

**UBCO**

September 2024

**DUTY**

**Technical Service Manual**

**VERSION 1.1**

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# **General Information**

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## 1.1 RELEASE HISTORY

**TABLE 1: RELEASE HISTORY**

VERSION	DESCRIPTION	DATE
1.0	Initial Release	July 2024
1.1	UPDATES; Front Tyre Pressure - Page 13 Rear Tyre Pressure - Page 13 Brake Description - Page 14 Suspension Description - Page 14 Battery Description - Page 14 Swing Arm Torque and Location - Page 49 Rear Mudguard Torque - Page 59 Kickstand Torque - Page 60 Centre Stand Torque - Page 64 Foot Peg Mount Fastener Torque - Page 65 Headlamp Fastener Torque - Page 74	September 2024

## 1.2 GENERAL INFORMATION AND DISCLAIMERS

Please read this disclaimer carefully before using the technical repair manual. By accessing and utilizing this manual, you acknowledge and agree to the following terms and conditions:

1. **USE AT YOUR OWN RISK:** This technical repair manual is provided for informational and educational purposes only. The information contained herein is intended for skilled technicians and professionals who have the necessary tools, equipment, and expertise to safely and accurately perform the repairs described. The use of this manual is entirely at your own risk, and the manual's publisher, authors, and contributors shall not be held liable for any damages or losses arising from its use.
2. **PROFESSIONAL GUIDANCE:** This manual is not a substitute for professional advice, diagnosis, or repair services. It is essential to consult with an UBCO certified technician or manufacturer-approved service personnel when dealing with complex technical repairs or maintenance tasks. The manual is meant to complement, not replace, professional expertise.
3. **APPLICABILITY:** The procedures and instructions in this manual are generic in nature and may not be suitable for all devices, equipment, or situations. Always refer to UBCO documentation or guidelines for device-specific repair instructions and specifications where available.
4. **SAFETY PRECAUTIONS:** Motorcycle repairs can be dangerous and may involve exposure to electrical hazards, moving parts, and other potential risks. Prior to attempting any repair, please ensure that you are adequately trained and equipped with the necessary safety gear. Follow all safety warnings provided by the manufacturer as well as industry health and safety guidelines. Wear appropriate Personal Protective Equipment aligned with your on site Health and Safety Assessment of the operations within this manual. At a minimum it is recommended that appropriate gloves and safety glasses are worn throughout.
5. **WARRANTY IMPLICATIONS:** Attempting repairs on a product covered by a warranty or service agreement may void such coverage. Always check UBCO's warranty terms and conditions before undertaking any repair work.
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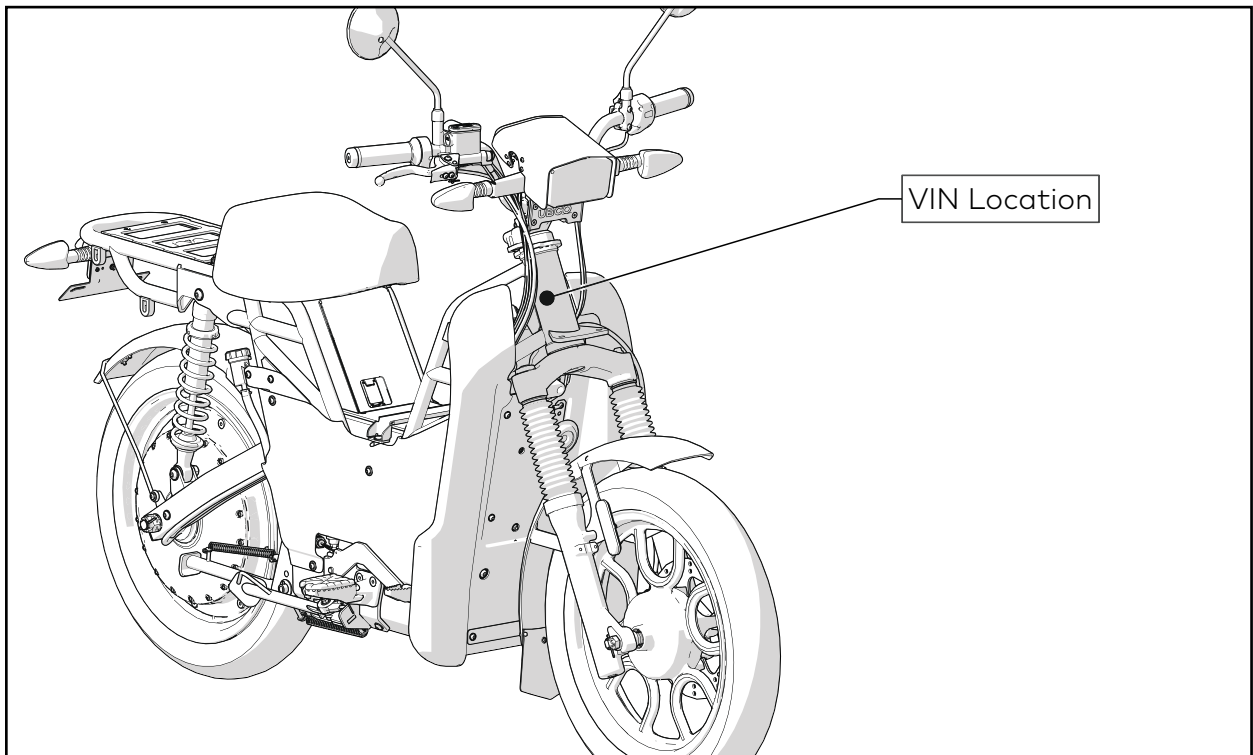
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By using this technical repair manual, you agree to abide by these terms and conditions. If you do not agree to these terms, do not continue to use this manual. Your use of this manual constitutes your acceptance of these disclaimers and limitations.

### 1.3 BIKE IDENTIFICATION

UBCO Duty Bikes are manufactured with a Vehicle Identification Number (VIN) and Product Identification Number (PIN) respectively. This identifier is located on the right hand side of the headtube.



## 1.4 REQUIRED TOOLS AND CONSUMABLES

The following basic hand tools are required for carrying out the processes defined within this manual.

### HEX BITS

- 3mm
- 4mm
- 5mm
- 6mm
- 8mm

### TORX BITS

- T20
- T25
- T30

### SCREWDRIVERS

- #1 Philips
- #2 Philips

### SOCKETS

- 10mm
- 13mm
- 17mm
- 21mm
- 22mm
- 27mm

### SPANNERS

- 8mm
- 10mm
- 13mm
- 17mm

The following workshop equipment is required for carrying out the processes defined within this manual.

### ITEM

- Micrometer
- Tyre Pressure Gauge
- Tread Depth Gauge
- Side Cutters
- Dial Gauge
- Brake Bleed Kit
- Breaker Bar
- Socket Driver
- Rubber Hammer
- Torque Wrench(es) Covering - 2Nm to 200Nm
- Needle Nose Pliers

Note - Impact drivers should not be used at any point within the assembly or dis-assembly of components on the UBCO bike.

The following consumables are required for carrying out the processes defined within this manual.

**LUBRICANTS**

- Di-Electric Grease
- Red Rubber Grease

**ADHESIVES**

- Loctite 243

**FLUIDS**

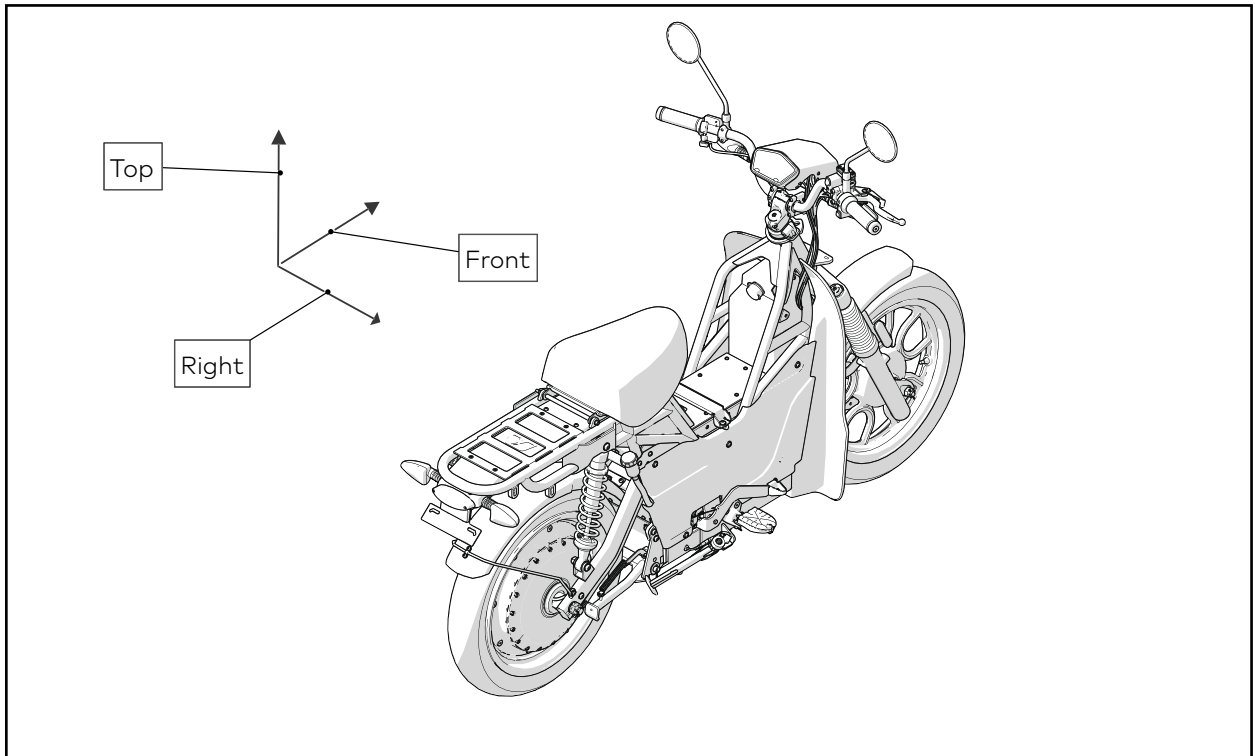
- DOT 4 - Brake Fluid
- Isopropyl Alcohol

**OTHER**

- Cloth - Lint Free
- Cloth - Cleaning
- Cable Ties - Small / Medium / Large

## 1.5 BIKE ORIENTATION

Throughout this manual the bike orientation is to be referred to from the rider position. For example, the right hand side refers to the right hand side of the vehicle when you are seated, facing the handlebars.



