



FlyPast Spotlight

Polikarpov I-16

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This month our *Spotlight* highlights an immediately identifiable Russian fighter, one that served in both the Spanish Civil War and World War Two. Its design can be traced to the early 1930s – it became the world's first cantilever monoplane with retractable undercarriage to attain operational status. Setting a trend for future fighter specification, the diminutive I-16 was the mainstay of the Soviet Air Force at the outbreak of World War Two. Developed from the I-15 biplane, it turned out to be a vastly superior performer and remained in service with the Spanish Air Force until the 1950s. Through exclusive features and artwork we examine this legendary warplane.



Main picture
The retractable ski undercarriage developed for the I-16 did affect the aircraft's handling and speed, adding drag. By 1938, mass production of ski-fitted I-16s was under way. KEY



Spotlight

Polikarpov I-16

Dynamic

Far right
The first prototype I-16 seen in December 1933, when fitted with skis. The use of this equipment during the Russian-Finnish War meant the type lost its speed advantage.

Below
Squadrons equipped with the I-16 were considered highly combat capable and reliable. **KEY COLLECTION**

Like many Soviet aeroplanes of the era, the Polikarpov I-16's conception and design were conducted under incarceration – and the relentless eye of the State. Following his initial failure to create a new fighter blueprint, aircraft designer Nikolai Polikarpov was abruptly jailed and ordered to conceive the superior product demanded by Premier Joseph Stalin.

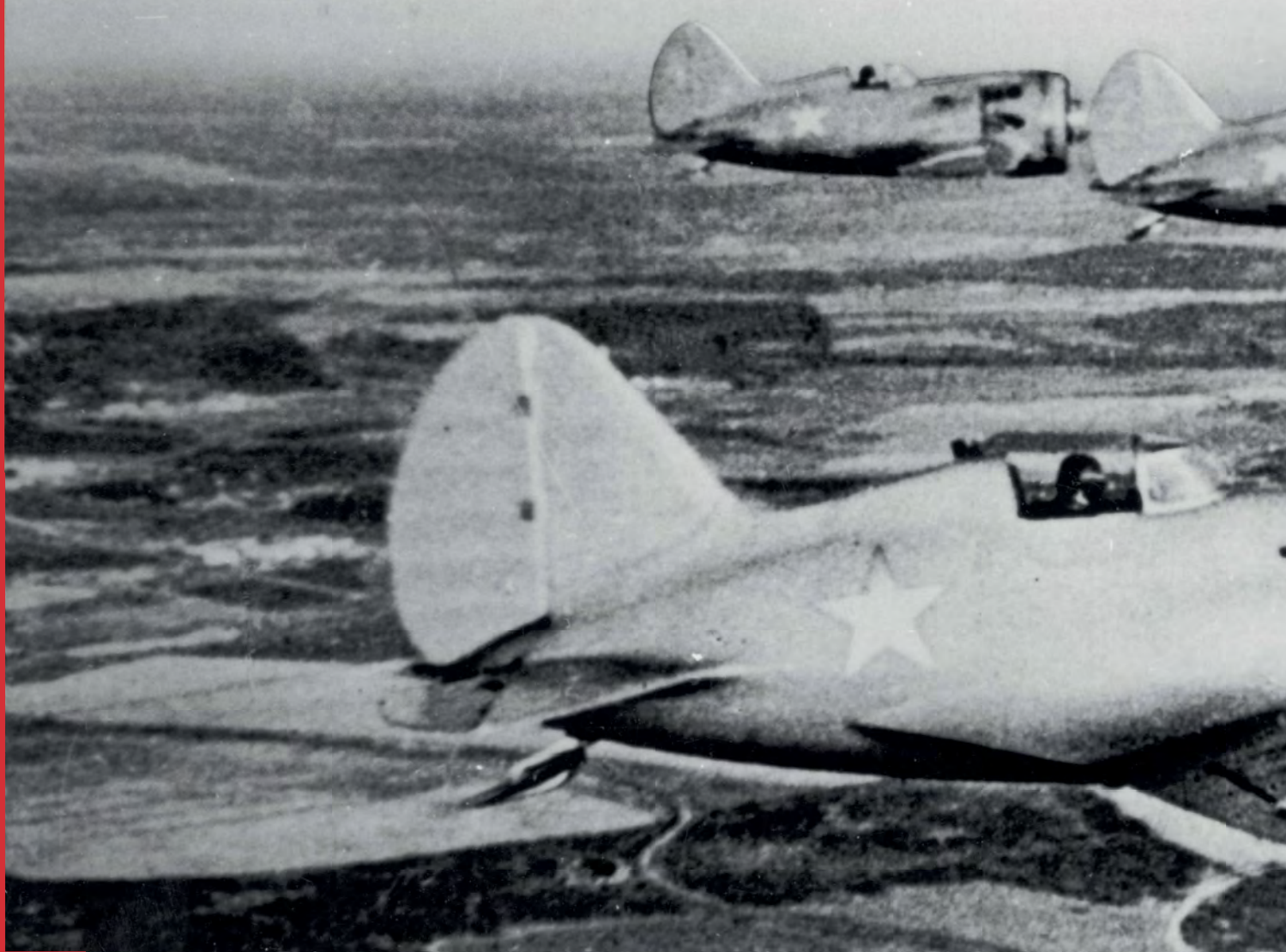
Considered in 1932, the resultant aircraft entered series production in 1934, under the designation I-16. Comprising mixed construction materials, the diminutive machine with its open cockpit was an incredibly affordable option for the Soviet Union. Steel tubing

