NEWSLETTER 10

A special Aeronautical issue

JICEY

PRECISION SHIMS

PARIS AIR SHOW SPECIAL EDITION

Jicey and Aeronautics: a story of precision

It was in 1946 that the Jicey works opened its doors for the first time; and some years later the laminated peelable shims that the Viroflay works was to develop would already be incorporated in the main French and European industries. But it would certainly be aeronautics that became the most demanding marketplace for these components which are so necessary for the installation of mechanical assemblies in civil and military aircraft. Now the A380 has just performed its first flight tests, and Jicey is proud to share this extraordinary European adventure. And in fact there are several-hundred laminated peelable shims, solid shims or extra-thin Jicey shims to be found in the cockpit, undercarriage, doors, engine equipment mountings, exhaust systems or airbrakes in what is regarded as a record-breaking aircraft. Jicey has always been able to build into its shimming products the required quality, precision, technology and innovation that make its adjustment shims an indispensable element that aeronautical design offices can rely on in developing the aircraft of the future.

IN BRIEF

Jicey at the 46th International Paris Air Show at Le Bourget

Once again, Jicey will be present at this Salon, which is a major event on the international scale. The Le Bourget exhibition is an opportunity to meet numerous customers in the field of aeronautics, representing more than 30% of Jicey's turnover, with prestigious names such as Dassault Aviation, Hispano-Suiza, Liebherr Aerospace, Lisi, Eurocopter, Thales and of course Snecma.
Jicey will be exhibiting its complete range of peelable shims, separable shims, solid shims and extra-thin shims which are found in their hundreds on business aircraft, civil aircraft & military aircraft.
Visit us in Hall 2B, stand i5B from 13th to 19th June.

A high-performance web client tool for progressing your orders in real-time, wherever you are.

Out of consistent concern to offer you the tools which give you an overview over the task of purchasing your components, Jicey has successfully set up a protected web client interface. After login, you immediately access our website with dedicated pages which provide you with information about progress in dispatches/deliveries, order book and the state of progress with orders in course of manufacturing, in real-time.
If this service interests you, please contact our commercial manager on +33 (0)1 39 07 10 40.

The Qualifas Association covers the quality of purchasing for French aerospace industries.
Since 1996, Jicey's quality system has been recognised by Qualifas as complying with the requirements of the standard world referential EN/AS/JISQ 9100.

QUALIFAS

Jicey works on achieving considerable reduction in its delivery time-

! frames, essentially entailed by the delays inherent in the schedules of the suppliers of raw materials and of cold-rolling companies in particular, by setting up programs over several years and by a major increase in stocks of materials.

Jicey, supplier to Dassault Aviation for adjustment shims since the 1950s.

DASSAULT AVIATION is one of the major players in the world aeronautical industry with a presence on five continents. This company has mastered emerging, strategic technologies, and is active in the civil & military fields; it relies on reputable design offices, on flexible, rationalised industrial tooling and on a wide product range. On the occasion of the Falcon 7X program, Dassault Aviation implemented extremely innovative processes which integrated the latest service life management tools of any product (PLM). These processes, which cover development, production & support, represent a veritable industrial revolution. With regard to development, the breakthrough achieved by the "virtual" plateau, which enables a score of companies scattered across the globe to work towards the same goals in engineering, will eventually change the terms of co-operation for the entire industry. To quote some figures, Dassault Aviation has a turnover of €3.46 billion; net profit of €308 million; more than 12,000 persons distributed over 28 sites and offices around the world; more than 1700 Falcons of all types sold since 1965; nearly 7500 military & civil aircraft supplied over 60 years and more than 70 countries using its military aircraft, Falcon bizjets and Falcon multi-role aircraft.
The Falcon range comprises six business aircraft with an operating range of 3000 to 5700 nautical miles. This product range takes in two intercontinental twin-engined aircraft (Falcon 2000 & 2000EX EASy), two intercontinental three-engined aircraft (Falcon 50EX & 900DX), one trans-Pacific three-engined aircraft, the Falcon 900EX EASy and the latest business aircraft offering: a very long-range triple-engined aircraft, the Falcon 7X. But the Falcon range also includes multi-role aircrafts for maritime surveillance, medivac etc. Dassault Aviation is also developing two well-known military aircraft: the Rafale and the Mirage 2000-5 Mk 2.

