



MODULO DOLLY A USER'S MANUAL

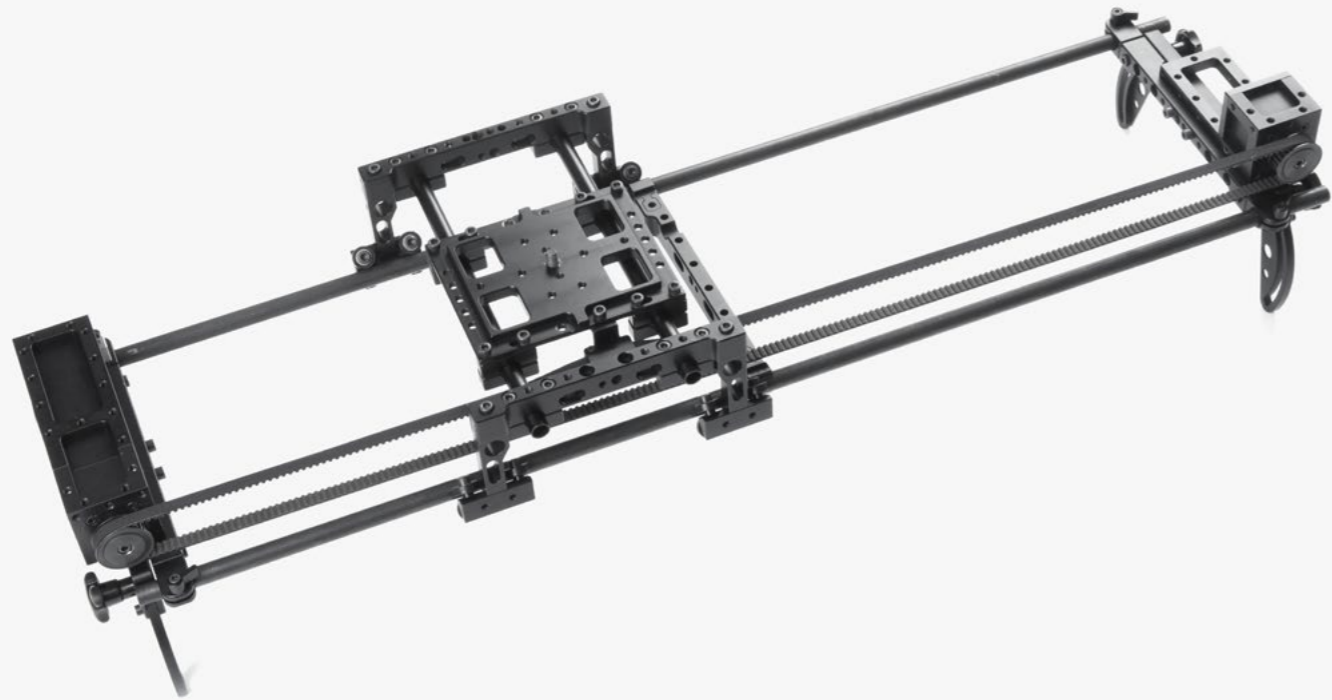


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1. Getting started

Thank you very much for purchasing DitoGear™ motion control equipment. We hope that our devices will meet your expectations bringing a great value to your productions.

This manual includes hardware instructions for using DitoGear™ Modulo. Depending on the bundle you purchased and the configuration of your setup, Modulo may be controlled by different controllers, such as:

1. DitoGear™ OmniController
2. DitoGear™ Trito
3. DitoGear™ DragonBridge Interface
4. DitoGear™ Evolution software package and multi-axis motion control interface

Detailed instructions related to these controllers have been delivered to you electronically with purchase of the device. In case you can't find them, download all manuals from ditogear.com/user-manuals

Please follow the instructions in this manual to learn how to get the most of DitoGear™ Modulo and DitoGear™ motion control devices.

Please ensure to carefully read the safety instructions and precautions contained in this manual and corresponding controllers manuals prior to the first use of the device.

Should you need any assistance or support do not hesitate to contact us at support@ditogear.com.

Precautions for safe use and optimal Modulo performance

Please read and follow the guidelines below to use the Modulo safely and ensure its best performance.

Caution!
Incautious use of the device may cause serious injuries to your body. Never put your hands or fingers near the trolley or the traction belt during operation!

Caution!
DitoGear is not responsible for any damage to Modulo, camera or other equipment caused by improper use of the device.

Caution!
Make sure not to put excessive load to the Modulo. The payload that is considered as safe for optimal performance is 25kg (55lbs) in horizontal operation mode and 4kg (8.8lbs) in vertical operation mode. Never use the Modulo under higher payloads - the device may get damaged and you may void the warranty.

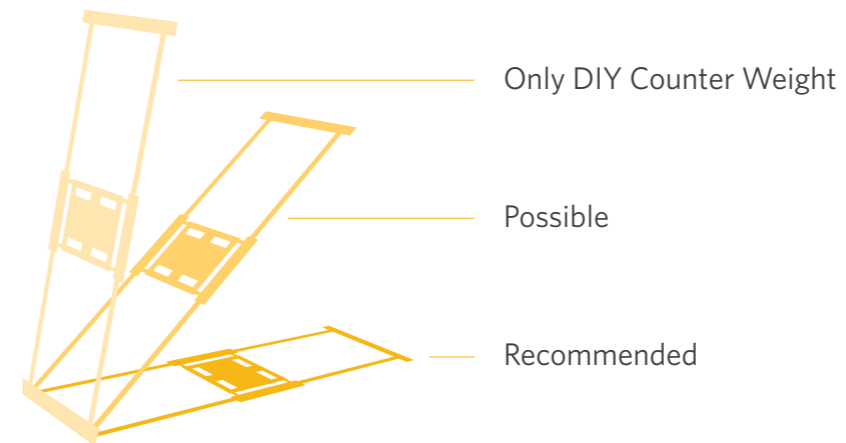
Motor warning signals and behaviors.

