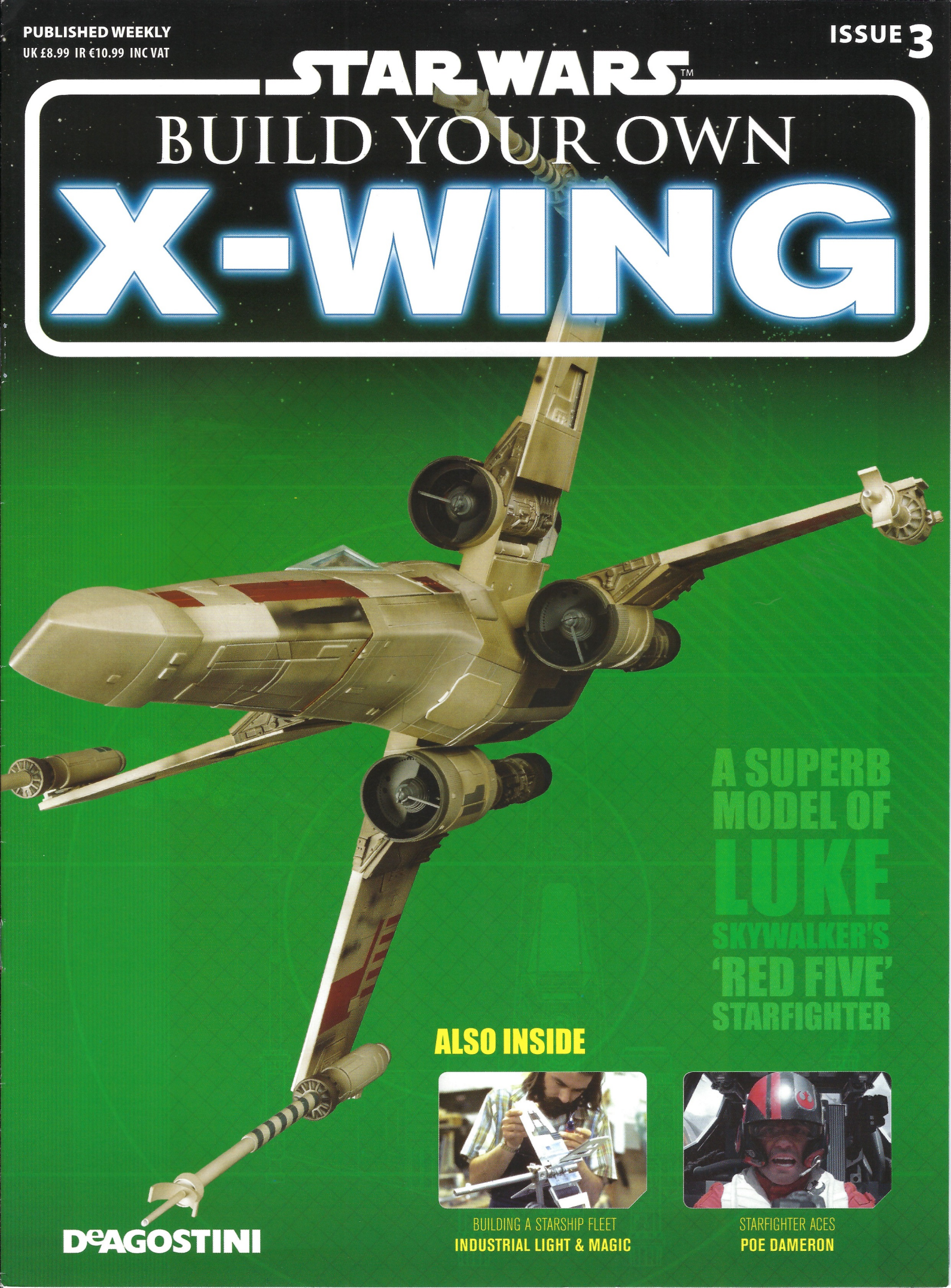
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ISSUE 3

STAR WARS™

BUILD YOUR OWN X-WING



A SUPERB MODEL OF LUKE SKYWALKER'S 'RED FIVE' STARFIGHTER

ALSO INSIDE

BUILDING A STARSHIP FLEET
INDUSTRIAL LIGHT & MAGIC

STARFIGHTER ACES
POE DAMERON

DeAGOSTINI

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STAR WARS™
BUILD YOUR OWN X-WING

CREATING A STARSHIP FLEET 3
MAKING FILMING MINIATURES

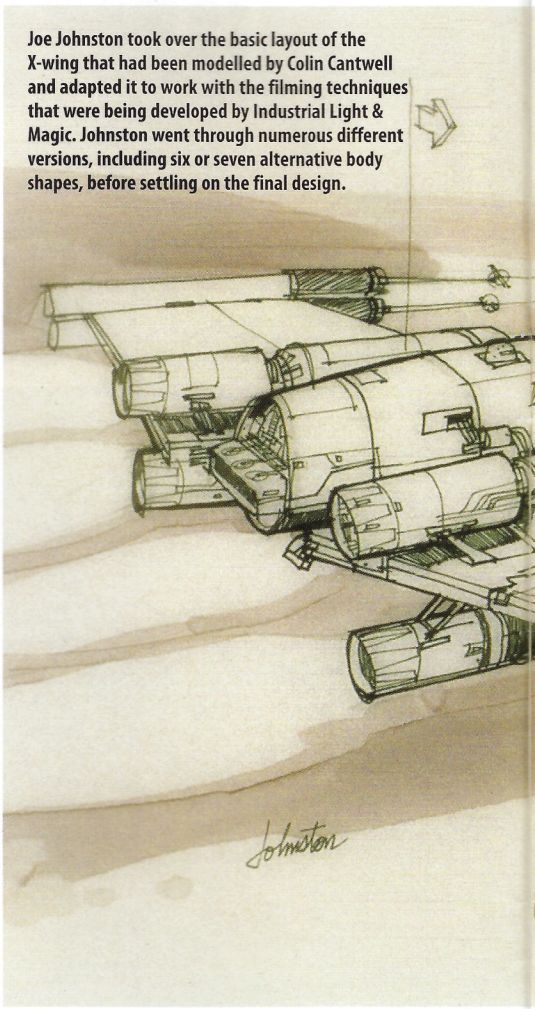
Discover how the design of the X-wing was refined to fit the requirements of cutting-edge special effects filming technology.

STARFIGHTER ACES 6
POE DAMERON – THE BEST PILOT IN THE RESISTANCE

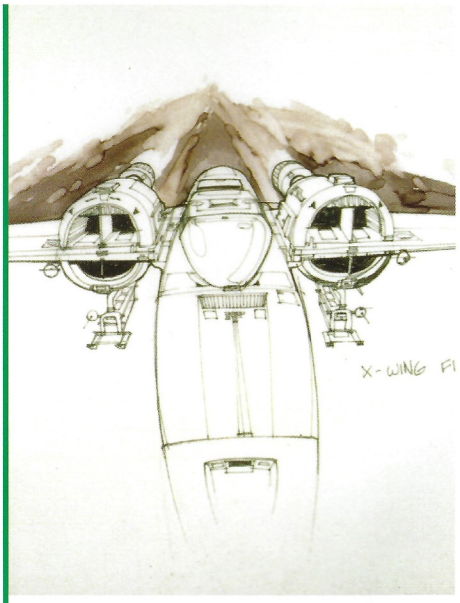
The skilled pilot who flew an X-wing for the New Republic against the might of the First Order.

BUILD THE X-WING 10
R2-D2, LASER CANNON, AND COCKPIT FRAMES

Includes all the parts to assemble R2-D2's right leg and internal LED, plus the components for the first laser cannons and frames for the cockpit.



Joe Johnston took over the basic layout of the X-wing that had been modelled by Colin Cantwell and adapted it to work with the filming techniques that were being developed by Industrial Light & Magic. Johnston went through numerous different versions, including six or seven alternative body shapes, before settling on the final design.



The split-circle engine layout in this Joe Johnston X-wing design was not used, but would resurface on the T-70 fighter in *Star Wars: The Force Awakens*. This X-wing also has a one-piece, curved-bubble cockpit canopy.

