



iSTEC

EXPERIENCE. INNOVATION.

**AEROSPACE
BROCHURE**



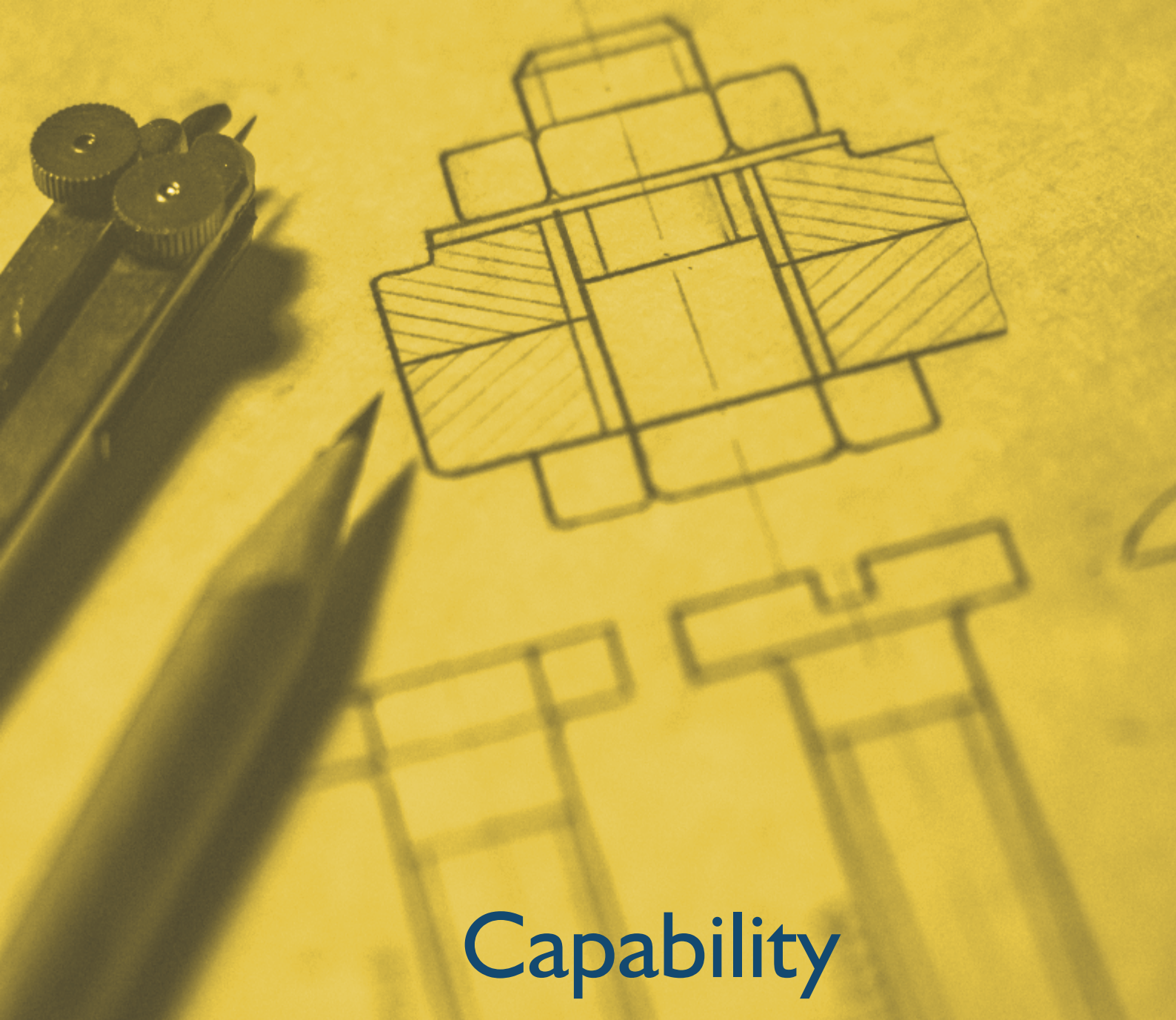
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Capability

ISTEC has exceptional strength in the engineering design and development of new innovative systems, with a large team fully equipped with the latest 3D solid modelling and Finite Element Analysis (FEA) software. ISTEC adopt a very proactive approach with a strong desire to work as part of the customer's team throughout the design process and beyond.

With many existing products in-service, across Land, Sea and Air domains, the engineering team look to either adapt 'off the shelf' in-service solutions, or establish bespoke solutions to ensure full compliance with customer requirements.

