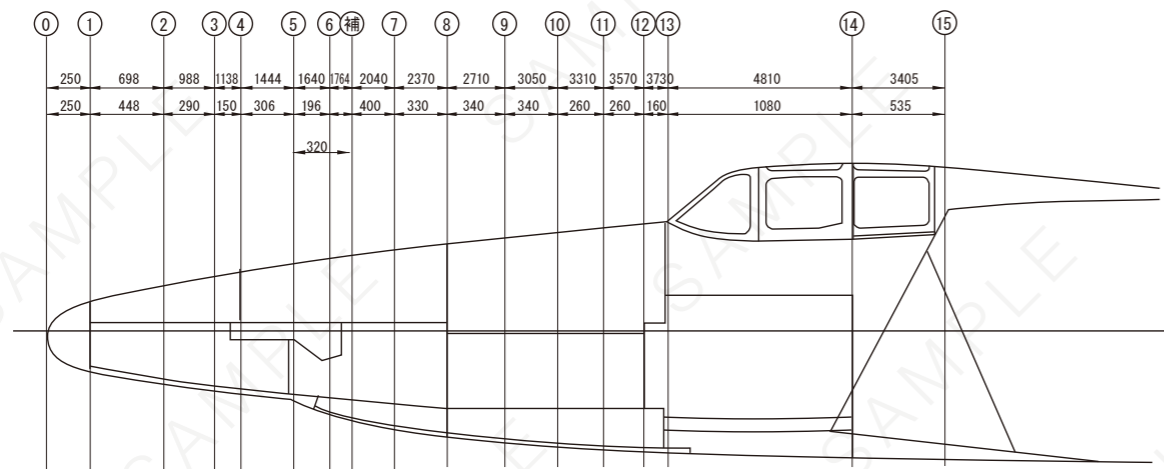


7月に入ると地上滑走テストの目処が立ち、基礎研究の時代からずっとこの前翼型機「震電」の開発にかかわって来た、いわば生みの親の鶴野技術大尉がテストを担当することとなった。7月下旬、藤田飛行場のトンネル格納庫から夏の陽光がじりじりと照りつけるエプロンへと押し出された「震電」の前には、設計、開発にかかわった技師達をはじめ、渡辺福雄九州飛行機社長、海軍の監督官などが整列し、玉串奉奠が行われた。「震電」が闘うべきB-29による爆撃は昼夜を分かたず激しさを増しており、海軍のみならず、日本中が「震電」の完成を待ち望んでいた。

午後になって鶴野技術大尉は、脚立をまっすぐに延ばした急造の搭乗梯子を使って、高い位置にある「震電」の操縦席へと収まった。おもむろにエンジンを始動し、回転数を上げる。カウル後端にある冷却ファンが高い金属音を立てて回転する。やがて、ゆるゆると動き出した機体は、機首を左右に振り、タキシングを開始した。未舗装の誘導路からは大量の砂埃が舞い上がる。エンジンの回転を全速にまで上げ、滑走路端まで滑走。少し機首を上げたかと思った瞬間、機体はそのまま反転して停止した。でこぼこの多い誘導路を、上下に揺れながら戻ってきた機体を見ると、プロペラの先端が数十センチほど曲がっていた。滑走中、予期せぬ機首上げにより、機体後端のプロペラが地面を叩いたのだ。この後、応急処置として側翼の下端に、同社で製造されていた「白菊」の尾輪を取り付けた。また、破損したプロペラは試作2号機用に用意されていたものと交換された。



昭和19年8月7日付けで作成された「試製震電 計画説明書」に収められた初期の胴体構造図。機首下面のラインが後の「震電」と異なっている。図中の丸付き数字は、隔壁やフレームなど、構造材の位置を表している。

The initial body structure illustration, from the "Test Production Shinden - Project Instructions" prepared and dated August 7th, 1945. The line of the underside of the nose differs from the later "Shinden". The numbers inside circles represent the structural location of the frame, barrier walls, etc.

As they entered July, the situation seemed hopeful for above-ground glide tests, and it was decided that Major Tsuruno would be in charge; the man who had been involved in the development of the "Shinden" the entire time, right from its initial research period, and who could easily be called its true creator. In late July, the Shinden was pushed out of the tunnel hangar at Mushiroda Airfield and onto the ramp, bright with the rays of the scorching summer sun. And gathered together before it were the engineers involved in its development and production, the president of Kyushu Airplane, Fukuo Watanabe, and Inspectors from the Navy. At this point, the dedication of a sacred tree branch was carried out, in accordance with traditional Japanese Shinto rituals. The bombing raids being carried out by the B-29s were increasing in severity day and night, and it was these craft that the Shinden was meant to fight. It was not just the Navy; the completion of the Shinden had been eagerly awaited throughout Japan.