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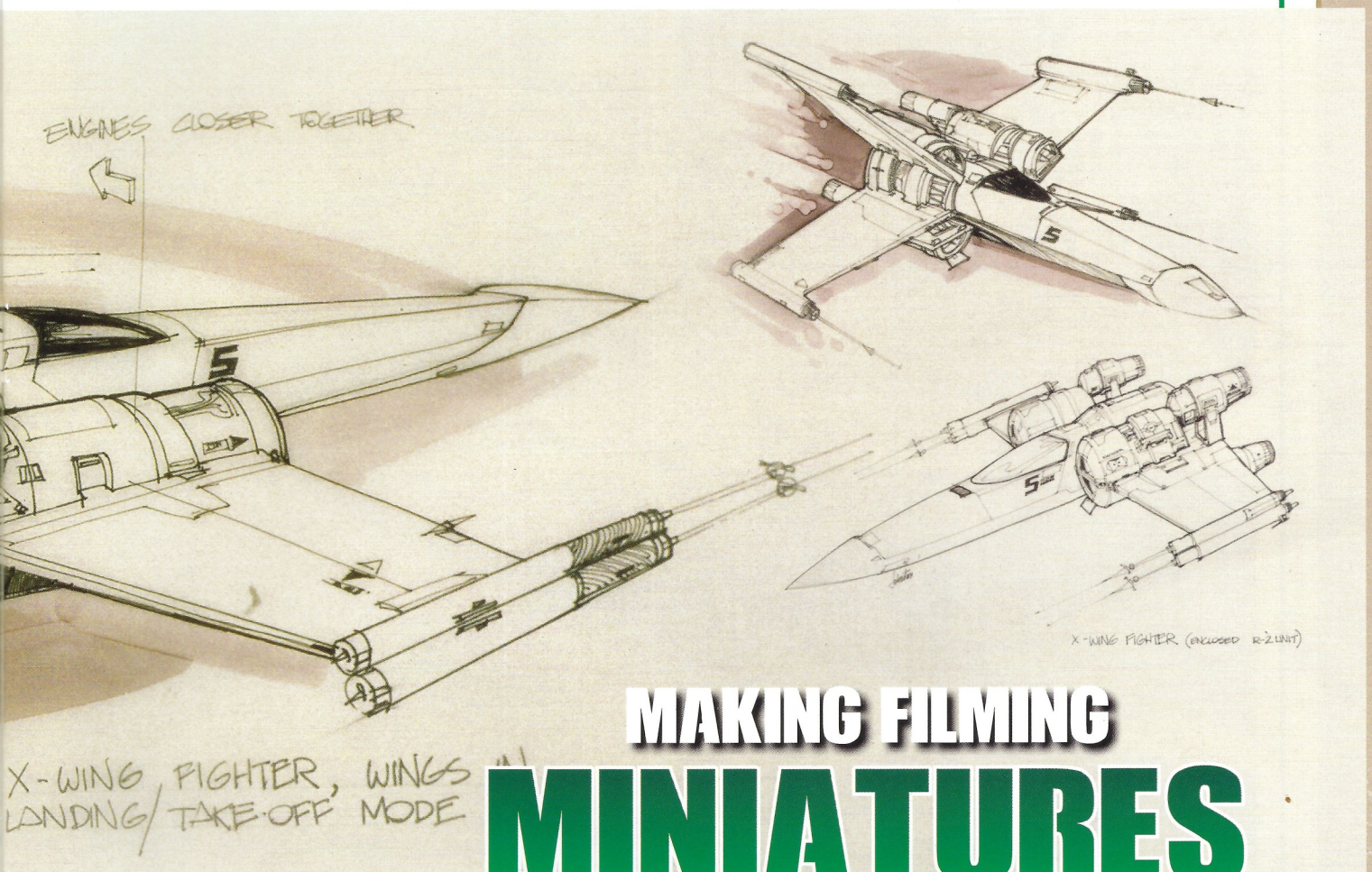
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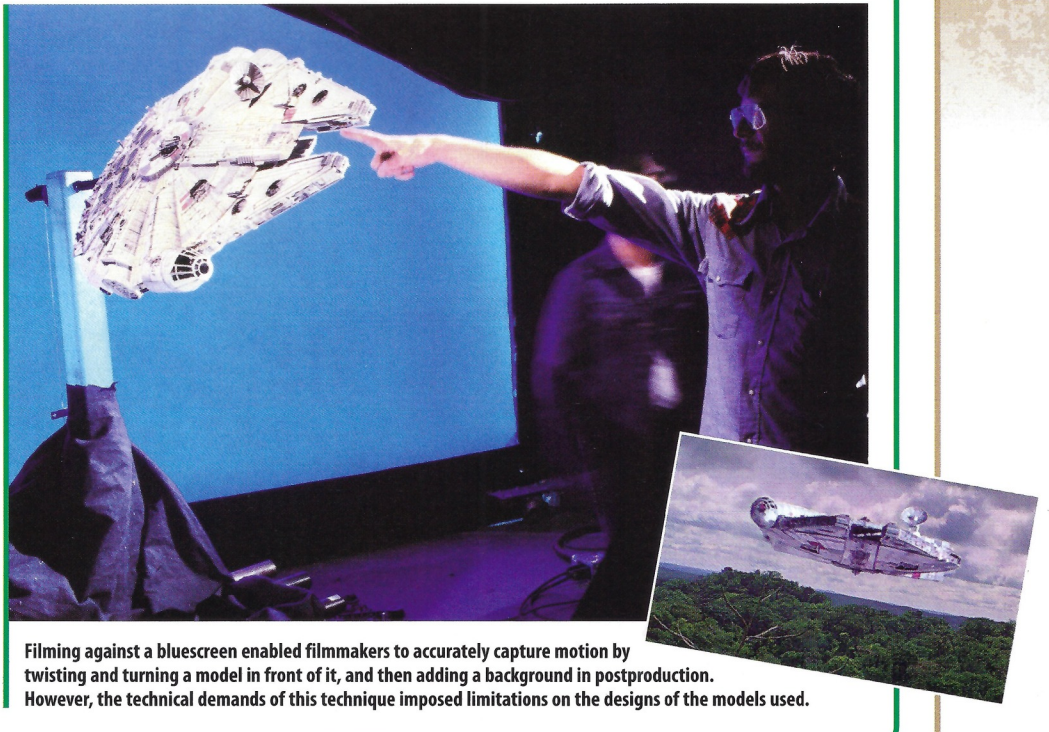


MAKING FILMING MINIATURES

By the time Colin Cantwell had finished his concept models, Industrial Light & Magic was getting to grips with the technical demands of the action sequences that George Lucas had envisaged. The director had collected and screened footage of World War II aerial dogfights for the team, showing craft twisting and turning around each other. And special effects supervisor John Dykstra noted that what made these sequences look real was that the camera was moving with the action. 'If you start moving the camera, that is the subliminal cue to the person watching it… that he's watching real, live-action photography'.

BREAKING NEW GROUND

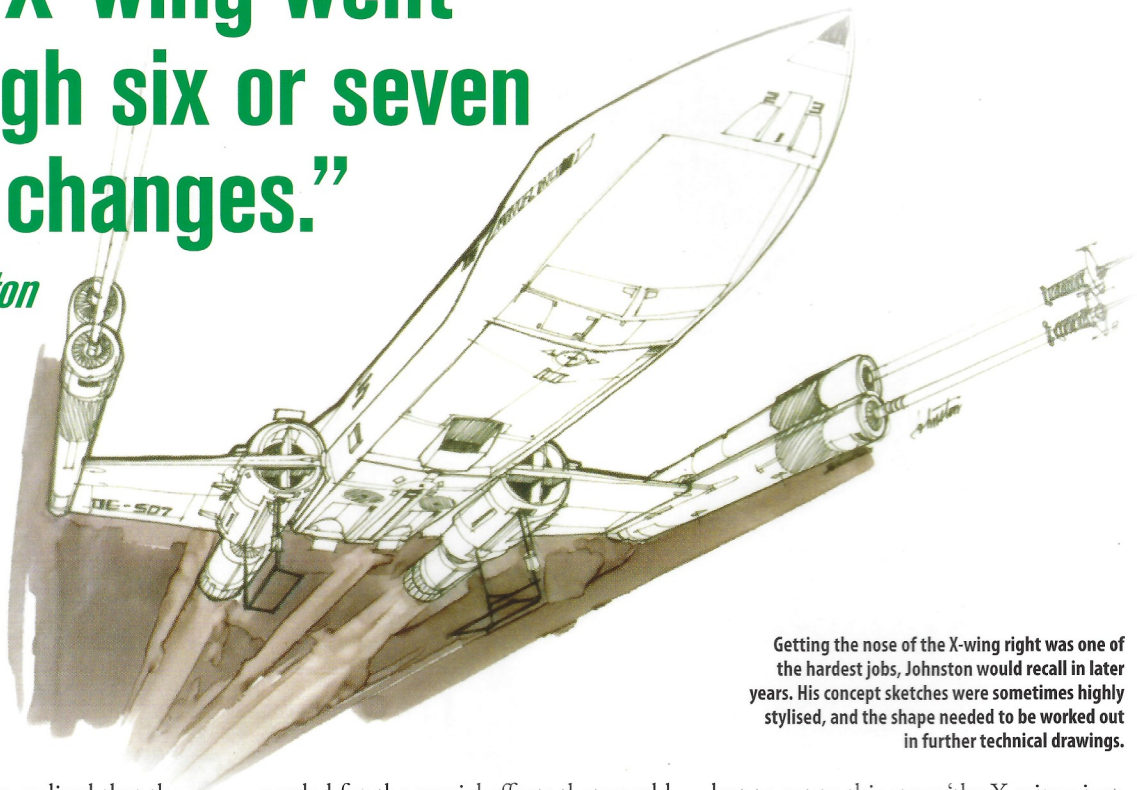
Making special-effects models appear to dive, bank and weave around each other in one shot, filmed from a moving viewpoint, had never been attempted



Filming against a bluescreen enabled filmmakers to accurately capture motion by twisting and turning a model in front of it, and then adding a background in postproduction. However, the technical demands of this technique imposed limitations on the designs of the models used.

"The X-wing went through six or seven body changes."

Joe Johnston



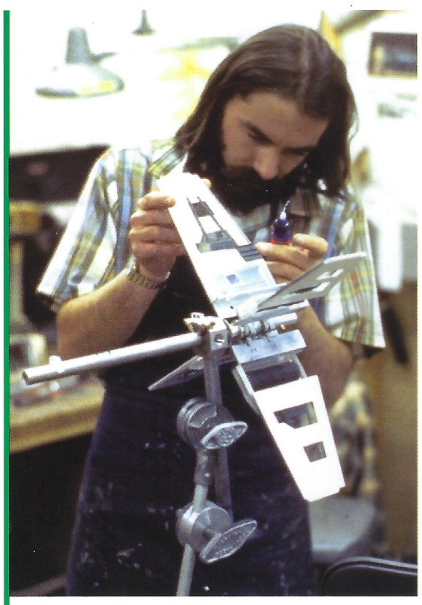
Getting the nose of the X-wing right was one of the hardest jobs, Johnston would recall in later years. His concept sketches were sometimes highly stylised, and the shape needed to be worked out in further technical drawings.

before. But Dykstra realised that the latest technology would allow him to build a computer-controlled motion-capture rig with a camera on a moving arm that could repeat the same movements precisely, time and again. All the elements could be filmed separately and later be combined into a dramatic sequence. Placing models on blue pylons in front of a blue screen would enable them to 'float' in front of a neutral background. Later, the bluescreen would be replaced with a matte painting of stars and planets.

