

RALLY / ADVENTURE KIT

FOR GAS GAS EC ENDURO BIKES



MY 2021 - 2022



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WELCOME TO THE AURORA FAMILY!

In Aurora Rally Equipment we firmly believe that the products should give value to your bike, allow you to enjoy it during long distance trips and races and be as reliable as they can possibly get. Motorsport forms part of our DNA. It's no surprise that since 2013 the Aurora Rally Equipment accessories have reached the top step of the podium in many international rallies, have won world rally championships and have shown exceptional strength and reliability.

We treat each customer as we would a guest in our home. And since 2013 Aurora Rally Equipment is designing, testing, and manufacturing some of the highest technology accessories for rally bikes. From navigation towers and frame clamps, to rally switches, fairings, and full rally kits with triple tanks.

Over many years of building rally winning bikes, Aurora Rally Equipment learned how to offer the highest quality level rally equipment, the best kits for converting off-road and adventure bikes into rally bikes, for participating and competing in Rally Raid events around the world, as well for long distance off-road travelling.

Aurora Rally Equipment offerings, are modular kits, roadbook holders and navigation gear (switches, controllers etc.), lite kits with windshields and full rally kits with expanded fuel range, all integrated for seamless ergonomics, plug and play with ease of use.

Repairs are, when needed, simple to perform and the bike can be reversed back to its original state in a simple way.



Aurora Rally Equipment, designs, tests, and races its products and all riders, from rally racing to round the world travellers use our equipment in the hardest events around the globe.

IF YOU THINK YOU CAN'T,
YOU WON'T...
IF YOU THINK YOU CAN,
YOU WILL.
WE CAN, AND WE WILL.
WELCOME TO OUR FAMILY!



*This is our new,
rally/adventure kit
for enduro bikes*



RALLY / ADVENTURE KIT

In 2016 our Vykon navigation tower series was released. A tower that could be adapted into three different configurations. The tower was designed using three different materials. Aluminum, stainless steel and polymer. A unique idea that we still carry throughout our product range with great success.

In 2018 we set up for a journey that led us to this, unique rally / adventure kit. The idea of transforming your cockpit according to your needs taken a step further thanks to advanced analysis and manufacturing technology. We bring to you a kit that will change the way you enjoy your bike. A kit that will never give up no matter what you throw at it. A kit that will follow you to your adventures on Trans American and Trans Euro trails (TAT and TET), a kit that will allow you to race Dakar and other FIM rallies. A kit that will allow you to have a minimal setup if you want, or a fully loaded tower with spares, accessories, tools and emergency kits.



COMPACT

Enjoy the agility of the small, enduro bikes. Unlike their big brothers these bikes have easy to remove side panels, so why add more parts? Keep it simple!



RELIABLE

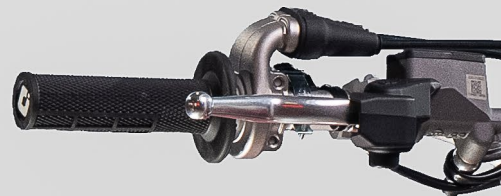
OEM parts from KTM™ means that you get the reliability from the 18 Dakar winning bike!



FULL CNC MACHINED

Five years of racing experience have gone into this state-of-the-art navigation tower. Machined out of a 50mm solid block of aluminum, this tower has an exceptional strength to weight ratio with unique impact characteristics. The kit will fit like a glove onto your bike and there is no need to modify anything to install it.

The advanced 3D CNC parts will embrace the frame like there were meant to be there in the first place.

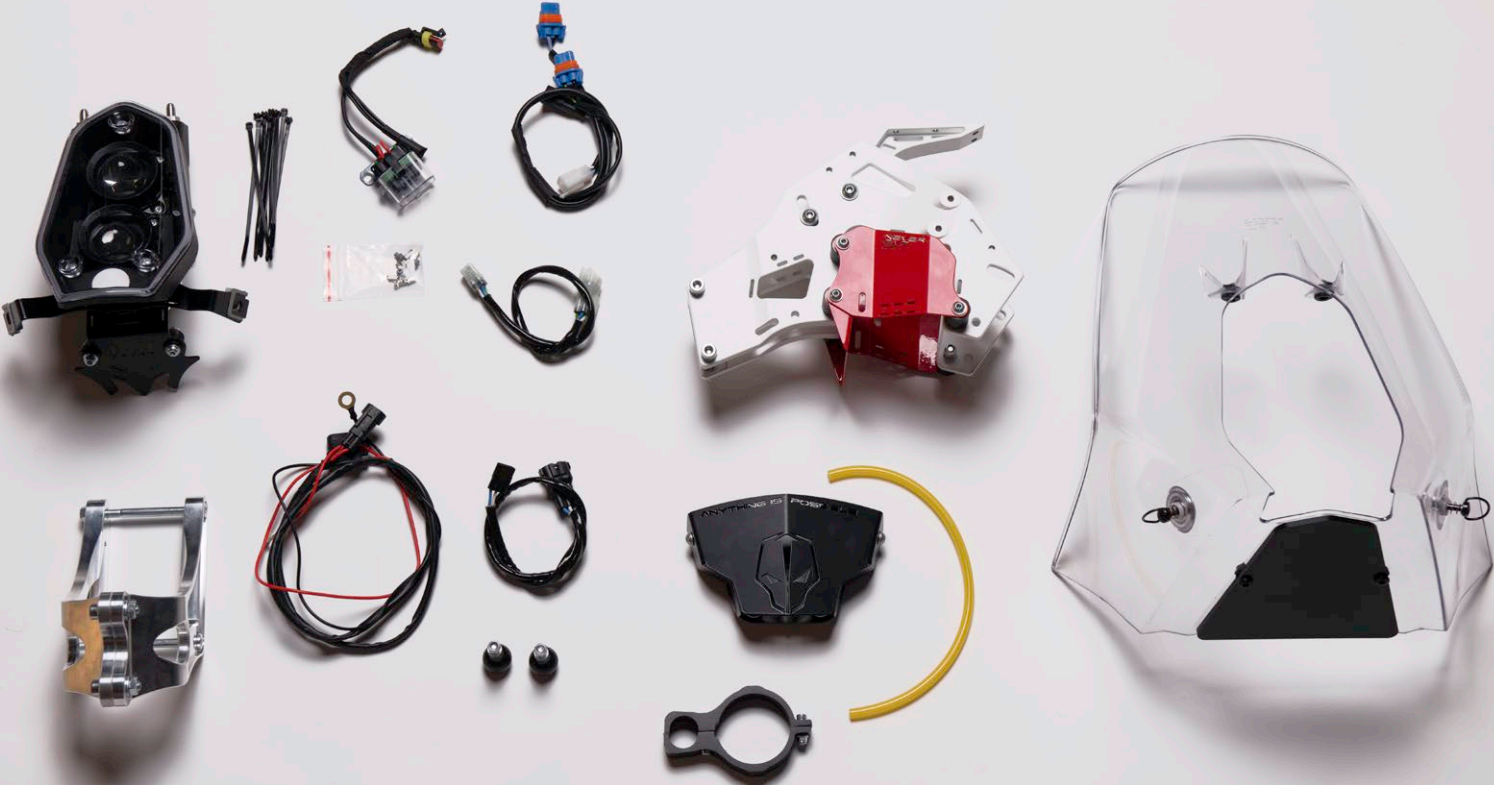


VERSATILE

Choose trail, rally, or adventure mode with this unique tower. Add accessories, emergency kits, tools, digital accessories or just keep it plain and simple with two RAM™ mounts. Go full pro and add FIM tracking devices should you choose to enter races such as the Dakar or Africa Eco Race.



