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Move People
Better

City
Trekking
Sportive
Cargo
Commercial

Stepless Shifting

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enviolo

The Moving Standard.

enviolo is “The Moving Standard” for bicycles and eBikes today.

With our stepless and automatic shifting products incorporating the revolutionary enviolo technology, we elevate your riding experience and make it simpler, more fun, safer, and healthier.

Riding a bike with enviolo’s stepless or automatic shifting solution means concentrating less on changing gears and more on what’s important, for example: traffic, road hazards, passengers, or enjoying the beauty of your surroundings.

enviolo’s stepless and automatic shifting benefits are now available in five different group sets. All group sets are specifically designed for their use cases: city, trekking, sportive, cargo, and commercial.

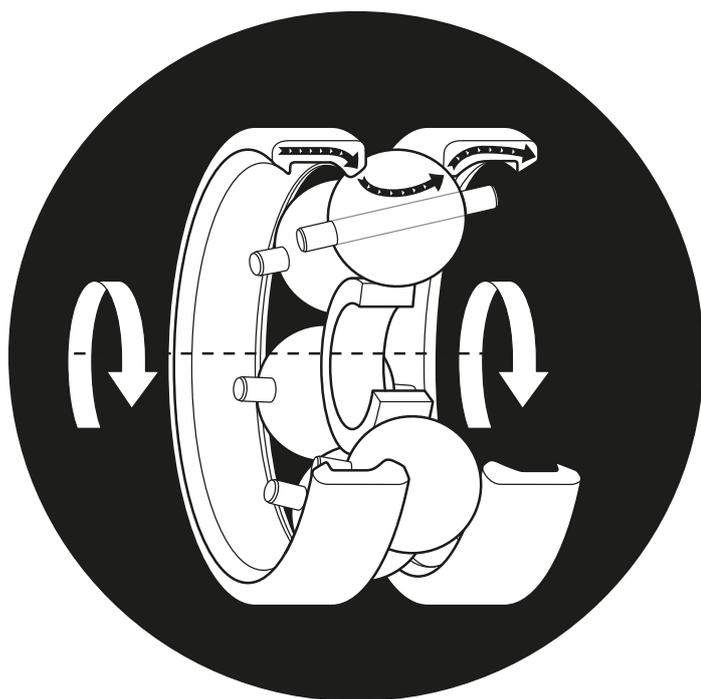
During the design process of these new components, we focused on the unique needs of the five different rider personas and the type of bicycles they ride. This mission to deliver the best possible shifting solution for each rider enables us to be “The Moving Standard.”

enviolo is a division of Fallbrook Technologies Inc. and until January 1, 2018, it was operating under the name “NuVinci® Cycling”. The enviolo head office is located in Amsterdam, The Netherlands.

Simplicity is the ultimate sophistication.

Leonardo da Vinci

enviolo



-  Near silent
-  Stepless shifting
-  Effortless shifting, even under load
-  Greater gear ratio range
-  No additional shifter
-  Wireless connection
-  Mobile app customisation
-  Comfortable pedaling at your desired preset cadence

Stepless Manual Shifting: As simple as adjusting the volume on a radio.

With our stepless manual technology, riders can effortlessly change their gear ratio, even under load. Thus we enable them to focus on the important aspects of their ride such as traffic or scenery. No more step changes, locked gears, empty pedaling, or creaking, just a unique ride feel created by the technology's ease of use.

The system enables low maintenance, long-lasting bikes, especially in a combination with a belt drive, the perfect fit for the new rider generation, focused on simplicity and comfort. Moreover, the technology can also be merged with powerful e-bike systems. The enviolo stepless manual technology was created based on use cases to serve specific rider needs, and consists of specifically designed internal gear hubs and matching controllers.

Stepless Automatic Shifting: Why bother switching gears manually?

The stepless automatic technology takes the ride experience to the next level with its 'set it and forget it' approach. Cyclists only need to set up their desired cadence, and the stepless automatic technology will adjust the enviolo system so that they can always pedal at the same pace, even up or down hill.

To be in line with the trend of 'integrated systems', the technology can also be merged into the e-bike's control unit, thus cleaning up the handlebar and simplifying the ride experience.

System Overview

City, Trekking, Sportive,
Cargo, Commercial



CT

enviolo^{CT}



TR

enviolo^{TR}



SP

enviolo^{SP}



CA

enviolo^{CA}



CO

enviolo^{CO}

System Overview

enviolo
AUTOMATI(ON)

City, Trekking, Sportive,
Cargo, Commercial



enviolo^{CT}



enviolo^{TR}



enviolo^{SP}



enviolo^{CA}



enviolo^{CO}

Component Specifications

Our high-tech components, designed specifically for their use cases, offer unrivaled possibilities.

enviolo

Internal gear hub



enviolo CT



enviolo TR

| | | |
|---|--|--|
| Colors | Matt black / dark grey | Matt black / dark grey |
| Weight | 2450 g | 2450 g |
| Max. speed RPM | 800 RPM | 800 RPM |
| Nominal ratio range | 310% (0.55 - 1.7) | 380% (0.5 - 1.90) |
| Lifetime | 20,000 km | 20,000 km |
| IP classification | Hub = IP65, freewheel = IP54, rear shifter = IP54 | Hub = IP65, freewheel = IP54, rear shifter = IP54 |
| Temperature range | -20°C to 48°C | -20°C to 48°C |
| Brake options | 6-bolt disc/rim/roller | 6-bolt disc/rim/roller |
| Max. brake disc rotor | 180 mm | 180 mm |
| Disc brake screw length requirements | 10 - 17 mm | 10 - 17 mm |
| Max. disc brake screw torque | Use disc brake manufacturers recommendation, but don't exceed 6.2 Nm | Use disc brake manufacturers recommendation, but don't exceed 6.2 Nm |
| Spoke options | 32/36 | 32/36 |
| Spoke size | 2 mm - 2.34 mm | 2 mm - 2.34 mm |
| Spoke flange diameter | 125 mm | 125 mm |
| Spoke hole diameter | 2.9 mm | 2.9 mm |
| Wheel size | Minimum 16" | Minimum 16" |
| Axle threads | M10 X 1 | M10 X 1 |
| Dropout width | 135 mm | 135 mm |
| Dropout thickness | 6 - 10 mm | 6 - 10 mm |
| Dropout length for no-turn washer engagement (measured from axle center) | Recommended 14 mm, minimum 10 mm | Recommended 14 mm, minimum 10 mm |
| Total axle width (without acorn nuts) | 183 mm | 183 mm |
| Chainline | 49.0 +/- 0.5 mm | 49.0 +/- 0.5 mm |
| Beltline (Gates) | 45.5 +/- 0.5 mm | 45.5 +/- 0.5 mm |
| Beltline (Continental) | 46.2 +/- 0.5 mm | 46.2 +/- 0.5 mm |
| Sprocket thickness (chain) | 2.3 mm | 2.3 mm |
| Sprocket thickness (belt) | 4.3 mm | 4.3 mm |
| Sprocket sizes (chain) | 16 - 22 T | 16 - 22 T |
| Sprocket sizes (belt) | 20 - 28 T | 20 - 28 T |
| Sprocket type | 9-spline, one side flat | 9-spline, one side flat |
| Chain type | 3/32", 1/8" with 3 mm offset cog | 3/32", 1/8" with 3mm offset cog |
| Recommended lacing patterns | 2-cross for 26" or larger, 1-cross for 24" or smaller, radial spoking is not allowed | 2-cross for 26" or larger, 1-cross for 24" or smaller, radial spoking is not allowed |

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Internal gear hub



enviolo SP



enviolo CA



enviolo CO

| | | | |
|---|---|--|--|
| Colors | Matt black / silver | Matt black / dark grey | Matt black / dark grey |
| Weight | 2450 g | 2450 g | 2450 g |
| Max. speed RPM | 800 RPM | 800 RPM | 800 RPM |
| Nominal ratio range | 380% (0.5 - 1.90) | 380% (0.5 - 1.90) | 310% (0.55 - 1.7) |
| Lifetime | 20,000 km | 20,000 km | 20,000 km |
| IP classification | Hub = IP65, freewheel = IP54, rear shifter = IP54 | Hub = IP65, freewheel = IP54, rear shifter = IP54 | Hub = IP65, freewheel = IP54, rear shifter = IP54 |
| Temperature range | -20°C to 48°C | -20°C to 48°C | -20°C to 48°C |
| Brake options | 6-bolt disc/rim | 6-bolt disc/rim | 6-bolt disc/rim/roller |
| Max. brake disc rotor | 203 mm | 203 mm | 180 mm |
| Disc brake screw length req. | 10 - 17 mm | 10 - 17 mm | 10 - 17 mm |
| Max. disc brake screw torque | Use disc brake manufacturers recommendation, but don't exceed 6.2 Nm | Use disc brake manufacturers recommendation, but don't exceed 6.2 Nm | Use disc brake manufacturers recommendation, but don't exceed 6.2 Nm |
| Spoke options | 32/36 | 32/36 | 32/36 |
| Spoke size | 2 mm - 2.34 mm | 2 mm - 2.34 mm | 2 mm - 2.34 mm |
| Spoke flange diameter | 125 mm | 125 mm | 125 mm |
| Spoke hole diameter | 2.9 mm | 2.9 mm | 2.9 mm |
| Wheel size | Minimum 16" | Minimum 16" | Minimum 16" |
| Axle threads | M10*1 M12*1 tapered (Syntace) M12*1 flat (DT swiss) M12*1.5 (E-Thru) M12*1.75 (Maxle) | M10*1 | M10*1 |
| Dropout width | 135 / 142 / 148 mm | 135 mm | 135 mm |
| Dropout thickness | 6 - 10 mm | 6 - 10 mm | 6 - 10 mm |
| Dropout length for no-turn washer engagement (measured from axle center) | Recommended 14 mm, minimum 10 mm | Recommended 14 mm, minimum 10 mm | Recommended 14 mm, minimum 10 mm |
| Total axle width (w/o acorn nuts) | 183 mm | 183 mm | 183 mm |
| Chainline | 49.0 +/- 0.5 mm for 135 mm and 142 mm and 52 +/- 0.5 mm for 148 mm dropouts | 49.0 +/- 0.5 mm | 49.0 +/- 0.5 mm |
| Beltline (Gates) | 45.5 +/- 0.5 mm for 135 mm and 142 mm and 48.7 +/- 0.5 mm for 148 mm dropouts | 45.5 +/- 0.5 mm | 45.5 +/- 0.5 mm |
| Sprocket thickness (chain)* | 2.3 mm | 2.3 mm | 2.3 mm |
| Sprocket thickness (belt) | 4.3 mm | 4.3 mm | 4.3 mm |
| Sprocket sizes (chain) | 16 - 22 T | 16 - 22 T | 16 - 22 T |
| Sprocket sizes (belt) | 20 - 28 T | 20 - 28 T | 20 - 28 T |
| Sprocket type | 9-spline, one side flat | 9-spline, one side flat | 9-spline, one side flat |
| Chain type | 3/32", 1/8" with 3mm offset cog | 3/32", 1/8" with 3mm offset cog | 3/32", 1/8" with 3mm offset cog |
| Recommended lacing patterns | 2-cross for 26" or larger, 1-cross for 24" or smaller, radial spoking is not allowed | 2-cross for 26" or larger, 1-cross for 24" or smaller, radial spoking is not allowed | 2-cross for 26" or larger, 1-cross for 24" or smaller, radial spoking is not allowed |

Groupset Power Limits

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enviolo requires the use of a sprocket ratio of minimally 2.0

Nominal Power 250 W

| | 120 kg | 130 kg | 140 kg | 150 kg | 160 kg | 170 kg | 180 kg | 190 kg | 200 kg | 210 kg | 220 kg | 230 kg | 240 kg | 250 kg |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 50 Nm | CT CO | TR | TR | SP CA |
| 55 Nm | CT CO | TR | TR | SP CA |
| 60 Nm | TR | SP CA |
| 65 Nm | TR | SP CA |
| 70 Nm | TR | SP CA |
| 75 Nm | TR | SP CA |
| 80 Nm | TR | SP CA |
| 85 Nm | TR | SP CA |
| 90 Nm | SP CA | | | | | | | | | |
| 95 Nm | SP CA | | | | | | | | | |
| 100 Nm | SP CA | | | | | | | | | |

Nominal Power 350 W

| | 120 kg | 130 kg | 140 kg | 150 kg | 160 kg |
|-------|--------|--------|--------|--------|--------|
| 50 Nm | SP CA |
| 55 Nm | SP CA |
| 60 Nm | SP CA |
| 65 Nm | SP CA |
| 70 Nm | SP CA |
| 75 Nm | SP CA |
| 80 Nm | SP CA |
| 85 Nm | SP CA |

Nominal Power 500 W

| | 120 kg | 130 kg | 140 kg | 150 kg | 160 kg |
|-------|--------|--------|--------|--------|--------|
| 50 Nm | SP CA |
| 55 Nm | SP CA |
| 60 Nm | SP CA |
| 65 Nm | SP CA |

CT TR SP CA CO

enviolo

AUTOMATI^Q
Hub Interfaces



| | | | |
|--|-------------------------------|-------------------------------|-------------------------------|
| IP classification | IP54 | IP54 | IP54 |
| Electrical specifications*: | | | |
| Nominal voltage range | 18 V - 55 V | 18 V - 55 V | 18 V - 55 V |
| Peak voltage | 60 V | 60 V | 60 V |
| Min. voltage | 18 V | 18 V | 18 V |
| Built-in fuse protection | 3A | 3A | 3A |
| Average power consumption while shifting | (2Nm X 2.5W) = 5W | (8Nm X 2.5W) = 20W | (2Nm X 2.5W) = 5W |
| Peak power consumption | 10.5W < 3s | 48W < 3s | 10.5W < 3s |
| Shut-down protection | Data is saved at shutdown | Data is saved at shutdown | Data is saved at shutdown |
| Sleep mode | Time can be pre-set using app | Time can be pre-set using app | Time can be pre-set using app |
| Power consumption Sleep mode | 0.5W | 0.5W | 0.5W |
| Power consumption Non-shifting | 0.5W | 0.5W | 0.5W |
| Wiring: | | | |
| Wire diameter | I-Harness = 3.7mm | I-Harness = 3.7mm | I-Harness = 3.7mm |
| Connector Ø on AHI | 4-pin = 9mm | 4-pin = 9mm | 4-pin = 9mm |
| Connector Ø to power source | 10.2 X 14.2 mm | 10.2 X 14.2 mm | 10.2 X 14.2 mm |

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AUTOMATI^Q
Hub Interfaces



| | | |
|--|-------------------------------|-------------------------------|
| IP classification | IP54 | IP54 |
| Electrical specifications: | | |
| Nominal voltage range | 18 V - 55 V | 18 V - 55 V |
| Peak voltage | 60 V | 60 V |
| Min. voltage | 18 V | 18 V |
| Built-in fuse protection | 3A | 3A |
| Average power consumption while shifting | (8Nm X 2.5W) = 20W | (8Nm X 2.5W) = 20W |
| Peak power consumption | 48W < 3s | 48W < 3s |
| Shut-down protection | Data is saved at shutdown | Data is saved at shutdown |
| Sleep mode | Time can be pre-set using app | Time can be pre-set using app |
| Power consumption Sleep mode | 0.5W | 0.5W |
| Power consumption Non-shifting | 0.5W | 0.5W |
| Wiring: | | |
| Wire diameter | I-Harness = 3.7mm | I-Harness = 3.7mm |
| Connector Ø on AHI | 4-pin = 9mm | 4-pin = 9mm |
| Connector Ø to power source | 10.2 X 14.2 mm | 10.2 X 14.2 mm |

*Final specification under evaluation.