PHOTOGRAPHIC LIMITATIONS

While Dykstra worked to perfect his motion-control rig, chief model-maker Grant McCune and his team realised that Cantwell's elegant, slim concept models would be impossible to photograph in this way. Each element of the model had to be bulky enough to show up clearly against the bluescreen background – ruling out ultra-thin wings – while the models also had to be large enough to contain the wiring that would power the lights and motors needed for the special effects that would allow the pilots to lock their starfighters' S-foils in the attack position.

McCune recalled that the basic ideas for revising the key ships – including the X-wing – were fixed within 30 days,

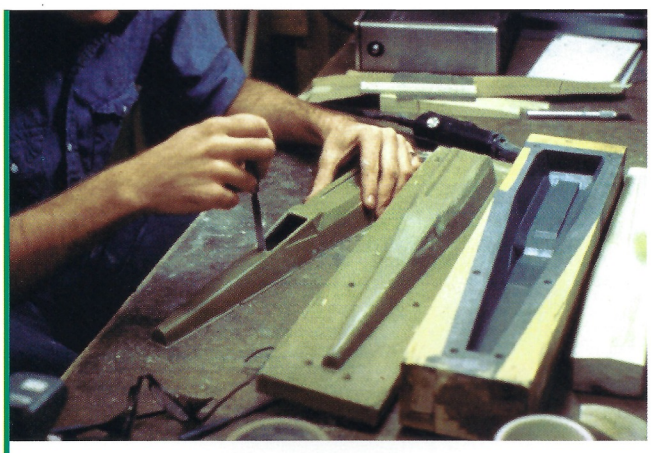


To stand up to the rigours of filming, the X-wings had internal armatures made of aluminium alloy, which included mounting points.

but to get to this stage 'the X-wings just kept getting fatter and fatter'. McCune explained how they were complicated by the systems inside: 'The X-wing had a box inside of it, with gears made of rubber bands, pipe, and motors, and it was continually evolving.' The internal armature included the electrical harness, and ducts made of surgical tubing to carry cooling air to the internal lights for the engine glow and the fibre optics that represented the laser cannons. There were also mounting points with clamps that would solidly support the ship from a range of different angles, depending on how it was to be filmed.

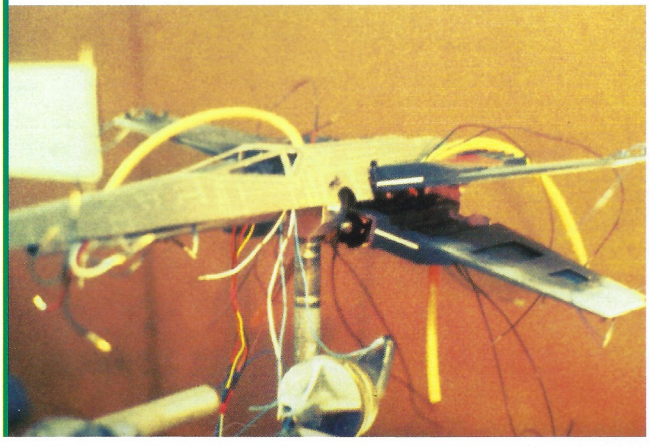
GOING INTO PRODUCTION

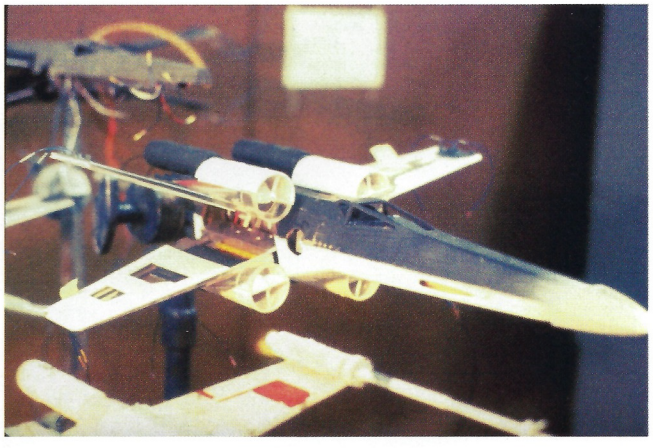
Multiple X-wings were needed for the rebel attack squadrons, so copies of some parts were moulded to speed up the process. To get to that stage, however, Joe Johnston remembered that the team had to watch the model-making process very carefully and adapt the design as it went along: 'The X-wing went through six or seven body changes. We had a lot of trouble with the nose. From the front,





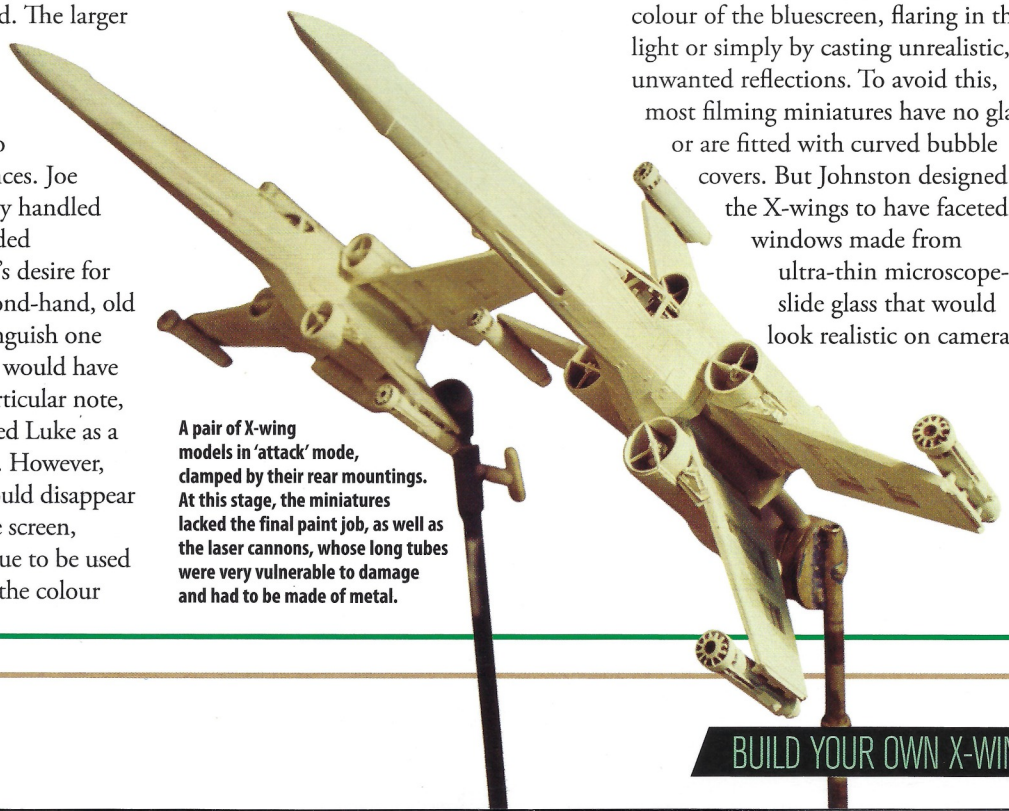
The exterior parts of the X-wings were sculpted in separate sections to allow multiple copies to be made. They were then assembled over the armatures and internal fittings, and finally painted and detailed, before filming.





you need that little lip on there; we worked with that a long time.'

The model-makers' schedules were particularly short because the ships needed to be approved before full-scale versions could be produced. The larger models were required on the sets that were being built in England where George Lucas was going to film the live-action sequences. Joe Johnston and Steve Gawley handled the detailing, which included interpreting George Lucas's desire for 'the rebel ships to look second-hand, old and beat up'. To help distinguish one fighter from the next, each would have squadron markings. Of particular note, the original script designated Luke as a member of Blue Squadron. However, because the colour blue would disappear when put in front of a blue screen, Dykstra could not allow blue to be used on any of the models, and the colour scheme was changed to red. So Luke and his wingmates became members of Red Squadron. Also, everything needed to have dull, flat surfaces.



A pair of X-wing models in 'attack' mode, clamped by their rear mountings. At this stage, the miniatures lacked the final paint job, as well as the laser cannons, whose long tubes were very vulnerable to damage and had to be made of metal.

A GLAZED COCKPIT CANOPY

The exception to this was the cockpit's windows. Glazed windows can often cause all kinds of problems in visual-effects work, either by picking up the colour of the bluescreen, flaring in the light or simply by casting unrealistic, unwanted reflections. To avoid this, most filming miniatures have no glass, or are fitted with curved bubble covers. But Johnston designed the X-wings to have faceted windows made from ultra-thin microscope-slide glass that would look realistic on camera.

POE DAMERON

THE BEST PILOT IN THE RESISTANCE

A complete natural as a pilot, Poe Dameron trained to fly an X-wing for the New Republic Defence Fleet. Rapidly growing disillusioned with the Republic's inaction to the First Order's violations of the Galactic Concordance peace treaty, he was persuaded to switch his allegiance to the Resistance.

Poe Dameron was a child of the Imperial era, born near the end of the Galactic Civil War. Flying was in his blood. His mother was Shara Bey, a rebel A-wing pilot and a veteran of numerous battles, including the Battle of Endor where she flew as a member of the Alliance's Green Squadron. As an infant, Poe was mainly raised by Shara's father, as both she and her husband Kes Dameron, a member of the Rebel Alliance Pathfinders, were caught up in the struggle against the Empire.