With the coming of afternoon, Major Tsuruno used the hastily constructed boarding ladder that had been extended straight up, and settled into the pilot's seat, situated so high in the Shinden. Gently, he started the engine, and then revved it. The cooling fan in the tail end cowling gave a loud clank and began to turn. Before long, the craft that had slowly come to life gave a shake of its nose, and then began to taxi. A great cloud of dust swirled upwards from the unpaved taxiway. The engine was turning at full speed, and they were at the tip of the runway, gliding. And in that moment, just as it seemed that the nose was really starting to lift a little, the aircraft turned right around and stopped completely. Looking at the craft that was swaying up and down as it returned to that heavily pitted runway, it was obvious the tip of the propeller was bent several dozen centimeters. As it began to glide, the unexpected had occurred; the rise of the nose had caused the propeller on the tail to strike the ground. After that, the landing gear that had been manufactured by the same company for the "Shiragiku" was attached to the side wings as a stop-gap measure. In addition, the damaged propeller was exchanged with the one being used for the second prototype craft.

地上滑走での損傷修復と各部の調整を終えた試作1号機は、鶴野技術大尉からテストを引き継いだ九州飛行機の宮石テストパイロットによって、地上滑走テストを繰り返していたが、8月3日、ついに大空へと飛び立った。絶望的な戦局の中、せめて一矢を報いと羽ばたいた「震電」の勇姿を、鶴野技術大尉はじめ、開発にかかわった全ての技術者が地上から見上げていた。安堵のため息、歓声と共に、万歳の声があちこちから上がる。強力なトルクのため、「震電」は10°ほど右に傾いたまま高度を上げていった。

「震電」は高度約400mで大きく旋回し、飛行場上空を1周。右に傾きながらも無事に着陸した。ついにやった。コックピットから降りた宮石テストパイロットの元に鶴野技術大尉や技師達が駆け寄る。お互い固い握手をかわし、輝かしい新鋭迎撃機「震電」の未来と、その活躍を確信した。

その後、8月6日と8日に2回目、3回目の飛行テストが行われた。どちらも脚は出したままで、15分程度の飛行だった。テストの結果、最大の問題は大きなトルクによる機体の右傾だった。その対策として試作機では前翼の取り付け角を3°とし、その傾向が顕著となる低速、フラップ下げ時で、フラップ下げ角を35°にするなど、とりあえずの対策を講ずることとなった。その他にも細かな問題は見つかったが、どれも大きな改修を要するものではなかった。

その間、広島と長崎にはB-29によって新型爆弾が投下され、その尋常ならざる被害が報告されていた。一刻の猶予もないと感じていた開発陣は、8月17日に全速力によるテスト飛行を行う予定とした。

When the repairs to the damage from its glide and the modifications to each part had been completed, Kyushu Airplane's test pilot Miyaishi took over the testing from Major Tsuruno, and the above-ground glide tests were repeated. And on August 3rd, the Shinden at last leapt into the great skies above. In the midst of that desperate war situation, Major Tsuruno and all of the engineers involved with its development gazed up from the ground, watching the gallant figure that the Shinden cut as it spread its wings, ready to fight back. Sighs of reliefs, shouts of joy, and cheers of victory rose up here and there. Due to its powerful torque, the Shinden listed 10 degrees to the right as it gained altitude.

The Shinden made a large turn at an altitude of 400m, and circled the skies surrounding the airfield once. Then, still listing to the right, it landed safely. At last, it had done it. Major Tsuruno and all the gathered engineers rushed over to Miyaishi as he descended from the cockpit. As they exchanged firm handshakes, they confirmed the future of this gleaming new interceptor, the Shinden, and the active role they had played in its realization.

After that, on August 6th and 8th, the second and third test flights were performed. Both of them were done with the landing gear still down, and were flights of roughly 15 minutes. The tests showed that the biggest problem was the pull to the right on the fuselage caused by the large torque. Various counter-measures were applied; for example, the attachment angle of the front wings was raised 3 degrees, and as the tendency was strongest at low gear and when the flaps were down, the lowered flap angle was raised 35 degrees. And so for the time being, steps had been taken to fix the problem. Other small problems were also discovered, but none of them were things that would require large fixes.

During that time, a brand new style of bomb had been dropped on Hiroshima and Nagasaki by the B-29s, but although the excessive casualties had been reported, the development team felt that this was not the moment for postponement, and a full speed test flight was scheduled for August 17th.



