SWS No.14 - 1/32 川崎 キ45改甲/丙 二式複座戦闘機 屠龍

Kawasaki Ki-45 Kai Ko / Hei TORYU (NICK)

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Actual Aircraft Dimensions, Performance and Characteristics

・用途：戦闘機　　・乗員：2名
・全幅：15.02m　　・全長：11.00m
・全高（水平時）：3.70m
・動力：三菱重工業　ハ102
　空冷複列星型14気筒 1,080hp
・最高速度／高度：540km/h ／ 6,000m
・武装：ホ103　一式 12.7mm固定機関砲 × 2（機首・甲）
　ホ203　37mm機関砲 × 1（機首・丙、陸軍航空工廠製）
　ホ3　試製20mm固定機関砲 × 1（胴体下面・共通）
　98式7.92mm旋回機銃 × 1（後席・共通）

・Role: Fighter Aircraft　　・Crew: 2
・Wingspan: 15.02m　　・Length: 11.00m
・Height (when level): 3.70m
・Power: Mitsubishi Heavy Industries Ha-102
　14-cylinder air-cooled two-row radial engine developing 1,080hp
・Maximum speed/altitude: 540km/h ／ 6,000m
・Armament: Two Ho-103 Type 1 12.7mm Fixed Machine Cannons (Ko)
　Ho-203 37mm Machine Cannon (Hei, Manufactured in Army Aerial Arsenal)
　Ho-3 20mm Fixed Machine Cannon Prototype (Both Types)
　Type 98 7.92mm Turret Machine Gun (Both Types)

川崎 キ45改甲/丙 二式複座戦闘機 屠龍

Kawasaki Ki-45 Kai Ko / Hei TORYU (NICK)

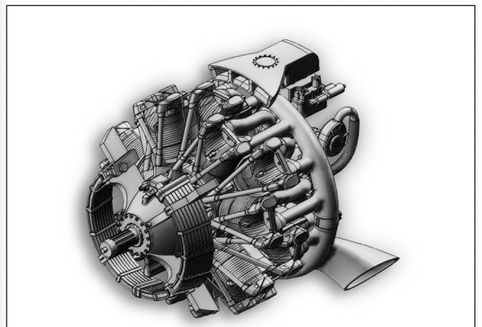
二式複座戦闘機「屠龍」は、川崎航空機が開発・製造した大日本帝国陸軍の双発戦闘機。試作名称は「キ45改」で、連合軍のコードネームは「Nick」。同年採用の二式単座戦闘機「鍾馗」と区別し、「複座」と付された。1930年代半ばから1940年頃欧米では、単発機よりも航続距離が長く高速で、搭載能力も大きな双発機は、一機種で戦闘・爆撃・偵察・指揮など様々な任務をこなせて効率的であると考えられた。その影響を受けた大日本帝国陸軍より、1937年に双発複座戦闘機の開発命令を受けた川崎造船所（後の川崎航空機）は試作を繰り返し、1940年5月完成の九九式双発軽爆撃機の基本設計を流用して、翌1941年9月には試作1号機「キ45改」を完成。各種飛行テストの結果、1942年2月に「二式複座戦闘機」として制式採用された。

エンジンは、三菱重工業製の航空機用空冷複列星型14気筒エンジン「ハ102」（海軍では「瑞星」の名で実戦投入済み）を搭載。離昇出力は1080hpで、遠心式スーパーチャージャー1段2速の過給機を持ち、開発初期から長らくつきまとったナセルストール問題も、ナセル自体の取り付け位置を調整することで解決された。このエンジンの採用こそが、「キ45改」成功の鍵だったと言えよう。また本機は、武装の違いにより大きく分けて甲・乙・丙・丁の4種類が存在し、その多用途性によりあらゆる戦域に配備された。特に大型機の迎撃、中でも対B-29迎撃ではエースパイロットを多く輩出し、終戦まで連日の出撃を行う大活躍だった。本機を「屠龍」と言わしめ、B-29撃墜の立役者でもある機首武装「ホ203」は、第二次世界大戦中に大日本帝国陸軍が使用した航空機関砲である。初速570m/秒、発射速度120発/分（搭載弾数は16発）で、一撃で4発重爆撃機を撃墜可能であった。