Six months after the Battle of Endor, Poe's parents left the Rebellion to settle on Yavin 4 and make a home for the family. When Shara left rebel service, she was given her old RZ-1 A-wing interceptor to fly as part of the civil defence of the colony, and would take her young son out in it. From the first, she let him play with the controls, and when he reached the age of six she started showing him how to fly the ship properly. Sadly, Shara died unexpectedly when Poe was just eight years old, but his mother's friend Lieutenant L'ulo helped to mentor the youngster and further his interest in flying.

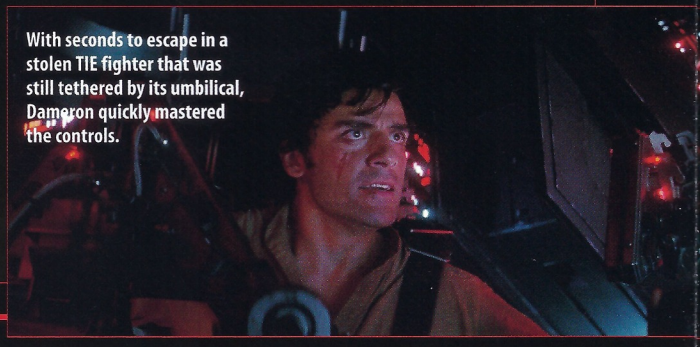
"All right, let's light it up!"

Poe Dameron

HIGHLY ADAPTABLE

'I CAN FLY ANYTHING'

Poe Dameron had a supreme belief in his own abilities. When a renegade stormtrooper named FN-2187 helped Dameron escape from the First Order, he had no doubt of his abilities to fly a TIE/sf space superiority fighter.



With seconds to escape in a stolen TIE fighter that was still tethered by its umbilical, Dameron quickly mastered the controls.

A FRIEND AND HELPER

As soon as he was old enough, Poe followed his late mother's career path, becoming a pilot in the New Republic Starfleet, where his dedication and skill took him rapidly through to the rank of commander. As leader of Rapier Squadron, he first met the astromech droid BB-8, who would assist him in flying Red Leader's T-85 X-wing and become a firm friend in the years that followed.



Dameron had a strong sense of duty to the cause he espoused, but also had a strong sense of commitment to his comrades in arms.



BB-8, the spherical astromech droid assigned to the commander and flight leader of Rapier Squadron, followed Poe Dameron when he left the New Republic fleet and joined the Resistance.

JOINING THE RESISTANCE

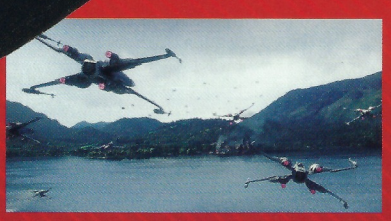
Stationed in the Mirrin sector, Rapier Squadron's role was to protect the trade lanes from pirates, but after four weeks they came into conflict with a First Order raiding party that attacked the freighter *Yissira Zyde*, losing one of their number in the battle that ensued. Republic Command had a policy not to take action against the First Order, so Poe's request to investigate the attack or involve the Resistance was denied. But after another skirmish against the First Order, Dameron met General Leia Organa, who offered him the chance to join the Resistance, which he accepted immediately.

TECH / EQUIPMENT

T-70s & T-85s

The T-70 X-wing starfighter was a continuation of the series that started with the T-65B, and was manufactured by Incom-FreiTek for use by the New Republic Starfleet. The craft's advanced weaponry made it more versatile than its predecessor – either in dogfights with other starfighters, or assaults on capital ships – but it was eventually replaced by the newer T-85, which Poe Dameron flew when he became commander of the New Republic Starfleet's Rapier Squadron.

Meanwhile, surplus T-70 X-wings became the frontline starfighters of the Resistance in its struggle against the First Order, and Dameron would become famous for his distinctive T-70 codenamed *Black One*.

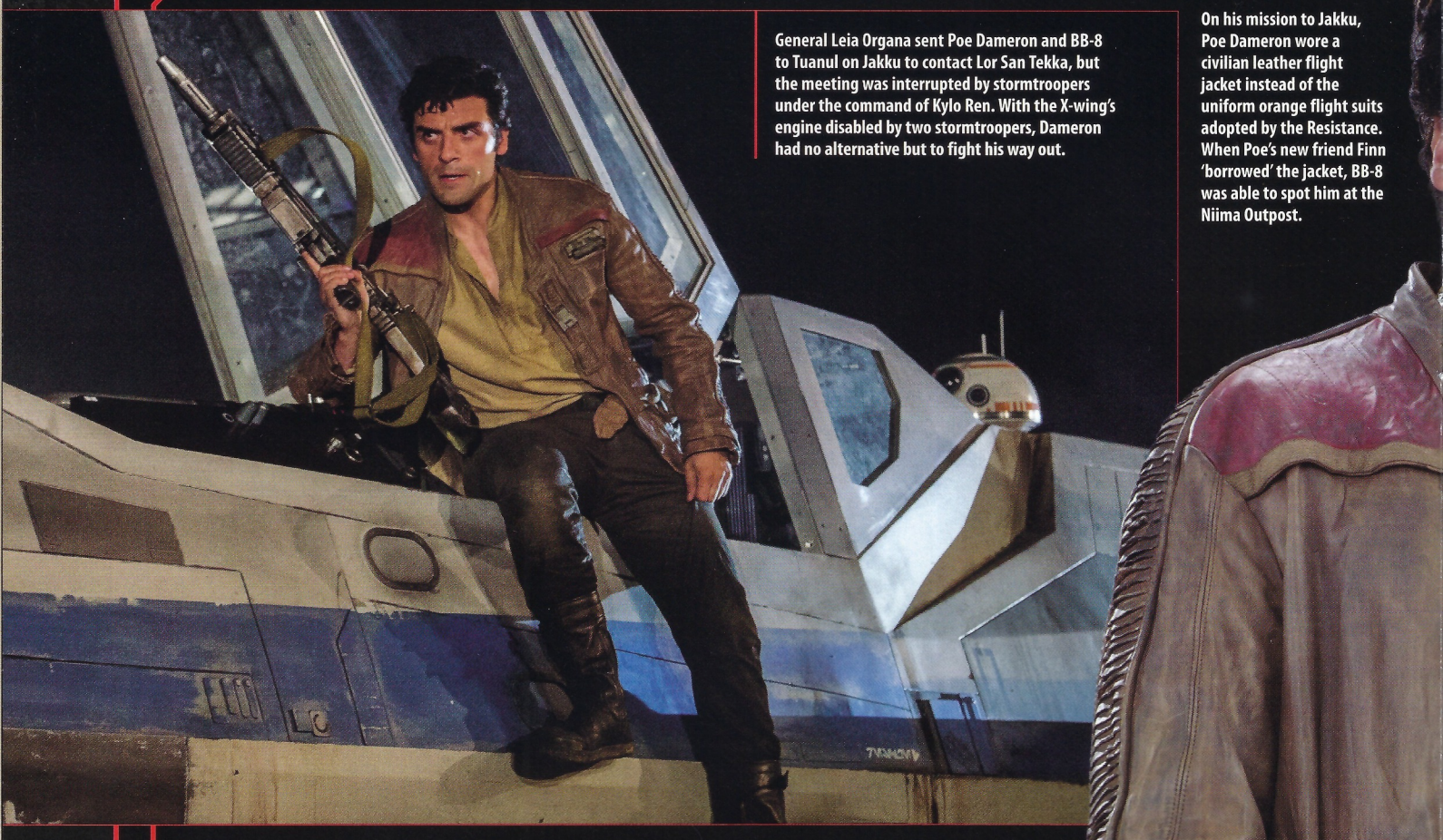


When he was recruited by the Resistance, Dameron made full use of the opportunity to use his skills in his personal T-70 X-wing.

"That's one helluva pilot."
Finn

COMMANDER POE

As commander of a Resistance fighter wing facing the might of the First Order, Dameron strengthened the resources of Starfighter Corps and the Resistance base on D'Qar. Under the call sign Black Leader, he flew a customised T-70 X-wing dubbed *Black One*, recalling the name of his former unit, Black Squadron.



General Leia Organa sent Poe Dameron and BB-8 to Tuanul on Jakku to contact Lor San Tekka, but the meeting was interrupted by stormtroopers under the command of Kylo Ren. With the X-wing's engine disabled by two stormtroopers, Dameron had no alternative but to fight his way out.

On his mission to Jakku, Poe Dameron wore a civilian leather flight jacket instead of the uniform orange flight suits adopted by the Resistance. When Poe's new friend Finn 'borrowed' the jacket, BB-8 was able to spot him at the Niima Outpost.

Discovering that the First Order was hunting Lor San Tekka, General Leia Organa realised they were trying to find the location of Luke Skywalker, the last Jedi. Leia sent Poe Dameron on a desperate mission to get the information first. Dameron was eventually able to trace the old member of the Church of the Force to the remote planet Jakku. San Tekka gave Poe the data, but at that moment Kylo Ren's forces attacked, killing San Tekka and capturing Poe. Fortunately, Poe was able to place a data storage unit inside his droid, BB-8, who he then sent into the desert to escape the First Order.

TECH / EQUIPMENT

STARFIGHTER HELMET

The Resistance made wide use of Rebel Alliance symbols, and many of its members displayed the 'starbird' emblem on their uniforms. Resistance X-wing pilots painted the rebel crest onto their helmets, and for Poe the connection was personal, too, as both of his parents had fought for the Alliance. Poe's helmet also featured an anti-glare shield to prevent any kind of bright light or explosions from blinding him, which was particularly useful during atmospheric flight. The helmet also had an integrated microphone on the left side that enabled Poe to maintain communications with the rest of his squadron, even in the heat of battle.



Poe attended a planning meeting led by the Resistance's senior leaders. It was agreed that the X-wing squadron led by Dameron was vital to the success of the desperate bid to destroy the First Order's deadly superweapon.

