Maximum Manoeuvrability.

German Engineering with Passion.

- Electrically powered
- Radio remotely controlled
- Loads and unloads the nosewheel automatically with one click on the remote
- Only 1 person required for operation
- Flexible use for all aircraft up to 195 tonnes
- Extreme low height
- Park your aircraft using the last corner of your hangar and save space

The safest and most effective way of moving aircraft towbarless.

Electrify your Ground Handling.

Towing capacity up to 195 t
(429.900 lbs)

mototok® easy moving

3167 / 09-2015

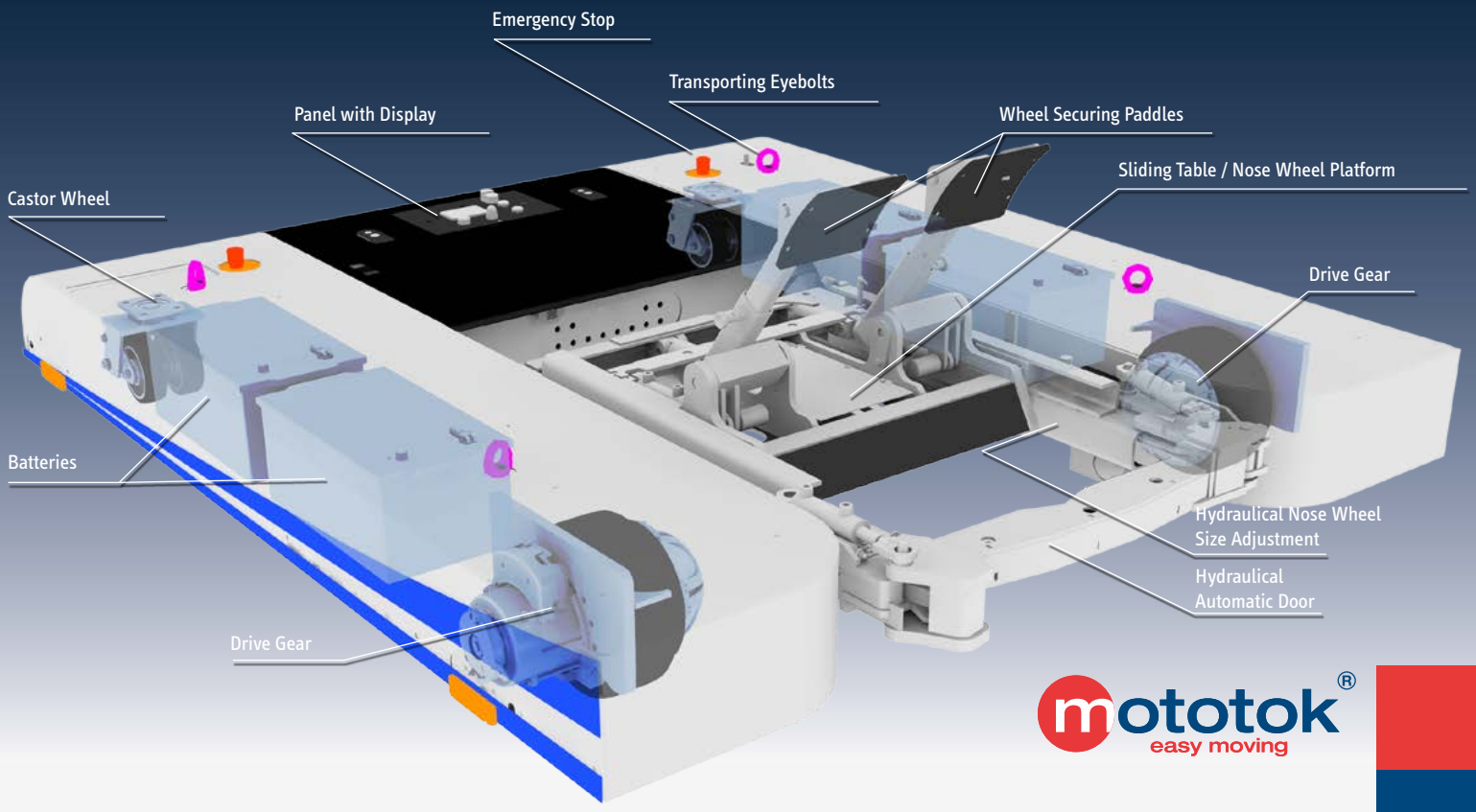
mototok – the high-tech wireless remote controlled aircraft and helicopter tug.

Not a vision, but reality. The revolution is here when it comes to maneuvering aircraft and helicopter. A big idea in a small format! Name: mototok. Distinguishing features: Revolutionary in its simplicity. Extremely compact. Uniquely flexible. And very high performance.

- mototok has high-tech radio remote control with worldwide safety approval for airports.
- mototok provides the optimum balance between minimal dimensions and maximum effect!
- mototok enables the movement of the aircraft to be controlled at every conceivable collision point around the aircraft.
- mototok can be used for almost all aircraft within seconds and without conversion.

Extremely powerful electric motors driven by high-performance, maintenance-free batteries with high cycling capability, regulated and controlled by two high-performance microprocessors provide enormous driving forces. Extremely high initial torque ensures smooth acceleration, particularly at the start. Storage capacity is sufficient for several days, depending on workload. Separate ground-power equipment is often not necessary as most mototok tugs have 12 V or 24/28 V ground-power connection.

Only mototok appliances are capable of manoevering an aircraft's nose a few millimetres away from a hangar wall, and obove all, quickly and effieciently prepare all other aircraft in the hangar for their next duties. Whether in forward or reverse motion, mototok will always manage to create up to 40% more space inside the hangar.



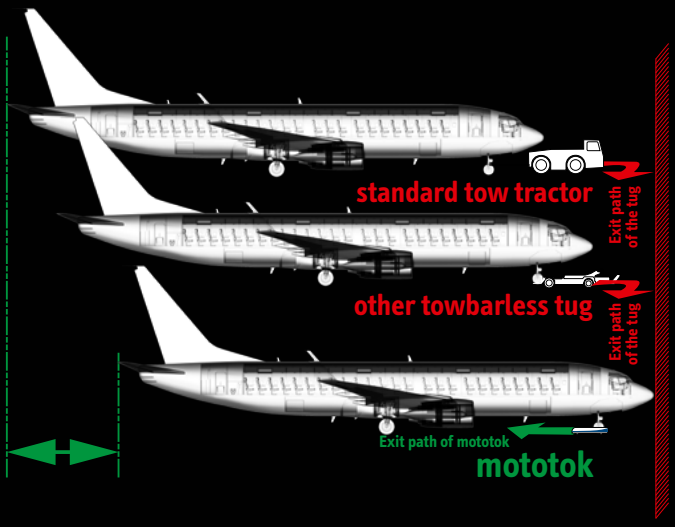
mototok® easy moving

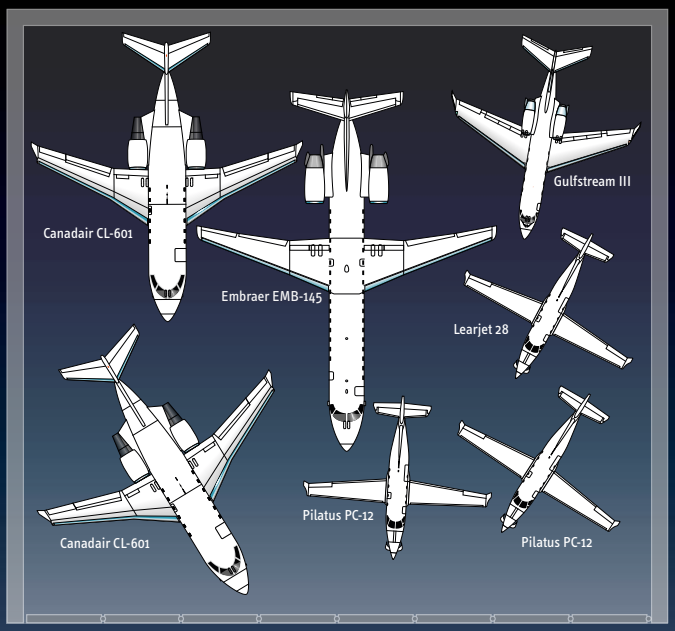
Only mototok generates up to 40% more space in your hangar.

mototok excels in tight situations: Park your aircraft safely, easily and effectively where you want: In the hangars corner, directly towards the hangars wall or near by other aircraft in the hangar. Save space in the process – depending on your hangar situation up to 40%.

Operating with normal tugs with or without a towbar is intricate. Turning the nose wheel whilst maneuvering without moving the aircraft is impossible. And you have to consider the exit path of the tug. Thus parking the aircraft with old technology is unprofitable. You are not able to use your hangars full capacity.

The low height, the compact design and the radio remote control of mototok tugs gives you the fully control of the hangars space. It saves costs through optimized use of limited space.



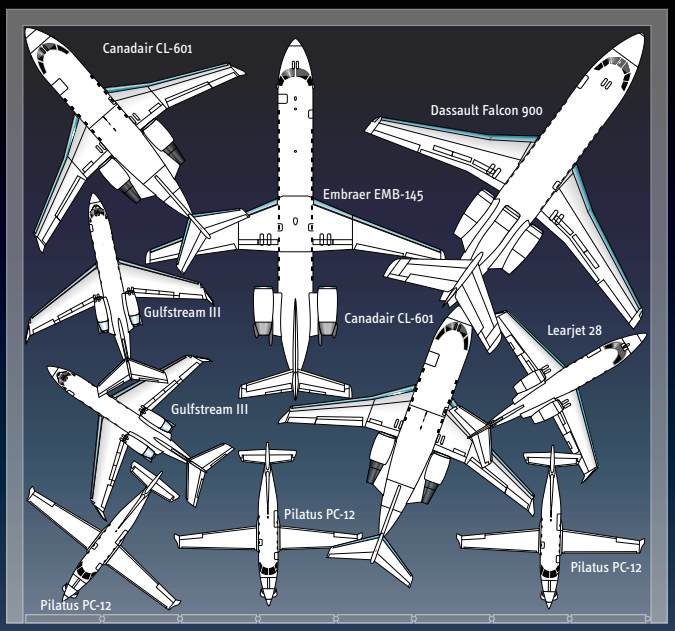


Typically situation in a hangar – managed with a conventional tow tractor. The biggest disadvantages are:

— All aircraft faces to the hangars gate because you have to consider the exit path of the tow tractor. Parking directly in a hangars corner is impossible.

— The distance between the aircraft has to be acceptably big. Maneuvering with a tow tractor means you have to move the machine to turn the nose wheel. Turning the nose wheel without moving the aircraft is impossible!

You are not able to use your hangars full capacity!