The DitoGear™ OmniSlider Servo, OmniHead, LensDrive and Modulo are equipped with an internal low-level servo motor controller protecting the motor from damage in result of overload or physical blockage of the moving parts. When a motor approaches the performance limit you will hear a short repeating beep from the motor box. It indicates that the motor is working under high payload and is close to its performance limit.

When an excessive load is put on the axis motor or the device is not properly calibrated and the motor tries to work against physical movement limit, a low-level motor controller will prevent the damage to the motor by cutting the power off. You will hear the continuous beep sound coming from the motor box. It indicates the motor stall. In this situation you need to press the reset button on the motor housing (OmniSlider, LensDrive) or reconnect signal cable (OmniHead, Modulo) and probably re-calibrate the device.

Operation modes and angles

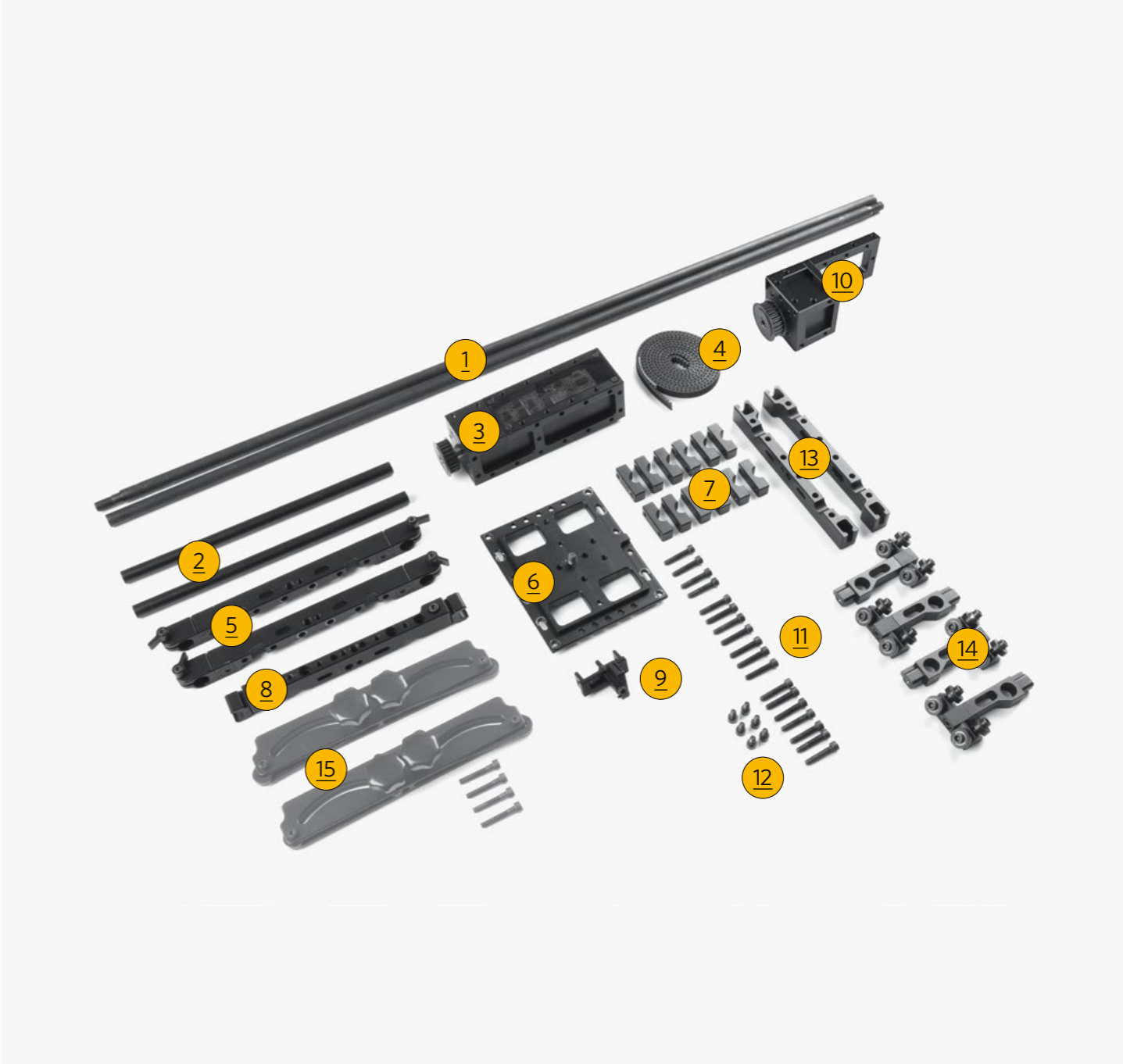
Modulo Dolly is designed to operate horizontally. Depending on the weight of your camera setup, it can also be operated slightly tilted or even vertically. In case of working in vertical orientation, a DIY counterweight is recommended. DitoGear™ is not responsible for any damage to the equipment caused while operating in highly sloped or vertical orientation.