All design work is undertaken in full compliance to the ISTEC design processes and procedures that ensure critical areas are addressed during the design phase, such as: compliance with user requirements; ease of operation and maintenance; ensuring a modular design and obsolescence management.

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Background

ISTEC Services Limited, (ISTEC) is the United Kingdom's principal supplier of high quality, precision engineered small-arm and medium calibre gun mounts, weapon stations and ancillaries.

Formed in 1989, ISTEC continues to be a leading designer and manufacturer of specialist military equipment which supports the modern warfighter worldwide, across Land, Sea and Air platforms.

During that time, ISTEC has developed as a dynamic, customer-focused company; delivering pragmatic advice and high quality products in a timely manner.

ISTEC is an ISO 9001:2015 accredited company with a reputation for providing robust, reliable and effective weapon mounting equipment and ancillaries in support of continuing, domestic and overseas requirements.

ISTEC's mounts and weapon ancillaries are currently supplied to the world's leading defence integrator's and operated by users worldwide, as well as the UK.

ISTEC specialise in fully integrating a customer's inventory of crew-served weapons, either retrospectively onto vehicle platforms or by design at the concept stage.



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ENGINEERING F

ISTEC design and manufacture aerospace weapon mounts for a variety of customers and platforms globally. ISTEC have a range of fully qualified and certified aerospace mounts, which form the basis of any new aerospace weapon mounts.

When designing a weapon mount for an aerospace application there are a number of challenges which need to be considered in comparison to a land or naval based system. Whilst ISTEC can draw on many years of experience designing and manufacturing land and naval based systems, there are a unique set of requirements, which are specific to aerospace applications. ISTEC are fully adept with these requirements, having designed and qualified weapon mounts as part of aerospace platforms, which have achieved type certification.

ISTEC aerospace weapon mounts are designed in such a manner that the mounts are as light as possible, whilst still ensuring that the required loading conditions can be achieved throughout the operational life of the mount. This creates a unique set of design parameters, whereby optimisation of each component is critical in terms of strength versus weight.

To assist with the validation of each component, ISTEC utilises the most current finite element analysis (FEA) tools to carry out both static and dynamic simulations. Within these analysis tools, the loading conditions are inputted as boundary conditions. The peak stress on each component is then analysed and checked to ensure that there is a positive safety margin to the yield strength of the material used to realise each part. The safety margin can be used to optimise each component such that there is no unnecessary additional mass, whilst satisfying the strength requirements.

When manufacturing aerospace weapon mounts there are a very stringent set of requirements not only dictated by the customer, but also by legislative bodies such as the CAA. Aerospace manufacture requires a 'cradle to grave' traceability process, ensuring all raw material sourced is to an aerospace release, with full traceability back to the mill, along with composition tests to ensure that the material alloying elements are within the required specification minimums.

For each manufacturing batch, first article inspection reports (FAIR) are required. These reports contain all detailed information to document that when each component is manufactured, it fully complies to the standard and specification called out on the drawing. For each manufactured component a first article inspection report contains; raw material certificates, manufacturing route/job cards, CMM measurement reports and finishing certificates. All of these reports are individually inspected and verified, at which point the overall weapon mount assembly FAIR can be compiled.

As with all aerospace equipment, prior to a mount being released and fitted to an airframe, a full qualification test programme is undertaken. These test programmes are used as the final stage of validation of the weapon mount design and are used to further validate the FEA that is carried out during the initial design phase.

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Test programmes are intense, and predominantly consist of vibration and shock testing, as well as environmental exposure tests. The vibration and shock tests are designed to fully life the weapon mount and simulate 10,000 flight hours or 20 years of service life. These tests ensures that, when exposed to the forces and vibrations, expected during operational life, the weapon mount will perform as expected and not fail.

The environmental exposure tests are also highly accelerated life tests, designed to expose any potential corrosion issues. There are very strict requirements for the pass/fail criteria for these tests, to ensure that the mount is suitable to be operated in all environmental conditions, throughout its service life.

The final part of the certification process is a live firing test. Once all the engineering, qualification and first article inspection reports are completed and finalised, the mounts are released under a blue banding for experimental test flight. A full firing campaign, of a number of thousand rounds, is then conducted with the aircraft in all operational conditions.

The level of certification and specific testing required for an aerospace mount, can often vary from platform to platform; nevertheless, the comprehensive aerospace quality procedures and the vigorous testing regimes, have ensured that ISTECH have successfully qualified mounts on numerous airframes for a variety of global helicopter manufacturers.