PRE-ASSEMBLED



COMPLETE

The enduro kit comes with everything you need to install it and it is completely reversible. No need to modify a single part of your bike! All the parts are pre-assembled for your convenience. We do the hard work so that you don't have to!



RACING BREED

Each kit Aurora develops is tested in real racing conditions by racers who are part of our development program. Nicola Dutto, the Italian paraplegic rider who competed in Dakar and finished Africa Eco Race along with his team is one of these riders and we are proud to have him on-board this journey!





IMAGINE...

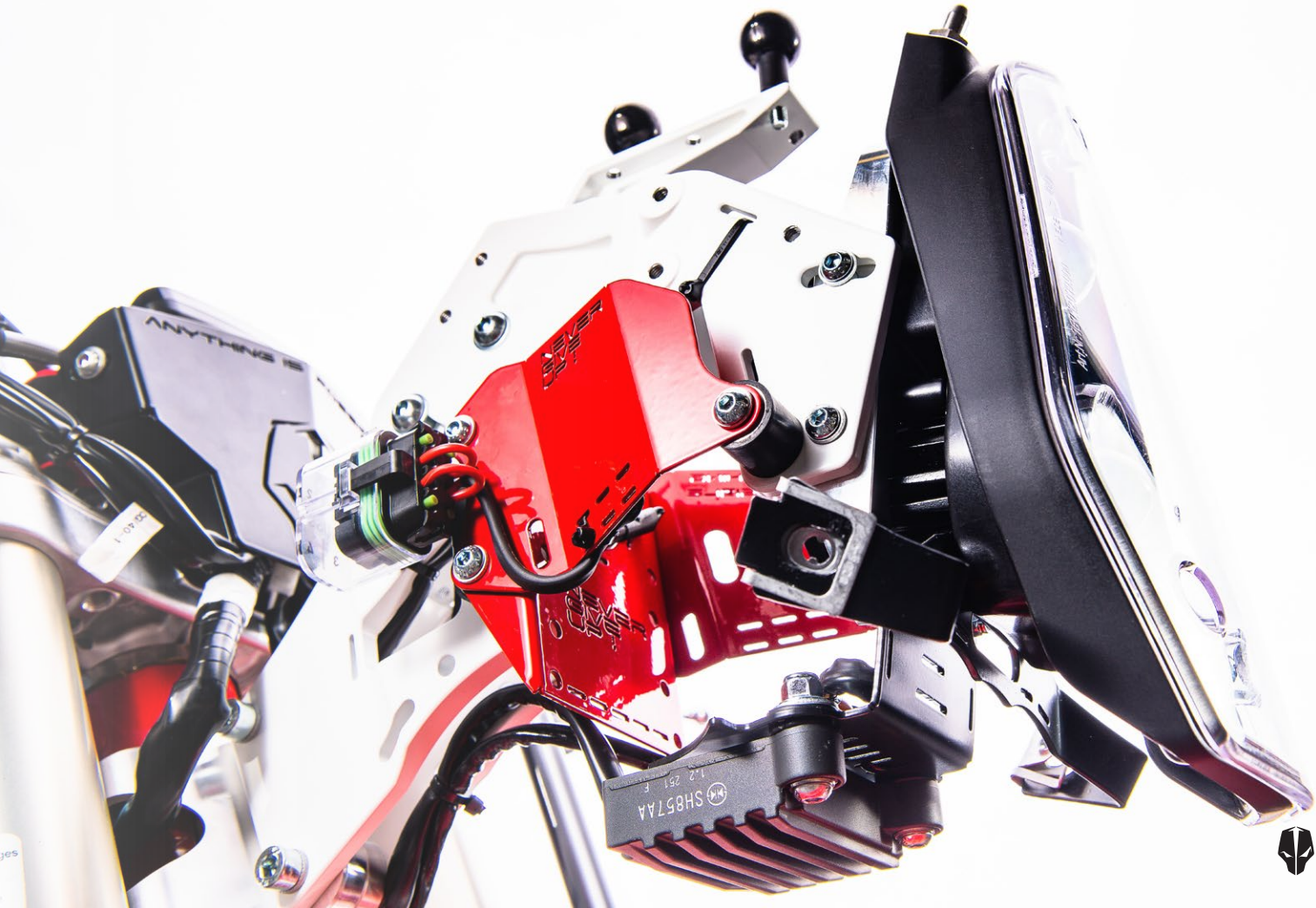
Imagine a kit that will allow you to transform your enduro bike to a long distance Xplorer. A conversion kit that will allow you to race the Dakar, should you choose to, or travel along the European and American trails. A kit that will not interfere with your bike, will have a minimal effect on weight and will serve you wherever you decide to go. A kit with a frame clamp that comes with a lifetime warranty, like all our billet products since 2016.

All that in a small packed kit, which uses KTM™ rally factory parts for increased reliability and safety.

Imagine a tower that is able to metamorphosize in more than 10 different setups to serve your will. A tower that will allow you to add tools, rally equipment, mobile phones, gps or tablets, spare parts and other small things that you may need to access immediately (such as a small raincoat) with ease. Unlike most available solutions that add extra panels, actually increasing the time to either access parts or undress the bike, imagine a kit that allows you to access the tower in seconds!

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The time is now. Read on!



EXPERIENCE DESIGN

Everything can be improved upon - even the light and athletic enduro bikes.

Enduro bikes have come a long way since the old days. There are added benefits when going off road with such bikes. Ease of maintenance, weight saving compared to a full adventure bike and simplicity are just some of them. This allows you to travel and explore further than before, without the fear of getting stuck in a trail that it would be impossible to climb back up with a larger bike.

Up till today, navigation towers for adventure and rally bikes were made with traditional manufacturing methods. Laser cut and bent, composites either with hand laid procedures or via molds and autoclaves, and some CNC parts were thrown into the mixture. We firmly believe that 3D CNC manufacturing is the optimum way to go into the future. It's more expensive (as each part has to be machined separately and the process is more time consuming), but Aluminium, if the alloy is chosen properly, has a superior impact strength, it is very light compared to steel and the strength to weight ratio can be optimised by the engineers.