昭和20年10月、米軍の引き渡し命令によって破損していた箇所を応急修理した試作1号機。機体の各部に修理痕やへこみが見られ、風防にはガラスがなく、飛行できる状態ではなかった。

The first prototype craft in October, 1946. The parts that had been damaged as a result of the US Army's order to hand the craft over had been temporarily repaired. It is possible to see traces of those repairs and other various dents on the surface of the body. There is also no glass in the windscreen, and it was not in any condition to be able to fly.

ついに形となり、大空へ羽ばたいた本土防空の最後の切り札が、いよいよその全貌を現すはずだった。時速約740km/hというプロペラ機としては限界の速度を持って、空を埋め尽くすB-29の大編隊へ、一撃、二撃を加えるはずだった。しかし、それは叶わなかった。

8月16日、敗戦の翌日、鶴野技術大尉は九州飛行機の関係者を集めて、関係書類、設計図面などの焼却、破棄を命じた。数時間後、福岡県立筑紫航空工業学校のグラウンド中央にうずたかく積み上げられた書類に火が放たれた。自分たちが心血を注いで作り上げて来た、祖国防衛の最後の望みが炎となって消えていく。今まで、皆で積み上げて来た成果が、今まで信じてきた国と共に崩れ去っていくのだ。せめて、一撃、あのB-29に加えたかった。敵機を迎え撃ち、高度10,000mへ全速で急上昇して行く「震電」の勇姿を、一目、見てみたかった。皆、涙を浮かべながら、拳手の礼でその状況を見守る。誰からともなく「海ゆかば」を歌いだし、その歌声は徐々に大きくなって、暑い夏の午後のグラウンドに、

At last it had shown its form and spread its wings to the skies above; this final trump card to defend the skies of their homeland. It was due to reveal everything of itself. As a propeller-driven aircraft with an approximate speed of 740km/h, it possessed the very height of speed, and it was due to strike holes in the great formations of the B-29s that blotted out the skies above. However, that did not happen.

On August 16th, the day following the end of the war, Major Tsuruno gathered together all the related staff at Kyushu Airplane, and gave the order to incinerate and destroy all the related documentation and design drawings. A few hours later, in the grand center of the Aviation Industrial School in Chikushi, Fukuoka, a grand pile of documents stacked high were lit on fire. Their final hopes and dreams for the defense of their homeland, that they had built up only by pouring their very own blood, sweat and tears into... in that moment, vanished in a single blaze. The fruits of all their labors up until now crumbled away into nothing, together with the country that they had believed in, until now. Just one blow, against the B-29s. Just one glimpse, of the Shinden's gallant figure as it rose steeply at full speed to an altitude of 10,000m, ready to tackle an enemy craft. Even as they shed tears, they saluted their thanks as they watched over the scene. Somebody began to sing "Umi Yukaba" (a famous Japanese patriotic song), and those

静かに流れて行った。

一方、機体製作が行われていた原田工場にも機体の破壊と焼却命令が伝えられていた。敗戦の時点で、試作2号機はほぼ完成して、エンジンを搭載するだけになっており、試作3号機もだいたいぶ形になっていた。それらの機体はトラックに積める程度に分解され、近くの窪地でガソリンをかけて燃やされた後、埋められた。

日本海軍が最後の切り札と頼んだ局地戦闘機「震電」の開発は、試作1号機の約45分の飛行と数分の記録フィルムを残しただけに終わった。昭和20年10月、米軍からの引き渡し命令により外形だけを修復された「震電」の試作1号機は、分解されてアメリカへ渡った。それは、65年経った今もワシントンのスミソニアン博物館の倉庫に、当時のままの状態で眠っている。翼をもがれ、エンジンをも外されて軀と化したその機体は、もうあの夏の陽の光を浴びることはない。

singing voices slowly joined together, becoming louder, until they were washed away into silence in the grandness of that hot, summer afternoon.

Meanwhile, an order was also given for the destruction and incineration of the craft itself at Harata factory, where the production of the craft had been carried out. At the time of the war's end, the second prototype craft was almost completed, and was only waiting for the engine to be equipped, and even the third prototype craft was beginning to take form. But those craft were dismantled until they could be loaded onto a truck, placed into a nearby pit, and doused with gasoline. And after they had been burned, they were buried.