Same hangar with electric wireless remote controlled mototok aircraft tug:

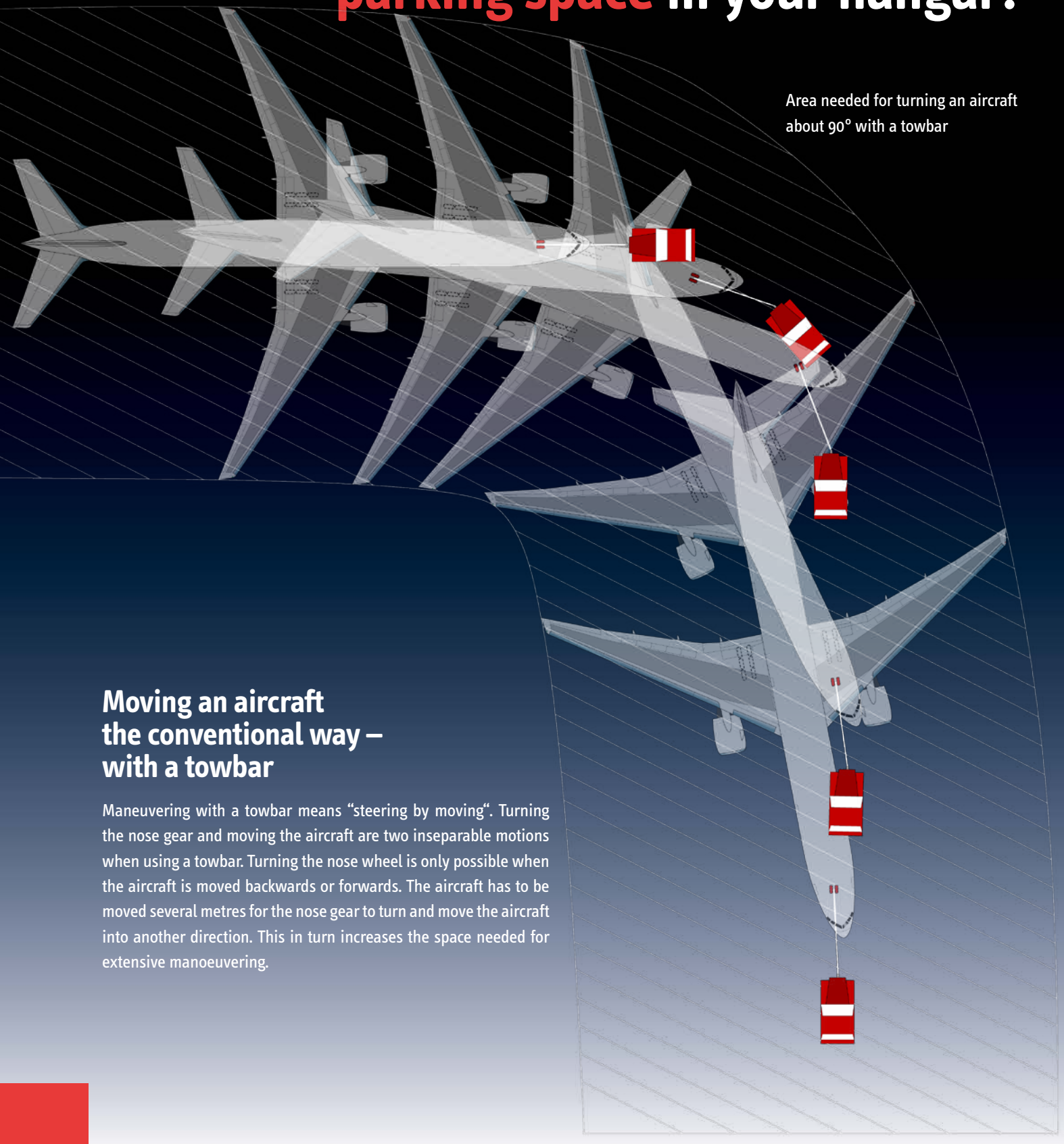
+ Park your aircraft directly towards a wall or in the hangars corner. You don't have to consider the exit path of mototok due to mototoks very compact design.

+ „Stack“ aircraft – park your aircraft with extreme minimal distance. Mototok turns the nose wheel on the spot with no movement of the aircrafts fuselage or wingtips. Maneuvering in extreme narrow situations is from now on no problem.

Increase the capacity of your hangar up to 40% by optimizing parking space!

mototok® easy moving

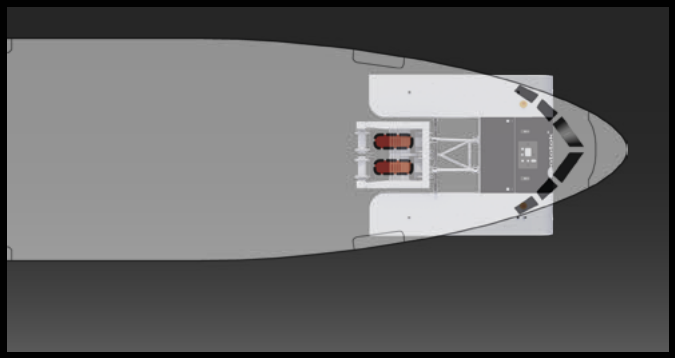
Why does mototok saves parking space in your hangar?

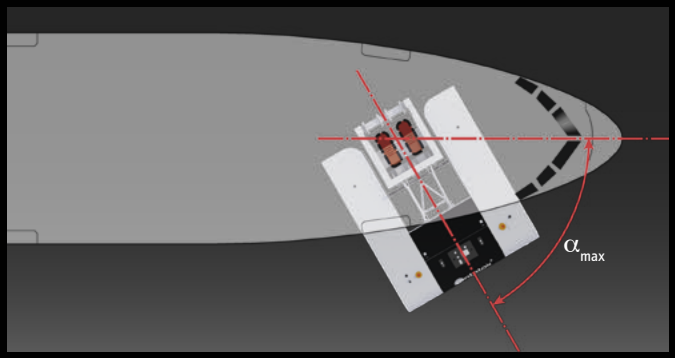


Area needed for turning an aircraft about 90° with a towbar

Moving an aircraft the conventional way – with a towbar

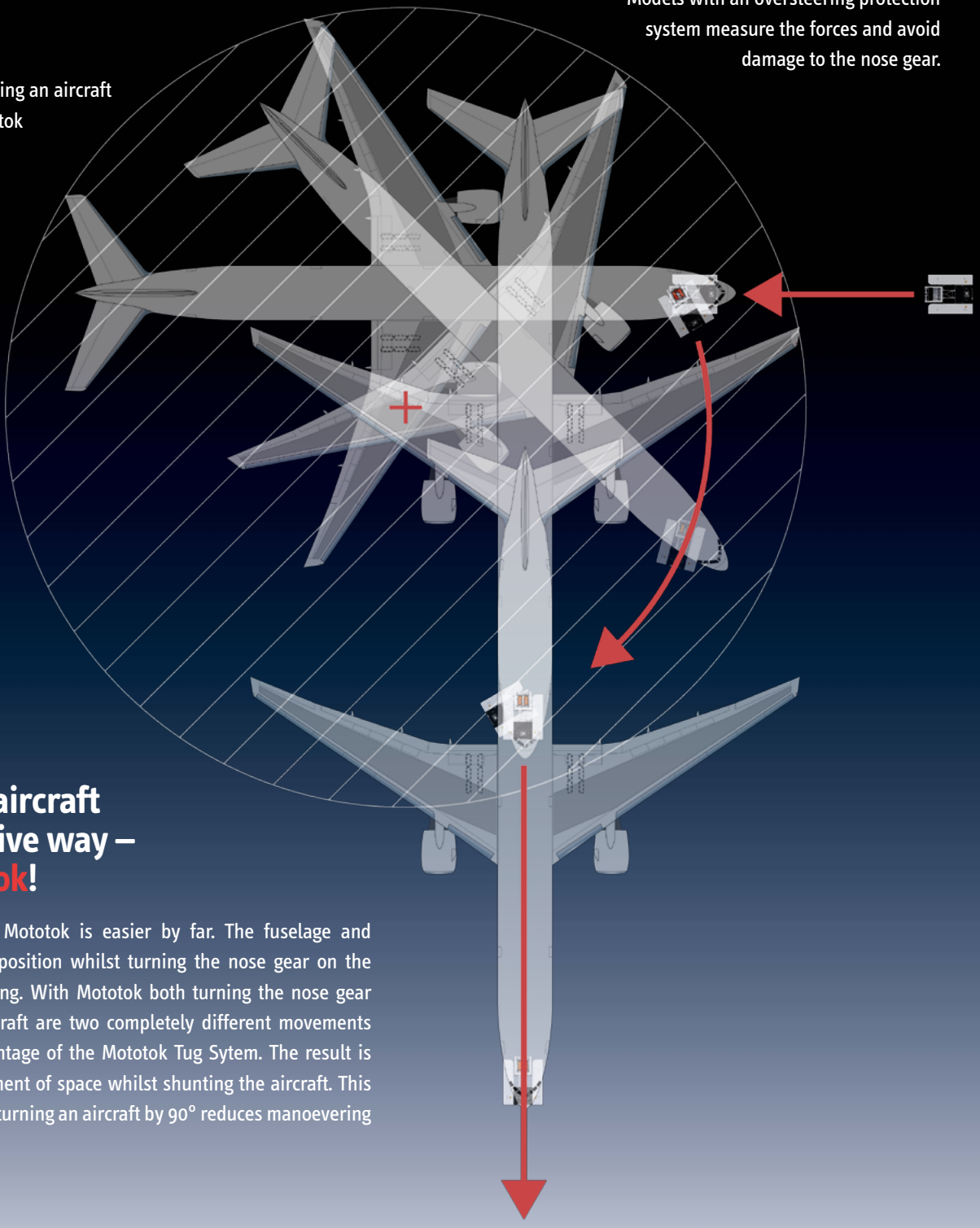
Maneuvering with a towbar means “steering by moving“. Turning the nose gear and moving the aircraft are two inseparable motions when using a towbar. Turning the nose wheel is only possible when the aircraft is moved backwards or forwards. The aircraft has to be moved several metres for the nose gear to turn and move the aircraft into another direction. This in turn increases the space needed for extensive manoeuvering.





Models with an oversteering protection system measure the forces and avoid damage to the nose gear.

Area needed for turning an aircraft about 90° with mototok



Moving an aircraft the innovative way – with mototok!