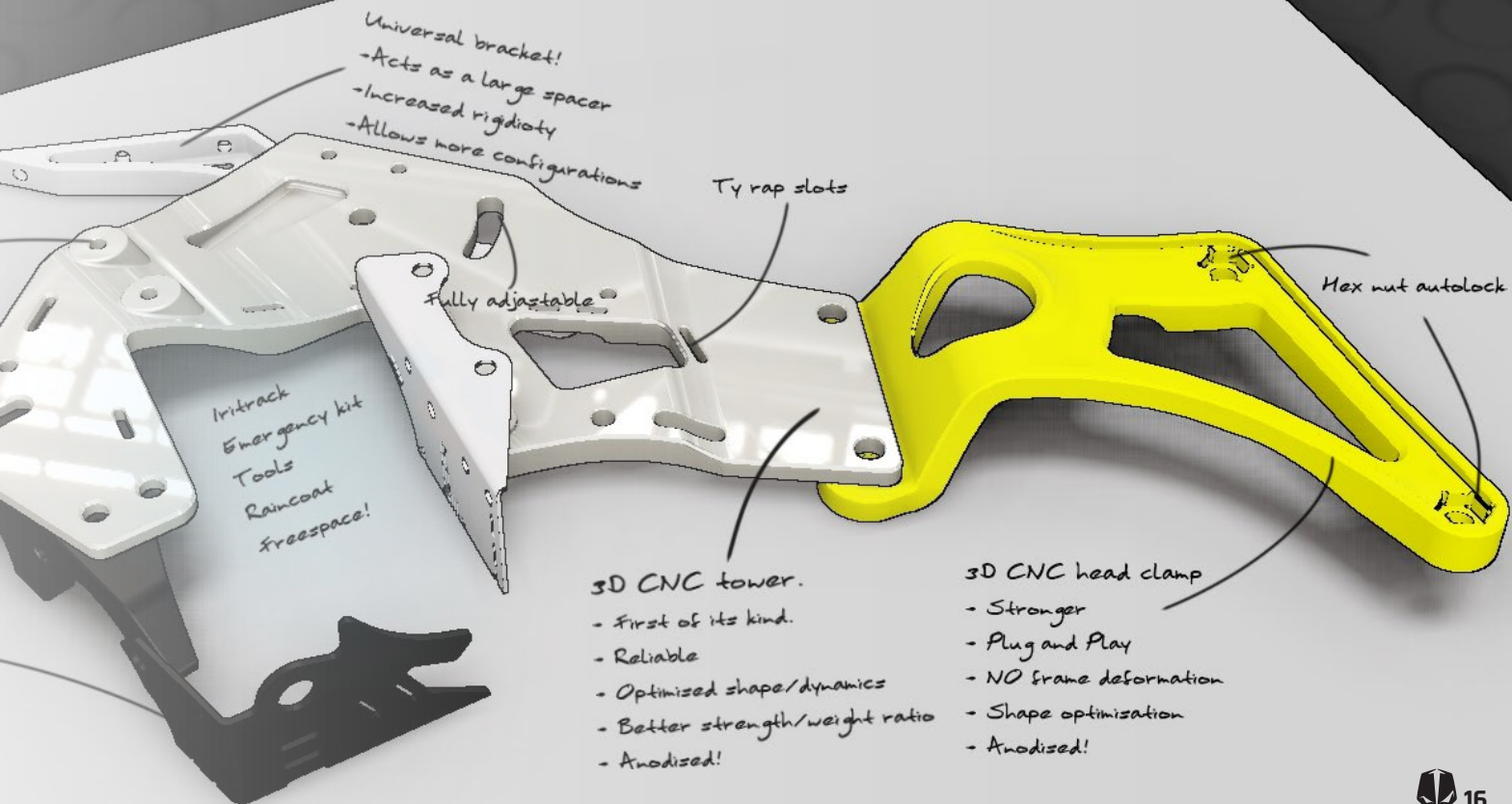
A CNC tower allows for infinitely variable thickness, thus allowing maximum control of the flexibility of each individual part, threads and pockets can be created so that the ergonomics and functionality are perfected, while the extra parts on the tower are eliminated. Spacers and number of connecting bolts can be minimized and there is much more space. And all of that in a compact package that is fully customisable.

Imagine a tower that you can take to Dakar (and back!) in TransEuro and TransAmerican trails (TET and TAT). A tower that you can commute with, or remove it and install it on another bike. A tower that can take from professional tracking devices in Dakar and Africa Eco Race to tools, phones, rugged tablets, and GPS devices if you are up for an adventure with your enduro bike.

Future M6 accessories

*full CNC light bracket.
- light
- acts as a spacer/stiffener*

*Rectifier repositioned.
- More air
- better head clamp design!*



INNOVATION WITH IMAGINATION

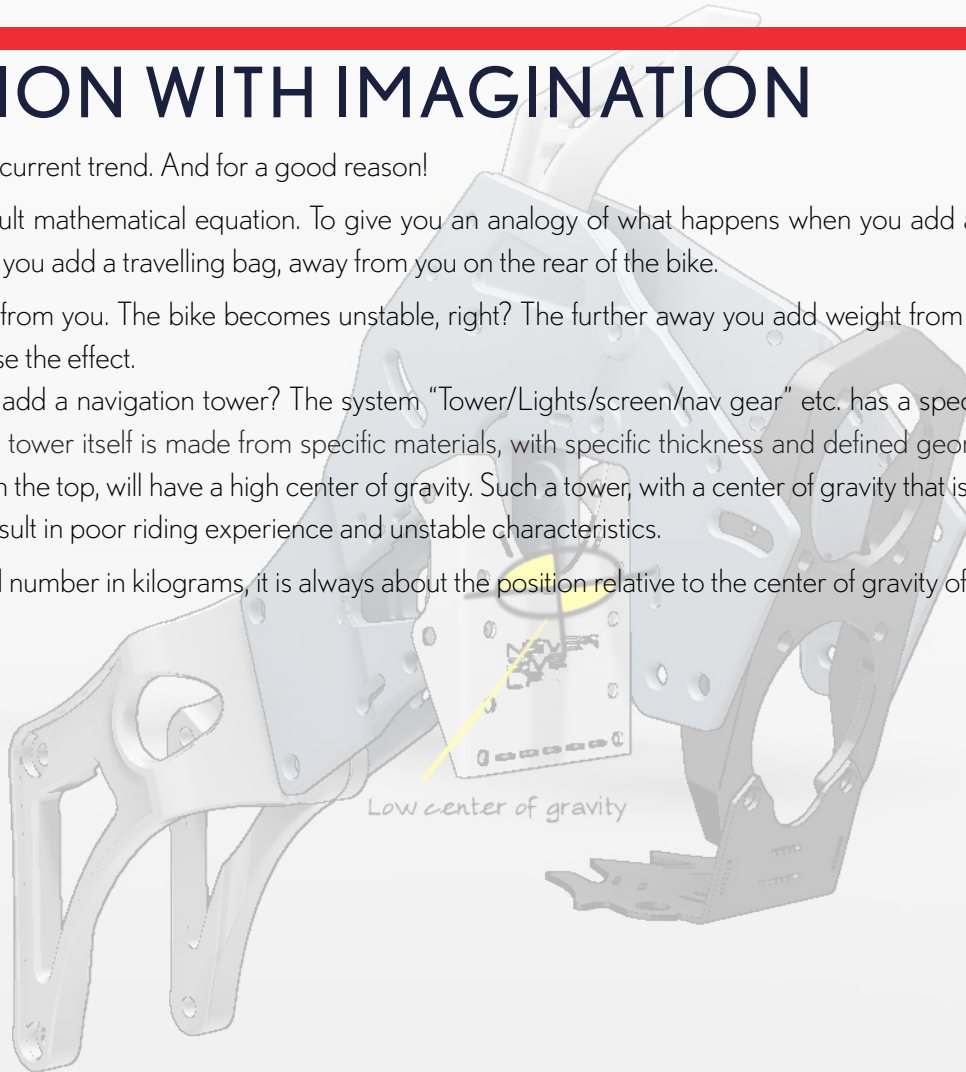
Mass centralisation is the current trend. And for a good reason!

