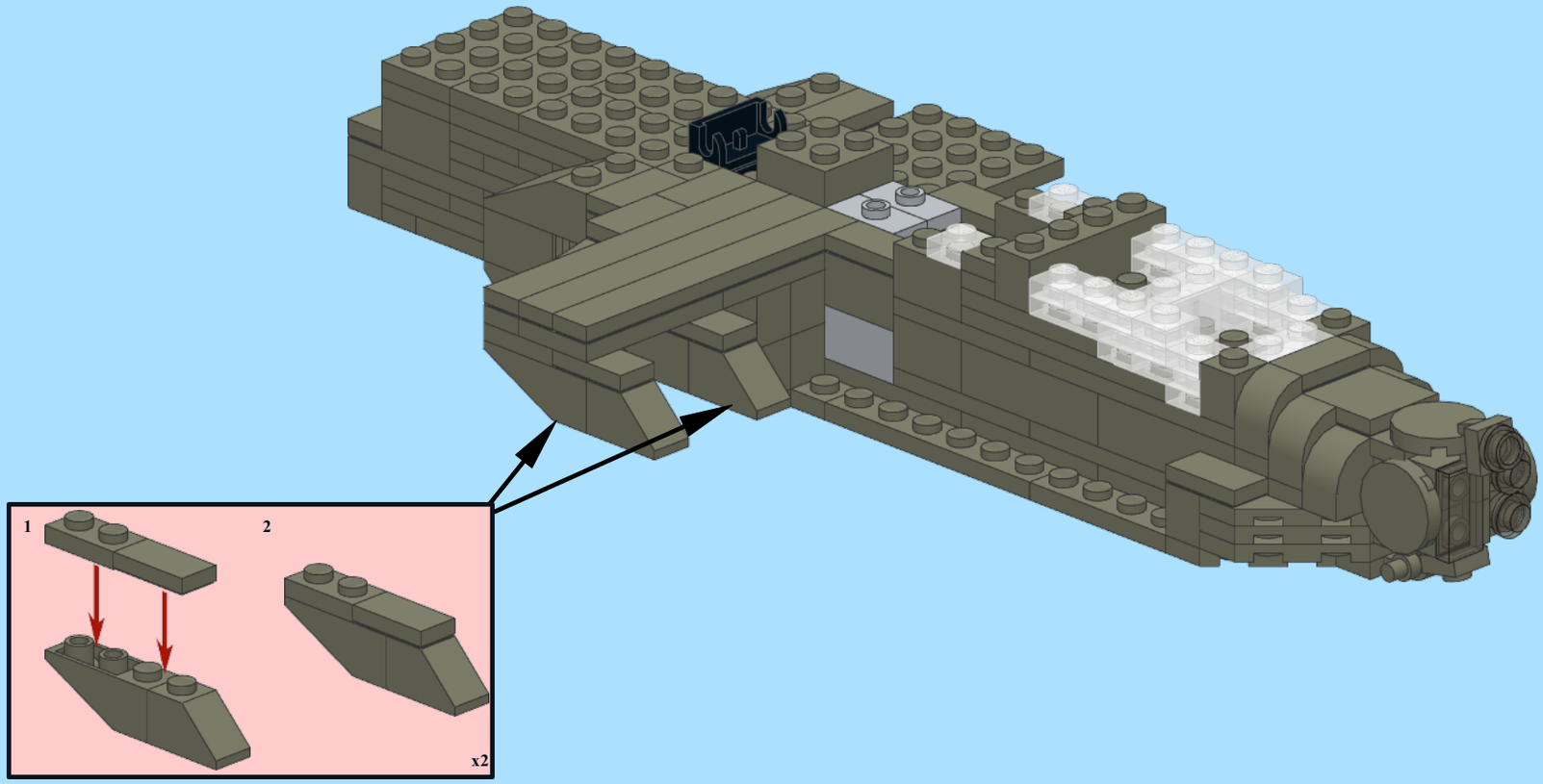

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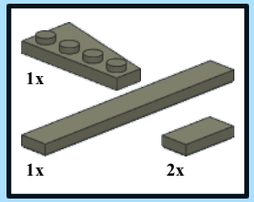

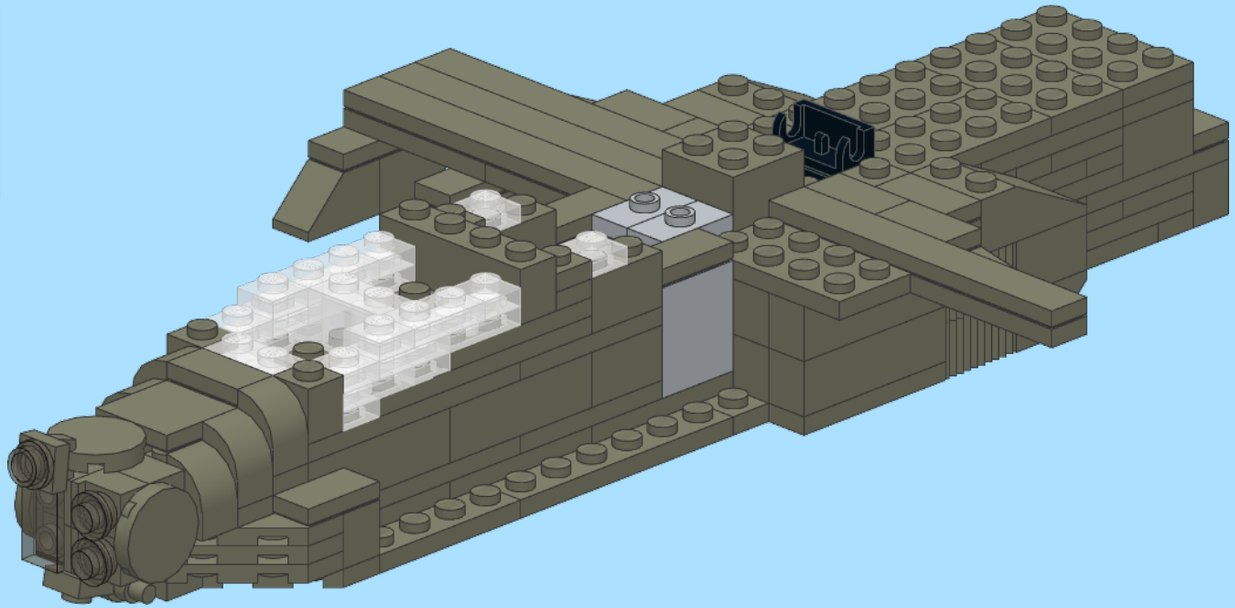

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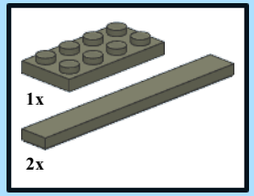

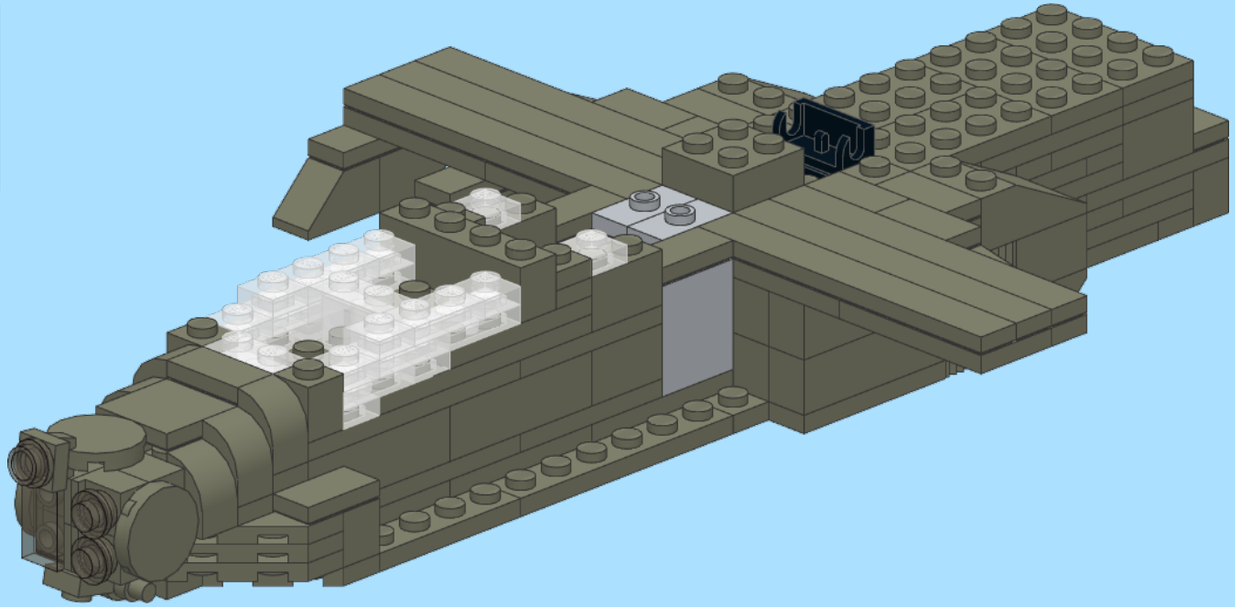

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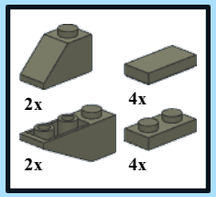

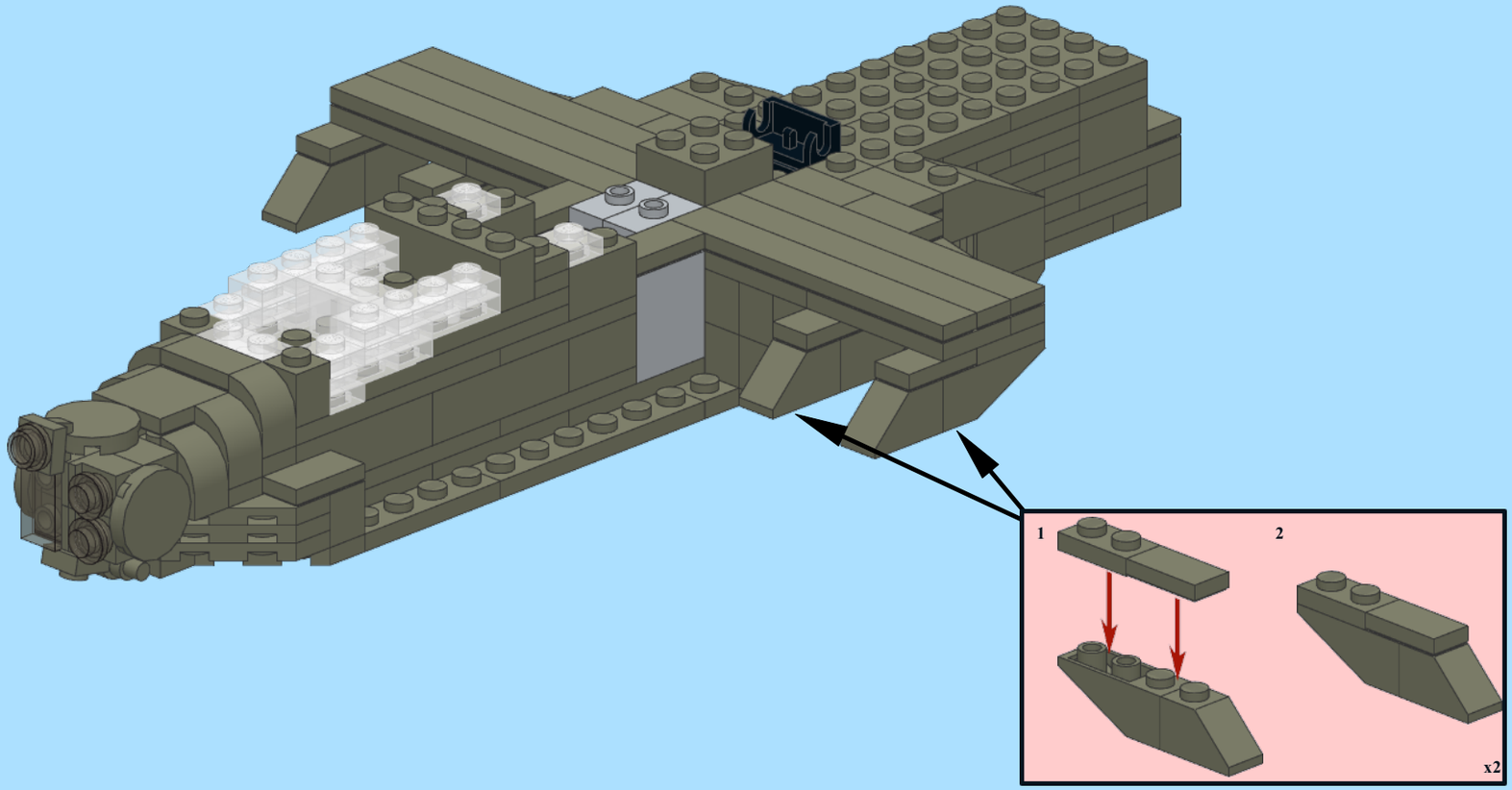

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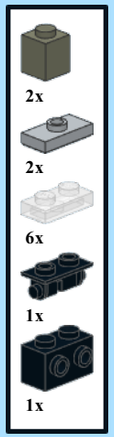

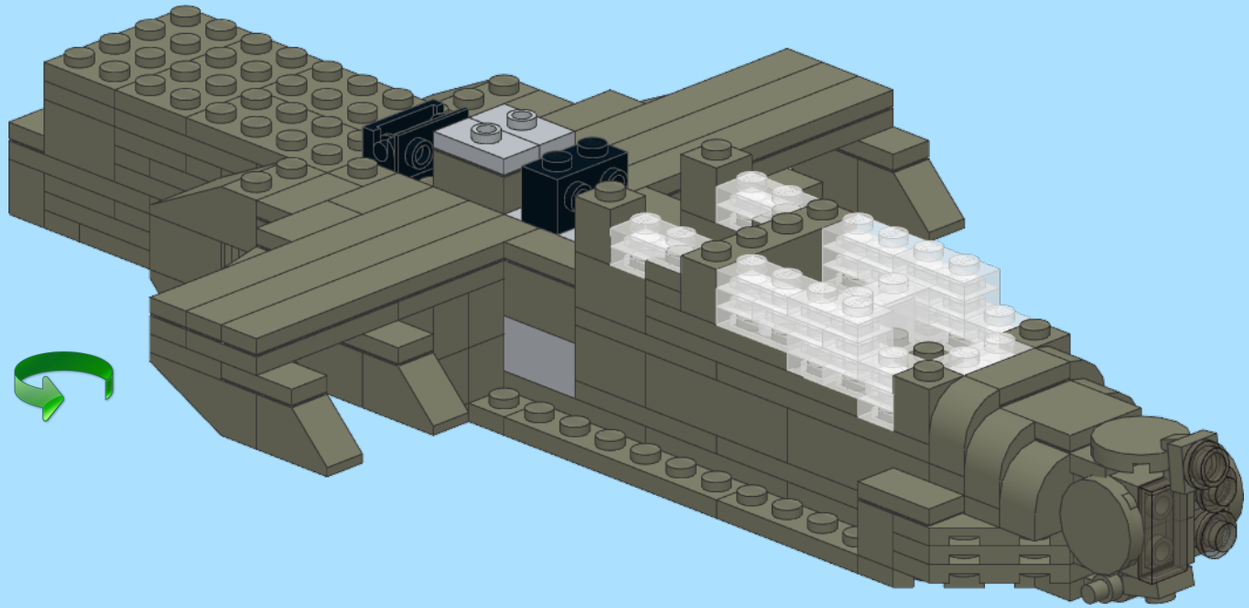

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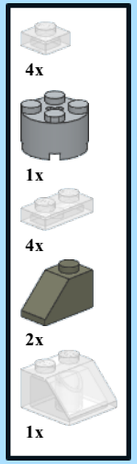

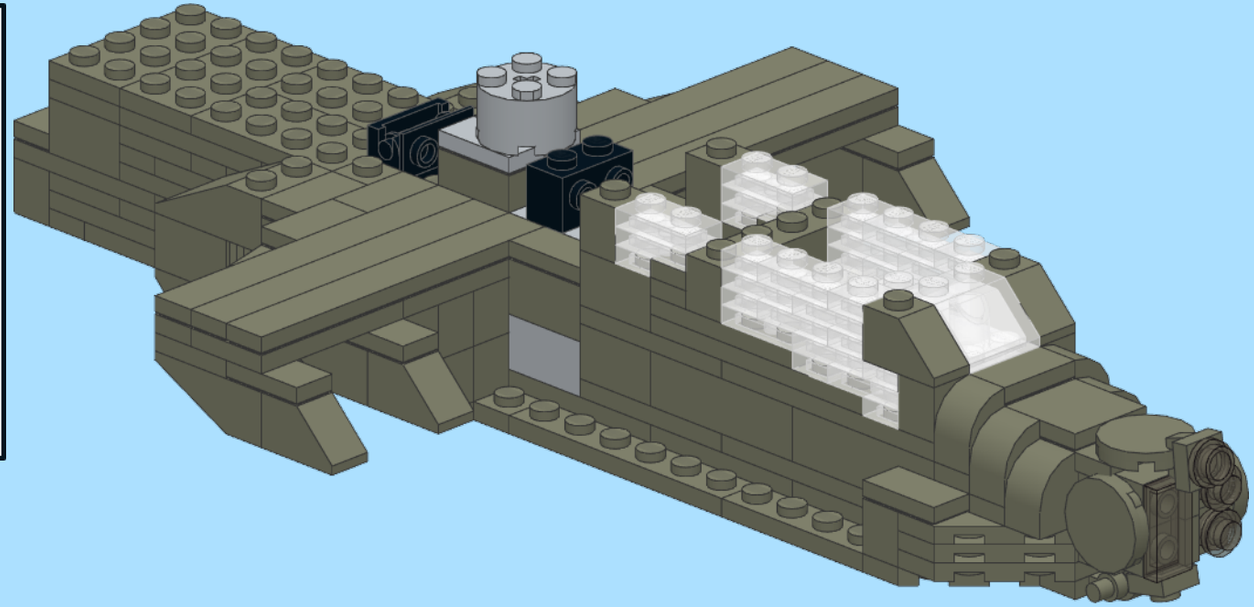

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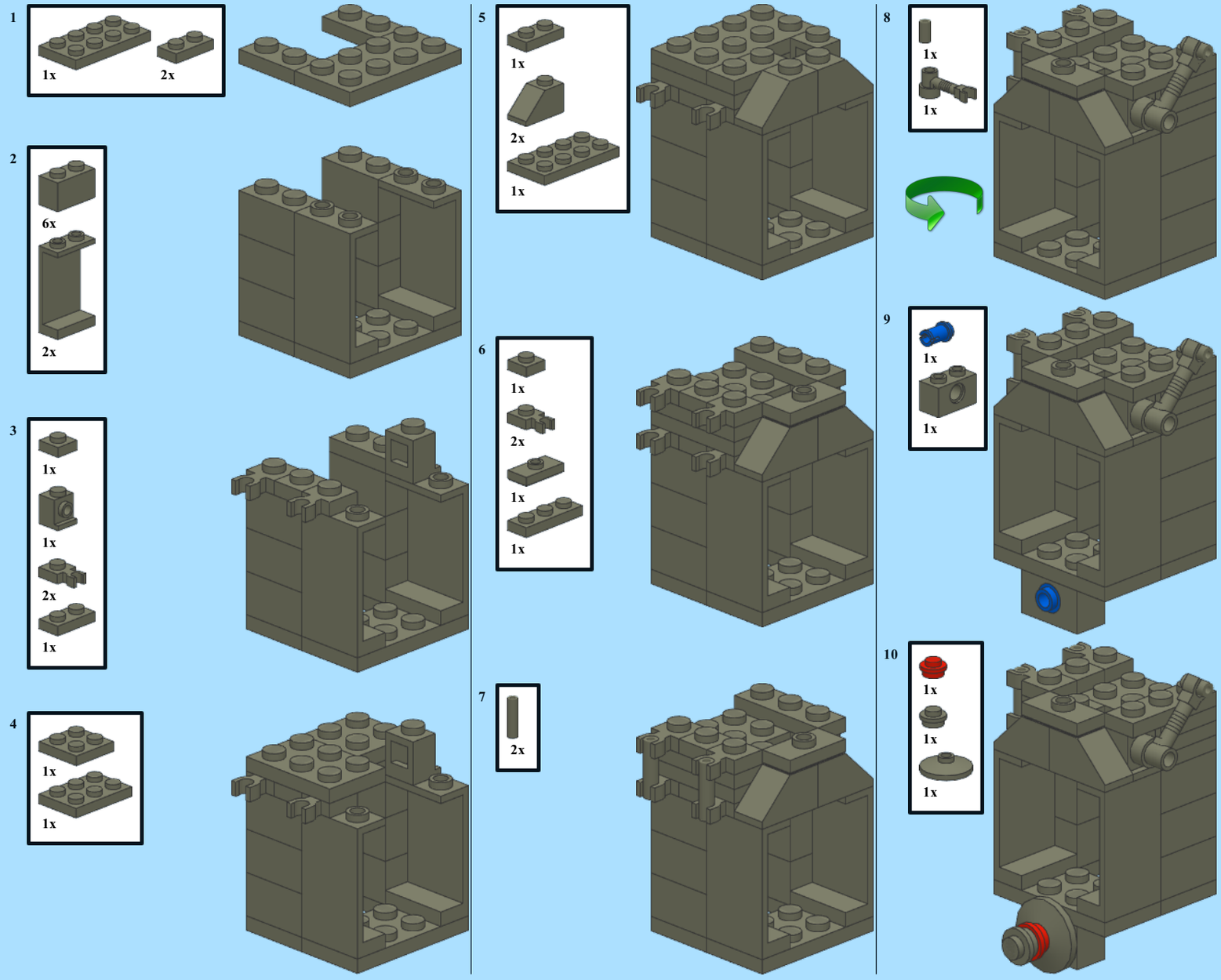