formed the bulk of the forward fuselage and wing spars, wood was employed in the aft section and duralumin in the wing and tail framework. In using what they already had, manufacturing did not require expensive or new techniques, and it relied on easily obtainable commodities. For added simplicity, the pilot would raise the undercarriage manually using a mechanical winch.

However, despite this straightforward approach, the I-16 was a reliable design powered initially by a 450hp (336kW) M-22 radial engine, which gave it a top speed of 279mph (450km/h). At the time, no other production fighter anywhere in the world could boast

that sort of performance, a factor that ensured its service entry with the Red Army Air Force (VVS). Although the I-16 looked unusual with its short, bulbous fuselage it, in the opinion of designer Polikarpov, 'made life easy for the airflow'.

Despite looking squat, the type offered excellent manoeuvrability, thanks in part to the aft centre of gravity, which also made the aircraft very stable in flight. It did however cause problems when it came to pilot training, but also had a positive role to play. Airmen who flew the I-16 remarked on the refined techniques needed to fly it, but often went on to more complicated aircraft without difficulty. They dubbed the I-16 'Ishak' which



Donkey

Mikhail Maslov details the birth of the revolutionary Polikarpov I-16, and its combat service in Soviet hands

translates as 'Little Donkey'. Unlike many types before it, the nickname suited, as it was recalcitrant (in certain aspects of its flight envelope) and yet at the same time, consistent and simple to operate.

The I-16 was the first of a new generation of monoplane fighters. Like many innovations, aviation would normally dictate that this new development would disappear a few years later, and they would revert to the tried and tested methods. However, this wasn't to be with the I-16, which continued to be modified up until 1940. Series production ceased in 1942, with the total number of aircraft produced exceeding 10,000. It could be argued that at the end of the 1930s, the

I-16 was the most widely produced aeroplane anywhere in the world.

Russians in Iberia

The I-16 flew its first combat sorties over Madrid, Spain, in November 1936. Arriving with Soviet pilots at the plea of the country's Republican Forces, the I-16 crews gained the upper hand in the air early on, due to the unique and unexpected flight characteristics over enemy fighters. They flew the I-16 Type 5 variant, which was fitted with the 700hp M-25A engine and two underwing ShKAS 7.62mm machine guns, firing 1,800 rounds per minute.

Along with the I-16's positive qualities, though, the aircraft also had its shortcomings. Pilots noted a



“Airmen who flew the I-16 remarked on the refined techniques needed to fly it...”



SPOT FACT *The I-16 Type 10 was the first version to feature an open cockpit with a fixed windscreen*

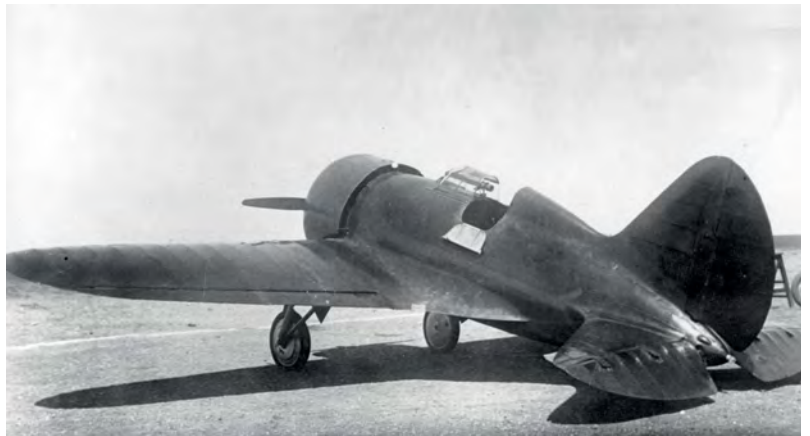
Right
The prototype I-16 with an M-22 engine in 1934.

Below
Soviet I-16 crews play dominoes between flights during the Khalkin-Gol conflict, in eastern Mongolia. The number of Chinese pilots grew as more converted to the type.

long take-off run and a tendency to swing to the left. Flying the aircraft at low level required concentration, as it would rapidly lose speed at the slightest pull on the stick and often enter a spin. Incidentally, the I-16 could recover well from a spin if caught early. On landing, a high gliding speed meant it was held off the ground for a considerable time and once down, the resulting roll-out was long and unstable. This wasn't helped by the type's lack of flaps.

