
T-MAK

T-MAK mine blast attenuating seats for land vehicles and crashworthy seats for helicopters are the world's most reliable equipment in the seating systems category.

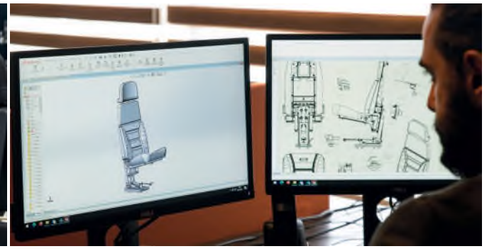
With its products focused on protecting human life and preventing injuries, T-KALIP is an international leading manufacturer in the defense industry.

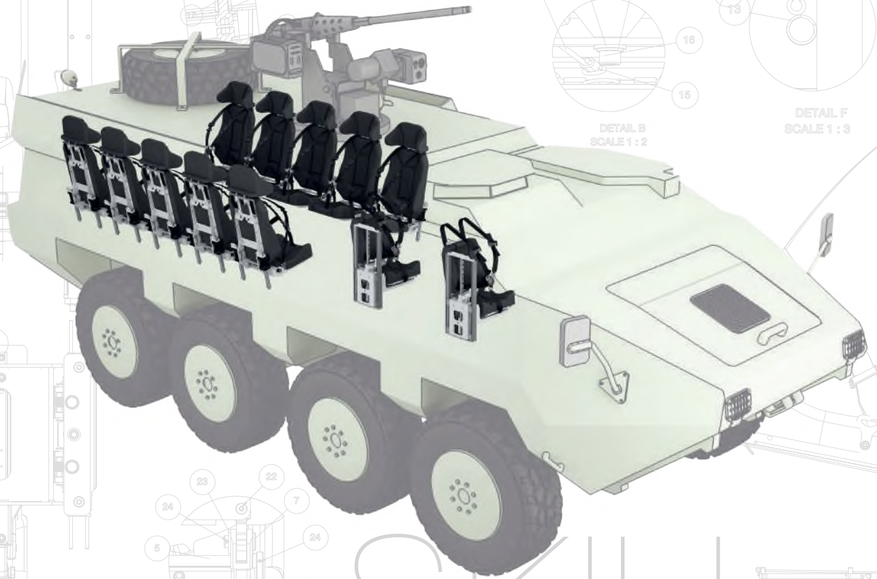
- T-KALIP, which has AS9100 Rev D quality assurance system and facility security certificate,
- With a team of more than 100 professionals,
- 7000 m^2 indoor factory area,
- Annual production capacity of more than 8000 seats,
- Exports to more than 35 countries.
- More than 30000 PIECES "Mine Blast Attenuating Seats for Land Vehicles" and "Crashworthy Seats for Helicopters" are in service.

T-MAK

T-KALIP

DESIGN & DEVELOPMENT





SKILL

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T-KALIP, which continuously improves its designs with its R&D activities, has made its products the world leader by using its technological knowledge, experience and infrastructure.

With powerful design team using computer aided design software, T-KALIP transforms many of its designs into state of the art products after successfully completing the necessary tests and fully validating the designs.

Both seating system products and mechanical interface products are protected with various patents.

T-KALIP design team provides unconditional support for the adaptation of the products to all kinds of vehicles.

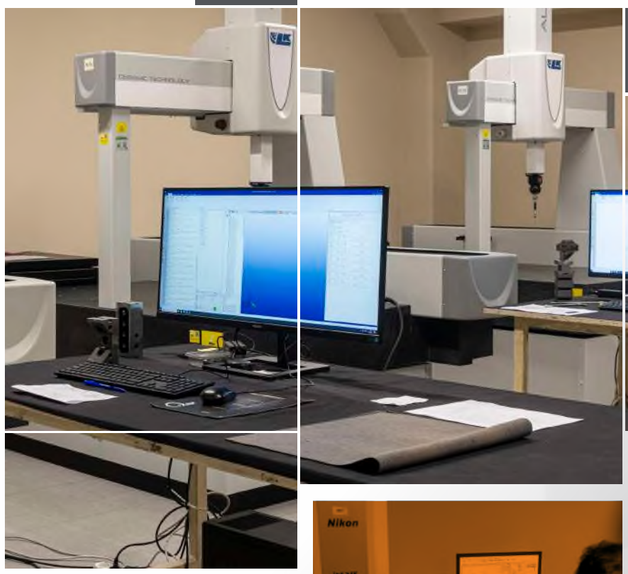
QUALITY CONTROL

The experienced and trained staff of our quality control department uses many measuring devices to keep the product quality at the highest level.