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Manual
Controller

- Shift cable length
- Grip rotation options*
- Handlebar diameter
- Cable housing
- Shift cable diameter
- Compatible with all CVPs
- IP classification
- Grip Material



enviolo CT

- 2200mm
- Multi-turn or One-turn
- 22.2 mm
- Full cable housing recommended, dual cable route
- 1.1 - 1.2 mm (original 1.2 mm)
- Yes
- IP54
- Standard



enviolo CA 2

- 3300mm
- Multi-turn or One-turn
- 22.2 mm
- Full cable housing recommended, dual cable route
- 1.1 - 1.2 mm (original 1.1 mm)
- Yes
- IP54
- Extended Durability



enviolo CO

- 2200mm or 3300mm
- Multi-turn or One-turn
- 22.2 mm
- Full cable housing recommended, dual cable route
- 1.1 - 1.2 mm (original 1.1 mm)
- Yes
- IP54
- Extended Durability

enviolo

Manual
Controller

- Shift cable length
- Grip rotation options*
- Handlebar diameter
- Cable housing
- Shift cable diameter
- Compatible with all CVPs
- IP classification
- Grip Material



enviolo TR

- 2200mm or 3300mm
- Multi-turn or One-turn
- 22.2 mm
- Full cable housing recommended, dual cable route
- 1.1 - 1.2 mm (original 1.1 mm)
- Yes
- IP54
- Standard



enviolo SP

- 2200mm
- Multi-turn or One-turn
- 22.2 mm
- Full cable housing recommended, dual cable route
- 1.1 - 1.2 mm (original 1.1 mm)
- Yes
- IP54
- Standard

enviolo

AUTOMATI*Q*
Controller

- Cable
- Handlebar diameter
- Compatible with all IGH
- IP classification

- Wireless
- 22.2mm
- Yes
- IP54

Controllers Compatibility Matrix

| | | City  | Trekking  | Sportive  | Cargo  | Commercial  |
|-----------|---|---|---|---|--|---|
| MANUAL |  | ✓ ✓ | ○ ✓ | ○ × | ○ × | ○ ○ |
| |  | ○ ○ | ✓ ○ | ○ × | ○ × | ○ ○ |
| |  | ○ × | ○ × | ✓ ○ | ○ ○ | ○ × |
| |  | ○ × | ○ × | ○ ✓ | ✓ ✓ | ○ × |
| |  | ○ ○ | ○ ○ | ○ × | ○ × | ✓ ✓ |
| AUTOMATIQ |  | ✓ ✓ | ○ ○ | ○ × | ○ × | ○ ○ |
| |  | ○ ○ | ✓ ✓ | ○ × | ○ × | ○ ○ |
| |  | ○ × | ○ × | ✓ ✓ | ○ ○ | ○ × |
| |  | ○ × | ○ × | ○ ○ | ✓ ✓ | ○ × |
| |  | ○ ○ | ○ ○ | ○ × | ○ × | ✓ ✓ |

Frame Requirements

To assist you in designing your frames to be compatible with our products (e.g. sufficient clearance to chainstay/chain case) we have compiled an overview of our components with system measurements.

For 3D data please reach out to your responsible contact.



Vertical dropout

Using a vertical dropout requires a secondary chain tension adjustment option (e.g. eccentric bottom bracket or chain tensioner). The advantage of vertical dropouts is that once the tension is set, the rear wheel can be reinstalled without readjusting the tension.

Horizontal dropout

Horizontal dropouts are preferable for enviolo hubs, because they allow easy chain tension adjustment.

Mechanical cable routing

As in any other cable system, the number and sharpness of bends influences the ease of shifting. We recommend that you consider this in your cable routing to limit required shift effort.

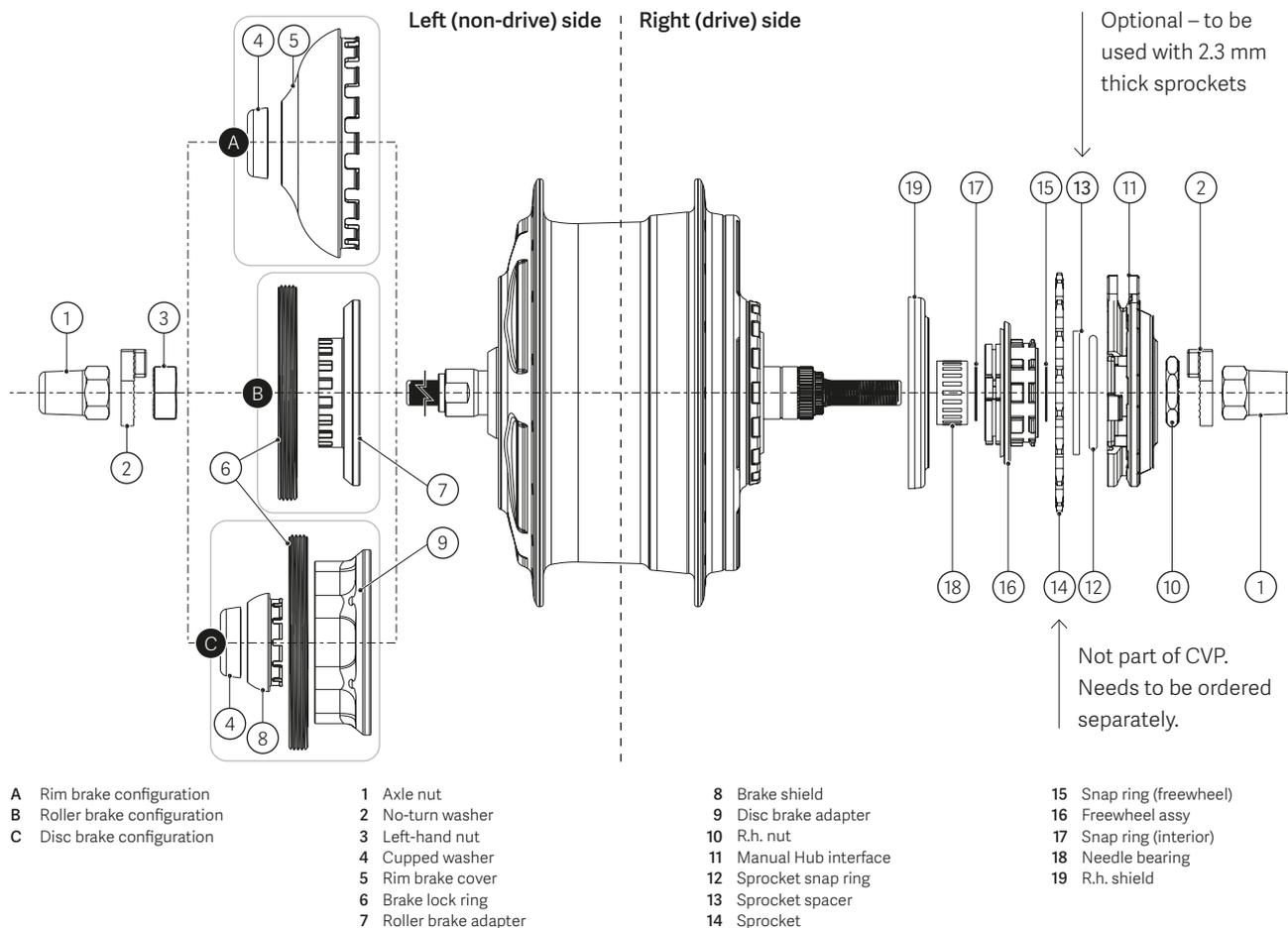
142/148 mm dropout configurations

On 142/148 mm dropouts, where you plan to use the AUTOMATIq system, you require a sliding dropout, since the AHI is likely to interfere with derailleur hangers.