Given the I-16's sensitive controls and overall skittish nature, it required a steady hand when it came to operating the guns with any hope of hitting the target; the firing button was on the 'stick'. It was often said that only experienced and well-trained pilots were expected to achieve success in the I-16 while in combat.

By the middle of 1937, aircraft delivered to Spain from the USSR were of poor quality, both structurally and mechanically. The type's engine was failing at an unacceptably high rate and the wings were weak. This resulted in a series of accidents that led to a loss of faith by its pilots and groundcrew. As the issues were known, the aircraft were upgraded on arrival – the wings were strengthened and the canvas covering them replaced. Subsequently, updated



I-16 Type 10s were fitted with the M-25V engine producing 750hp, and four ShKAS machine guns – two synchronized in the fuselage and two in the wings.

Battling Nippon

From 1937 onwards the I-16 was supplied by the Soviet Union to China, which was fending off Japanese aggression; 216 examples were delivered by September 1939. Initially the I-16s were flown by Soviet pilots but gradually, Chinese airmen took over as more converted to the type. Air engagements were fought with mixed results but, following the arrival of

the Nakajima Ki-27 in 1939 and the Mitsubishi A6M Zero in 1940, the Japanese turned the tide of battle. By this time, Soviet pilots had been recalled from the country. Meanwhile I-16s continued to operate in small groups as well as singly in China until 1944.

At the height of battle during 1939, Soviet pilots encountered the Japanese at Khalkin-Gol in Mongolia. This short war became well known due to the mass deployment of aircraft from both sides, in the hope of attaining the upper hand in the skies. During the first clashes, the Japanese gained superiority, but this soon swung in favour of the Soviets, who had an advantage over the Ki-27 up to an altitude of around 13,000ft.





“In January 1940, the I-16 fought during the Soviet-Finnish War. At the time, the total number of I-16s on Soviet strength was 480”



The Khalkin-Gol conflict ended with a resounding victory for the Red Army after an effective ground-based offensive. Despite this, the Soviets lost 207 aircraft, half of those being I-16s. The Japanese had 162 aircraft destroyed – with 74 written off as a result of battle damage.

In January 1940, the I-16 fought during the Soviet-Finnish War. At the time, the total number of I-16s on Soviet strength was 480.

The winter of 1939-40 was one of the most severe, making flights in the open cockpit much more difficult. As well as in the air, ground conditions were often grim. To combat this, numerous I-16s were fitted with skis on the mainwheels. However, the process for the pilot of raising them using the mechanical winch, while wearing a bulky winter flying suit, was far from easy. Consequently, most



flew using fixed skis meaning they lost their advantage of speed to the high drag. By the end of hostilities in March 1940, just six aerial battles and 65 smaller encounters were recorded. The principal reasons behind Soviet



losses were accidents attributed to poor weather.

Modifications to the I-16 in 1939 resulted in numerous new variants: the Type 24 was fitted with an 800hp M-62 engine; the Type 27 also gained the M-62 powerplant; the Type 28 utilised the M-63 and the addition of cannons. The final version was designated Type 29. Fitted with an M-63 engine rated at 900hp, it gained the capability to carry underslung fuel tanks, plus up to six RS-82 unguided rockets and was equipped with radio as standard. Armament consisted of three synchronised machine guns – two 7.62mm ShKAS and a single 12.7mm. Despite the improved powerplant, the Type 29 didn't meet the air force's specifications, which demanded a fighter capable of 310mph (500km/h).

Between 1939-40, the USSR took significant steps in creating modern fighter aircraft and

Above left

An I-16 Type 5 prepares to start with the help of a Soviet variant of the Hucks starter.

Above

Pilots and I-16s of the Air Forces Baltic Fleet undergo inspection.

Left

Snr Lt Shinkarenko was awarded the title Hero of the Soviet Union for his part in the battles during the Soviet-Finnish War, which comprised just six aerial combats and 65 smaller skirmishes.

Below left

A pilot in the cockpit of an I-16 Type 5. Fitted with the M-25A engine, this variant housed two ShKAS 7.62mm machine guns under the wings.

by mid-1941 the resulting designs manufactured by the likes of MiG, Lavochkin-Gorbunov-Gudkov and Yakolev were entering service. In the meantime, the I-16 remained the principal fighter of the VVS. ➔

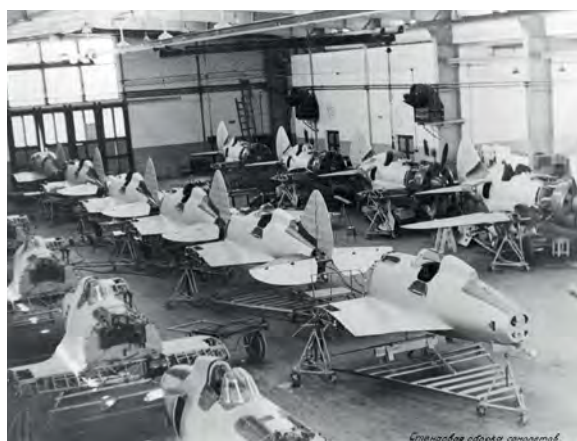
SPOT FACT Later versions of the I-16 could carry unguided rockets beneath the wings for ground-attack work

Right

Most repair work on the type was undertaken on the front line, although some had to be sent back to factories for major maintenance.