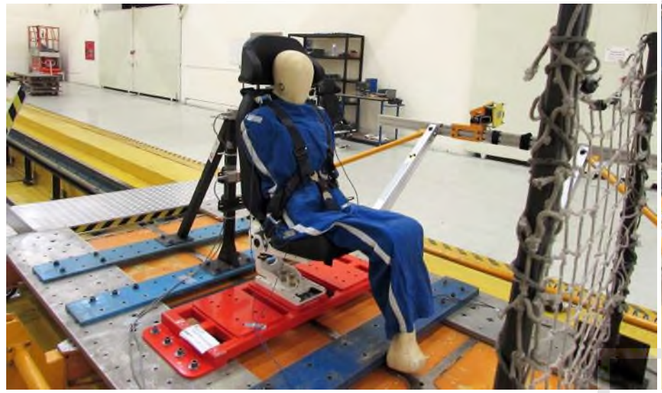
- 3-dimensional coordinate measuring (CMM),
- Video optical measurement machine,
- Photo optical measurement machine,
- Metal analyzer (Optical Spectro Meter),
- Hardness measuring,
- Surface roughness measuring,
- Paint-coat thickness measuring devices.

Inspection and tests of our products are carried out in accordance with international quality standards and military standards and are shipped to our customers with the relevant reports and certificates.

Our company also performs different tests in cooperation with universities and third party laboratories.

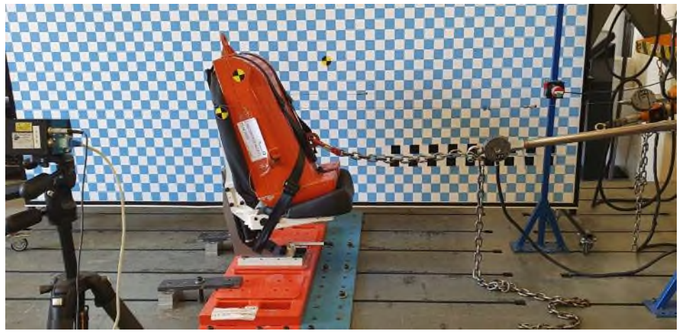


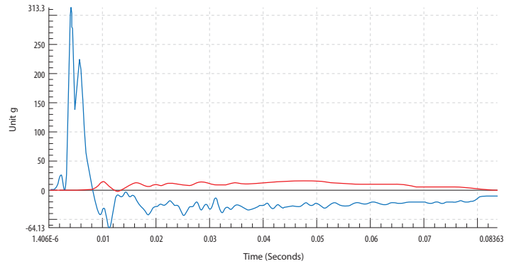
TEST



- DROP TOWER TESTS
- ECE TEST
- SLED CRASH TEST
- BLAST TEST

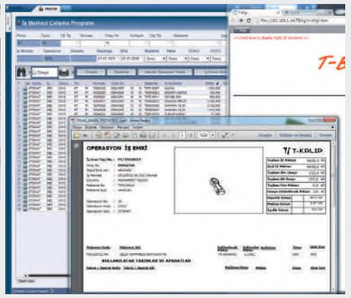
- Tested on drop tower tests with Hybrid III Test dummies.
- Tested in mine blast tests.
- Very high repeatability in attenuating performance during the tests.





PERFORMANCE

PRODUCTION



T-KALIP uses the most advanced technology and constantly updated multi-axis CNC milling and turning centers and welding robots in production.

In addition to machining, operations such as press forming, welding, seat upholstery and assembly are also carried out within our company.

All stages of our production are carried out with computer aided production (CAM) programs and are managed with material resource planning (MRP) software in our ERP system.

T-KALIP aims to supply reliable seating systems in two categories;

- Mine blast attenuating seats for land vehicles.
- Crashworthy seats for helicopters.