2. In the box

MODULO DOLLY A	1M	2M
PARTS	QUANTITY	
1. 1m Track Unit	2	4
2. Building Rod	2	2
3. Servo Motor Unit	1	1
4. Traction Belt (meter)	3	5
5. End Block	2	2
6. Trolley Base	1	1
7. Rod Mounting Clip	12	12
8. Spreader	1	1
9. Traction Belt Clamps Set	1	1
10. Bearing Block	1	1
11. 1-inch-long bolt		
12. 1/3-inch-long bolt		
13. Trolley Base Block	2	2
14. Trolley Bearings	4	4
15. Modulo Support Feet Set*	2	3

*Not included in the basic kit. The amount in the table is recommended.



3. Assembly

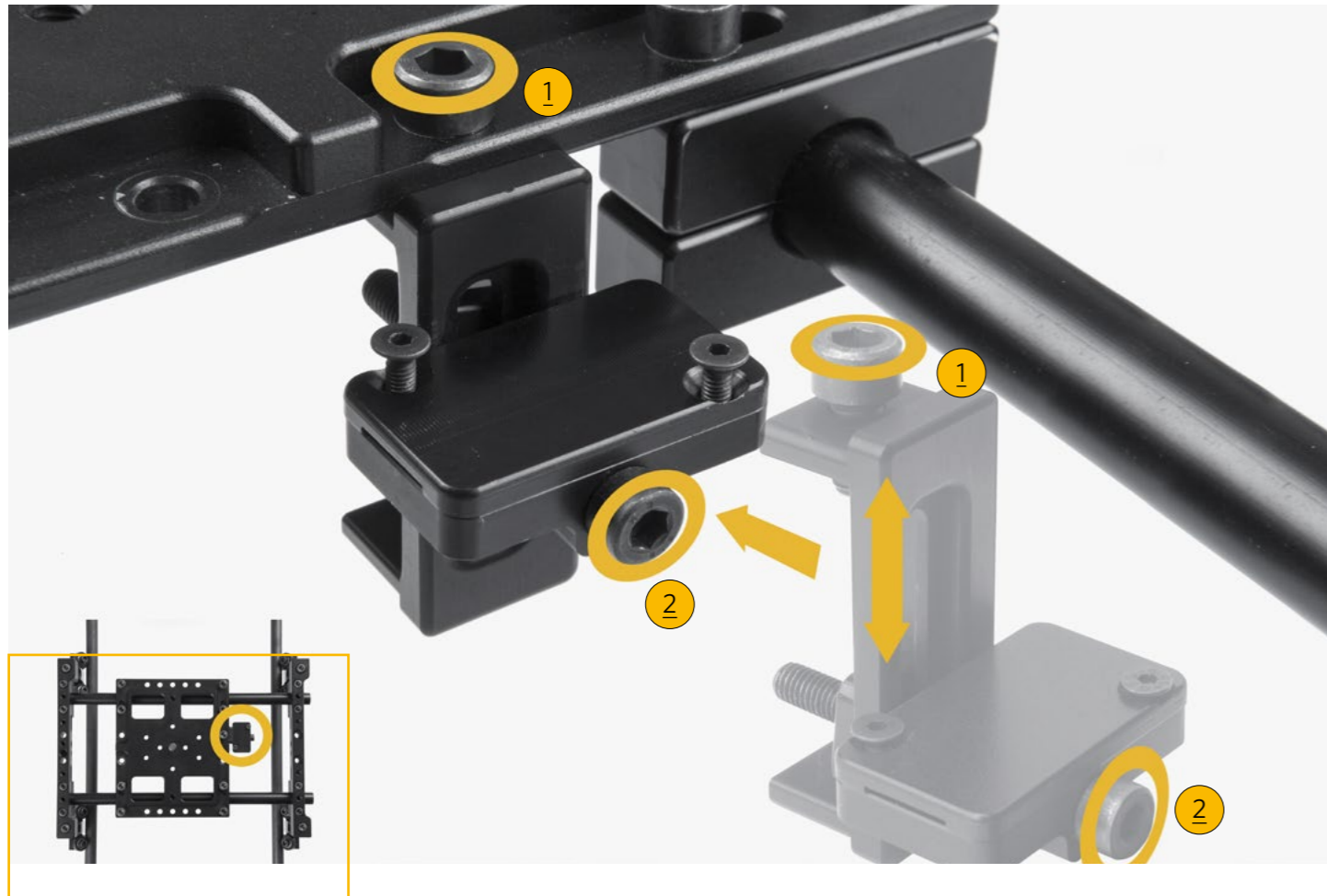
- 1 Attach four pairs of Rod Mounting Clips to the Trolley Base. The Rod Mounting Clip without thread should be located between the Trolley Base and the threaded Rod Mounting Clip. Do not tighten the bolts at this step.



- 2 Insert each of Building Rods into two pairs of Rod Mounting Clips. Tighten the bolts.



- 3 Attach Traction Belt Clamps Set to the Trolley Base with bolt #1.
It is possible to move the clamp up or down using bolt #2.



