



## **T - R e x**

<b>01</b>	Index
<b>03</b>	BREMACH in the world
<b>05</b>	BREMACH history
<b>07</b>	The birth of T-REX
<b>09</b>	From virtual prototype to the real ones
<b>11</b>	Motor Show
<b>13</b>	Conceived to withstand
<b>15</b>	Adaptative Modular Space Frame
<b>17</b>	Steel construction
<b>19</b>	The cockpit
<b>20</b>	Production department
<b>23</b>	Testing
<b>24</b>	Inside technology
<b>28</b>	Bremach team
<b>29</b>	Equipment
<b>30</b>	Defence applications
<b>32</b>	Dimensions and weights



## BREMACH IN THE WORLD

Worldwide, in 4x4 multipurpose vehicle field, it's difficult to find an alternative.

**BREMACH** has managed to expand its business on 3 continents (Europe, Africa, Latin America) and more than 30 countries worldwide through strategic alliances and joint ventures. Thanks to its characteristic versatility, enjoyed by more than 50 years of experience acquired in the Italian market, **BREMACH** is the key of success, that allows access to almost all business sectors: from oil drilling sites and assistance in prohibitive areas such as fire fighting, winter maintenance, civil protection or even converted to the ultimate camper van for leisure use.



**Angelo ADRIANO**  
M. Eng.

Head of  
International  
Operations

"It is not easy to internationalize a small medium company with a deep-rooted Italian industrial culture. To do this, you need to be open-minded and pragmatic, **BREMACH** is both".

Born in Brescia in 1978, after graduating in Mechanical Engineering, he came in **BREMACH** in 2006, with experience of working in the field of engineering.

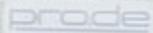
Eclectic and multifaceted nature, he coordinates a solid team of collaborators, working within **BREMACH** across a wide range of different areas of the company: from marketing to international development projects.



A v e r y s p e c i a l v e h i c l e f o r v e r y s p e c i a l p e o p l e



# BREMACH HISTORY



**BREMACH** was born in the late '50s in Varese, northern Italy, as mechanical workshop.  
 From an Aermacchi conceive, company which until then was devoted to the military market, was born the three-wheel project, with economy characteristics of operation and absolute reliability, designed for short transports.  
**BREMACH** developed the 4 wheel drive vehicles in the '70s.  
 "I took over **BREMACH** in 2000, saving it from extinction, because I wanted to give a product integration to my historical engineering automotive sector core business".  
**BREMACH** merged into **PRO.DE** in 2005.

Born in 1963, **DARMAK** (merging with **SIPEC** and **VE&D**) is one of the most important independent developing vehicle center in Italy.  
 With the headquarters in Turin and Brescia, **DARMAK** offers a complete service from product engineering to its validation within the engine, transmission, chassis and SIEE, using the most advanced CAD and CAE systems.  
**DARMAK** merged into **PRO.DE** in 2005.




**Giovanni SALVI**  
 M. Eng.  
 President



"I had the dream to create in Italy a company with the same competences of *Steyr-Puch*.  
 I have managed to coagulate in **PRO.DE**, with a series of aggregations, engineering and technology to produce 4WD vehicles.  
 The imperative that marked the work during these years has been inspired by the exclamation of Annibale before the impossibility of crossing the Alps with elephants:  
*"we will find a way or we build a new ones"*

"I took over **VALSELLA MECCANOTECNICA** in 1999 to give a production site for the core business of the group".  
**VALSELLA** merged into **PRO.DE** in 2005.






## THE BIRTH OF T-REX



The first challenge of T-REX? Three comfortable seats and all the equipment of 2.10m vehicle in only 1.70m wide.

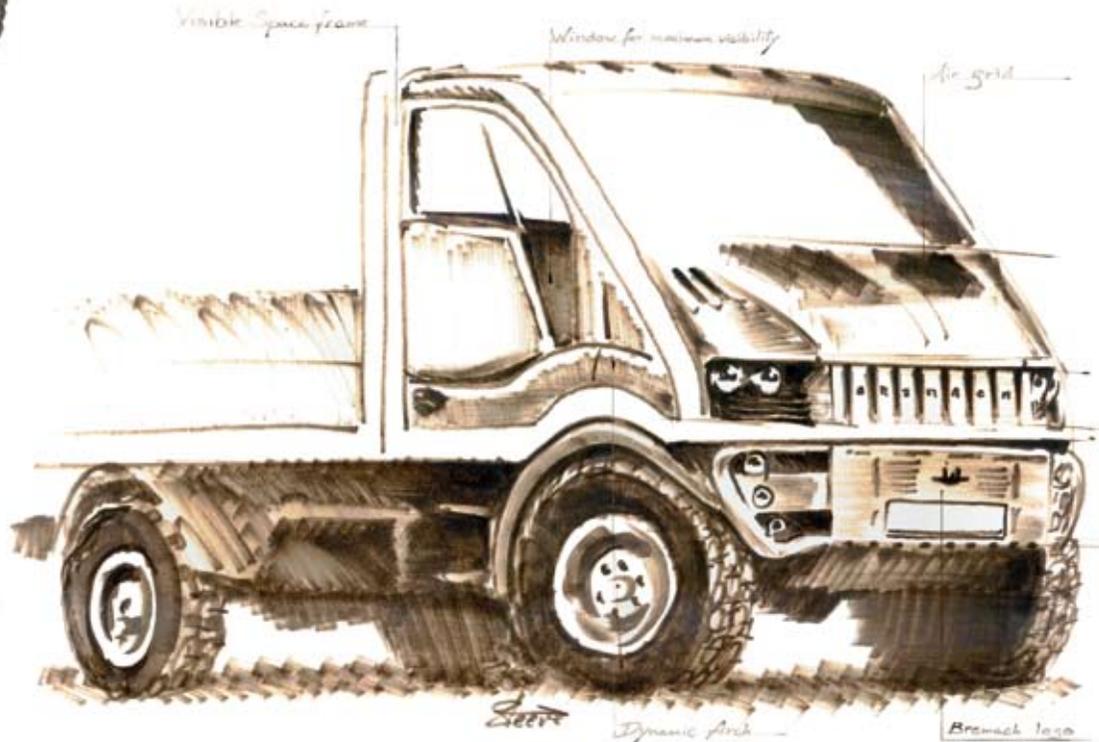
"It was like putting 3 liters of water in a 2-liter bottle!"

Our team had to improve every inch of the vehicle shape to get this!



"I liked T-REX project immediately, because I had the possibility to start from a blank page".

"The first change I made, includes the slipping forward of the wheels up to the maximum possible, in order to reduce the front overhang, and increase the attack angle, two important points when it comes to extreme off-road use".



**Steeve BERNAUD-HEYD** creator of T-REX

"I created T-REX as a true sports car, aggressive, slim, and with a powerful design".