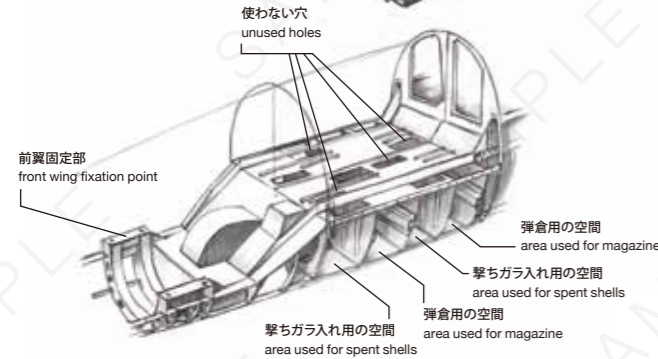
The development of the close range fighter craft "Shinden", ordered as the Japan Navy's final trump card, was over; leaving behind only 45 minutes of flight time for the first prototype craft, and a scant few minutes of recorded film footage. In October of 1945, the first prototype craft - of which only the exterior had been repaired - was dismantled and sent to America due to an order issued by the US Armed Forces. And even now, 65 years later, it sleeps quietly, in the same condition as then, in a warehouse at the Smithsonian Institution in Washington. Its wings stripped, its engine removed, the craft has become almost like a corpse; it will never bathe in the rays of that summer sun ever again.

■機銃

対敵重爆撃機の切り札、攻撃は最大の防御なり

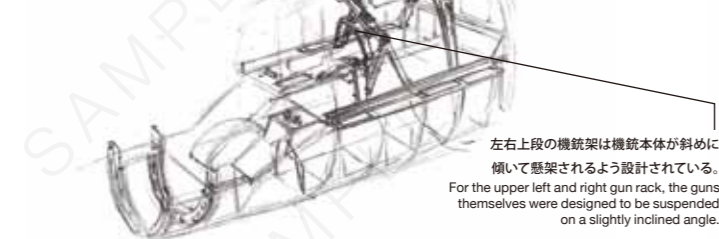
■機体前部 機銃懸架部

Fuselage Front: Machine Gun Suspension Area



■機銃懸架方法

Machine Gun Suspension Method



震電に搭載される予定だった「十七試三十耗機銃」は後に「五式三十耗固定機銃一型」として制式化されたこととなったが、雷電、極光、月光、彩雲、彗星等にごく少数が搭載されたほか、烈風、震電、天雷、秋水等、当時の全ての新鋭戦闘機に搭載予定のまま、歴史の影に消えていった。そして、平成二年(1989年)にケンタッキー軍事歴史博物館(KMHM)において錆だらけの「五式三十耗固定機銃一型」と「十八試二十耗機銃」が発見されるまでは、彩雲D-295号に斜銃として装備された写真がたったの3枚公表されているのみだった。戦後45年の時を経て、ようやくその姿がおぼろげながら見えてきたのである。震電におけるこの「五式三十耗固定機銃一型」の存在意義は、まさにその大火力と言えるだろう。日々刻々と悪化する戦況下、迫りくる敵重爆撃機の大編隊に対抗するには、それらの侵襲してくる超高高度へと最短で到達し、かつ、最低限のチャンスで最大限の結果を出せる武装が必要だったのである。それを実現する

■Machine Guns A trump card when confronting enemy bombers; offense is the best defense

Due to the adoption of the canard wing design, the engine was positioned in the rear of the aircraft, and so the Shinden was able to have its armaments concentrated in the front of the craft. However if the shells were ejected from the craft, there was the fear of them causing damage to the propeller at the back. As a result, the Shinden's supply magazine and spent shell system was designed to rotate entirely within the craft. In order to equip such a large amount of firepower in such a narrow space as the plane nose, a variety of ingenious schemes were incorporated. Each of the two guns on the left and right were isolated by a barrier similar to a bridge girder. And the suspension staggered above, below, in front and in back on each side suspended the already raised machine guns to slant even further to the left and right. From this, the magazines in the underside of the nose and the spent shell cases were arranged together, resulting in a magnificent internal nose structure where everything was perfectly in place. Illustration 1 shows the flow of the magazines and spent shells of one of the guns equipped on the left-hand side. For the right-hand side, the flow was reversed with magazines on the left and spent shells on the right.

The Shinden was originally intended to be equipped with the "Type 17 Prototype 30mm Cannon", but this was later standardized to the "Type 5 30mm Fixed Machine Gun". However out of the Raiden, Kyokukou, Gekkou, Saiun, Suisei, etc. only a very small minority were actually equipped with this gun type, and it has now vanished into the shadows of history, with nothing more than its intended usage on all the cutting-edge fighter craft of the time such as the Reppu, Shinden, Tenrai, and Shuusui. In addition, up until the rust-covered "Type 5 30mm Fixed Machine Gun" and "Type 18 20mm Machine Gun" were