Right centre

An I-16 Type 24 is serviced before the next flight. The variant equipped 26% of the Soviet fighter force on the eve of war with Germany.



873 remained on the front line. Of those, nearly 100 needed repairs. Most of this work was undertaken in the field, while a small number was sent back to factories for major servicing. The most intensive losses were among aircraft used by the frontline Army Aviation units. By the end of 1941, these had 240 I-16s available and kept a similar number until mid-1942.

Despite the abruptness of the German attack and high losses suffered on the ground, I-16 pilots mounted immediate, fierce resistance against the Luftwaffe. In

own lives. Fifteen Soviet pilots used the tactic on that first day alone. Against the backdrop of the military failures later that year, pilots were encouraged to use this extreme act. That said, flown by a skilled pilot, the I-16 remained a dangerous opponent in 1942. The ratio of combat losses for the type was less than any other VVS fighter a year into the war. German pilots on the Eastern Front never considered the I-16 an easy target and would try to avoid a manoeuvring fight with it at all costs.

The special textbook *Fighter Aviation Tactics*, published in 1943, stated: "The I-16 of course concedes to the Me 109 in speed, but outperformed the Me 109 in manoeuvrability. An I-16 cannot force an Me 109 that does not want to fight into an air battle, but it can make very short work of an enemy that is heading into battle." It also remarked: "An I-16 is always able to evade an Me 109 attack, as long as the I-16 pilot has seen the enemy in sufficient time. The I-16 would usually attack the latter head on. For an I-16 as well as for all other types of fighter, an altitude advantage is valued very highly. In attacks on Me 109s from the forward hemisphere, the pilot of the latter aircraft has no protection."

In spring 1942, the most numerous I-16s left in service were those serving in the Soviet Air Defence System – 333 of these aircraft patrolled assets behind the lines and provided cover for the larger cities. However, their time was limited. A year later, just 143 remained and by the end of 1943 it was estimated less than 50 of the more up-to-date variants survived. All I-16s were withdrawn from air defence in 1944.

The I-16 and its crews proved themselves well in almost all sectors of the front line in the war's initial

Above

A typical I-16 assembly line in 1941. By the end of production in 1942, more than 10,000 of the type had been built.



Right

Sgt V Segalayev of the 71st Fighter Air Regiment calibrates the guns of an I-16 Type 29, while another armourer makes adjustments.

Crews had assimilated to the type well, and squadrons equipped with it were considered both reliable and combat-capable.

The Big Show

On the eve of the war with Germany in June 1941, the number of I-16s available on the western border was 1,635 – or 26% of the Soviets' fighter force. At dawn on Sunday June 22, 1941 the Soviet Union's border was suddenly attacked over its entire length by German forces. Two days later, it had become apparent that the I-16s were one of the Luftwaffe's principal targets – just 937 of the type remained and, as of June 30,

the first two weeks of battle, the Germans had lost more than 800 aircraft, many to the guns of the I-16. But victory came at a price.

On June 22, 1941, Lt A Moklyak of the 67th Air Regiment rammed a Junkers Ju 88 after running out of ammunition and was killed. This was his fifth victory, making him an ace. Lt Vasiliy Loboda of the 19th Fighter Air Regiment shot down two German machines before ramming a third. Despite this desperate action being the last resort in air combat, many interpreted it as an act of heroism. On the first day of the war, however, it was a way to halt the advance of the aggressors, even at the cost of their



stages. Two noted pilots who flew numerous operations over the Baltic Front were Capt A Antonenko, and P Brinko (the latter a veteran of the Khalkin-Gol conflict). With their 'kill' tally sitting at 11 and 15 respectively, the airmen were recognised by higher command and on July 14, 1941 were awarded the title Hero of the Soviet Union.

One of the most successful I-16 exponents was Capt V Golubev, who also served with distinction on the Baltic Front. He flew more than 100 missions over a relatively short period in 1941, including 45 strafing attacks, and shot down 11 enemy aircraft. Golubev, who went on

to command the 4th Guards Air Regiment, destroyed 27 opponents while flying the I-16, including two Focke-Wulf Fw 190s in January 1943. When the regiment converted to the Lavochkin La-5 his score climbed to 39.

On the Leningrad Front the 13th Independent Air Squadron flew the I-16 longer than any other unit. On February 23, 1944 squadron commander Maj D Kudymov shot down an Fw 190 with a tally of 29 victories on its tail, close to the settlement of Pokrovskoye, in the Yarkovsky District. The aircraft crashed in Soviet territory, so ground forces were able to reliably confirm it. This was to be one of the last uses of the I-16 in aerial combat. In February 1944, the unit joined the 21st Fighter Air Regiment of the Baltic Fleet Air Forces and re-equipped with the Yakolev Yak-7 soon after.