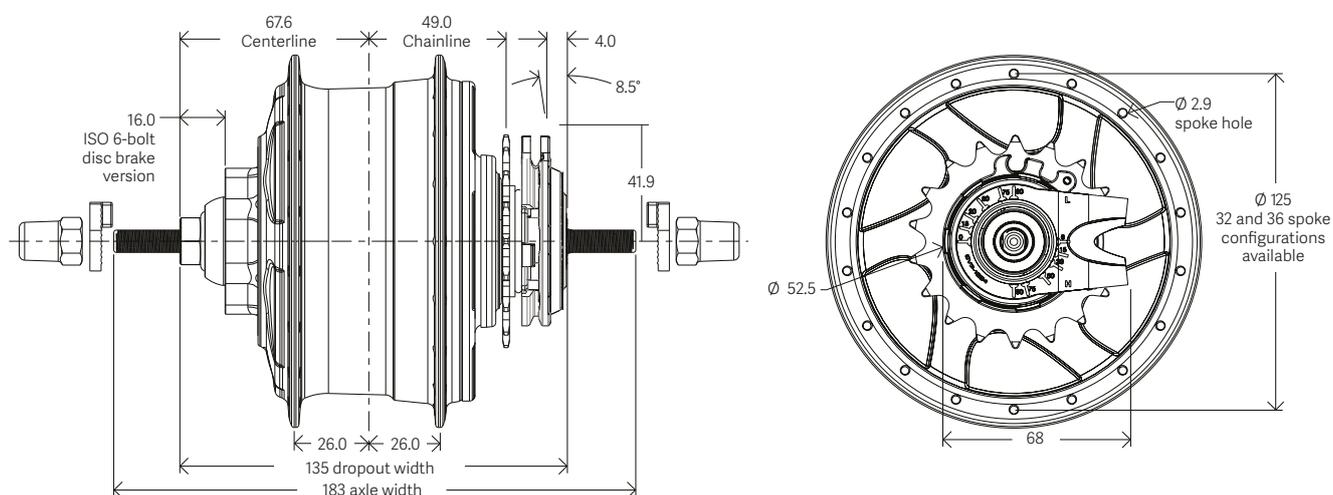
enviolo CT, enviolo TR, enviolo CO

Required Package Space

Components of Assembly



CVP with Manual Hub Interface

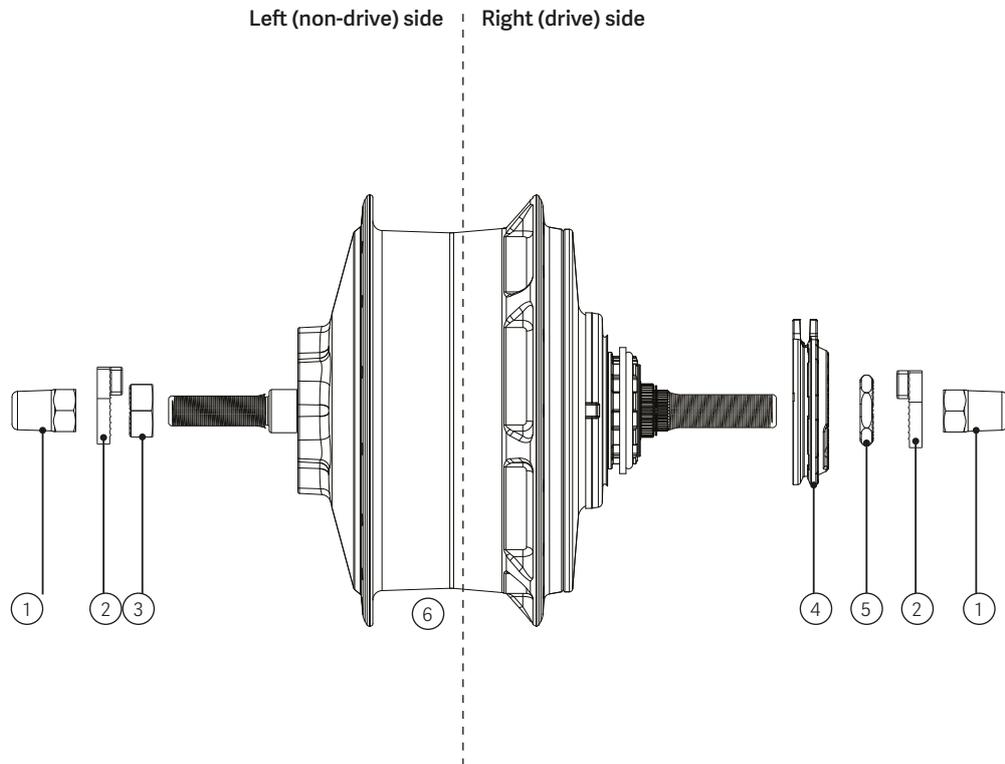


enviolo CA

Required Package Space

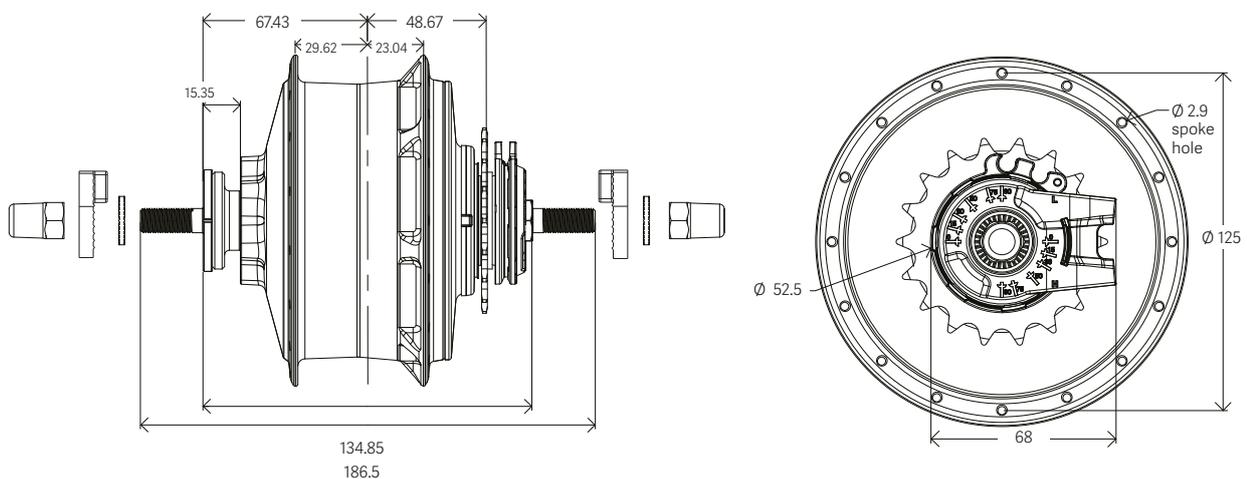
135 mm

Components of Assembly



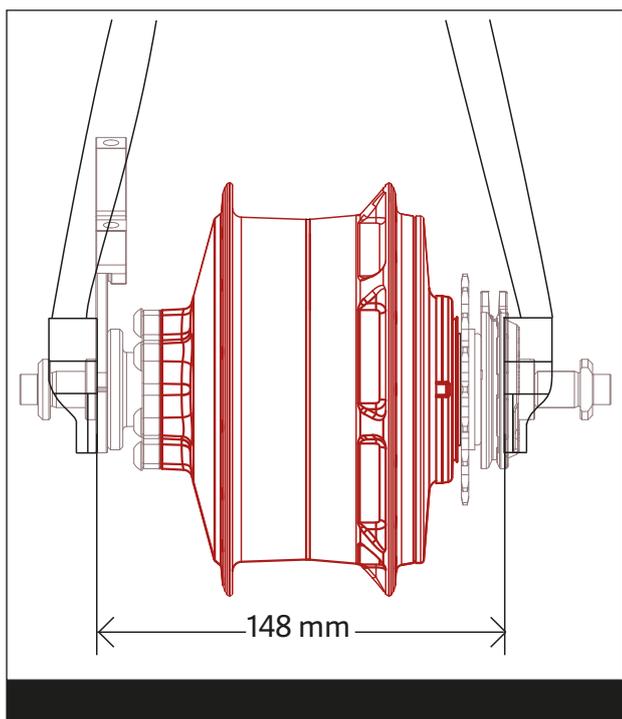
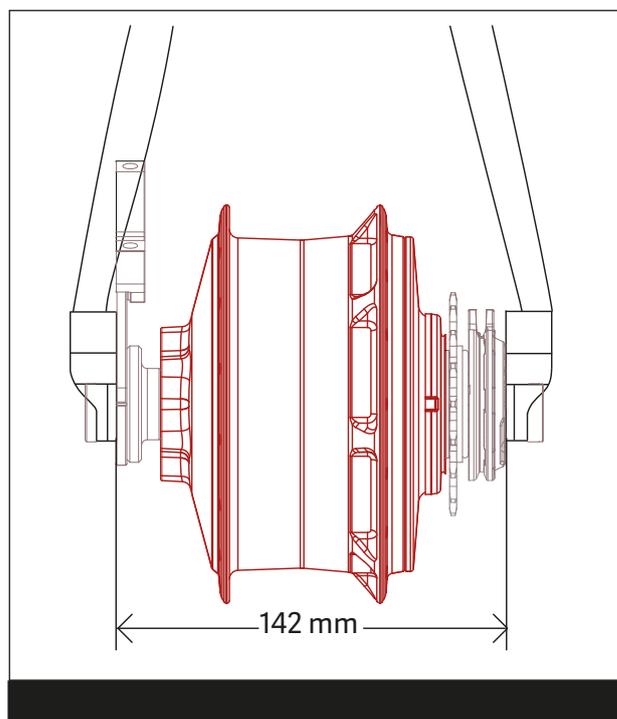
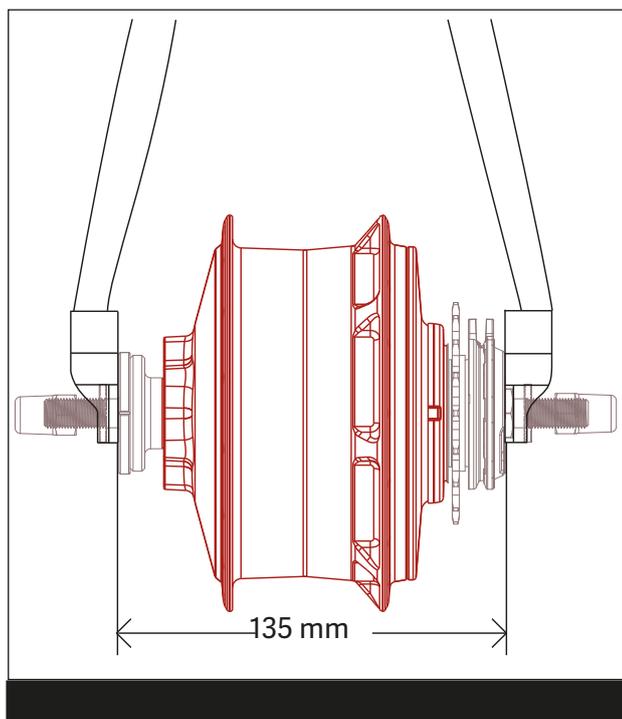
- 1 Nut, Acorn
- 2 No-turn washer
- 3 Left-hand nut
- 4 enviolo CA manual hub interface
- 5 RH Nut
- 6 Assembly enviolo CA IGH top level

CVP with Manual Hub Interface

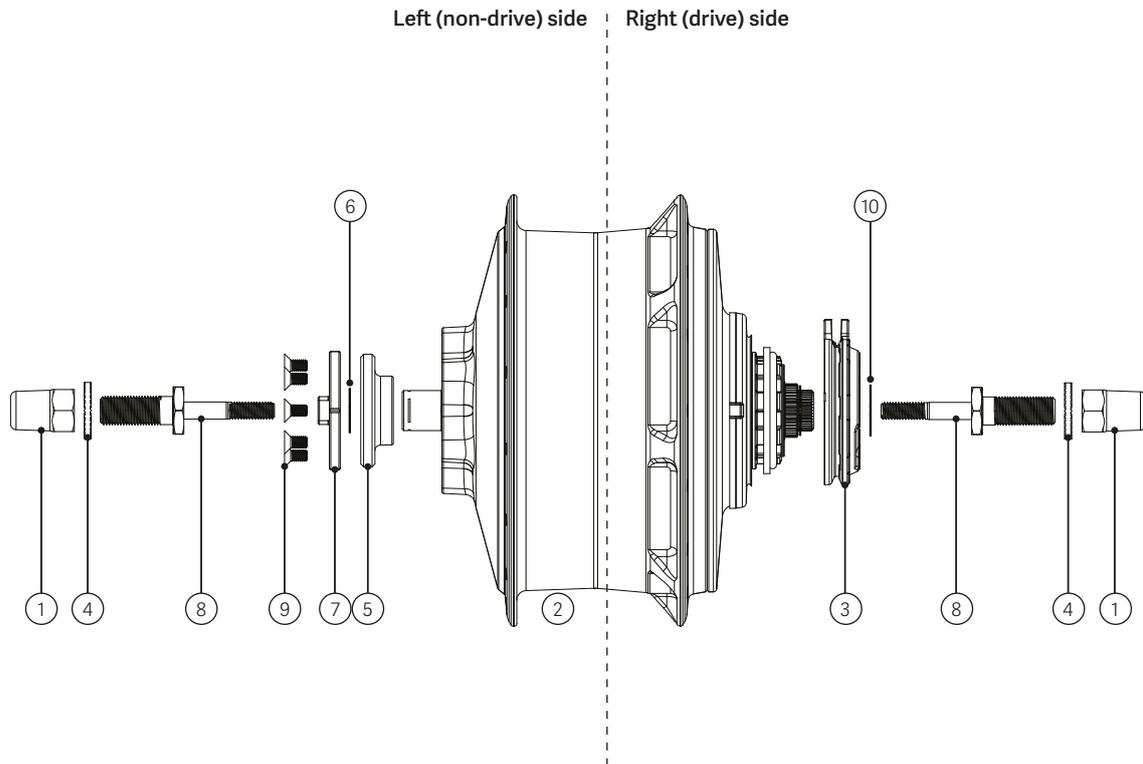


enviolo SP

Dropout Options

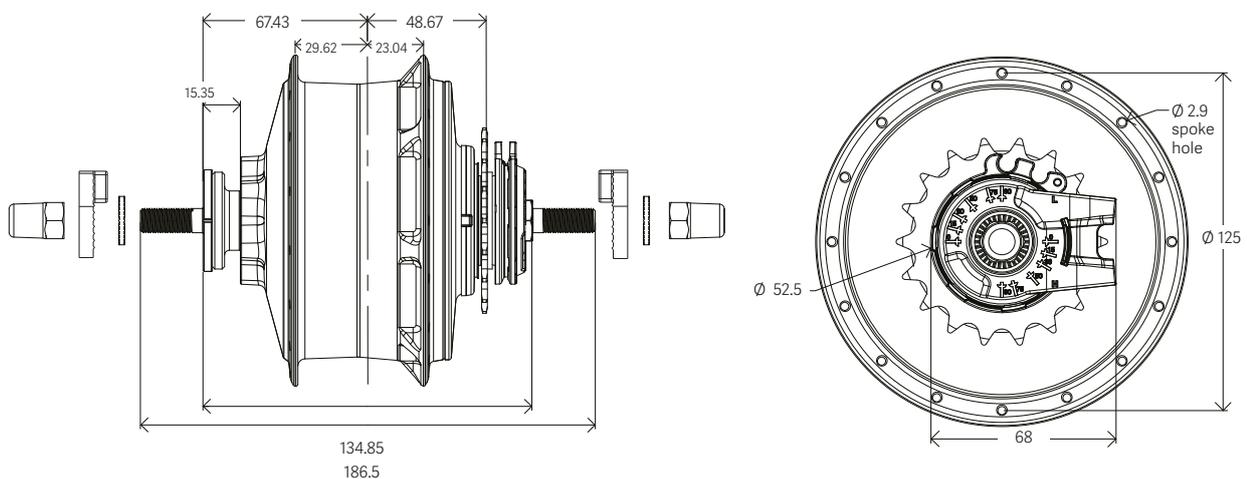


Components of Assembly



- | | |
|---|--|
| <ul style="list-style-type: none"> 1 Nut, Acorn 2 Assembly enviolo SP CVP top level 3 enviolo SP manual hub interface 4 Lock washer, M10 5 Adapter, Torque Reaction 6 Retaining ring 7 Axle plate, 135 mm compatible | <ul style="list-style-type: none"> 8 Shaft, threaded adapter 9 Bolt, countersunk, Torx, M4 x 0.7 x 8 10 Washer, spacer, 13 x 19 x 0.5 |
|---|--|