# **Model Specifications**

**TECHNICAL SERVICE MANUAL**



## 2.1 MODEL NAMING

Model.....UBCO DUTY BIKE

## 2.2 DIMENSIONS

Length ..... 1800mm  
Width ..... 820mm  
Height ..... 1360mm  
Seat Height ..... 840mm  
Wheelbase ..... 1215mm

## 2.3 MASS

Chassis Mass (No Battery).....85kg  
Battery Mass ..... 35kg  
Vehicle Mass ..... 120kg  
Maximum Payload (including Rider) ..... 160kg  
Gross Vehicle Mass..... 280kg

## 2.4 WHEELS

Size ..... 16"  
Width ..... 2.5"  
Front Wheel Rim Material ..... Aluminium  
Rear Wheel Rim Material ..... Aluminium  
Front or Rear Trueness Deflection Limit.....2mm

## 2.5 TYRES

Front and Rear Tyre..... 100/80-16 Tubeless  
Tyre Use Type ..... On Road  
Minimum Tread Depth ..... Refer to local authorities  
Recommended Front Tyre Pressure ..... 200kPa / 29psi / 2 bar  
Recommended Rear Tyre Pressure ..... 220kPa / 32psi / 2.2 bar

## 2.6 BRAKES

Brake Type .....	Hydraulic Combined Braking System
Operation .....	
Hand Lever Front, Foot Lever Rear, CBS Balance operated by Foot Lever	
Front Brake Disc Diameter .....	240mm
Front Brake Disc Standard Thickness .....	3.5mm
Front Brake Disc Minimum Thickness .....	3.0mm
Front Brake Disc Runout Limit .....	0.5mm
Rear Brake Disc Diameter .....	220mm
Rear Brake Disc Standard Thickness .....	3.5mm
Rear Brake Disc Minimum Thickness .....	3.0mm
Rear Brake Disc Runout Limit .....	0.5mm
Brake Pad Thickness (Friction Material Only) .....	2.7mm
Brake Pad Thickness Limit (Friction Material Only) .....	0.5mm
Recommended Fluid .....	DOT 4

## 2.7 FRONT SUSPENSION

Type .....	Telescopic Fork
Spring / Shock Absorber Type .....	Spring / Adjustable Gas Damper
Travel .....	150mm

## 2.8 REAR SUSPENSION

Type .....	Twin Shock
Spring / Shock Absorber Type .....	Coil Spring / Gas Damper
Travel .....	80mm

## 2.9 CHASSIS SPECIFICATIONS

Frame Type .....	Tubular Aluminium
------------------	-------------------

## 2.10 BATTERY

Type .....	UBCO Lithium Ion
Capacity .....	6.2kWh
Nominal Voltage .....	50.4V
Charger .....	100-240V 450W Wall or Bench Mount

# **Service Information**

**TECHNICAL SERVICE MANUAL**

## 3.1 COMPONENT REUSE

When carrying out procedures within this manual the guidance is to reuse components. It should be noted that components like washers, circlips, o-rings and fasteners are easily damaged and should be replaced if signs of wear and tear are present.

## 3.2 CLEANING PROCEDURES

When a fastener (new or old) is to be used within a procedure outlined within this manual, it first requires cleaning. To clean a fastener follow the below process;

Prepare the threads using an appropriate aqueous or solvent based cleaner. Wipe the threads ensuring no corrosion inhibitor, dirt or debris remains.

If there is any stubborn debris use a fine wire brush to agitate, remove and then prepare the threads with an appropriate cleaner.

Assess the thread for signs of wear and tear and replace with new if required.

## 3.3 APPLICATION OF THREADLOCKER

This procedure should be followed for every use of threadlocker within this manual. Ideally refer to the manufacturers specifications for the application of threadlocker. If these are unavailable follow the below process;

1. Prepare the threads using an appropriate aqueous or solvent based cleaner. Wipe the threads ensuring no corrosion inhibitor, dirt or debris remains.
2. Allow the threads to dry after cleaning ensuring no trace of the cleaners used in the first stage remains.
3. Apply a few drops of threadlocker to the section of the bolt where the nut will sit.
4. Carefully fit the nut onto the bolt allowing the threadlocker to spread evenly.
5. Allow the threadlocker to cure for 24 hours. During this time movement of the assembly should be kept to a minimum. In cases where this is not possible, an accelerator may be used. Refer to the manufacturers specifications for process.

## 3.4 STANDARD TORQUE SETTINGS

This chart specifies tightening torques for standard metric ISO fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise speci-

fied, tightening torque specifications require clean, dry threads. Components should be at room temperature.

**TABLE 2: STANDARD TORQUE SETTINGS**

FASTENER	TORQUE SETTING FOR UNLUBRICATED FASTENER GRADE (NM)	
	STAINLESS STEEL CLASS 70	STEEL CLASS 10.9
M3	1	1.5
M4	2.5	3.5
M5	5	7
M6	9	12
M8	21	29
M10	44	57

### 3.5 USE OF CABLE TIES

Wherever used Cable Ties should be trimmed with no sharp edges. Where possible Cable Ties should be placed so that the final trimmed edge is least likely to come into contact with the user during normal use of the Bike.

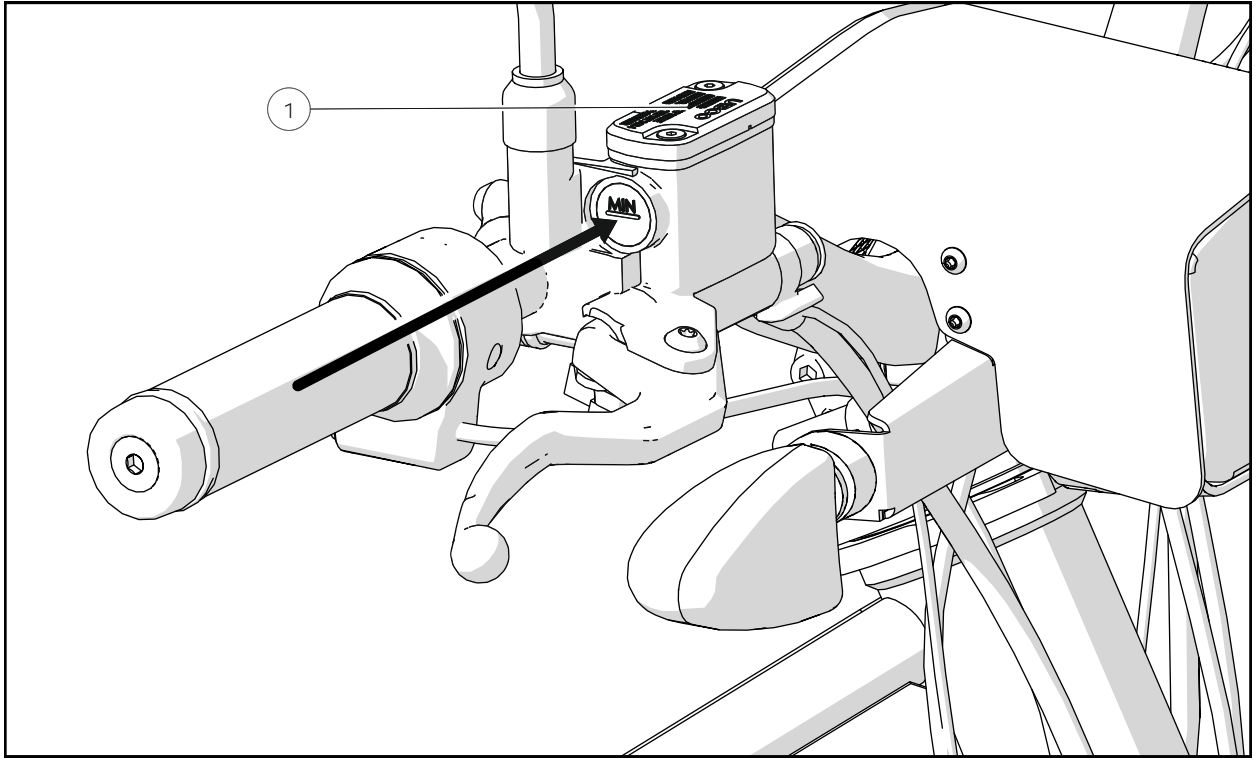
### 3.6 BRAKE COMPONENT HANDLING

When handling brake pads and discs ensure that the active surfaces of the components do not come in contact with contaminants. Avoid touching the brake surfaces with bare hands, as the oils from your skin can contaminate the surface. Do not allow the brake pad surface or portion of brake disc that comes into contact with the brake pad to touch anything other than a clean, lint free cloth. If the brake pads or discs do become contaminated, attempt to clean with Isopropyl alcohol and discard if unsuccessful.

# **Service Checks, Adjustments and Processes**

**TECHNICAL SERVICE MANUAL**

## 4.1 CHECKING BRAKE FLUID LEVEL



### NUMBERED ITEMS

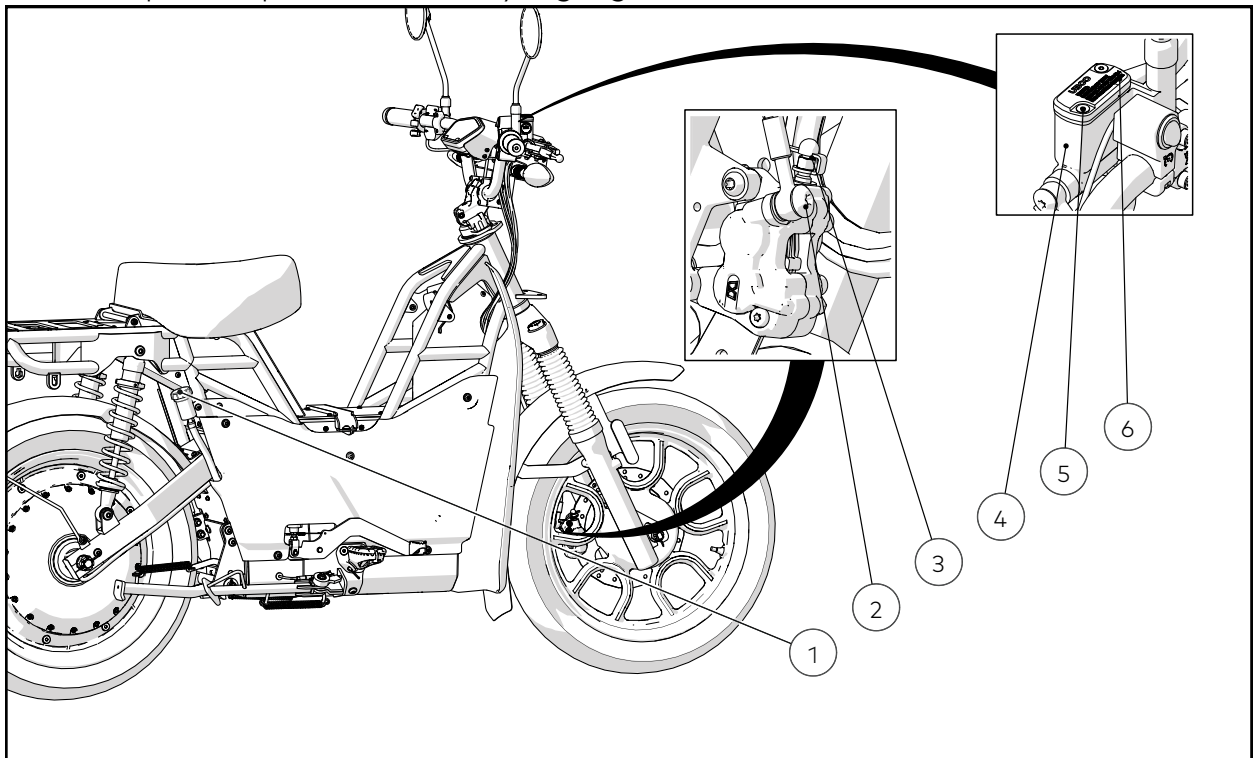
1. Master Cylinder Top Surface

### PROCESS STEPS

1. Ensure the Master Cylinder Top Surface is parallel to the ground
2. Looking horizontally at the level indicator ensure it is above the minimum line

## 4.2 BLEEDING / REPLACING BRAKE FLUID

Follow the below processes to bleed the brakes. If replacing the brake fluid, carry out the optional processes clearly highlighted.