SUSTAINABLE

MINE BLAST ATTENUATING SEATING SYSTEMS FOR LAND VEHICLES

Shock waves caused by the explosion of a landmine, pushes the vehicle upwards with a very high acceleration.

This impact causes injuries and fatalities when it is transferred to personnel via their fixed seats.

Use of energy attenuating systems on the seats, reduces the transferred acceleration, minimizing the risk of injury.

T-KALIP's attenuating system, ensures equal protection for different weight crews and do not require any preparation or adjustment according to crew weight.

SEATING FEATURES

- The seats meet the standard MIL-STD-1472G
- Fire retardant cushion cover
- Easy assembly and disassembly
- Low weight, effective price

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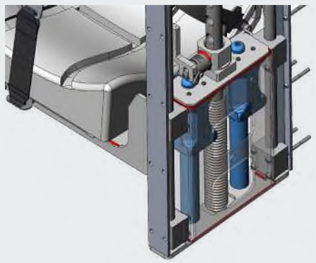
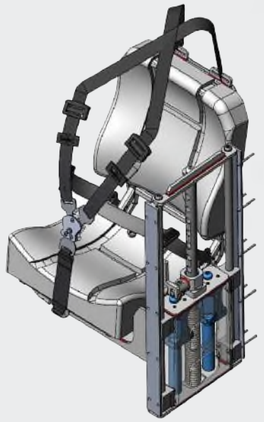
BLAST ATTENUATION SYSTEM

- Blast attenuation performance that fits to the STANAG 4569 standard.
- Equivalent blast protection from the 5th percentile female to 95th percentile male.
- Equivalent blast protection without any preparation or adjustment according to crew weight.
- Equivalent blast protection under different shock scenarios,
  - high vertical acceleration magnitude-short acceleration duration,
  - moderate vertical acceleration magnitude-long acceleration duration.
- The embedded fuse senses the blast, prevents unnecessary stroking during severe driving conditions.
- Not affected from temperature changes. (-40°C to +60°C)
- No maintenance required.
- Compact structure saves space at the back of the seat.
- Efficiently used stroking distance saves space under the seat.
- Suitable for various applications, wall or floor mounted.
- Easily adapted for crew seat, driver seat, commander seat or gunner seat.
- Reusage after easy replacement of the attenuating tube.



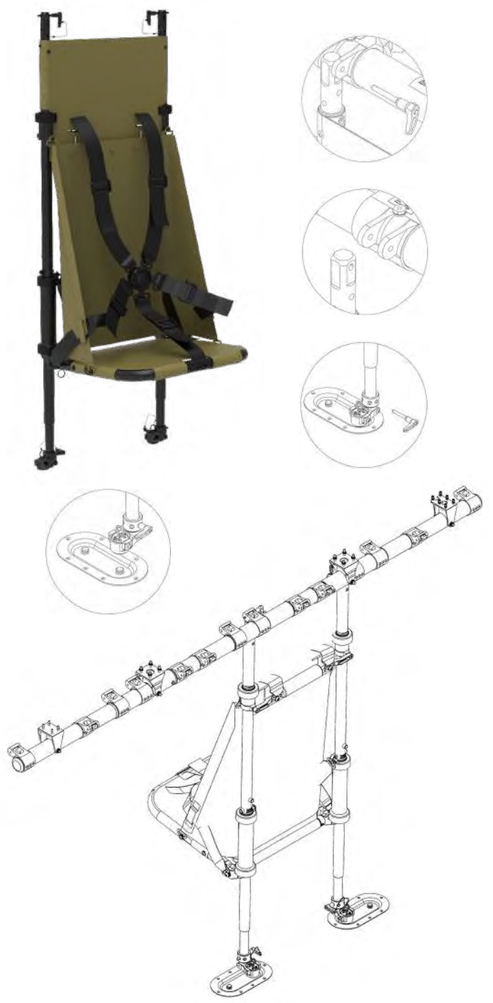


CRASHWORTHY SEATS FOR HELICOPTERS

T-MAK crashworthy seats absorb ground impact energy by stroking downward relative to the aircraft floor at a load which is preset to approach the upper limit of human spinal compressive tolerance.