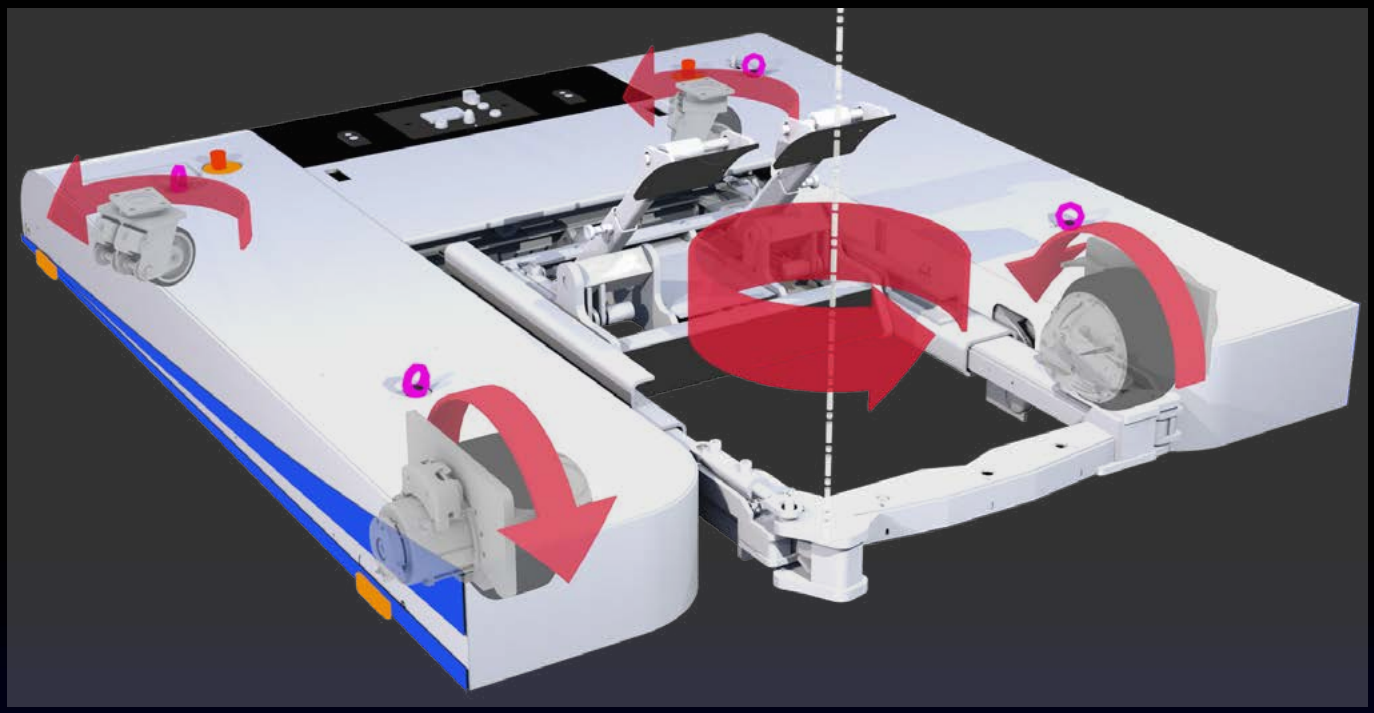
Manouevering with Mototok is easier by far. The fuselage and wingtips remain in position whilst turning the nose gear on the spot for manoeuvering. With Mototok both turning the nose gear and moving the aircraft are two completely different movements – the deciding advantage of the Mototok Tug Sytem. The result is a minimum requirement of space whilst shunting the aircraft. This example shows that turning an aircraft by 90° reduces manoevering space to a circle.

mototok® easy moving

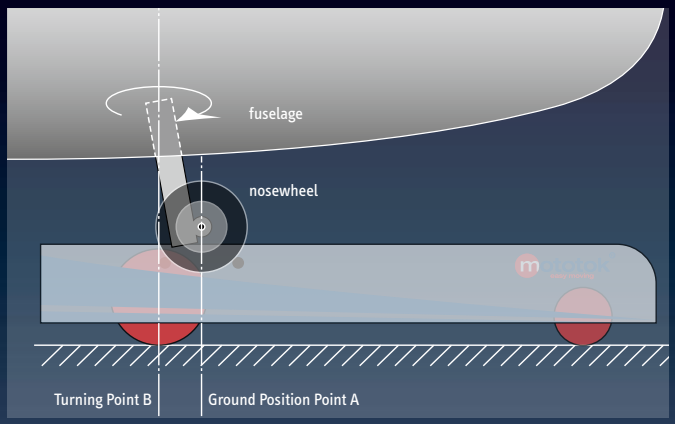
Turning on the spot with no wingtip movement.

The mototok principle.

Learn more:
www.mototok.com/turn

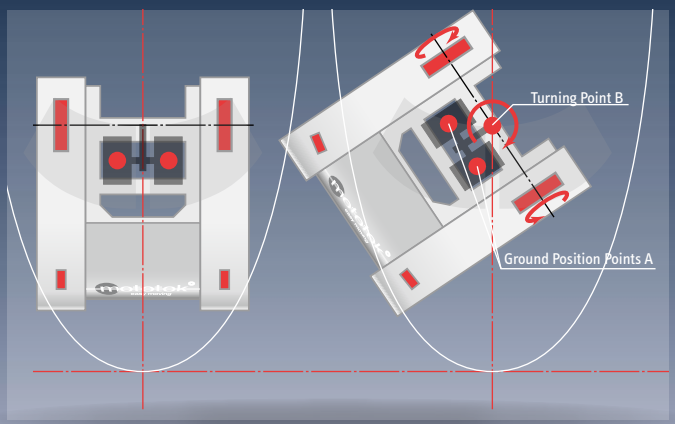


A nosewheel is basically offset in order to remain safely on track during take-off and landing. Due to this, ground position point A is not identical with construction related axis B on the landing gear.

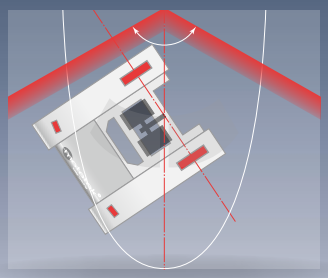


mototok is intelligent. The steering of a mototok is performed through different rotating speed of both processor-controlled wheel-hub motors. A perfect turn on the spot is naturally no problem: one motor rotates forwards, the other backwards. Both motors recognise rotational resistance and carry out a precise turning manoevre around axis B on landing gear. The aircraft remains almost immovable from its location during the turn. Therefore, accidents through collisions are practically out of the question. Additionally, transverse forces are not inflicted upon the nosewheel and landing gear hence no damgage will be caused to the bearings and other landing gear related components.

According to the relative rotation speed of both driving wheels every route can be performed.



With mototok, a shearing off of the nose wheel stop whilst turned around its axis is impossible because the adjustable electronic torque control effectively prevents this.



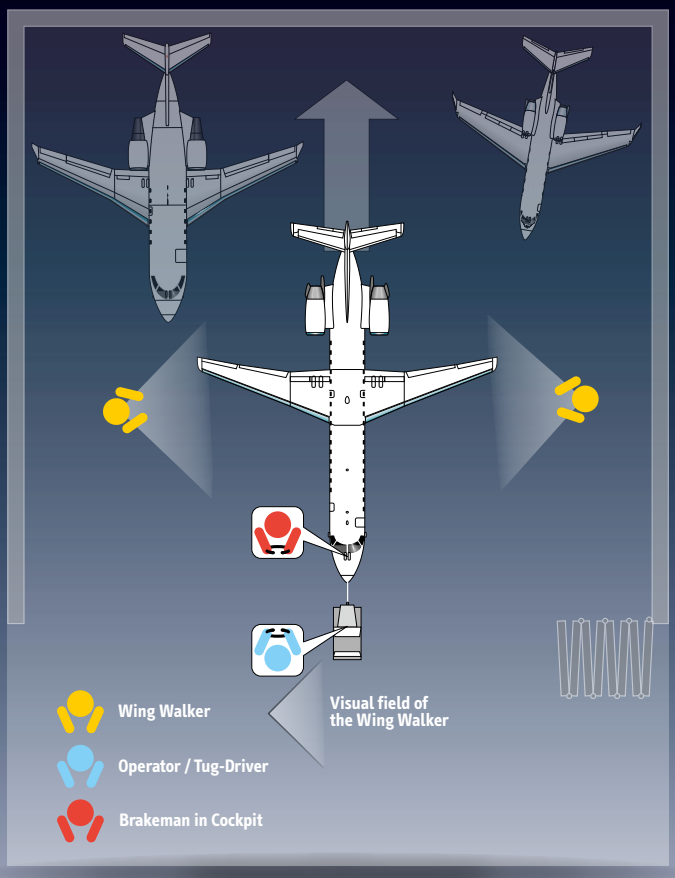
mototok® easy moving

More advantages of using an electric driven mototok-tug.

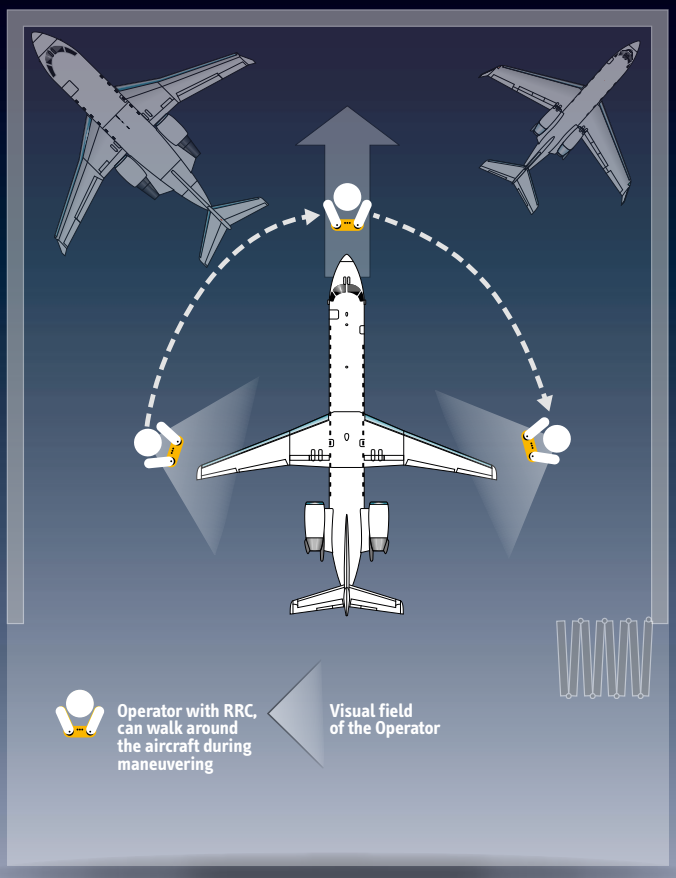
Cost effective.

- Low personnel costs by means of wireless transmission control – the operator is essentially a “wing walker” himself.
- Increases the number of aircrafts in your Hangar.
- No driving licence required.
- Extremely low maintenance costs, no maintenance plan necessary.

Towing with a conventional Tractor:
At least 4 Persons needed



Circumferential view – only one person with a radio remote control (RRC) needed for moving the aircraft

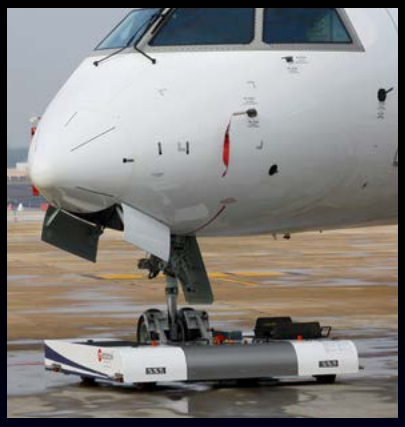


Safe.