THE BATTLE FOR STARKILLER BASE

Captured by the First Order and held prisoner aboard Kylo Ren's Star Destroyer, Poe's situation seemed dire. He had almost given up hope when he was rescued by a deserting stormtrooper, who Dameron came to call Finn. Finn needed a pilot to help him escape – and couldn't have chosen a better one…

Poe made his way back to the Resistance base, where he witnessed the destructive force of the First Order's new terror weapon, Starkiller Base. The Resistance knew with certainty that they would be the next target. Dameron was deployed to lead a squadron of Resistance X-wings to escort General Organa to Maz Kanata's castle on Takodana, where BB-8 had been spotted. During the mission, Poe's squadron having driven off the First Order, Finn and Han Solo were rescued by members of the Resistance.

Returning to their base on D'Qar, the Resistance devised a strategy to blow up the superweapon. Admiral Statura theorised that the stellar energy that powered Starkiller Base must be contained by a thermal oscillator. Finn, who had worked at the base, confirmed its location and volunteered to disable the shields protecting the planet. Solo promised he'd be able to get Finn to the planet in the *Millennium Falcon*. Once the shields were down, Dameron would lead Black Squadron on a mission to destroy the oscillator and cripple the main weapon. It sounded like a simple plan for a pilot with Poe Dameron's ability…



STARKILLER BASE

More terrifying even than the Death Stars, Starkiller Base was developed by Supreme Leader Snoke to wipe out the hated New Republic and the Resistance, demonstrating the power of the First Order and leaving only one ruler of the galaxy. Engineers worked for decades to build the base deep inside a mysterious frozen planet, harnessing its properties to create a unique and terrifying weapon.

"Our job's done here. Let's go home!"

Poe Dameron



Once the ground assault team had brought down the shields protecting Starkiller Base's thermal oscillator, Dameron had full authorisation to attack, and his team emerged from hyperspace to engage the defences and destroy the base.

R2-D2, laser cannon and cockpit frames

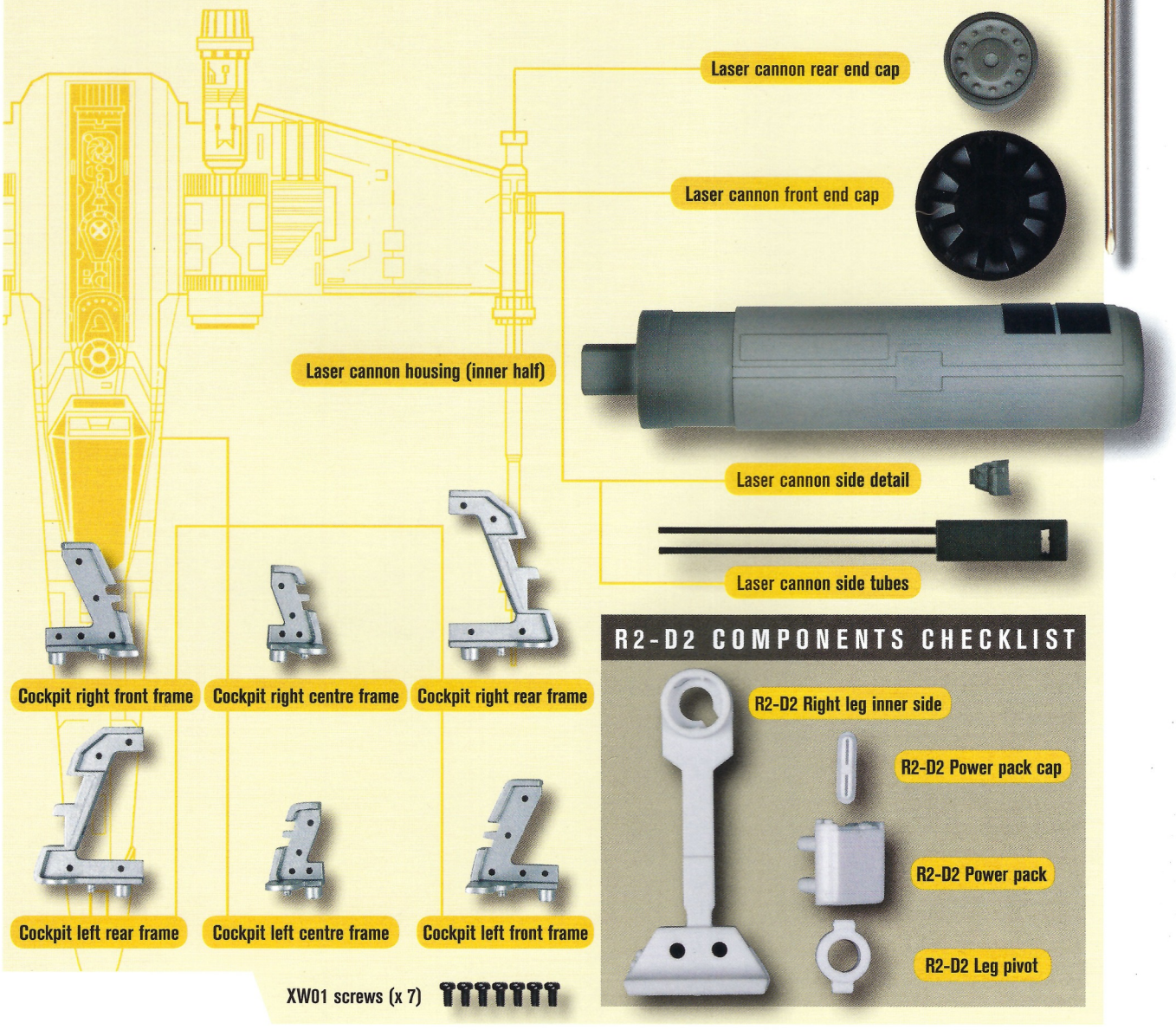
This issue includes all the parts to assemble R2-D2's right leg, including the internal LED that powers his lights, plus the components to complete the housing for the first laser cannon's laser generator, and frames for the cockpit that fits inside the fuselage.

FREE Screwdriver

As the cockpit frames are assembled with screws, this issue also includes the screwdriver you will need to do this part of the job.

COMPONENTS CHECKLIST

Use this guide to check what parts you have received and where they fit on the model



R2-D2 COMPONENTS CHECKLIST

ASSEMBLING R2-D2'S RIGHT LEG

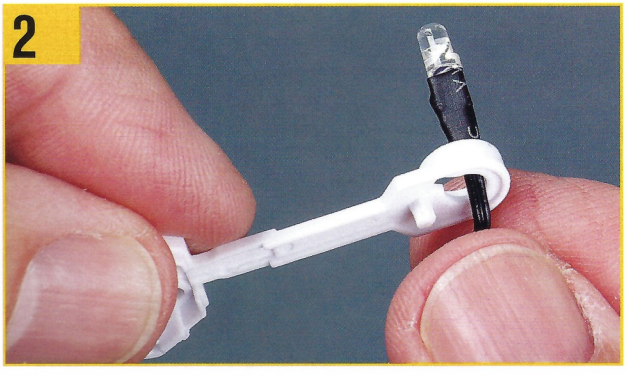
R2-D2's right leg is assembled in much the same way as the leg you made in Stage 2, but you need to fit the LED and its wiring, which includes two electrical contacts inside R2-D2's foot.

1



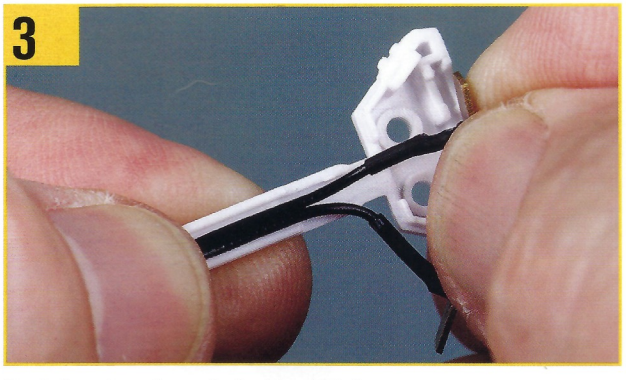
Take all four parts of R2-D2's leg provided with this issue, plus the right leg and internal LED from Issue 1.

2



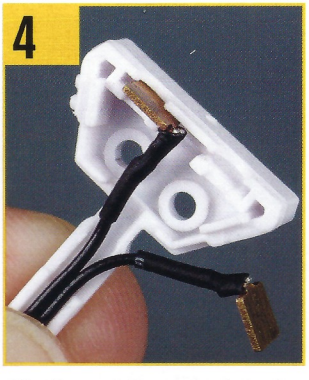
Slip the LED through the hole in the inner half of R2-D2's leg, making sure it goes through from the inside.

3



Feed the wires along the inside of his leg.

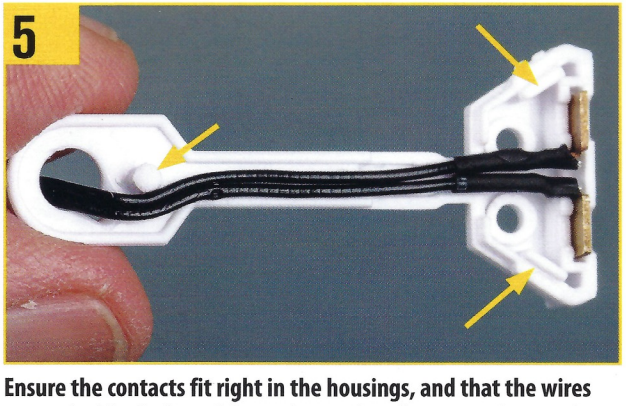
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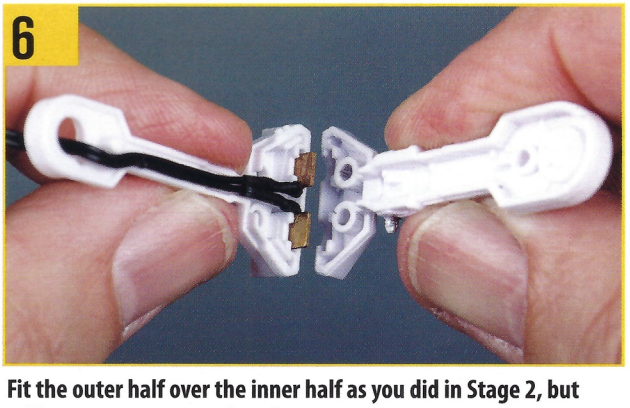
Slip the metal contacts into the two housing slots at the base of R2-D2's foot, ensuring they do not touch each other in the middle.