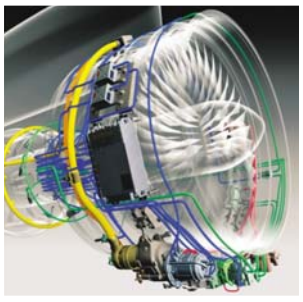
Rafale

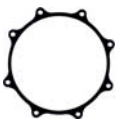
Jicey has been the privileged supplier of Dassault Aviation for adjustment shims since the beginning of the 1950s and for the Mystere, the first supersonic aircraft produced in bulk for the air force. Today, Jicey peelable shims, solid shims or extra-thin shims can be found on all of this manufacturer's aircraft.
In any mechanical assembly, the insertion of a Jicey adjustment shim makes it possible to compensate for the play resulting from the addition of tolerances for all of its components. This is why Jicey adjustment shims are essential for the extreme precision required for aeronautical mechanical assemblies. On the Rafale, for example, special steel solid shims are fitted on the Hispano Suiza AGB (accessory gearbox) of the M88-2, the engine developed by Snecma Motors. Laminated peelable shims are also located inside hydraulic systems on other Dassault aircrafts.

Cover Photo : François Robineau - Dassault / Aviaplans

Hispano-Suiza, system manufacturer and engine equipment manufacturer, uses Jicey adjustment shims on its accessory gearboxes.

Hispano-Suiza, a company fromthe Safran group, develops and manufactures a wide range of complete and innovative equipment for drive systems, with particular reference to regulation & monitoring systems and power trains for aeronautical engines and helicopters. Hispano-Suiza is a name that stands for more than 20,000 powertrains sold worldwide, accounting for 300 million flight hours. The powertrain is a mechanical assembly made up of pinions, casings and shafts which takes up a proportion of the engine's energy and transmits it to the various systems of the engine and of the aircraft. One of the components of the powertrain is the accessory gearbox, of a characteristic banana shape, onto which a major proportion of the regulation equipment is fitted: alternator, starter motor, fuel pump, or pump, fuel regulator etc. Jicey adjustment shims, as illustrated here, are positioned at the conical couplings. They have been found to be necessary for the precise fitting of accessory gearboxes.





IN BRIEF

Jicey is relocating!

We are getting bigger & bigger, and in order to keep up with our pace of growth, we are modernising and getting out to the country. Looking ahead to 2006, Jicey will be setting itself up at Houdan in the Yvelines, with premises of 3000 m². This relocation will coincide with the company's 60th anniversary and will mark a future turning point for Jicey, helping it respond with modern tools to the challenges of tomorrow. Why not make a note of our future address right now: rue des Côtes d'Orval, zone de la Prévauté, 78550 Houdan.

THE FIGURE

0.01mm

0.01 mm is the minimum thickness of an extra-thin stainless-steel shim (thinnest for steel, aluminium and polymer is 0.025 mm). This recognised know-how held by Jicey with regard to the machining of ultra-thin materials makes it possible to produce extra-thin shims to measure and with no rough edges, making it possible to compensate for amounts of play often less than 1/10 of a millimetre.

Six month after the launch of its new product, Alkomposit Viewtek ®, return to a formula which has attracted large numbers of customers.