- Hydraulic fixation of the nose wheel.
- Fully programmable speeds, braking curves, initial torques and over steering protection – Controlled and regulated by internal microprocessor.
- Gentle treatment of the landing gear with a built in hydro-pneumatic system.
- 100 % circumferential visual control around the aircraft. No knocks. No collisions. Optimum use of limited space!

Flexible.

- Maneuver a wide range of aircraft with the same mototok-model – ONE MACHINE for all corporate aircraft single or double nose wheel including helicopters.
- Connect the aircraft from the front or the rear.
- Hydraulic nose wheel adjustment – for different nose wheel diameters.

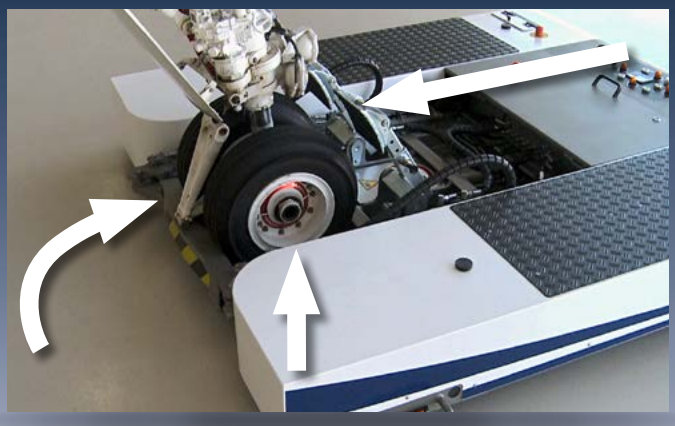


Automatic One-Click Loading. As simple as pressing a button.

Easy-to-use.

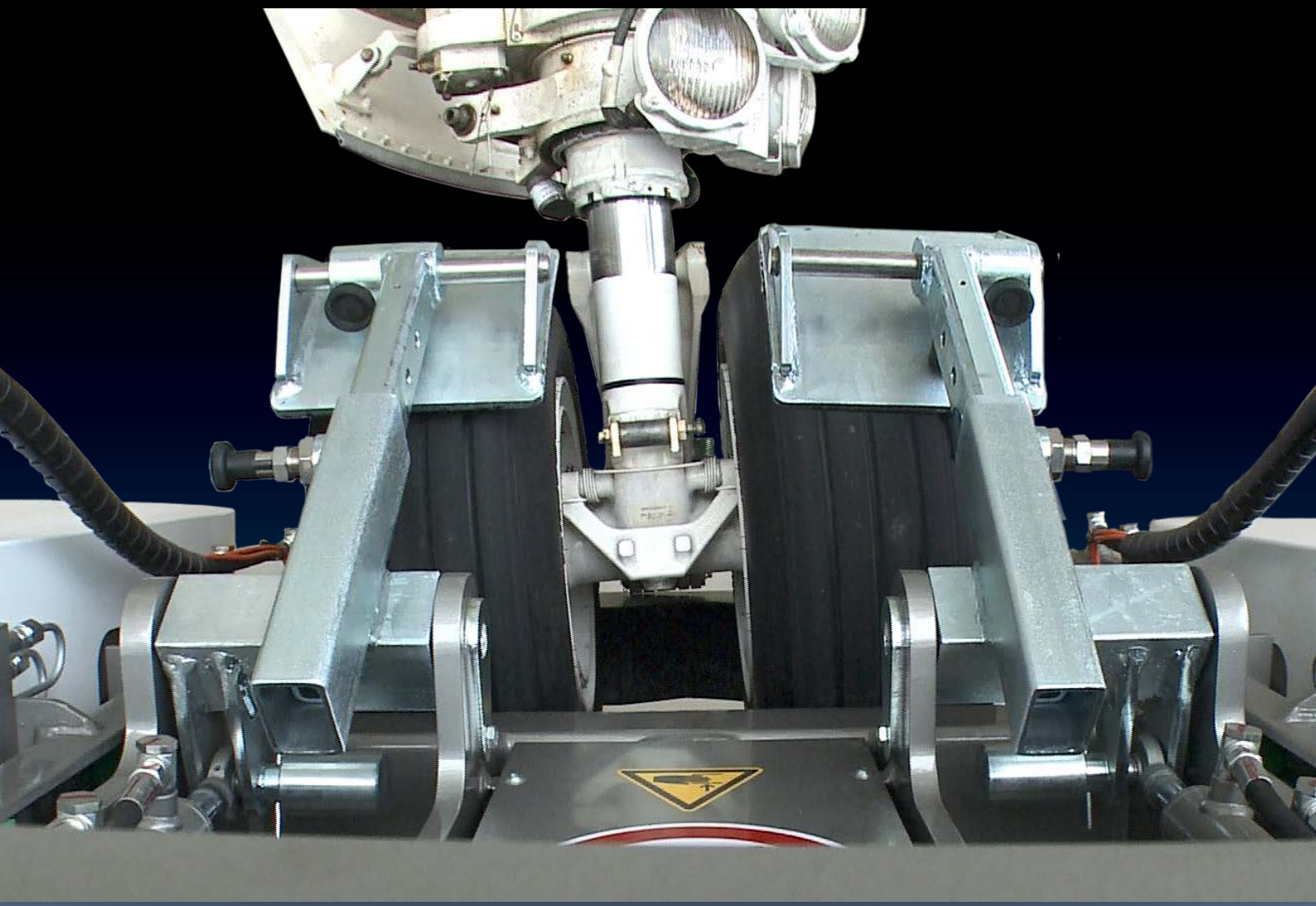
Docking takes a matter of seconds from the rear or front of the nose wheel. Simply drive the mototok up to the nose wheel. The wheel is then hydraulically fixed firmly in position and raised – ready for take off! All this with no awkward strap, no inconvenient winch. No bolts or tools are required.

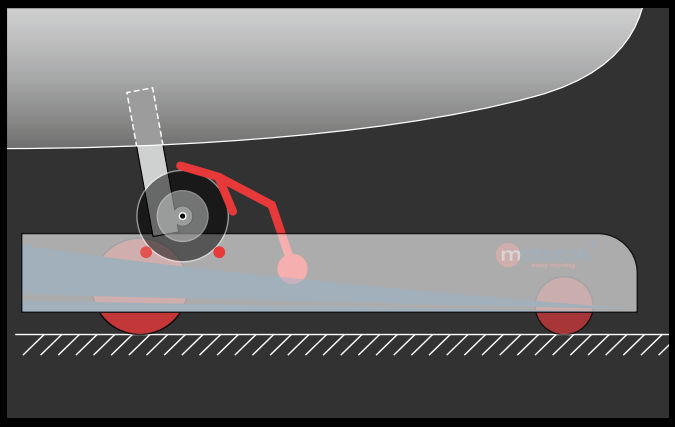
- Radio remote controlled operating under an industrial frequency code approved for airports.
- Automatic connection to the aircraft's nose wheel with one click.
- No straps, no winch, no tools required.



Learn more:
www.mototok.com/autoload

Hydraulical and gentle Clamping of the Nose Wheel: Safety first.



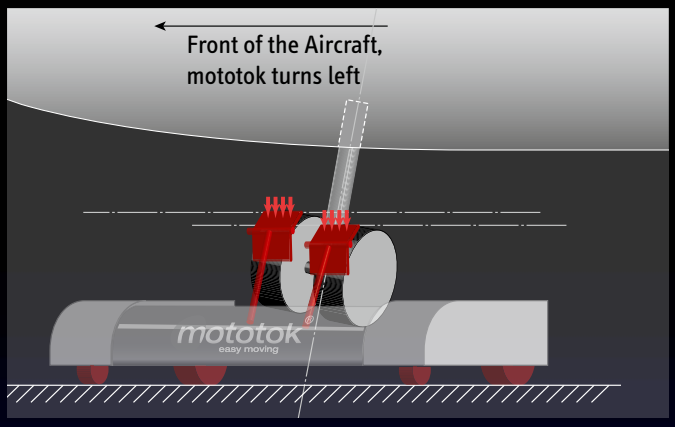


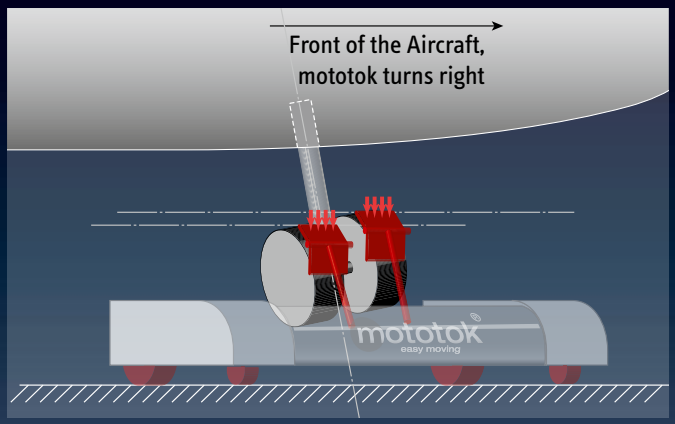
When the nosewheel is raised it is secured by means of the hydro-pneumatically operated wheel securing system.

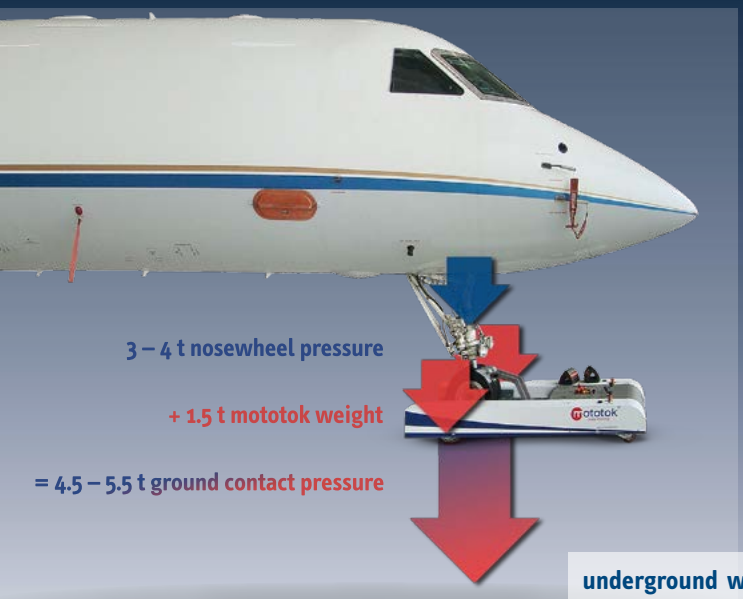
The nosewheels tilt on account of offset nosewheel gear mechanism and are also kept in a fixed tilted position under constant ground contact pressure provided by the hydro-pneumatic system of the model M-Series and TWIN.