Born in France in 1972, Steeve started his career as Car Designer in '92 at BUGATTI, where he worked on EB110, EB112 and Lotus Elise.

He realised also numerous prestigious prototypes such as Ferrari (225S, 500 TRC), Buccioli, Hispano-Suiza, Maserati.

He joined **PRO.DE** group in 1996 as "Head of Design" where it had been entrusted him the development of several vehicles:

Iveco Daily Combi, ASTRA, FIAT Ducato.

Moreover, he had worked as Head of Design for TOURING SUPERLEGGERA bodyshop where he created new vehicles (Maserati, Alfa-Romeo, Lancia, BMW).

He has taken over the T-Rex project since 2005.

T-REX is a special vehicle, with its space-frame visible. It's the first industrial vehicle which has an external skeleton!

The pannels (roof, bonnet, lateral sides ) do not have any structural function, but only esthetic ones.

Steeve BERNAUD-HEYD drew inspiration from fighter planes to make the vehicle internal, developing a real "COCKPIT".

In fact, the dashboard is made of stainless steel panel on which are installed the various commands.

The visibility and ergonomics have been optimized to give intuitive controls.



## FROM VIRTUAL PROTOTYPE



From the first sketches, T-REX has been fully designed with computer. Steve says: "Thanks to the virtual engineering systems, we have been able to keep an eye, since the beginning of the project, on all the different aspects of the vehicle and maintain its characteristics: visibility and ergonomics tests, mechanical equipment, maintenance, and of course, structure resistance. We have realized a particular study to improve the aerodynamic flow and to reduce consumption".

## TO THE REAL ONES

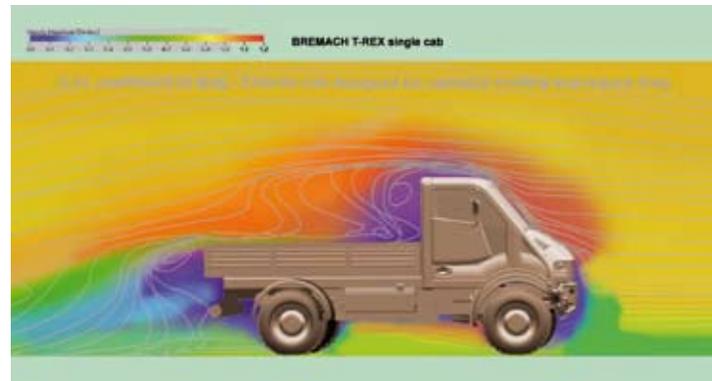


BREMACH developed series of models and prototypes to verify the virtual concept validity. The first prototype was in fact a static model for studies of the engine layout, ergonomics and habitability. After the first one, we made a series of working prototypes, on which had been tested several types of suspensions, engines, anchors.

## INTERIOR



## DRAG



## EXTERIOR

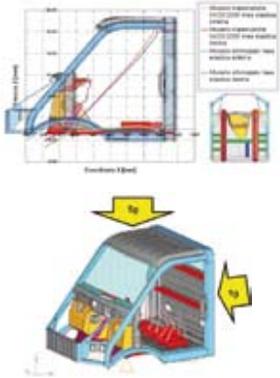








The cabin skeleton is made by a new structure, adaptive space frame, the first model in the world.

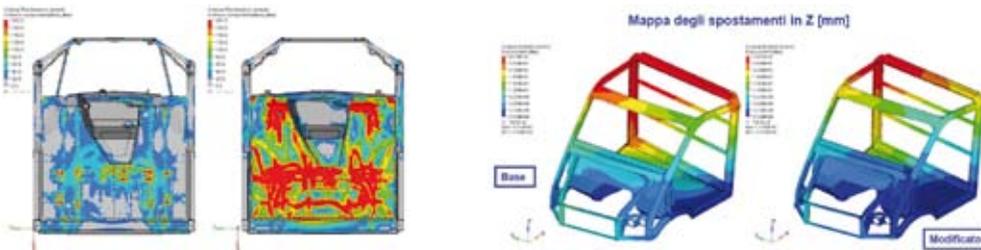


MADE TO WITHSTAND TO 6 G



A conventional structure is expected to be resistant to 2G. Our competitors can achieve 3G for some extreme applications. **BREMACH** cab was developed to withstand to more than 5G. He does not give only the impression of being the most resistant vehicle ever built, but it really is!

**BREMACH** secret is its unusual tubular structure. The tube is the most resistant mechanics material. In fact, the side roll-bar is made starting from a tube which is shaped and rolled through several steel masks, gives the resistance.

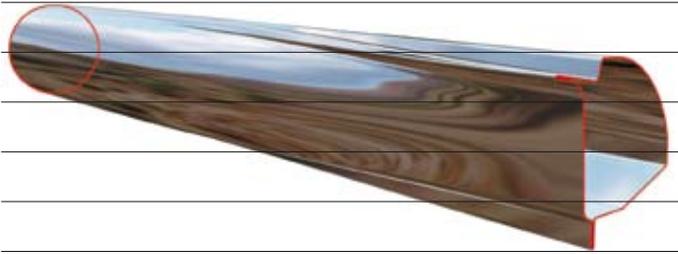


At the right, a conventional floor. On the left, reinforced steel floor, capable to withstand to 5 +1 G!

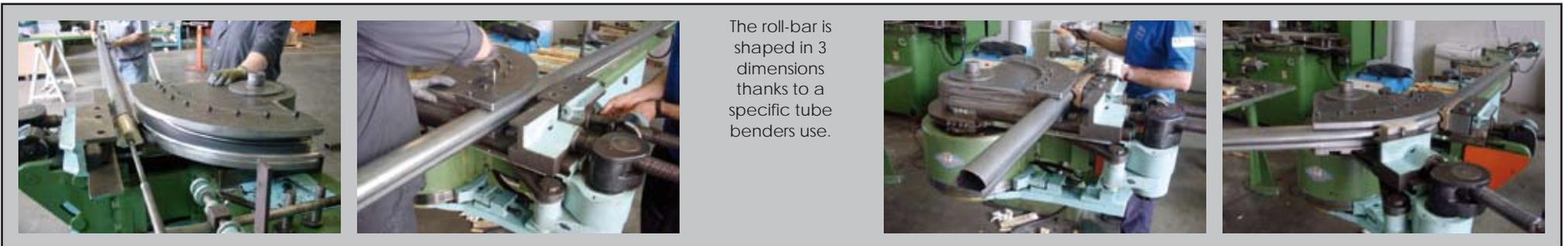
- VERTICAL = 5G
- DECELERATION = 1G
- LATERAL = 0.7 G
- TWIST = 220 NM



## ADAPTATIVE MODULAR SPACE FRAME



At the heart of T-REX there is an innovative structure. A tubular profile worked out in 2D and subsequently in 3D, in order to achieve a structure strength never reached before. This innovative concept, used only in the aerospace industry, has been used by **BREMACH** to be much more resistant than a simple extrusion. The T-REX modular structure is made starting from a 100mm diameter tube formed using an elaborate train roller. The advantage is the high resistance. In fact, thanks to this, the steels sheets are welded each other in order to avoid deformations even in case of extreme stresses.