** Please contact with us for detail information*

CRASHWORTHY TROOP SEAT
for SIKORSKY UH-60 / S-70 / T-70



T-MAK crashworthy seats absorb ground impact energy by stroking downward relative to the aircraft floor at a load which is preset to approach the upper limit of human spinal compressive tolerance.

- Total weight 8.6 kg, including harness.
- Ceiling to floor mounted.
- Floor connection on AN7516 stud.
- Ceiling connection with a quick release pin on the lug.
- Tested according to MIL-S-85510.
- Gives protection from the 5th percentile female to 95th percentile male.
- NOT affected from temperature changes. (-40°C to +60°C)
- NO maintenance required.
- Compact structure saves space at the back of the seat.
- Efficiently used stroking distance saves space under the seat.
- The seats meet the standard MIL-STD-1472G
- Fire retardant fabric.
- 5 point static restraint.
- Simple and quick installation, no tools required.
- The lower connection of the seat system has a 4 inch telescopic structure to enable the assembly of the seat to the platform and compensate floor deformation during crash.
- The seat also compensates additional 1.75 inches of helicopter fuselage expansion during takeoff.
- Qualified for Fore Facing and Aft Facing orientations.

TROOP SEAT / FORE AND AFT FACING / UH-60 / S70
Dynamic Tests
• Fore Facing Combined Vertical Dynamic (Test 1) (MIL-S-85510) • Fore Facing Combined Horizontal Dynamic (Test 2) (MIL-S-85510) • Aft Facing Combined Vertical Dynamic (Test 1) (MIL-S-85510) • Aft Facing Combined Horizontal Dynamic (Test 2) (MIL-S-85510)
Static Tests
• Fore Facing Upward Static Test (MIL-S-85510) • Fore Facing Aftward Static Test (MIL-S-85510) (*) • Aft Facing Upward Static Test (MIL-S-85510) • Aft Facing Aftward Static Test (MIL-S-85510)
Additional Dynamic Tests
• Fore Facing Pure Vertical Dynamic Test (MIL-S-85510) (*) • Fore Facing Pure Lateral Dynamic Test (MIL-S-85510) • Fore Facing Pure Horizontal Dynamic Test (MIL-S-85510) • Aft Facing Pure Vertical Dynamic Test (MIL-S-85510) (*) • Aft Facing Pure Lateral Dynamic Test (MIL-S-85510) (*) • Aft Facing Pure Horizontal Dynamic Test (MIL-S-85510)
Environmental Tests
• Non-Operating Temperature Tests (MIL-STD-810G) • Humidity Test (MIL-STD-810) • Salt Fog Test (MIL-STD-810) • Dust Test (MIL-STD-810) • Vibration Test (MIL-STD-810) • Functional Shock Test (MIL-STD-810) • Fungus Test (MIL-STD-810) • Flammability Test (FAR 25) • Solar Radiation Test (MIL-STD-810) • Transmissibility Test (MIL-STD-1472G)

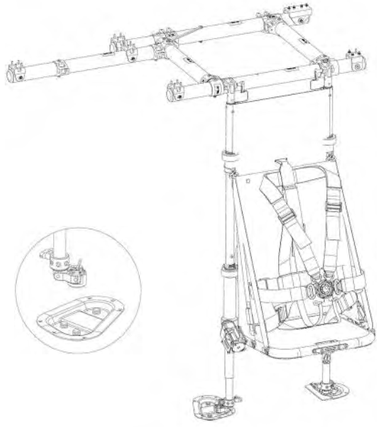
CRASHWORTHY TROOP SEAT FOR ALL ORIENTATIONS
for SIKORSKY UH-60 / S-70 / T-70

T-MAK crashworthy seats absorb ground impact energy by stroking downward relative to the aircraft floor at a load which is preset to approach the upper limit of human spinal compressive tolerance.

- Total weight 8.9 kg, including harness.
- Ceiling to floor mounted.
- Floor connection on AN7516 stud.
- Ceiling connection with a quick release pin on the lug.
- Tested according to MIL-S-85510.
- Gives protection from the 5th percentile female to 95th percentile male.
- NOT affected from temperature changes. (-40°C to +60°C)
- NO maintenance required.
- Compact structure saves space at the back of the seat.
- Efficiently used stroking distance saves space under the seat.
- The seats meet the standard MIL-STD-1472G
- Fire retardant fabric.
- 5 point static restraint.
- Simple and quick installation, no tools required.
- The lower connection of the seat system has a 4 inch telescopic structure to enable the assembly of the seat to the platform and compensate floor deformation during crash.
- The seat also compensates additional 1.75 inches of helicopter fuselage expansion during takeoff.
- Qualified for Fore Facing, Aft Facing and Side Facing orientations.