一見シンプルな外観形状は、実際は各部が複雑かつ有機的な形状で構成され、特に機首、キャノピー周り、胴体上・下面、胴体前・後部のねじれるような面構成が見所。胴体内燃料タンクの搭載や、胴体下面機銃の弾丸装填操作の必要性などの理由から、必然的に前後離れて配置された座席は、その設計から同乗者間の意思疎通は難しかったと思われる。様々な武装は二人が分担して操作し、前席は機首・胴体下面武装・上向き砲の射撃を担当。後席は旋回機銃の射撃を担当する。本キットでは最初期である甲及び丙型（陸軍航空工廠製）を再現可能。その豊富な武装の中から特徴的な機首武装として、甲型は短機首に「ホ103」12.7mm機関砲2門を搭載。丙型（陸軍航空工廠製）は別タイプの短機首に「ホ203」37mm機関砲1門を搭載。胴体下面には「ホ3」20mm機関砲1門を搭載し、弾道溝周辺の複雑な形状も見事再現。さらに、後席武装「98式旋回機銃」が後席シートやキャノピーと連動して可動する仕組みを選択式で再現可能といった徹底ぶりで甲及び丙型（陸軍航空工廠製）の武装を完全制覇。各型操縦系統の違いや後席武装との関連性まで組み立てながら学べるのはSWSキットならでは。大戦末期の逼迫した戦況下で、この機体に込められた兵士たちの希望、そして開発者たちの意地。それら全てを飲み込むように激化する戦況。SWSキットを組み立てながら、それら全てに思いを馳せていただきたい。

The Type 2 Two-Seat Fighter “Toryu” was a twin-engine fighter aircraft designed and developed by Kawasaki Aircraft Industries for the Imperial Japanese Army. The prototype short designation number was “Ki-45 Kai” and the Allied reporting name was “Nick.” “Two-Seat” was added to the title in order to distinguish it from the Army Type 2 Single-Seat Fighter “Shoki”, which was commissioned in the same year.
From the mid-1930s to around 1940, twin-engine aircraft were considered in Europe and the Americas to be most effective due to their long flying range, high speed, and high payload capacity, and were employed for combat, bombing, reconnaissance, and command, among a variety of other duties. Influenced by this, the Japanese Imperial Army ordered major aircraft manufacturers to develop twin-engine fighter aircraft in 1937. In response, the Kawasaki Shipbuilding Corporation (later to become Kawasaki Aircraft Industries) conducted numerous trials. After appropriating the basic design of the Army Type 99 Twin-engine Light Bomber, which had just been completed in May 1940, they completed the first prototype in September 1941, named “Ki-45 Kai.” After passing flight tests, the aircraft was designated as the “Type 2 Two-Seat Fighter” and officially adopted for army use in February 1942.
The Ki-45 was powered by the “Ha-102” air-cooled 14-cylinder double-row radial aircraft engine developed and manufactured by Mitsubishi Heavy Industries that was used by the Navy under the name “Zuisei” (“Holy Star”). Nacelle stall, which had plagued the Ki-45 from its earliest stages of development, was resolved by altering the mounting location of the nacelles. With its 1,080 horsepower takeoff and single-stage two-speed centrifugal superchargers, it can be said that the use of this engine was the key to the success of the Ki-45 Kai.
The Ki-45 was divided into four variations based on armament; “Ko,” “Otsu,” “Hei,” and “Tei.” This versatility led it to being used in a variety of different battlefields. The Ki-45 proved to be particularly capable of intercepting large aircraft, and many pilots became aces counterattacking B-29s. The aircraft was active in combat up to the end of the war.
The root of the name “Toryu” (or “Dragon Slayer”) was the World War II Japanese Imperial Army’s Ho-203 cannon mounted in the aircraft nose, the Ki-45’s most distinctive armament and one of the leading stars of intercepting B-29s. The Ho-203 muzzle velocity was 570m per second, it could fire 120 rounds per minute (loaded with 16 rounds) and could shoot down a four-engine heavy bomber in a single blow.
While the external appearance of the aircraft may seem simple at first glance, every part of the airframe is actually engineered in a highly-complex and interconnected fashion. In particular, the nose, canopy area, upper and lower fuselage and the curving construction of the front and rear fuselage is very impressive. Due in part to the placement of the internal fuel tank and the necessity for loading operation of the underside fuselage machine gun, the pilot seats had to be placed far apart. It is thought that this separation caused difficulty in communication between the two pilots. The tasks of operating the various weapons were divided between the front and rear. The front-seat pilot controlled those mounted on the nose and fuselage underside as well as the upward-firing cannons. The rear-seat pilot controlled the rear machine gun.
This kit can replicate the Ko type, which is the first version, as well as the Hei version (as manufactured in the Army Aerial Arsenal). For the Ko version, two Ho-103 12.7mm cannons are in the short nose, selected as representative front weapons from among the wide range of options. In the Hei (Arsenal) version, the different type of short nose is equipped with one Ho-203 37mm cannon.
One Ho-3 20mm cannon is mounted on the fuselage underside, and the elaborately complex area around the weapon mount is recreated in thorough detail. All of the weapon options for the Ko and Hei (Arsenal) versions are made possible, with the choice to recreate the connected mobility system between the rear seat-controlled Type 98 turret machine gun and the rear seat sheet and canopy.
While building, one can learn the differences between each version’s flight controls and even the connection with the rear seat weapons, one of the distinct highlights of building an SWS kit.
Amidst the increasingly strained war efforts in late WWII, the Toryu was full of the hopes of the soldiers and the strong will of its developers. They faced an intensifying military situation posed to dash all of those wishes. We hope that you will think of them as you build the SWS kit.