## IRON MADE

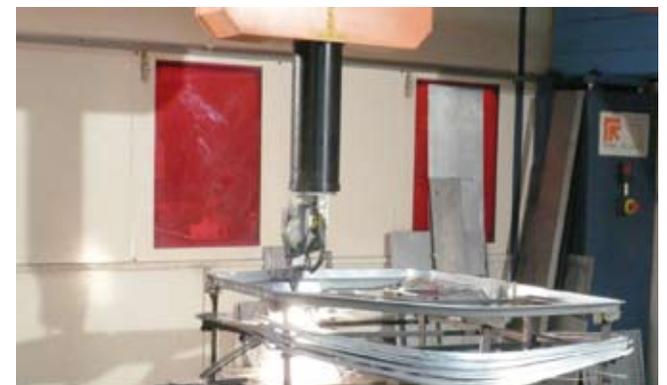
T-REX cab is made entirely by steel.

The lateral sides and the rear roll-bar are made by "adaptative modular space frame" (see previous page). The front and back panel, and the floor are made using pressed steel, while the reinforcements, under the cab, are made by high-tensile steel.

The doors are made entirely of steel. Inside, aluminium handles.



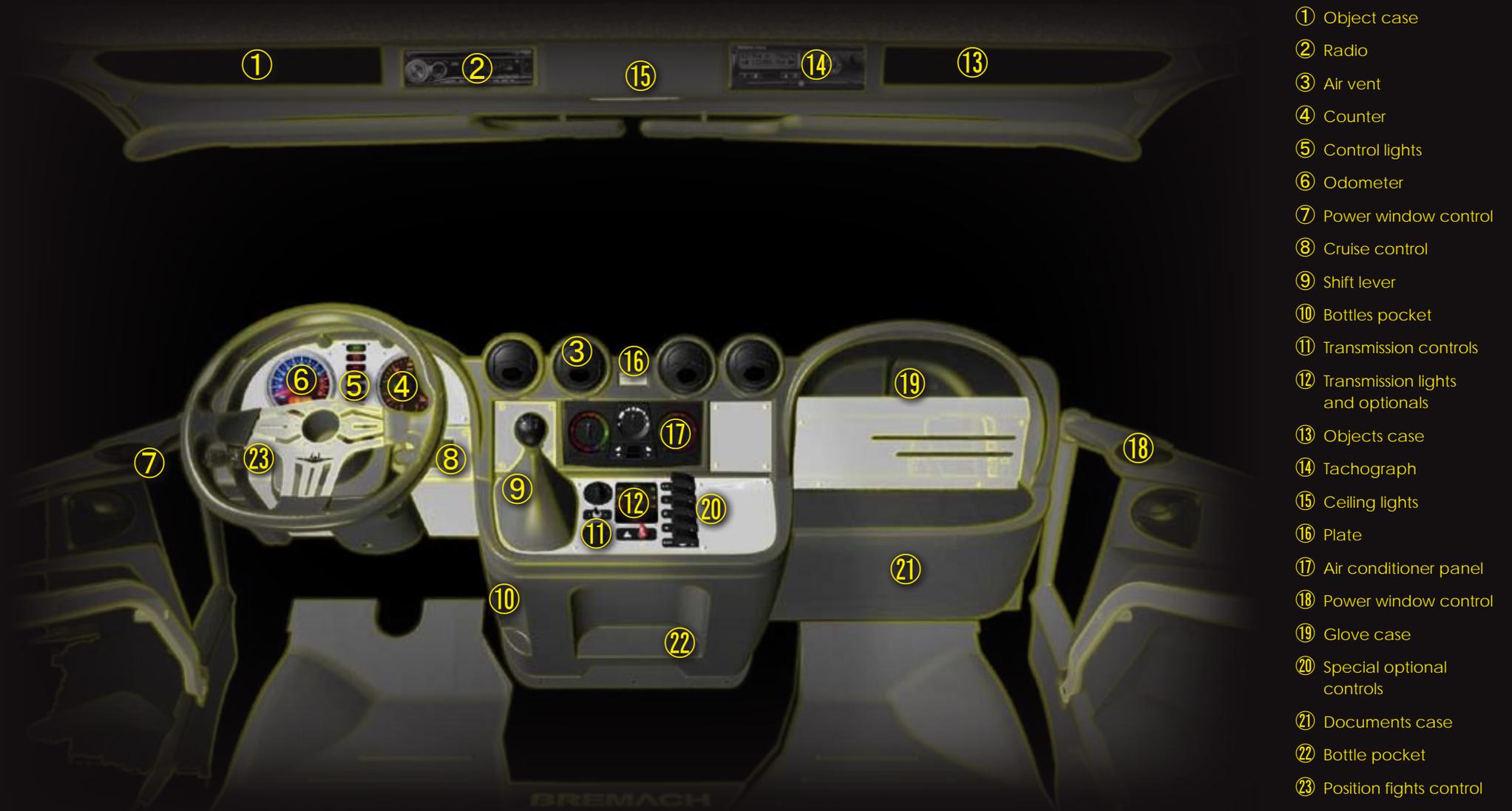
Cab assembly is done in a specialized workshop to ensure the highest quality of assembly structure.





THE COCKPIT





## PRODUCTION DEPARTMENT



### Absolute care in every detail

There are few vehicles that can boast of being fully handmade nowadays.

**BREMACH** is one of these exceptions, along with other "dinosaurs" as Bentley and Aston-Martin.

**BREMACH** is pleased to offer you the best, both for the interior with stainless panels, as well as for the exterior details.

Never before a commercial vehicle was built with such attention. It's not a vehicle like the others, because each **T-REX** is Unique!



One of the few HAND MADE VEHICLE



**Marco SALVI,**  
M. Eng.  
Production Manager

Born in 1981 in Brescia, Marco got his degree in Management Engineering. After an experience in England where he worked for Bentley, he returned to Brescia to manage **BREMACH** production.

**"BREMACH strength?"**  
Its flexibility! The vehicle is fully assembled by hands, from experts who know it perfectly. Together with our engineering, Bremach is able to offer special solution to meet our customer demands. It is a rare quality in the vehicle manufacturers field".

Anytime a customer has a specific request, we involve our engineering team. We analyze the feasibility and develop the virtual propose. Once we have realized the customer propose, the vehicle is developed under marking to give a perfect precision to the final piece.



TESTING





**Denny MADAU**  
Prototyping  
& Testing

“What is my task? To drive until the vehicle destruction”.