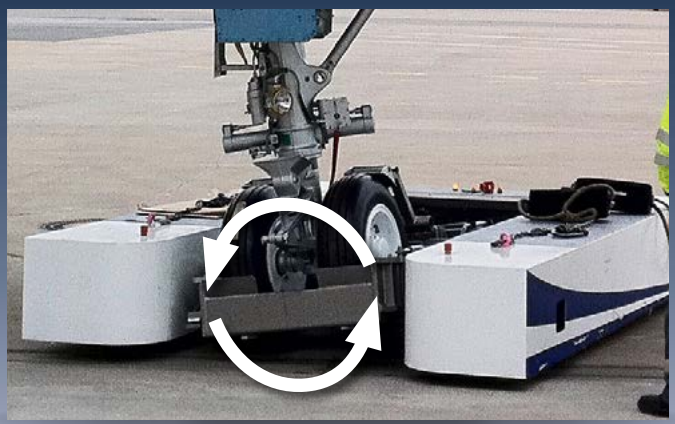
The nosegear platform of the Model SPACER is gimbal-mounted with three hydraulic cylinders. This compensates the tilted position whilst turning the nosegear.

The nose wheel pressure is positioned exactly between the two drive wheels of mototok. So the resulted ground contact pressure is very high. A very high ground contact pressure ratio in relation to the total aircraft weight is attained due to the fact that the driving wheels are 100mm wide. Under these circumstances, mototok can be operated without any problems in rain, snow or on ice.





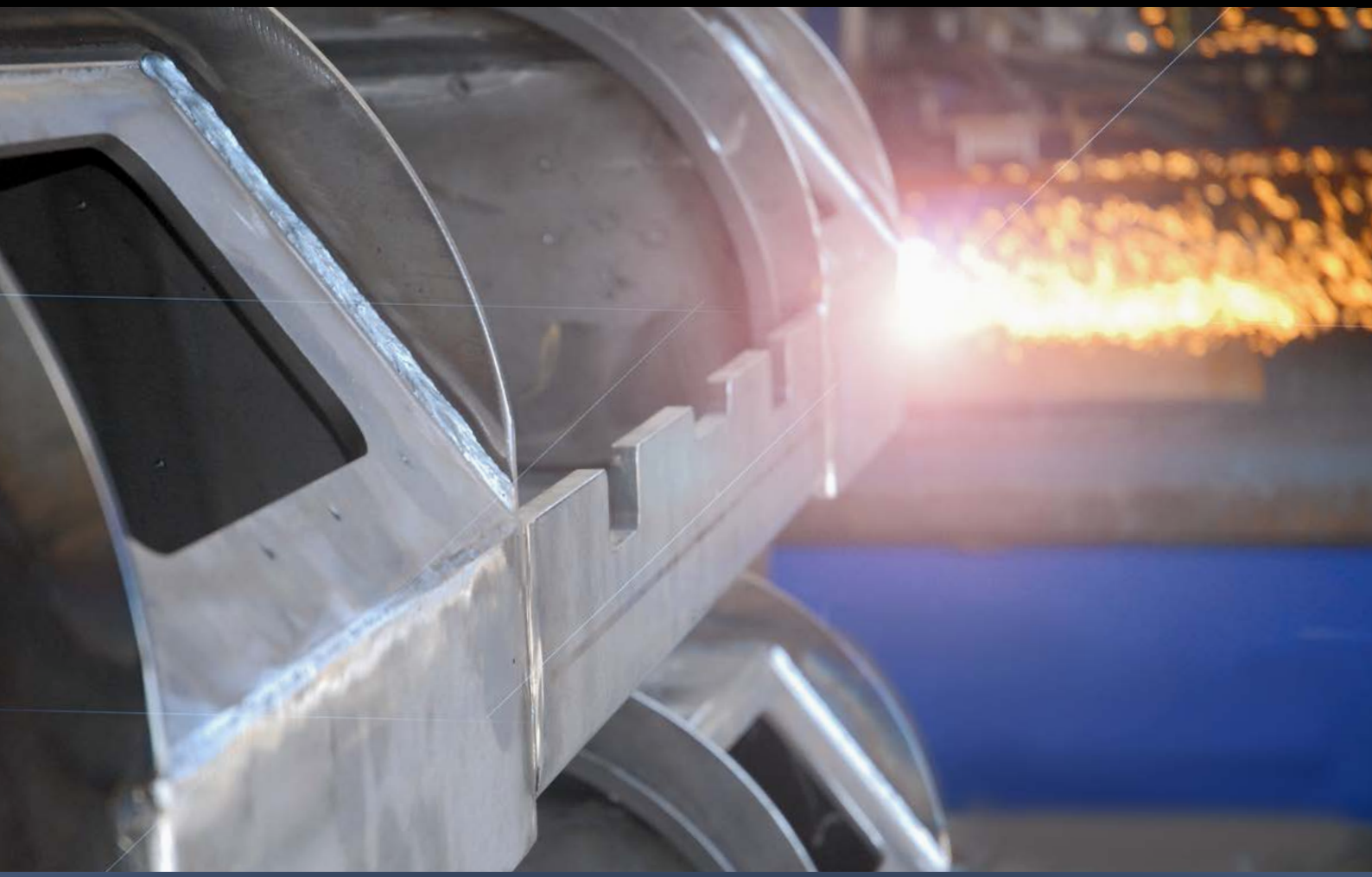




underground wet	++++
snowy	+++
icy	++

mototok® easy moving

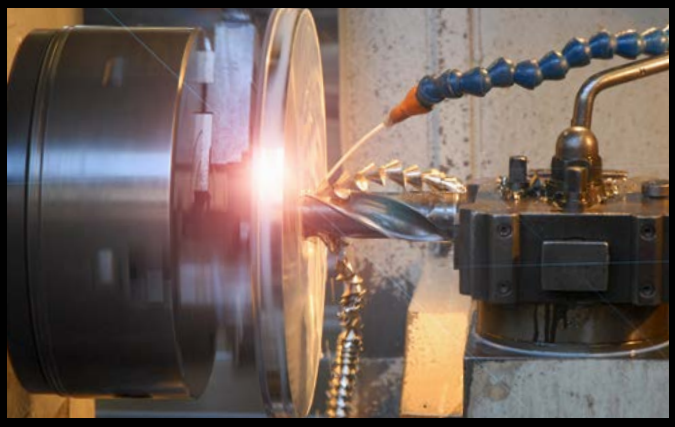
Working with fire and steel:
The mototok production process.

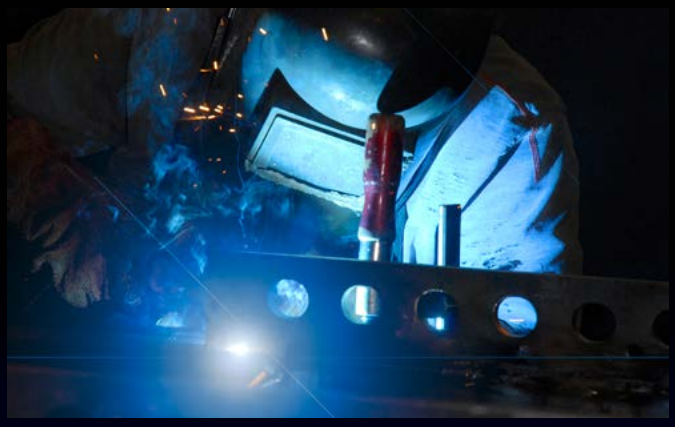


Our innovative built to last aircraft tractors are best equipped for daily heavy use as they consist of high-grade material, hand-picked components according to the finest engineering designs. Our products are capable of withstanding the toughest conditions when exposed to wind and salt water. Thanks to a selection of the finest materials, only limited maintenance is necessary.

Our production process corresponds and applies to all necessary demands and conditions required in the engineering industry.

DIN 18800, DIN 15018, DIN 4112, DIN EN 15614-1, EN 287-1	Certificate of Welding
EN 12895	Immunity requiremts
EN 61000-4-2	Eletrostatic discharge
EN 61000-4-3	Radio-frequency electromagnetic field
DIN 4112, DIN 18800, DIN15018, DIN 4132, DIN 1055	Statics Calculation
DIN EN 10025, DIN 1543, DIN 1013, DIN 17210, DIN 10149-2	Material Steel
2006/42/EC	Machinery Directive (European Community Legislation)
2004/108/EC	EMC Directive (European Community Legislation)
EN 292-1	Safety of Machinery – Basic Terminology, Methodology
EN 292-2	Safety of Machinery – Technical Principles and Specific:ations
EN 418	Safety of Machinery – Emergency Stop Equipment, Functional Aspects
EN 954-1	Safety of Machinery – Safety-Related Parts of Control Systems
EN 95/16/EG	Safety of Machinery – May, 17th 2006
EN 1050	Safety of Machinery – Principles for Risk Assessment
EN 60 204-1	Safety of Machinery – Electrical Equipment of Machines
EN 60 529	Degrees of Protection Provided by an Enclosure
EN 1175-1	Safety of industrial trucks – Electrical requirements for battery powered trucks
EN 13849-1 PL 1 EN	Safety of Machinery – Safety-related parts of control systems
EN 1915	Aircraft ground support equipment – Basic safety requirements
PrEN 12312-7	Aircraft ground support equipment – Aircraft movement equipment
EN 51 000-6-4 (SAE J551 expired code equivalent)	Radiated Electromagnetic Emissions (3rd party tested/certified)



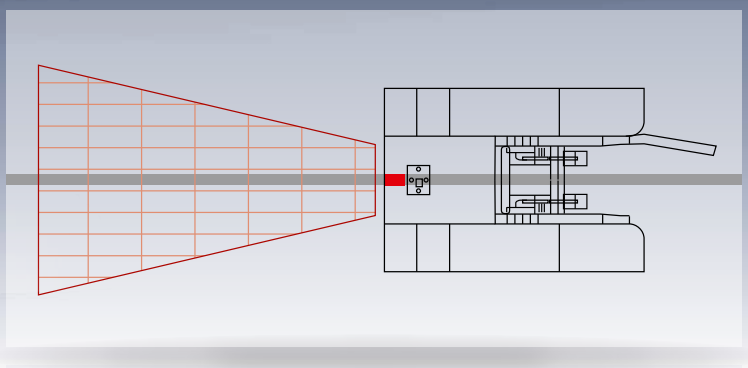


mototok® easy moving

AGV
OPTION
AUTOMATIC GUIDED VEHICLE

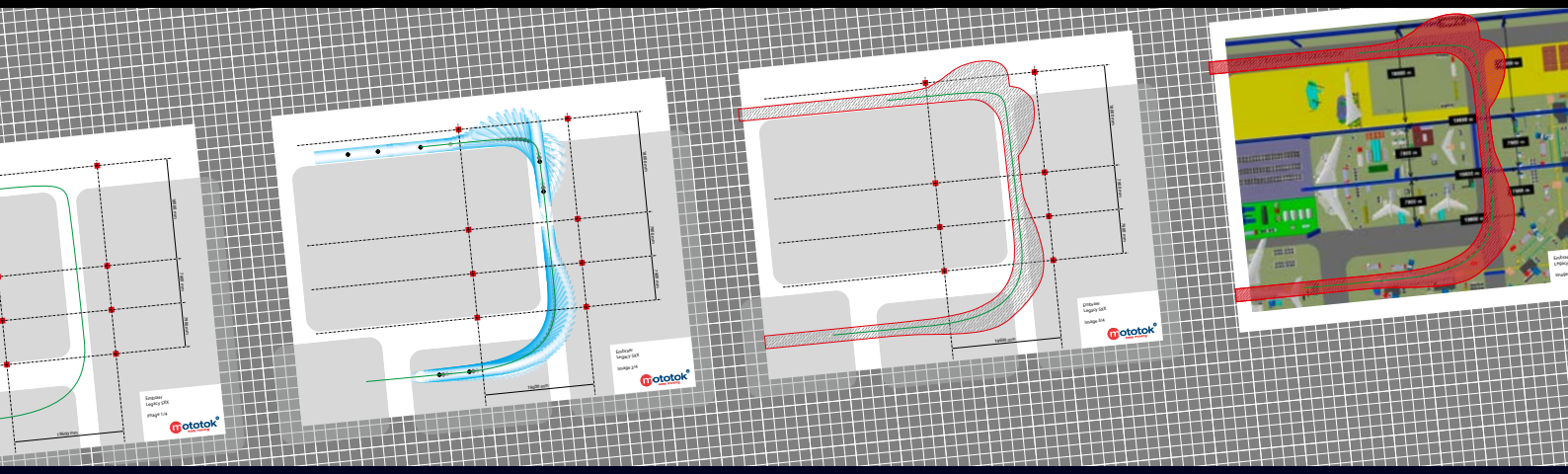
Automatic, camera-guided steering control along track lines installed on the floor.