- 4 Connect Support Feet to each of End Blocks using two bolts. (Optional)



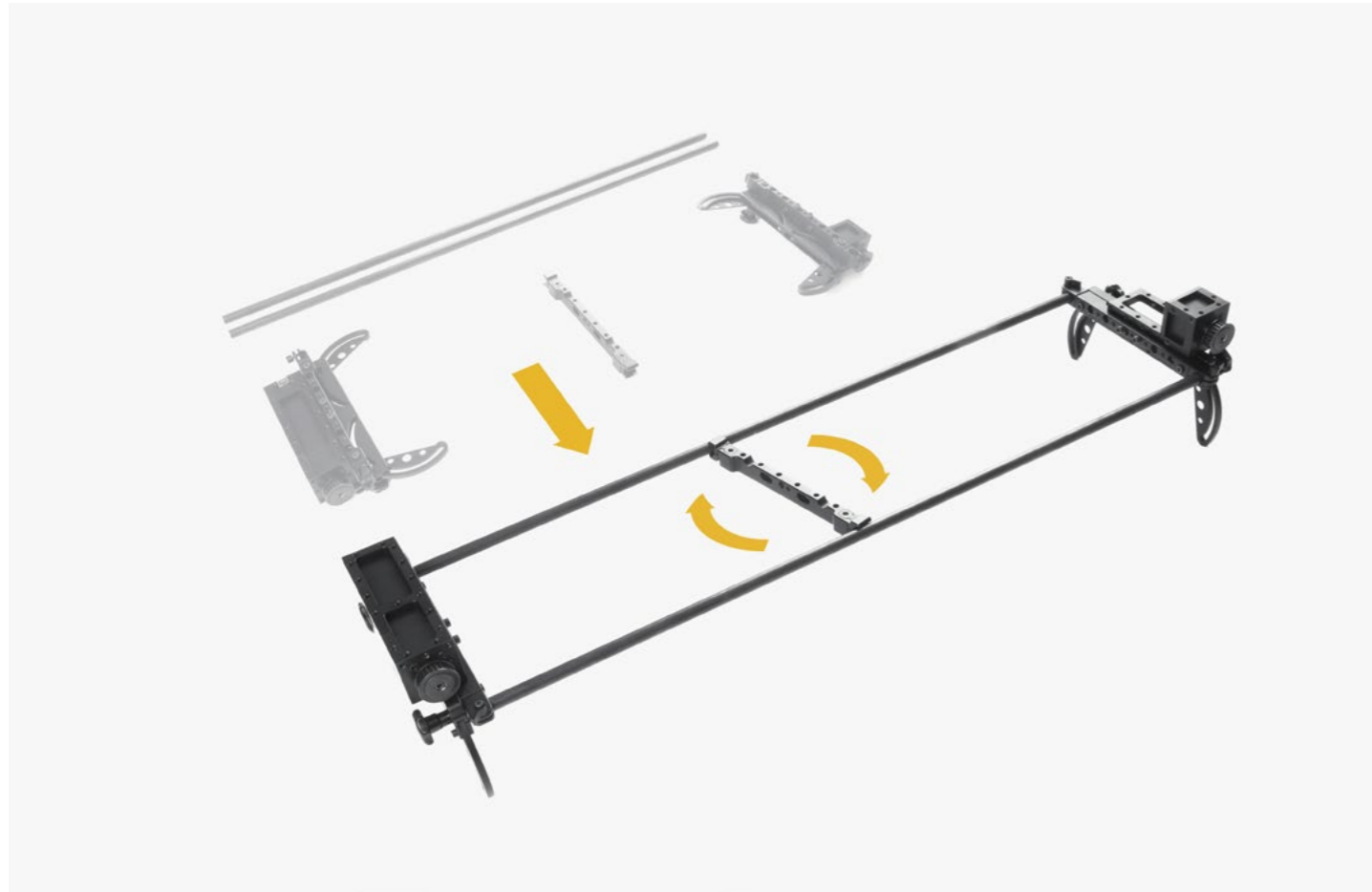
5 Attach the Servo Motor Unit to one of the End Blocks.