IMPROVED TROOP SEAT / FORE, AFT AND SIDE FACING / UH-60 / S70
Dynamic Tests
• Fore Facing Combined Vertical Dynamic (Test 1) (MIL-S-85510) (*) • Fore Facing Combined Horizontal Dynamic (Test 2) (MIL-S-85510) (*) • Aft Facing Combined Vertical Dynamic (Test 1) (MIL-S-85510) (*) • Aft Facing Combined Horizontal Dynamic (Test 2) (MIL-S-85510) (*) • Side Facing Combined Vertical Dynamic (Test 1) (MIL-S-85510) • Side Facing Combined Horizontal Dynamic (Test 2) (MIL-S-85510)
Static Tests
• Fore Facing Upward Static Test (MIL-S-85510) (*) • Fore Facing Aftward Static Test (MIL-S-85510) (*) • Aft Facing Upward Static Test (MIL-S-85510) (*) • Aft Facing Aftward Static Test (MIL-S-85510) (*) • Side Facing Upward Static Test (MIL-S-85510) (*) • Side Facing Aftward Static Test (MIL-S-85510) (*)
Additional Dynamic Tests
• Fore Facing Pure Vertical Dynamic Test (MIL-S-85510) (*) • Fore Facing Pure Lateral Dynamic Test (MIL-S-85510) (*) • Fore Facing Pure Horizontal Dynamic Test (MIL-S-85510) (*) • Aft Facing Pure Vertical Dynamic Test (MIL-S-85510) (*) • Aft Facing Pure Lateral Dynamic Test (MIL-S-85510) (*) • Aft Facing Pure Horizontal Dynamic Test (MIL-S-85510) (*) • Side Facing Pure Vertical Dynamic Test (MIL-S-85510) (*) • Side Facing Pure Lateral Dynamic Test (MIL-S-85510) (*) • Side Facing Pure Horizontal Dynamic Test (MIL-S-85510)
Environmental Tests
• Non-Operating Temperature Tests (MIL-STD-810G) (*) • Humidity Test (MIL-STD-810) (*) • Salt Fog Test (MIL-STD-810) (*) • Dust Test (MIL-STD-810) (*) • Vibration Test (MIL-STD-810) (*) • Functional Shock Test (MIL-STD-810) (*) • Fungus Test (MIL-STD-810) (*) • Flammability Test (FAR 25) (*) • Solar Radiation Test (MIL-STD-810) (*) • Transmissibility Test (MIL-STD-1472G) (*)

CRASHWORTHY GUNNER SEAT
for SIKORSKY UH-60 / S-70 / T-70



T-MAK crashworthy seats absorb ground impact energy by stroking downward relative to the aircraft floor at a load which is preset to approach the upper limit of human spinal compressive tolerance. Wearable restraint system provides movement ability.

- Total weight 14.2 kg, including harness.
- Ceiling to floor mounted.
- Floor connection on AN7516 stud.
- Ceiling connection with a quick release pin on the lug.
- Tested according to MIL-S-85510.
- Gives protection from the 5th percentile female to 95th percentile male.
- NOT affected from temperature changes. (-40°C to +60°C)
- NO maintenance required.
- Compact structure saves space at the back of the seat.
- Efficiently used stroking distance saves space under the seat.
- The seats meet the standard MIL-STD-1472G
- Fire retardant fabric.
- Stand-up Restraint System with 3 inertia reels.
- Simple and quick installation, no tools required.
- The lower connection of the seat system has a 4 inch telescopic structure to enable the assembly of the seat to the platform and compensate floor deformation during crash.
- The seat also compensates additional 1.75 inches of helicopter fuselage expansion during takeoff.
- Qualified for Side Facing orientations.