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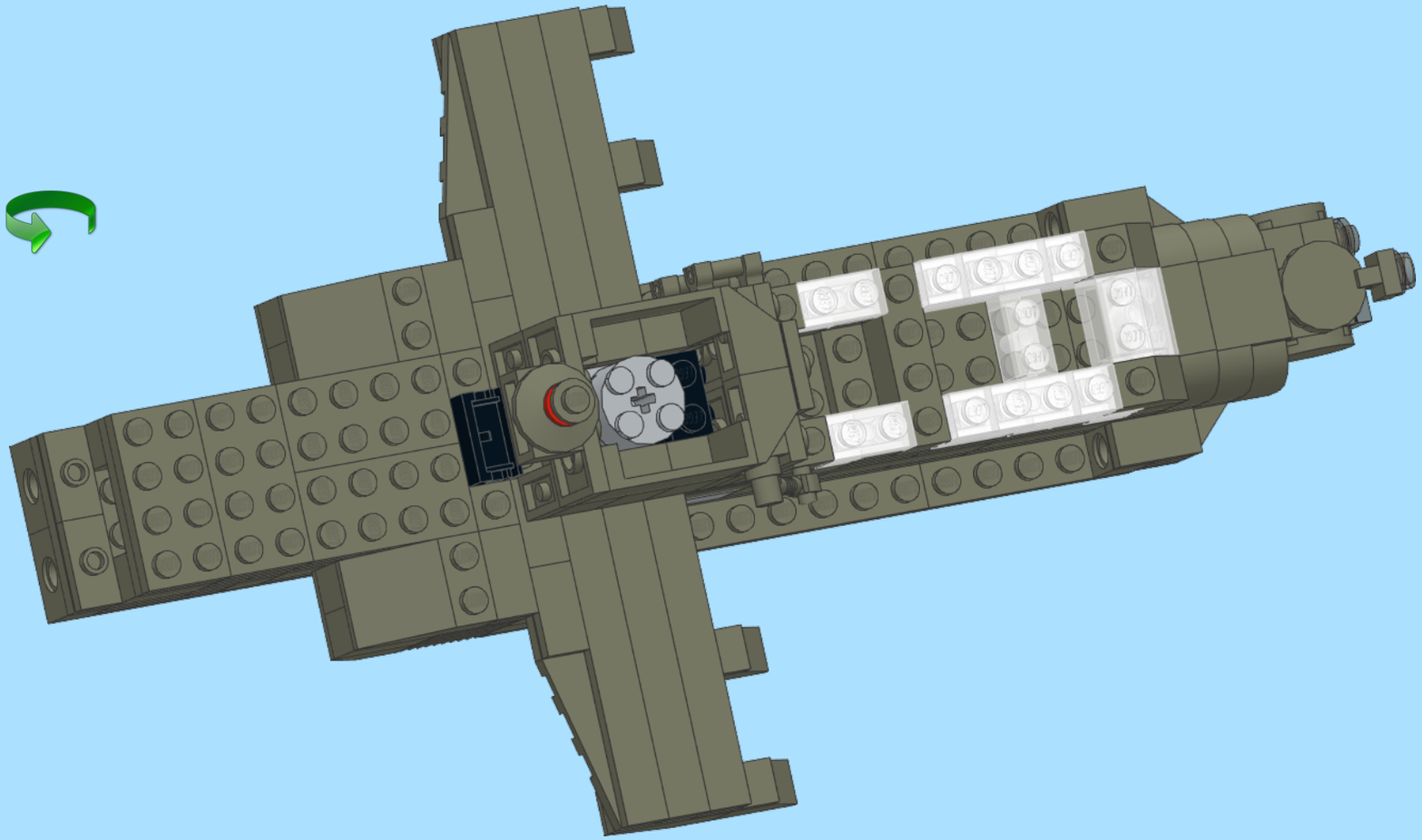

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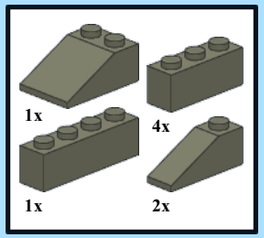

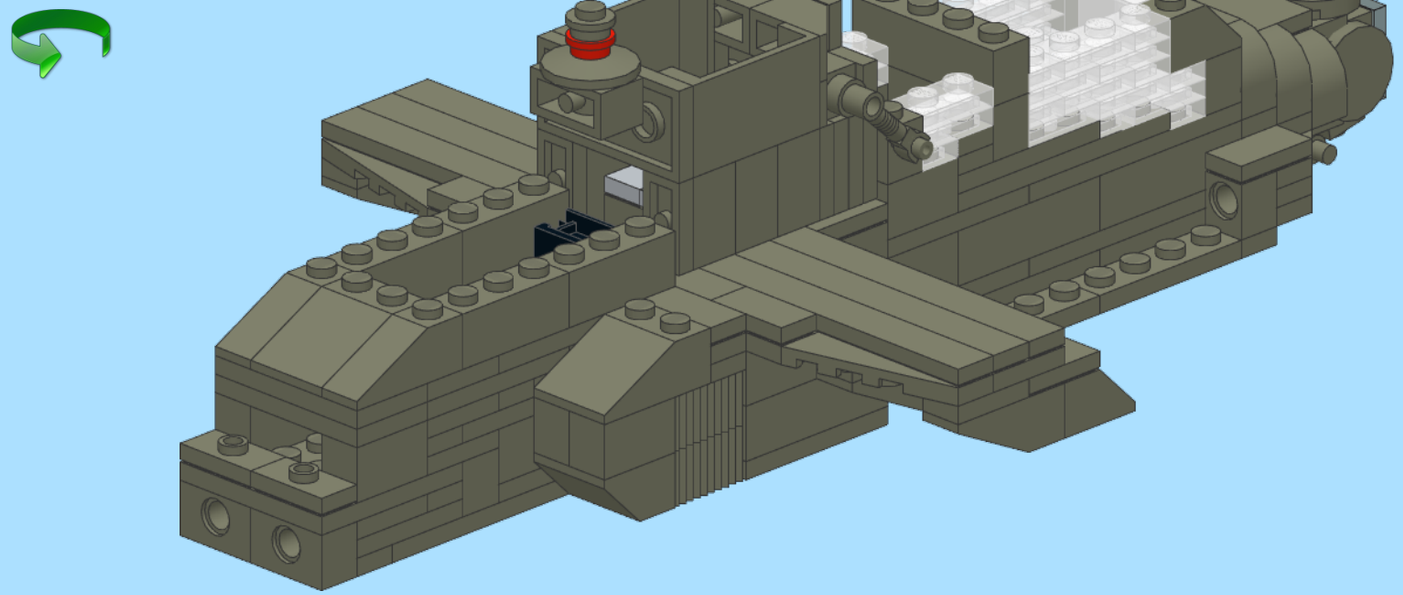

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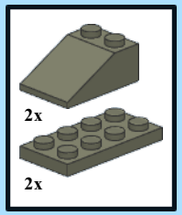

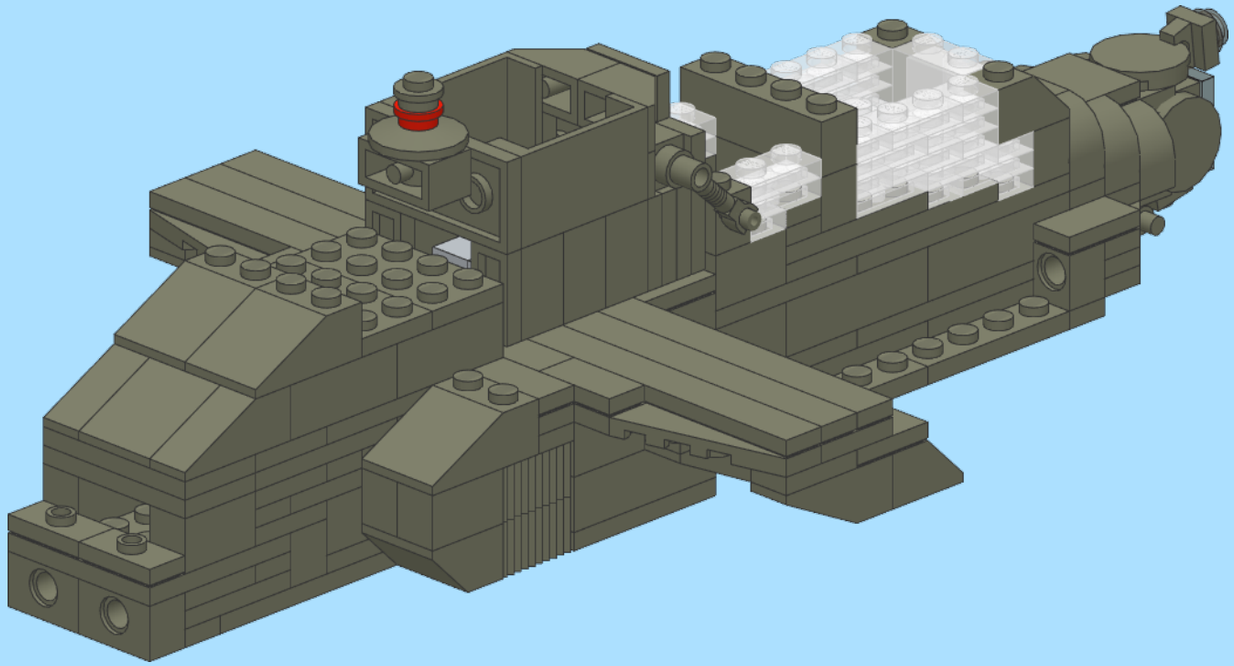

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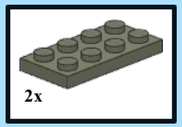

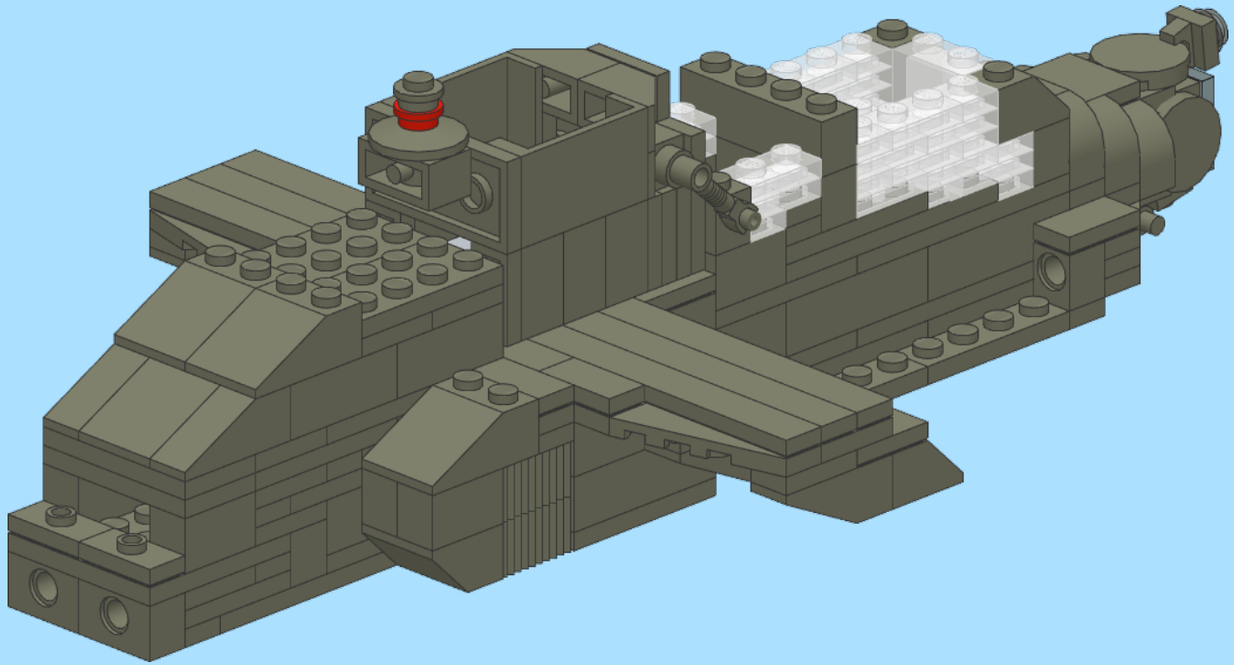

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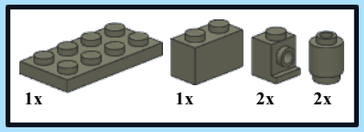

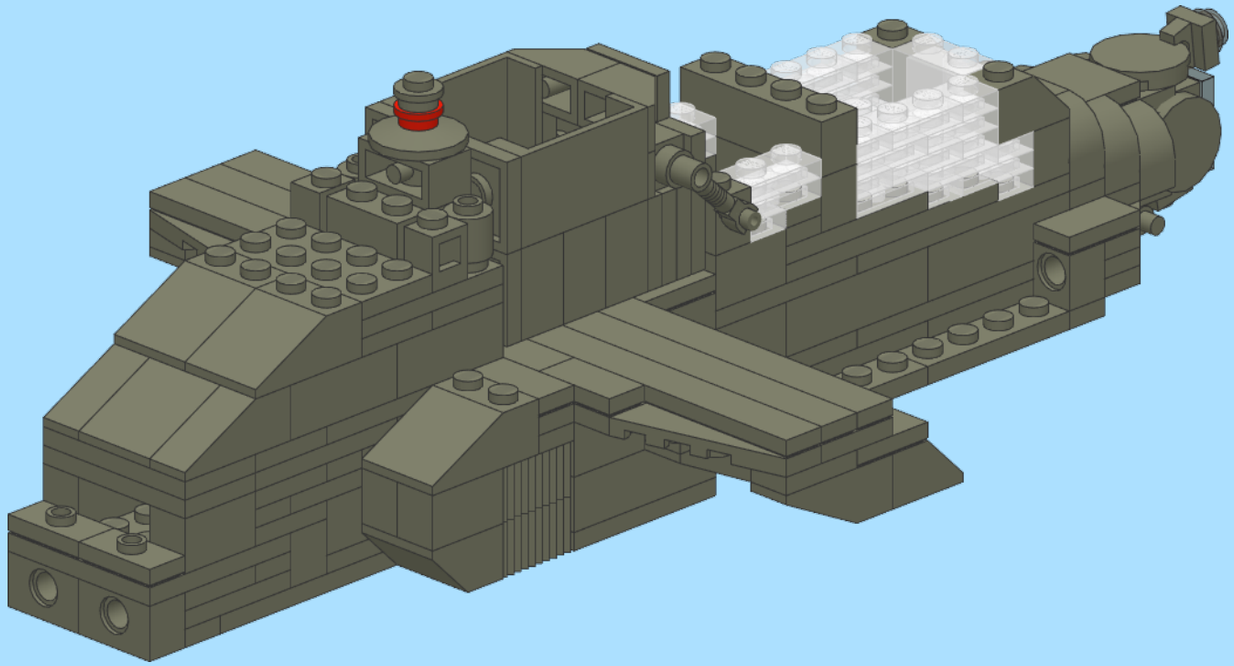

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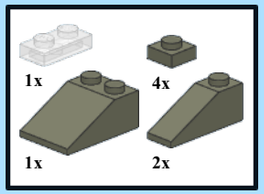

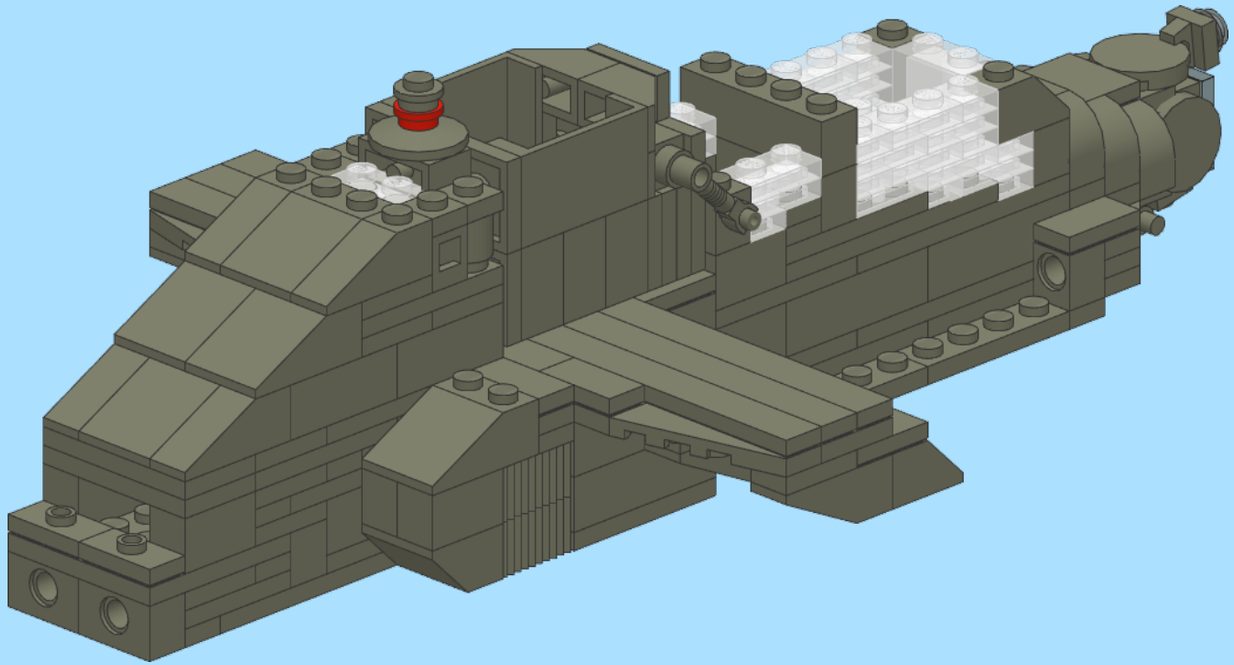

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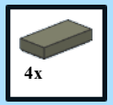

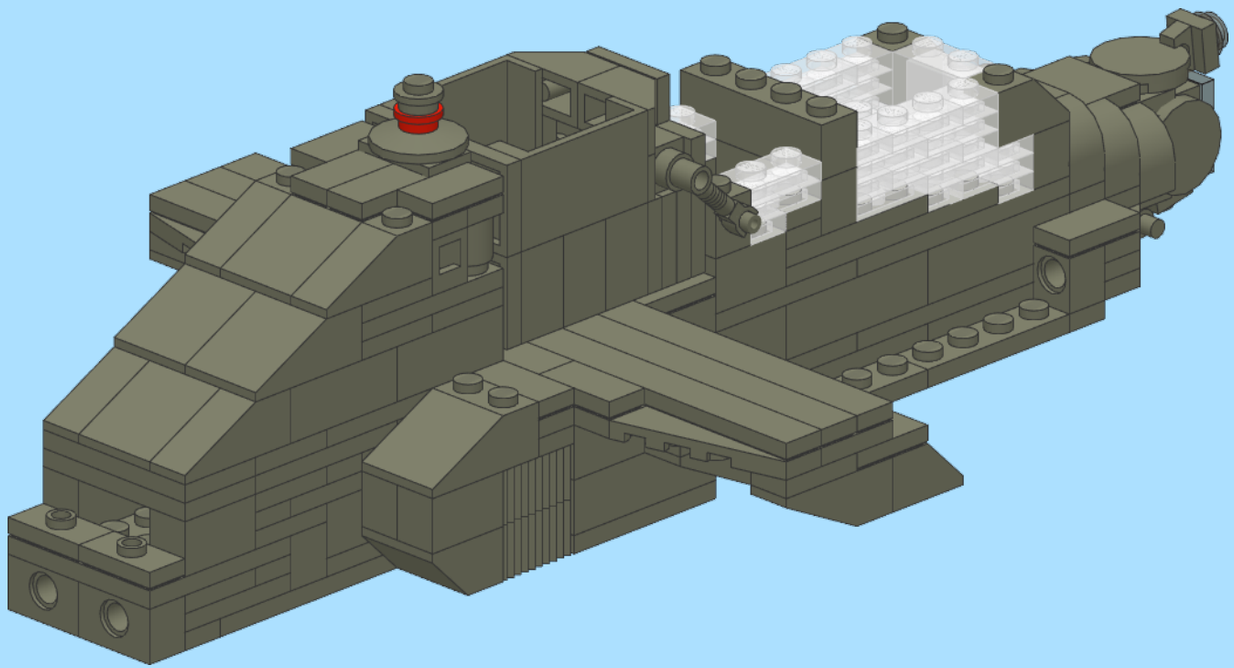

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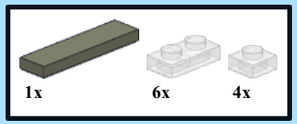

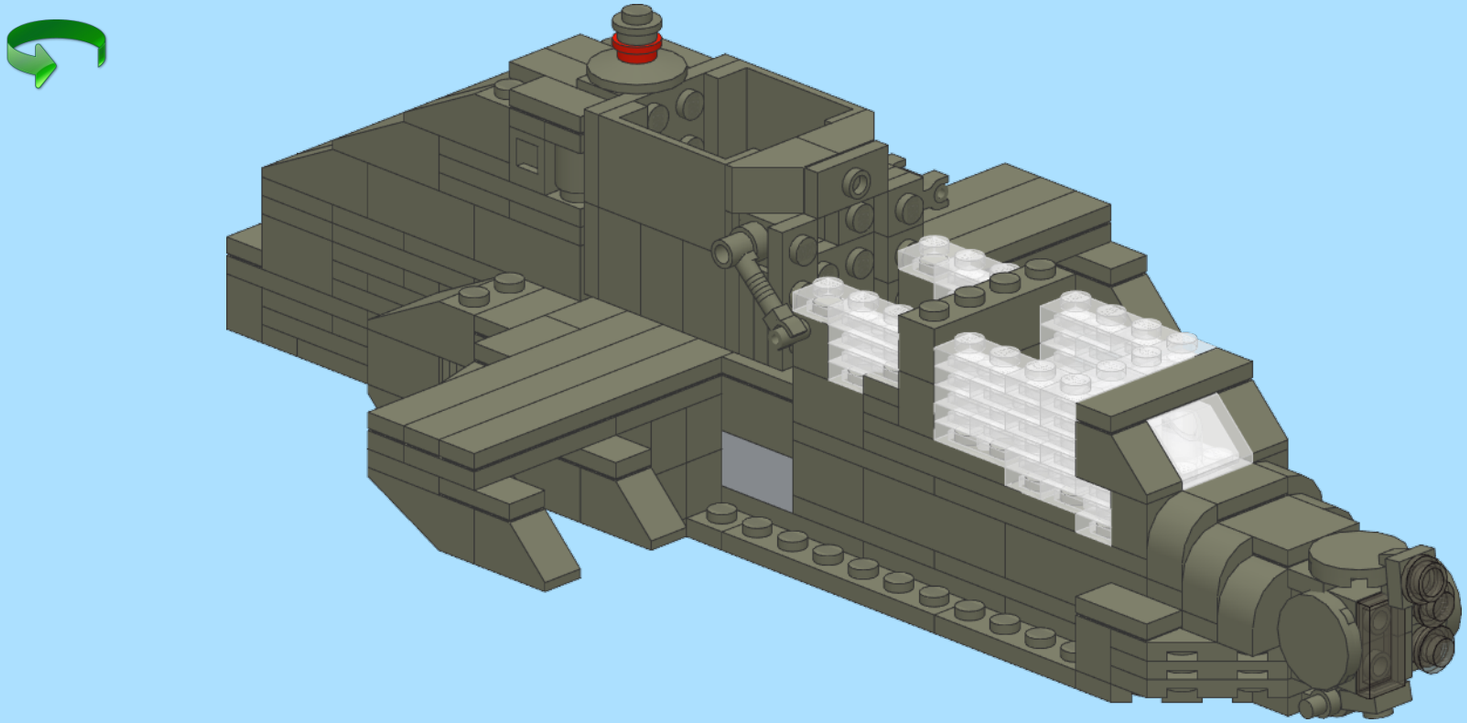

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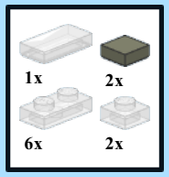