5



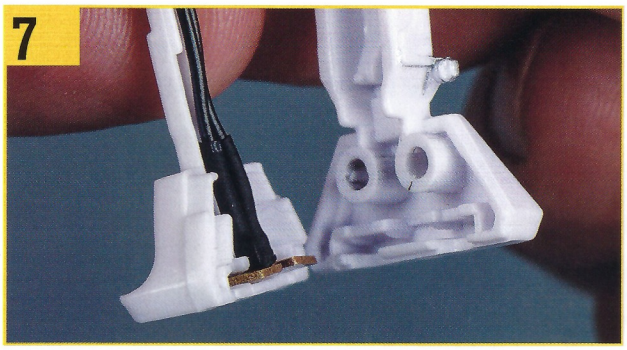
Ensure the contacts fit right in the housings, and that the wires run up inside the leg without obstructing the arrowed mountings.

6



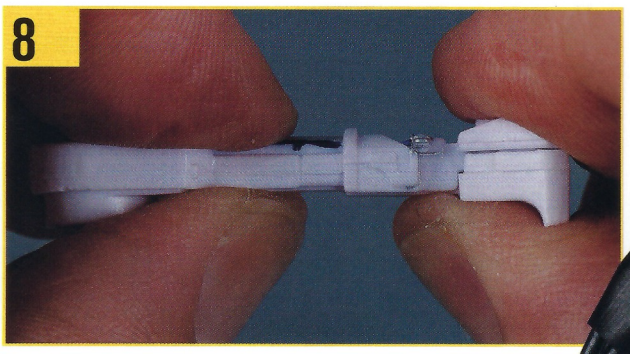
Fit the outer half over the inner half as you did in Stage 2, but taking care not to trap the wires...

7



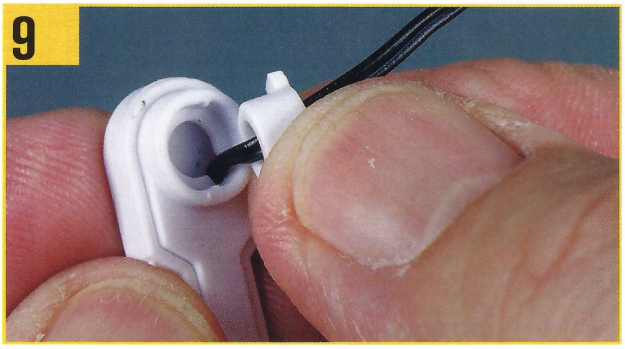
... and ensuring that the metal disc contacts align with the slots in the outer half of the leg.

8



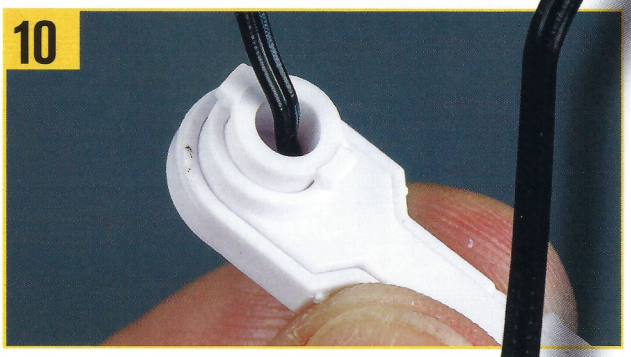
When both parts are correctly aligned, press them firmly together.

9



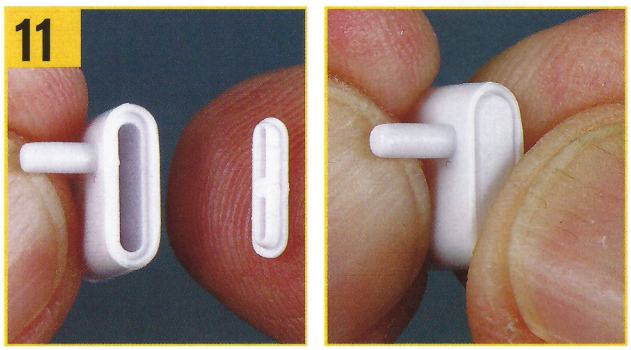
Push the pivot into the circular mounting on R2-D2's shoulder with the two lugs at the top and the bottom.

10



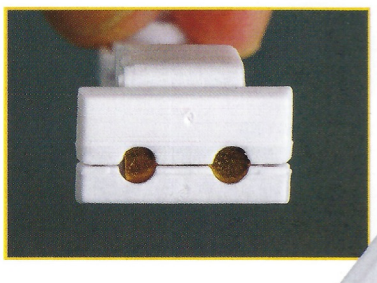
The assembly should go together like this.

11

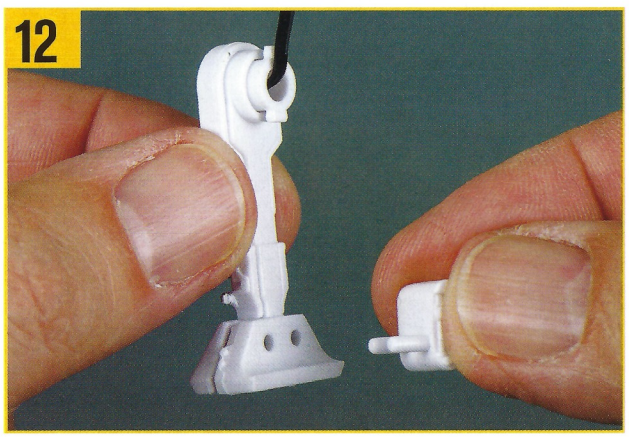


Press the small oval cap into the matching recess in the power pack.

That completes the right leg, ready to fit to R2-D2's body in Stage 4. The two brass contacts visible on the base of his foot will power the LED when R2-D2 is inserted into the droid socket behind the cockpit, and this will be tested in Stage 4.



12

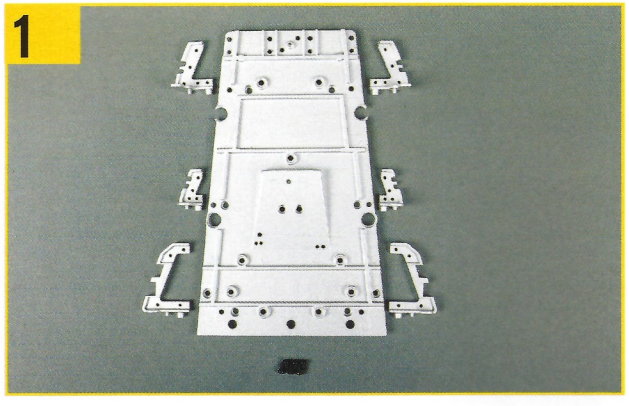


Press the pins on the power pack into the holes in R2-D2's foot.

COCKPIT ASSEMBLY

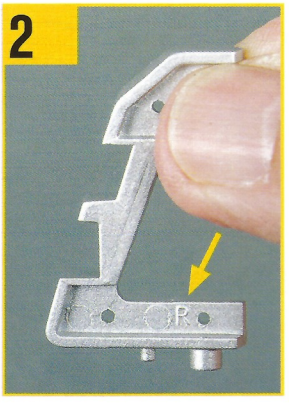
Start putting the internal frames for the cockpit together. The framework will be fitted inside the fuselage to support the pilot's seat and controls, which are provided with a future issue.

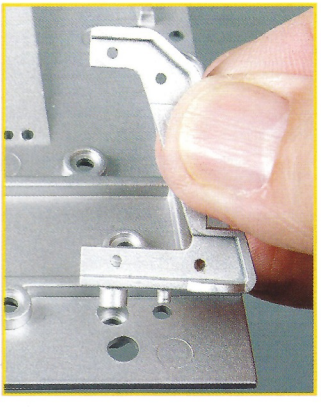
1



Take the cockpit base from Issue 2, together with the cockpit frames and screws supplied this time. (There is one spare screw.)

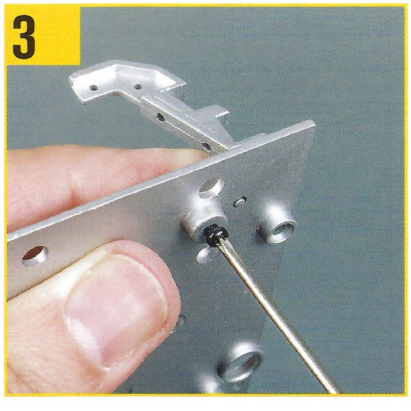
2





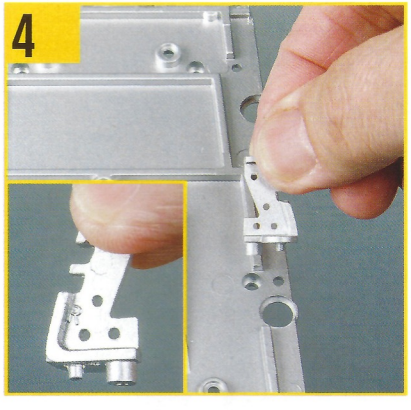
Take the largest side frame that has an 'R' for 'right' on it, and fit it into the right rear holes in the cockpit base, this way round.