GUNNER SEAT / SIDE FACING / UH-60 / S70
Dynamic Tests
• Combined Vertical Dynamic (Test 1) (MIL-S-85510) • Combined Horizontal Dynamic (Test 2) (MIL-S-85510)
Static Tests
• Upward Static Test (MIL-S-85510) • Aftward Static Test (MIL-S-85510)
Additional Dynamic Tests
• Pure Vertical Dynamic Test (MIL-S-85510) (*) • Pure Lateral Dynamic Test (MIL-S-85510) (*) • Pure Horizontal Dynamic Test (MIL-S-85510)
Environmental Tests
• Operating Temperature Test (MIL-STD-810) (*) • Non-Operating Temperature Tests (MIL-STD-810) • Humidity Test (MIL-STD-810) • Salt Fog Test (MIL-STD-810) • Dust Test (MIL-STD-810) • Vibration Test (MIL-STD-810) • Functional Shock Test (MIL-STD-810) • Transmissibility Test (MIL-STD-1472G) • Fungus Test (MIL-STD-810) (*) • Flammability Test (FAR 25) (*) • Solar Radiation Test (MIL-STD-810) (*)

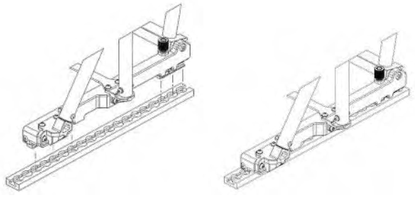
CRASHWORTHY TROOP SEATS
for TA T625 GOKBEY

T-MAK crashworthy seats absorb ground impact energy by stroking downward relative to the aircraft floor at a load which is preset to approach the upper limit of human spinal compressive tolerance.

- Total weight 8.9 kg, including harness.
- Ceiling and floor mounting: MS 33601 rails
- Tested according to MIL-S-85510.
- Gives protection from the 5th percentile female to 95th percentile male.
- NOT affected from temperature changes. (-40°C to +60°C)
- NO maintenance required.
- Compact structure saves space at the back of the seat.
- Efficiently used stroking distance saves space under the seat.
- The seats meet the standard MIL-STD-1472G
- Fire retardant fabric.
- 5 point static restraint.
- Simple and quick installation, no tools required.
- The lower connection of the seat system has a 4 inch telescopic structure to enable the assembly of the seat to the platform and compensate floor deformation during crash.
- The seat also compensates additional 1.75 inches of helicopter fuselage expansion during takeoff.
- Qualified for Fore Facing and Side Facing orientations.

TROOP SEAT / FORE AND SIDE FACING / GOKBEY U.H.
Dynamic Tests
• Fore Facing Combined Vertical Dynamic (Test 1) (MIL-S-85510) • Fore Facing Combined Horizontal Dynamic (Test 2) (MIL-S-85510) • Side Facing Combined Vertical Dynamic (Test 1) (MIL-S-85510) • Side Facing Combined Horizontal Dynamic (Test 2) (MIL-S-85510)
Static Tests
• Fore Facing Upward Static Test (MIL-S-85510) • Fore Facing Aftward Static Test (MIL-S-85510) • Side Facing Upward Static Test (MIL-S-85510) (*) • Side Facing Aftward Static Test (MIL-S-85510)
Additional Dynamic Tests
• Fore Facing Pure Vertical Dynamic Test (MIL-S-85510) • Fore Facing Pure Lateral Dynamic Test (MIL-S-85510) (*) • Fore Facing Pure Horizontal Dynamic Test (MIL-S-85510) • Side Facing Pure Vertical Dynamic Test (MIL-S-85510) (*) • Side Facing Pure Lateral Dynamic Test (MIL-S-85510) (*) • Side Facing Pure Horizontal Dynamic Test (MIL-S-85510)
Environmental Tests
• Operating Temperature Test (MIL-STD-810) (*) • Non-Operating Temperature Tests (MIL-STD-810) (*) • Humidity Test (MIL-STD-810) (*) • Salt Fog Test (MIL-STD-810) (*) • Dust Test (MIL-STD-810) (*) • Vibration Test (MIL-STD-810) • Functional Shock Test (MIL-STD-810) • Transmissibility Test (MIL-STD-1472G) • Fungus Test (MIL-STD-810) (*) • Flammability Test (FAR 25) (*) • Solar Radiation Test (MIL-STD-810)

CRASHWORTHY ARMORED CREW SEATS
for TA T625 GOKBEY

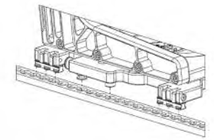


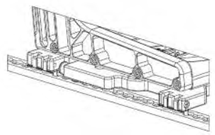
T-MAK crashworthy seats absorb ground impact vertical energy by stroking downward relative to the aircraft floor at a load which is preset to approach the upper limit of human spinal compressive tolerance.