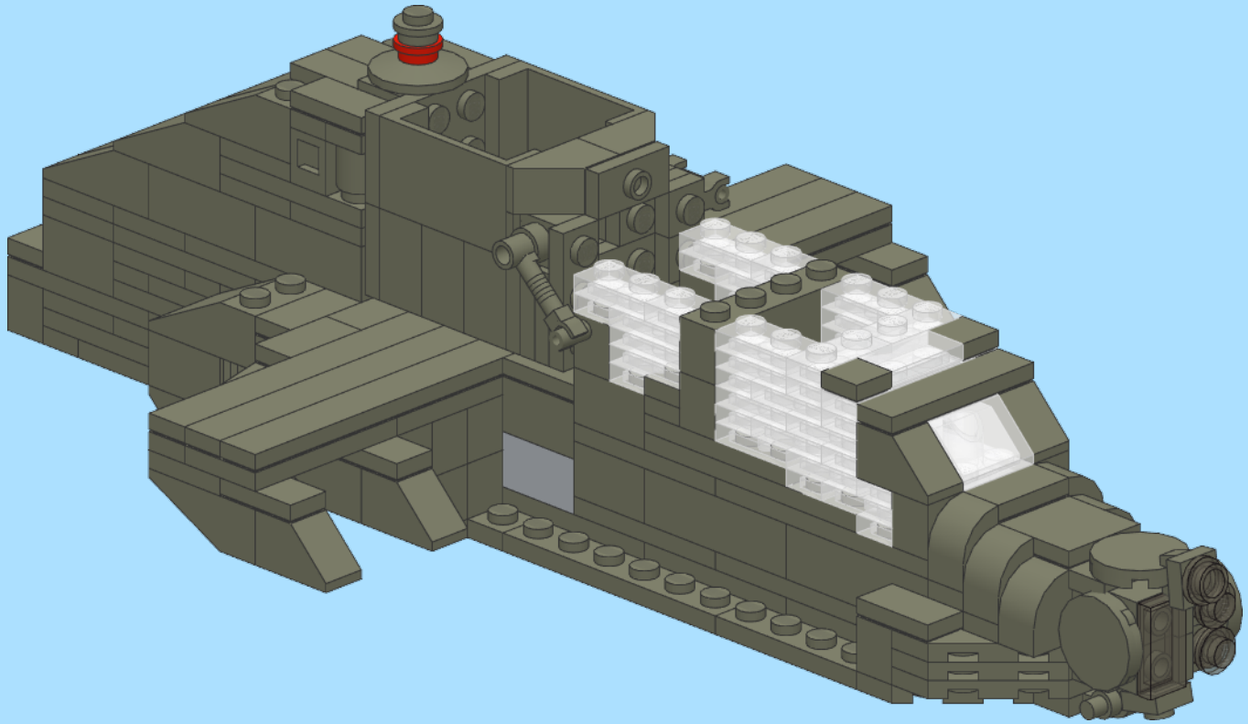

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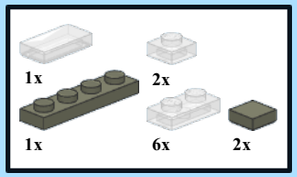

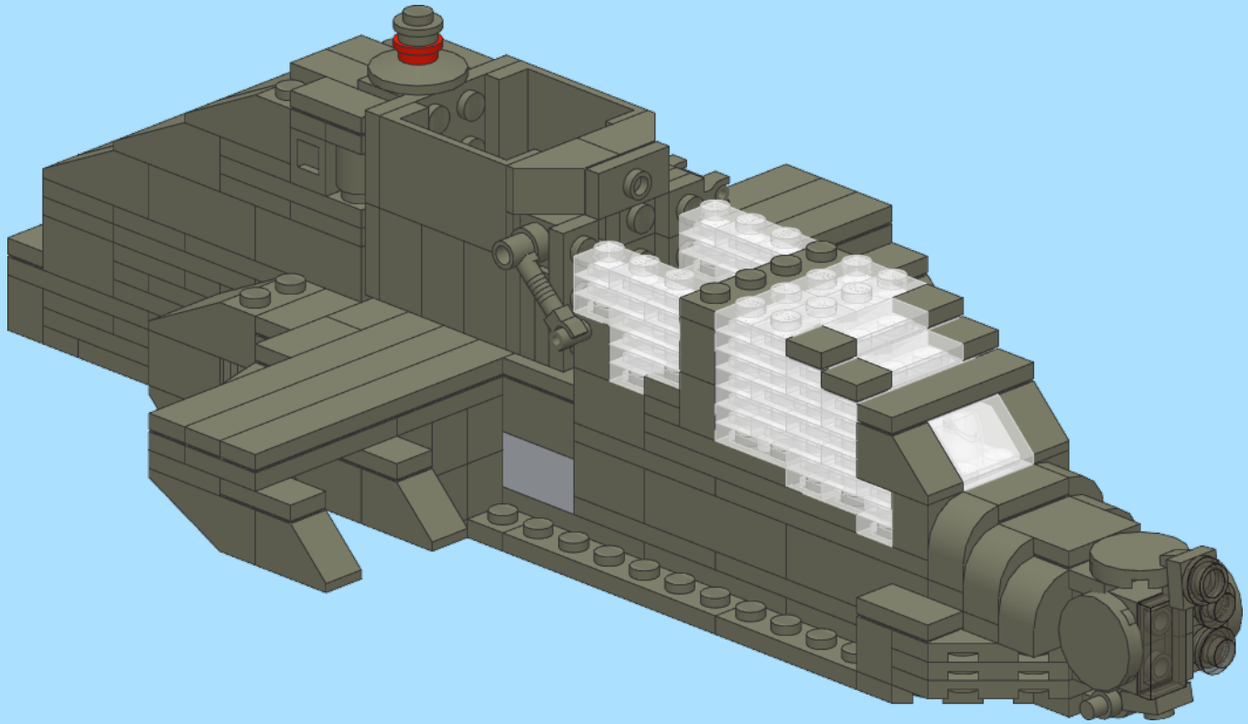

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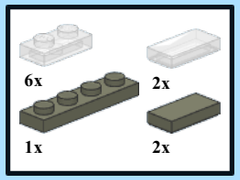

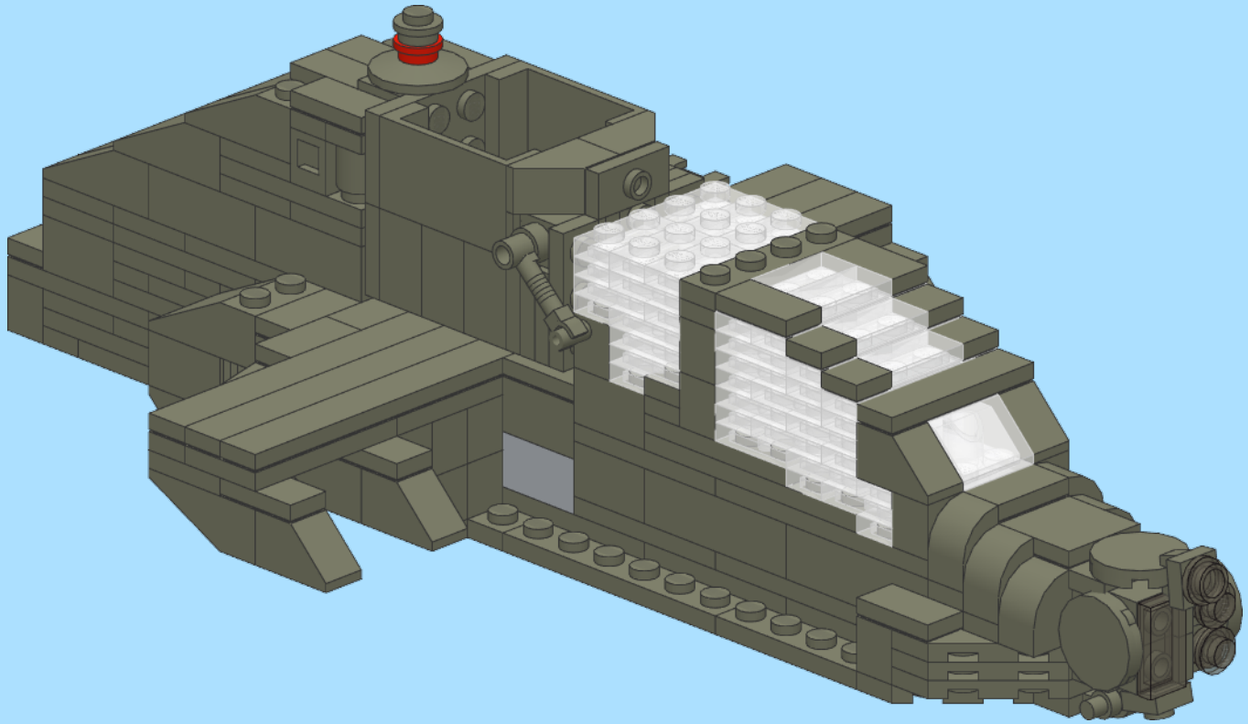

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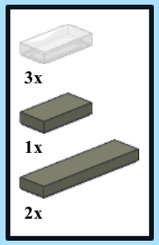

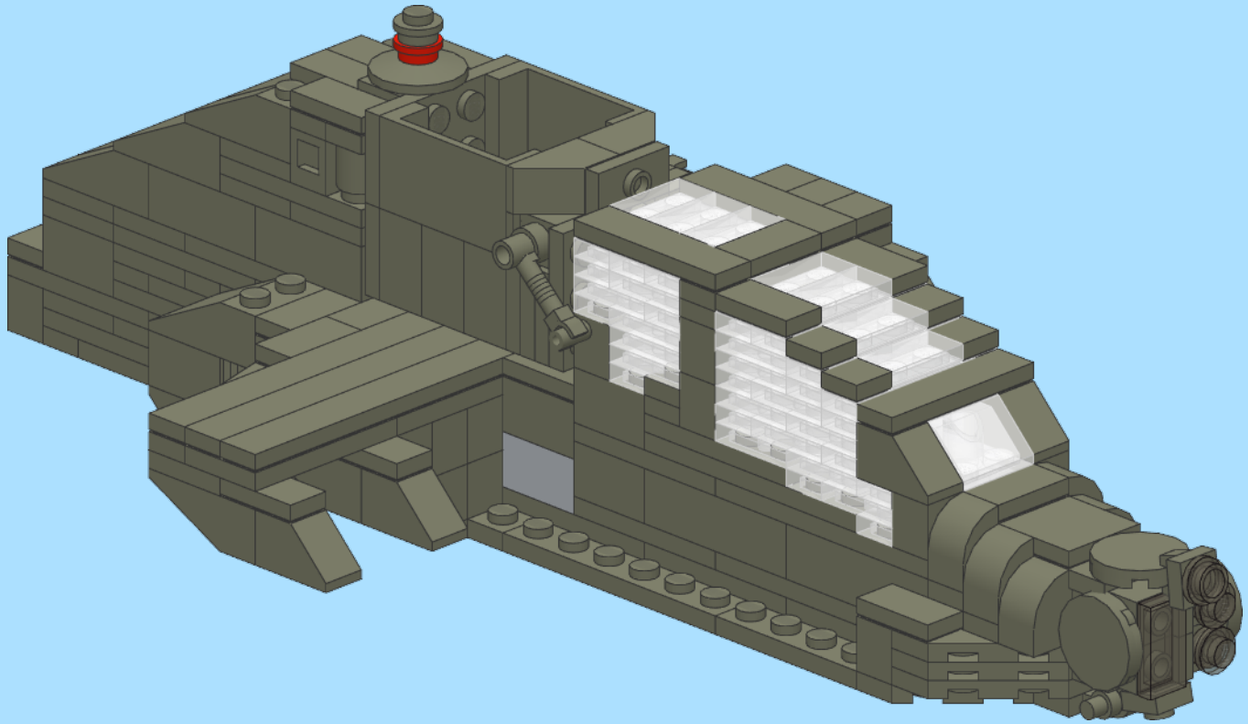

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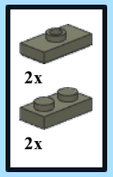

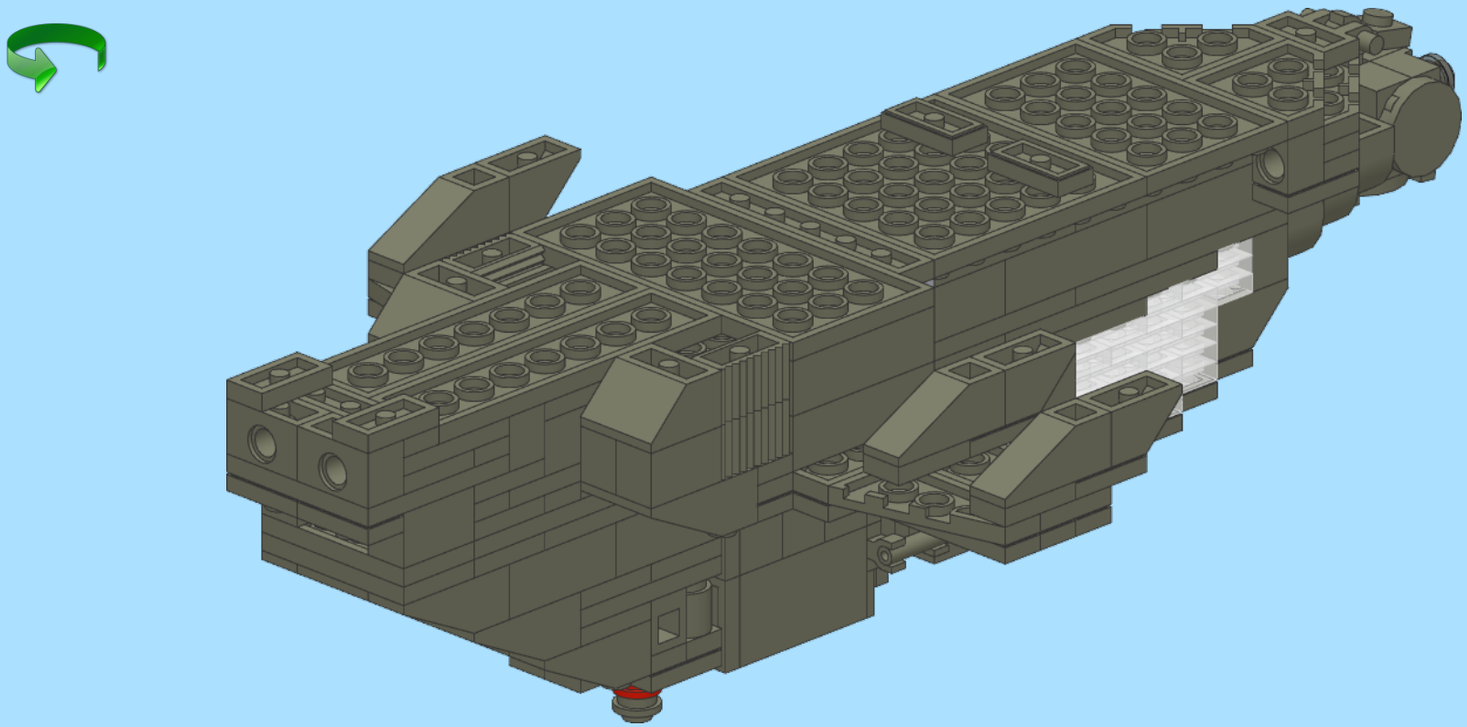

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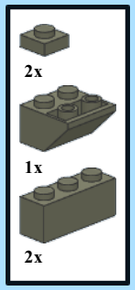

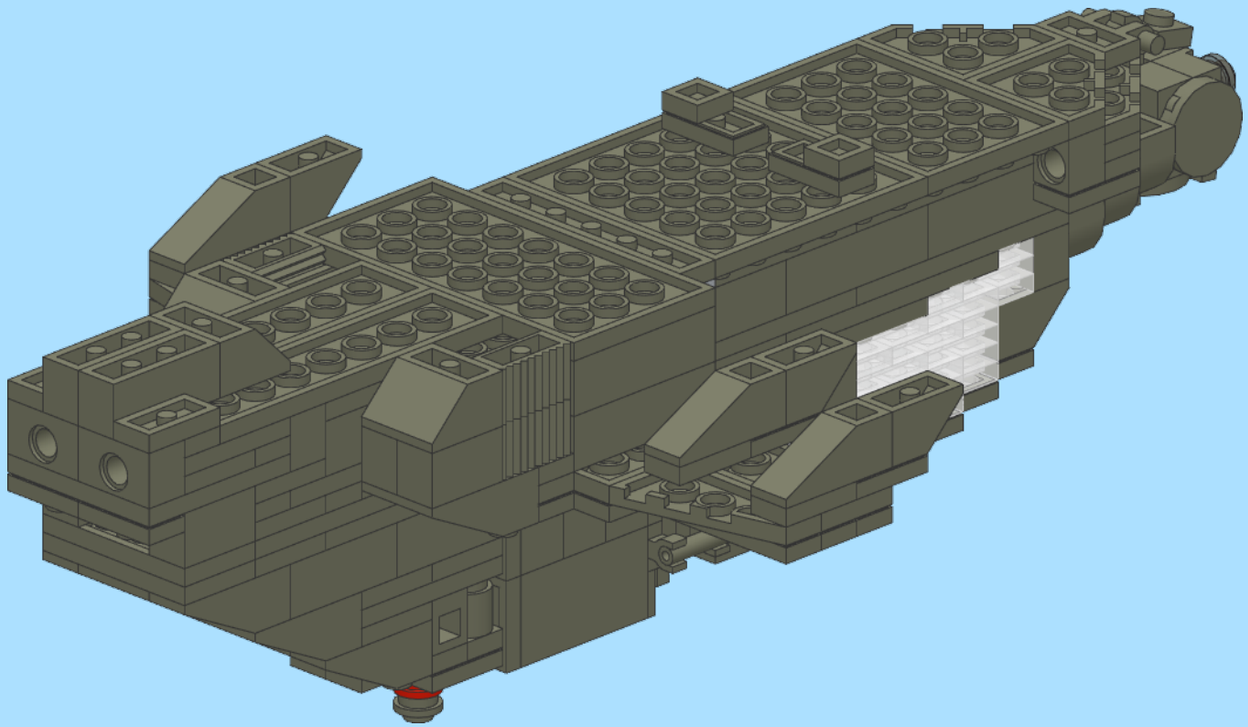

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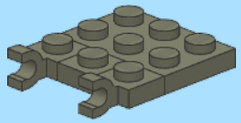

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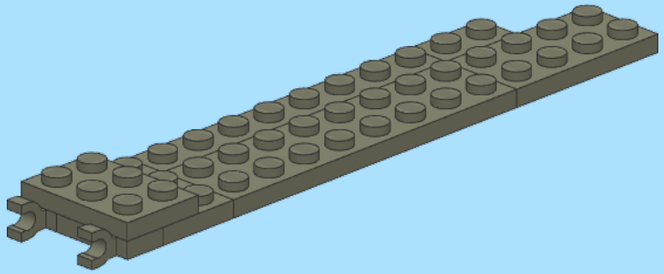

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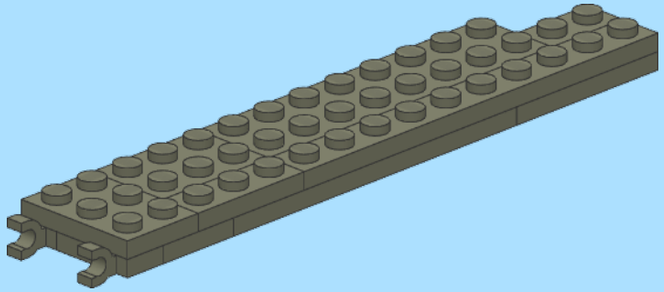

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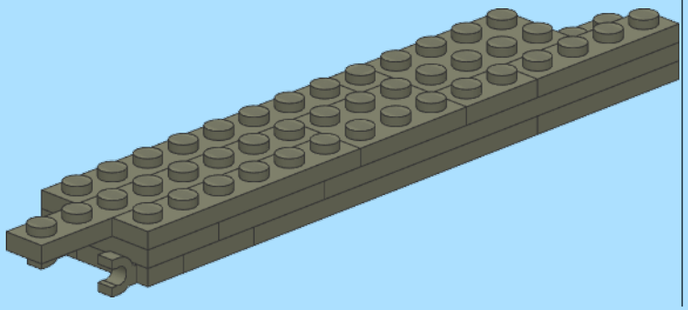

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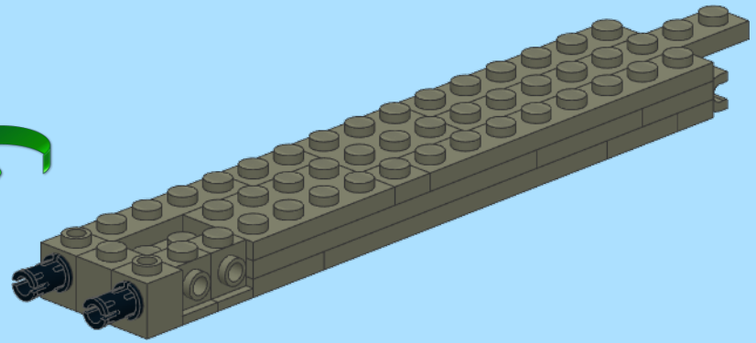

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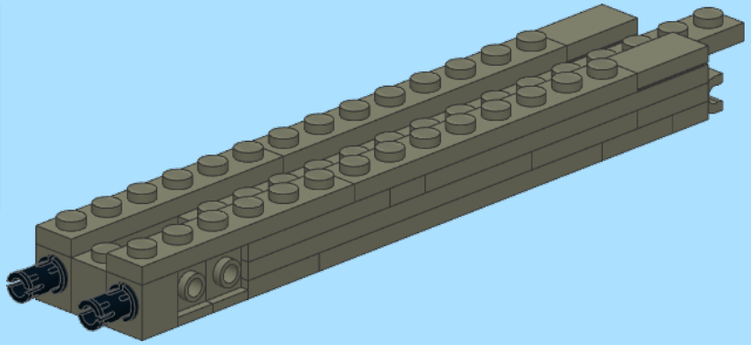