### NUMBERED ITEMS

1. Rear Brake Reservoir Cap
2. Banjo Fastener
3. Bleed Port Cover
4. Master Cylinder Body
5. Master Cylinder Cover Fastener
6. Master Cylinder Cover

### TOOLS / CONSUMABLES REQUIRED

- Bleed Kit Tubing
- DOT 4 Brake Fluid
- 8mm Spanner
- #2 Philips Head Screwdriver
- Isopropyl Alcohol
- Lint Free Cloth

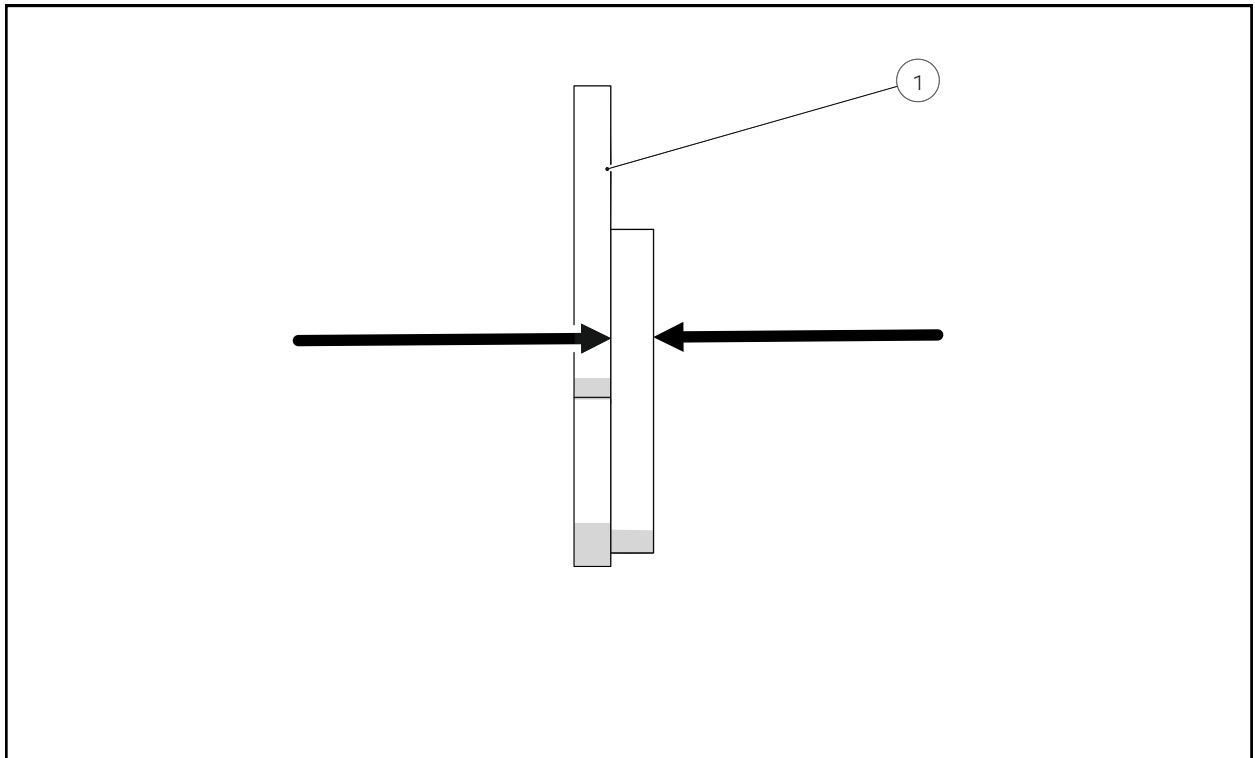
### PROCESS STEPS

1. Remove the Front Caliper Bleed Port Cover and install the Bleed Kit Tubing
2. Using a #2 Philips Head Screwdriver, release and remove the Master Cylinder Cover Fasteners
3. Remove the Master Cylinder Cover and Brake Reservoir Diaphragm
4. Using DOT 4 Brake Fluids, fill the Brake Reservoir to the top
5. Actuate the Front Brake Lever to build pressure



6. Using a 8mm Spanner, gently release then tighten the Caliper Bleed Port Fastener. Some fluid should be able to escape but all pressure shouldn't be lost
7. Check to ensure Brake Reservoir is still full, if low, repeat Step 4
8. Repeat Steps 5, 6 and 7 until the Brake Lever actuation feels firm and no air bubbles are showing in Bleed Tube
9. Using a 8mm Spanner, tighten the Caliper Bleed Port Fastener
10. Check the Brake Reservoir Diaphragm for signs of wear or damage and replace if required. Install into the Brake Reservoir
11. Using a #2 Philips Head Screwdriver, tighten the Master Cylinder Cover Fasteners securing the Master Cylinder Cover
12. Remove the Bleed Kit Tubing and reinstall the Front Caliper Bleed Port Cover
13. Using Isopropyl Alcohol and Lint free Cloth, clean both the Master Cylinder and Caliper Assembly
14. Remove the Rear Caliper Bleed Port Cover and install the Bleed Kit Tubing
15. Remove the Rear Brake Reservoir Cap
16. Using DOT 4 Brake Fluids, fill the Rear Brake Reservoir to the top
17. Actuate the Brake pedal to build pressure
18. Using a 8mm Spanner, gently release then tighten the Caliper Bleed Port Fastener. Some fluid should be able to escape but all pressure shouldn't be lost
19. Check to ensure Brake Reservoir is still full, if low, repeat Step 17
20. Repeat Steps 16, 17 and 18 until the Brake Lever actuation feels firm and no air bubbles are showing in the Bleed Tube
21. Using a 8mm Spanner, tighten the Caliper Bleed Port Fastener
22. Remove the Bleed Kit Tubing and reinstall the Rear Caliper Bleed Port Cover
23. Check the Brake Reservoir Diaphragm for signs of wear or damage and replace if required. Install into the Brake Reservoir
24. Reinstall the rear Brake Reservoir Cap
25. Using Isopropyl Alcohol and Lint free Cloth, clean both the Master Cylinder and Caliper Assembly
26. OPTIONAL - If replacing the Brake Fluid - Remove the fluid from the system prior to carrying out this procedure

## 4.3 INSPECTING BRAKE PADS



### NUMBERED ITEMS

1. Brake Pad

### TOOLS / CONSUMABLES REQUIRED

- Micrometer

### PRE REQUISITES

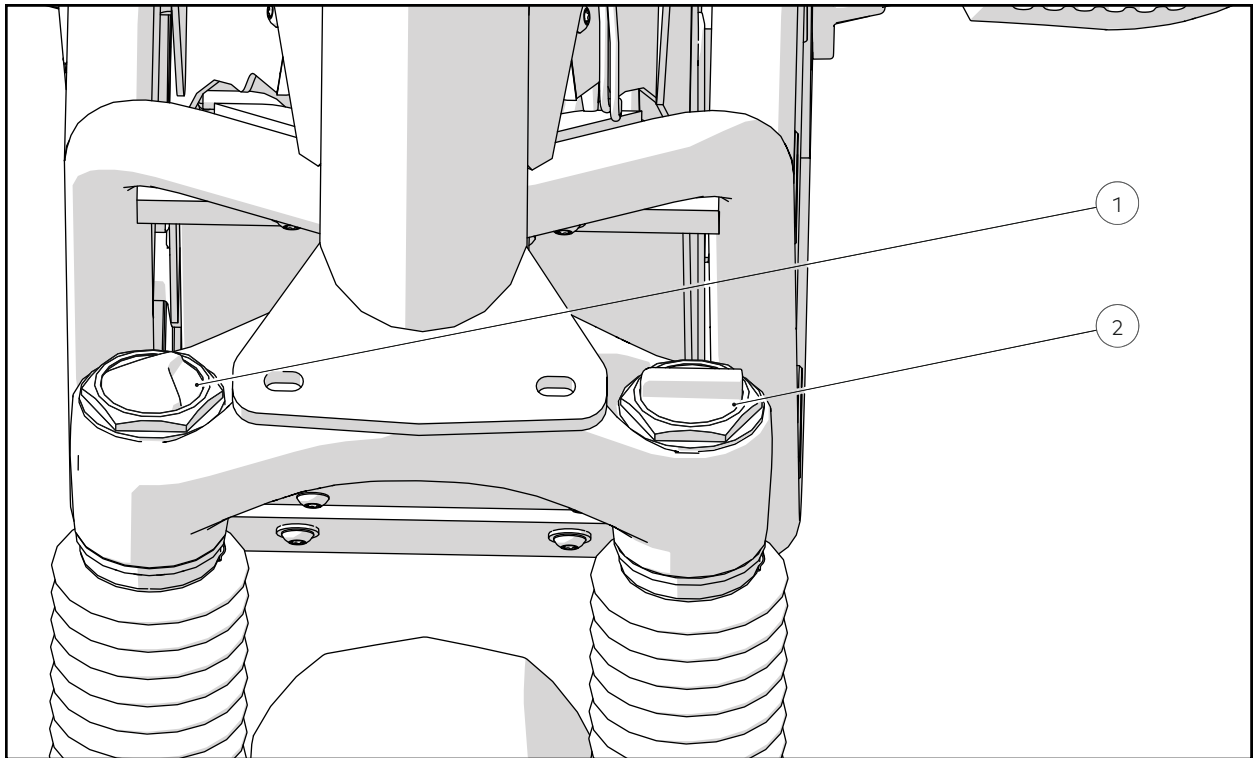
Brake Pads - Page 39

### PROCESS STEPS

1. Inspect for signs of wear and damage. If present replace the Brake Pads using the method outlined on Page 39
2. Using a Micrometer, measure the Brake Pad Thickness. If below the limit outlined on Page 14 replace the Brake Pads using the method outlined on Page 39

## 4.4 ADJUSTING FRONT SUSPENSION SETTINGS

Adjusting suspension settings may have an impact on the headlight beam direction. After carrying out the below process, adjust the headlight beam using the method outlined on Page 28.