CVP with Manual Hub Interface

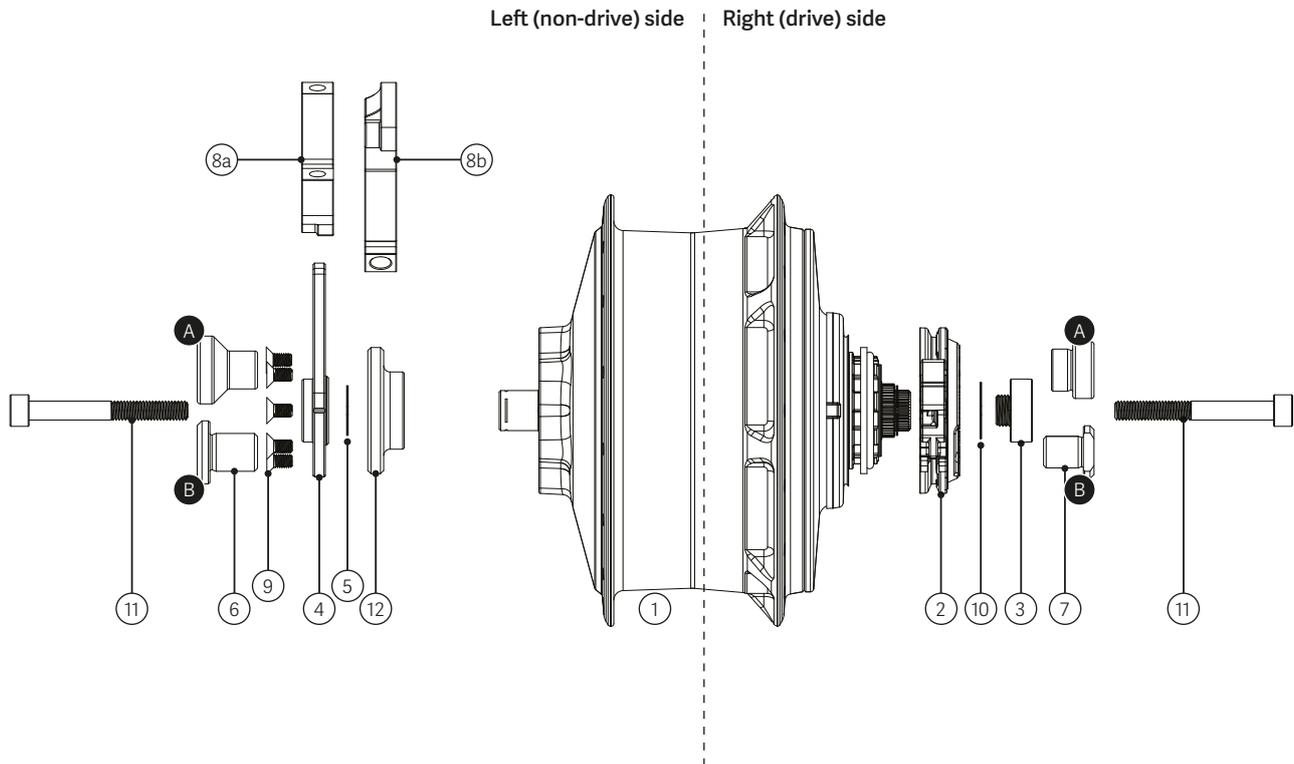


enviolo SP

Required Package Space

142 mm

Components of Assembly



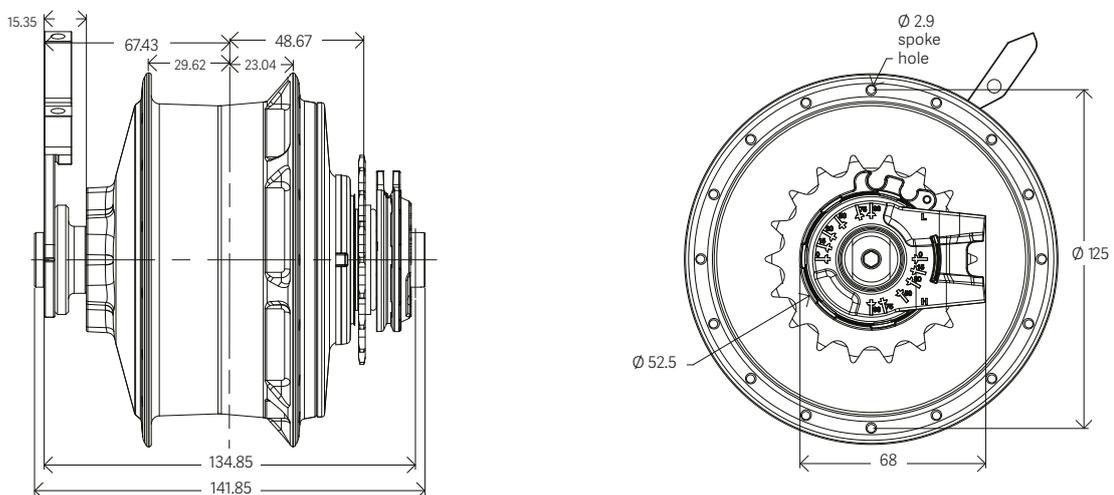
- A Syntace
- B DT Swiss, Maxle, E-Thru

- 1 Assembly Enviolo SP CVP top level
- 2 enviolo SP manual hub interface
- 3 Adapter, lock nut, OD20 or OD22, 12 x 142 / 12 x 148 compatible
- 4 Axle plate, 142/148 mm compatible
- 5 Retaining ring

- 6 Spacer, LH
- 7 Spacer, RH
- 8a Brake caliper mount IS to PM
- 8b Brake caliper mount PM to PM

- 9 Bolt, countersunk, Torx, M4 x 0.7 x 8
- 10 Washer, spacer, 13 x 19 x 0.5
- 11 Socket head cap screw, M6
- 12 Adapter, Torque Reaction