Born in 1975 in Brescia, Denny has been working more than 22 years as industrial vehicle mechanic. Keen on 4x4 vehicles racing and sport riding preparation, he is in charge of prototypes building. He has made numerous 4x4 driving courses, that allow to test the vehicles newly made, until the limit. Altogether to make T-REX a reliable vehicle even in extreme conditions.

# B R E M A C H   O F F   R O A D   T E S T   T R A C K



## BREMACH T-REX INSIDE TECHNOLOGY

### Engine

4 cylinder turbodiesel common rail multijet, T-Rex motorization is always at the forefront of technology.  
From F1A, 2.3 l. and 116 hp, up to F1C, 3 l. 16 valves and 176 hp.



### FPT

**BREMACH** has chosen FIAT POWER TRAIN (FPT) to power its vehicles. Developed with DARMAC support, FPT engines are nowadays, the most reliable and modern in the engine market.



### Reduction box

Designed and developed by Bremach, the reduction box increases wheel torque in order to give maximum efficiency. The driver can choose half speed reduction and low ratio range, and has a wide range of speeds, all with electronic engagement.

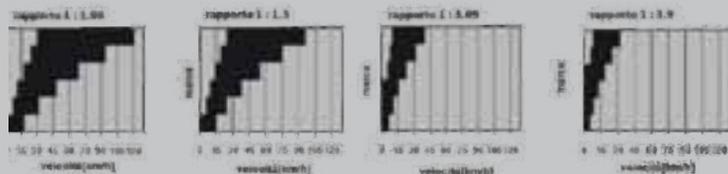


### Gearbox

Two transmission gears with panel controls :

- ZF manual 6 speeds with overdrive.
- Automatic Allison assures the right grip on rough grounds.

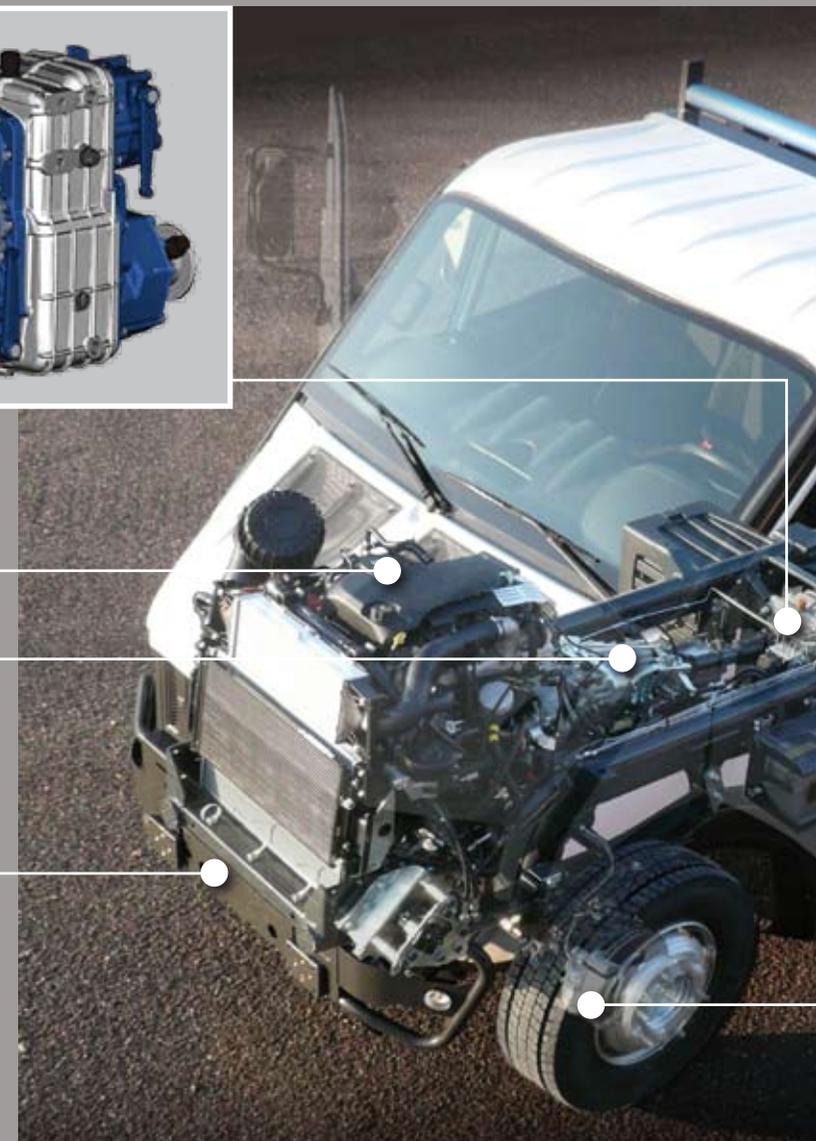
Connected to the reduction, offer to the user a wide range of 24 gears:

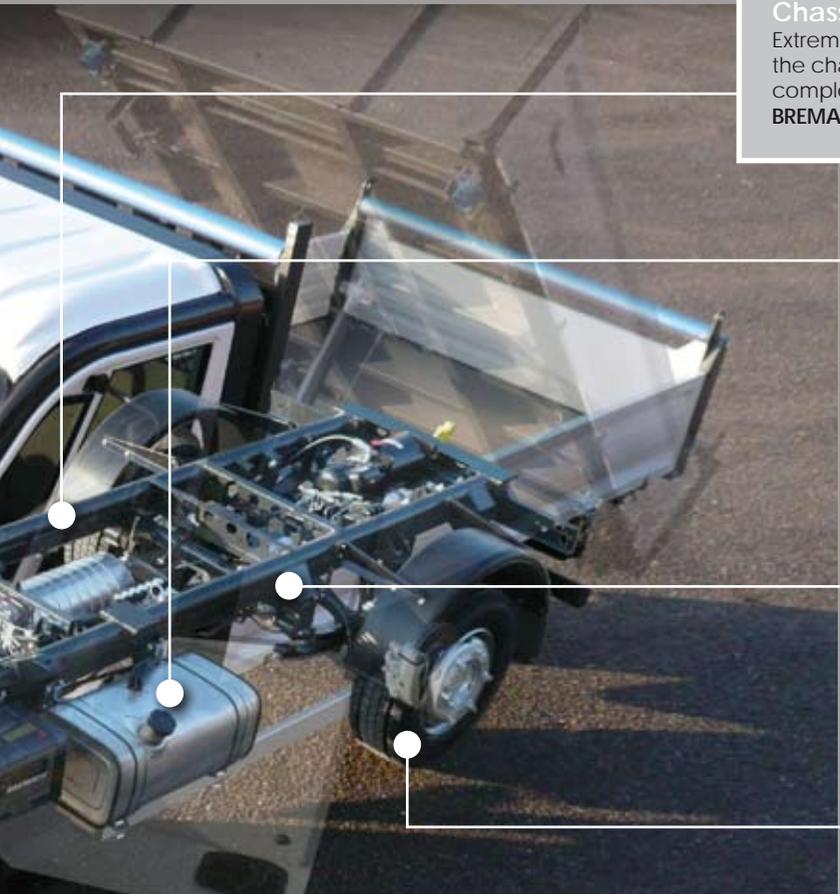


### PTO

Depending on requirements and applications, power take off is available up to 55kw from:

- gear box
- transfer box
- front engine pulley





### Chassis

Extremely rigid with its unusual tubular section, the chassis has a reinforced chassis frame, completely designed and developed by **BREMACH** for vehicle use in extreme conditions.