We will not dig into difficult mathematical equation. To give you an analogy of what happens when you add a tower, think about what happens when you add a travelling bag, away from you on the rear of the bike.

Or if the pillion sits away from you. The bike becomes unstable, right? The further away you add weight from the center of gravity of the bike, the worse the effect.

What happens when we add a navigation tower? The system “Tower/Lights/screen/nav gear” etc. has a specific center of gravity. This is because the tower itself is made from specific materials, with specific thickness and defined geometry. A very light tower, when loaded on the top, will have a high center of gravity. Such a tower, with a center of gravity that is further away from that of the bike, will result in poor riding experience and unstable characteristics.

It is not about the physical number in kilograms, it is always about the position relative to the center of gravity of the bike.



Keep heavy weight parts in the green area! ✓



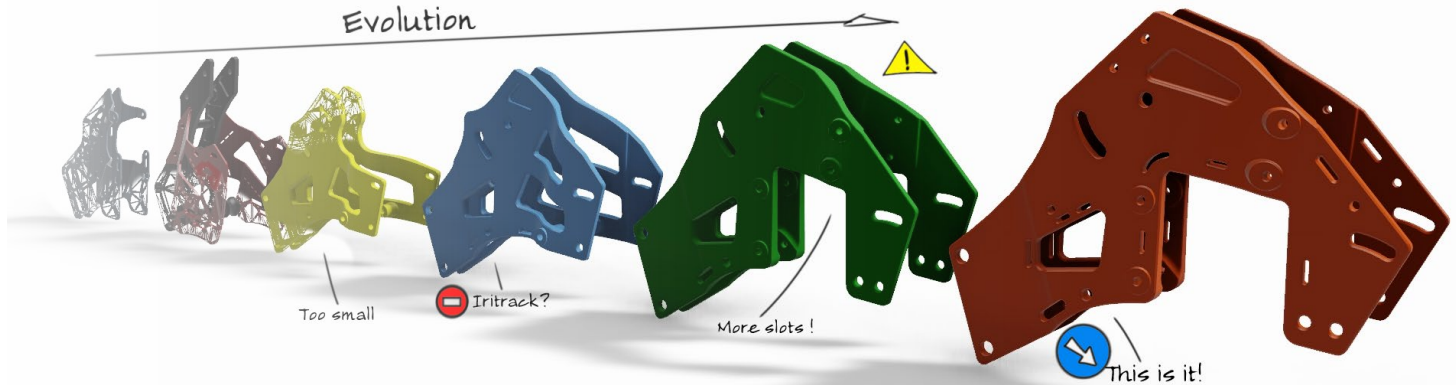
MECHANICS

The geometry on this rally kit is unique.

On an enduro bike, converted either for rallies or for exploring trails, the priorities of the rider are different from those of a big adventure. Environmental protection is good, but it is not mandatory. What is more important is to keep the bike agile, with minimum interference with its riding characteristics.

The OEM KTM™ rally screen is modified in house to position it closer to the bike by 40 millimeters (thus getting the whole assembly closer to the bars), while the air duct that is used in the official rally bike to direct air in the air filter of the factory bike is omitted since it does not serve a purpose on the enduro bike. This way, the tower sits lower and closer to the bike.

Lower means safer, since the top of the navigation tower is now further away from the rider. This way the riding characteristics of the bike remain virtually unchanged, allowing you to enjoy riding your bike in all conditions.



- improved safety
- lower CG
- better riding characteristics
- better stability

Lower



Closer



THE ART OF SIMPLICITY

Beauty and function lie in simplicity. We worked hard to give you a design that is so beautifully simple to use, maintain and work with that it will change the way you see and use navigation towers.

Tommorow's technology, today. The tower is comprised of three main parts (left and right side and the spine like part in the middle). This allows the tower to be held together with only two M8 bolts. This is unique in the industry and allows you to service the tower, replace parts, cables and navigation gear in no time. Being a racer this is paramount, but it is also important when you are in the middle of an adventure, travelling to remote places.

The spine like structure is strong in all directions, making this a key part in the structure. This is a part that will hold all you navigational gear and eventually the forces will be transmitted to the tower, through that part, if you lay the bike down hard. But there is no need to worry. Should this part gets damaged, it can be replaced using only two bolts!

The light support is stronger and lighter than previous designs, and acts as a brace for the front part of the tower. There is plenty of adjustability to adjust the LED lights that come straight from the rally factory KTM™ 450 bike. Finally, the recitfier is relocated to the front part of the tower, allowing it to get fresh air, thus improving cooling.