Underwing stores

Throughout its combat career, the I-16 gained notoriety for its use of the RS-82 unguided rocket. First used in 1939 at Khalkin-Gol, widespread employment began in 1941. Positive results were recorded despite a slight reduction in speed when carrying the munition.

Capt Golubev flew a successful sortie against a pair of German intruders on March 12, 1942 above the airfield at Vystav, near Lake Ladoga. The German pilots had formed the habit of shadowing



Soviet fighters back to their airfields, before almost mercilessly shooting them down in the landing phase, when they were unable to defend themselves. While returning to base after a sortie with several fellow airmen, Golubev spotted a pair of Bf 109s stalking them and held back. On attacking them, he shot one down with traditional machine gun fire, and the second with a salvo of four rockets. They were his 11th and 12th victories. In combat on May 12, 1942 Golubev gained two more 'kills' and was awarded the title Hero of the Soviet Union.

According to the Red Army-Air Force document *Journal of Combat Losses*, 1944 was the last official year of operations for the I-16 in the VVS. Of the 10,000 or so produced, just 538 remained in Russia. The I-16 held on the longest in the Far East. As of August 9, 1945, there were just 14 I-16s in the Pacific Fleet Air Force's line-up. ●

Above
Aircraft of the 4th Guards Fighter Air Regiment at Novaya Ladoga airfield, Russia in spring 1942. The I-16 nearest the camera was the personal mount of Snr Sgt Tsokolayev. Note the engine warming 'jackets' to ease starting.

Below
An I-16 from the 27th Fighter Air Regiment demonstrates the type's effective winter whitewash camouflage at an airfield near Klina, Kosovo, in 1941.



are believed to have been supplied to the Spanish government from the Soviet Union



‘Mottled Mosca’

Polikarpov I-16s flown by the Spanish Nationalists were among the most colourful examples of the type, as this superb **Andy Hay** artwork demonstrates

When the portly I-16 was sent from the Soviet Union to the Spanish Republicans, to help fend off Franco's fascist rebels, it wore a livery of dark green over sky blue, enlivened by red fuselage and wings bands, and red/yellow/purple-striped rudders. Unlike Soviet examples, often

sporting large patriotic slogans, the Spanish 'Mosca' was mostly devoid of any other form of markings apart from small squadron motifs. These included artworks portraying a six-spotted domino, and the cartoon characters Popeye and Betty Boop.

More colour adorned Spanish I-16s once they were captured by Franco's forces, who painted some aircraft in

vivid sprayed-mottle patterns of light sand and green, and on occasion with red-brown. They also applied a mix of yellow and red Spanish roundels, the Fascist black circle, and black crosses on white rudders. After the rebels' victory in 1939, they retained the I-16 to form a new post-war air force and the type soldiered on until 1953. ●

Artwork

This I-16 Type 5, '1W●1', received a dazzling colour scheme after being captured from the Spanish Republicans. It was operated by the Group I-W at Cuatro Vientos, near Madrid, in 1939 after necessary maintenance work. The Type 5 echoed its Type 4 predecessor in every way but the engine (the M-22 powerplant used by the Type 4 was replaced by the M-25A) and the addition of a propeller spinner. Later, the Type 5's forward-sliding canopy was replaced by a fixed windscreen and open cockpit.

ANDY HAY-2019



SPOT FACT Hundreds were destroyed on the ground in the first days of Operation Barbarossa

I-16 in profile



ShKAS machine guns of .30in calibre was the light armament of the I-16 Type 10

The Fly and the Rat

The Soviet Union's diminutive Polikarpov I-16 played an important part in the Spanish Civil War. **Malcolm V Lowe** outlines its frontline use during the conflict



Above
An I-16 Type 10, presumably during landing. The aircraft probably belonged to Grupo Nº 21. The I-16's main undercarriage was a rather complicated structure, while all the Moscas that flew in Spain were fitted with a tail skid. MALCOLM V LOWE COLLECTION

The Spanish Civil War, fought between 1936-39, was very much an armed rehearsal for World War Two. Several countries found the conflict useful for testing military equipment, on the ground and in the air. The fascist powers of Germany and Italy donated masses of military aid to the rebel forces of General Franco, while the Soviet Union supplied a smaller but nonetheless important amount of materiel to the embattled Spanish government. Among the aircraft types delivered to the Republicans was a significant number of Polikarpov I-16 fighters, which proved to be a match on many occasions for their German and Italian adversaries.

Overseas involvement

Soviet military aid to the legitimate Spanish government included several frontline combat types, of which the I-16 was among the most significant, and three specific marks have been identified: Types 5, 6 and, most notably, the Type 10.

During its operations over Spain the I-16 became well liked by the Spanish government forces, who

nicknamed it 'Mosca' (fly – although it was a term of endearment rather than derision. In some parts of Spain it means midge or mosquito).