### NUMBERED ITEMS

1. Rebound Adjustment Dial
2. Preload Adjustment Dial

### REBOUND ADJUSTMENT

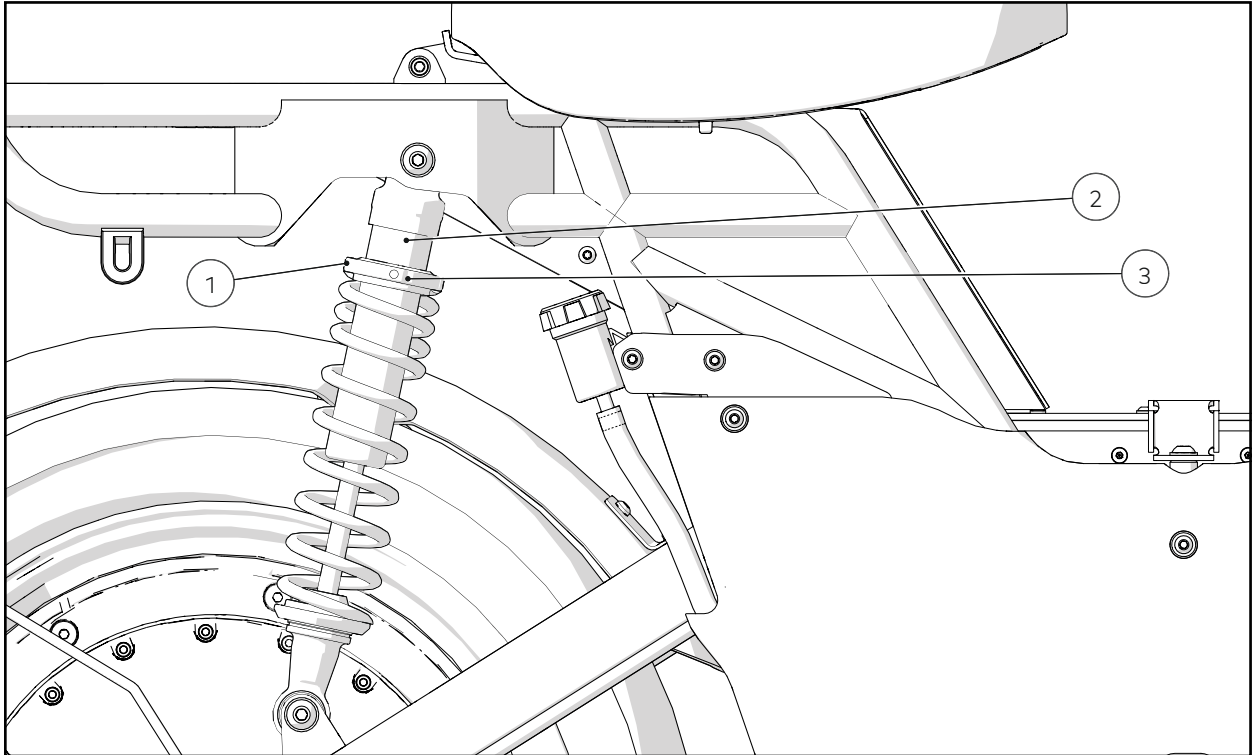
1. Rebound speed is adjusted on the right-hand side of the fork crown
2. Twist the dial clockwise to slow the rebound and anti-clockwise to speed it up

### PRELOAD ADJUSTMENT

1. Spring preload is adjusted on the left side of the fork
2. Twist the dial clockwise to lessen the spring force and make the suspension softer and anti-clockwise to increase the spring force and make the suspension stiffer

## 4.5 ADJUSTING REAR SUSPENSION SETTINGS

Adjusting suspension settings may have an impact on the headlight beam direction. After carrying out the below process, adjust the headlight beam using the method outlined on Page 28



### NUMBERED ITEMS

1. Locking Grub Screw
2. Adjustment Thread
3. Preload Adjustment Disc

### TOOLS/CONSUMABLES REQUIRED

1. 3mm Hex Bit

### PRELOAD ADJUSTMENT

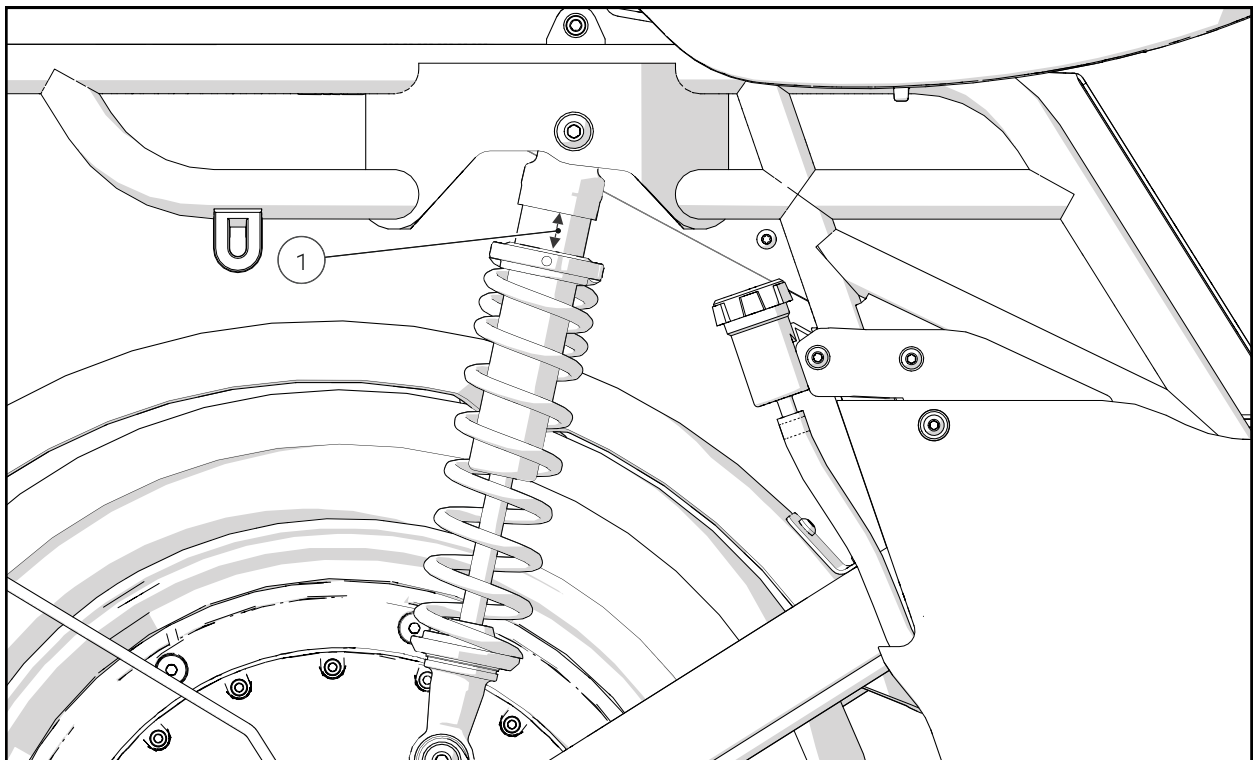
1. Preload is adjusted by winding the disc at the top of the spring
2. Twist the disc anti-clockwise to lessen the spring force and make the suspension softer and clockwise to increase the spring force and make the suspension stiffer
3. The preload setting should be set equally on both sides of the bike
4. After adjusting suspension settings and using a 3mm Hex Bit, lock each sides Preload Adjustment Disc in place

## 4.6 RECOMMENDED SUSPENSION SETTINGS

The below table outlines recommended suspension settings for on and off road riding with varied total vehicle load (rider + load). The thread measurement is for the total amount of thread visible at the top of the suspension as shown in the image at point 1.

**TABLE 3: RECOMMENDED SUSPENSION SETTINGS**

RIDE TYPE / VEHICLE LOAD	FRONT REBOUND	FRONT PRELOAD	REAR PRELOAD
On Road 90kg	Max Fast	Lowest Position	20mm Thread
On Road 140kg	Max Fast	1 Turn Before Highest Position	20mm Thread