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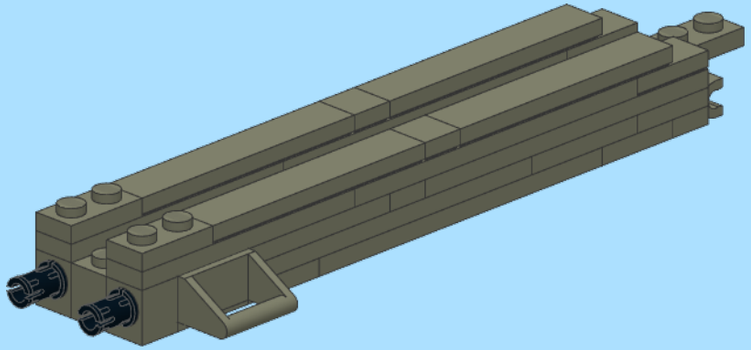

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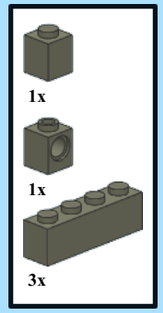

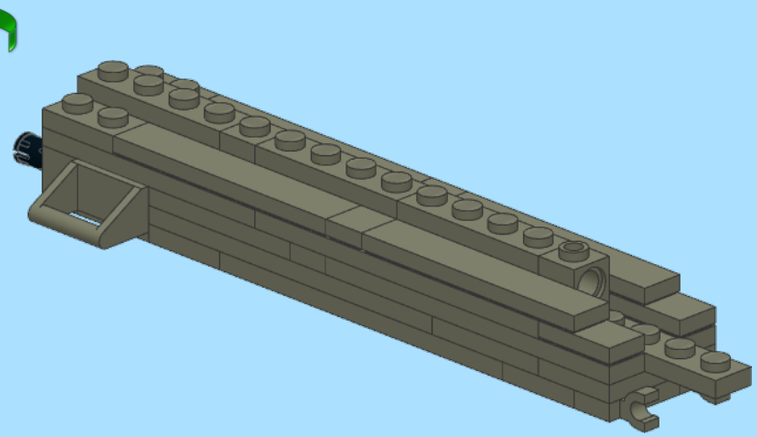

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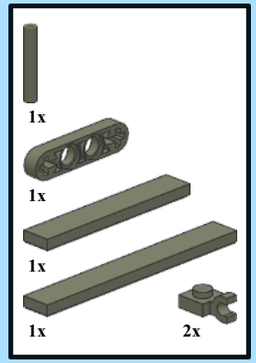

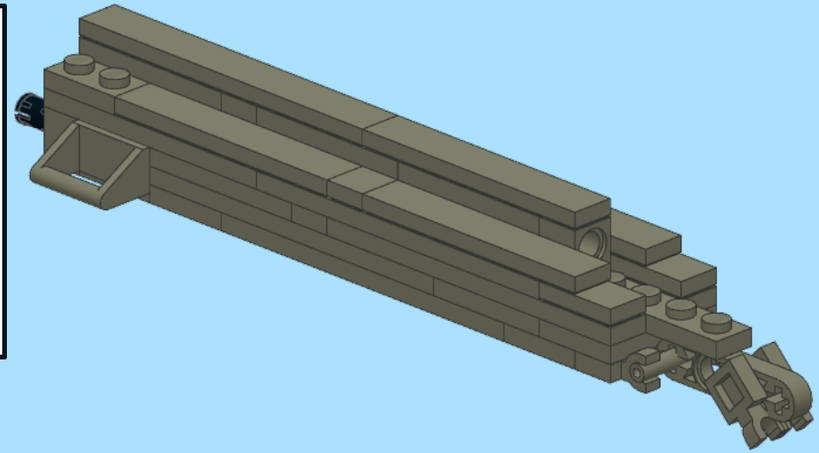

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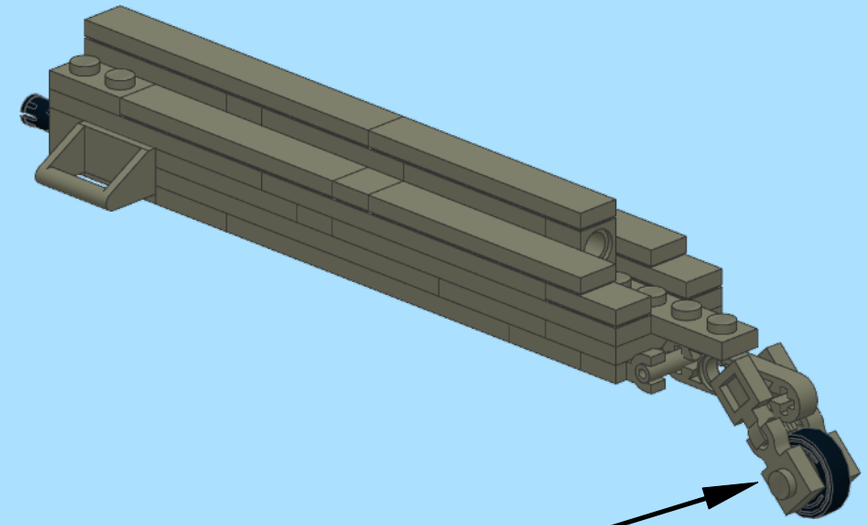

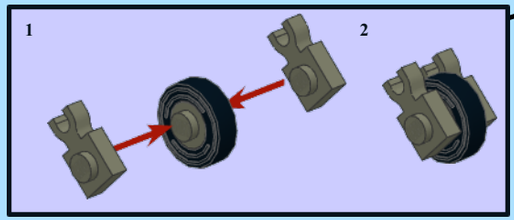

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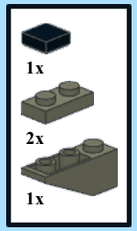

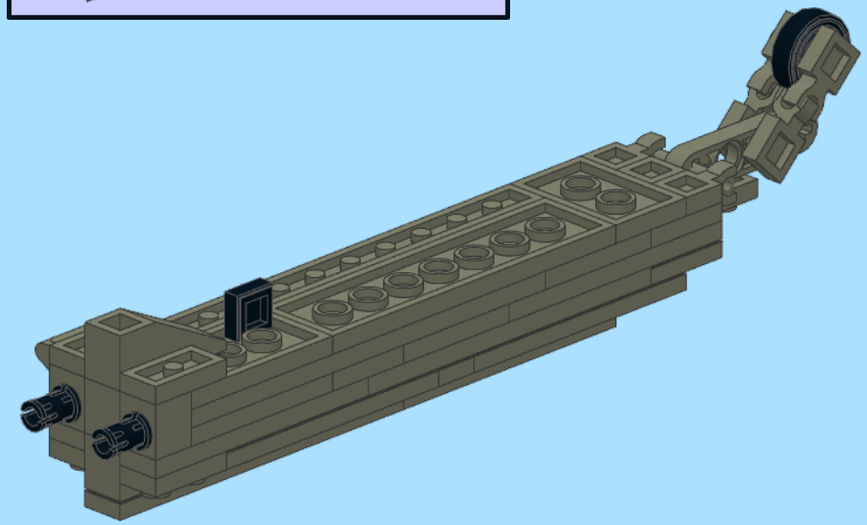

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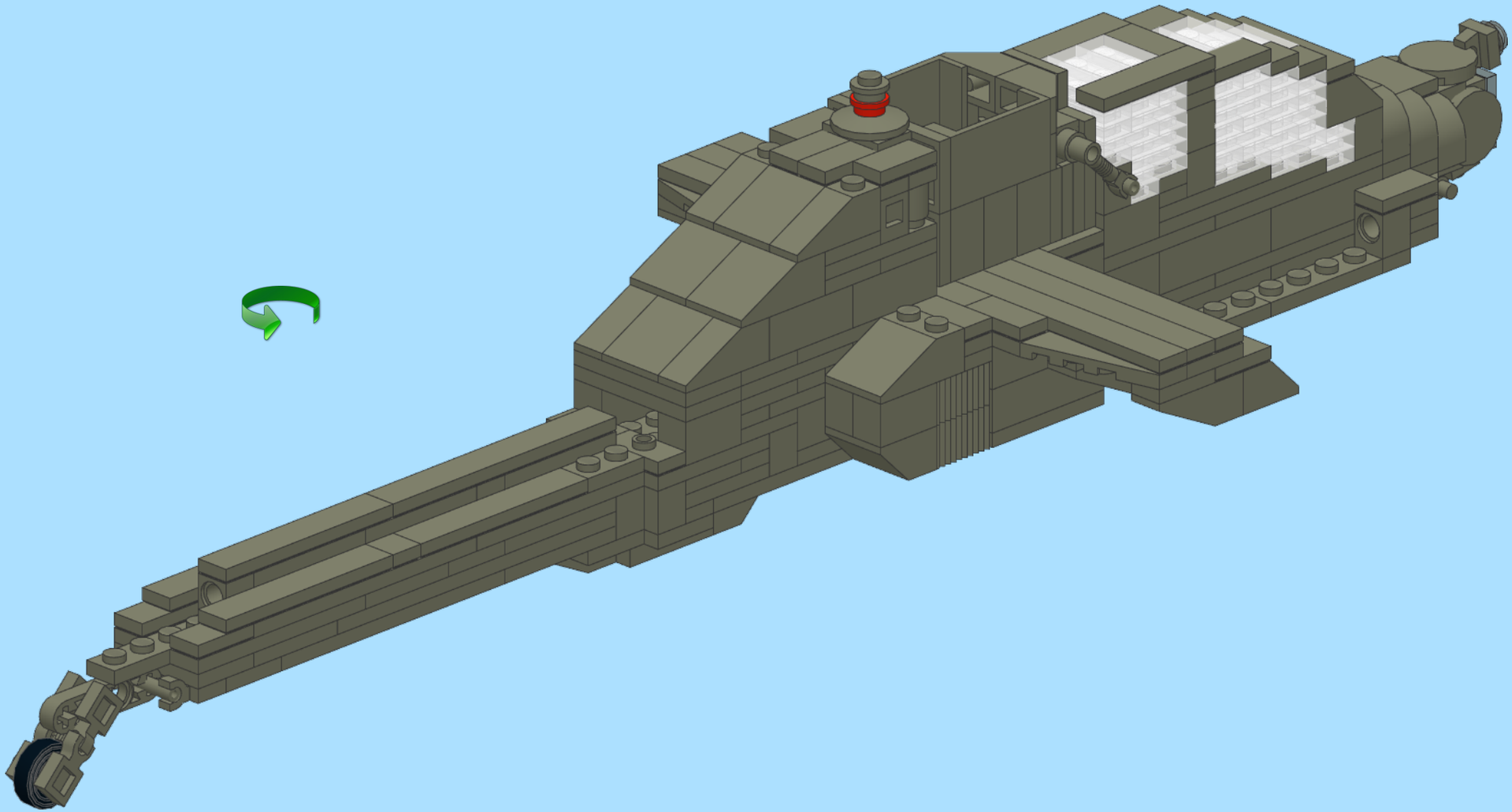

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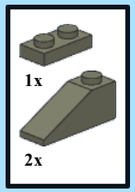

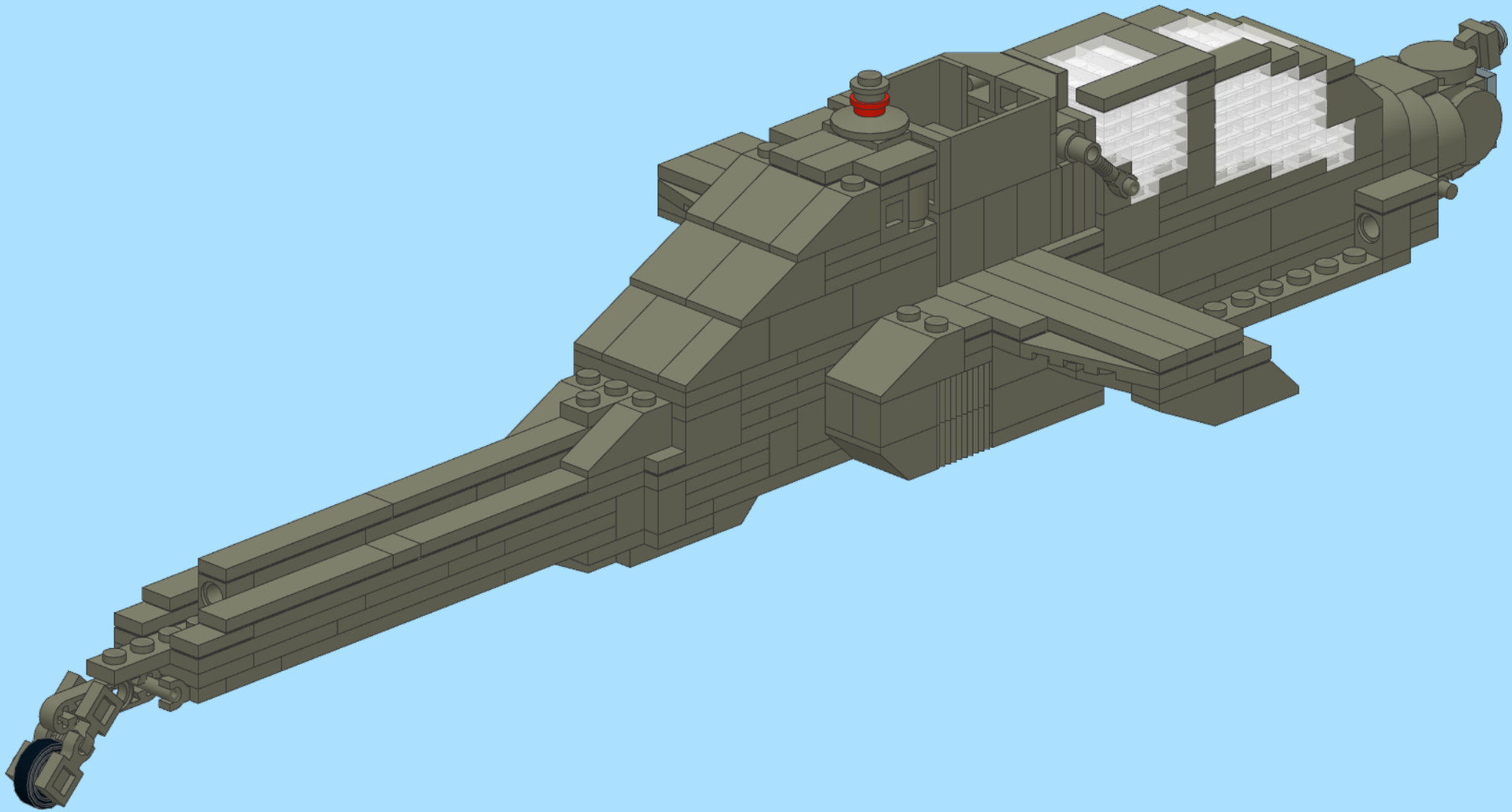

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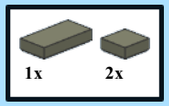

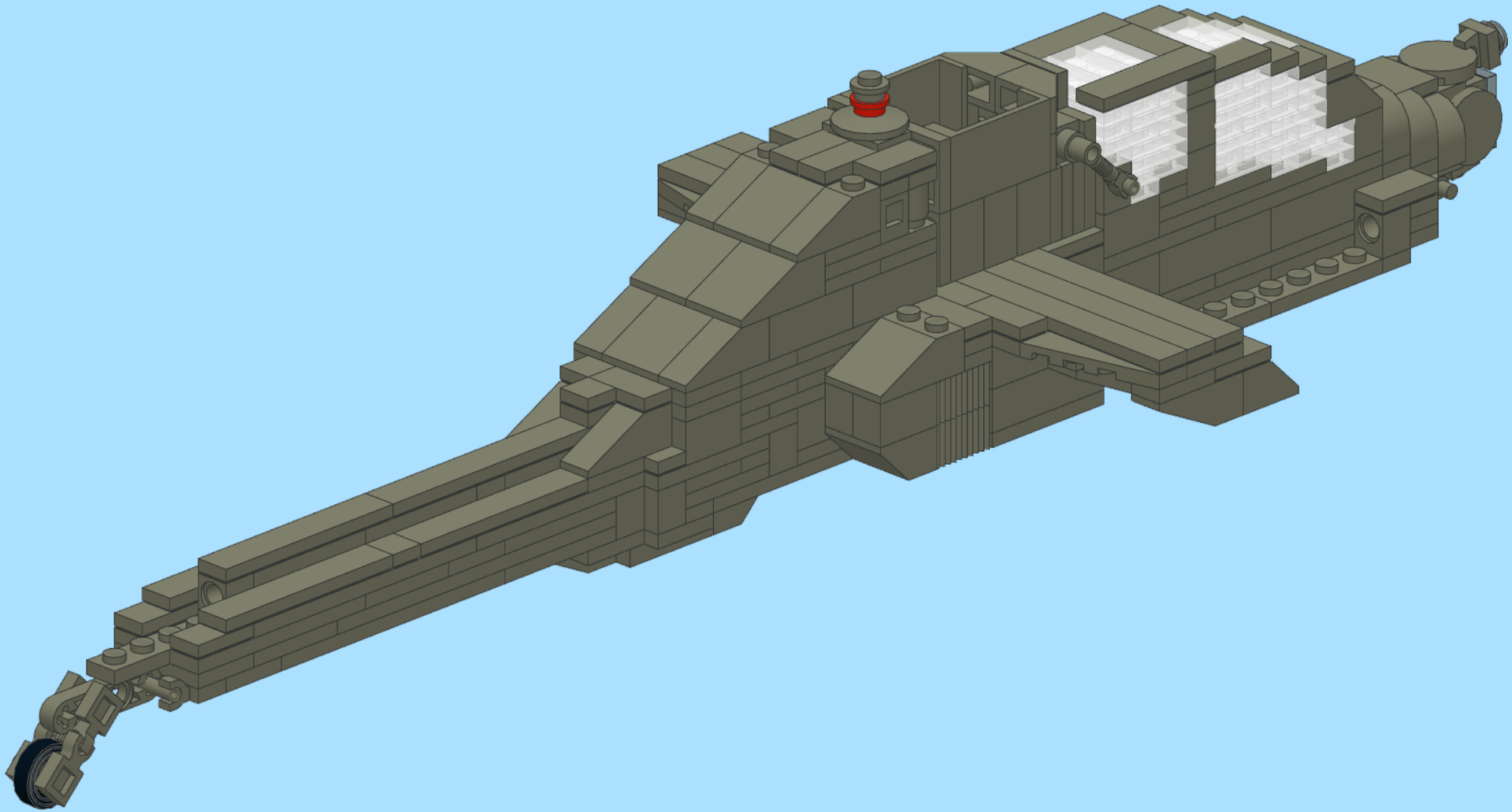

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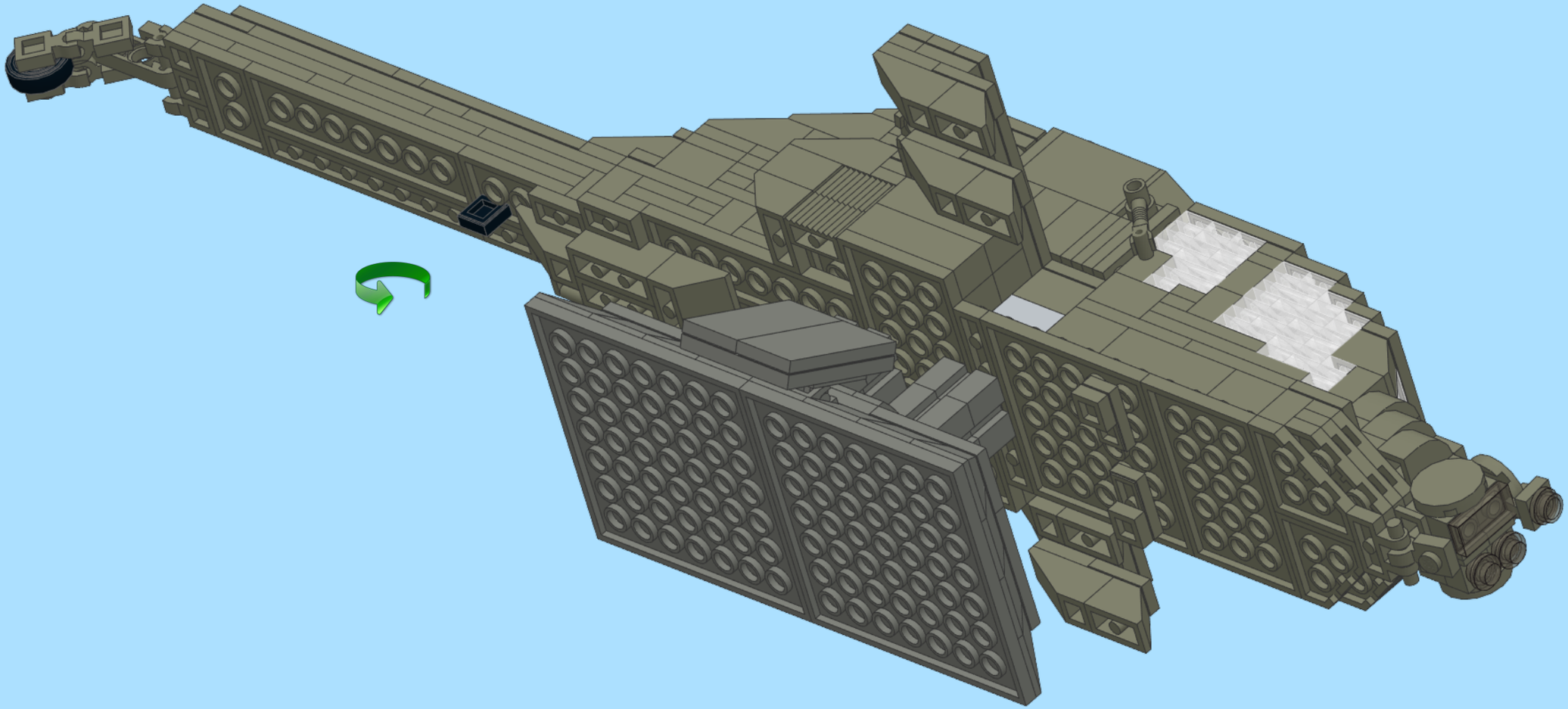