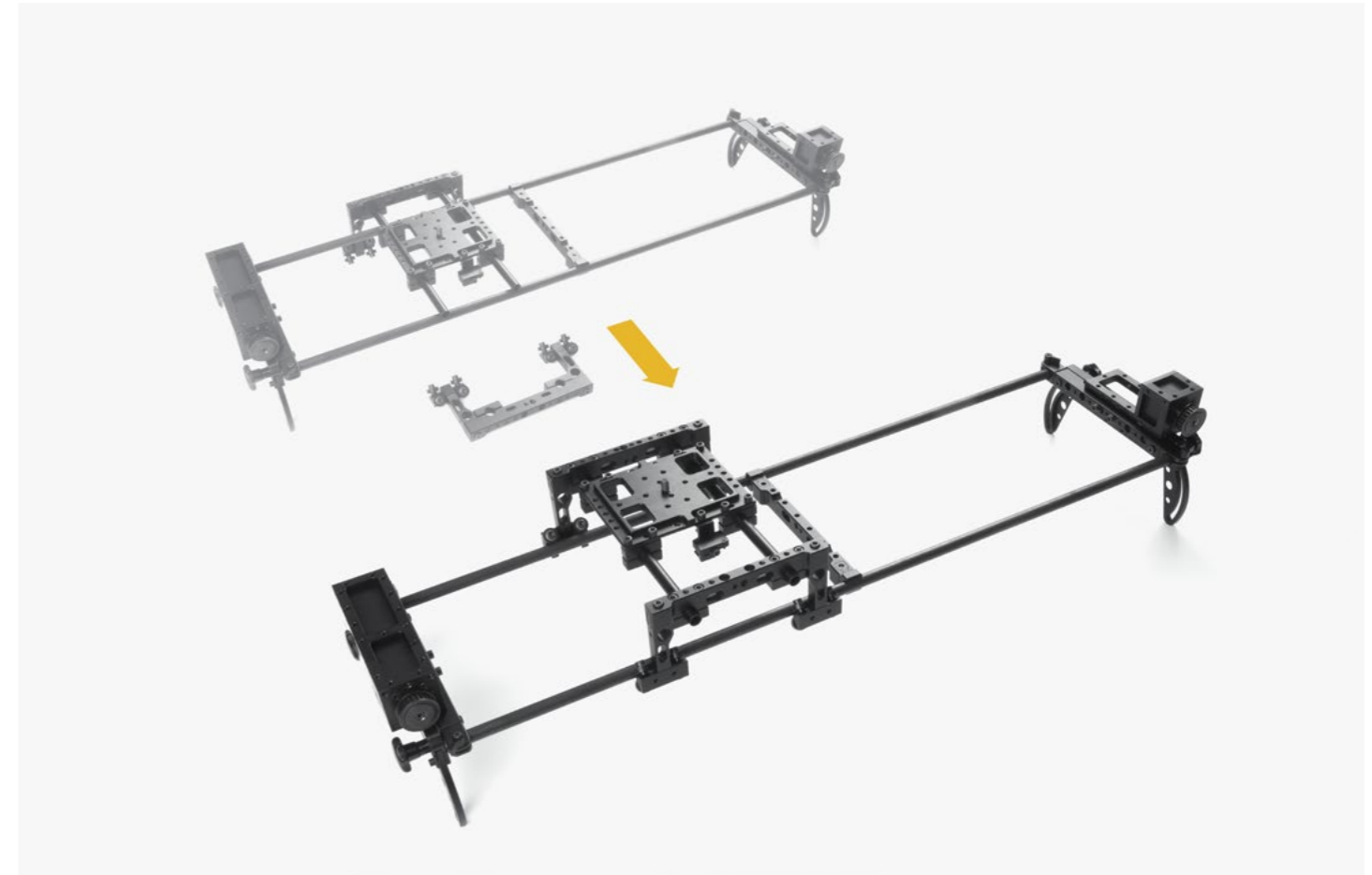
6 Affix the Bearing Block to the other End Block. Watch out for proper orientation of the parts - while the blocks are facing each other the gears should be located in line on one side.



- 7 If you have multiple Track Units, connect them together in pairs.
- 8 Insert Track Units into End Blocks. Loosen the clamps if necessary.
- 9 Install the Spreader(s) between two opposite Track Units. Loosen the clamps if necessary.



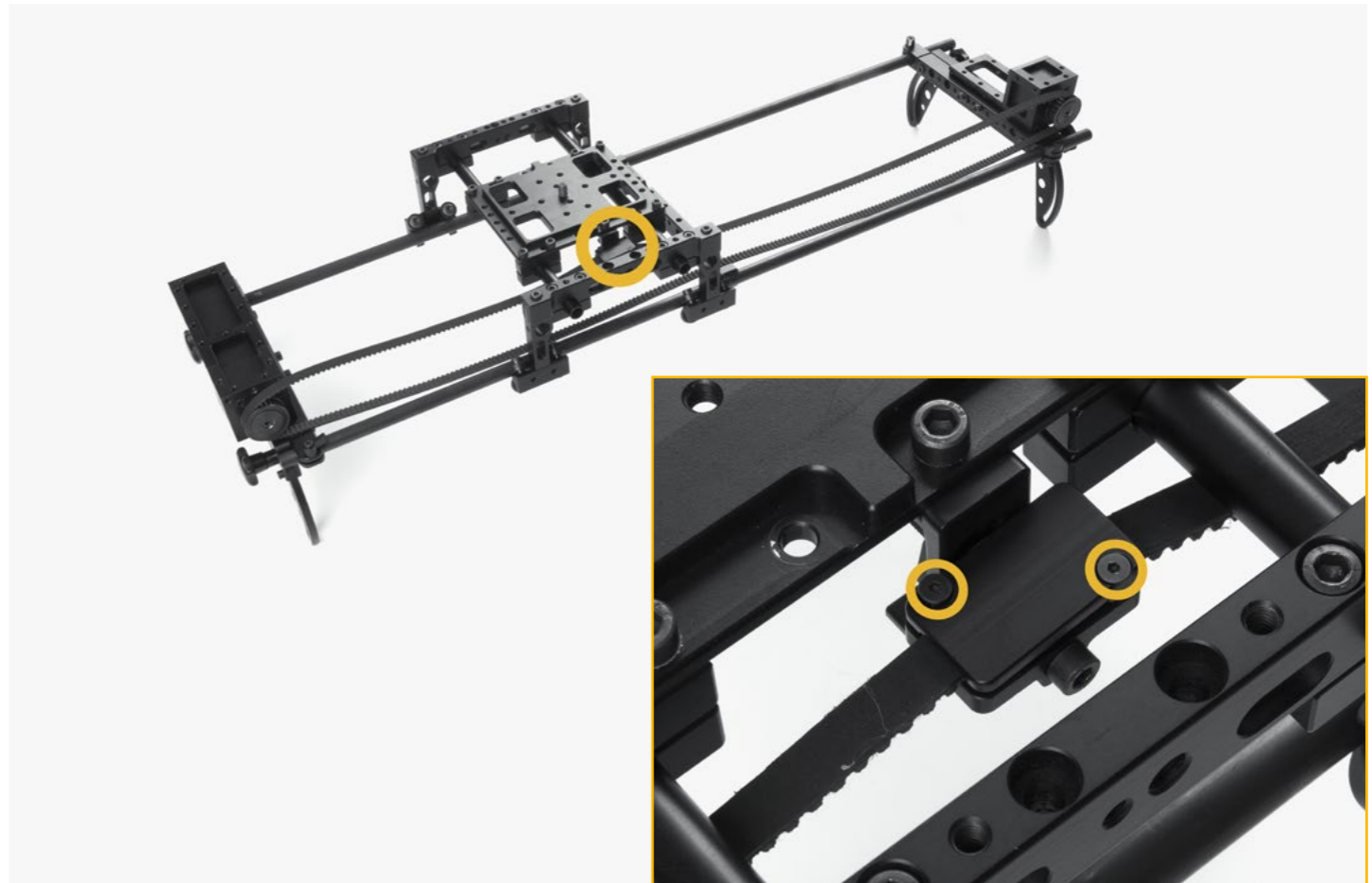
- 10 Connect one set of Trolley Sidewheels (Trolley Base Block + Trolley Bearings) to two Building Rods and the Base Plate.
- 11 Add the second set of Trolley Sidewheels and mount the trolley on Track Units.
- 12 Tighten the bolts to stabilize the trolley. The tension should be sufficient to keep the trolley on the track, but you should avoid excessive tension which may result in high friction of the trolley on the track.