### Fuel tank

70 or 140 liters, stainless steel tanks.

### Axles

Rigid type with parabolic leaf springs, telescopic double acting shock absorbers, to ensure the maximum stability even for extreme use. The axles are entirely designed and developed by **BREMACH**.



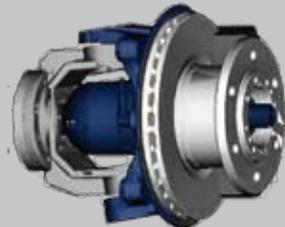
### Tyres

Available different types, suitable for any use: from Michelin XZL for Off-road use to those used on sand, road or mixed route.



### Brakes

Developed by **BREMACH** in collaboration with Bosch, independent double hydraulic, with brake on four wheels and autoventilated on the front axle, longitudinal deceleration sensor and deselectable ABS.



**Davide FERRARIO**  
M. Eng.  
Engineering director

"The design combines dreams and reality, responding with ideas to any present and future

adventure vehicle.

In **BREMACH** I have the motivating force to coordinate everybody's ideas to have an harmonic product, technologically advanced".

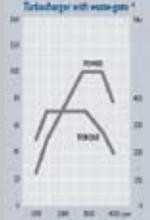
Born in 1978 in Brescia, he started his career as Project Leader in automotive design for Iveco commercial vehicle, before his graduation in Mechanical Engineering. After a brief experience as Plant Engineer to explore issues related to the production, he came to Darmak as Program Manager coordinating projects for customers such as Iveco, Fiat, Piaggio, Carraro, Lamborghini.

He has been **BREMACH** Engineering Director since 2008.

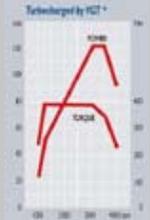
**IVECO  
F1A 2.3 l - 116 hp**



**IVECO  
F1C 3.0 l - 146 hp**



**IVECO  
F1C 3.0 l - 176 hp**



**SPIDER 2 SEATS**



**SINGLE 3 SEATS**



**DOUBLE 6 SEATS**



**CAB**

**ENGINE**

**GEAR BOX**



**ZF**  
6-Speed Manual



**ALLISON**  
5-Speed Automatic



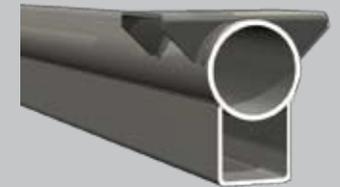
**CHASSIS**

**GROSS VEHICLE WEIGHT**

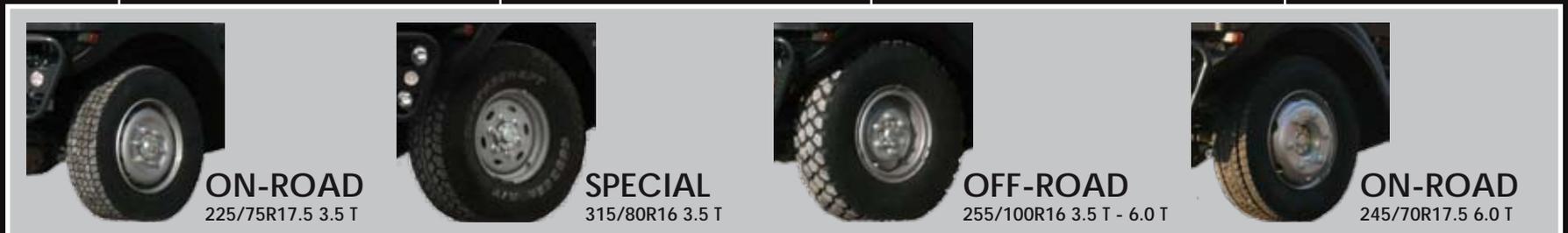
**TYRES**

**T-REX CONFIGURATOR**

**3.5 T frame 3.0 mm**



**6.0 T frame 5.0 mm**







## EQUIPMENT

BREMACH offers a wide range of equipment: from a rolling chassis, which our customers can fit bodywork as needed, to a fully equipped vehicle.

Bremach's technical expertise and design of the structure allow any particular demand to be met.

AMBULANCE - FIRE BRIGADES - ROAD-RAIL VEHICLE - ARMoured VEHICLE - CAMPER VAN - FIXED BODY - REMOVABLE BODY - DRILLING - WASTE COMPACTOR - HEDGE TRIMMER - DEFENCE - DOUBLE CAB - CRANE - ACCESS PLATFORM - CIVIL PROTECTION - TIPPING BODY - SALT SPREADER - SNOWPLOUGH - TANKER





SOV (Special Operation Vehicle) by [KMW](http://www.kmw.com)