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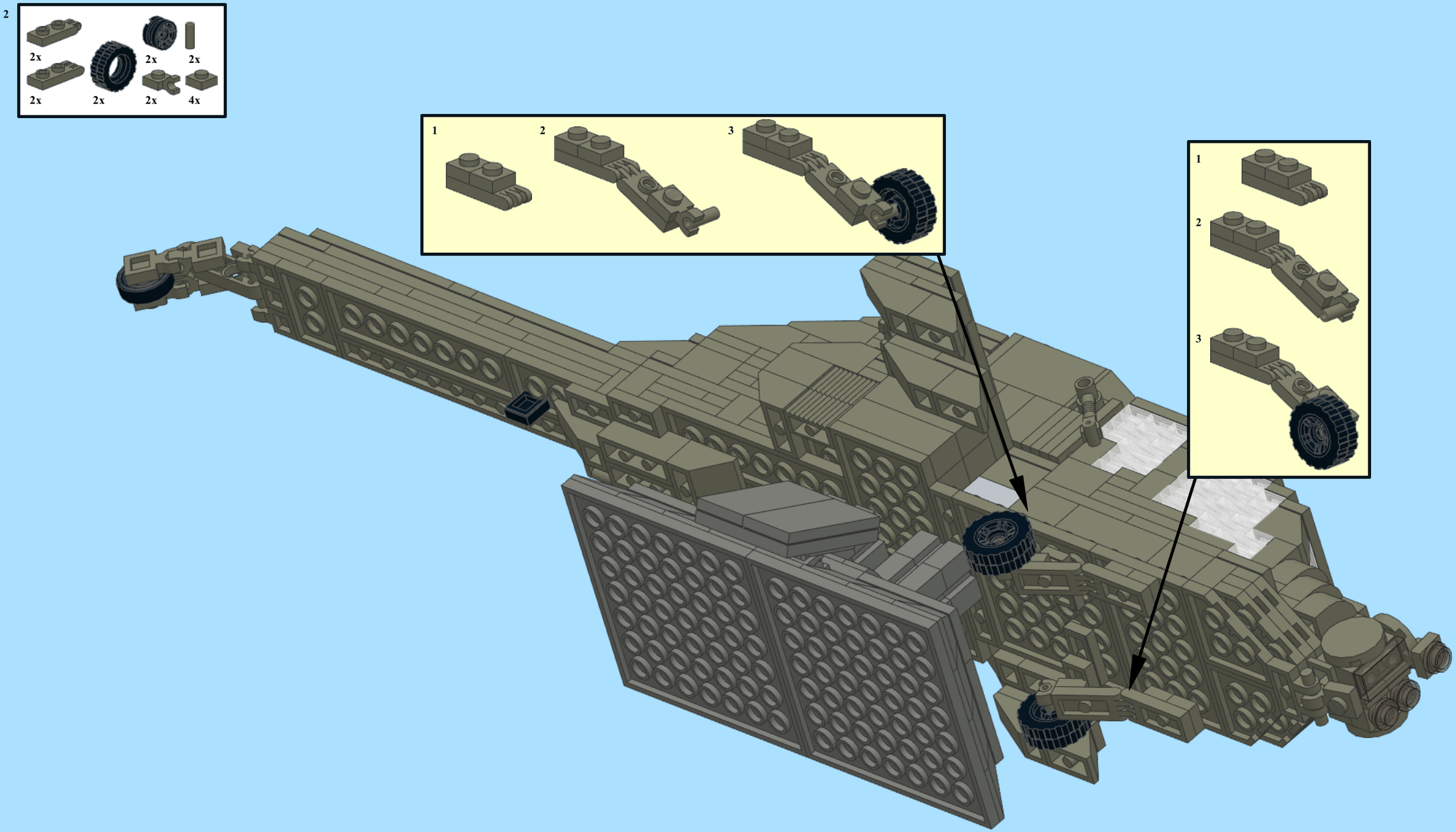

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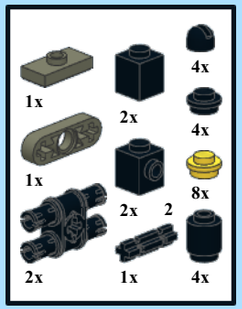

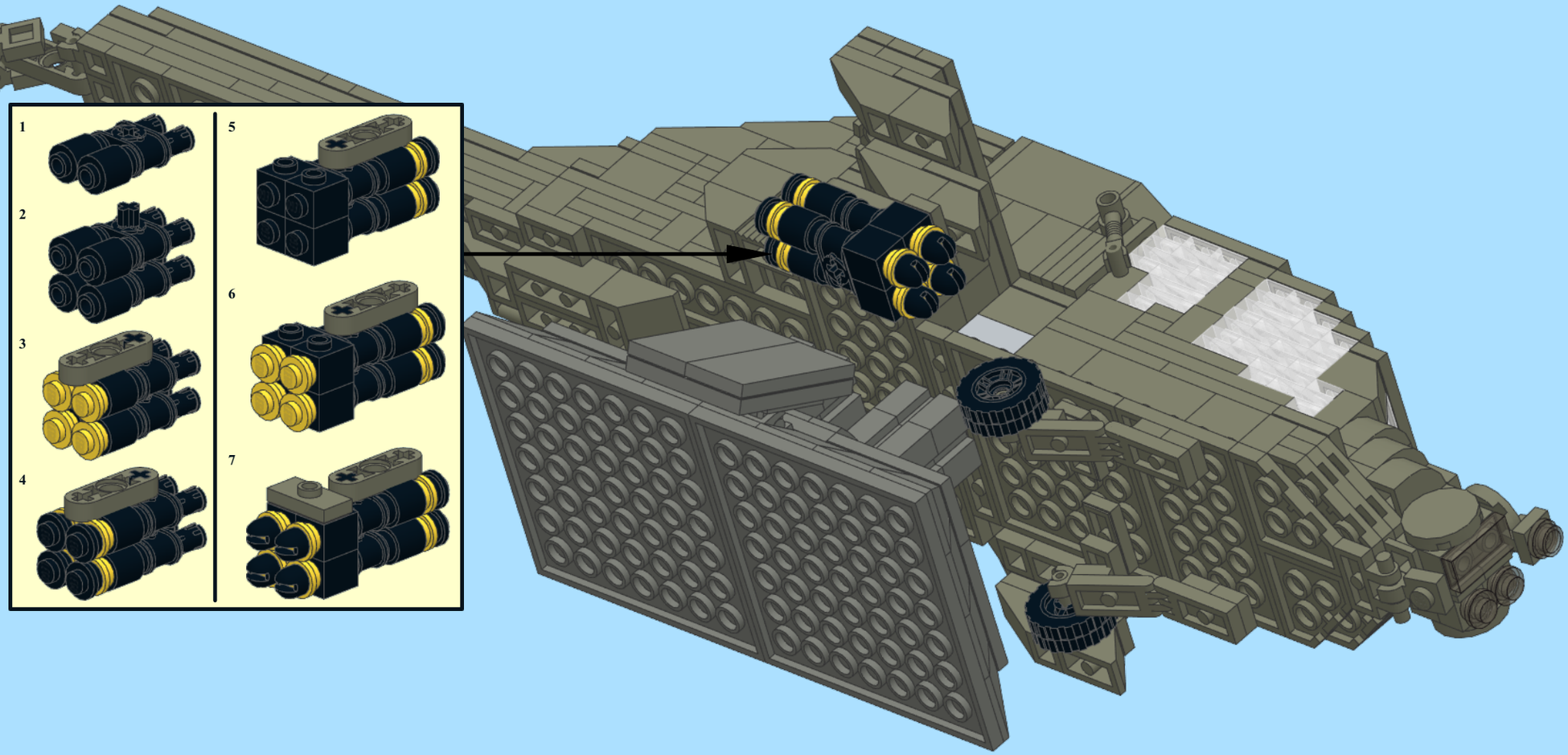

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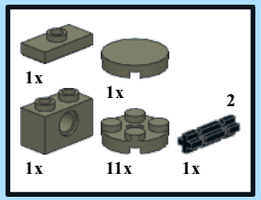

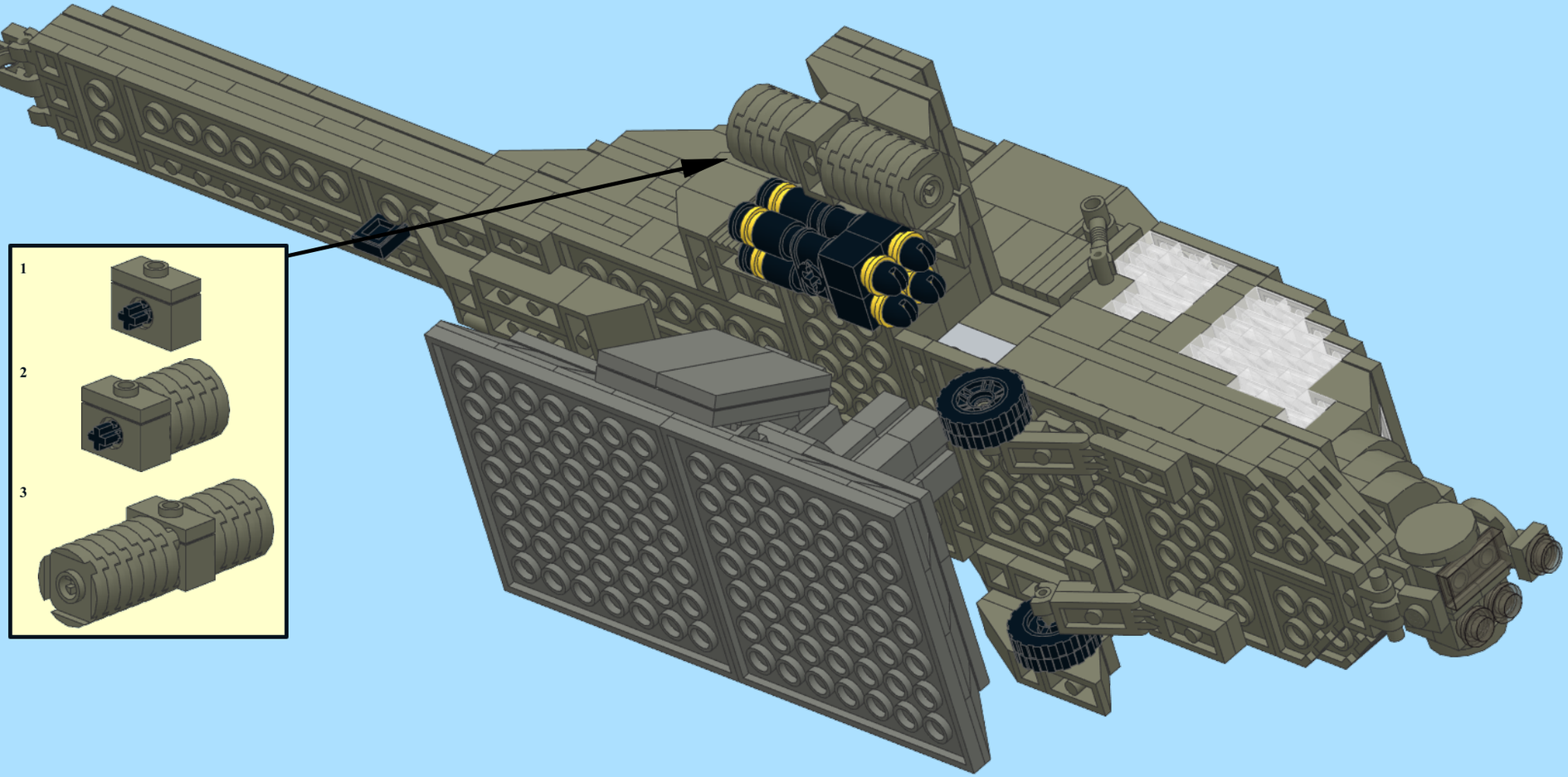

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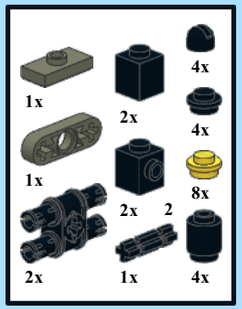

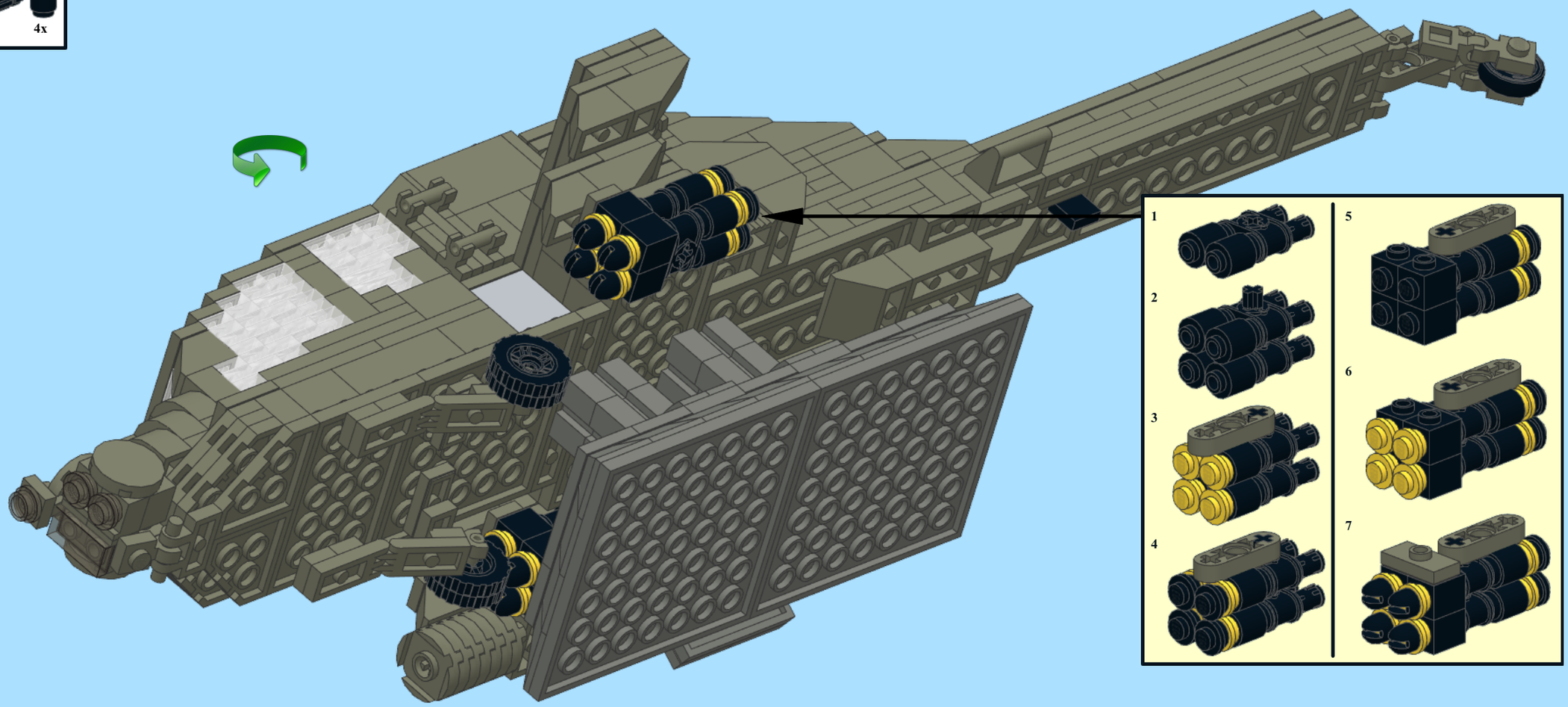

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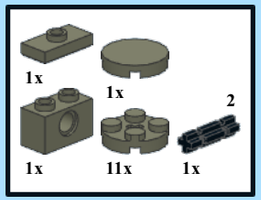

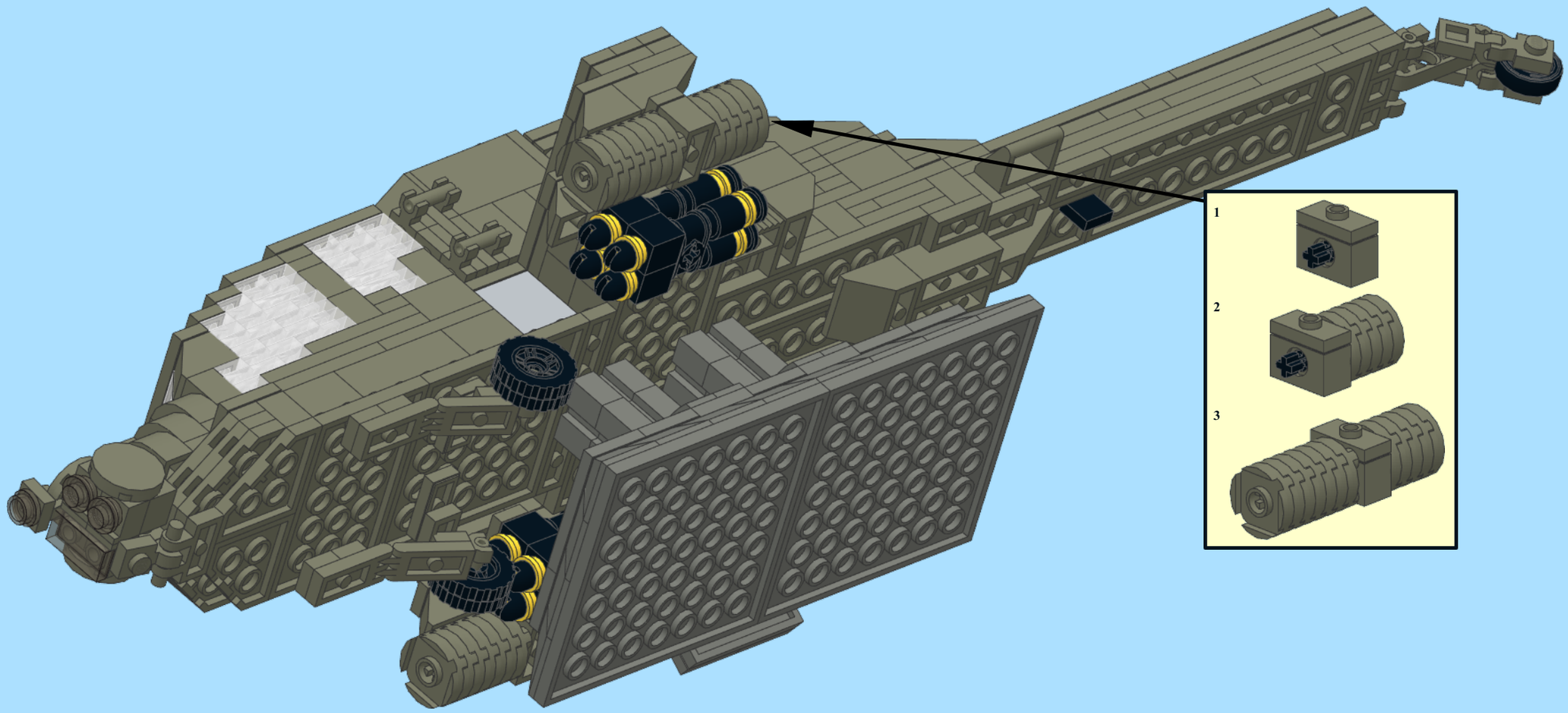

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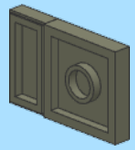

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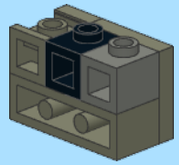

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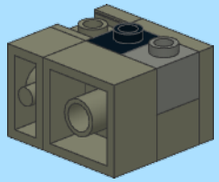

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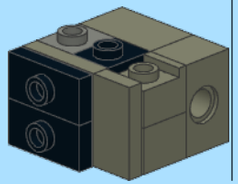

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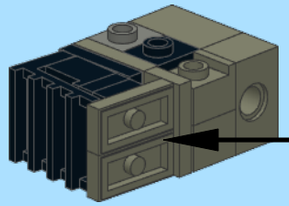

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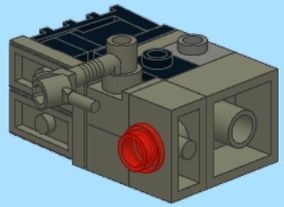

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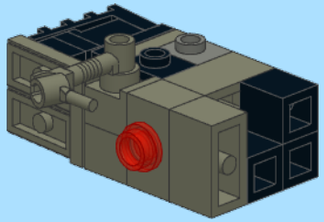

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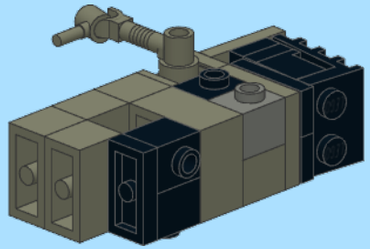

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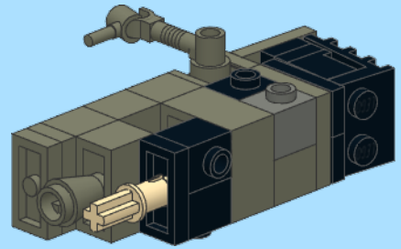

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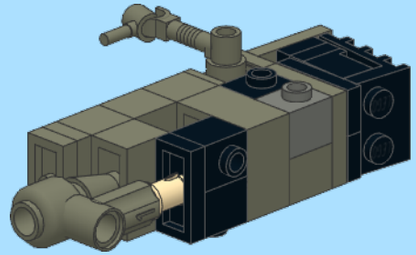

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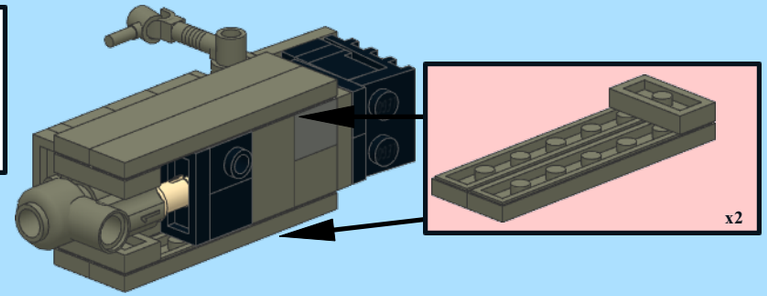