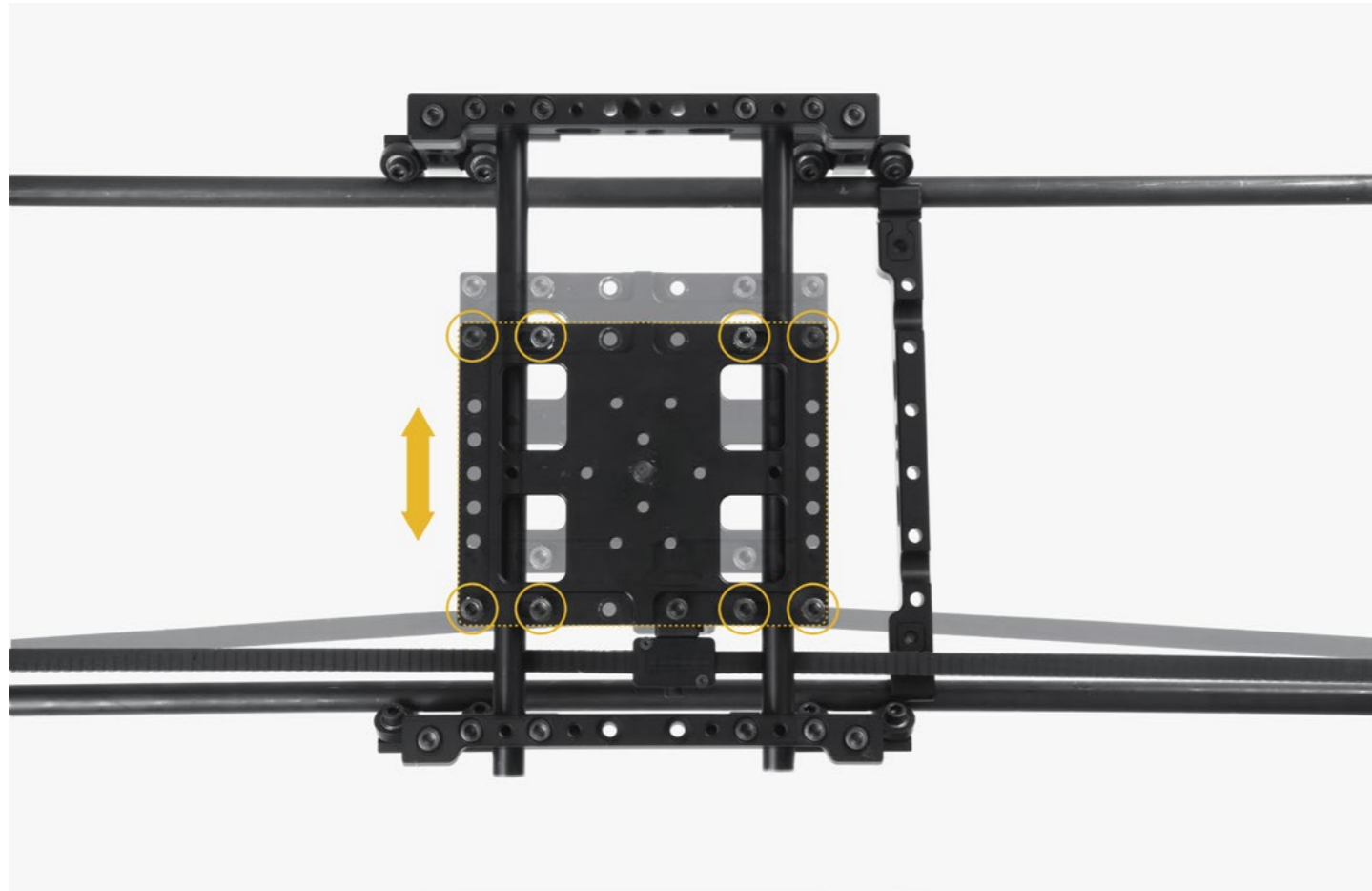
13 Put the Traction Belt loosely on the Servo Motor Unit gear and the Bearing Block gear.



14 Fix the Traction Belt in a loop using Traction Belt Clamps Set.



- 15 Loosen the marked bolts to move the Trolley Base on Building Rods. Traction Belt and Clamps Set should be aligned with the Servo Motor gear and the Bearing Block gear.