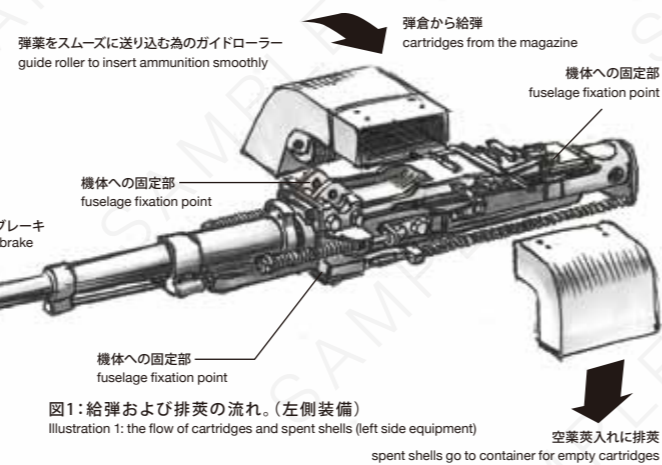
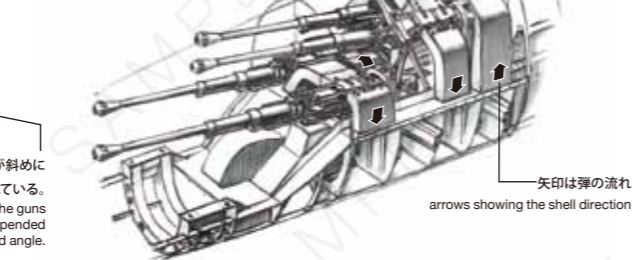


図1: 給弾および排莢の流れ。(左側装備)
Illustration 1: the flow of cartridges and spent shells (left side equipment)

エンテ型(前翼型)を採用することでエンジンを機体後部に配置し、機体前部に武装を集中させることができた震電だが、機体外へ排莢してしまうと、後部にあるプロペラを破損してしまう恐れがあるため、震電の給弾・排莢システムは全て機体内部で循環するよう設計された。狭い機首の空間にこれだけの大火力を搭載するためには様々な工夫が盛り込まれた。橋桁状の隔壁に隔てられた左右2挺ずつの機銃は、片側で上下と前後にずらして懸架、さらに上段の機銃は左右とも斜めに懸架されているのが分かる。これにより機首下面の弾倉および撃ちガラ入れも交互に配置され、見事機首内に全て収まる仕組みである。図1では左側装備の機銃の給弾・排莢の流れが記されている。右側装備の場合は、左側から給弾、右側から排莢と逆になる。

■機体前部 機銃懸架部(機銃間隔壁無し図)

Fuselage Front: Machine Gun Suspension Area (illustration without wall between guns)



のがこの機銃であったのだが、実際には史実にある通り搭載叶わぬ装備であった。では実際にどれほどの威力があったのだろうか。「五式三十耗固定機銃一型」は350gの弾薬を初速750メートル/秒で発射する強力な機銃であった。それを震電はエンテ型(前翼型)構造を活かして機首内に4挺搭載する予定だったが、1挺の重量が70kgもあること、発射の反動が大なること等、その搭載は障害の多い難しいものであった。だが、この機銃斉射時の約2.5t/mにも及ぶ反動に耐えるため機体中心線上の橋桁状の補強構造を備え、さらに4挺を狭い機首内に搭載するため、左右で銃をずらして給弾と排莢を交差させるという複雑な懸架方式が採ること、この機銃の搭載を可能にしようとしたのである。携行弾数は、1挺あたり60発。下方2挺のみ、もしくは4挺同時発射の選択が可能であった。

discovered in Kentucky Military History Museum in 1989, only a mere 3 photos had been officially uncovered of Saiun YoD-295 on which these slanting guns were equipped. Passing through the post-war era of the year 1945, perhaps it was a sight that could still be seen, even as it gradually grew vague, indistinct. And as for the true meaning of these "Type 5 30mm Fixed Machine Gun" for the Shinden itself, surely that would be the huge degree of firepower. Under a war situation that was growing worse day by day, hour by hour, it was vital to reach the ultra-high altitude of those invaded skies as quickly as possible, and to have armaments that could show maximum result with minimum risk, in order to oppose the huge formations of the enemy's heavy bombers that drew ever nearer. It was these machine guns that would see the realization of that, and yet in actuality, as history shows, they never fully realized that dream of being equipped. Well then, how much power did they actually possess? The "Type 5 30mm Fixed Machine Gun" was a powerful gun capable of firing its 350g ammunition at an initial velocity of 750metres/second. Taking advantage of the Shinden's canard wing (front wing design) construction, four guns were intended to be equipped in the nose of the craft. But with each gun weighing a full 70kgs, and with a strong firing recoil, there were numerous obstacles involved with equipping them on the craft. However, so that the aircraft could endure a recoil of up to roughly 2.5t/m when the cannon was firing, a reinforcing structure similar to that of a bridge girder was equipped on top of the center-line of the fuselage. In addition, to equip all four cannons in such a confined space, a complicated suspension system was adopted whereby the left and right cannons were staggered and the supply magazine and spent shells were made to cross over. It was these such experiments that were intended to make it possible to equip these guns. The total ammunition carried was 60 shots for each cannon, and it was possible to choose to simultaneously fire either all four cannons, or the lower two cannons only.