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MHI 39 M240 Pintle

The MH 139 weapon mounts provide a stable platform to support operators crew served weapon. The M240 pintle is an externally fixed platform mount offering azimuth and elevation/depression movement of the parent machine gun. Features include:

- M240 Weapon fitment
- Externally mounted pintle
- 250 round ammunition box holder M19A1
- Link and case collection for 250 rounds
- Fully qualified and in service (US Airforce)
- Type certification achieved
- Versions for LH and RH installations
- Fitment via lower searchlight attachment points and upper dedicated hardpoints
- Operated through the forward cabin sliding window

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AWI59

M3D Pintle

The AWI59 weapon mounts provide a stable platform to support operators crew served weapon. The M3D pintle is an internally fixed platform mount offering azimuth and elevation/depression movement of the parent machine gun. Features include:

- M3D Weapon fitment
- Door mounted pintle which attaches to an external step
- 600 round ammunition box can also be provided
- Feed chutes can also be provided
- Option for 100 round H83 holder attached to the pintle directly
- Link collection for 600 rounds
- Fully qualified and in service (Philippine Navy)
- Can be configured for LH or RH door installations

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AW109 M60 and M240 Pintle

The AW109 weapon mounts provide a stable platform to support operators crew served weapon. The M60 pintle or M240 is an internally fixed platform mount offering azimuth and elevation/depression movement of the parent machine gun. Features include:

- M60 Weapon fitment
- Door mounted pintle from dedicated hardpoints within the cabin (LH adaptor plate required)
- 250 round ammunition box holder
- Link and case collection for 250 rounds
- Fully qualified and in service (Philippine Navy)
- Versions for LH and RH door installations

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AWI39

M240 Pintle



The **AWI39** weapon mounts provide a stable platform to support operators crew served weapon. The M240 swingarm is an internally fixed platform mount offering azimuth and elevation/depression movement of the parent machine gun. Features include:

- M240 Weapon fitment
- Internal cabin mounted
- Deploys through the forward cabin sliding window
- Can be stowed internally
- 200 round ammunition box holder H84
- Link and case collection for 200 rounds
- Fully qualified and in service (Pakistan Air Force)
- Versions for LH and RH installations
- Fitment via the seat rail attachments within the cabin

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AW169 MG42 Pintle

The AW169 weapon mounts provide a stable platform to support operators crew served weapon. The MG42 pintle is an externally fixed platform mount offering azimuth and elevation/depression movement of the parent machine gun. Features include:

- MG42 Weapon fitment
- Externally mounted pintle
- Fitment via footstep outside the sliding door of the main cabin
- Operated through the door of the main cabin, but can be operated through sliding window on cabin door
- 250 round ammunition box holder M19A1
- Link and case collection for 250 rounds
- Spade grip assembly for MG42 included
- Fully qualified and in service
- Versions for LH and RH installations

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PUMA2

L112A1 Pintle

The PUMA2 weapon mounts provide a stable platform to support operators crew served weapon. The L112A1 MMG swing arm is an internally fixed platform mount offering azimuth and elevation/depression movement of the parent machine gun. Features include:

- ARD GPMG/M240/MAG58 Weapon fitment
- Internally mounted pintle
- Fitment via floor inside the main cabin and braced against cabin
- Operated through the door of the main cabin
- 200 round ammunition box holder H84
- Link and case collection for 200 rounds
- Fully qualified and in service with UK MoD
- Versions for LH and RH installations

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LAND

ISTEC continue to innovate and support the land element of the battlespace.

With a large range of certified in-service MMC and HMC mounts fitted to wheeled and tracked platforms worldwide, ISTEC continue to develop to meet the ever changing demands of the modern battlespace.

Mount types range from Protected Weapon Stations giving 360 degree capability, as fitted to the Husky and Viking platforms, to the iswing arm MMC mounts fitted to the Jackal 3 and Foxhound.



SEA

The maritime battlespace is one of the harshest environments in which ISTECS equipment operates. Manufactured from marine resilient material and finishes, the range of ISTECS naval equipment can be seen across the entire maritime domain on submarines, capital, littoral and merchant ships, as well as in-shore and river crafts. ISTECS also supply naval systems for integration on offshore drilling rigs.

The ISTECS range of naval products is extensive, with modern solutions being added on a regular basis. New product design may be as a result of a specific customer requirement, or as part of an internally funded programme where ISTECS look to continuously improve existing solutions or look to develop new concepts to the benefit of the user community.



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