## 4.7 INSPECTING TYRES

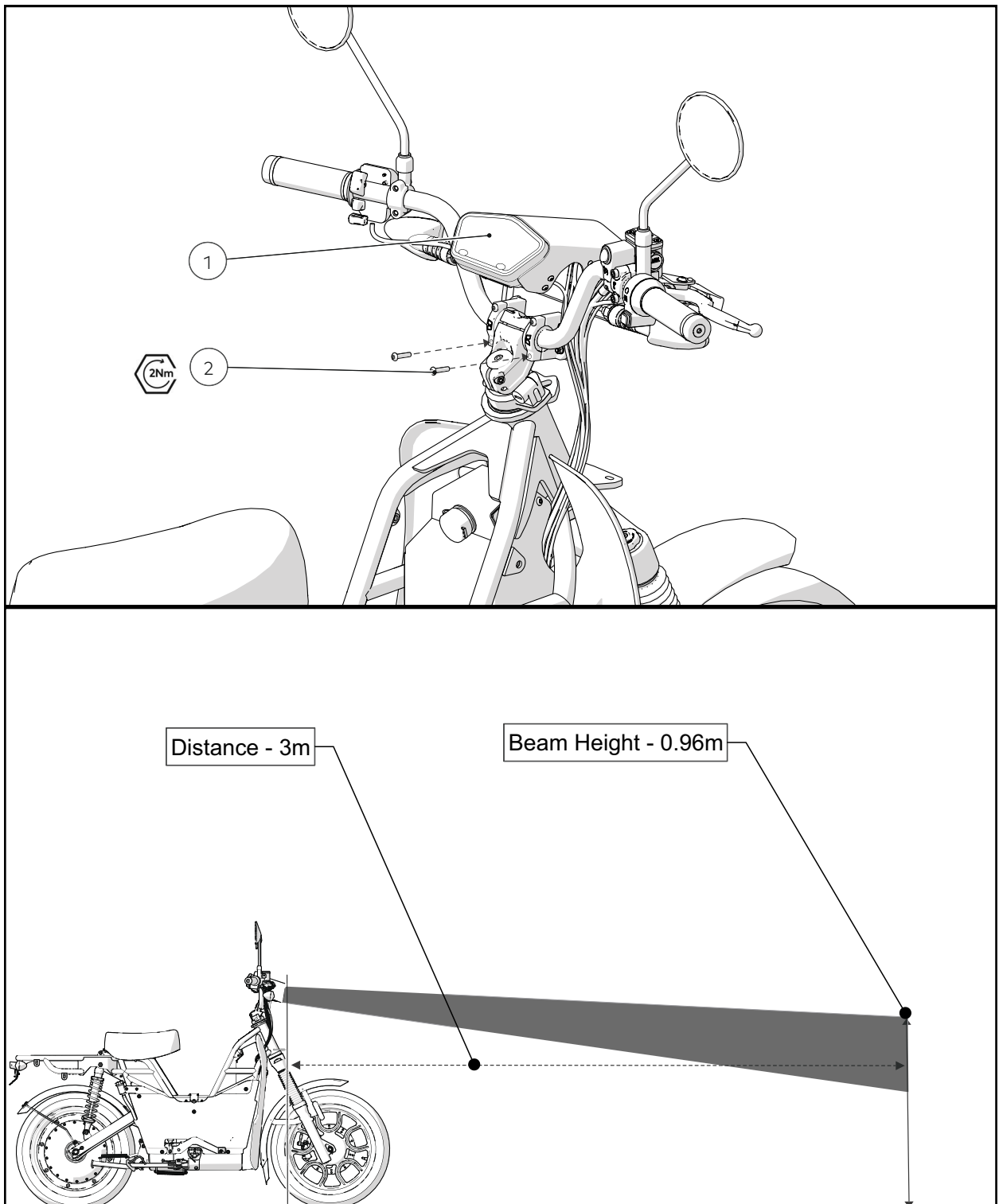
### TOOLS / CONSUMABLES REQUIRED

- Tyre Pressure Gauge
- Tread depth Gauge

### PROCESS STEPS

1. Visually check the Tyre surface and sidewall, if it is damaged, replace the Tyre
2. Using a Tread Depth Gauge, measure the Tyre tread. If it is below either the local legal limit (for On-Road registered vehicles) or the limit outlined on Page 13, replace the Tyre
3. Using a Tyre Pressure Gauge, measure the pressure of the Tyre. Note the Tyre's pressure should only be checked and regulated when the Tyre's temperature equals the ambient temperature
4. If the Tyre's pressure is outside the range specified within Page 13, inflate or deflate accordingly

## 4.8 ADJUSTING HEADLAMP BEAM



**NUMBERED ITEMS**

1. Headlamp and Display Assembly
2. Fastener

**TOOLS/CONSUMABLES REQUIRED**

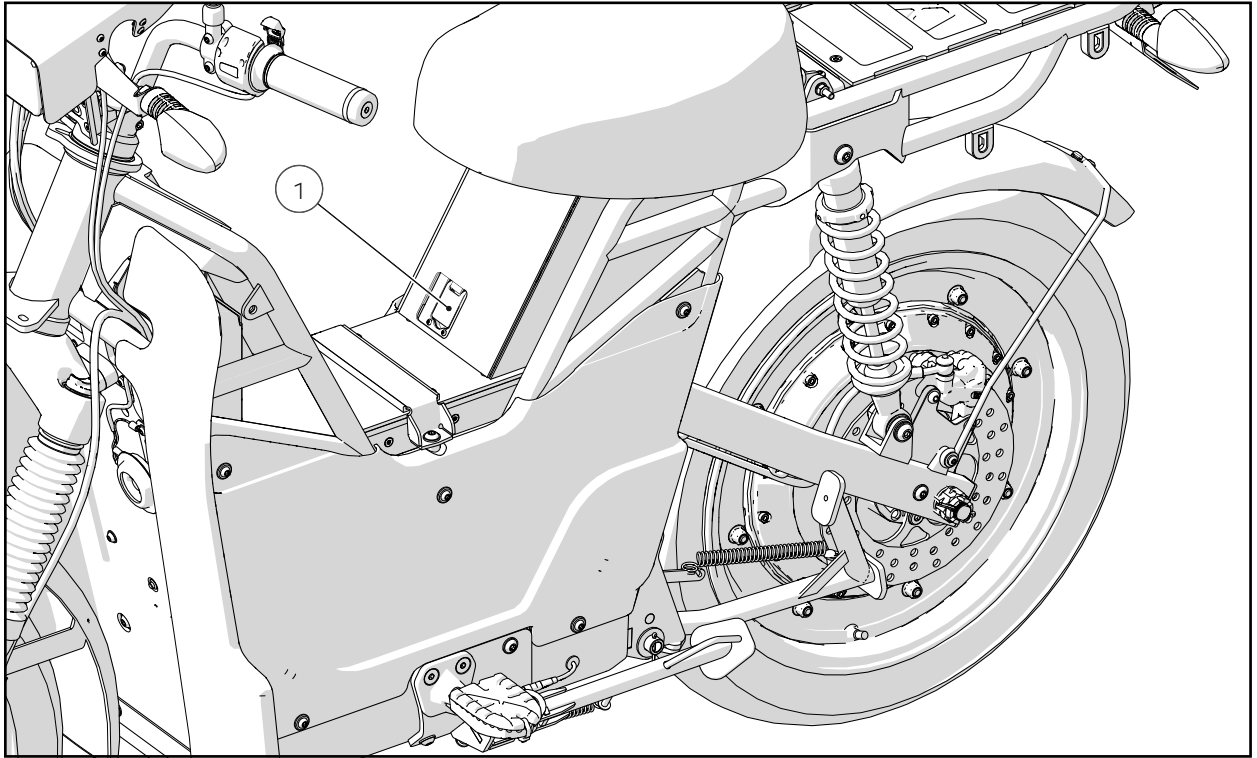
- 3mm Hex Bit
- Torque Wrench

**PROCESS STEPS**

1. Move the Bike 3m away from a wall on level ground as shown on Page 28
2. On the wall mark a point 0.96m from the floor
3. Chock the Wheel so the Headlamp is pointing directly at the wall and turn on the Headlamp Low Beam
4. Using a 3mm Hex Bit, loosen the 2 Headlamp Assembly fasteners and adjust the Headlamp angle until the central point of highest intensity sits on the mark on the wall
5. Using a 3mm Allen Hex Bit and Torque Wrench, tighten the 2 Headlamp Assembly fasteners



## 4.9 CHARGING THE BATTERY



### NUMBERED ITEMS

1. Charge Port Cover

### PROCESS STEPS

1. Remove the Charge Port Cover and plug in the Charger ensuring the connector is rotated clockwise, clicks and locks into place
2. To remove the Charger pull back the tab and then rotate the connector anti-clockwise before pulling it outwards
3. Replace the charge port cover