■前翼

震電の特徴たる前翼には、現代のエアバス級のテクノロジーが存在する。

大戦末期、すでに通常の型式では敵重爆撃機を迎撃するに足る海軍の要求性能を満たすには限界であるとされ、これを打開するための革新的な方法としてエンテ型(前翼型)は大いに注目を浴びた。このエンテ型における前翼は主翼よりも格段に高い揚力係数を発揮し、胴体後部に配したエンジンとの組み合わせによって機体の小型・軽量化を実現させた。そのエンテ型を採用した震電の最大の特徴でもある前翼は、全金属製の二本桁方式となっている。前縁スラットと、二段式の親子下げ翼兼昇降舵があり、まるであたかも現代のエアバスを連想させるかのような高度な技術がこの小さな前翼に収められていることが分かる。(前翼下面に見える突起物は可動軸)また、上面前後の桁間に厚さ5mmの外板を使うなど特殊な構造とすることで、これらの複雑な操作機構を狭く薄い前翼に収めることに成功したのである。ちなみに、前翼と主翼のフラップを操作する油圧作動筒は1本とし、連動するようになっている。



図1: 最大限の能力を発揮するべく、その取り付け位置に関しては徹底的な試験・研究が繰り返された。結果、震電における前翼は空力的に最も優れた位置に配された。

Illustration 1: to exhibit its maximum ability, experimentation and research into the attachment location was repeated over and over, and the result was that the Shinden's front wings were placed in the most aerodynamically superior location for the craft.

■側翼

大戦機でありながらも近未来的なシルエットを連想させる側翼には、開発者の苦悩が見え隠れする。

震電の側翼は前翼同様に二本桁式の全金属性である。取り付け位置は機体中心から左右に2.360mの、主翼中心部の後縁に、主翼後桁とボルト1本で取り付けられている。こんなところにも生産・整備性の向上という設計理念が反映されているから恐れ入る。中央上方には舷灯、上下端にはバルンサーがあり、方向舵に関しては弦長152mmというコンパクトでありながらもジュラルミン張りのものが採用されている。方向舵に限ったことではないが、震電は400ノットを超える速度を求められるが故、昇降舵、補助翼ともども羽布ではもたないことが判明し、全てジュラルミン張りとしたのである。また、側翼下部に取り付けられた車輪は「白菊」のものであり、試飛行時に機首を上げすぎ、プロペラが地面を叩くといった事例が生じてしまったため、接地防止用に急遽取り付けられたものである。これらを考慮すると、震電がいかに「暴れ馬」(高性能)だったかが容易に想像つくだろう。だからこそ周囲の期待は高まり、一刻も早く実戦配備が望まれた反面、随所に開発者の苦悩が見え隠れするのかもしれない。

図2: エンジンが搭載された胴体後部。側翼上端の左に見えるくぼみは排気管排気口、胴体後端のスピナー手前にある縦長の溝は潤滑油冷却器導風筒出口である。

Illustration 2: the rear of the craft where the engine was loaded. The dent that can be seen on the upper edge of the left side wing is the exhaust pipe exhaust port, and the oblong gap just before the spinner on the tail end of the craft is the oil cooler duct vent.

■Front Wings

The Shinden's characteristic front wings continue to live on in today's airbus class technology.

In the final days of the war, the usual types of craft had already reached a limit in regards to fulfilling the performance demands of the Navy to be sufficient enough to intercept the enemy's heavy bombers. In such a situation, this innovative technique of using the canard style (front wing design) to break that deadlock received a great deal of attention. These canard style front wings showed an even more remarkably high lift coefficient than the main wings, and paired with the placement of the engine in the rear of the craft, it was possible to realize a smaller, lighter weight fuselage. The front wings were the main characteristic of the Shinden which utilized this canard design, and they were made entirely of metal, in a two-girder style. With leading edge struts, a two-stage parent-child style wing flap, and elevator, you can understand that these tiny front wings possessed an advanced level of technology that surely suggests the airbuses of the present day.

(The protuberance visible on the underside of the front wings is the mobile axle.) Furthermore, with unique construction such as the 5mm thick panels used for the spars throughout the upper side, the achievements present in the complicated operational mechanisms for these narrow, slim front wings were a success. Incidentally, there was only a single hydraulic actuator to operate the flaps for both the front wings and main wings, and so they moved together.