The tower sides are milled out of a 50mm solid block of Aluminum, giving excellent rigidity characteristics. They feature slots and M6 threads in key areas thus allowing them to carry multiple brackets and accessories without the need to drill and tap. The opening in the middle of the tower creates this characteristic 'crane' shape, and is positioned exactly in the center of gravity of the tower. This way, added weights in this area will have minimal effect on the tower, and actually bring the center of gravity of the assembly even lower.

simple, elegant, powerfull

Aligning holes.

bracket support
strong in all directions
optimised shape

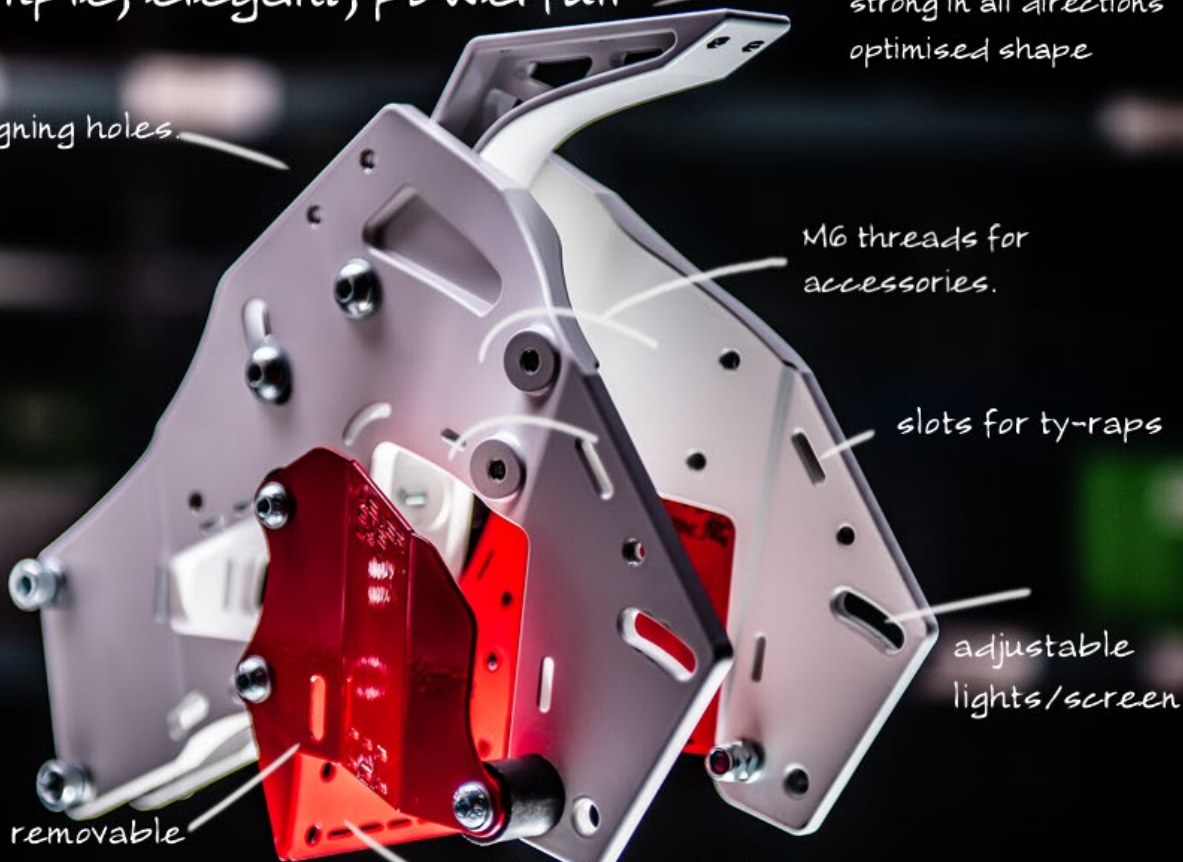
M6 threads for
accessories.

slots for ty-raps

adjustable
lights/screen

removable
side covers

iritrack bracket
Dakar ready!



A LEGENDARY FRAME CLAMP

We produced our first CNC frame clamp in 2016. Since then, we have an unmatched record of 100% reliability on these parts. Make no mistake, this is the part that you don't want to give up! This is the foundation of your tower. It holds everything together and it clamps the frame with immense force.

In Aurora we firmly believe that a frame clamp should be the strongest part of your navigation tower. This is a part that we design to stay there even during the toughest races and heavy crashes. The tower can be repaired, the cables can be reconnected. But this part is really next to impossible to patch up.

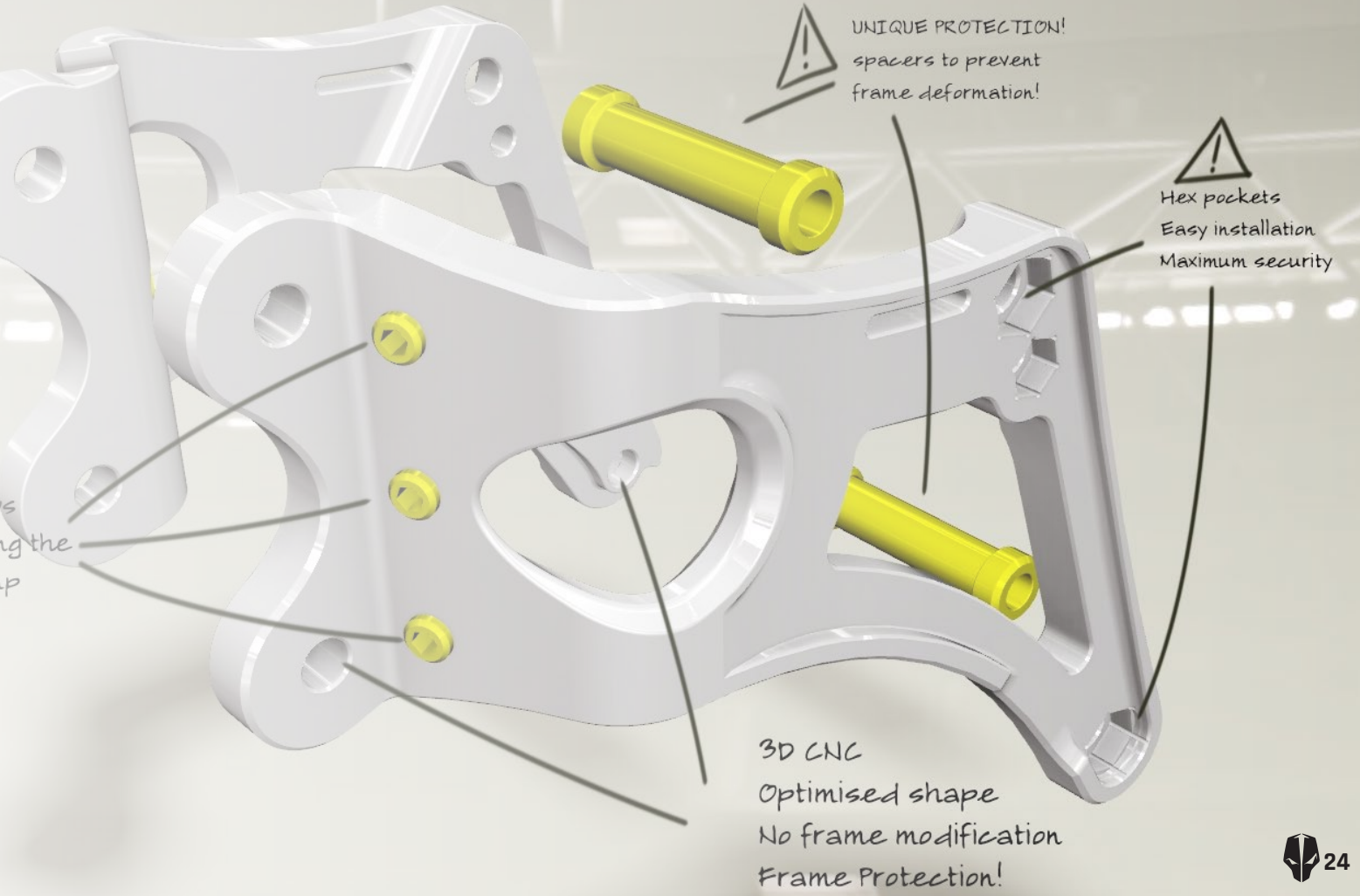
If that part collapses, there is no way to properly repair it in the field, and it is really challenging to hold everything in place if this part sustains damage. The clamping systems in the industry are quite old, yet neither the frame is protected from being crushed by the clamping forces generated, nor the bolted connection is fully shielded from creeping.