- 16 Make sure the Traction Belt is properly stretched. Belt tension can be further enhanced by adjusting the position of End Blocks.
- 17 Modulo Dolly A hardware is ready for operation.
- 18 Proceed with connecting DitoGear™ Motion controller(s) as described in their respective manuals.



4. Technical specifications

DitoGear™ Modulo Dolly A - Technical specifications

Working speeds	min: virtually unlimited max: 5cm/s in Dolly A configuration or 120°/s on the motor shaft
Workload	tested up to 25 kg in horizontal operation mode
Power supply	10.5V - 14.4V DC
Avg current draw	0.8A - 1.1A(at 12V DC)
Battery operating time	up to 8h on a new and charged 7Ah kit battery in timelapse mode at 15°C
Operating temperature	-25°C to 45°C
Operating humidity	20% to 80%

DitoGear™ Modulo - Parts and accessories dimensions and weights

DitoGear™ OmniController	106(75) x 187 x 50 mm, approximately 300 g
DitoGear™ Battery pack 14Ah:	151 x 98 x 95 mm, 3597 g
DitoGear™ Battery pack 7Ah:	151 x 65 x 95 mm, 2750 g
Servo motor unit	1.25 kg
Track(1m, pair)	1.35 kg
Spreader	0.25 kg
End-block	0.25 kg
Bearing block + frame	0.65 kg
Trolley (full kit)	1.5 kg
Support feet (1pcs)	0.3 kg
Drive wheel	under 0.1 kg

5. Conservation Guidelines

DitoGear™ Modulo Drive electronics is protected by a sealed housing. It is weather resistant therefore it can work under standard conditions including high humidity, light rain or light show and low temperatures. However, it is not fully water resistant and should not be used under extreme conditions.

- 1 While not in use DitoGear™ Modulo should be stored in a dry and dust-free place, preferably the Aluminum Transport Case by DitoGear™ or a Pelicase type of transport case.
- 2 Always be very careful storing and transporting the device and avoid mechanical damage. It is not covered by the warranty.
- 3 After use make sure to clean the DitoGear™ Modulo Drive and all DitoGear™ Modulo parts with a soft fabric. You can use water and light cleaning fluids Do not use any strong chemicals.

6. Using 3rd Party Power Adapters

DitoGear recommends using original DitoGear™ AC/DC power adapters and batteries. While using a 3rd party adapter make sure it meets the requirements detailed in technical specifications table.

Caution!

DitoGear is not responsible for any damage or failures caused by the use of a 3rd party power supply adapter.

7. Precautions for Safe Use of DitoGear™ Power Cables

Power cables cannot be looped during operation due to insufficient heat rejection that can cause melting of the cable insulation and ultimately its failure. Remember to disconnect all power cables after use, especially during transportation.

8. Using DitoGear™ Power Packs

DitoGear™ Power Pack 7Ah/14Ah and DitoGear™ PowerBox include gel type lead acid batteries, that have a low voltage operating limit. When you discharge the battery below that limit, the irreversible chemical processes occur and the recharging performance can be affected. It is recommended not to fully discharge the battery.

The lead acid battery will self-discharge slowly over time. Leaving the battery for more than 3 months without recharging may result in damage. Remember to recharge the battery at least every 3 months.

9. Obtaining Support

In case of any technical issues that can't be solved by carefully reading the manuals do not hesitate to contact us at support@ditogear.com

10. Limited Warranty

DitoGear One (1) Year Limited Warranty
For DitoGear Products Only

Consumer rights and restrictions.

For consumers, who are covered by consumer protection laws or regulations in their country of purchase or, if different, their country of residence, the benefits conferred by this warranty are in addition to all rights and remedies conveyed by such consumer protection laws and regulations. This warranty does not exclude, limit or suspend any rights of consumers arising out of non-conformity with a sales contract. However, as described below, DitoGear disclaims statutory and implied warranties to the extent permitted by law, and in so far as such warranties cannot be disclaimed, all such warranties shall to the extent permitted by law be limited in duration to the duration of the express warranty described below and to the repair or replacement service as determined by DitoGear in its sole discretion. Some states (countries and provinces) do not allow limitations on how long an implied warranty or condition may last, so the limitations described above may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state (or by country or province). This limited warranty is governed by and construed under the laws of the country in which the product purchase took place. DitoGear, the warrantor, under this limited warranty stands for DitoGear™ Robert Paluch, ul.Krańcowa 30, 62-002 Suchy Las, Poland.

Warranty.

DitoGear's warranty obligations for this hardware product are limited to the terms set forth herein. DitoGear warrants this DitoGear-branded hardware product against defects in materials and workmanship under normal use for a period of one (1) year from the date of retail purchase by the original end-user purchaser ("Warranty Period"). If a hardware defect arises and a valid claim is received within the Warranty Period, at its option and to the extent permitted by law, DitoGear will either (1) repair the hardware defect at no charge, using new or refurbished parts that are equivalent to new in performance and reliability, (2) exchange the product with a product that is new or refurbished that is equivalent to new in performance and reliability and is at least functionally equivalent to the original product, or (3) refund the purchase price of the product. DitoGear may request that you replace defective parts with user-installable new or refurbished parts that DitoGear provides in fulfillment of its warranty obligation.

A replacement product or part, including a user-installable part that has been installed in accordance with instructions provided by DitoGear, assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you.

When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes DitoGear's property. Parts provided by DitoGear in fulfillment of its warranty obligation must be used in products for which warranty service is claimed. When a refund is given, the product for which the refund is provided must be returned to DitoGear and becomes DitoGear's property.