The Type 10 was sometimes referred to as the 'Super Mosca'. It was an up-gunned improvement over the Types 5 and 6, with two .30in (7.62mm) ShKAS machine guns mounted in the upper forward fuselage, in addition to the Type 5/6's similar pair of wing-mounted machine guns. The cockpit was also different on these later Moscas, utilising a fixed windscreen allied to an open cockpit layout – therefore negating the curious forward-sliding canopy of the earlier I-16s. A revised gun-sighting arrangement was also fitted. These versions were early in the Soviet Union's long production run of the I-16, and they featured a tail skid.

The exact number of I-16s of all marks supplied by the Soviet Union to the Spanish government has been the subject of much debate and conjecture. The most reliable recent figure, drawing on Russian and Spanish records, suggests that a total of 276 examples of all marks reached Spain. It has also recently come to light that several further

Moscas were probably manufactured locally, as many as ten possibly being completed in this way.

In addition to the single-seat I-16s, four examples of the two-seat Polikarpov UTI-4 (sometimes called the I-16UTI) trainer were apparently supplied to the Spanish government. As well as the I-16, other important Soviet types dispatched to Spain included Polikarpov's I-15 single-engined biplane fighter, and the Tupolev SB twin-engined high-speed bomber. The I-15 was called the 'Chato' in Spain (literally flat nosed or pug nosed), and sometimes fought alongside the Moscas, albeit the two types were normally assigned to different units.

Necessary supplies

At the start of the war, the Spanish Aviación Militar (the legitimate air force of Spain) possessed a rather motley collection of outdated types. The country's fighter force comprised the much disliked Nieuport-Delage NiD 52 sesquiplane fighters supplied earlier in the 1930s from France – later bolstered by locally built examples, plus a small number of Hawker



“Soviet military aid to the legitimate Spanish government included several frontline combat types, of which the I-16 was among the most significant”

Fury biplanes. These proved totally incapable of standing up to the more modern warplanes that were rapidly made available to Franco's rebels by both Germany and Italy. The German Heinkel He 51 biplane fighter (examples of which started to arrive in Nationalist rebel-held Spanish territory from early August 1936), plus the similar Italian Fiat CR.32, quickly gained air superiority. The situation rapidly became grave for the government forces, in the air and on the ground.

Potential salvation came in the supply of warplanes from the Soviet Union, which was

politically supportive of the Spanish government, although also very happy to receive Spanish payments for war supplies. On a different level, the Soviet Union identified the escalating conflict in Spain as the opportunity to trial some of its newest frontline aircraft in combat. There was also the potential of giving useful combat experience to its pilots, who, like those from Germany and Italy supporting Franco's rebels, could 'volunteer' for service in Spain.

Initial I-16s reached Spain during late 1936, and 31 Moscas had been delivered by December 20 that year.

For the first few months of their frontline service they were flown exclusively by Soviet pilots. They started operations on November 13, 1936, in a bloody air battle, when Soviet-manned fighters intercepted a major Legion Condor bombing raid on the Spanish capital. This resulted in losses on both sides.

The arrival of the I-16, though, changed the air war immediately. It was totally superior to the Legion Condor's principal fighter, the Heinkel He 51, and could hold its own against the Fiat CR.32. For several outstanding months, the little Moscas, aided by I-15s, regained air superiority for the government forces. The opposing Republican personnel gave them a very specific and unaffectionate nickname, 'Rata' (rat).

Soviet training

Spanish government pilots earmarked to fly the Soviet fighters were transported by ship from Spain to the Soviet Union, where they received training at Kirovabad. Later, a Spanish-based flying school for government trainees, the Escuela de Alta Velocidad, at El Carmolí, instructed potential fighter pilots on the Soviet type.

During the summer and autumn of 1937, the first Spanish pilots to graduate on the I-16 were ready to take the little fighters into combat. Initially their Mosca-equipped unit was the 1ª Escuadrilla (squadron), sometimes called the 1ª Escuadrilla de Moscas. Soviet-manned I-16 squadrons were the 2ª, 3ª, 5ª and 6ª, all coming under the umbrella of Grupo N° 21. This fighter group eventually included squadrons →

Left
One of the foreign aviators who successfully flew the I-16 in Spain against the rebel forces was the American Frank Tinker. Later in his combat career he flew an I-16 in the 1ª Escuadrilla (Grupo N° 21), claiming two Legion Condor Bf 109s. MALCOLM V LOWE COLLECTION

Below
An impressive line-up of I-16 Type 10s in post-Spanish Civil War service, operated by what had become the new Spanish Air Force under Franco's fascist dictatorship. The nearest aircraft appears to be coded 'I-W-22', and has an unusual gunsight resembling that of earlier Moscas. It is sometimes attributed to Grupo N° 26 in 1944-45. KEY COLLECTION



SPOT FACT The original prototype/development machine designated TsKB-12 first flew in December 1933