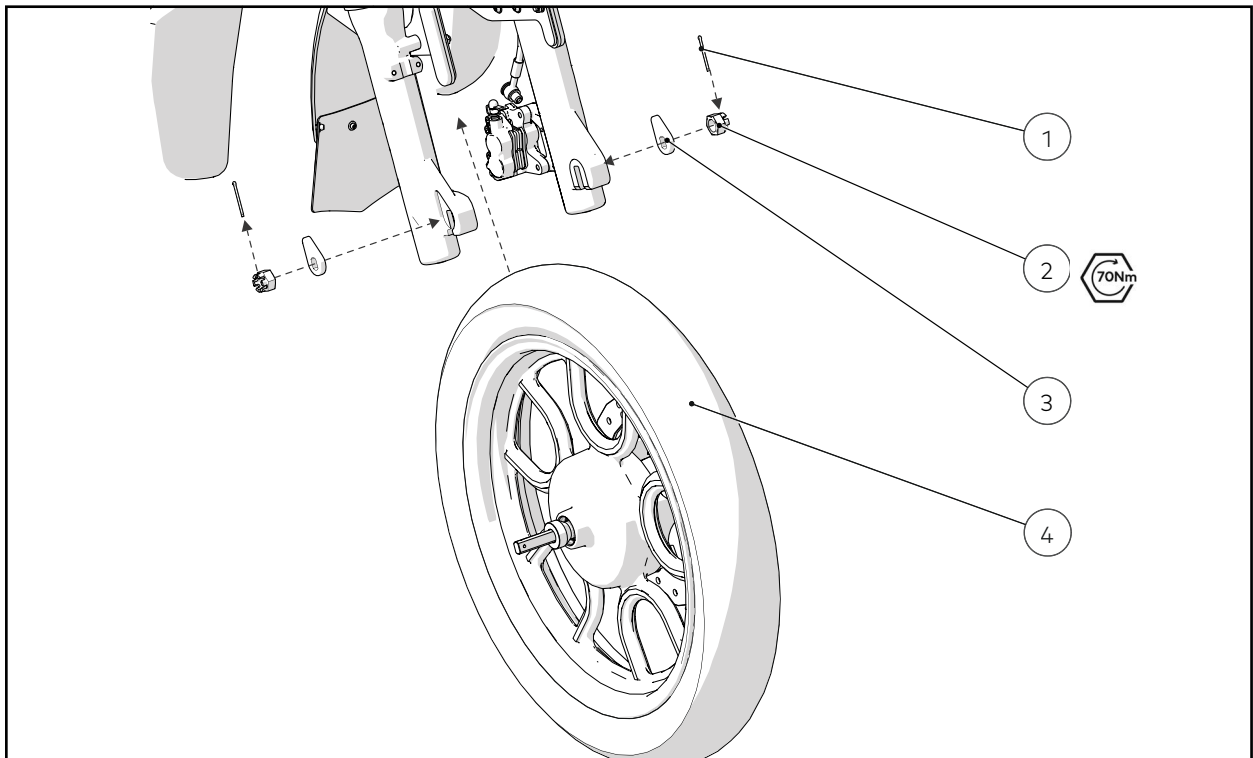
# **Removal and Replacement Operation**

**TECHNICAL SERVICE MANUAL**

# **Wheels**

**TECHNICAL SERVICE MANUAL**

## FRONT WHEEL



### NUMBERED ITEMS

1. Split Pin
2. Castle Nut
3. Torque Arms
4. Front Wheel Assembly

### TOOLS & CONSUMABLES REQUIRED

- Needle Nose Pliers
- 22mm Socket
- Torque Wrench

### PRE-REQUISITE STEPS

Caliper (Optional) - Page 43 - NOTE - Do Not Disconnect Brake Lines

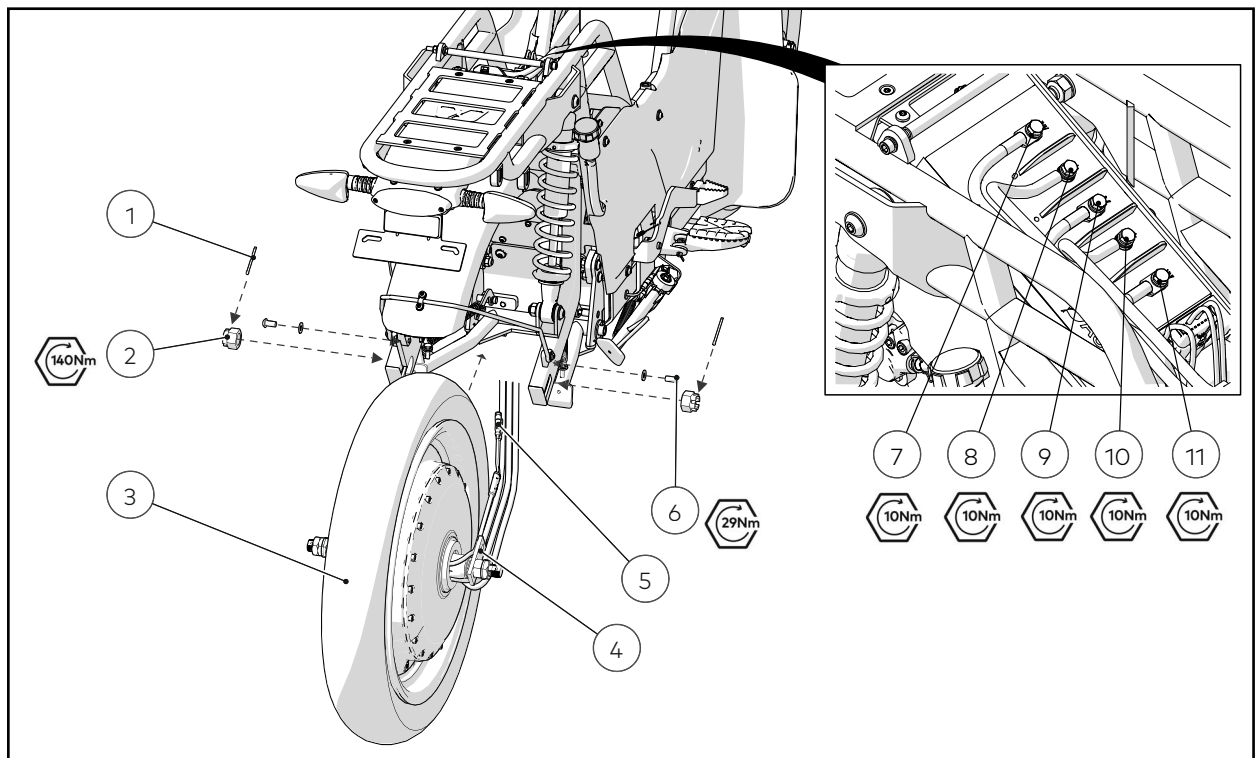
### REMOVAL

1. Support the centre of the bike using a suitable stand
2. Using Needle Nose Pliers, remove the 2 Castle Nut Pins
3. While supporting the weight of the Front Wheel use a 22mm Socket to remove the 2 Castle Nuts and Torque Arms

## **REPLACE**

1. Assemble the Torque Arms onto the Front Wheel and lift into place
2. Using a 22mm Socket and Torque Wrench, tighten the 2 Castle Nuts to the Initial Torque Setting shown in the image then tighten further (up to a maximum of 100Nm) to align the Split Pin. Note - Do not re-use the Split Pin

## REAR WHEEL



### NUMBERED ITEMS

1. Split Pin
2. Castle Nut
3. Rear Wheel Assembly
4. Torque Arm
5. Motor Connector
6. Torque Arm Retention Bolt
7. U Connector
8. Positive Connector
9. V Connector
10. Negative Connector
11. W Connector

### TOOLS & CONSUMABLES REQUIRED

- 4mm Hex Bit
- 5mm Hex Bit
- 27mm Socket
- Torque Wrench

### PRE-REQUISITE STEPS

Seat - Page 57

Rear Console Upper Cover - Page 54

Disconnect Battery - Page 70

Brake Caliper - Page 43 - NOTE - DO Not Disconnect Brake Line

WARNING - Apply front lever brake

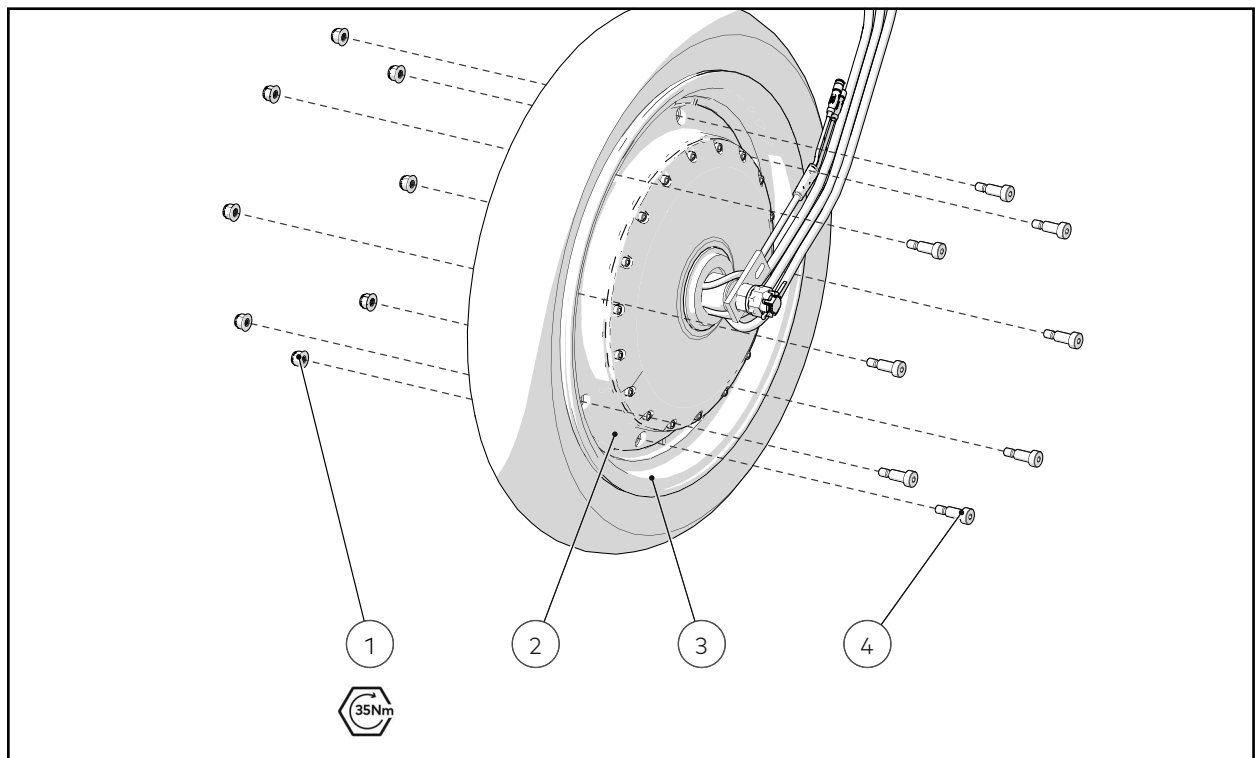
## **REMOVAL**

1. Using a 10mm Socket, release and remove the 3 Motor Controller Connections - U, V W
2. Disconnect the Sensor Cable
3. Using Side Cutters, remove any Cable Ties retaining the Motor Cable to the Swing Arm and remove the Cabling Protection Plugs
4. Using a 4mm Hex Bit, release and remove the Mudguard Stay
5. Using a 5mm Allen Key, release and remove the 2 Torque Arm Retention Bolts
6. Using Needle Nose Pliers, remove the 2 Castle Nut Pins
7. While supporting the weight of the Rear Wheel use a 27mm Socket to loosen the 2 Castle Nuts

## **REPLACE**

1. Assemble the Torque Arms and Spacers onto the Rear Wheel and lift into place
2. Using a 5mm Hex Bit, Torque Wrench and Loctite 243, tighten the 2 Torque Arm Retention Bolts
3. Using a 27mm Socket and Torque Wrench, tighten the 2 Castle Nuts to the Initial Torque Setting shown in the image then tighten further (up to a maximum of 200Nm) to align the Split Pin. Note - Do not re-use the Split Pin
4. Using Needle Nose Pliers, fit the 2 Castle Nut Pins
5. Using a 4mm Hex Bit, release and remove the Mudguard Stay fasteners
6. Install the Motor Cables and use Cable Ties to retain
7. Using a 10mm Socket and Torque Wrench, tighten the Motor Controller Connections
8. Connect the Sensor Cable

## HUB FROM RIM



### NUMBERED ITEMS

1. Nut
2. Hub
3. Rim
4. Fastener

### TOOLS/CONSUMABLES REQUIRED

- 5mm Hex Bit
- 13mm Socket
- Torque wrench

### PRE-REQUISITE STEPS

Rear Wheel - Page 35

### REMOVE

1. Using a 5mm Allen Key and 13mm Socket, release and remove the 8 Hub Fasteners

### REPLACE

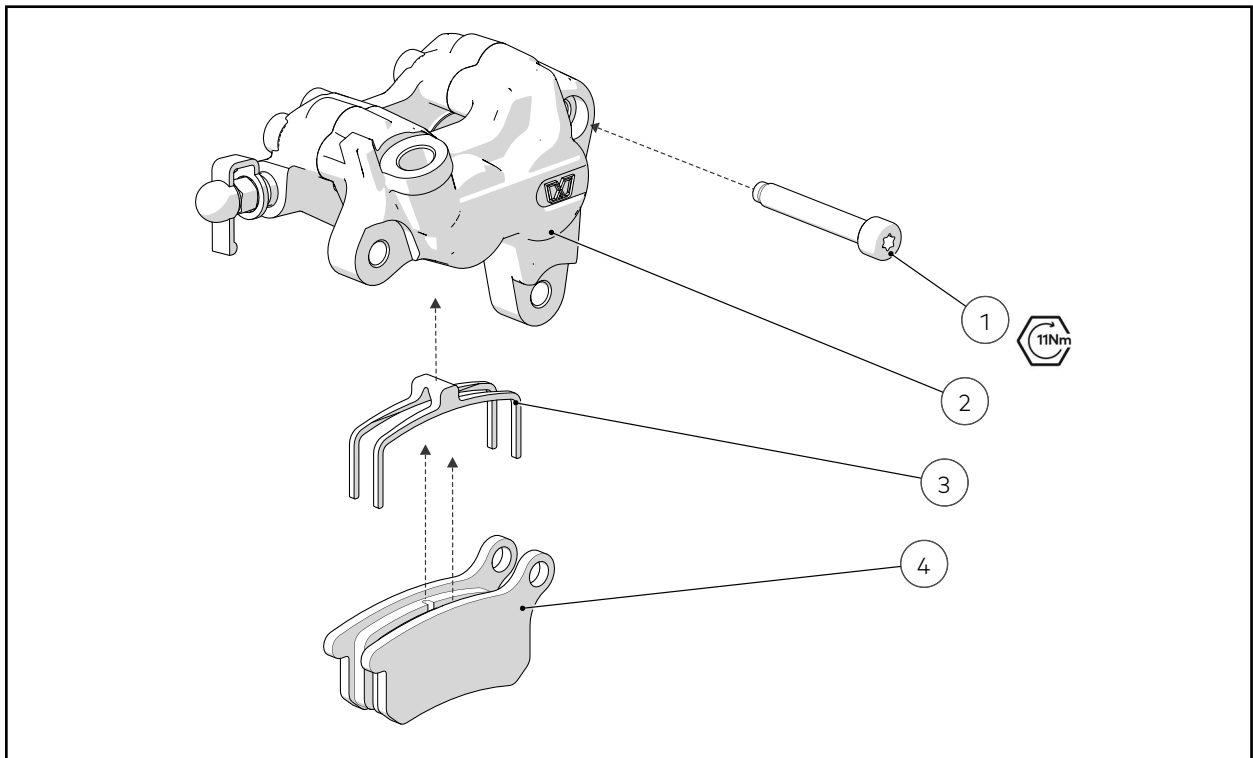
1. Place Rim on top of the Hub with UBCO symbol visible
2. Using a 5mm Hex Bit, Torque Wrench and 13mm Socket, tighten the 8 Hub Fasteners