Exclusions and limitations.

To the extent permitted by law, this warranty and the remedies set forth above are exclusive and in lieu of all other warranties, remedies and conditions, whether oral, written, statutory, express or implied. As permitted by applicable law, DitoGear specifically disclaims any and all statutory or implied warranties, including, without limitation, warranties of merchantability and fitness for a particular purpose and warranties against hidden or latent defects. If DitoGear cannot lawfully disclaim statutory or implied warranties then to the extent permitted by law, all such warranties shall be limited in duration to the duration of the express warranty and to the repair or replacement service as determined by DitoGear in its sole discretion. Some states (countries and provinces) do not allow limitations on how long an implied warranty or condition may last, so the limitations described above may not apply to you. No DitoGear reseller, agent, or employee is authorized to make any modification, extension, or addition to this warranty. If any term is held to be illegal or unenforceable, the legality or enforceability of the remaining terms shall not be affected or impaired.

This Limited Warranty applies only to hardware products manufactured by or for DitoGear. The Limited Warranty does not apply to any non-DitoGear hardware products even if packaged or sold with DitoGear hardware. Manufacturers or suppliers, other than DitoGear, may provide their own warranties to the end user purchaser, but DitoGear, in so far as permitted by law, provides their products "as is".

DitoGear does not warrant that the operation of the product will be uninterrupted or error-free. DitoGear is not responsible for damage arising from failure to follow instructions relating to the product's use.

This warranty does not apply: (a) to consumable parts, such as batteries, unless damage has occurred due to a defect in materials or workmanship; (b) to cosmetic damage, including but not limited to scratches, dents and broken elements on ports; (c) to damage caused by use with non-DitoGear products; (d) to damage caused by accident, abuse, misuse, liquid contact, fire, earthquake or other external causes; (e) to damage caused by operating the product outside the permitted or intended uses described by DitoGear; (f) to damage caused by service (including upgrades and expansions) performed by anyone who is not a representative of DitoGear; (g) to a product or part that has been modified to alter functionality or capability without the written permission of DitoGear; (h) to defects caused by normal wear and tear or otherwise due to the normal aging of the product.

Except as provided in this warranty and to the extent permitted by law, DitoGear is not responsible for direct, special, incidental or consequential damages resulting from any breach of warranty or condition, or under any other legal theory, including but not limited to loss of use; loss of revenue; loss of actual or anticipated profits (including loss of profits on contracts); loss of the use of money; loss of anticipated savings; loss of business; loss of Opportunity; loss of goodwill; loss of reputation; loss of, damage to or any indirect or consequential loss or damage howsoever caused including the replacement of equipment and property. The foregoing limitation shall not apply to death or personal injury claims, or any statutory liability for intentional and gross negligent acts and/or omissions. Some states (countries and provinces) do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Obtaining warranty service.

DitoGear will provide warranty service either (i) at an DitoGear Retail or DitoGear Authorized Service Provider ("ASP") location, where service is performed at the location, or the DitoGear Retail or ASP may send the product to an DitoGear repair service location for service, (ii) by sending you prepaid way bills (and if you no longer have the original packaging, DitoGear may send you packaging material) to enable you to ship the product to DitoGear's repair service location for service, or (iii) by sending you customer installable new or refurbished replacement product or parts to enable you to service or exchange your own product ("DIY Service"). Upon receipt of the replacement product or part, the original product or part becomes the property of DitoGear and you agree to follow instructions, including, if required, arranging the return of original product or part to DitoGear in a timely manner. When providing DIY Service requiring the return of the original product or part, DitoGear may require a credit card authorization as security for the retail price of the replacement product or part and applicable shipping costs. If you follow instructions, DitoGear will cancel the credit card authorization, so you will not be charged for the product or part and shipping costs.

If you fail to return the replaced product or part as instructed or the replaced product or part is not eligible for warranty service, DitoGear will charge the credit card for the authorized amount.

Please access and review the online help resources at the DitoGear website (www.ditogear.com) and contained in the product manual before requesting warranty service. If the product is still not functioning properly after making use of these resources, please contact DitoGear at support@ditogear.com.

Service options, parts availability and response times may vary according to the country in which service is requested. Service options are subject to change at any time. You may be responsible for shipping and handling charges if the product cannot be serviced in the country in which service is requested. If you seek service in a country that is not the country of purchase, you will comply with all applicable import and export laws and regulations and be responsible for all custom duties, VAT, and other associated taxes and charges. For international service, DitoGear may repair or exchange defective products and parts with comparable products and parts that comply with local standards. In accordance with applicable law, DitoGear may require that you furnish proof of purchase details before receiving warranty service.

11. Privacy

DitoGear will maintain and use customer information in accordance with the DitoGear Customer Privacy Policy available at ditogear.com/legal/privacy-policy/.

12. Miscellaneous

Trademarks and copyrights

DitoGear™, DitoGear™ OmniController, DitoGear™ Evolution, DitoGear™ Trito , DitoGear™ OmniSlider, DitoGear™ OmniHead and DitoGear™ LensDrive, DitoGear™ Modulo are trademarks of Dito Gear Robert Paluch ul.Krańcowa 30, 62-002 Suchy Las, Poland. Unauthorised use is strictly prohibited. All other trademarks referenced in this manual are used only for informative purposes and are property of their respective owners.

Disposal and recycling information

The device and all batteries included with it must be disposed of properly according to local laws and regulations. The product must be disposed of separately from the household waste. When your product reaches its end of life, contact DitoGear or your local authorities to learn about recycling options.





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