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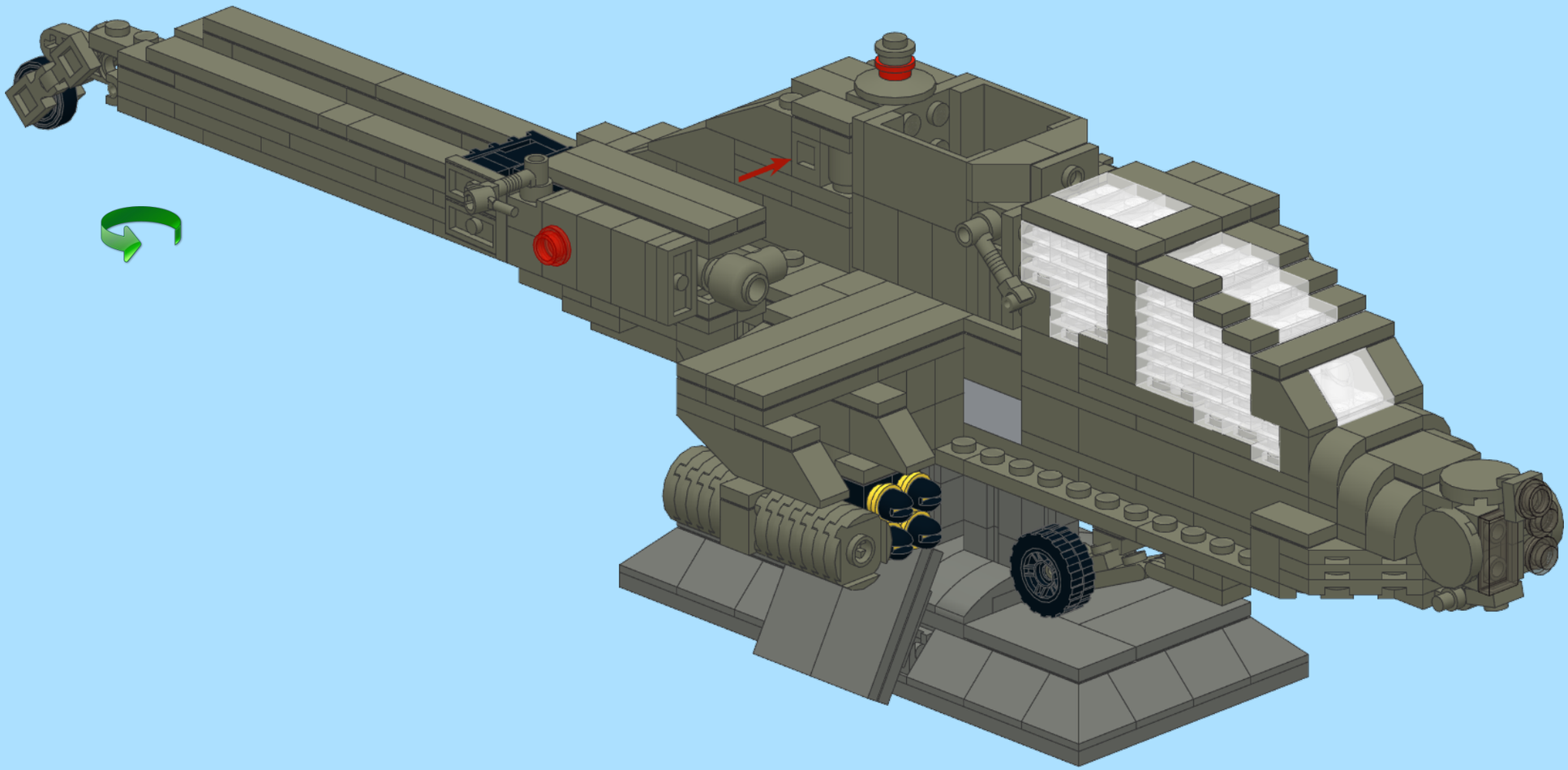

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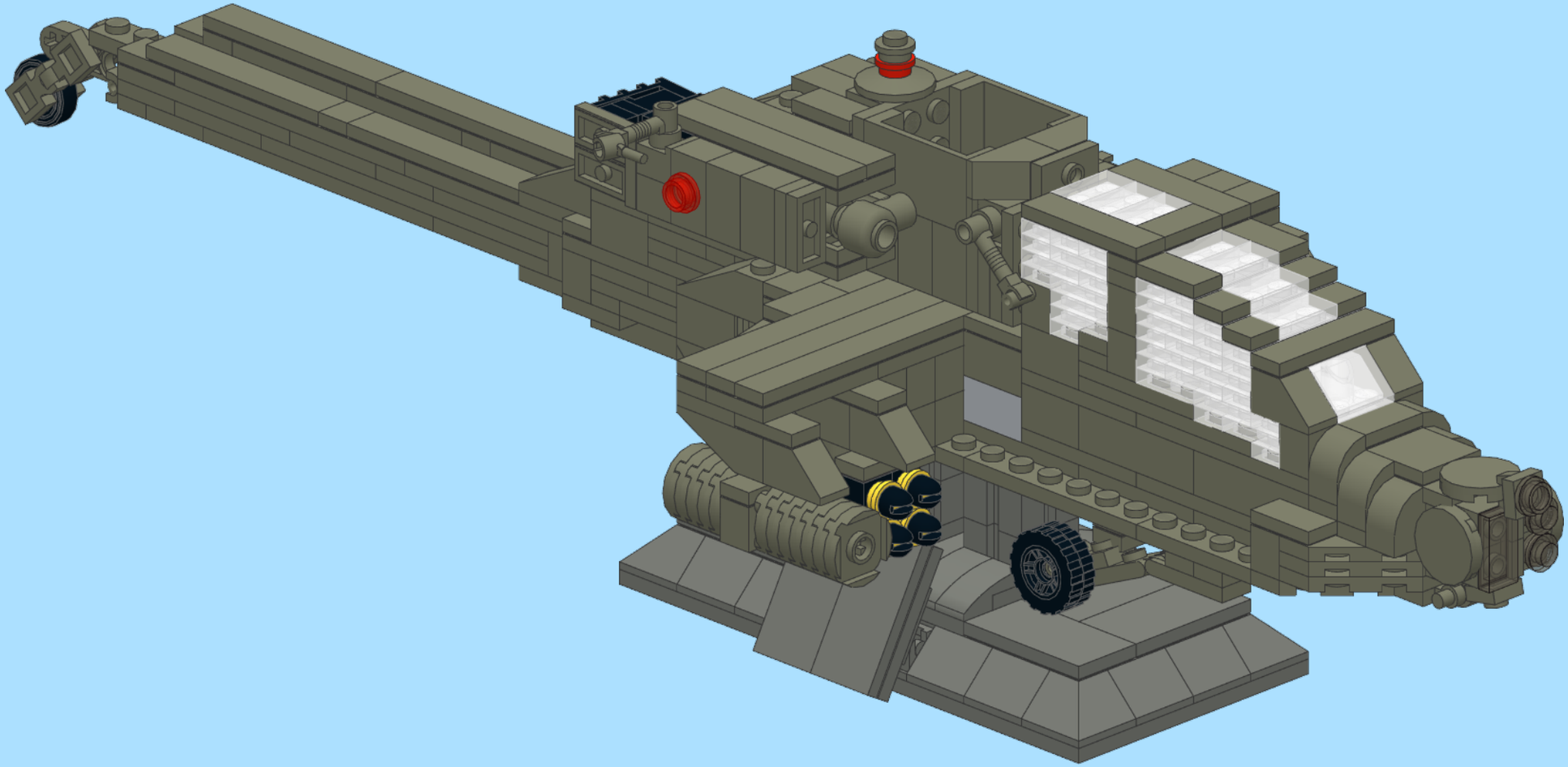

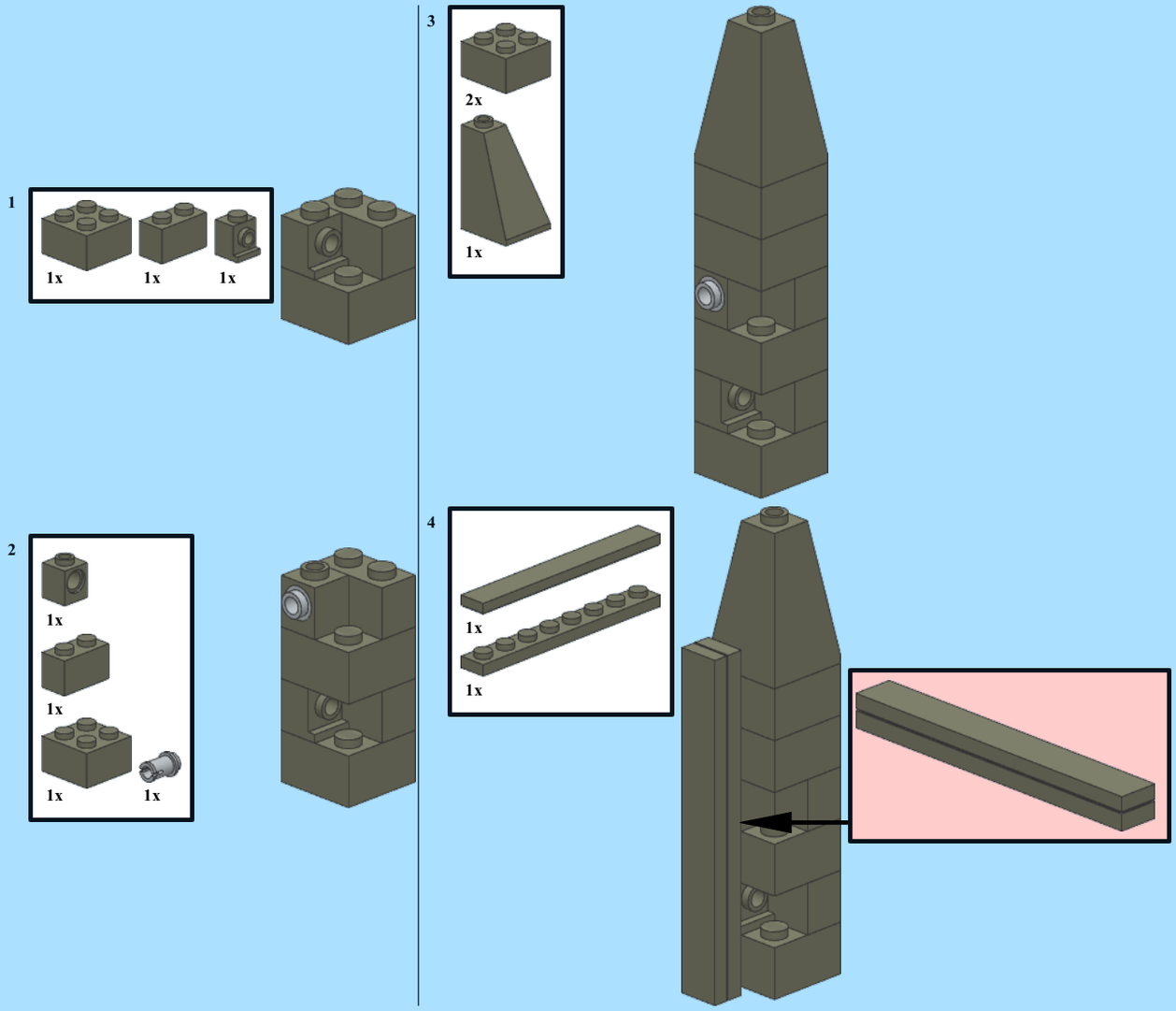

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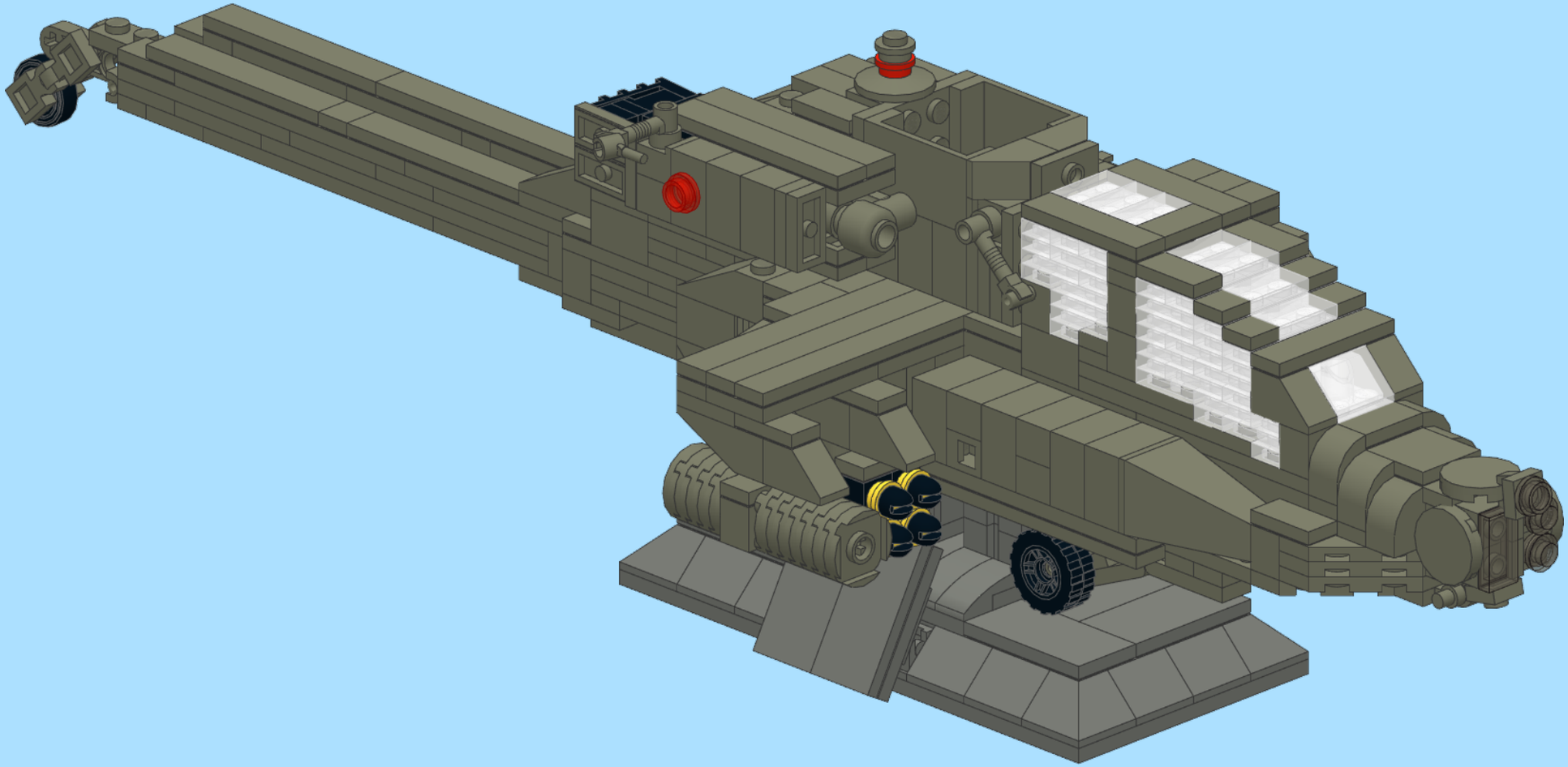

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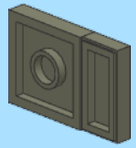

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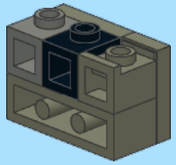

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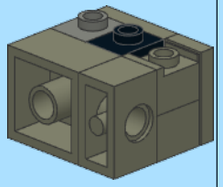

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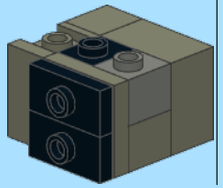

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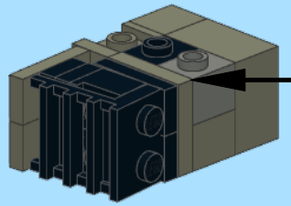

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1x
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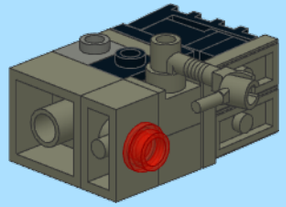

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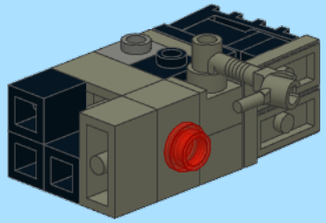

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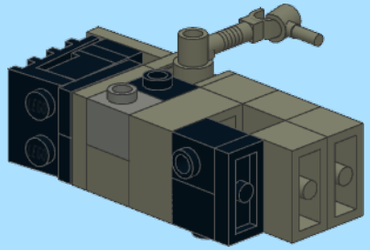

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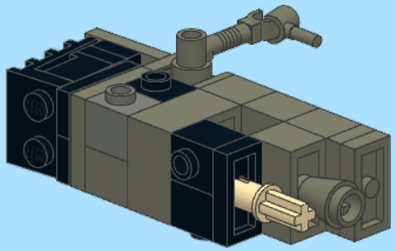

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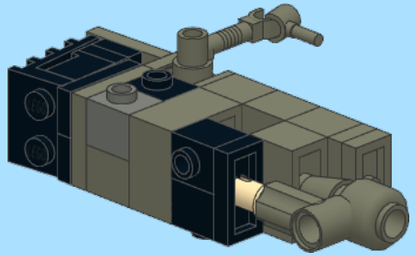

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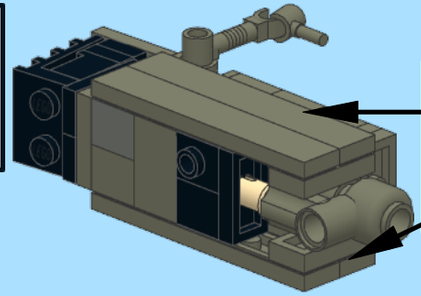

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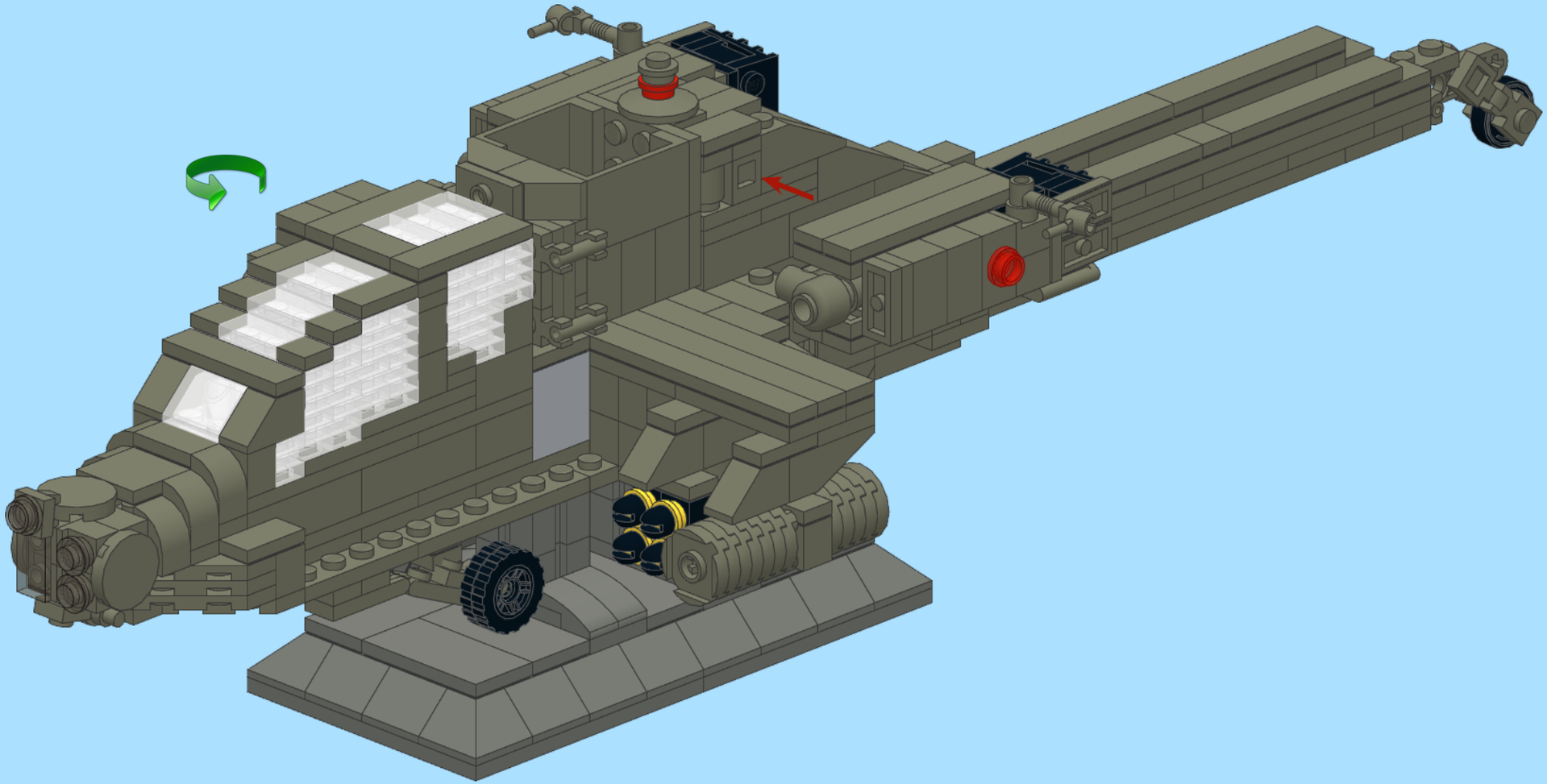
x2