The Aurora head clamp offers unique solutions to those problems. The forces generated by the M8 bolts that press the clamp onto the frame can exceed 1000kgs when tightened to spec. The sheet metal on your frame will eventually deform (this is called creeping in engineering terms) and the bolted joint will no longer be tight. Further to that, the frame will also may be damaged as the sheet metal plates may give up straight away. We strongly believe that your kit should stay in service for the life of your bike. We designed steel spacers that are strong enough to withstand the clamping forces and protect your frame, adding to the longevity of the system.

In addition, six M8 grab screws will make sure that everything stays in place and all the vibrations are minimised in the system.



set screws
for securing
head clamp



UNIQUE PROTECTION!
spacers to prevent
frame deformation!

Hex pockets
Easy installation
Maximum security

3D CNC
Optimised shape
No frame modification
Frame Protection!

is
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-P

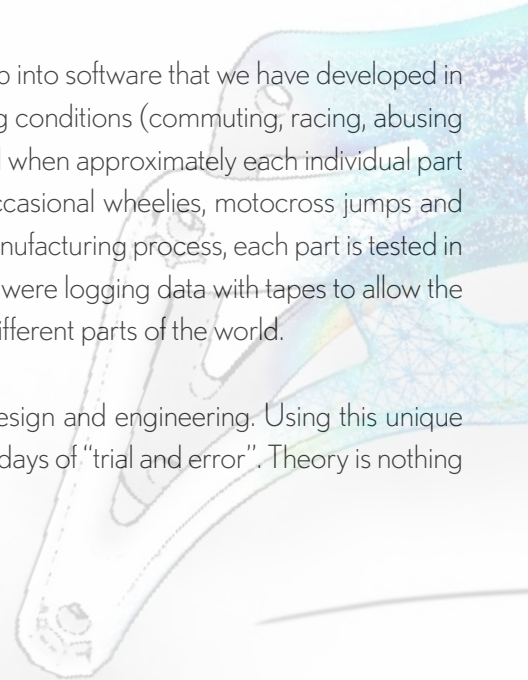
THE FUTURE IS NOW

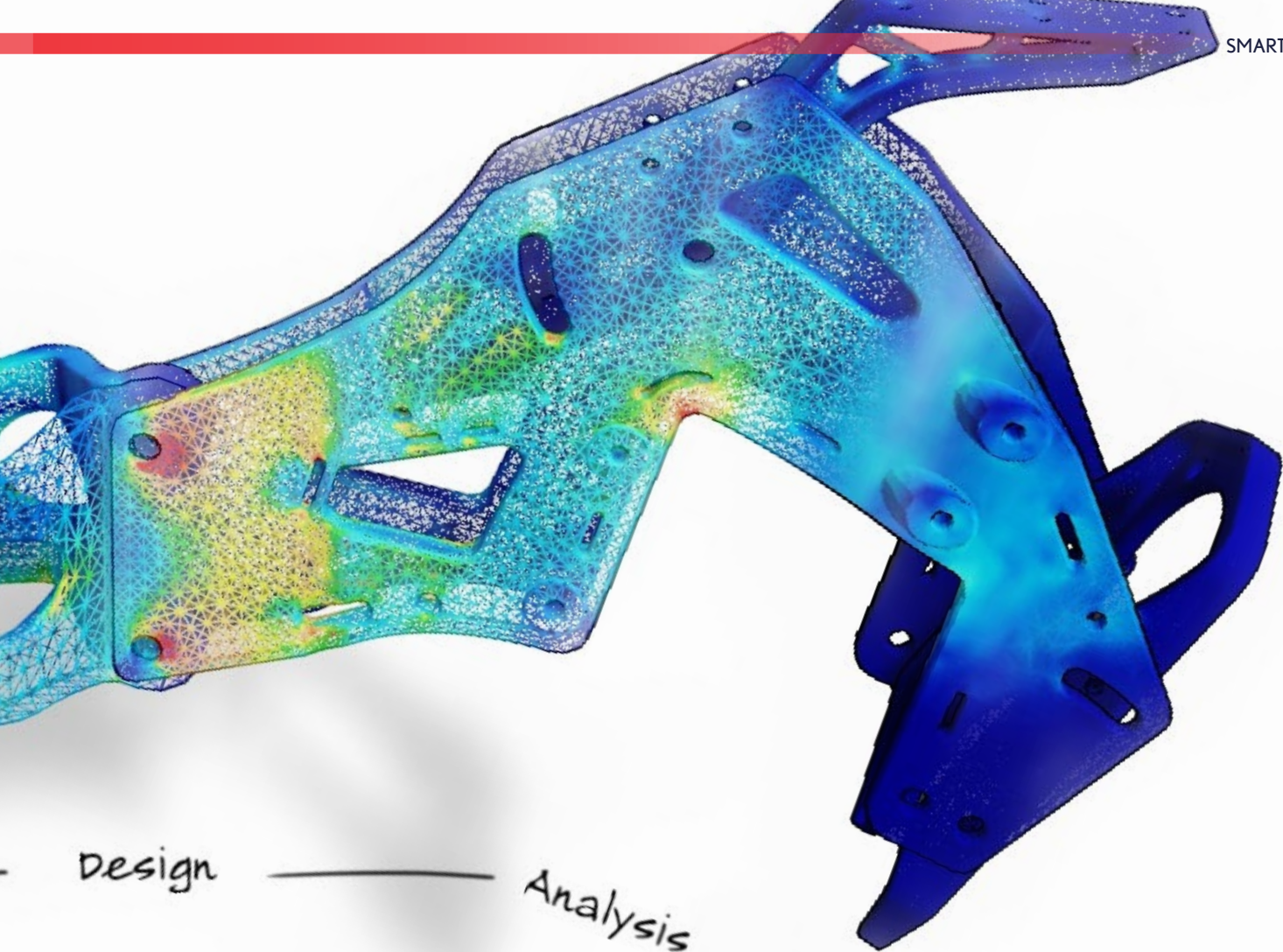
None of the designs would work, or perform flawlessly if there are no data to back up the new ideas and unique shapes.