Spanish Civil War terminology

Above
One of the well-known government fighter pilots was José María Bravo Fernández-Hermosa, commander of the 3ª Escuadrilla of Grupo Nº 21. Here he is being shaved by a groundcrew member, with his I-16 Type 10 'CM-193' beside them. KEY COLLECTION

In modern times it has become usual to call the combatants in the Spanish Civil War the Republicans and Nationalists. This is something of an over-simplification of the two sides, and masks the true nature of the opposing forces. The people referred to as the Spanish Republicans were the legitimate and legally established government of Spain. The Nationalists were the rebels, led by General Franco, who wanted to overthrow the government and replace it with a fascist dictatorship. The legal Spanish government's air arm in place as Spain's air force at the start of the war was the Aviación Militar. Thereafter, it underwent at least one change of name but not a change of purpose. Today it is normally referred to as the 'Spanish Republican Air Force'. The rebels (who are usually called Nationalists) under General Franco developed their own air arm, with Spanish pilots loyal to the rebel cause, which is sometimes referred to by Spanish historians as the Aviación Nacional. It was backed by Italy's Aviazione Legionaria (known in Spanish as the Aviación Legionaria) and by Germany's Legion Condor.



further unit of note flew the I-16 for the government forces. This was the Escuadrilla I-16 Mosca del Norte (sometimes referred to as the Escuadrilla de Caza del Norte, also appearing to have used I-15s). As its name suggests, this squadron operated on the Spanish northern front, where it was involved from July 1937 in the bitter and ultimately unsuccessful fighting against Nationalist rebel forces. Originally including Soviet pilots, and led by Valentin Ukhov, this independent squadron later came under Spanish command. Its first 'home-grown' CO, Andrés Rodríguez Panadero, was shot down and killed near Gijón in late September 1937. His I-16 fell to the guns of a Legion Condor Messerschmitt Bf 109B of 1.J/88 flown by the well-known German pilot Oblt Harro Harder.

As the war situation gradually worsened for the government forces, on or around October 26, 1938 the Soviet government recalled all its 'volunteer' pilots. This was a further headache for the hard-



Above
Several of the pilots from the Escuadrilla de Caza del Norte pose for the camera. Second from left is Andrés Rodríguez Panadero, who rose to command the squadron. This unit was intended to counter the rebel Nationalist forces threatening the Basque Country and Asturias. JB VIA MALCOLM V LOWE

numbered up to the 7ª Escuadrilla; units with Soviet airmen later being restructured as the Spanish assumed greater control of this group, and more Spanish pilots became proficient on the I-16.

Unfortunately for these government airmen, the air superiority enjoyed by the Republicans over the Nationalists during early 1937 did not last. The success of the Mosca was one of the reasons why the Germans eventually committed large numbers of the ultra-modern Messerschmitt Bf 109 to the conflict, to bolster Legion Condor capabilities. The first

Messerschmitts began arriving in Spain during December 1936, albeit mainly for combat evaluation, but the type was committed in numbers the following year, initially in its Bf 109B version. From then onwards the air fighting over Spain became bitter and prolonged. The I-16 could hold its own against the Bf 109B if well flown, but its comparatively light armament, even in the four-gun Type 10, proved no match for the Bf 109's heavier 'punch'.

In addition to the I-16-equipped Escuadrillas of Grupo Nº 21, a





pressed Spanish government forces because the Soviet pilots (and other personnel) had been highly valuable assets. During March 1939 the Spanish government's opposition collapsed, with its remaining territory rapidly falling to fascist rebels.

For the Mosca, the war had proven to be a struggle. The advent of the Bf 109B and later versions of the excellent Messerschmitt fighter brought about the most difficult period for the I-16, and it appears that around 187 of the 276 supplied by the Soviet Union were eventually lost. Recent research of military documents suggests that 112 were shot down in aerial combat, one was brought down by anti-aircraft fire, and 11 were destroyed on the ground. A staggering 62 were apparently lost in accidents, showing that the nimble little Mosca was also challenging to fly.

Aerial victories

The exact victory tallies of the Spanish and Soviet I-16 pilots are extremely difficult to verify. Poor record-keeping, due to the frantic



Belarus but at the time was a part of the Russian Empire, Gritsevets (sometimes also called Gritsevez in English) became an accomplished aviator in the Soviet Union and served in Spain as a 'volunteer' fighter pilot. His unit was the I-16-equipped 5^a Escuadrilla of Grupo N^o 21. In some sources he is credited with approximately 30 aerial victories in Spain, although this might reflect the entire victory claims of the squadron while he commanded it. It is more likely that his individual score over Spain was around seven aerial victories in the I-16. Recalled from Spain along with the other Soviet pilots in the latter stages of 1938, he served during the following year in the Far East in action against the Japanese over

Left centre
I-16 Type 10 'CM-177' belonged to the 4^a Escuadrilla (Grupo N^o 21) and wore that unit's familiar Popeye painting on its vertical tail. Several of the unit's members enjoy a welcome respite for food, with the aircraft in the background. MALCOLM V LOWE COLLECTION