- Total weight 42.5kg, including armored bucket
- 5 point retractable restraint system with lock/autolock feature.
- Mounted to floor by MS33601 standard rails.
- 5 inches vertical, 5 inches horizontal adjustment
- Backwards swivel (for pilot unconscious conditions)
- Padded Headrest
- Armored wing panels (optional)
- Gives protection from the 5th percentile female to 95th percentile male
- NOT affected from temperature changes. (-40°C to +60°C)
- NO maintenance required
- Compact structure saves space at the back of the seat
- Efficiently used stroking distance saves space under the seat
- Meets MIL-STD-810 environmental testing requirements
- The seats meet the standard MIL-STD-1472G
- Fire retardant fabric / Fire retardant cushions
- Simple and quick installation, no tools required
- Tested according to MIL-S-58095 / NATO Stanag 3950

ARMORED CREW SEAT / FORE FACING / GOKBEY U.H.
Dynamic Tests
• Combined Vertical Dynamic (Test 1) (NATO STANAG 3950) • Combined Horizontal Dynamic (Test 2) (NATO STANAG 3950) • Pure Vertical Dynamic (Test 3) (NATO STANAG 3950) • Pure Vertical Dynamic (Test 4) (NATO STANAG 3950)
Static Tests
• Upward Static Test (NATO STANAG 3950) • Downward Static Test (NATO STANAG 3950) • Forward Static Test (NATO STANAG 3950) • Aftward Static Test (NATO STANAG 3950) • Lateral Static Test (NATO STANAG 3950) • Combined Static Test (NATO STANAG 3950)
Environmental Tests
• Operating Temperature Test (MIL-STD-810G) • Non-Operating Temperature Tests (MIL-STD-810G) • Humidity Test (MIL-STD-810G) • Salt Fog Test (MIL-STD-810G) • Dust Test (MIL-STD-810G) • Fungus Test (MIL-STD-810G) • Vibration Test (MIL-STD-810G) • Functional Shock Test (MIL-STD-810G) • Transmissibility Test (MIL-STD-1472G) • Fire & Flammability Test (FAR 25) • Solar Radiation Test (MIL-STD-810G) • Ballistic Tests (MIL-STD-662F)

CRASHWORTHY OPERATOR SEATS
for BOMBARDIER 6000



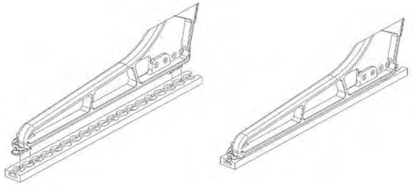


- Total weight is 30 kg.
- Forward / backward adjustable by 100 mm.
- Height adjustable 175 mm.
- Backrest tilt adjustment is between 10°- 35°.
- Rotary adjustment full circle, 360° in 30° steps.
- Adjustable and foldable arm support is available on both sides of the seat.
- Headrest is removable and height adjustable.
- The seat will be connected to the floor with “MS/AS 33601 Heavy Duty Rails”.
- 5 point retractable restraint system with lock/autolock feature.
- Tested in accordance with the requirements of FAR 25.561 and FAR 25.562.
- Fire retardant fabric / Fire retardant cushions