CVP with Manual Hub Interface

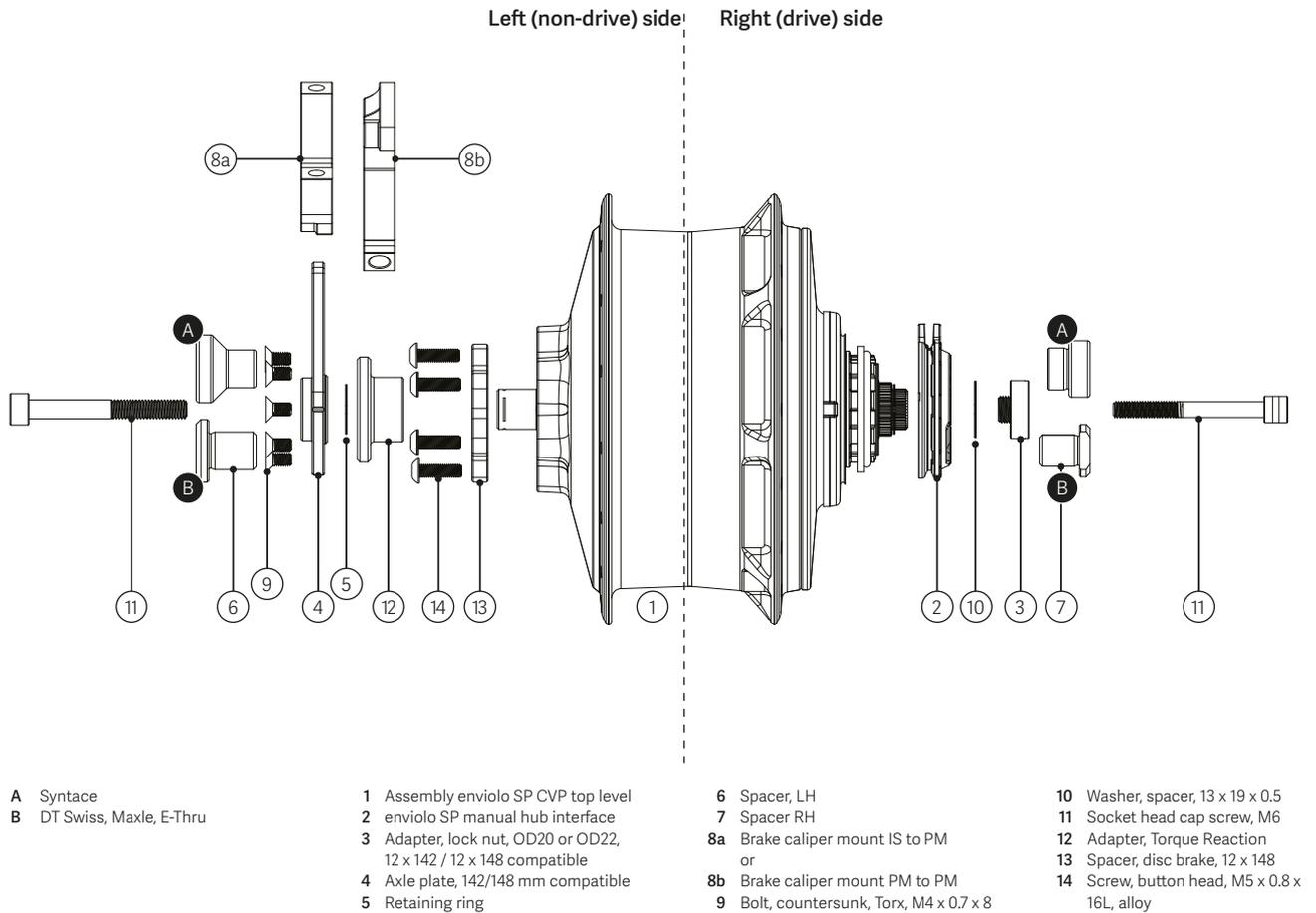


enviolo SP

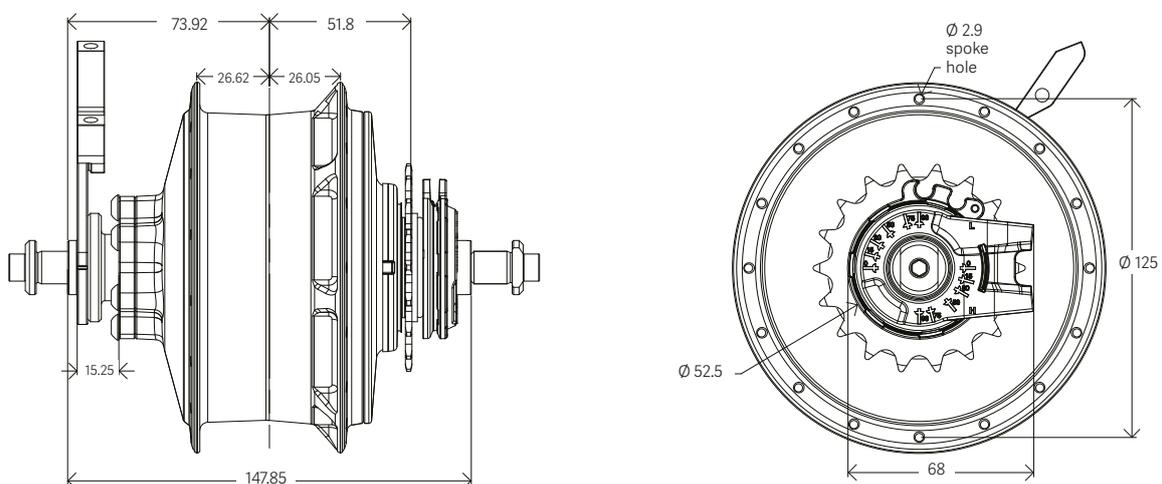
Required Package Space

148 mm

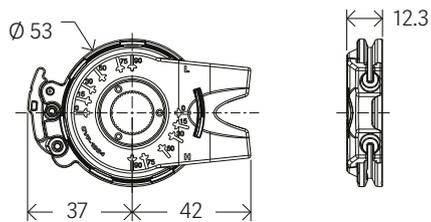
Components of Assembly



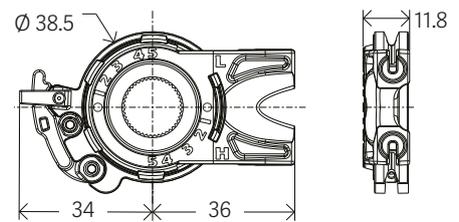
CVP with Manual Hub Interface



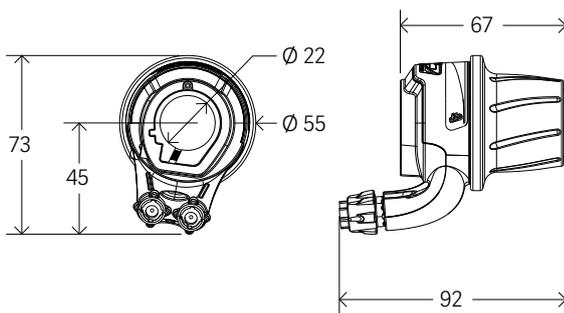
Multi-turn: Manual Hub Interface



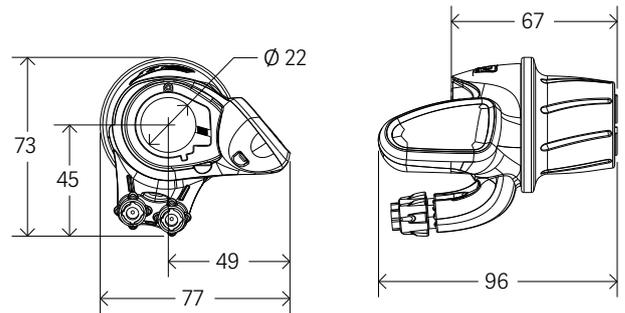
One-turn: Manual Hub Interface



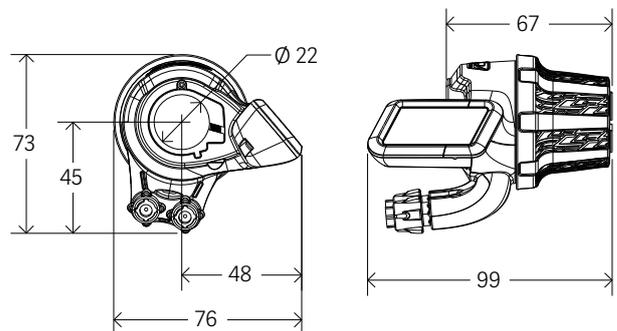
Multi-turn: Controller



One-turn: Controller

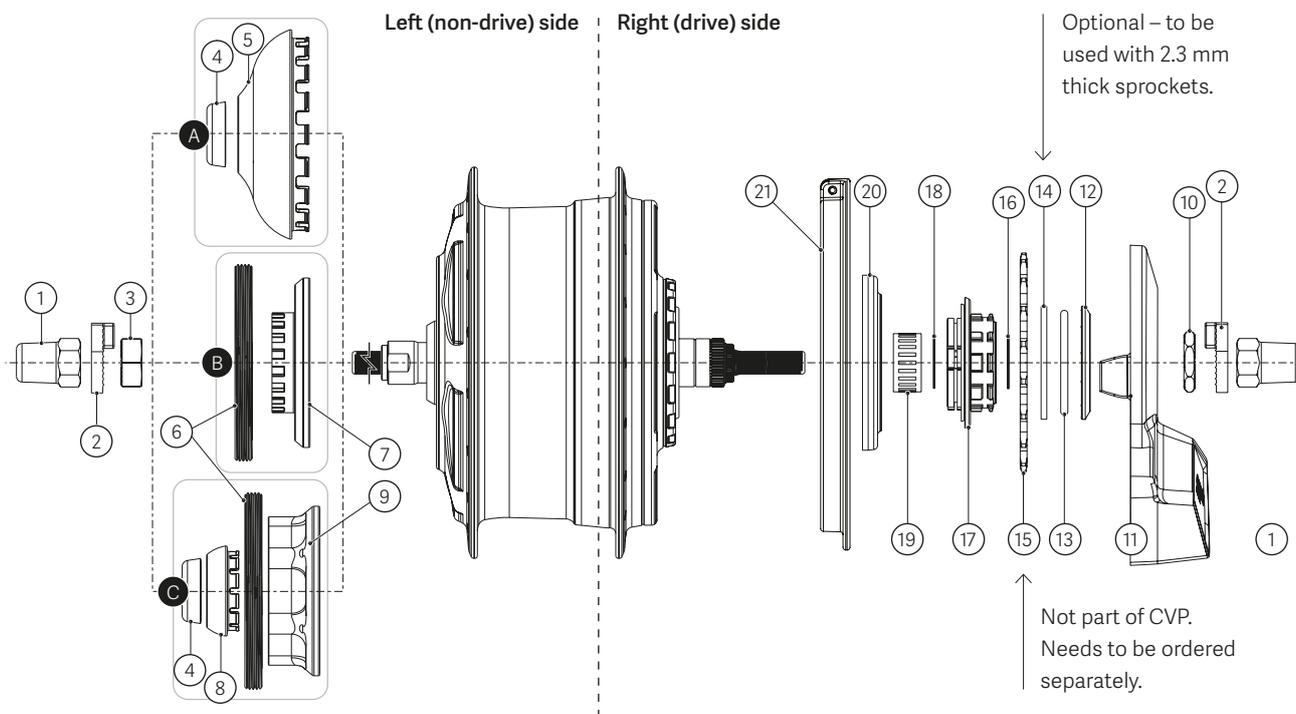


One-turn: Controller



enviolo CT, enviolo TR, enviolo CO Required Package Space

Components of Assembly



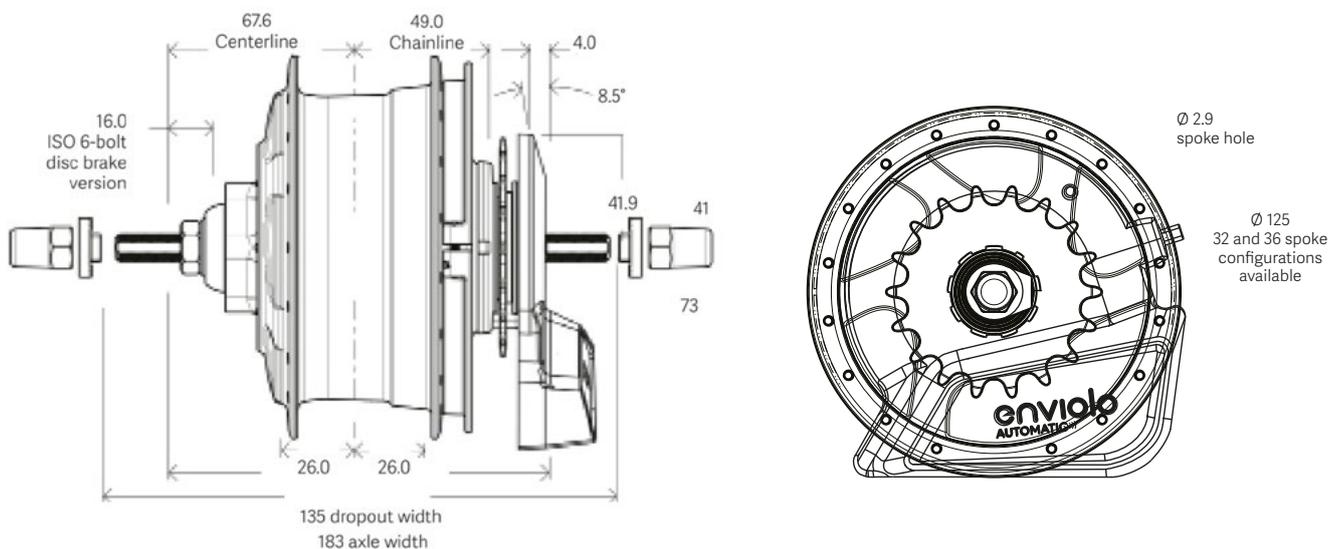
- A Rim brake configuration
- B Roller brake configuration
- C Disc brake configuration

- 1 Axle nut
- 2 No-turn washer
- 3 Left-hand nut
- 4 Cupped washer
- 5 Rim brake cover
- 6 Brake lock ring
- 7 Roller brake adapter

- 8 Brake shield
- 9 Disc brake adapter
- 10 R.h. nut
- 11 AUTOMATI*Q* Hub Interface
- 12 Sprocket encoder
- 13 Sprocket snap ring
- 14 Sprocket spacer

- 15 Sprocket
- 16 Snap ring (freewheel)
- 17 Freewheel assy
- 18 Snap ring (interior)
- 19 Needle bearing
- 20 R.h. shield
- 21 Hub encoder