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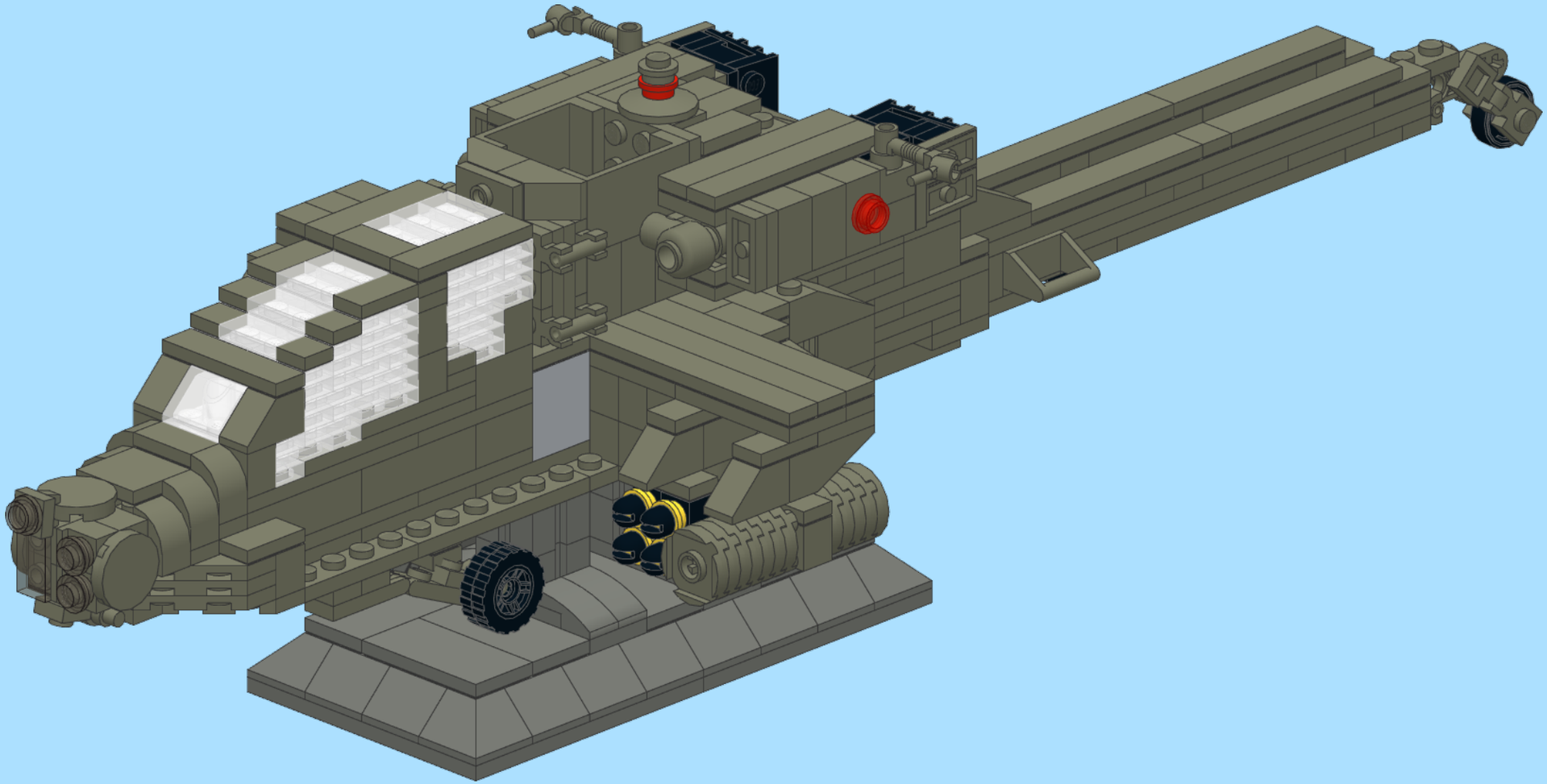

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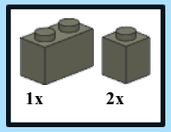

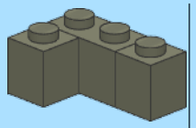

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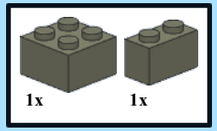

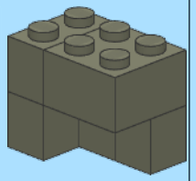

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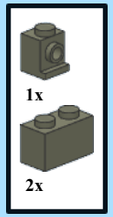

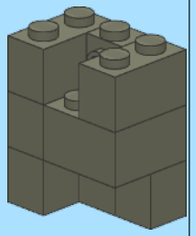

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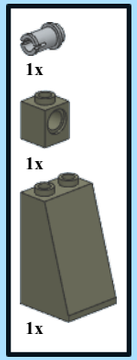

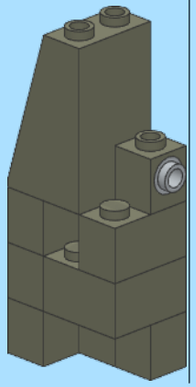

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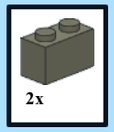

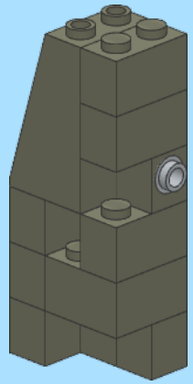

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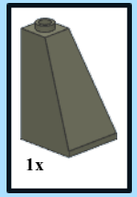

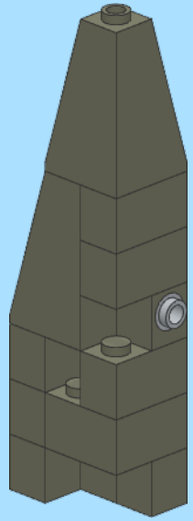

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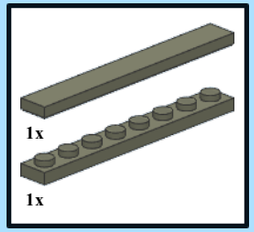

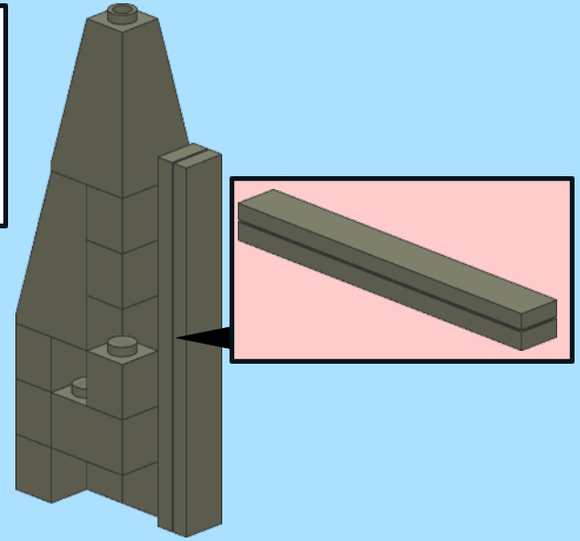

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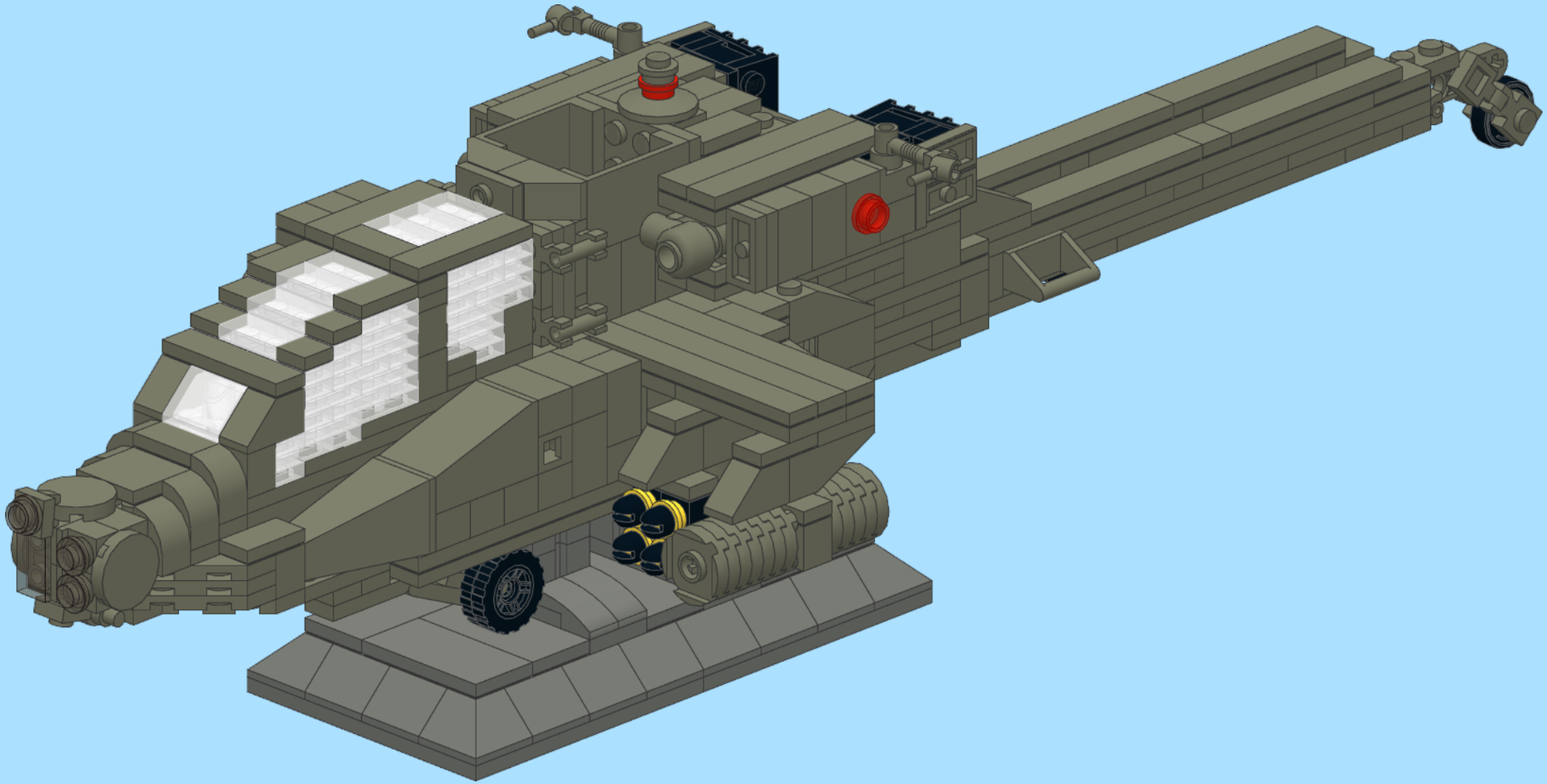

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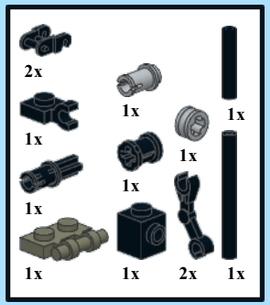

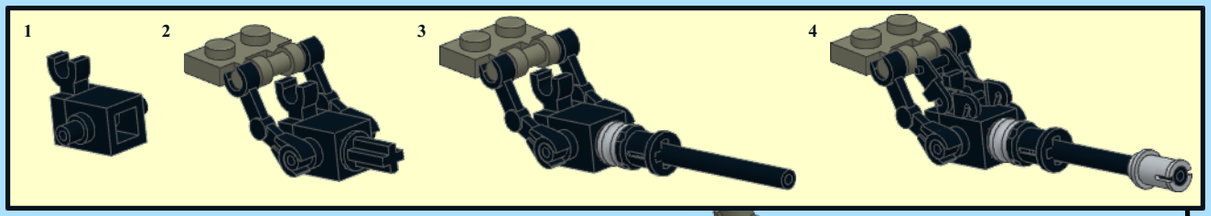

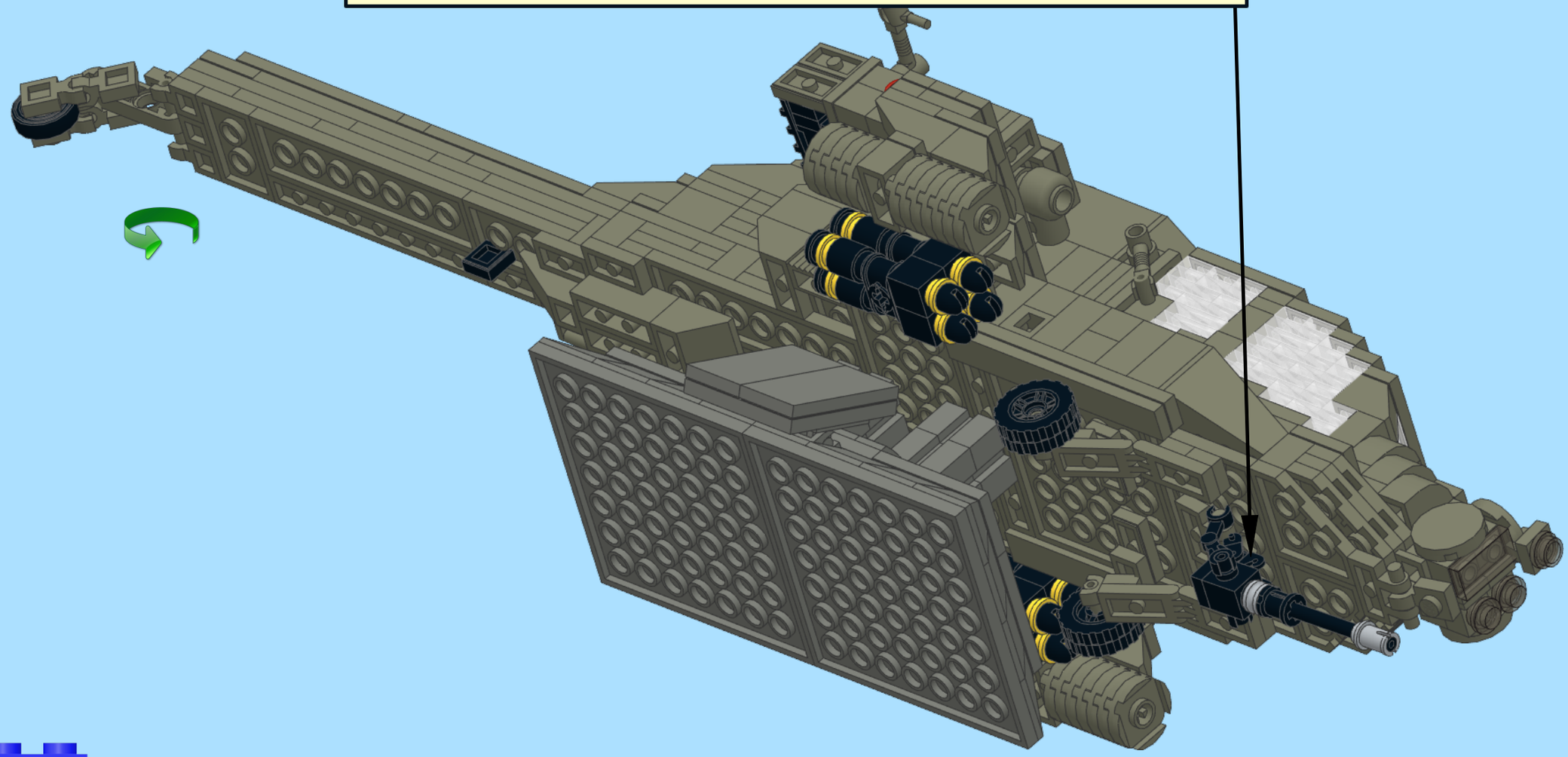

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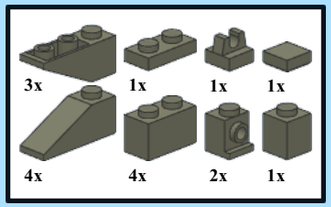

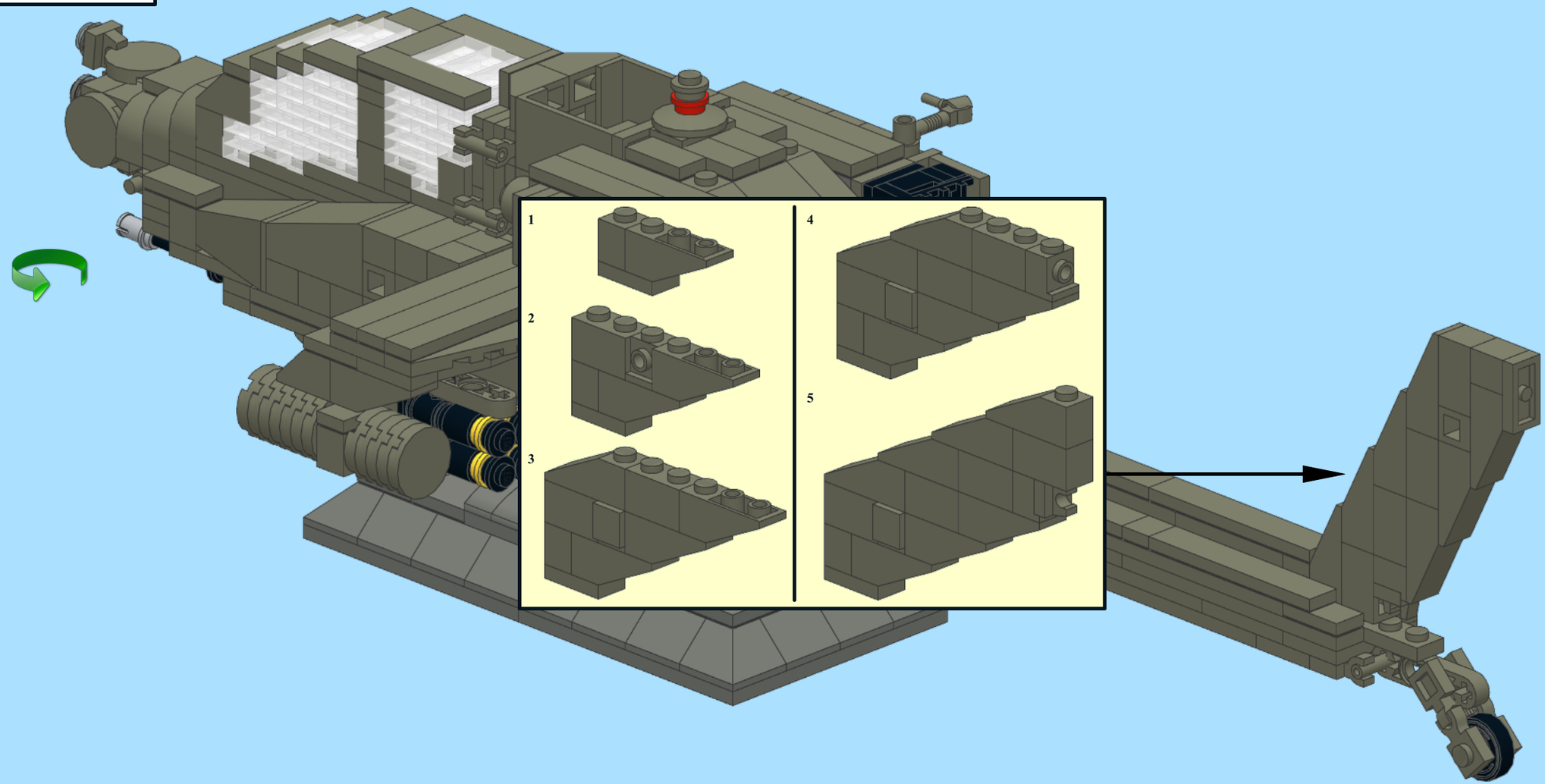

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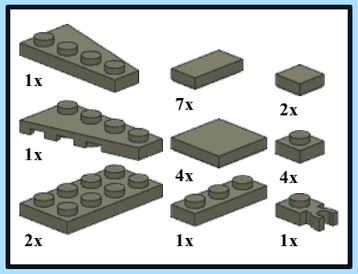

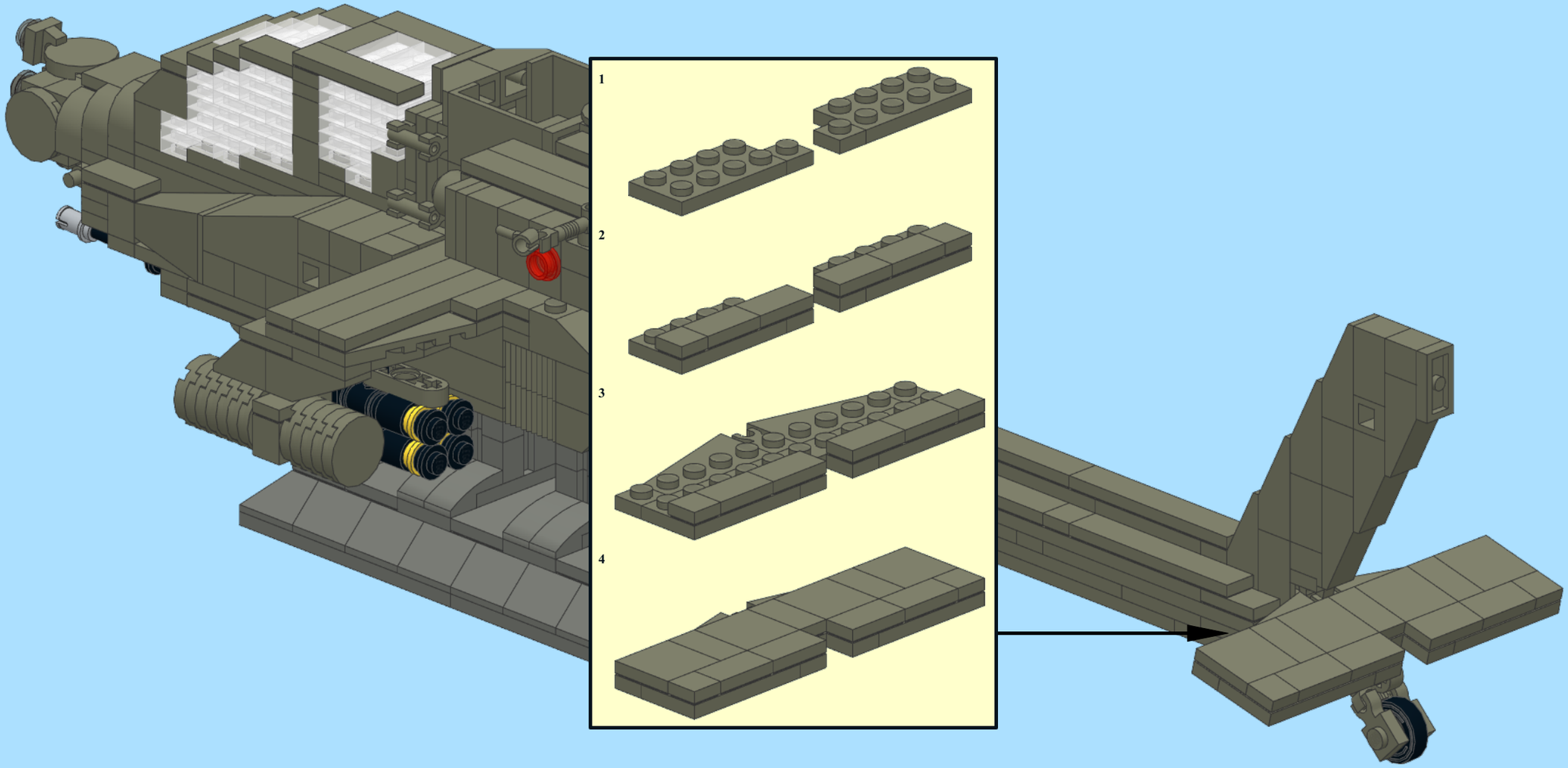

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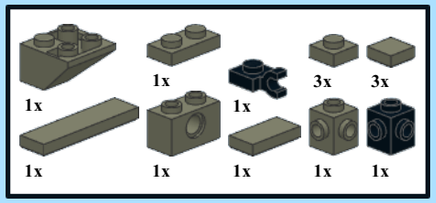