Below
Soviet airmen flew the Mosca in combat during its early months in Spain, and then partnered Spanish airmen as they became proficient on the type. One of the most successful of the former was Sergey Ivanovich Gritsevets, seen here in uniform. MALCOLM V LOWE COLLECTION



war situation, the complicated Spanish system of verifying aerial kills, the lack of many documents and conflicting claims/counter-claims frequent in all aerial warfare have clouded the issue. Several Spanish historians have tried to piece together what information is available, mixed with personal reminiscences. An example of the outstanding Mosca pilots was undoubtedly Mexican-born Francisco Tarazona Torán. He was among the Spanish airmen trained in the Soviet Union at Kirovabad, and may have achieved eight aerial victories while flying the I-16. Manuel Zarauza Clavero, who flew in the 4^a Escuadrilla and later led Grupo N^o 21, was the Spanish pilot widely regarded as the top scorer during the war.

Two Soviet pilots, Lev Lvovich Shestakov and Sergey Ivanovich Gritsevets were particularly successful. Born during 1909, in what is now the independent

disputed territory, again flying the I-16 in combat. Tragically, having survived the frantic aerial combat over Spain and then countering the Japanese, Gritsevets lost his life in an accident at Bolbasovo airfield near Vitebsk on September 16, 1939.

Fly's twilight

The Spanish Civil War officially ended in April 1939 with the total defeat of the Spanish government forces. Franco's victorious Nationalist rebels became the new Spanish administration, and among their many war prizes were countless Soviet-supplied aircraft that had ended up on the losing side. The worth of the I-16 had been recognised by Franco's forces and the Germans and Italians who flew against them, resulting in the type beginning a fresh career as war booty in the brand new, fascist-run Spanish air force. The type continued with this 'new' service into the 1950s, later principally as a trainer. ●

Above
The Mosca was respected by both sides during the conflict, although the rebels called it the 'Rata' (rat), and airworthy examples that fell into the hands of Franco's forces were often flown again. This captured aircraft in rebel markings was a Type 5 with the unusual forward-sliding canopy. MALCOLM V LOWE COLLECTION

Left
I-16 Type 10 'CM-225' was often flown by Manuel Zarauza Clavero, one of the great exponents of the Mosca, for the government forces. The I-16's small size is clearly evident in this well-known photograph. JB VIA MALCOLM V LOWE

Polikarpov I-16

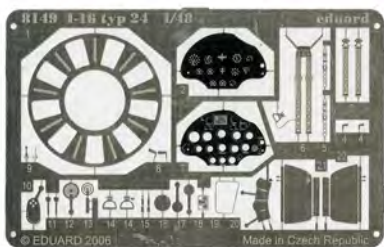
FlyPast editor **Chris Clifford** discusses the currently available I-16 kits

'Rata' Replicas

Right
The most recent tooling of Polikarpov's characterful I-16 fighter is from Ukrainian firm ICM. It offers excellent detail and is packaged separately (with different parts) as the Type 24, 28 and 29. ALL AIRFIX MODEL WORLD

Polikarpov's stubby little fighter has attracted the attention of various model kit manufacturers. Produced in scales from 1/144 up to 1/32, there is a reasonable amount of choice. The most recent offering in the latter size is from ICM, as the Ukrainian firm began releasing well-detailed products in 2017 and continues to do so. The company's mouldings portray the I-16 Type 24, 28 and 29, and some of these have already been re-boxed by Revell and Hasegawa. While the real aircraft was relatively spartan, ICM's kits faithfully reproduce all the features to ensure a splendid model. Azur also

Right
The Czech company Eduard has produced excellent 1/48 scale I-16s, some featuring photo-etched metal components.



Bottom right
Modellers who favour 1/72 scale have several I-16 options, including those from Japan's Hasegawa. Here, the company combined its Type 18 kit with ICM's I-153 in the same package.

released a 1/32 I-16 in 2004, and it was subsequently re-packaged by Special Hobby... although it should only be considered by experienced modellers due to the challenging fit. In 1/48 scale, the best options are arguably those from Eduard, which has moulded sublime representations of the Type 10, 17, 18, 24 and 29. While some of these offer plastic parts alone, the firm's other ProfiPACK and Royal Class releases also include photo-etched metal and resin details, themed decals and parts for two or three models. Same scale I-16s have also been issued by Hobbycraft, although these date from the 1990s and the detail is reasonable at best. However, serious builders can achieve admirable results by adding scratch-built and/or aftermarket embellishments. A worthy 1/48 option is the recent kit by Russia's Ark Model, which mixes styrene, resin and metal parts. Those who favour 1/72 scale have the ancient Revell and Matchbox



items, which can still be found at online auction sites, but far better are those from Hasegawa and ICM, with multiple sub-types being produced. Amodel is notable as it

has created different boxings of the two-seat UTI-4, along with single-seaters, but these limited-run kits are tricky to build and have basic detail. ●