3



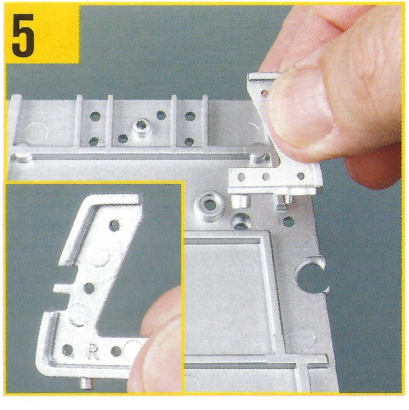
Using your screwdriver, drive one of the screws from the packet marked XW01 up into the hole in the frame.

4



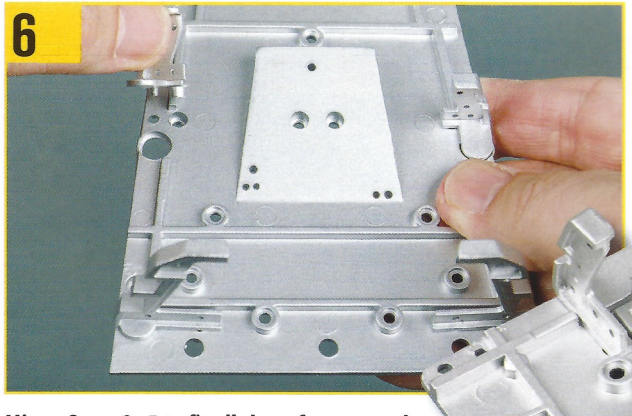
Fit the smallest frame marked with an 'R' this way round in the next set of holes and secure it with another screw.

5



Fit the remaining 'R' frame like this, and screw it in place.

6



Mirror Steps 2–5 to fit all three frames on the left of the cockpit base.

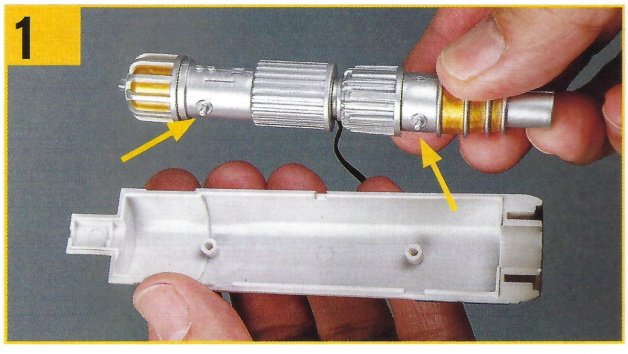
That completes this phase of the cockpit assembly, which you will continue in Stage 4.



ASSEMBLING THE LASER CANNON

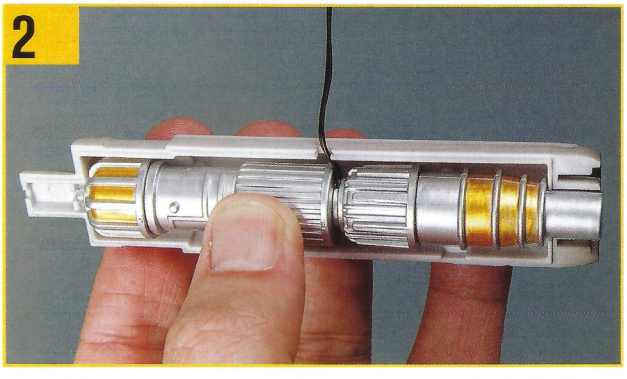
Now that you have received the inner half of the cannon housing, you can assemble the housing around the laser generator from Stage 2, and add the barrel from Stage 1.

1



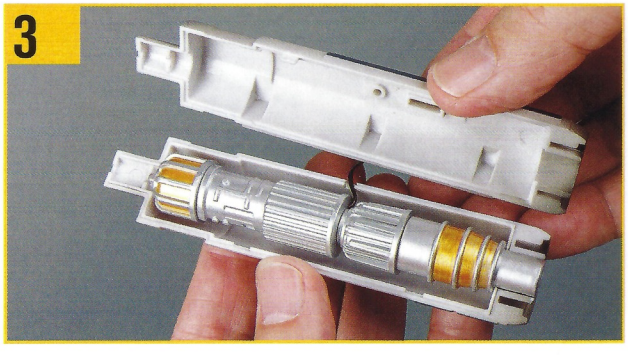
Align the laser generator with the cannon housing supplied this time, noting the two pins indicated by the arrows, and the notch in line with the wire.

2



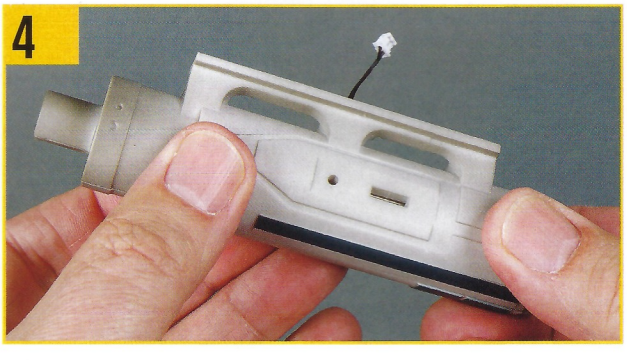
Fit the two pins into the matching sockets and press the generator into place, leading the wire through the notch in the housing.

3



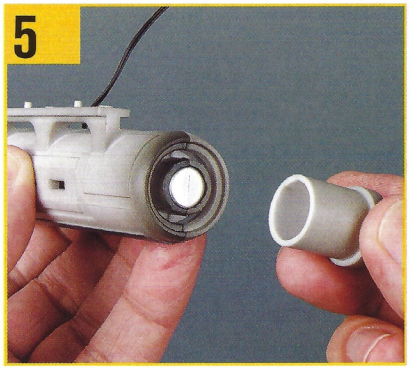
Take the outer half of the laser cannon (supplied with Issue 1), and align it with the inner half as shown.

4



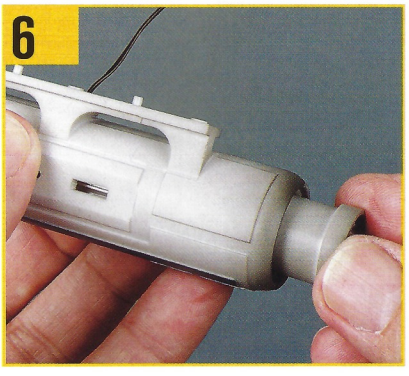
Press the two halves of the housing together firmly.

5



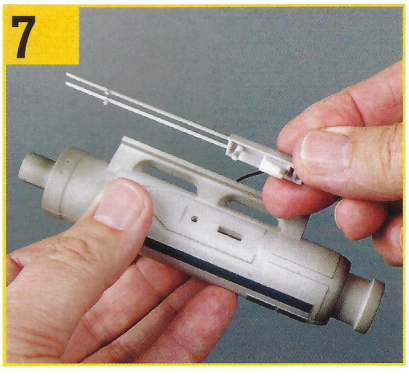
Take the rear end cap and align it with the end of the housing.

6



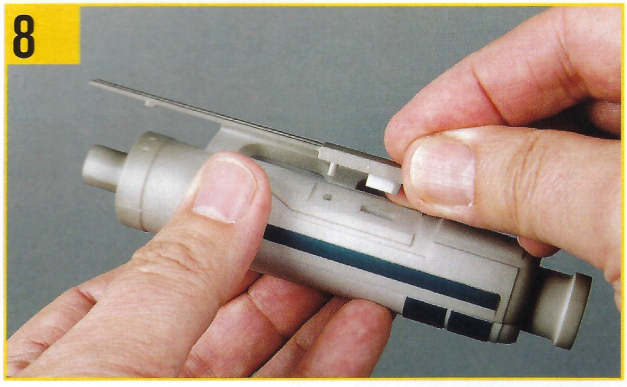
Press the end cap onto the housing, which will hold the assembly together.

7



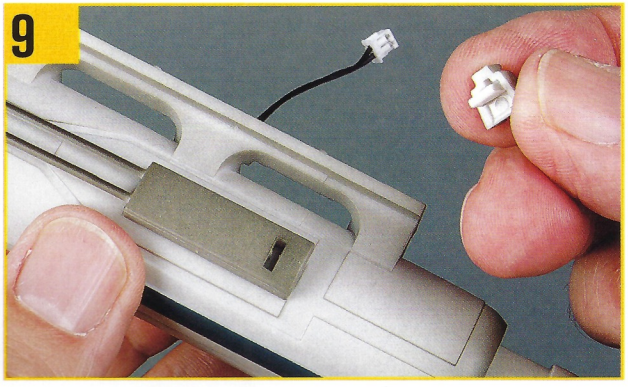
Align the tab and pin in the side tubes with the matching holes in the housing.

8



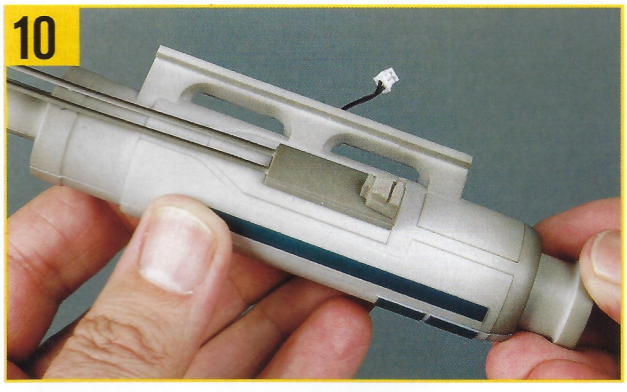
Press the side tubes firmly into place.