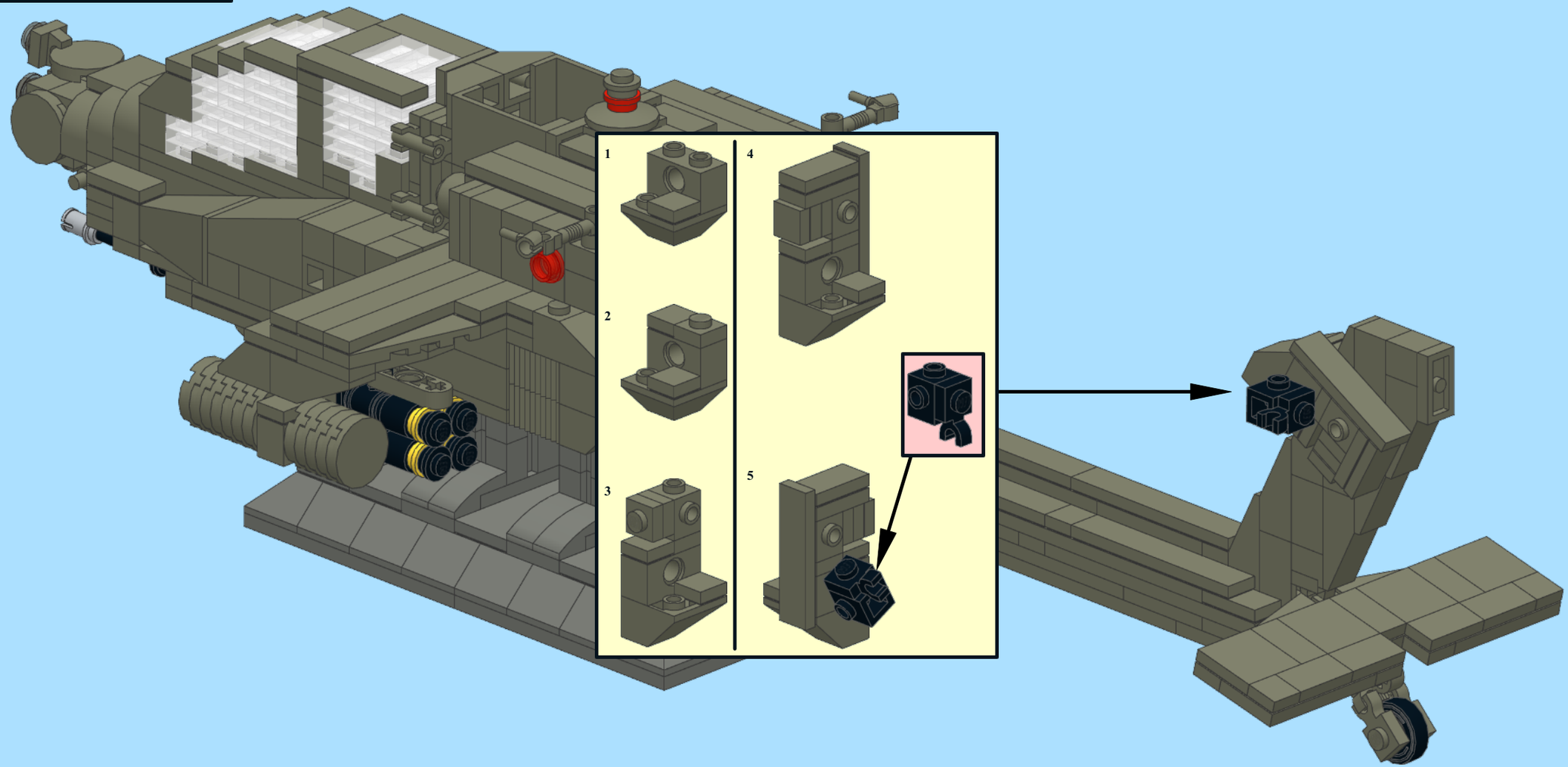

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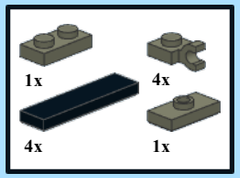

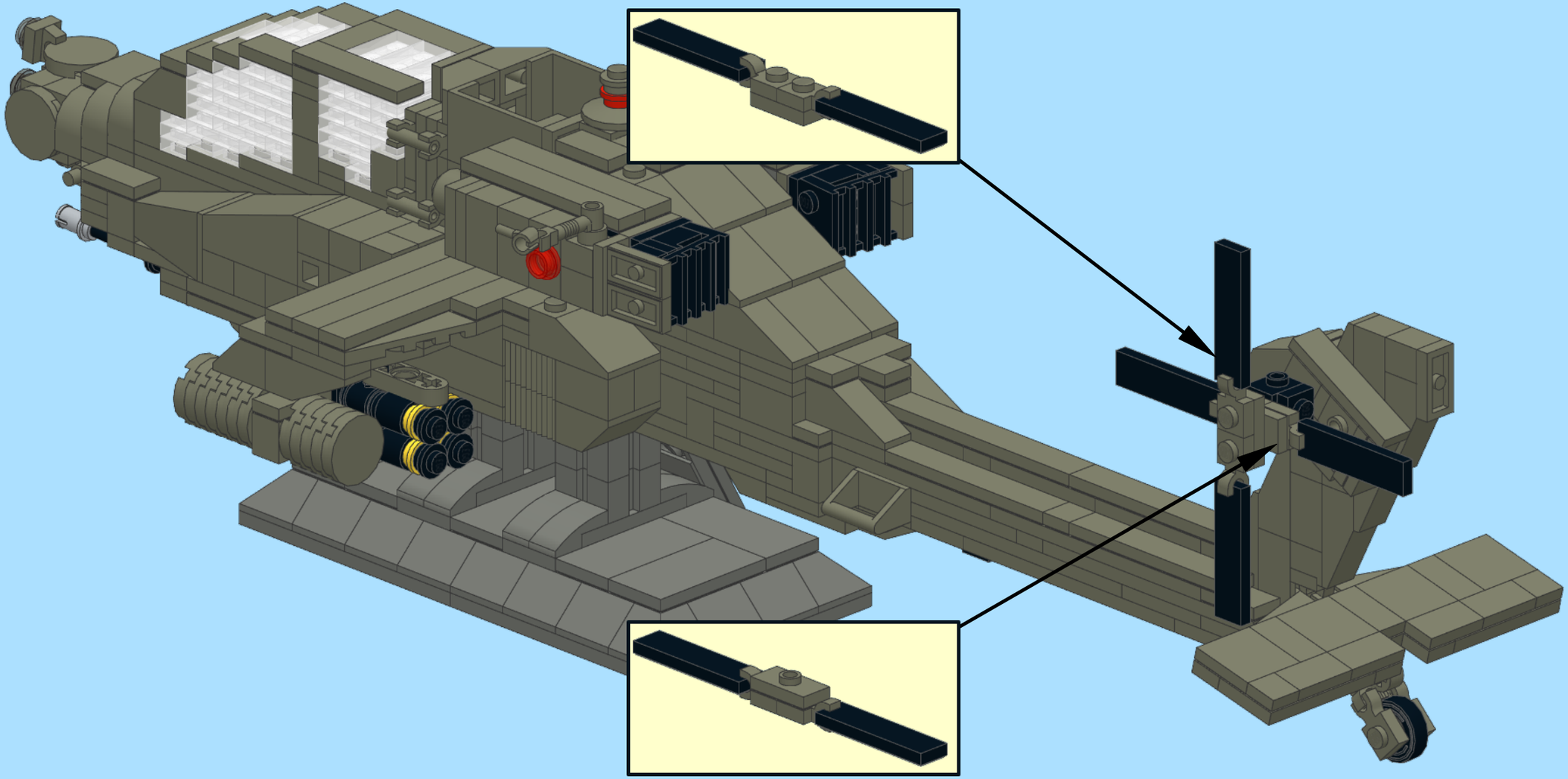

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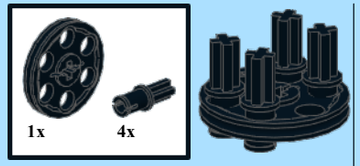

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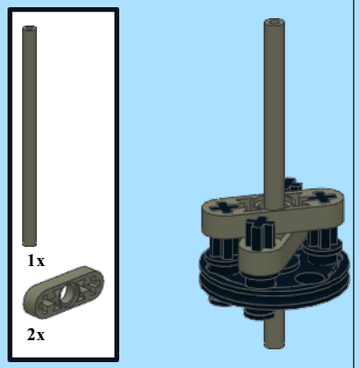

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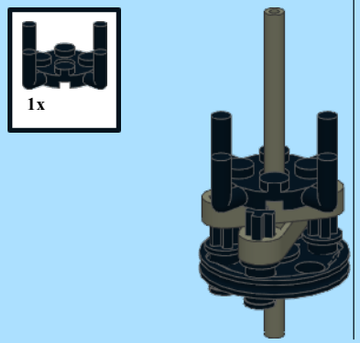

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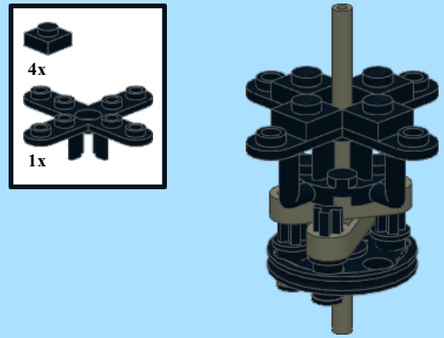

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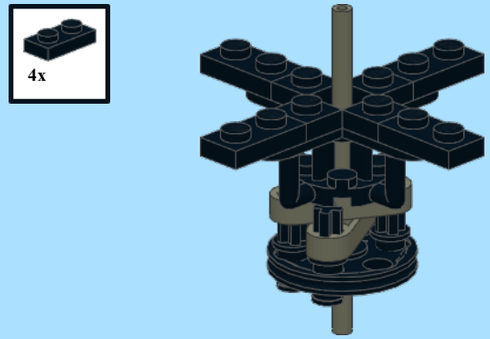

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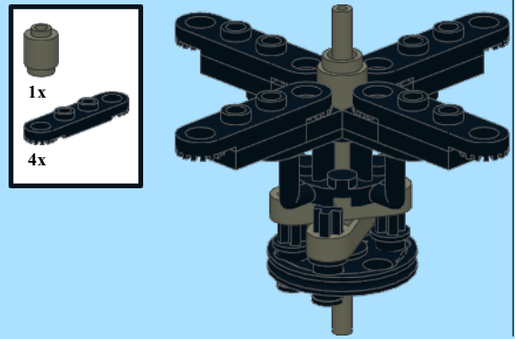

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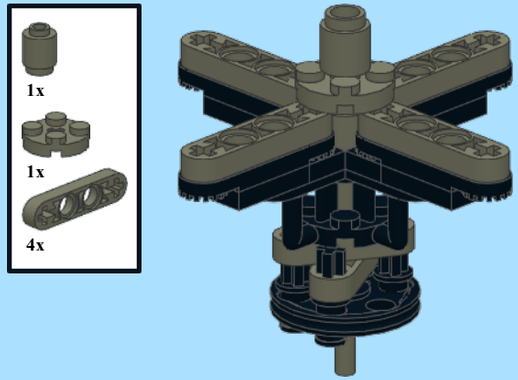

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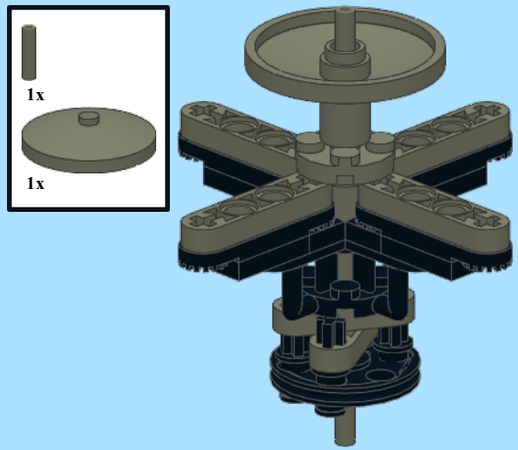

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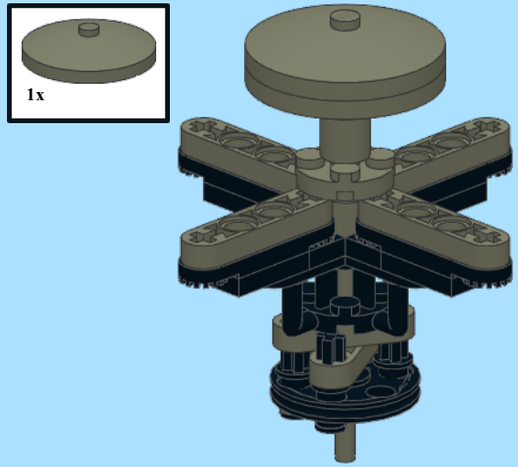

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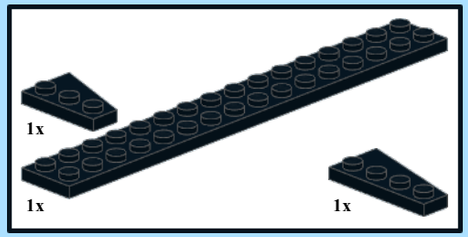

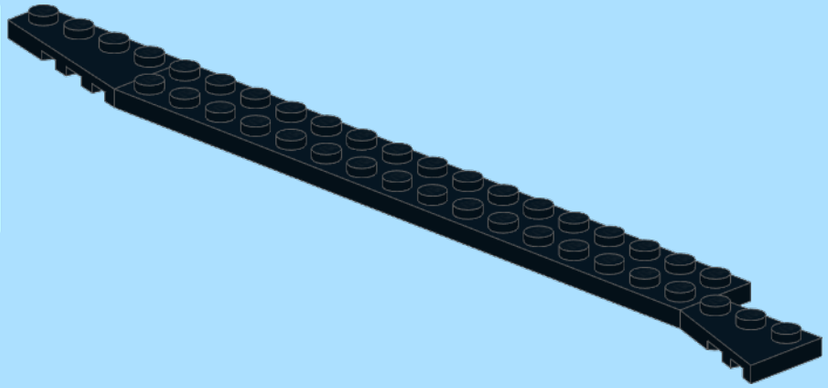

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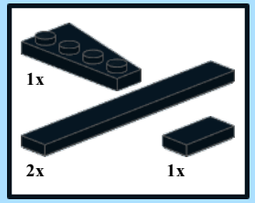

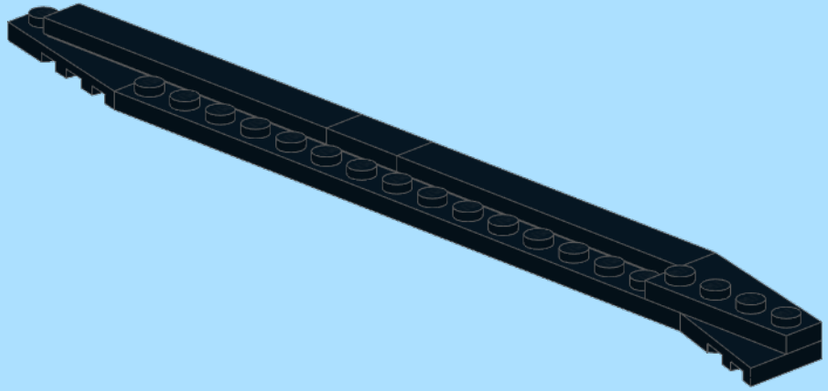

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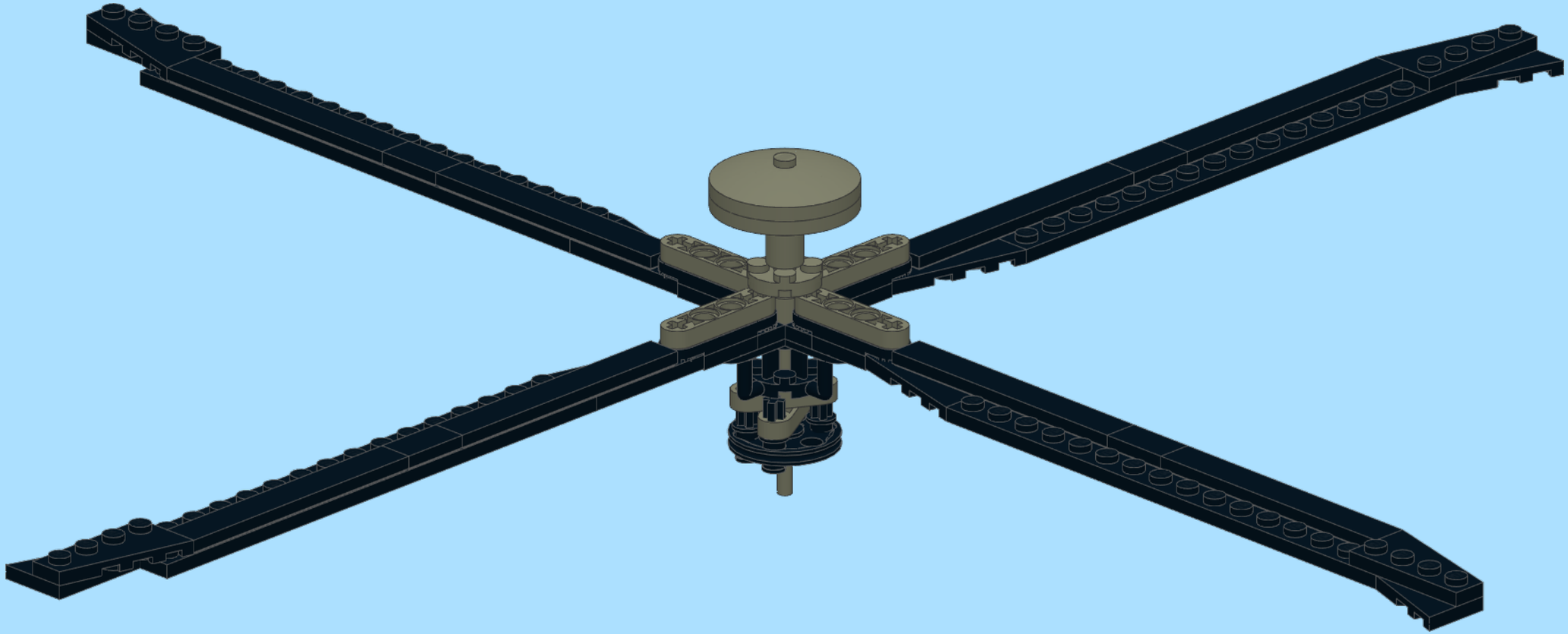

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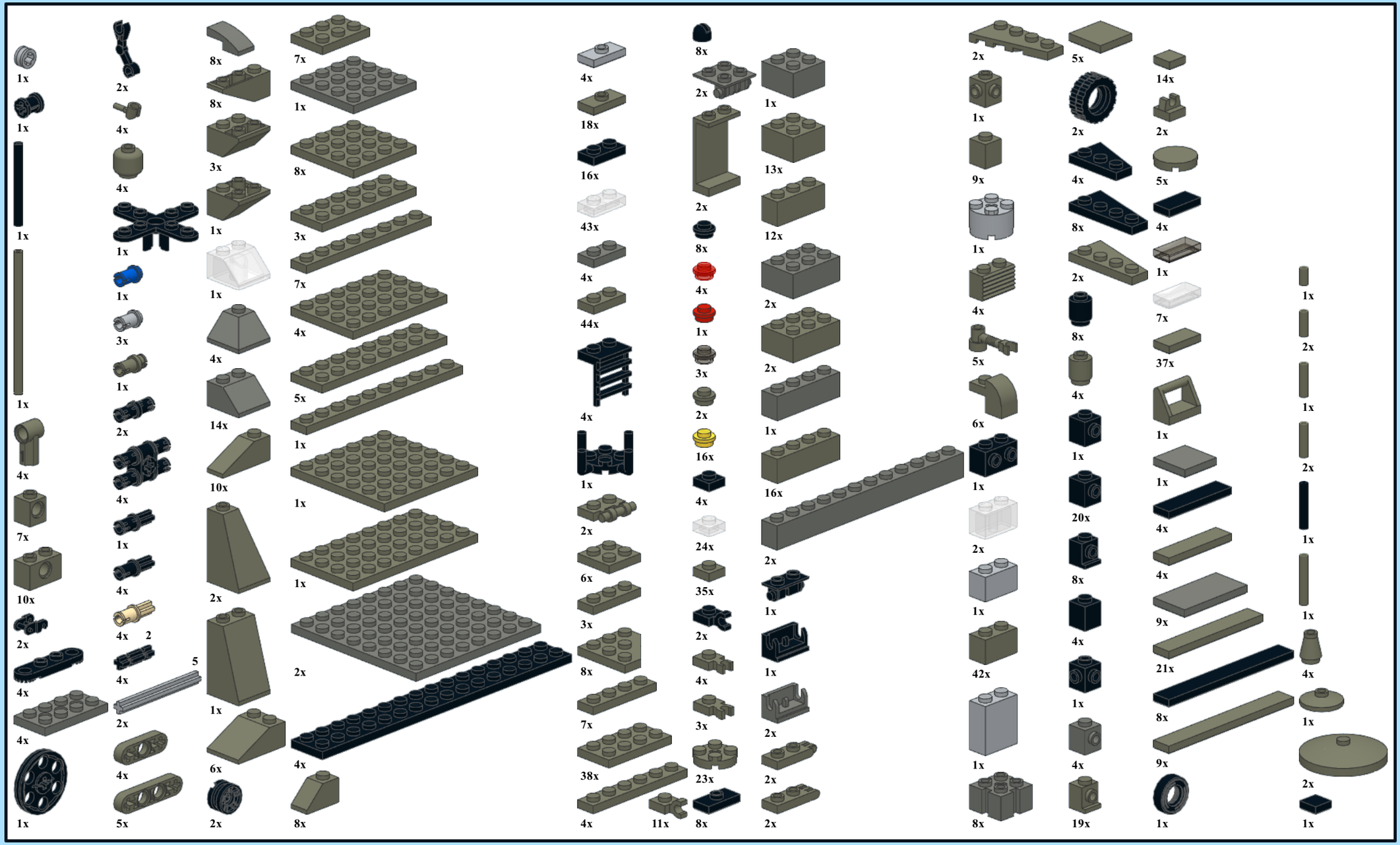

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