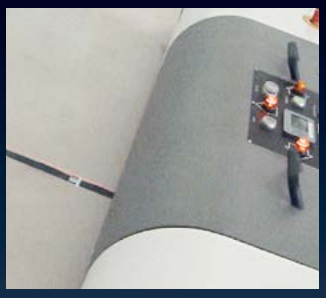
The principle: A camera continuously scans the floor below the mototok. A solid line of defined width is recognized as the guiding line. Next the camera recognises the position and curvature of the guiding line to within 3 mm and when there is a variation in parallelism it reacts with control signals that are led to the drive wheels. By means of different rpms of the two drive wheels, steering is then initiated – mototok follows the line.



Learn more:
www.mototok.com/agv

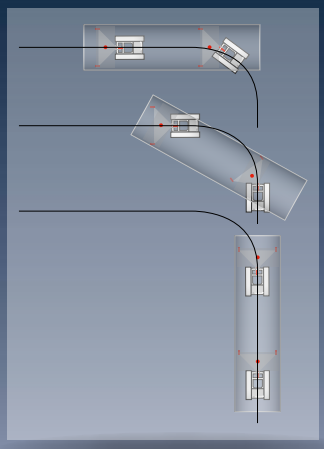
Steering of the greatest precision, placement of the highest accuracy, safety of the highest degree.





Bar codes on the floor make automatic steering of a mototok possible, e.g. if there is a junction, a change in speed or a stop.

On production lines during aircraft manufacture, mototok is a versatile tool that can be used with great flexibility. During assembly, mototok automatically moves the aircraft fuselage to the individual assembly points. In very space-restricted production environments, two synchronized mototoks may also be used, as shown in this example of a production hall design. In addition, we work together with you to develop the optimal path through your hall.



mototok® easy moving

Pushback

Towing capacity up to 95 t / 195 t (210,000 lbs / 430,000 lbs)

SPACER.

SPACER – for large Aircraft.

- Towing capacity up to 95 or 195 t
- Gimbal-mounted nosegear platform with three hydraulic cylinders for compensating the tilt of the nose gear whilst turning
- Electronic torque control for safely and gently turning the nose gear
- Oversteering protection system
- Automatic nose gear engaging function
- For aircraft with a wheel diameter between 450 and 1200 mm
- NTO license for 737's and 320-family

Learn more:
www.mototok.com/spacer

Makes electrical maneuvering up to 195 tons easy.

	SPACER 8600	SPACER 195
applicable for		
Max. towing capacity	95 tons 209440 lbs	195 tons 429900 lbs
Use for	Narrow Body (e.g. A 320-Family, Boeing 737-Family)	Wide Body (e.g. A 300-Family, A 310-Family)
		Narrow Body (e.g. A 320-Family, Boeing 737-Family)
	Regional Jets (e.g. Bombardier Canadair, Embraer)	Regional Jets (e.g. Bombardier Canadair, Embraer)

mototok®
easy moving

SPACER.
Pushback Operations made easy.

With the capabilities of towing and pushing aircraft up to 95 tonnes mototok SPACER 8600 is the ideal tug for your apron operations.

The SPACER 8600 comes with a NTO license for 737's and 320-family. In combination with the outstanding pros of all mototok vehicles like

- the low initial and maintenance costs
- the eco-friendly electric drive
- the one-man-operation without the need of any driving license

you gain a powerful and flexible machine for all apron and – in addition – hangar operations.

The pros of using a Mototok Spacer for Pushback-Operations at a glance

- Only one person needed for operation
- Electrically driven
- Radio Remote controlled
- Minimal operating costs
- Minimal maintenance costs
- Self-activating fully Hands-free wireless Headset

Learn more:
www.mototok.com/pushback

Stay in touch with the pilot and the tower staff

Mototok includes a high quality cordless interphone with an effectve noise reduction for a safe communication of the operator with the pilot and the tower. It can be activated hands free so that the operator can communicate while steering the mototok with both hands on the remote control.

mototok®
easy moving

TWIN.

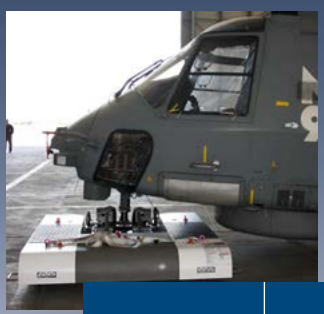
TWIN – for Aircraft with a gross weight up to 50 tons.

- Towing capacity 39 or 50 tons
- Fully automatic nose gear engaging function
- Singe or double nose wheel
- Hydraulic adjustment of the mouth opening depth for wheels with small diameter
- Speed up to 1.5 m/s

Towing capacity up to **50 t** (110,230 lbs)

Learn more:
www.mototok.com/twin

Power for big tasks.



	TWIN 3900 AC-AD TWIN 3900 AC-AD Flat	TWIN 6500 AC-AD TWIN 6500 AC-AD Flat
applicable for		
Max. towing capacity	39 tons 85980 lbs	50 tons 110230 lbs

mototok®
easy moving

M-SERIES.

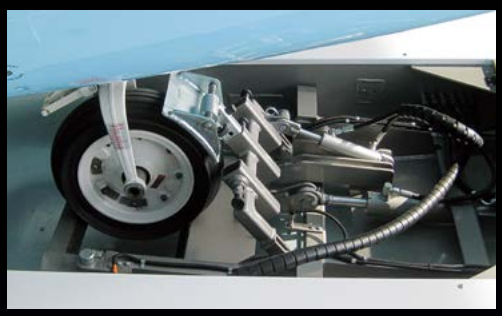
M-SERIES – for Aircraft with a gross weight up to 28 t.

- **Fully automatic nose gear engaging function**
- **Single or double nose wheel**
- **Speed up to 0.89 m/s**

Towing capacity up to 28 t
(61,729 lbs)

Learn more:
www.mototok.com/mseries

For small Machines, Helicopter and Jets.

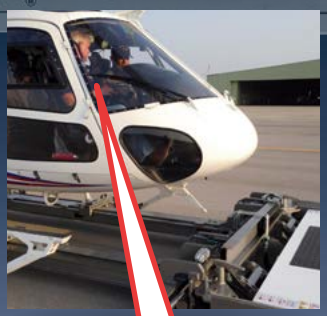


	M-Series M 528
applicable for	
Max. towing capacity	28 tons 61729 lbs

mototok®
easy moving

helimo®

Lifting capacity up to 6 t (13.200 lbs)

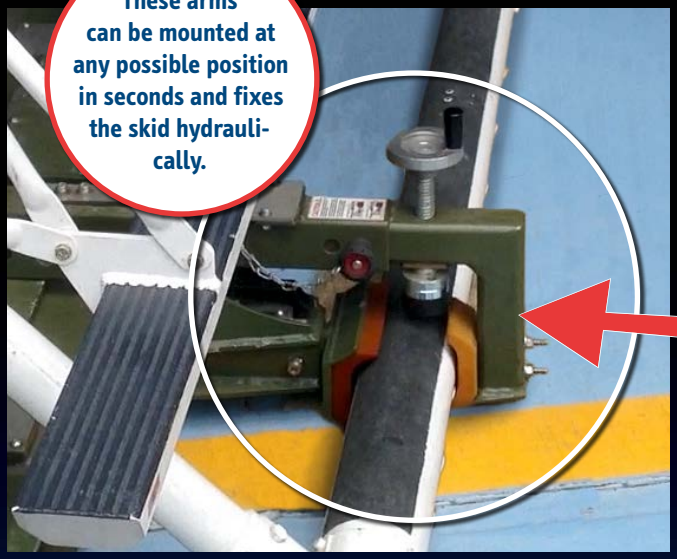


- Highly precise manoeuvrability
- Wireless controlled
- Extremely compact
- Usable for all skidded helicopter in seconds
- No problems with mounted cameras, radar or headlamps underneath the helicopter
- Up to a week of operating time
- Ground-Power included

Remote control the mototok from inside the Aircraft

Learn more:
www.mototok.com/helimo

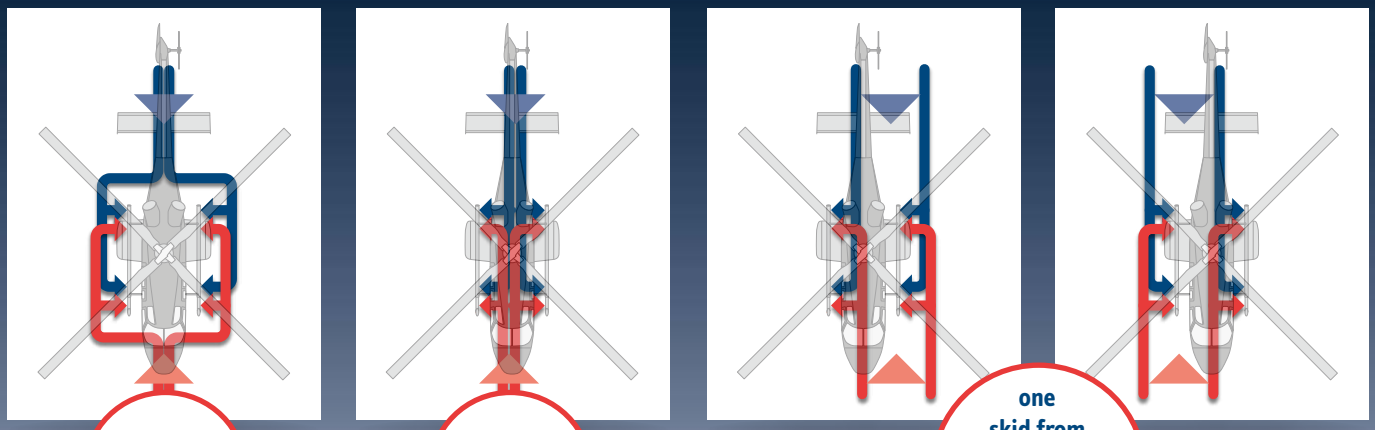
Helimo – the electrical and precise mover for all helicopters with landing skids.