We introduced it to you on an exclusive basis in our previous Newsletter, and we were already aware that we had developed an excellent product which was naturally going to become a commercial success. In fact, the only formula for designing a product which is going to become a reference in its own marketplace is to have a really good idea. And the really good idea is this process, patented by Jicey, which revolutionises and simplifies, to an extreme degree, the utilisation of a peelable shim. Now, briefly to review the specific details of Alkomposit Viewtek ®: it's a laminated composite material peelable shim where the thickness of the sheets of which it is made up is marked on the middle section of the component. This marking also uses colour coding for each available thickness (0.025, 0.05, 0.10 mm). Accordingly, at a glance you can clearly tell the thickness of the sheet which you have just removed. This process, together with the great ease of peeling off the composite material, means that this is a shim which provides considerable reduction in adjustment times.

But its advantages don't stop there, because Alkomposit Viewtek can be bi-composed : then the shim is made up of sheets of two different thicknesses on each side. One side being made up of sheets of 0.025 mm and another of sheets of 0.10 mm, for example. Accordingly, the operator can start to perform setting by removing the thickest elementary sheets and finish by removing one or two of the more thin components on the other side. Thanks to the Viewtek process, marking is immediate and the desired dimension is quick and easy to obtain. This bi-composition or rather bi-thickness characteristic of the peel shim is a real cost-cutting factor. The bi-composed peelable shim is just as precise and is far less expensive than the equivalent peelable shim made up only of the finest-thickness components.

A further significant advantage, which has many instances of relevance to your applications, is the possibility of using each peel-off sheet as a single shimming component. Other characteristics to which one may refer are its low density (50% that of aluminium), its excellent resistance to chemical agents, its dual functionality (shimming and sealing), its great safety of utilisation (manual peeling without tools), its flexibility and -- again -- its extensive resistance to temperatures (-70°C to +220°C). Numerous customers have naturally migrated from our aluminium peelable shims to Alkomposit Viewtek because of its numerous benefits. We could also mention Aro SA or -- again -- Wilhelm Vogel Gmbh with regard to the setting of tooling machines or shimming on stepdown gear.

Don't hesitate to try Alkomposit Viewtek, you are very likely to stay with it.

"With Jicey, product quality and zero defects are more than just concepts, they have now become a constant reality."

1. In April 2005, out of 2250 orders, only two instances of product non-compliance were recorded since the beginning of the year. That's a record figure of 0.09%.

2. Jicey has just invested massively in information technology so as to develop and modernise its production control.

OVERVIEW OF PEELABLE SHIMS

The laminated peelable shims is Jicey's flagship product. Very few companies in the world have mastered this technology, but the quality we bring makes all the difference.

Jicey is now able to look back on 60 years of continuous innovation in the development of custom peelable shims for industry. Jicey has become the reference in this field, developing a laminated rigid block made up by stacking of elementary foils interconnected by adhesive over the whole of their surface. Accordingly, the elementary layers are very easily removed one by one using a cutting tool, until the desired dimension is arrived at. This process obviates the need for machining and grinding of solid shims whilst providing comparable or even better precision. And it is an equally advantageous replacement for stacks of thin metal foils, and thus makes it possible to avoid inaccuracy. By comparison with conventional shimming, the time-saving achieved can exceed 50% or even more if conventional shims would have had to be grinded. Today, laminated peelable shims are used with great success in all industrial fields (aeronautics, public projects, mechanical-engineering, railways, transport and tooling machines). Jicey manufactures more than 3 million shims each year for more than 5000 clients around the world.

JICEY'S RACING CAR

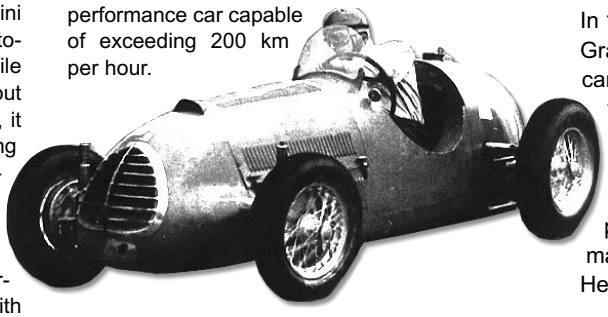
The Jicey Formula One car finally emerges from the workshops in the Estienne d'Orves street, ready to represent france for the first time in international Grand Prix competitions.