■Side Wings

The side wings, which suggest both a craft designed for war and a futuristic silhouette, also give fleeting glimpses of the troubles that afflicted the developers.

The Shinden's side wings, like it's front wings, were in a two-girder style and entirely made of metal. Their attachment position was 2.360m to the left and right of the center of the fuselage, and they were attached with a single bolt to the back girders of the main wings, on the trailing edge of the center of the main wings. Even here one can be amazed by the implementation of the design ideas to improve manufacture and maintainability. In the middle of the upper side were the navigation lights, and on each upper and lower wingtip was a balancer, and the rudder used a duralumin-made piece, while having a conceptual chord length of 152mm. This was not just restricted to the rudder, either; with a desired top speed of over 400 knots, the Shinden's elevator, aileron, and even the aircraft cloth that no longer remains have all been confirmed to have been made of duralumin. In addition, the wheels attached to the underside of the side wings were from the 'Shiragiku'. At the time of its test flight an incident occurred where the nose rose too high, and the propeller struck with the ground, and so these were hurriedly attached as a preventative measure. When you consider this, isn't it easy to imagine the Shinden as a 'restive horse' (ie, high powered)? It was perhaps for these very reasons that expectations surrounding it continued to rise, along with the desire to see it deployed as soon as possible, while on the other hand the troubles afflicting the developers flitted ubiquitously in and out of sight.



前翼型ならではの鋭く上がった機首。前翼が外され、接合部からわずかだが内部構造が垣間見える。前翼接合部の左上あたり(機首先端上面カウル)にうっすらと機銃口を塞いだ痕のようなものが見える。試飛行時状態では機銃は搭載されておらず、この部分はそのまま機銃口を塞ぎ、そこから後ろの外板のみ交換されたのかもしれない。試飛行時状態を再現するアフターパーツ「初期型カウル」はこれを立体化したものである。このようなわずかな情報も見逃さない、造形村造形師の高い感性のなせる業である。

A sharply pointed nose that can only be found with the canard design. The front wings have been removed, and from the joining point you can catch just the tiniest glimpse of the internal structure. Near the upper left of the front wing joining point (on the nose point exterior cowling) you can just faintly see something that appears to be the traces of a plugged-up gun muzzle hole. At the time of its test flight, the guns were not in fact equipped, and so this part is probably a gun muzzle hole still plugged up from that time, with only the behind panels being exchanged afterwards. The 'Early Stage Cowling' Extra Part that allows you to recreate its condition during the test flight is a recreation of this. Here we see the high sensitivity of the Zoukei-mura sculptors, who did not miss even this, the most minimal of information.



発動機覆いと主翼。手前左の主翼の上に置かれているのが発動機後部覆いで、その上に置かれているのは外板の一部。形状から察するに、フルガン接手上部付近のものだろうか。また、発動機後部覆いから4本の支柱(見えているのは3本)が生えているのが分かる。支柱の根元には冷却ファン保護メッシュが張られている。キットをより実機に近付けるには、アフターパーツ第二弾、エデュアルド製エッチングパーツ「インテリアセット」に含まれるものを使用すると良いだろう。主翼のパネルラインも特徴的で、模型としてはSWSで初めて取り入れられたという点も見逃せない。

The engine cover and main wings. The thing sitting on top of the wing on the left side is rear engine cover, and the thing atop that is a section of the paneling. Judging by the shape, it probably goes somewhere near the fluid coupling compression tube, don't you think? In addition, there are 4 struts (3 that can be seen) coming out of the rear engine cover. The purpose of these struts was to attach the cooling fan's protective mesh. To bring the kit even closer to the real craft, you may like to use the parts included with the photo-etched 'Interior Set' by Eduard Models that was released in the second series of our Extra Parts. The panel line of the main wings was also quite characteristic, and one cannot overlook that this point was first incorporated into the model via the Super Wing Series.



胴体後部、正確にはエンジンルームである。青黒い縦に走るパイプはフルガン接手の昇圧管で過給機へとつながる。その奥には「ハ43」四二発動機の前列シリンダーヘッドとインタークパイプ、リング状の補器部発動機架などが見える。昇圧管の右下に見える支柱は主翼と胴体前半部の隔壁をつなぐものである。支柱と昇圧管の間に見えるパイプ状のものは、胴体側面にある冷却空気取り入れ口から過給機空気吸入口へとつながっている。それぞれのカラーリングは塗装の際に参考にしてみると良いだろう。

The rear of the body is certainly an engine room. The bluish black pipe running vertically is the fluid coupling compression tube that connects to the supercharger. Behind that, the front cylinder head and intake pipe of the 'Ha-43' Type 42 engine, the circular supplemental engine mount and more can be seen. The brace to the lower right of the compression tube links the main wings to the barrier wall of the front part of the body. The pipe-like object that can be seen between this brace and the compression tube links from the cooling air intake to the supercharger inlet duct. You may like to try using their coloring as a reference when painting your own Shinden.