Since the industry that we are operating did not have any standards, we went to create our own! Not only we mimic the potential weights on the towers and test the towers in off road tracks, but run multiple simulations on our servers to ensure that each part will endure the tests of time. For this new Rally / Adventure kit, we took this a step further. A brand new data logging system was acquired to allow us to further design and manufacture the ultimate navigation tower.

Aluminum has a finite life, and extending it is not an easy task. Acceleration data are fed up into software that we have developed in house for that very task. This way we can see and monitor vibrations during different riding conditions (commuting, racing, abusing etc.). CAD software is then employed to predict what will happen with these vibrations and when approximately each individual part will fail. Basically, each part that we develop runs multiple Africa Eco Races, trail rides, occasional wheelies, motocross jumps and many other 'modes' that we have in our digital library. This way, before we even start the manufacturing process, each part is tested in this virtual world. A technique that is used in the Formula 1 sector since the 80s when they were logging data with tapes to allow the engineers to mimic the races in their laboratories without the need to attend the tracks in different parts of the world.

Once satisfied in our virtual world, real people (our testers!) take over to validate the design and engineering. Using this unique method, all the parts have an advantage before they even get manufactured. Gone are the days of "trial and error". Theory is nothing without practice, and we are happy that since 2016, non of our frame clamps have failed.





Design

Analysis

SIMULATED RIDING

Imagine a bolt on your bike. How tight is tight? If a person is stronger than another, then tight may be too tight. This is why torque wrenches exist, to make sure that bolts are tightened with the exact same torque, every single time, no matter who does it.

The same happens when testing rally equipment. A fast and agile rider may not stress the bike too much, forces depend on the terrain, rider, bike type etc. It is of no good use to test the bike in a rally when we will be just commuting to the finish line.

The accelerometer makes sure that we have data to fully understand the stresses on the parts. Back in 2017 we used a +/- 30g accelerometer to understand the forces during different scenarios. In 2020 we updated this equipment to a +/- 200g impact

Off road



Amateur racing



Travelling



Professional racing



accelerometer, able to take 3500 measurements per second. That allows us to fully define what happens and optimise the shape, weight and strength of our parts. Remember that max g forces mean nothing without knowing for how long that force is applied!

The possibilities are endless. For example, reproducing the vibrations over a long period of time allows us to explore the effect on the aluminum parts and predict when they will fail, thus allowing us to perfect the design. In real life the chances to run Dakar or Africa Eco Race happen two weeks every year. In Aurora we can simulate such rides in our high end computers. This is the sort of test that would be impossible to perform in the real world.

SAY HELLO TO A.D.A.M.

Data from the accelerometers are then fed back to the Aurora Dynamic Analysis Module (ADAM) which is a software developed in house for analysing acceleration data and calculating the different frequencies, so that vibration analysis can be performed. 10 hours worth of riding can generate more than 120 million points (!) hence it is impossible to process them by other means. A.D.A.M. will process these data and give peak acceleration numbers, state the specific time that this happened and also point out erroneous data that may need our attention.

The screenshot displays the ADAM software interface with several key components and annotations:

- Global Maximum g Force:** A line graph showing acceleration over time with a horizontal line indicating the peak. *Annotation: Peak acc and time*
- Statistics:** A central hub with four sub-graphs:
 - All data:** A wide-range acceleration plot. *Annotation: All data*
 - Zoom in to max:** A zoomed-in view of the peak acceleration. *Annotation: Zoom in to max*
 - Data id Check max peak time:** A plot showing the specific data source for the peak. *Annotation: Data id Check max peak time*
 - Time Zoom to min:** A zoomed-in view of the time around the peak. *Annotation: Time Zoom to min*
- Frequency calculator:** A graph showing the frequency spectrum of the acceleration data. *Annotation: Frequency report. Used for vibration and fatigue analysis.*
- Main window:** The central control panel with the title "ADAM - AURORA DYNAMIC ANALYSIS MODULE". It includes:
 - File check: Status: Ready to roll!
 - Data root folder:
 - Gathering Files:
 - File number: Points per file: File with max g: Global Max:
 - Total Time: Points analysed: Average g: Global Min:
 - Progress: Folder Analysis, Reading Files, Calculating Matrix (each with a progress bar)
 - Files Analysed:
 - Dropped Files:
 - Buttons:
- 3D g force representation:** A 3D surface plot of acceleration data. *Annotation: seeing acceleration in 3 dimensions*
- 2D g force representation:** A 2D line plot of acceleration data. *Annotation: Understanding the global peak acceleration*

REAL WORLD TESTING

Navigation tower loaded with solid blocks of Aluminium is added to a 450 enduro bike.



Jumping on a track will stress the tower to its limits



Landing while acceleration
is recorded 3500 times per
second.



Maximum stress!



TRUE MULTIFUNCTION

The unique tower will hold everything you need to race, commute or explore. Mobile phones, GPS or tablets can easily be installed in the RAM™ mounts to keep everything simple with a wide view through the rally screen, or a dedicated back plate for adventure or rally can be installed. Below you can see some of the configurations that this tower is able to take. Carry tools, rally equipment, emergency kits, spare parts or raincoats with ease with this innovative navigation tower!

Use different accessories to fully customise your cockpit the way you like it. Roadbook and GPS back plates are available and custom setups can be designed and manufactured upon request.





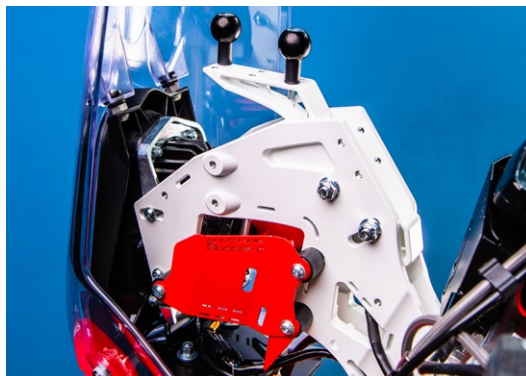
INTELLIGENT FEATURES

During our involvement in racing, it was apparent that factory teams try to have everything neatly packed inside the tower. While this idea is ok when there is a factory team with mechanics dedicated to a particular bike and lots of spare parts, for a non-factory rider or a traveller, this approach is not ideal. Getting to access the electrical cables, make repairs or even change switchgear becomes a real challenge when you have to undo the full tower to access them.

With this intelligent setup you will be able to gain access in no time. The 4-way fuse box is 100% waterproof and will ensure that your cables, connectors, and fuses remain dry whatever the weather. Upon request we can supply unique digital automatic fuses that will make fuse changing obsolete or LED fuses which light up when there is a fault, for quick error tracing. Choose your technology and focus where it matters the most. Your ride!