The HELIMO moves every type of helicopter with skids regardless of obstacles such as cameras, radar, floats, winds and weapons mounted on the belly or skids of the helicopter. The HELIMO is universal and easily adjustable to meet the specifications of the helicopter.

With HELIMO, you can pick up your helicopter by several different methods. You have the option of connecting to the skids from the outside or inside of its tubing with the HELIMO remaining outside your Helicopter either from the front or rear position. You also have the option of entering your helicopter under its belly from in front or from the rear and attaching to the skids from its inside tubing. It is possible to combine outside and inside attaching.

Eight principle ways of loading helicopter ...

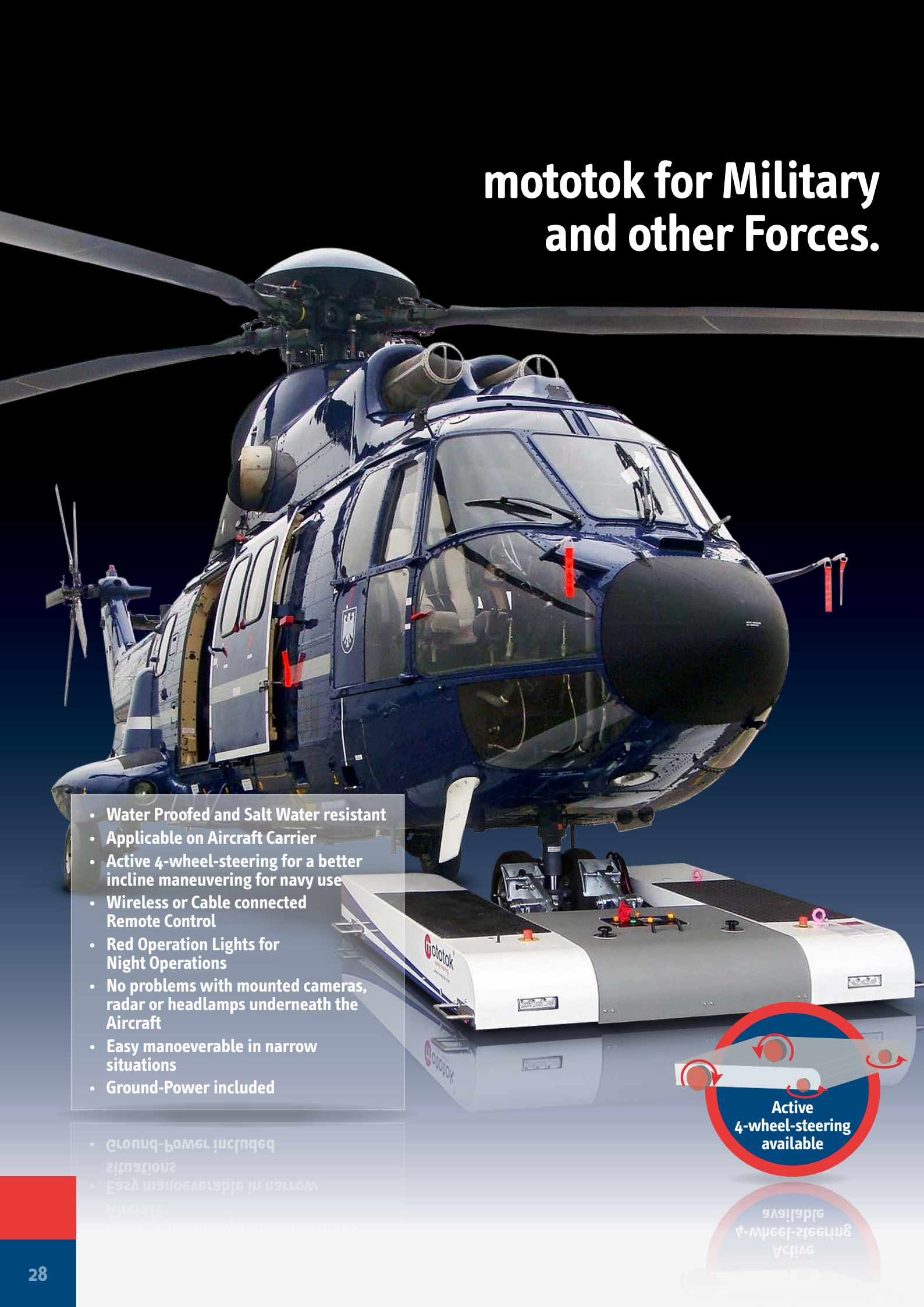


respectively ↑ from the front or ↓ from the back

	Helimo
applicable for	
Max. lifting capacity	6 tons 13228 lbs

mototok® easy moving

mototok for Military and other Forces.



- Water Proofed and Salt Water resistant
- Applicable on Aircraft Carrier
- Active 4-wheel-steering for a better incline maneuvering for navy use
- Wireless or Cable connected Remote Control
- Red Operation Lights for Night Operations
- No problems with mounted cameras, radar or headlamps underneath the Aircraft
- Easy manoeverable in narrow situations
- Ground-Power included

Learn more:
www.mototok.com/military

Makes the world a little safer.

mototok®
easy moving

TWIN WIDE 14.

Towing capacity up to
55 / 75 / 85 t
(121,254 / 165,347 / 187,393 lbs)

TWIN WIDE – for Aircraft like Lockheed C-130 (Hercules), Embraer KC 390 and suchlike.

- **Towing capacity up to 85 tons**
- **Fully automatic nose gear engaging function**

Low and wide for special aircraft.

	TWIN WIDE 14
applicable for	
Max. towing capacity	55 / 75 / 85 t 121,254 / 165,347 / 187,393 lbs

mototok® easy moving

Satisfaction guaranteed – our Customers

(extract)

Airports

Santiago de Chile	Chile	Arturo Merino Benítez International Airport	Several Aircraft
Cannes	France	Mandelieu Airport	Several Aircraft and Helicopter *
Lyon	France	Saint Exupery Airport	Several Aircraft and Helicopter *
Dresden	Germany	Airport	General Aviation *
Dublin	Ireland	International Airport	Several Aircraft
Kuala Lumpur	Malaysia	Sultan Abdul Aziz Shah International Airport	Several Aircraft
Panama	Panama	Albrook „Marcos A. Gelabert" International Airport	Several Aircraft
Moskow	Russia	Domodedovo Airport	Several Aircraft and Helicopter *
Malaga	Spain	Airport Costa del Sol	Several Aircraft and Helicopter *
Bern	Switzerland	Airport	Several Aircraft
Lugano	Switzerland	Airport	Several Aircraft Helicopter Agusta and others *
Sion	Switzerland	International Airport	Several Aircraft
Zürich	Switzerland	International Airport	Several Aircraft and Helicopter *
Glasgow	UK	International Airport	Several Aircraft
London	UK	Luton Airport	Several Aircraft
Birmingham	USA	Shuttlesworth International Airport	Several Aircraft
Burbank	USA	Bob Hope Airport	Several Aircraft
Chicago	USA	Chicago Executive Airport	Several Aircraft
Dallas	USA	Dallas Love Field	Several Aircraft
Denison	USA	North Texas Regional Airport	Several Aircraft
Indianapolis	USA	International Airport	Several Aircraft
McKinney	USA	National Airport	Several Aircraft
Minneapolis	USA	Saint Paul International Airport	Several Aircraft
Orlando	USA	Sanford International Airport	Several Aircraft
Philadelpia	USA	International Airport	Several Aircraft
Provo	USA	Municipal Airport	Several Aircraft
Seattle	USA	Tacoma International Airport	Several Aircraft
Seattle	USA	King County International Airport	Several Aircraft
Truckee	USA	Tahoe Airport	Several Aircraft
Tulsa	USA	International Airport	Several Aircraft
Waukegan	USA	Regional Airport	Several Aircraft

FBO / MRO

AirMec	Angola	MRO / Military Aircraft
Perth	Australia	FBO
Jet Alliance Vienna	Austria	Several Aircraft
Silk Way Airlines, Baku	Azerbaijan	Several Aircraft
Flying Group, Antwerpen	Belgium	Several Aircraft
Santiago de Chile	Chile	Several Aircraft
Panaviatic Ltd	Estonia	Several Aircraft
Cannes	France	Several Aircraft and Helicopter *
Lyon	France	Several Aircraft and Helicopter *
ACC Columbia, Hannover & Cologne	Germany	Global & others
AERO Dienst, Nuremberg	Germany	FBO
Sapura Aero	Malaysia	Several Aircraft
Hawker Pacific Asia Pte Ltd	Singapore	Several Aircraft
Air Service Basel	Switzerland	G5, Global Express, BOEING 737
Alpark SA	Switzerland	Several Aircraft
JetAviation, Geneva	Switzerland	Several Aircraft
Tarkim Air	Turkey	General Aviation *
Glasgow	UK	Several Aircraft
London	UK	Several Aircraft
ACI Jet Center	USA	Several Aircraft
DUNCAN Aviation	USA	Several Aircraft
Jet Legacy Center, Tulsa	USA	Several Aircraft
Starport Aviation	USA	Several Aircraft
Synergy Flight Center	USA	Several Aircraft
Centeravia		Several Aircraft

Aircraft Manufacturers

EMBRAER S.A.S. José dos Campos	Brasil	Embraer 195, 190, 175, 170, KC 390
BOMBARDIER, Montreal	Canada	Global Express Delivery Center
Dassault Aviation	France	Twin
Airbus S.A.S., Hamburg	Germany	Spacer
Rosvertol PLC	Russia	Helicopter Production MI-series *
Pilatus Aircraft Ltd	Switzerland	PC 12 Maintenance & Delivery
Turkish Aerospace Industries, Inc. (TAI)	Turkey	F 16 Fighter Maintenance Facility, Tiger Maintenance Facility *
BOEING	USA	Plant in Philadelphia AGV

Corporations

ACM	Chile		
ABP Food Group	Ireland		
Gazprom Avia, Moscow	Russia	Falcon jets	
OAO Gazprom	Russia	Several Helicopter & Aircraft	*
Anglo American	South Africa	Agusta AW139, G5	*
Alpine Sky Jets	Switzerland		
Novartis AG (JAPAT AG), Basel	Switzerland	Global Express, EC 135	*
CNH Industrial	The Netherlands		
Access Aviation	UK		
Abbvie	USA		
ACSI Corporation	USA		
American Colors International	USA		
C & P Aviation	USA		
Caribbean Investor Group	USA		
Columbia Pacific Management	USA		
Comcast	USA	Several Aircraft	
Cook Canyon Ranch	USA		
Disney	USA		
Harbert Aviation	USA		
Home Depot	USA	Several Aircraft	
Indianapolis Colts	USA		
L-3	USA	Several Aircraft	
Regions Financial Group	USA		
State Farm	USA	Several Aircraft	
Taxxas	USA		
The Boler Company	USA		
The CocaCola Company	USA	Several Aircraft	
The Duchossois Group	USA		
TLS Aviation	USA		