9



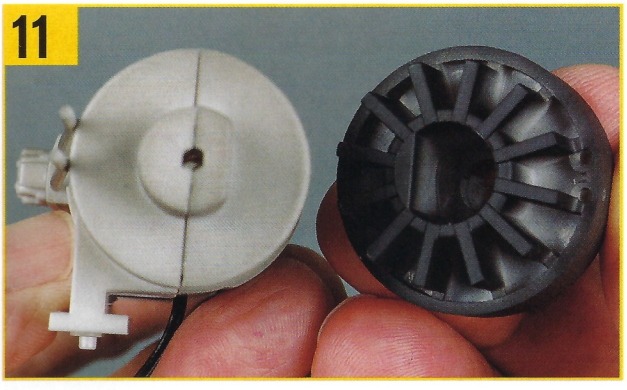
Align the tab in the side detail with the matching slot in the side tubes, making sure the part is this way round.

10



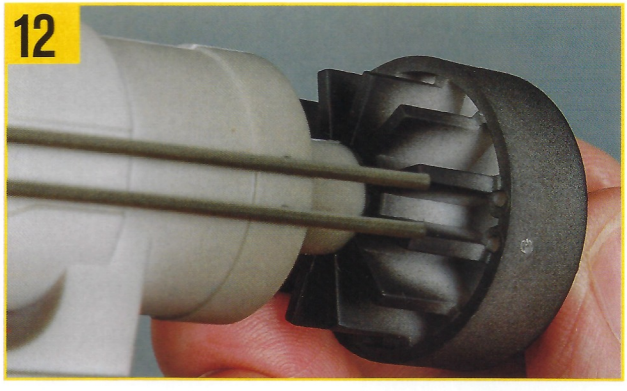
Press the detail firmly into the slot.

11



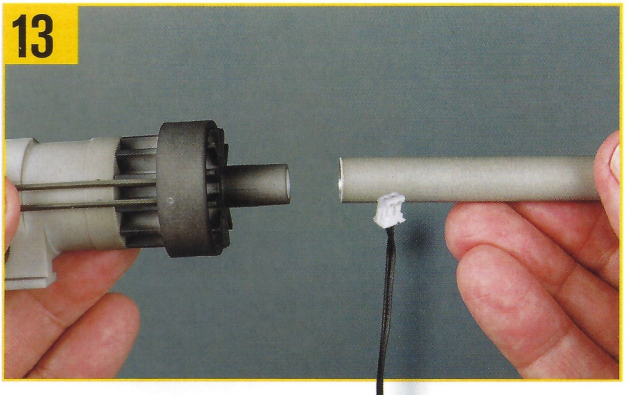
Align the front end cap with the end of the housing, noting that the hole is 'D' shaped and will only fit in one position.

12



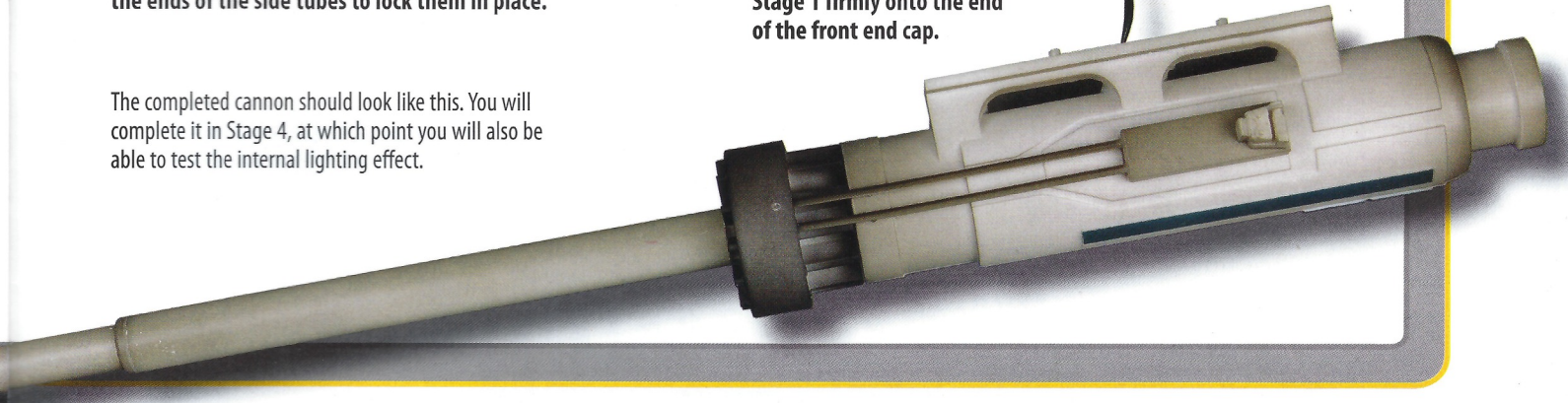
Press the end cap firmly onto the housing, ensuring that it covers the ends of the side tubes to lock them in place.

13



Press the barrel assembly from Stage 1 firmly onto the end of the front end cap.

The completed cannon should look like this. You will complete it in Stage 4, at which point you will also be able to test the internal lighting effect.



DON'T MISS OUT!

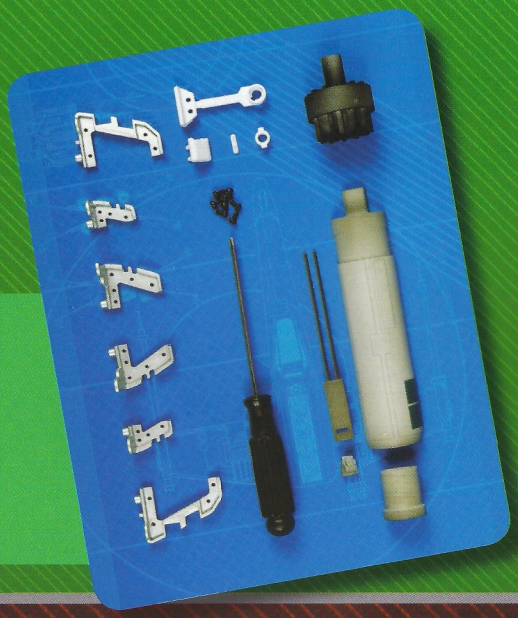
INSIDE THIS ISSUE

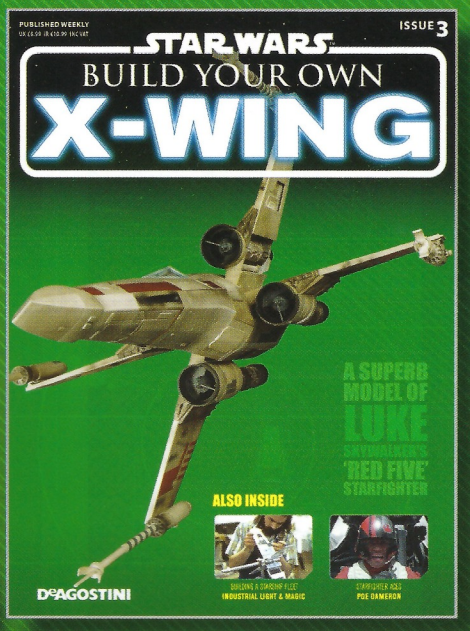
Building the X-wing model at ILM

Starfighter Aces: Poe Dameron

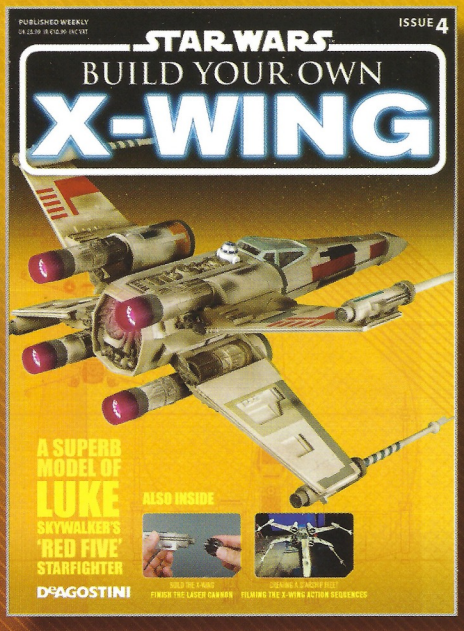
R2-D2's left leg
Laser housing
Cockpit frames

PLUS FREE SCREWDRIVER

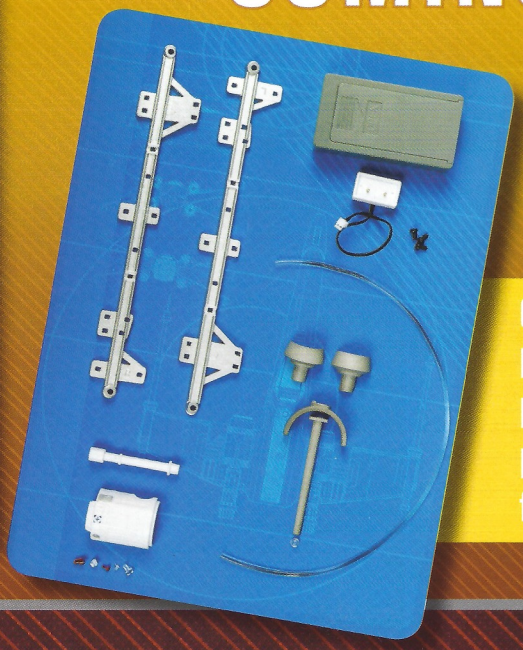




COMING NEXT



Filming the X-wing action sequences



Cockpit frames
R2-D2 parts
Battery box
Laser emitter and flash suppressor

Items may differ from those shown.

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