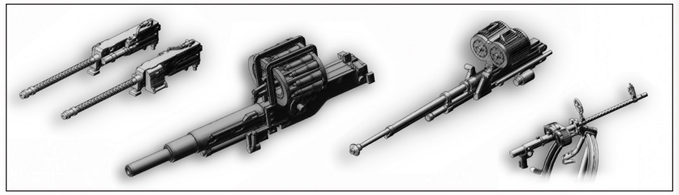
● ハ一〇二　発動機 ／ Ha-102 Engine



第二次世界大戦期に三菱重工業が開発・製造した航空機用空冷複列星型14気筒エンジン「ハ102」を搭載。離昇出力は1080hpで、遠心式スーパーチャージャー1段2速の過給機を持つ。採用は海軍のほうが早く、「瑞星」の名で実戦投入している。その確立された実用性を強みとして取り入れるべくして、迷走していたキ45に採用しキ45改として機体が完成した。土井技師による再設計が功を奏した箇所は機体全体に及ぶが、このエンジンの採用が一番重要な項目であったと言っても過言ではない。

The Ki-45 was powered by the Ha-102 air-cooled 14-cylinder two-row radial aircraft engine developed and manufactured by Mitsubishi Heavy Industries during World War II. With its 1,080 HP takeoff power and single-stage two-speed centrifugal superchargers, it was named “Zuisei” (“Holy Star”) by the Navy, who used the engine first.
After much wavering during the development of the Ki-45, the Zuisei engine was chosen for its established utility. With this choice, the Ki-45 Kai was completed. Aircraft designer Takeo Doi made many successful choices throughout the entire aircraft when he redesigned it, but to say that the choice of this engine was the most crucial would be no overstatement.

● ホ一〇三　一式十二・七粍固定機関砲　2門（甲）／
Two Ho-103 Type 1　12.7mm Machine Cannons (Ko)
ホ二〇三　三十七粍機関砲（丙、陸軍航空工廠製）／
Ho-203 37mm Machine Cannon (Hei, Manufactured in Army Aerial Arsenal)
ホ三　試製二十粍固定機関砲（共通）／
Ho-3 20mm Fixed Machine Cannon Prototype (Both Types)
九八式七・九二粍旋回機銃（共通）／
Type 98 7.92mm Turret Machine Gun (Both Types)



甲型の機首武装である一式十二・七粍固定機関砲「ホ103」は、第二次世界大戦時の大日本帝国陸軍の航空機関砲。一式固定機関砲、一式機関砲とも呼ばれ、太平洋戦争（大東亜戦争）における帝国陸軍の主力航空機関砲として、戦闘機のみならず多くの機体に搭載された。丙型（陸軍航空工廠製）の機首武装である三十七粍機関砲「ホ203」は、同じく第二次世界大戦中に大日本帝国陸軍が使用した航空機関砲。初速570m/秒、発射速度120発/分（搭載弾数は16発）で、一撃で4発重爆撃機を撃墜可能であった。まさに本機を「屠龍」と言わしめ、B-29撃墜の立役者でもある。また、共通武装として、胴体下面には試製二十粍固定機関砲「ホ3」を搭載。さらに、後席武装「98式旋回機銃」がある。

The Ho-103 Type 1 12.7mm Fixed Machine Cannons, nose weapons for the Ko type, were aircraft guns used by the Imperial Japanese Army during World War II. Also known as Type 1 Fixed Machine Cannons or simply Type 1 Machine Cannons, these were the main aircraft guns of the Imperial Army during the Pacific War (the Greater East Asia War). They were mounted onto many aircraft, not only fighters. The Ho-203 37mm Machine Cannon, mounted as the nose weapon of the Hei as manufactured in the Army Aerial Arsenal, was another aircraft weapon used by the Imperial Japanese Army during World War II. With a muzzle velocity of 570m/s and firing at a speed of 120 rounds/min. (loaded with 16 rounds), the cannon was capable of downing a four-engined heavy bomber in a single blow. This weapon was the champion B-29 destroyer, truly fit for the “Dragon-Slayer” Toryu.
Both versions in this kit mount the Ho-3 20mm Fixed Machine Cannon Prototype on the fuselage underside. There is also a Type 98 7.92mm Turret Machine Gun for the rear seat.