上の写真を反対側から見たもの。左右ともにエルロンは取り除かれ、主翼上に置かれているのが分かる。エルロンの置かれた付近、主翼後縁の切り欠きは側翼が接合される部分である。主翼の右の方に置かれているのは翼端部分だろうか。翼端灯の内部パーツらしきものが確認できる。写真左、発動機覆い後端部分から内部が若干覗けるが、そこにはプロペラ延長軸覆いが垣間見える。上の写真にあった発動機後部覆いから生える4本の支柱はここにつながり、支えるものである。

This was taken from the opposite side as the photo above. It appears the ailerons have been removed from both sides. You can see that they have been placed on top of the main wings. Near where the ailerons are placed, there is a notch in the trailing edge of the main wings; this is the point where the side wings were attached. Is the thing placed on the right side of the main wing perhaps the wingtip section? There's certainly a part that looks like the wingtip light. On the left side of the photo, you can just peek a little into the interior from the end part of the engine cover, and catch a glimpse of the cover of the propeller's elongated axle. The four struts in the rear engine cover in the above photo attached here and gave extra support.



胴体後端の15番バルクヘッド(隔壁)の背面。震電の胴体部分は正確にはここまでを言う。輸送時にはここで分割することが想定されていた。2枚垂れ下がったベルトは潤滑油タンクの固定ベルト。下半分は手前側に折れ曲がった形で、下部の向こう側に見えるのは燃料タンク(容量400リットル)。キャンバス製のベルトで吊られている。バルクヘッドの下部左右、外板との隙間には、曲がってしまった操縦系統のロッドが見えている。整備時には外板のみ外すことで操作系に簡単にアクセス可能で、整備性向上に貢献している。この構造こそが現用機にも通ずる、当時としては斬新な設計のひとつであり、日本人の設計の妙が窺える点でもあろう。

The rear of the 15th bulkhead (barrier wall) at the back of the fuselage. It would be accurate to say that the main body of the Shinden ends here. One can assume that when being transported it was separated at this point. The two belts hanging down are the belts for holding the lubrication oil tank in place. The lower half is bent at the closer side, and on the far side of the lower area the fuel tank (capacity: 400 liters) can be seen. It is suspended with canvas belts. On the upper left and right of the bulkhead, in the spaces between the panels, you can see bent flight control rods. During maintenance it was possible to easily access the operations systems just by removing the outer panels, which vastly improved its maintainability. This is just one of the constructs that has passed on to the crafts of today but which was a truly novel design at the time, giving us just a glimpse into the excellence of Japanese design.



発動機覆い部の左側面。通常は胴体後部と呼ばれる部分だが、震電では発動機を架台にのせて、それに覆いを被せた構造。例えば、「零戦」では機首の黒く塗装された部分に当たると言える。かなり痛んだ状態だが、各パネルの分割などがよくわかる。手前に転がっているのは、発動機覆いの後端。

The left surface of the engine cowling section. This section would usually be referred to as the rear of the body, but in the Shinden this was a structure where the engine was mounted on a frame and then covered with cowling. You could say it's like the part of the Zero fighter's nose that is painted black. Although it is in fairly damaged condition, you can clearly see the division of the panels. The part curving at the front is the tail end cowling.



左斜め後方から全体を見る。思いの外、細く絞られた胴体と、大きな6翅プロペラが印象的だ。側翼を頂点にして、主翼後縁は上へ折れ曲がったラインなのがわかる。

The whole craft from a back left angle. The sharp, narrow body and the huge 6-blade propeller are surprisingly impressive. From the top of the side wings, you can see the line where the trailing edge of the main wings is bent upwards.

CAPTURING THE 'SHINDEN'

震電を攻略する

実機を考証しながらキットを製作する

「魔法の素材プラスチックで本物の飛行機を再現する」造形村SWS開発陣が造形師の感性を駆使してプラスチックの限界に挑戦する。実機を深く考証しながら、異端の翼「震電」の謎に迫る。果たして、「模型」はどこまで「実機」に迫れるのか。



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SHIN DEN

CHAPTER 2

Creating a Kit While Investigating the Actual Craft

"Using the magical substance of plastic, we want to reproduce the genuine aircraft as a model" - the Zoukei-mura SWS development team challenged their sculptor sensitivity freely within the limits of plastic. As they thoroughly investigated the actual craft, they drew ever closer to the puzzles surrounding the "Shinden", with its unorthodox wings. Just how close can the "model" resemble the "actual craft" as a result?

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