CVP with AUTOMATI*Q* Hub Interface

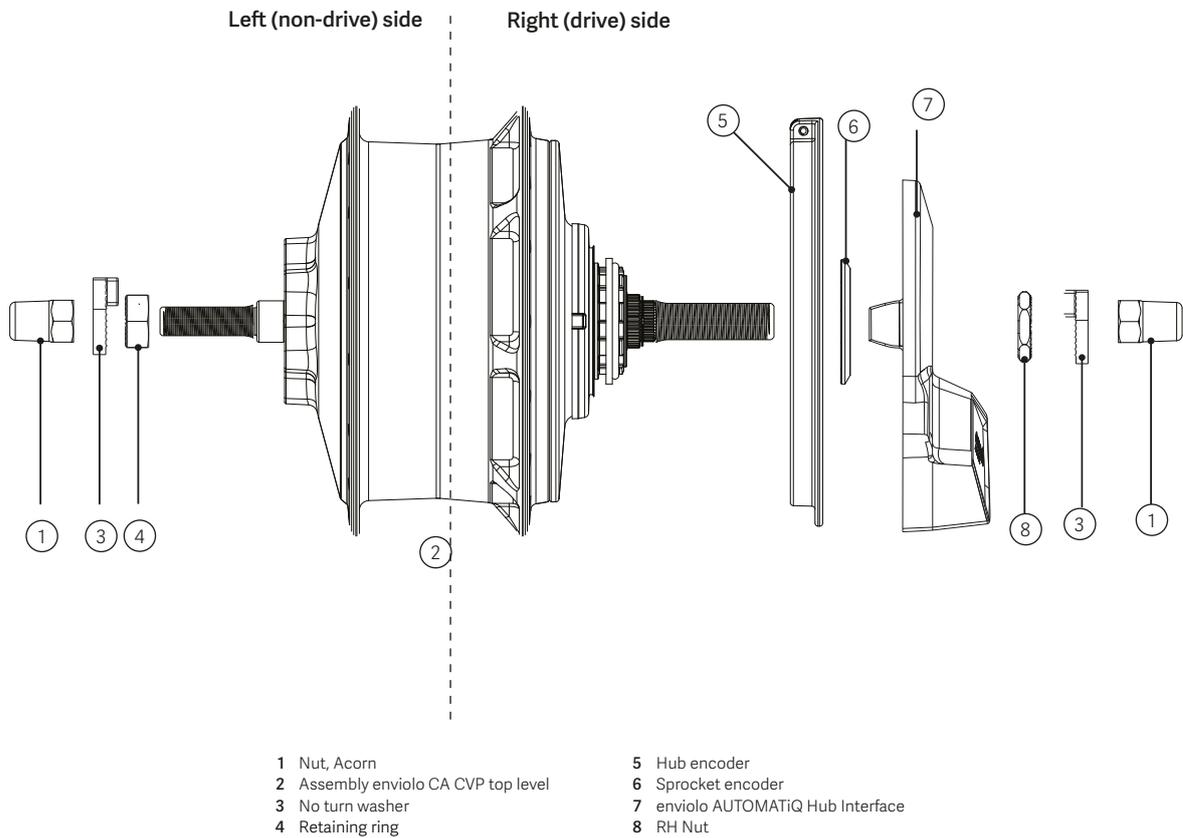


enviolo CA

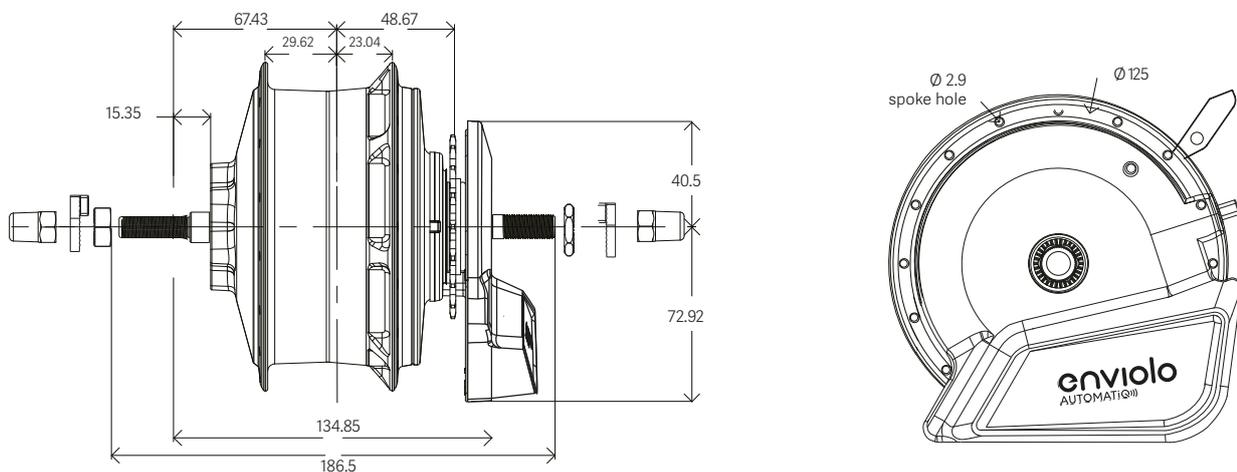
Required Package Space

135 mm

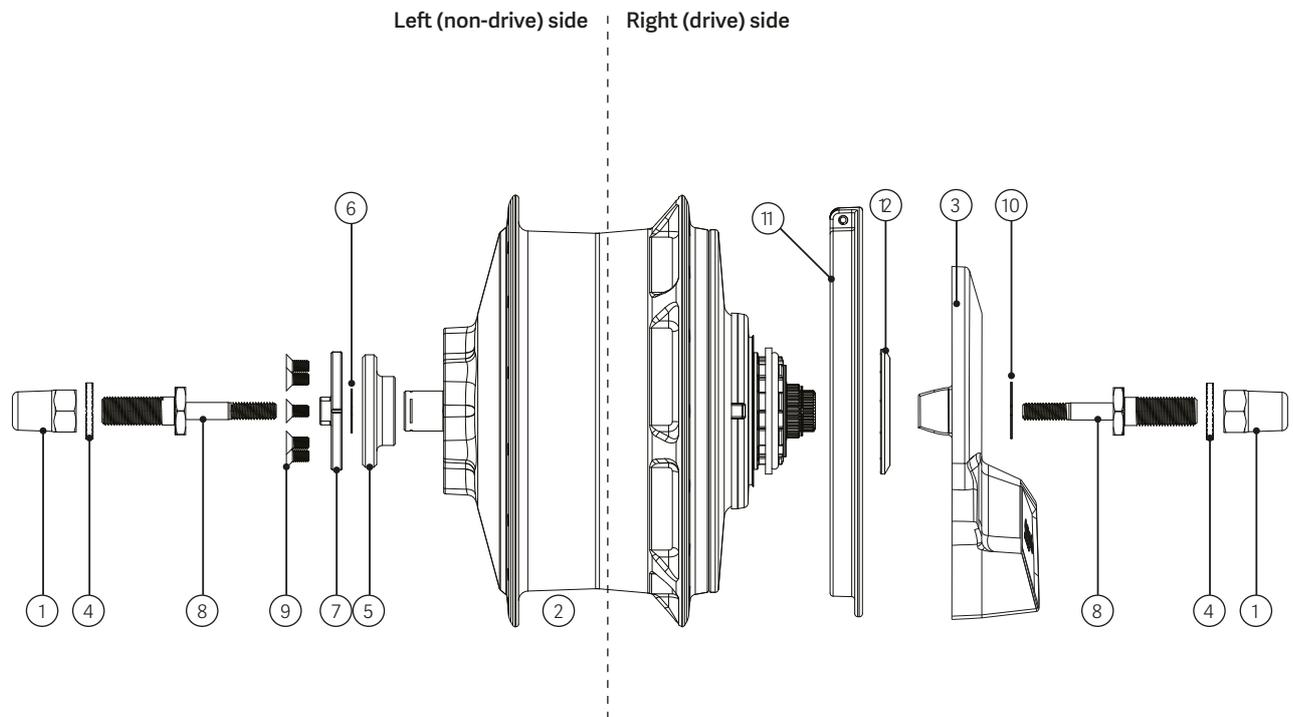
Components of Assembly



CVP with AUTOMATI*Q* Hub Interface

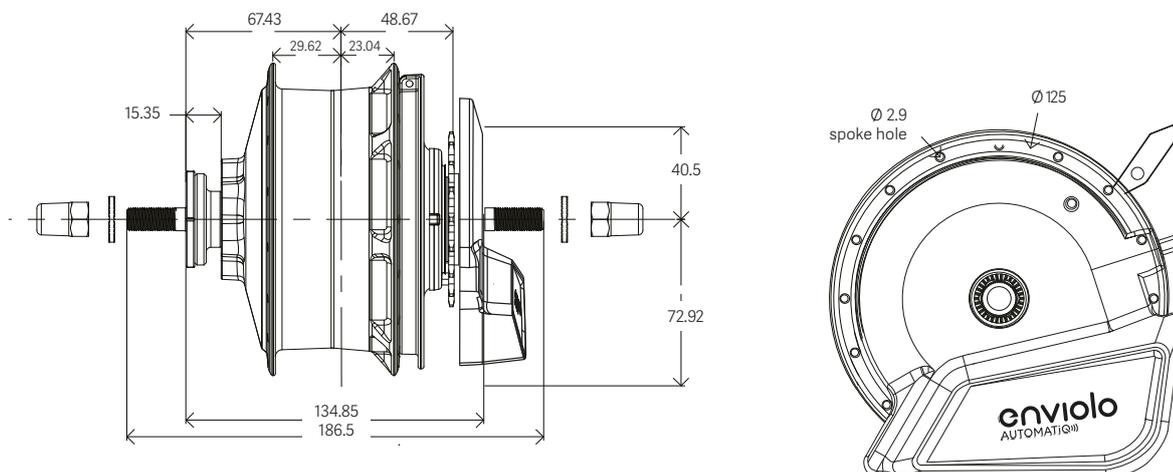


Components of Assembly



- | | |
|--|---|
| <ul style="list-style-type: none"> 1 Nut, Acorn 2 Assembly enviolo SP CVP top level 3 AUTOMATI<i>Q</i> Hub Interface 4 Lock washer, M10 5 Adapter, Torque Reaction 6 Retaining ring 7 Axle plate, 135 mm compatible | <ul style="list-style-type: none"> 8 Shaft, threaded adapter 9 Bolt, countersunk, Torx, M4 x 0.7 x 8 10 Washer, spacer, 13 x 19 x 0.5 11 Hub encoder 12 Sprocket encoder |
|--|---|

CVP with AUTOMATI*Q* Hub Interface

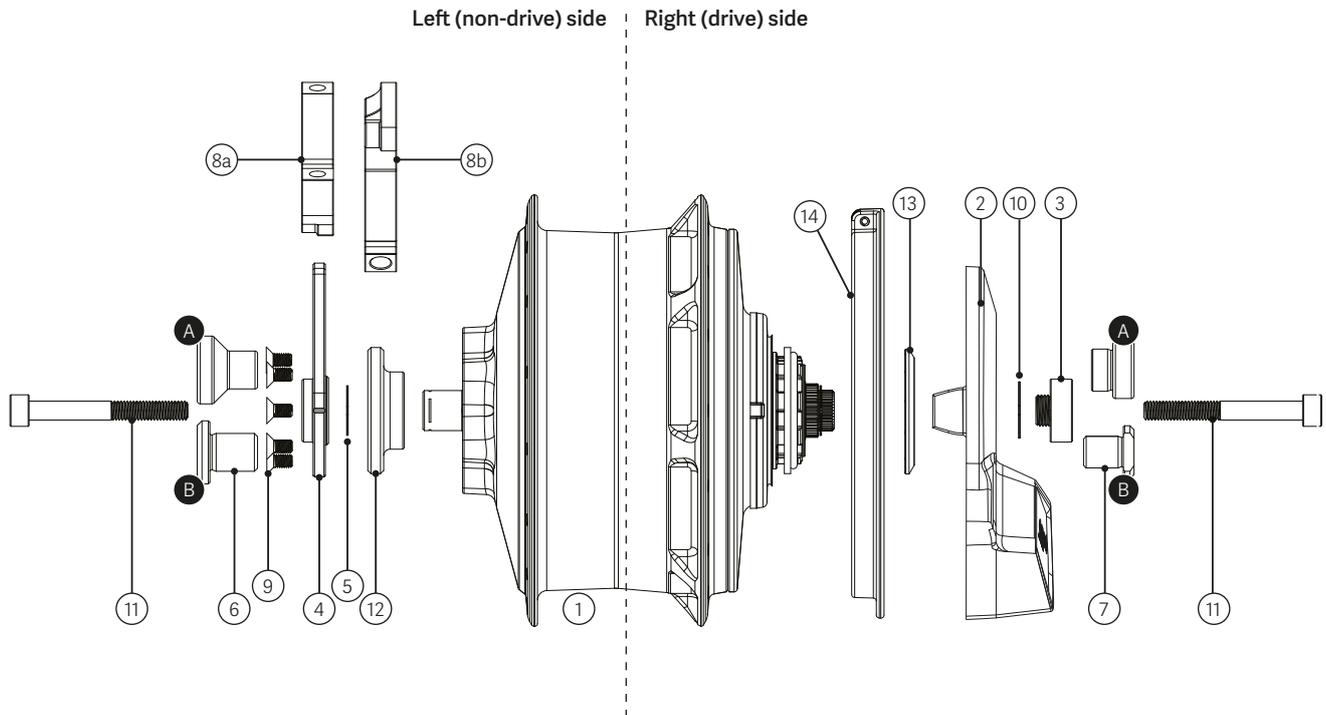


enviolo SP

Required Package Space

142 mm

Components of Assembly



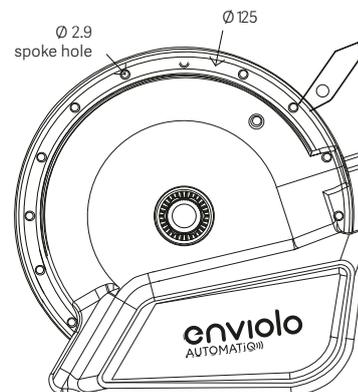
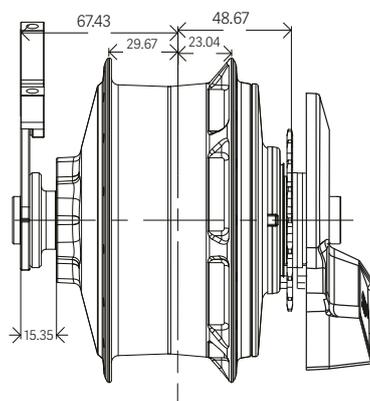
A Syntace
B DT Swiss, Maxle, E-Thru

- 1 Assembly enviolo SP CVP top level
- 2 AUTOMATI*Q* Hub Interface
- 3 Adapter, lock nut, OD20 or OD22, 12 x 142 / 12 x 148 compatible
- 4 Axle plate, 142/148 mm compatible
- 5 Retaining ring

- 6 Spacer, LH
- 7 Spacer, RH
- 8a Brake caliper mount IS to PM
- or
- 8b Brake caliper mount PM to PM
- 9 Bolt, countersunk, Torx, M4 x 0.7 x 8

- 10 Washer, spacer, 13 x 19 x 0.5
- 11 Socket head cap screw, M6
- 12 Adapter, Torque Reaction
- 13 Hub encoder
- 14 Sprocket encoder

CVP with AUTOMATI*Q* Hub Interface

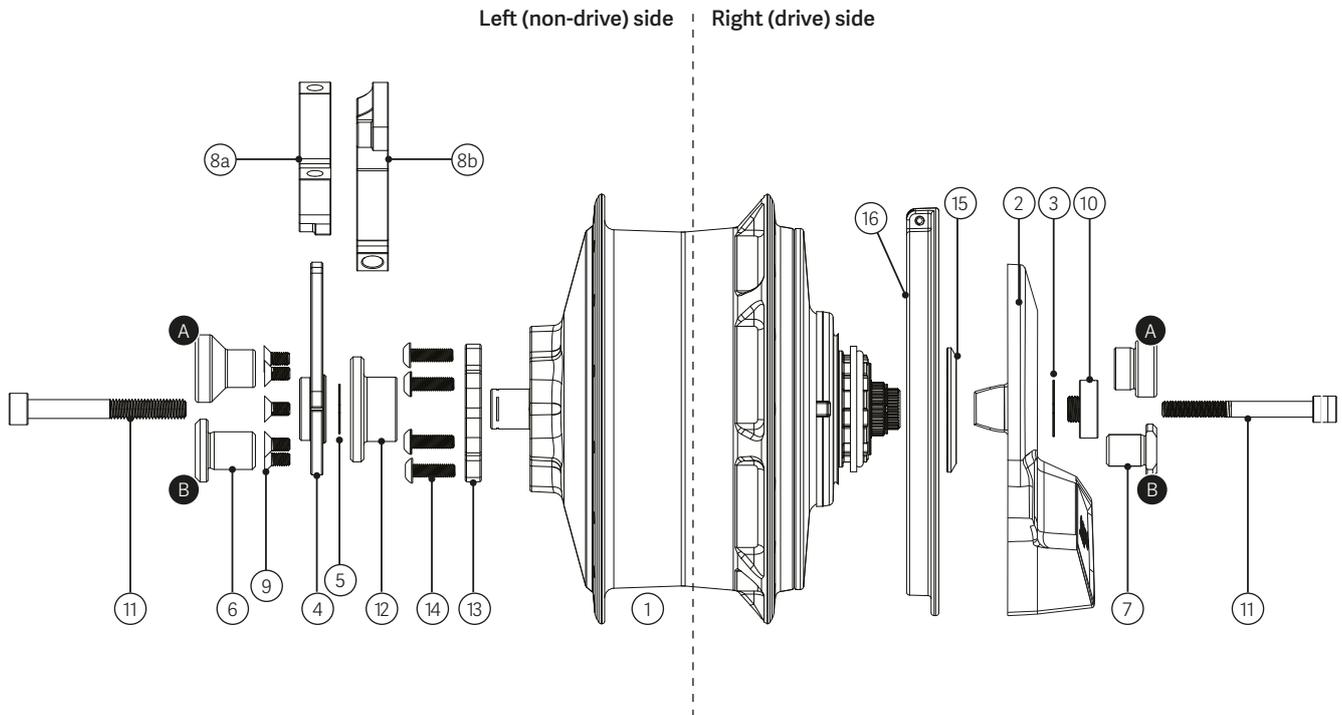


enviolo SP

Required Package Space

148 mm

Components of Assembly



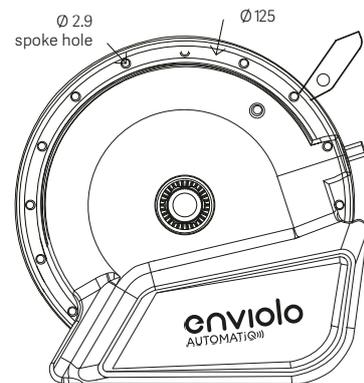
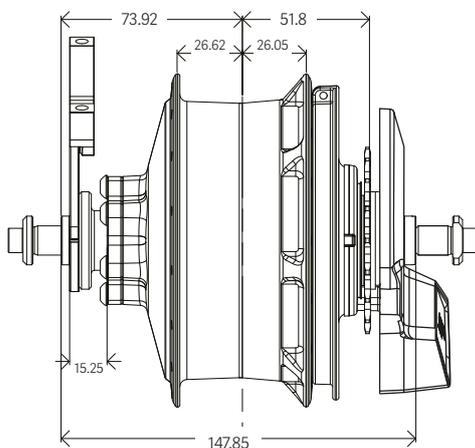
- A Syntace
- B DT Swiss, Maxle, E-Thru

- 1 Assembly enviolo SP CVP top level
- 2 AUTOMATI*Q* Hub Interface
- 3 Adapter, lock nut, OD20 or OD22, 12 x 142 / 12 x 148 compatible
- 4 Axle plate, 142/148 mm compatible
- 5 Retaining ring
- 6 Spacer, LH

- 7 Spacer RH
- 8a Brake caliper mount IS to PM or
- 8b Brake caliper mount PM to PM
- 9 Bolt, countersunk, Torx, M4 x 0.7 x 8
- 10 Washer, spacer, 13 x 19 x 0.5