Military

China Military	China	All kind of Aircraft, Helicopters	*
Columbian Air Force	Columbia		
Danish Army	Denmark	Challenger, Agusta EH 101, F 16	*
French Navy / Air Force	France	Rafale Fighter, SuperPuma, NH 90, EC 155, Panther	*
CASSIDIAN Manching (EADS)	Germany	Tornado & Eurofighter	*
Pakistan Military	Pakistan	HELIMO for Helicopters with skids	*
U.S. Army National Guard	USA	M 528	
Venezuela Military	Venezuela	Helicopters with skids & with wheels	*

Airlines

Air Nostrum, Líneas Aéreas del Mediterráneo S.A	Spain	Challenger, Agusta EH 101, F 16	*
Iberia, Líneas Aéreas de España S.A.	Spain	Spacer for BOEING and Airbus	
British Airways	UK	AIRBUS 320 Series	*
Thomson/TUI, Luton	UK	BOEING 737 Family	
Alaska Airways, Seattle	USA	BOEING 737 Family	

Special Forces

Federal Police	Germany	Helicopter Super Puma, EC 155	*
Guardia di Finanza Rome	Italy	For ATR	

Government

Sultanat of Oman	Oman	Eurocopter Super Puma Fleet	*

* Mainly Helicopter Operations

BOMBARDIER the evolution of mobility

DASSAULT AVIATION

EMBRAER

JET AVIATION

DUNCAN AVIATION

IBERIA

PILATUS

Thomson

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Technical Data

		M-SERIES	TWIN-SERIES			
		M 528	3900 AC-AD	6500 AC-AD	6500 AC-AD Flat	TWIN WIDE 14
Use for		single & double nosewheel, wheeled helicopter	single & double nose-wheel, wheeled helicopter	single & double nose-wheel, wheeled helicopter	single & double nose-wheel, wheeled helicopter	double nosewheel
Maximum towing capacity [1]		28 t 61729 lbs	39 t 85980 lbs	50 t 110231 lbs	50 t 110231 lbs	55 / 75 / 85 t 121254 lbs 165347 lbs 187393 lbs
Maximum nosewheel weight capacity		2 t 4409 lbs	4,5 t 9920 lbs	6 t 13228 lbs	6 t 13228 lbs	7 / 9 / 12 t 15432 lbs 19842 lbs 26455 lbs
Dimensions (without antenna, grips on the surface)	width	1808 mm 71.18 inch	2054 mm 80.87 inch	2054 mm 80.87 inch	2054 mm 80.87 inch	2892 mm 113.86 inch
	lenght	1808 mm 71.18 inch	2363 mm 93.03 inch	2363 mm 93.03 inch	2363 mm 93.03 inch	2363 mm 93.03 inch
	height	350 mm 13.78 inch	344 mm 13.54 inch	344 mm 13.54 inch	320 mm 12.60 inch	316 mm 12.44 inch
Ground clearance		80 mm 3.15 inch	88.5 mm 3.48 inch	88.5 mm 3.48 inch	88.5 mm 3.48 inch	85 mm 3.35 inch
Width of the wheel opening		500 mm 19.69 inch	665 mm 26.2 inch	665 mm 26.2 inch	665 mm 26.2 inch	
Depth of the wheel opening		330 mm 12.99 inch	min. 180 mm 7.09 inch max. 670 mm 26.38 inch	min. 180 mm 7.09 inch max. 670 mm 26.38 inch	min. 180 mm 7.09 inch max. 670 mm 26.38 inch	min. 100 mm 3.94 inch max. 600 mm 23.66 inch
Unladen weight		870 kg 1918 lbs	1700 kg 3750 lbs	1700 kg 3750 lbs	1700 kg 3750 lbs	3500 kg 7716 lbs
Hydraulic wheel opening doors		incl. full hands free hydraulic door	incl. full hands free hydraulic door	incl. full hands free hydraulic door	incl. full hands free hydraulic door	incl. full hands free hydraulic door
Time to load/fix aircraft		10 sec	10 sec	10 sec	10 sec	approx. 15 sec
Speed		3.2 km/h 0.89 m/s 2 mph	5.4 km/h 1.5 m/s 3.36 mph	5.4 km/h 1.5 m/s 3.36 mph	5.4 km/h 1.5 m/s 3.36 mph	2.5 – 6 km/h 0.69 – 1.67 m/s 1.55 – 3.73 mph
Batteries (maintenance-free, deep cycle gel batteries)		4 x 115 Ah	4 x 220 Ah	4 x 220 Ah	4 x 220 Ah	4 x 220 Ah
Voltage		48 V	48 V	48 V	48 V	48 V
Range (depending on the workload)		2 days	3-4 days	3-4 days	3-4 days	3-4 days
Possible terrain		Concrete, stone, asphalt	Concrete, stone, asphalt	Concrete, stone, asphalt	Concrete, stone, asphalt	Concrete, stone, asphalt
Tyres		Puncture-proof tyres	Puncture-proof tyres	Puncture-proof tyres	Puncture-proof tyres	Puncture-proof tyres
Radio remote control		Radio remote control (with safety features, waterproof, certification of conformity), worldwide safety approval, including				
Optional Equipment						
Hydraulic nosewheel securing [2]		inclusive	inclusive	inclusive	inclusive	inclusive
Ground power cable for gound power connection 13,4V / 25,6 V (short time up to 1300 A) [3]		available	available	available	available	available
Driving light (LED, 10,000 hour operating life, very high beam range)		inclusive	inclusive	inclusive	inclusive	inclusive
Yellow flashlight		available	inclusive	inclusive	inclusive	inclusive
Safety beeper		available	inclusive	inclusive	inclusive	inclusive
Trailer coupling adaptor for multi-functional extensions		available	available	available	available	available
Military spiral cable connection (15 m) between aggregate and control unit		available	available	available	available	available
Automatic controls by ground markings (AGV functionality)		available	available	available	available	available
Adaptations for special demands (i.e. military version / range of production)		available	available	available	available	available

Mistakes and technical alterations reserved
1) The stated towing capacity is valid for towing on normal ground conditions without an incline of more than 1 %.
2) This prevents the nosewheel from rising and slipping out of position. The securing device is hydraulically lowered onto the nosewheel and securely locked at the push of a button. Standard: mechanical securing system.
3) In most aircraft, the generator voltage is 28.4 V. The 25.6 V on-board batteries are charged with this voltage. With the mototok ground power supply, the on-board voltage can be maintained and used to start the turbines.
4) Some technical data of the type SPACER 195 may change due to further development and are not fixed yet.

SPACER

	8600 MA	195 [4]
	double nosewheel	double nosewheel
		
	95 t	195 t
	209439 lbs	429901 lbs
	10 t	22 t
	22046 lbs	48502 lbs
	2546 mm	3900 mm
	100.24 inch	153.54 inch
min.	3243 mm	3500 mm
	127.68 inch	137.80 inch
max. (ext. nose wheel reception)	3673 mm	
	144.61 inch	
	553 mm	553 mm
	21.77 inch	21.77 inch
	81 mm	105 mm
	3.19 inch	4.13 inch
	855 mm	1400 mm
	33.66 inch	55.12 inch
min.	450 mm	min. 450 mm
	17.72 inch	17.72 inch
max.	1200 mm	max. 1200 mm
	47.24 inch	47.24 inch
	4035 kg	13000 kg
	8896 lbs	28660 lbs
	incl. full hands free hydraulic door	incl. full hands free hydraulic door
	10 sec	
	5,4 km/h	10 km/h
	1,5 m/s	2,78 m/s
	3.36 mph	6.21 mph
	Armour Plate 300 Ah with electrolyte recirculation	
	80 V	
	3-4 days	
	Concrete, stone, asphalt	Concrete, stone, asphalt
	Puncture-proof tyres	Puncture-proof tyres
airports, TÜV certified		
	inclusive	inclusive
	not available	not available
	inclusive	inclusive
	inclusive	inclusive
	inclusive	inclusive
	not available	not available
	available	available
	available	available
	available	available

Date 04.2015

HELIMO IV

Use for		skidded helicopter 
Lifting capacity		6 t
		13228 lbs
Dimensions / overall max	lenght	6800 mm
		267.72 inch
	width	5760 mm
		226.77 inch
	height	650 mm
		25.59 inch
Dimensions / overall min (load area)	lenght	6600 mm
		259.84 inch
	width	2300 mm
		90.55 inch
	height	250 mm
		9.84 inch
Length of the extension arms		3960 mm
		155.91 inch
Cantilever arms	lenght	300 mm
		11.81 inch
	width	150 mm
		5.91 inch
Ground clearance		100 mm
		3.94 inch
Unladen weight		2.7 t
		5952 lbs
Voltage		48 V
Speed		5.4 km/h
		1.5 m/s
		3.36 mph
Tyres: Puncture-proof tyres		
Radio remote control (with safety features, waterproof, certification of conformity), worldwide safety approval, including airports (TÜV certified)		
24/28V Groundpower inclusive for engine start and updates		
Yellow flashlight inclusive		
Mistakes and technical alterations reserved / Date 05.2014		

mototok® easy moving

mototok.

Big advance. Compact design.

About mototok

With the mototok, logistical tasks at Aircraft Production Line Facilities, MRO, FBO and Airport Operations can now be solved in more effective, safe and economical manner.

Whatever logistical requirement, the mototok's ability to generate more space safely and precisely with the added advantage of a complete hands free connection to the nosewheel, hydro-pneumatic suspension system and a free roaming 100% visibility anywhere around the aircraft have put them in a class of their own.

Only the mototoks can maneuver an aircraft's nose, tail section or wing just a few millimeters away from a hangar wall or the next aircraft body part. By simply applying the creeper snail mode speed feature on the remote control, the operator can slowly inch the aircraft safely and effectively to its final resting place in the production line, maintenance stand, hangar corner or parking area.

mototok has primarily self-developed this innovative wireless transmission control dual-motor-principal technology which applies proven digital control engineering mostly used the automotive and truck industries.

Due to a decentralized alignment of the mototok's standardized CAN bus components, the need of cable complexities is no longer an issue. Because of this unique ability, we have convinced the world's foremost Aerospace companies including AIRBUS, The BOEING Company, CASSIDIAN, DASSAULT, EMBRAER, BOMBARDIER and PILATUS who operate mototoks in their day to day operations and know firsthand the major advantages they have to offer.

Learn more about mototok at www.mototok.com.

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Your Jet - Our Job - Since 1958

AIRBUS
AN EADS COMPANY

airservicebasel

BOEING

BRITISH AIRWAYS

BOMBARDIER
the evolution of mobility

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EMBRAER

Gulfstream

IBERIA

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PILATUS

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