OPERATOR SEAT / FORE AND AFT FACING / BOMBARDIER GLOBAL 6000
Dynamic Tests
• Fore Facing Combined Vertical Dynamic (Test 1) (FAR/CS-25) • Fore Facing Combined Horizontal Dynamic (Test 2) (FAR/CS-25) • Aft Facing Combined Vertical Dynamic (Test 1) (FAR/CS-25) • Aft Facing Combined Horizontal Dynamic (Test 2) (FAR/CS-25)
Static Tests
• Fore Facing Upward Static Test (FAR/CS-25) • Fore Facing Downward Static Test (FAR/CS-25) • Fore Facing Forward Static Test (FAR/CS-25) • Fore Facing Aftward Static Test (FAR/CS-25) (*) • Fore Facing Lateral Static Test (FAR/CS-25) • Aft Facing Upward Static Test (FAR/CS-25) (*) • Aft Facing Downward Static Test (FAR/CS-25) (*) • Aft Facing Forward Static Test (FAR/CS-25) • Aft Facing Aftward Static Test (FAR/CS-25) (*) • Aft Facing Lateral Static Test (FAR/CS-25) (*)
Environmental Tests
• Fire & Flammability Part I – II Tests (FAR/CS-25) • Vibration Test (DO-160G) • Operational Shock Test (DO-160G)

CRASHWORTHY PILOT SEATS
for TA T625 GOKBEY

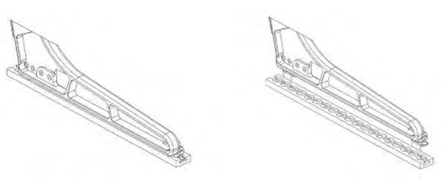
- 5 inches up/down and 3 inches forward/backward seat adjustment stroke.
- Mounted to floor by MS33601 standard rails.
- The total weight of one pilot/copilot seat is 12 kg maximum.
- 5 point retractable restraint system with lock/autolock feature.
- Tested according to the requirements of EASA CS 29.
- Fire retardant fabric / Fire retardant cushions



CIVIL PILOT-COPILOT SEAT / GOKBEY U.H.
Dynamic Tests
• Combined Vertical Dynamic (Test 1) (CS-29) • Combined Horizontal Dynamic (Test 2) (CS-29)
Static Tests
• Upward Static Test (CS-29) • Downward Static Test (CS-29) • Forward Static Test (CS-29) • Aftward Static Test (CS-29) • Lateral Static Test (CS-29)
Environmental Tests
• Temperature Test (DO-160G) • Temperature Variation Test (DO-160G) • Humidity Test (DO-160G) • Operational Shock Test (DO-160G) • Vibration Test (DO-160G) • Sand & Dust Test (DO-160G) • Fungus Test (DO-160G) • Salt Fog Test (DO-160G) • Solar Radiation Test (MIL-STD-810G) • Fire & Flammability Tests (DO-160G)

CRASHWORTHY PASSENGER SEATS
for TA T625 GOKBEY

- Floor mounting via laterally mounted MS33601 standard rails.
- The total weight is 10 kg maximum.
- Interchangeable among the seat classes to achieve standardization.
- 5 point or 4 point static restraint system.
- Tested according to the requirements of EASA CS 29.
- Fire retardant fabric / Fire retardant cushions



CIVIL PASSENGER SEAT / FORE AND AFT FACING / GOKBEY U.H.
Dynamic Tests
• Fore Facing Combined Vertical Dynamic (Test 1) (CS-29) • Fore Facing Combined Horizontal Dynamic (Test 2) (CS-29) • Aft Facing Combined Vertical Dynamic (Test 1) (CS-29) • Aft Facing Combined Horizontal Dynamic (Test 2) (CS-29)
Static Tests
• Fore Facing Upward Static Test (CS-29) • Fore Facing Downward Static Test (CS-29) • Fore Facing Forward Static Test (CS-29) • Fore Facing Aftward Static Test (CS-29) (*) • Fore Facing Lateral Static Test (CS-29) • Aft Facing Upward Static Test (CS-29) (*) • Aft Facing Downward Static Test (CS-29) (*) • Aft Facing Forward Static Test (CS-29) • Aft Facing Aftward Static Test (CS-29) (*) • Aft Facing Lateral Static Test (CS-29) (*)
Environmental Tests
• Temperature Test (DO-160G) • Temperature Variation Test (DO-160G) (*) • Humidity Test (DO-160G) • Operational Shock Test (DO-160G) • Vibration Test (DO-160G) • Sand & Dust Test (DO-160G) (*) • Fungus Test (DO-160G) • Salt Fog Test (DO-160G) • Solar Radiation Test (MIL-STD-810G) (*) • Fire & Flammability Tests (DO-160G)

T-MAK

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