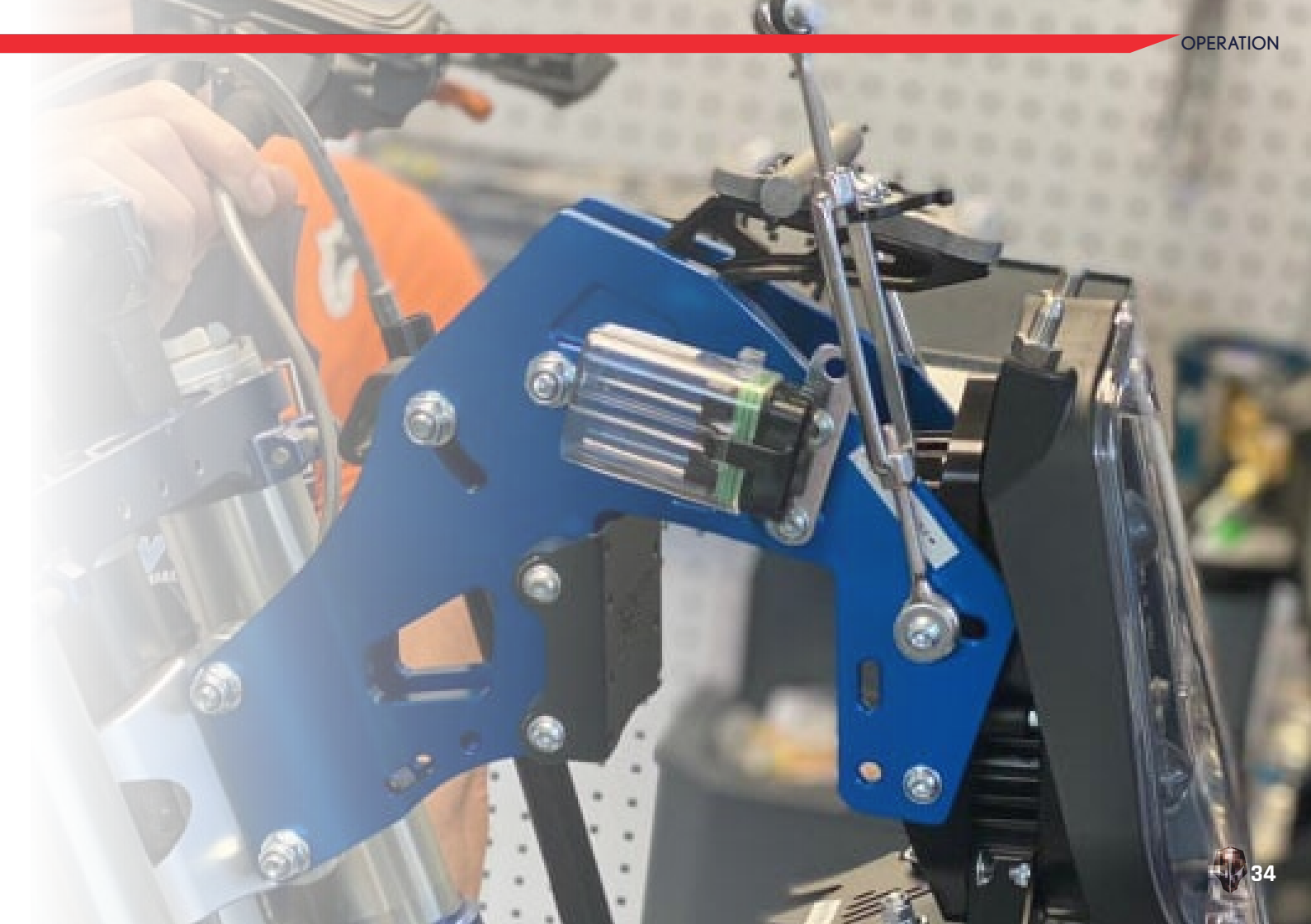
Removable covers to protect the cables and gain immediate access to the electrics.



Route the cables with ease thanks to the geometry of the tower covers.



These stainless steel covers can be removed using three Allen bolts.



CUSTOMIZATION

Build your own kit. We firmly believe that each rider has different needs, and personalising your rally equipment is a paramount for us. Aurora Rally Equipment since 2013 offers full customization on the kits and accessories that you get for your bike. We offer various anodising and powder coating colors for you to choose from, so that you make your kit unique and much different sticker setups, sponsor colors etc. The details of the tower can have a different color, while if you are a more traditional type, the raw look of the CNC machined tower in clear coat, may be your best choice!



Mix and match colors.



Choose between a variety of anodising colors to personalize your kit!



Get a clear coated tower for that raw look!



MANUFACTURING TECHNOLOGY

Each billet part is carefully manufactured on a CNC vertical center and then anodised according to customer specifications (if custom colours are chosen). An unprecedented feat of precision engineering, the navigation tower is superlight, yet stronger than ever before. Even the shape of the openings is carefully calculated to allow deformation in the event of a big crash, allowing the structure to deform, rather than break. The main aluminium parts of the tower weigh less than 1.5kg. When the tower is assembled together it has unparalleled strength to weight ratio and excellent impact strength characteristics.

HEAD TURNING DESIGN

The frame clamp design, inspired from road track racing aluminum frames, a design that gives maximum strength with minimum weight. The characteristic 'crane' shape of the tower, allows you to add devices or extra parts (tools, emergency kits etc.) in a place where they will not interfere with the riding characteristics of the bike.



DISCLOSURES

The new adventure / rally kit is available from our online store at aurora-rally.com and from our authorised dealers across the world.

The kit consists of:

KTM™ OEM rally screen, Hella™ LED main beam, Hella™ LED high beam, KTM™ OEM Light mask with stone guard, Full CNC navigation tower, Full CNC head clamp, Two RAM™ mounts, Iritrack bracket, Tower covers, Rectifier bracket, Quick release fasteners, OEM Speedo bracket and connectors cover, 100% waterproof, 4-way fuse box with harness, Plug and play harness.

- The top spacer in the frame clamp **MUST BE INSTALLED**. It is mandatory to install it to prevent frame damage.
- The bottom spacer can be omitted but we strongly advise to install it.
- **ALWAYS** follow the instructions in the manual and if you are not sure about your actions please consult a professional mechanic or contact us on support@aurora-rally.com
- Always ask your dealer about kit availability and delivery times

HELLA is a trademark of HELLA GmbH and Co. KGAA, KTM is a trademark of KTM AG, RAM MOUNTS is a trademark of National Products, Inc. Vehicles shown may be prototypes, and/or with options. Actual models may vary. Colors depicted may vary based on multiple factors, including ambient lighting and the format in which they are being viewed (e.g. computer, mobile device, or print).

See your local dealer for details. For more information call +30 210 60 25 003 or visit aurora-rally.com

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