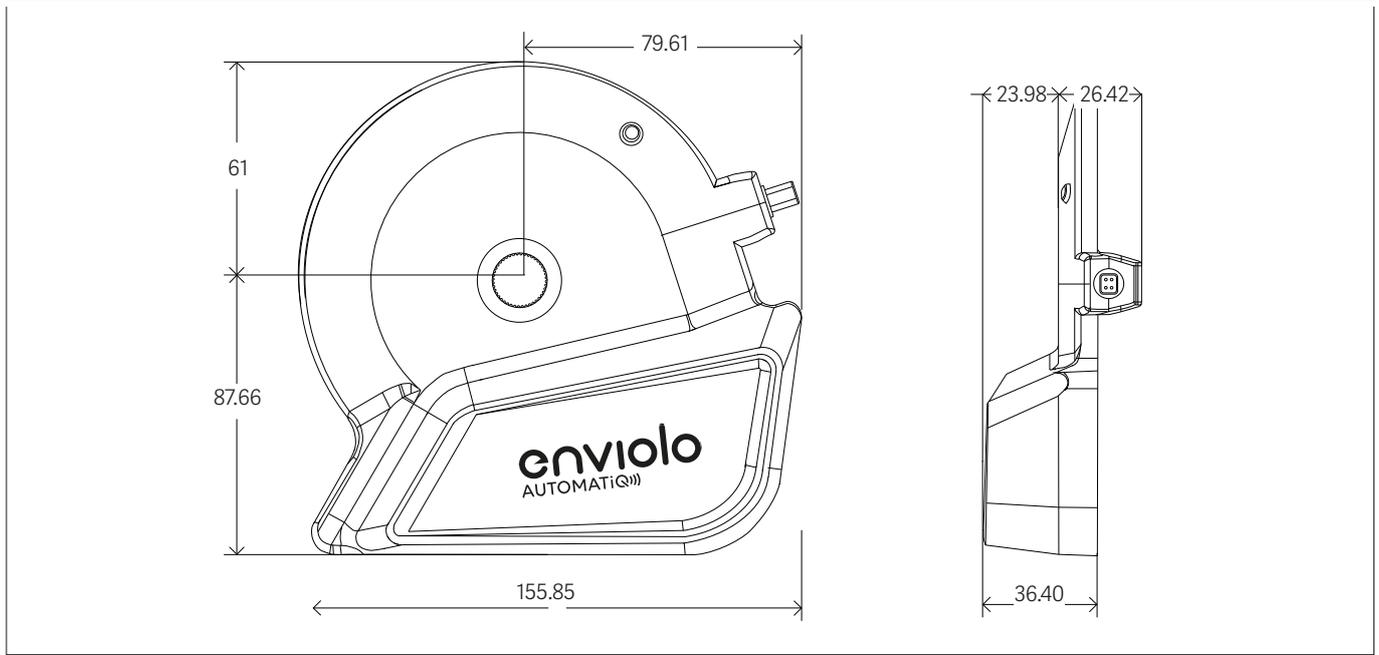
- 11 Socket head cap screw, M6
- 12 Adapter, Torque Reaction Spacer, disc brake, 12 x 148
- 13 Screw, button head, M5 x 0.8 x 16L, alloy
- 15 Hub encoder
- 16 Sprocket encoder

CVP with AUTOMATI*Q* Hub Interface



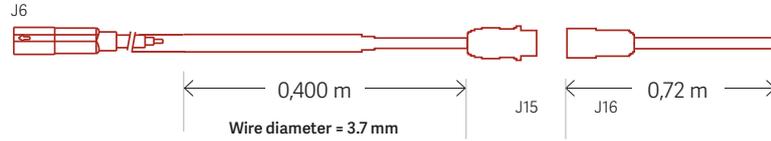
Individual Components

AUTOMATI*Q* Hub Interface





enviolo CT: AHI-AUT-CT-OE
 enviolo CO: AHI-AUT-CO-OE
 enviolo TR: AHI-AUT-TR-OE
 enviolo CA: AHI-AUT-CA-OE
 enviolo SP: AHI-AUT-SP-OE



Hirose connector: WIRE-AT3-400-OE Available from drive system manufacturer.
 WIRE-AT3-600-OE

-----OR-----

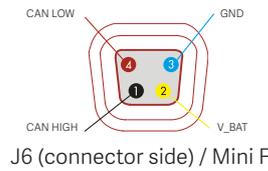


WIRE-AT3-DS-OE



enviolo AUTOMATI*Q* is a CAN Bus / BLE system

| HI Pin | Cable Pin | Color | Function |
|--------|-----------|--------|----------|
| 1 | 2 | Yellow | V_BAT |
| 2 | 3 | Blue | GND |
| 3 | 4 | Red | CAN_L |
| 4 | 1 | Black | CAN_H |



J15/Hirose



J5 (AHI side) / Mini F



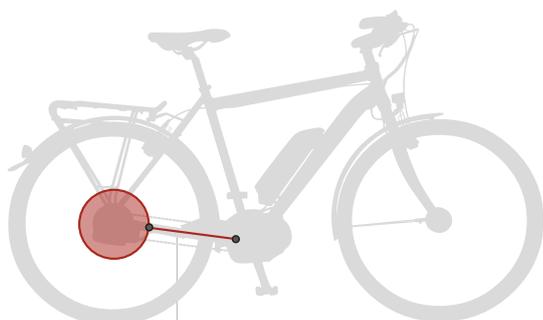
J16/Hirose

NOTE: Pin-Numbering on AHI-side is different from Pin-Numbering on Cable-side

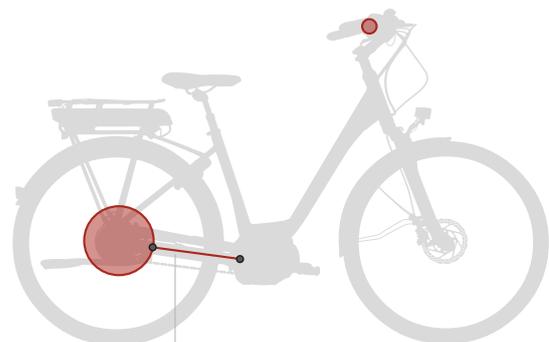
* This connector is only required if the counterplug is not provided by the drive system manufacturer. Please contact the drive system manufacturer for further information. For Yamaha we offer an alternative cable. Please contact the sales team for further information.

AUTOMATI*Q* Wire Harness

This diagram provides you an overview of the system connections.



I-Harness



I-Harness

Further Information



Besides the components themselves several other factors influence the battery range:

- Type of tires
- Tire pressure
- Riding at high assistance levels
- Rider and vehicle weight
- High carry-on weight
- Straight sitting position
- Headwind
- Topography
- Frequent starting and stopping
- Frequent riding under 20 km/h
- Frequent riding under 50 RPM
- Low pedaling force by rider
- Low outside temperatures
- Rider cadence

To support your assembly and maintenance of our products we offer four simple service tools:



BK-ADPT-TOOL
Brake adapter / disc assembly



HW-SNUT-TOOL
Spline nut tool



CE-HW-TOOL-SM-MLD
Cable hardware installation tool



CE-HW-TOOL-LG-CNC
Cable hardware installation tool

enviolo AUTOMATiQ App

enviolo



Web download of software and manuals through: support.enviolo.com
App download through the Apple App Store and Google Play Store.



Wireless
connection

Operates via BLE connection
from hub interface to
smartphone/tablet

Update enviolo Automatic
firmware

Program correct cadence
and bicycle settings



The AH1 to Smartphone or tablet connection lets you use our app to configure the automatic shifting units for various applications.

OPTIONAL COMPONENT: Not required for use by end consumer.

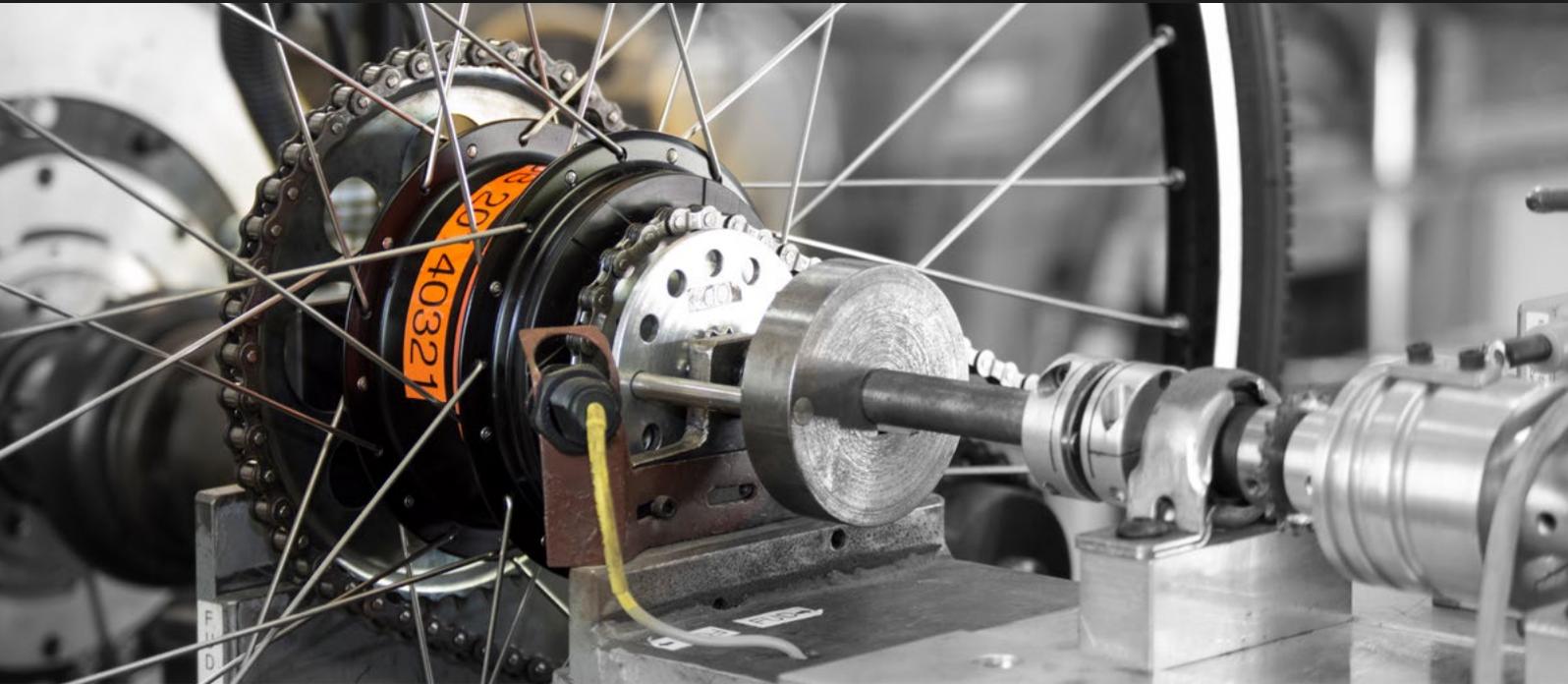


Assembly Torque Specifications

enviolo

| Torque Specs enviolo CT, enviolo TR, enviolo CO, enviolo CA | | Other Parts | |
|--|------------|------------------------------|--------------------------|
| Axle nuts | 30 - 40 Nm | Cable hardware | 1.5 - 2.0 Nm |
| Brake adapter + Loctite® 277 or similar | 55 - 65 Nm | Controller | 2.0 - 2.5 Nm |
| Interface locknut | 10 - 15 Nm | Output speed ring | 1.0 Nm |
| Spline nut | 9 - 10 Nm | Controller cable cover screw | 0.2 - 0.3 Nm (handtight) |

| Torque Specs enviolo SP (135 mm) | | enviolo SP (142/148 mm) | |
|---|------------|---|------------|
| Torque adapter screws | 2.5 - 3 Nm | Torque adapter screws | 2.5 - 3 Nm |
| Double threaded axle adapters | 10 - 15 Nm | Interface adapter | 10 - 15 Nm |
| Axle nuts | 30 - 40 Nm | Dropout adapter (not threaded in all cases) | 5 - 10 Nm |
| | | Axle bolts | 10 - 15 Nm |



Before we release our products to the market they have to run through a severe testing cycle, which is derived from automotive standards and includes an FMEA and functional safety analysis.

In addition all our products complete an extensive end-of-line testing and validation process.

Build quality

- Ride audit (quantity & quality)
- Ratio range
- R&D function
- Assembly tolerances

Design & overload tests

- Cold temperature operation test
- Torsional stress (DIN) test
- Wheel retention test
- Spoke flange ultimate load test
- Pedal drag test

Durability / fatigue tests

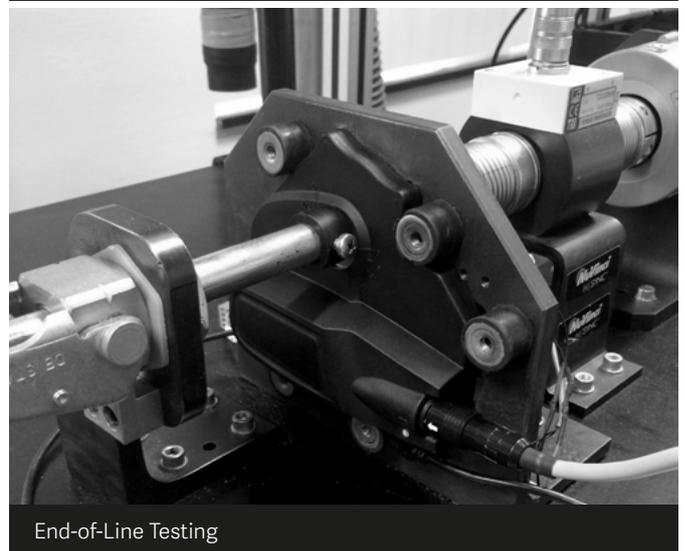
- Distributed fixed-ratio test (DFRT)
- Dynamic shift test (DST)
- Coasting test
- Canted wheel bump test
- Hub shell & cover fatigue test
- Spoke flange fatigue test
- Brake ultimate load & fatigue test
- Shifter system life test

Environmental tests

- Corrosion (salt spray) test
- UV test
- Environmental intrusion test
- Durability



Production Line Testing



End-of-Line Testing

Cooperation Partners

To support the trend of system integration we cooperate with the leading drive system manufacturers to offer an integrated shift system and with the market leaders in the zero-maintenance belt drive supply chain.