The Jicey, an innovative, modern racing car designed and made by Jean Caillas, was exhibited on 23rd October 1947 at the automobile exhibition at the Paris Grand Palais. It is displayed amongst other racing cars bearing the name of major French manufacturers: the racing Delage three-litre, the DB with a two-litre Citroen engine and the 4.5-litre Talbot single-seater. A Bugatti exhibit is the 1500 cc engine of a future single-seater. The relatively unsuccessful prototypes of three other manufacturers, De Concy, Dommartin and CTA Arsenal, are also exhibited. On the other hand, the Simca-Gordini would immediately take to the track and win victories. In the post-war context, where automobile manufacturers' preoccupation was still to find out how to get petrol and how much it would cost, it took some audacity to introduce a new racing car. But Jicey had enthusiasm and competitiveness to spare.

The first AG3 light-alloy body Jicey single-seater weighed only 23 kg and was equipped with a 1991 cc Peugeot Darlmat 402 four-cylinder engine, stoked up by two inverted Zenith carburettors and developing 100 hp. It was equipped with an electromagnetic Cotal gearbox. This French single-seater attracted admiration, with its French-blue paintwork and Cisitalia radiator grill. And it attracted the admiration of a young Belgian racing driver, one Georges Berger, who ran a major industrial company in conjunction with his brother. Following a visit to the Viroflay works, he decided to buy the car.

New BMW 328 engine

A test session was then organised at the Linas-Montlhery racetrack at the beginning of November. Georges Berger, who was not yet used to handling of the small Cotal gearbox lever, made a mistake and changed down directly from fourth to first gear, thus causing over-revving with the result that the engine blew up! It therefore had to be replaced. But it happened that during the exhibition a French driver, Eugène Martin, who had already got an introduction to his racing career on a BMW 328, had also noticed the Jicey. Georges Berger made his acquaintance, and decided to look for a BMW 328 engine in Belgium. He was to buy one, prepared by Eugène Martin, which Jean Caillas was to adapt to the Jicey with a "327" gearbox. That was how things turned out, and the alliance of the superb chassis and the BMW 328 six-cylinder, three-carburettor engine produced a very high-performance car capable of exceeding 200 km per hour.



Winning places with Georges Berger

After completion of development by Jean Caillas and his mechanic René Foiret, the car was driven by its first driver in the Grand Prix du Roussillon on 25th April 1948. Georges Berger thus qualified in fourth place for the first heat. The enthusiasm of this young driver, who was not yet adequately well-acquainted with the car's responses, landed him off the road and in a ditch. The only damage was a few knocks to the panelling of the single-seater, and Georges Berger, who emerged unscathed, resumed his place behind the wheel to complete the challenge. He recognised that he was in possession of an extraordinary racing car with remarkable roadholding and a chassis which was simultaneously light in weight and high in rigidity. The BMW engine was eminently well-suited for it; the whole package added up to a competitive single-seater capable of beating far more powerful cars. Georges Berger was to participate in the Silver cup at Montlhery on 30th May, and then at the circuit des Remparts at Angoulême on 11th July. René Foiret became Georges Berger's official mechanic. In 1949, Georges Berger was to enter important races such as the Brussels Grand Prix and the Silver cup at Montlhery.

1950: Podium at the Grand Prix des Frontières

In 1950, Georges Berger raced in the Le Mans Grand Prix and in the Rome Grand Prix, and came ninth in the Germany Grand Prix. His finest hour was on 28th May 1950 at the Grand Prix des Frontières at Chimay. It was on that day that Georges Berger, thanks to his Jicey, was to stand in third place on the podium, having beaten off many Veritas's and Maserati's, but above all Hermann Roosdorp's Ferrari 166 MM.

From the beginning of 1949, a second Jicey single-seater was to emerge. The Jicey adventure on all of the main circuits of Europe was just beginning.

To be continued.

Pierre Fouquet-Hatevilain

Journaliste à La Vie de l'Auto, rubrique pilote