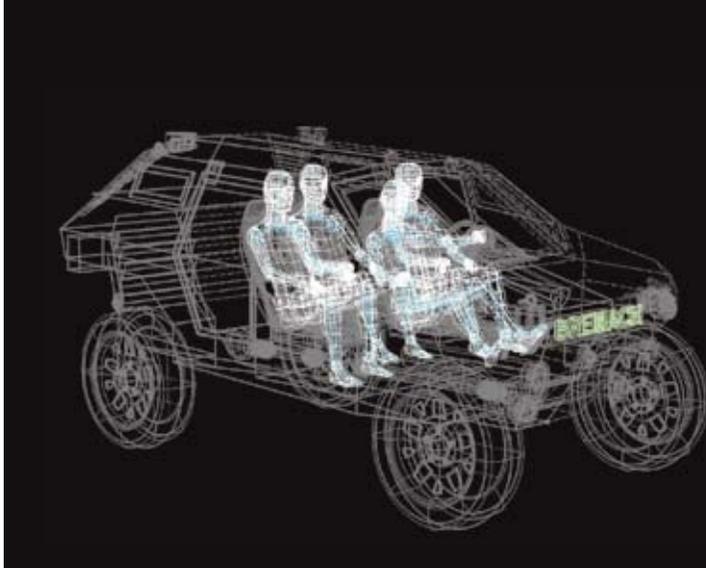
Logistic and support Vehicle



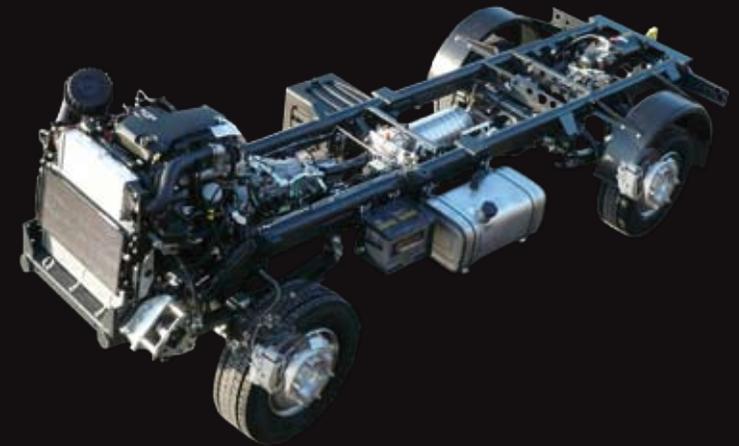
Mobile weapon platform

D E F E N C E

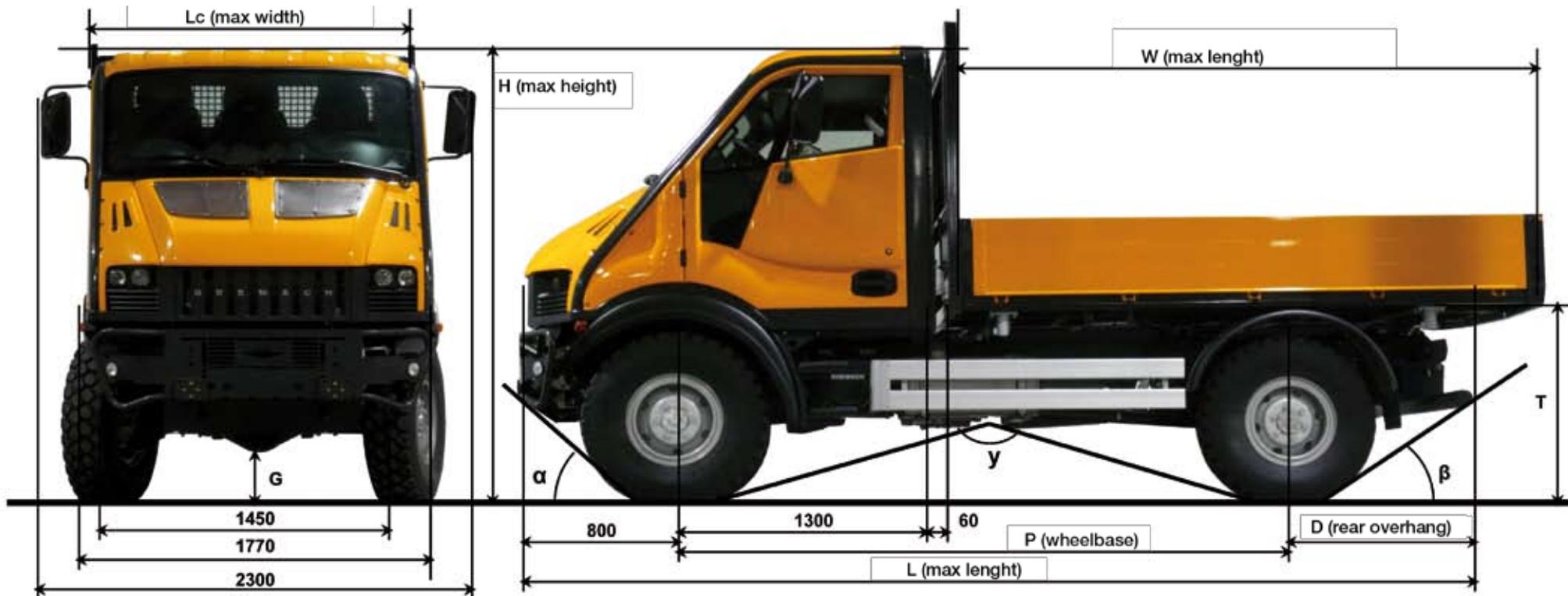
A P P L I C A T I O N S



The tubular BREMACH frame has been selected by the best defence vehicle manufacturers as base for military platforms. They had been subjected to exhausting military testing in Germany (virtual and physical) and got necessary certifications for this use with KMW - Krauss Maffei Wegmann. Its small size (as a jeep) and high load capacity (as a truck) have revolutionated the special vehicles field, vehicles used in the new international background.







	Gross vehicle weight	3500	3500	3500	3500	6000	6000	6000	6000	6000	6000
	Wheel/Tyres	on road 225/75R17.5		off road 255/100R16		on road 245/70R17.5		off road 255/100R16			
DIMENSION (mm)	Wheelbase	2600	3100	2600	3100	2600	3100	3450	2600	3100	3450
	L max length	4380	4880	4380	4880	4380	4880	5230	4380	4880	5230
	H max height (unloaded)	2430	2425	2495	2490	2445	2435	2430	2505	2500	2495
	Ca frontal wheel track	1440	1440	1465	1465	1440	1440	1440	1465	1465	1465
	Cp rear wheel track	1455	1455	1485	1485	1455	1455	1455	1485	1485	1485
	T chassis height (unloaded)	915	910	980	975	955	950	948	1015	1010	1008
	D Rear overhang	980	980	980	980	980	980	980	980	980	980
	W Max equip. length	2620	3120	2620	3120	2620	3120	3470	2620	3120	3470
	Lc* Max. width	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
	WEIGHT (kg)	Max load on front axle	2000	2000	2000	2000	2300	2300	2300	2300	2300
Max load on rear axle		2500	2500	2500	2500	4450	4450	4450	4200	4200	4200
Cab tare on front axle		1550	1572	1570	1592	1565	1587	1597	1585	1607	1617
Cab tare on rear axle		815	825	835	845	1010	1020	1025	1030	1040	1040
Total tare		2365	2397	2405	2437	2575	2607	2622	2615	2647	2657
Payload		1135	1103	1095	1063	3425	3393	3378	3385	3353	3343

Chassis with F1A engine \* OPT homologated with mirrors cat. II app. e3 03\*2115 est 01 (wide arm) W min/max = 2050 mm

## DIMENSIONS, WEIGHTS, PERFORMANCES

### PERFORMANCES

Gross vehicle weight	3500	3500	3500	3500	6000	6000	6000	6000	6000	6000
Wheels	on road 225/75R17.5		off road 255/100R16		on road 245/70R17.5			off road 255/100R16		
Wheelbase	2600	3100	2600	3100	2600	3100	3450	2600	3100	3450
Max surmountable slop	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
$\alpha$ Front approach angle	45	45	48	48	45	45	45	48	48	48
$\gamma$ Summit angle	136	141	136	141	140	145	147	135	140	142
$\beta$ Rear approach angle*	28 / 37	28 / 37	33 / 43	33 / 43	29 / 38	29 / 38	29 / 38	34 / 44	34 / 44	34 / 44
Max fording depth	750	750	800	800	750	750	750	800	800	800
G Axle height **	215 / 230	215 / 230	280 / 295	280 / 295	215 / 235	215 / 235	215 / 235	280 / 295	280 / 295	280 / 295