enviolo

AUTOMATI*Q*®

- integrated in controller

epowered by

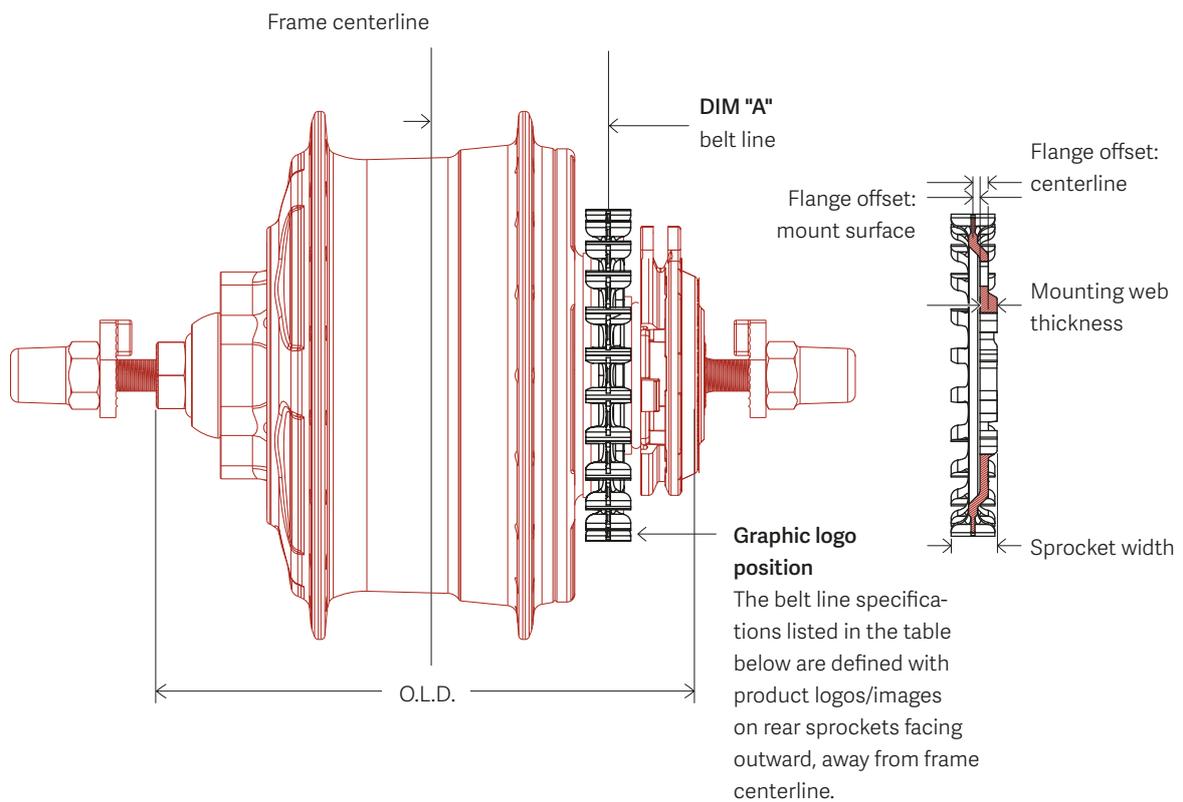


epowered by



Further partners are in constant development. If a drive system is not listed, please reach out to your responsible contact, as solutions may already be available.

Gates Belt Drive Specifications



CDX Beltline

enviolo CT, enviolo TR, enviolo SP*, enviolo CA*, enviolo CO

* 135 / 142 mm only

| Teeth | DIM "A" belt line | Tooth outer diameter | Sprocket width | Mounting web thickness | Article number |
|---------------------|-------------------|----------------------|----------------|------------------------|-----------------------|
| 22 | 45.5 mm | 75.33 mm | 11.6 mm | 4.3 mm | CT1122VMN |
| 24 | 45.5 mm | 82.26 mm | 11.6 mm | 4.3 mm | CT1124VMN |
| 26 | 45.5 mm | 89.31 mm | 11.6 mm | 4.3 mm | CT1126VMN |
| 28 | 45.5 mm | 96.31 mm | 11.6 mm | 4.3 mm | CT1128VMN |
| enviolo SP** | | | | | ** 148 mm only |
| 22 | 48.7 mm | 75.33 mm | 11.6 mm | 4.3 mm | CT1122VMN |
| 24 | 48.7 mm | 82.26 mm | 11.6 mm | 4.3 mm | CT1124VMN |
| 26 | 48.7 mm | 89.31 mm | 11.6 mm | 4.3 mm | CT1126VMN |
| 28 | 48.7 mm | 96.31 mm | 11.6 mm | 4.3 mm | CT1128VMN |

Compatible Chain Cases



350R N16



350R NV16

Chainglider

enviolo CT, enviolo TR, enviolo SP, enviolo CA, enviolo CO

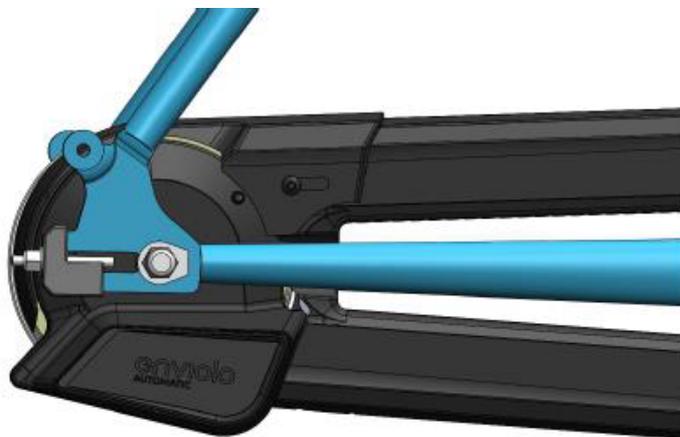
| Compatible systems | Front part | Rear part | Chainstay length | Compatible sprocket size |
|--------------------|----------------------------|-----------|------------------|--------------------------|
| Manual | 350F 38 / 42 / 44 / 48 | 350R NV16 | 445 - 475mm | 16 - 22 |
| Manual | 350F 38L / 42L / 44L / 48L | 350R NV16 | 530 mm | 16 - 22 |

*MY2020 AUTOMATiQ option in evaluation.

Hesling Chain Case

enviolo

Hesling[®]
bike parts



Finura

enviolo CT, enviolo TR, enviolo SP, enviolo CA, enviolo CO

| Compatible systems | Chainstay length | Compatible front sprocket size | Compatible rear sprocket size |
|--------------------|------------------|--------------------------------|-------------------------------|
| Manual | 450 - 490 mm | 38 | 18 - 22 |

*MY2020 AUTOMATiQ option available. Please contact your dedicated business development lead for more details.

Compatible Bicycle Trailers

Bike Trailer Adapters for enviolo CT, enviolo TR, enviolo CO enviolo SP (Solid Axle), enviolo CA

enviolo

BURLEY®

Trailer

Adapter

Minnow, Bee,
 Honey Bee,
 Encore, Solo,
 Cub, D'Lite,
 Nomad, Flatbed,
 Tail Wagon



Art. No. 960038

CROOZER® The bicycle trailer

Trailer

For vehicles from 2016

For vehicles before 2016

Croozer Kid
 Croozer Kid Plus
 Croozer Cargo
 Croozer Dog



Art. No. 122003516



XL: + 10 mm
 Art. No. 122003716



Art. No. 122000715



Croozer axle nut adapter
 with Thule coupling

THULE® SWEDEN

Trailer

Adapter

Thule Chariot Lite
 Thule Chariot Cab
 Thule Chariot Cross
 Thule Chariot Sport
 Thule Coaster XT



Art. No. 20100798

Use of third party adapters has not been tested by Fallbrook Technologies Inc. and therefore we cannot guarantee their performance or safety and hereby disclaim any liability resulting from their use. Please carefully follow all installation instructions provided by third party product producers for the installation and maintenance of such products.

Certificates & Declarations

Test Report

enviolo

| | |
|-----------------------|---|
| Test: | European Bicycle Standards (Rear Hub Durability and Strength Criteria) |
| Test Articles: | CVP's: enviolo CT, enviolo CO, enviolo TR, enviolo CA, enviolo SP Shifters: enviolo CT, enviolo CO, enviolo TR, enviolo CA, enviolo SP |
| Date: | 5 DEC 2017 |
| Reference: | ISO 4210:2014(E) which supersedes: <ul style="list-style-type: none">• EN 14764:2005• EN 14766:2005• CEN/TC 333 N.96:2002• DIN 79100-2:1999 ISO 8098:2014(E), US CPSC 16 CFR Part 1512 |
| Test Method: | Reference standard tests specific to rear hub durability and strength criteria |
| Test Location: | Fallbrook Technologies Inc., Cedar Park, TX |

Test Results:

The enviolo CT, enviolo CO, enviolo TR, enviolo CA, enviolo SP are tested to industry standards for internal hubs, as well as proprietary additional tests specific to NuVinci technology in use with traditional, as well as electric- assist bicycles (eBikes or pedelecs) up to 250W (rated) power for the enviolo CT, enviolo CO, enviolo TR and up to 500W (rated) power for the enviolo CA, enviolo SP.

Specifically, the enviolo CT, enviolo CO, enviolo TR, enviolo CA, enviolo SP meet rear hub durability and strength criteria for bicycle standard ISO 4210:2014(E) and ISO 8098:2014(E). The enviolo CT, enviolo CO, enviolo TR, enviolo CA, enviolo SP shifters comply with requirements set forth in ISO 4210:2014(E) and ISO 8098:2014(E). In addition, the enviolo CT, enviolo CO, enviolo TR, enviolo CA, enviolo SP hubs and enviolo CT, enviolo CO, enviolo TR, enviolo CA, enviolo SP shifters meet US CPSC 16 CFR Part 1512.

Proprietary Fallbrook Technologies Inc. testing that exceeds industry standards include:

- Durability (simulating 18,000 km of use at extreme conditions)
- Dynamic Shift Test
- Canted Wheel Bump Fatigue Test
- Coasting Fatigue Test
- Hub Shell and Cover Axial Fatigue Test
- Hub Shell spoke Flange Fatigue and Ultimate Tests
- Brake Fatigue Test
- Shifter System Durability Test
- Corrosion Resistance Test
- Weatherability / UV Test
- Environmental Intrusion Test
- Ride Audit Test (including cold weather testing)
- End of Line Efficiency, Ratio Range, and Leak Tests

Rev C

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Certificate of Compliance – RoHS Declaration

enviolo

Fallbrook Technologies Inc.
505 Cypress Creek Road, Suite L
Cedar Park, TX 78613

12/05/17

Fallbrook Technologies certifies product compliance to the European Union Directive 2011/65/EU on the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS).

All enviolo automatic brand system components comply with the stated substances and maximum concentration values tolerated by weight in homogeneous materials.

Lead (0,1 %)
Mercury (0,1 %)
Cadmium (0,01 %)
Hexavalent chromium (0,1 %)
Polybrominated biphenyls (PBB) (0,1 %)
Polybrominated diphenyl ethers (PBDE) (0,1 %)

Fallbrook Technologies relies on its supply chain partners to ensure daily compliance.



VP of Operations

Declaration of Conformity

enviolo

Manufacturer:

Fallbrook Technologies Inc.
505 Cypress Creek Road, Suite L
Cedar Park, TX 78613

Authorized Representative:

Richard Hilgart
Fallbrook Technologies Inc.
Technical Product Manager
Popovstraat 12
8013 RK Zwolle, The Netherlands

Product Name: enviolo Automatic and Automatic + Shifting System with belt drive compatibility. The enviolo Automatic and Automatic + Shifting System with belt drive compatibility consists of the following components:

(1) enviolo AUTOMATIQ Hub Interface ("AHI-AUT"), enviolo Automatic + Hub Interface ("AHI-AUTI"); (2) "Y" or "I" Harness, and (3) may include Grip shifter Controller ("ARC") or 3-button controller. A picture of the enviolo Automatic Shifting System is attached as Exhibit A.

The object of declaration described above is in conformity with Directive 2004/108/EC of the European Parliament and the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Testing Body: VDE Testing Certification Institute
Merianstrasse 28
63069 Offenbach
Notified Body No.: 0366

Date of Conformity: 1 September 2016

This declaration is issued under the sole responsibility of the Manufacturer and Authorized Representative described above.

Signed for on behalf of Fallbrook Technologies Inc.:



Richard Hilgart
Technical Product Manager



B35H-HARM-06 | Rev C

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Declaration of Conformity

Manufacturer:

enviolo
Vijzelstraat 68-72
1017 HL Amsterdam

Authorized representative:

Peter Kreuder
enviolo
Director of Product Management
Vijzelstraat 68-72
1017 HL Amsterdam

Product Name: enviolo AUTOMATiQ shifting system with belt drive compatibility. The enviolo AUTOMATiQ shifting system with belt drive compatibility consists of the following components:

(1) enviolo AUTOMATiQ Hub Interface (“AHI-CT/AHI-CO/AHI-TR/AHI-CA/AHI/SP”), (2) enviolo AUTOMATiQ “i” Harness, and (3) may include 3-button controller (“ARC”). A picture of the enviolo AUTOMATiQ Shifting System is attached as Exhibit A.

The object of declaration described above is in conformity with Directive 2004/108/EC of the European Parliament and the Council of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Testing Body:

DEKRA Certification B.V.
Meander 1051
6825 MJ Arnhem
Company registration: 09085396
Date of Conformity: 1 September 2019

This declaration is issued under the sole responsibility of the Manufacturer and is signed by its Authorized Representative described above.

Signed for on behalf of enviolo:



Peter Kreuder
Director of Product Management



Exhibit A

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REACH (Regulation, Evaluation, and Authorization of Chemicals) Declaration:

enviolo

Fallbrook Technologies Inc.
505 Cypress Creek Road, Suite L
Cedar Park, TX 78613

Effective Date: October 20, 2015

Supplier Declaration for Articles Provided

We declare that this information is true and complete to the best of our knowledge and that the articles we provide are compliant with restrictions on substances listed in Annex XVII of REACH regulations (15.06.2015). As a Non-EU company, we do not have a direct REACH obligation but we do verify compliance with Annex XVII to allow our customers to fulfill their REACH obligations. Fallbrook Technologies does not manufacture "substances" or "preparations" nor do we provide articles that involve the "intentional release of substances" per the definitions in Regulation (EC) No 1907/2006 – REACH.



VP of Operations

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Most Read Articles

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Manuals & Technical Documentation

Article created 4 mins ago  0

Resetting the CVP to Full Overdrive 🔗

Manuals & Technical Documentation

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Installation of Freewheel 🔗

Manuals & Technical Documentation

Article created 4 mins ago  0

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