# **Brakes**

**TECHNICAL SERVICE MANUAL**

## BRAKE PADS



### NUMBERED ITEMS

1. Brake Pad Fastener
2. Caliper Body
3. Brake Pad Spring
4. Brake Pads

### TOOLS/CONSUMABLES REQUIRED

- T25 Torx Bit
- Torque Wrench
- Brake Pad Spacer
- Brake Pad Spring

### PRE-REQUISITE STEPS

Caliper Removal - Page 43 - NOTE - Do not disconnect Brake Lines

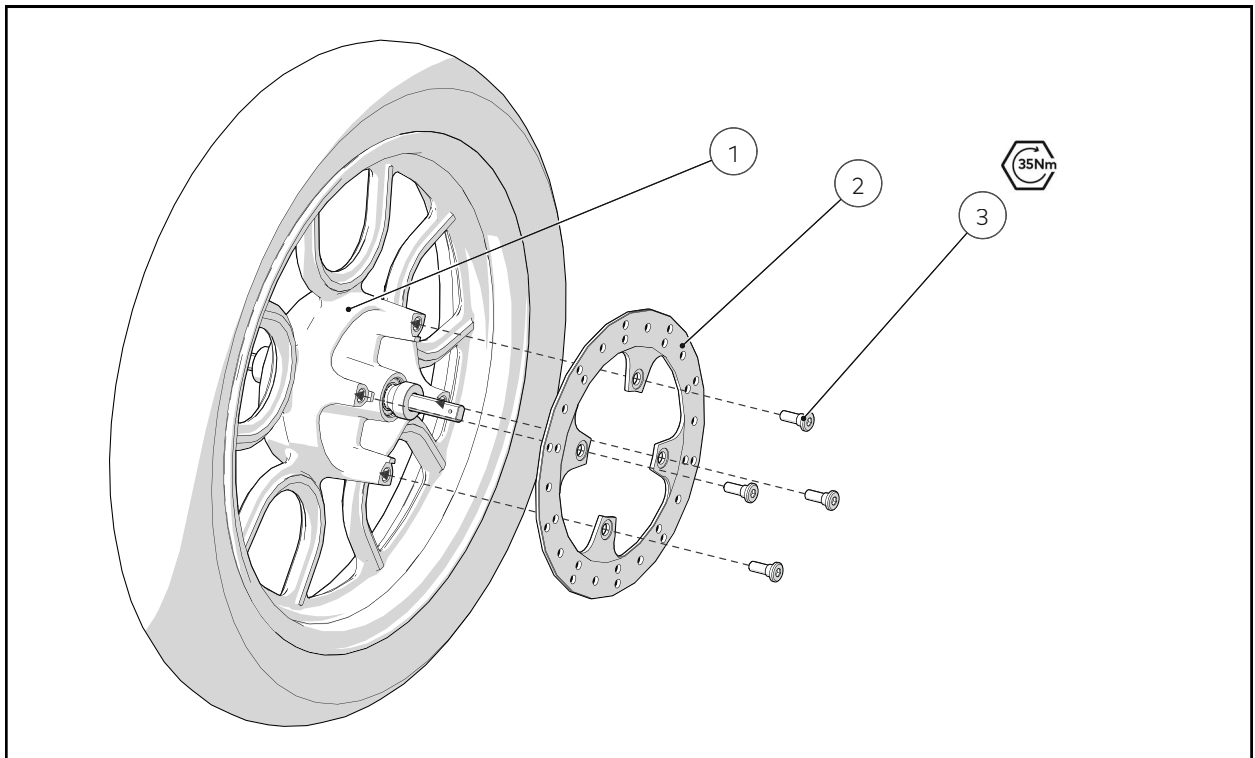
### REMOVE

1. Using a suitable tool, gently return the old Brake Pads and Pistons to full retraction
2. Using a T25 Torx Bit, release and remove the fastener and circlip retaining the Brake Pads
3. Remove the Brake Pads while retaining the Brake Pad Spring

## **REPLACE**

1. Place replacement Brake Pads into the Brake Pad Spring then into the Caliper
2. Using a T25 Torx Bit and Torque Wrench, tighten the fastener and replace circlip retaining the Brake Pads