\*on road / off road \*\* front /rear

### OFF-ROAD PERFORMANCES

6.0 T. T-REX WHEELBASE 2600

MAX SUMMIT ANGLE 135°

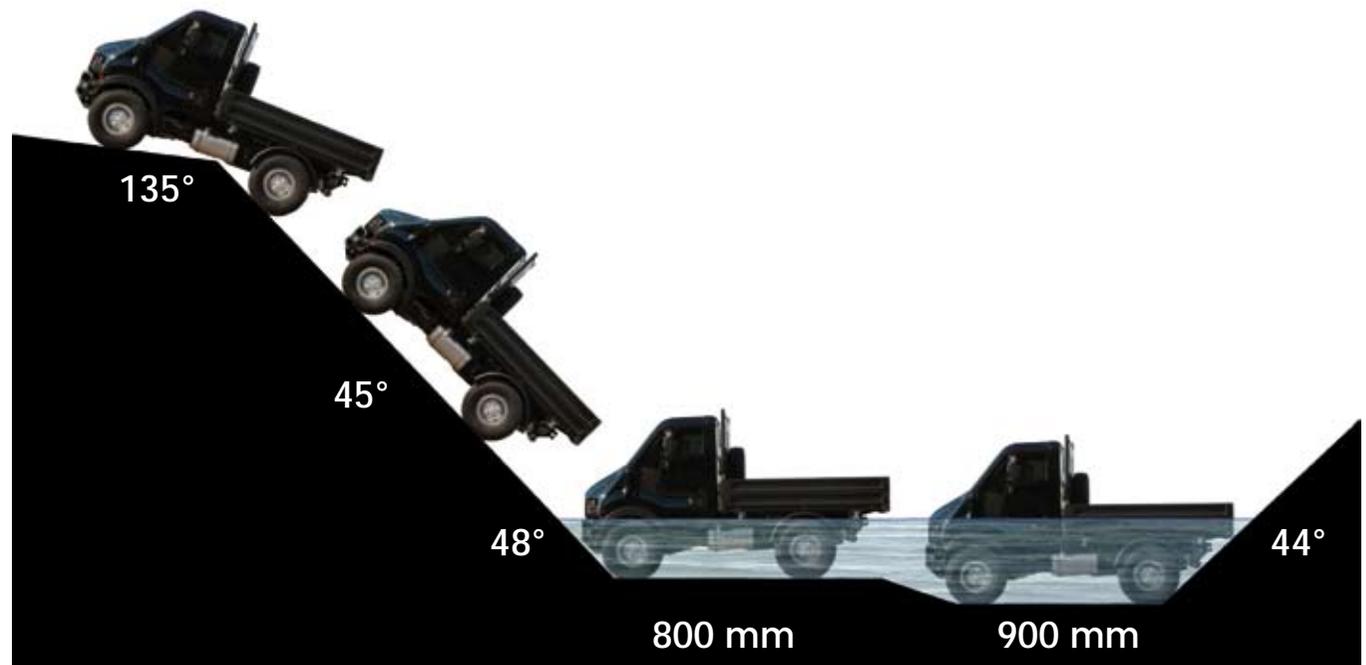
MAX SURMONTABLE SLOPE 45°

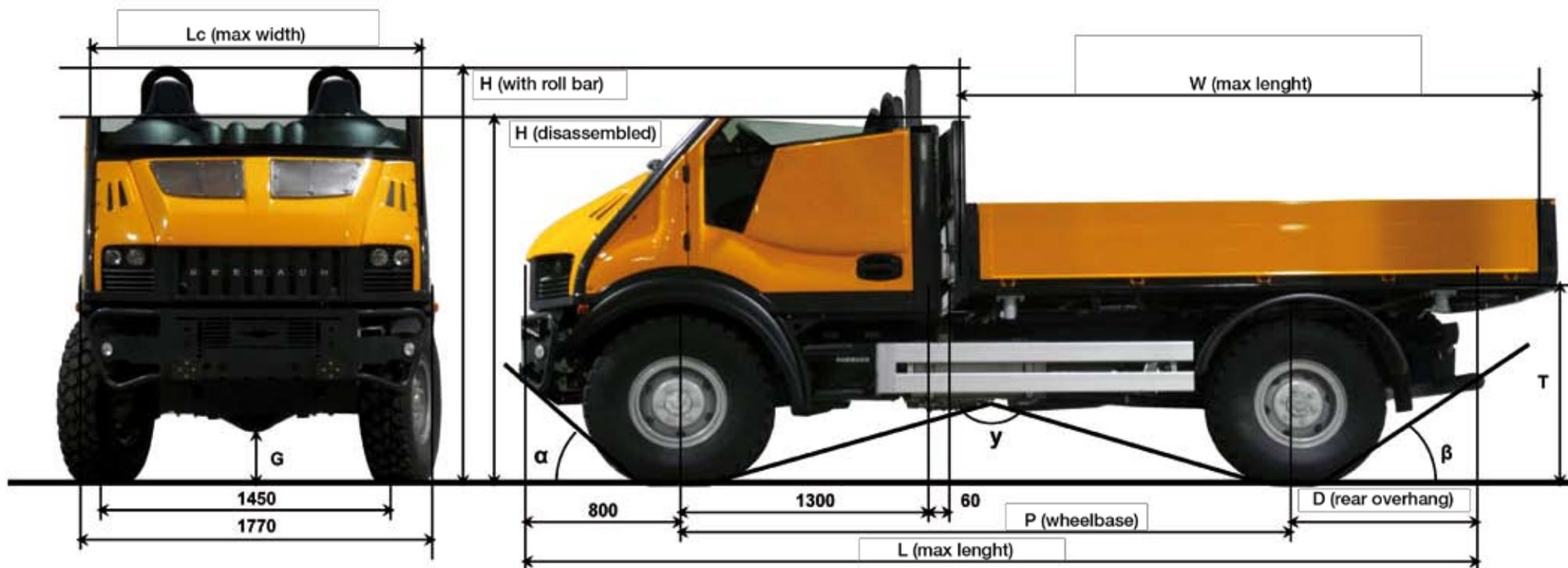
FRONT APPROACH ANGLE 48°

REAR APPROACH ANGLE 44°

MAX FORDING DEPTH 800 MM

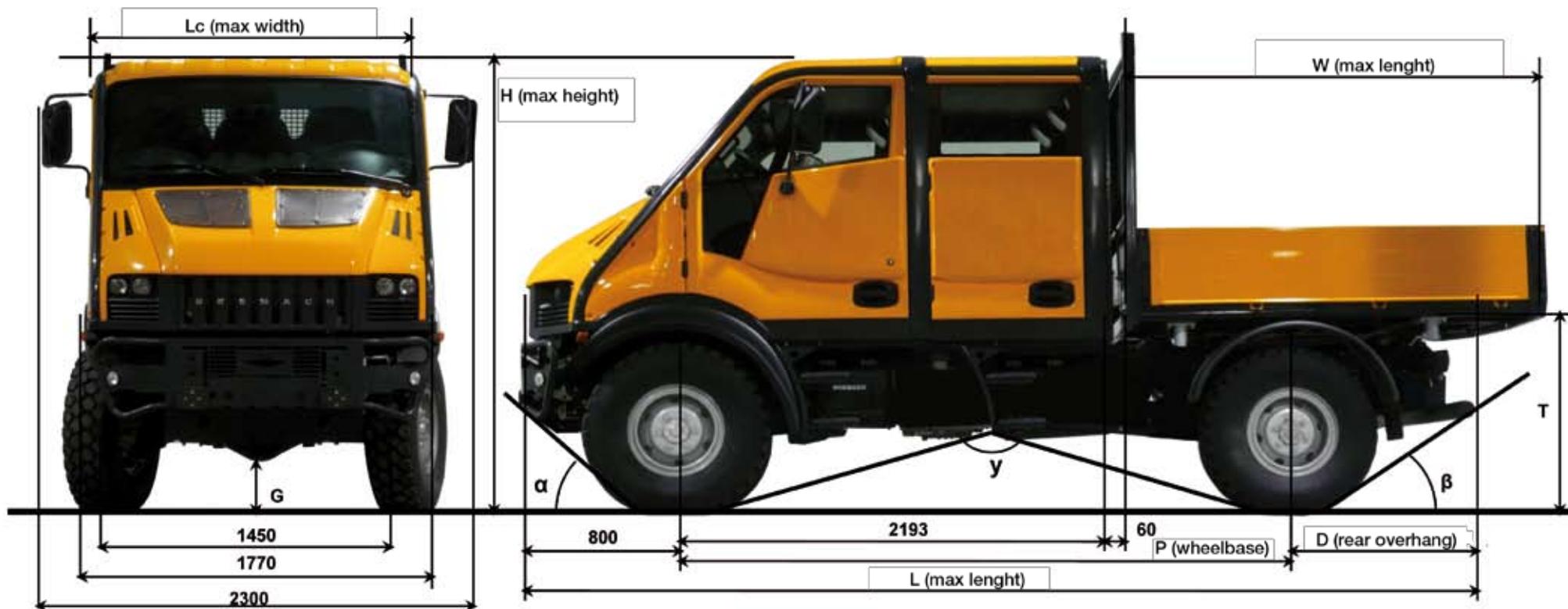
FORDING DEPTH WITH PREPARATION 900 MM





	Gross vehicle weight	3500	3500	3500	3500	6000	6000	6000	6000	6000	6000
	Wheel/Tyres	on road 225/75R17.5		off road 255/100R16		on road 245/70R17.5		off road 255/100R16			
	Wheelbase	2600	3100	2600	3100	2600	3100	3450	2600	3100	3450
	L max lenght	4380	4880	4380	4880	4380	4880	5230	4380	4880	5230
	H Max height with roll bar	2250	2250	2300	2300	2250	2250	2250	2300	2300	2300
	H Max cab height	1850	1850	1900	1900	1850	1850	1850	1900	1900	1900
	Ca frontal wheel track	1440	1440	1465	1465	1440	1440	1440	1465	1465	1465
	Cp rear wheel track	1455	1455	1485	1485	1455	1455	1455	1485	1485	1485
	T chassis height (unloaded)	915	910	980	975	955	950	948	1015	1010	1008
	D Rear overhang	980	980	980	980	980	980	980	980	980	980
	W Max equip. lenght	2620	3120	2620	3120	2620	3120	3470	2620	3120	3470
	Lc* Max. width	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
WEIGHT (kg)	Max load on front axle	2000	2000	2000	2000	2300	2300	2300	2300	2300	2300
	Max load on rear axle	2500	2500	2500	2500	4450	4450	4450	4200	4200	4200
	Cab tare on front axle	1460	1482	1480	1502	1475	1497	1507	1495	1517	1527
	Cab tare on rear axle	805	815	825	477	1000	1010	1015	1020	1030	1030
	Total tare	2265	2297	2305	2337	2475	2507	2522	2515	2547	2557
	Payload	1235	1203	1195	1163	3525	3493	3478	3485	3453	3443

Chassis with F1A engine \* OPT homologated with mirror cat. II app. e3 03\*2115 est 01 (wide arm) W min/max = 2050 mm1



## BREMACH T-Rex Double cab

4 doors  
6 single seats  
Central door lock with remote control

	Gross vehicle weight	3500	3500	6000	6000	6000	6000
	Wheel/Tyres	on road	off road	on road 245/70R17.5	off road 255/100R16		
DIMENSION (mm)	Wheelbase	3100	3100	3100	3450	3100	3450
	L max length	4880	4880	4880	5230	4880	5230
	H max height (unloaded)	2430	2500	2455	2445	2515	2510
	Ca frontal wheel track	1440	1465	1440	1440	1465	1465
	Cp rear wheel track	1455	1485	1455	1455	1485	1485
	T chassis height (unloaded)	910	975	950	948	1010	1008
	D Rear overhang	980	980	980	980	980	980
	W Max equip. length	2227	2227	2227	2577	2227	2577
	Lc* Max. width	1900	1900	1900	1900	1900	1900
	WEIGHT (kg)	Max load on front axle	2000	2000	2300	2300	2300
Max load on rear axle		2500	2500	4450	4450	4200	4200
Cab tare on front axle		1635	1655	1650	1700	1695	1715
Cab tare on rear axle		940	960	1135	1125	1155	1140
Total tare		2575	2615	2785	2820	2850	2855
Payload		925	885	3215	3180	3150	3145

Chassis with F1A engine \* OPT homologated with mirror cat. II app. e3 03\*2115 est 01 (wide arm) W min/max = 2050 mm1



Via Dritta - Località Fascia D'Oro  
25014 Castenedolo - Brescia - ITALIA  
Tel. + 39 03021371 - Fax +39 0302137340  
[www.bremach.it](http://www.bremach.it) - [info@bremach.it](mailto:info@bremach.it)

This brochure is BREMACH publication.  
All illustration and specifications are subject to changes. BREMACH reserves the right to make changes at the described models at any time without prior notice, in order to improve the product or for marketing and design reasons. Some of the models presented may not be available, or be available after the introduction on the market of the models. The illustrations include also special equipments that are not part of standard supply BREMACH organisation will be happy to provide further information and updates about our products and services.

**WWW.BREMACHTREX.COM**

Brochure designed by Steeve Bernaud-Heyd