## FRONT BRAKE DISC



### NUMBERED ITEMS

1. Wheel Assembly
2. Brake Disc
3. Fastener

### TOOLS/CONSUMABLES REQUIRED

- 6mm Hex Bit
- Torque Wrench
- Loctite 243

### PRE-REQUISITE STEPS

Front Wheel - Page 33

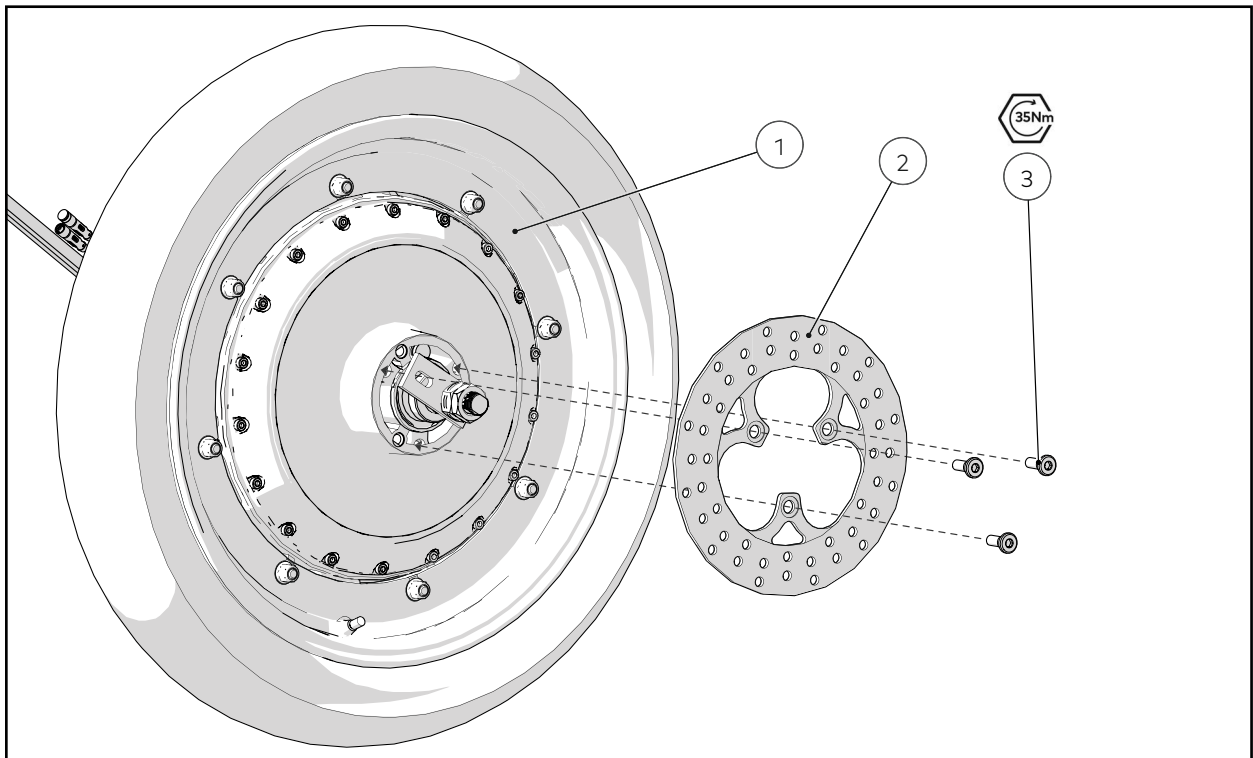
### REMOVAL

1. Using a 6mm Hex Bit, release and remove the 4 fasteners

### REPLACE

1. Using a 6mm Hex Bit, Torque Wrench and Loctite 243, tighten the 4 fasteners

## REAR BRAKE DISC



### NUMBERED ITEMS

1. Rear Hub
2. Brake Disc
3. Fastener

### TOOLS/CONSUMABLES REQUIRED

- 6mm Hex Bit
- Torque Wrench
- Loctite 243

### PRE-REQUISITE STEPS

Rear Wheel - Page 35

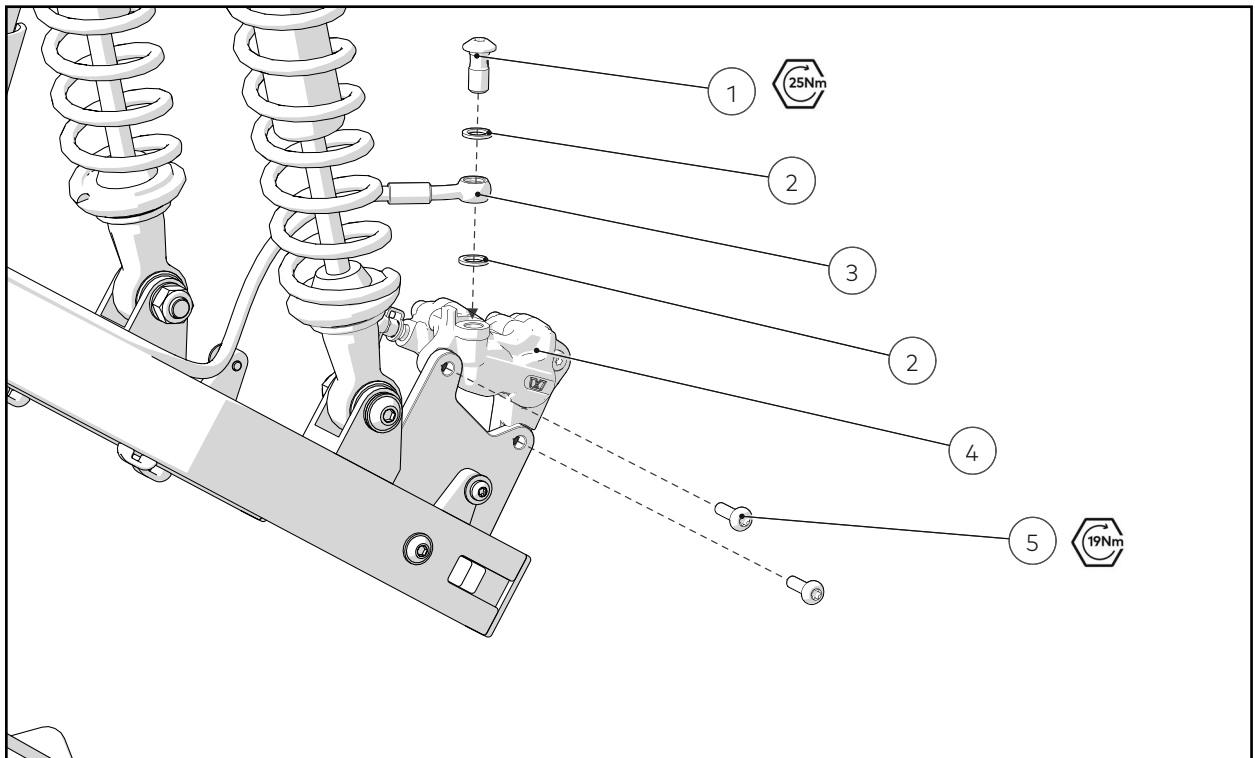
### REMOVAL

1. Using a 6mm Hex Bit, release and remove the 3 fasteners

### REPLACE

1. Using a 6mm Hex Bit, Torque Wrench and Loctite 243, tighten the 3 fasteners

## BRAKE CALIPER



### NUMBERED ITEMS

1. Banjo Fastener
2. Crush Washer
3. Brake Line Fitting
4. Caliper Assembly
5. Caliper Fastener

### TOOLS/CONSUMABLES REQUIRED

- T30 Torx Bit
- Torque Wrench
- Isopropyl Alcohol
- Lint Free Cloth
- Loctite 243

### PRE-REQUISITE STEPS

Brake Pad Removal - Page 39

Brake Fluid Removal - Page 21

### REMOVE

1. Using a T30 Torx Bit, release and remove the Banjo Fastener
2. Using a T30 Torx Bit, release and remove the Caliper Fasteners

## REPLACE

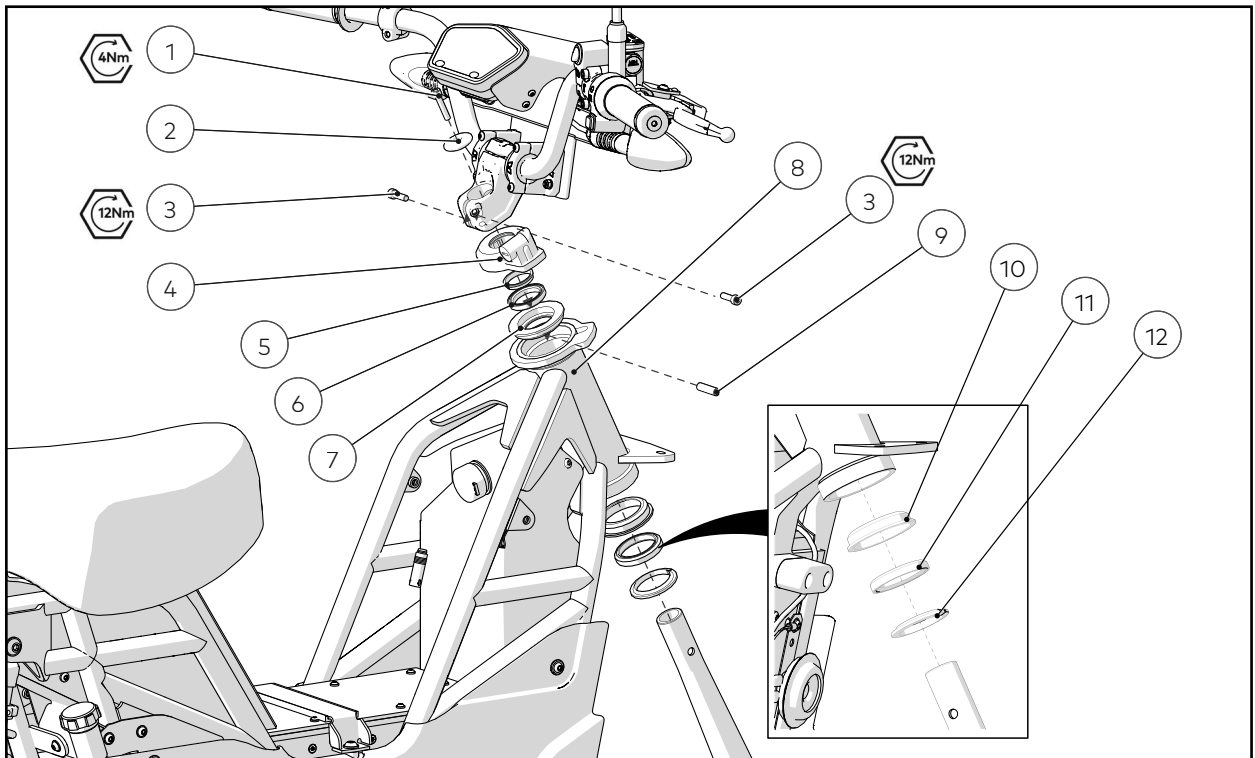
1. Using a T30 Torx Bit and Torque Wrench, tighten the Banjo Fastener
2. Using a T30 Torx Bit, Torque Wrench and Loctite 243, tighten the Caliper Fasteners
3. Replace and bleed the **Brake Fluid** using the method outlined on Page 21.  
NOTE - Step only required for Caliper Replacement
4. Using Isopropyl Alcohol and a Lint Free Cloth, clean the caliper assembly, Master Cylinder and Brake Line Fitting. NOTE - Step only required for Caliper Replacement

# **Steering and Suspension**

**TECHNICAL SERVICE MANUAL**



## FRONT FORK



### NUMBERED ITEMS

1. Headset Fastener
2. Headset Cap
3. Side Stem Fastener
4. Steerer Lock
5. Upper Headset Bearing Cup
6. Upper Headset Bearing
7. Upper Headset Bearing Race
8. Headtube
9. Steerer Anti Spin Dowel
10. Lower Headset Bearing Cup
11. Lower Headset Bearing
12. Lower Headset Bearing Race

### TOOLS/CONSUMABLES REQUIRED

- 5mm Hex Bit
- 5mm Allen Key Socket
- Torque wrench

## **PRE-REQUISITE STEPS**

Front Wheel - Page 33

Front Mudguard - Page 58

Caliper - Page 43 - NOTE - Do Not Disconnect Brake Line

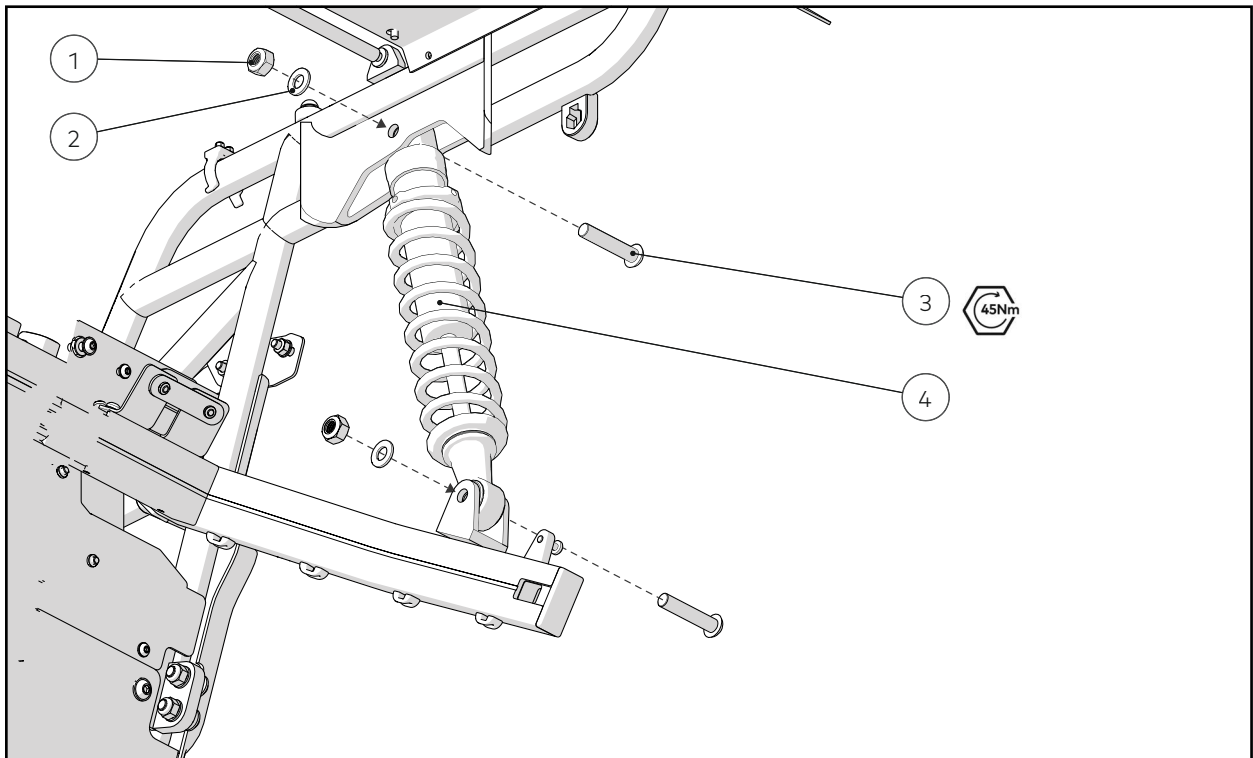
## **REMOVE**

1. Using a 5mm Hex Bit, release and remove the Headset Cap and Side Stem Fasteners
2. Lift the Headset and Steering Lock off the top of the Fork
3. Remove the Headset Spacer and Steering Lock from the Fork
4. Remove the Steerer Anti Spin Dowel
5. Remove the Upper and Lower Headset Crown Races and inspect both Upper and Lower Bearings for signs of damage or wear

## **REPLACE**

1. Seat the Lower Headset Bearing Cup into the Headtube
2. Seat the Fork into the Headtube, ensuring the Lower Crown Race and Lower Bearing are seated on the Fork
3. Assemble the Upper Bearing, Headset Spacer and Steering Lock, Split Ring, Anti Spin Dowel and Headset Bearing Top Cap onto the Steerer Tube Upper Headset
4. Using a 5mm Hex Bit, lightly tighten the Stem Fasteners
5. Using a 5mm Hex Bit and Torque Wrench, tighten the Headset Cap Fastener
6. Using a 5mm Hex Bit and Torque Wrench, tighten the Stem Fasteners

## REAR SHOCK ABSORBER



### NUMBERED ITEMS

1. Nut
2. Washer
3. Fastener
4. Rear Shock

### TOOLS/CONSUMABLES REQUIRED

- 8mm Hex Bit
- 17mm Spanner
- Torque Wrench

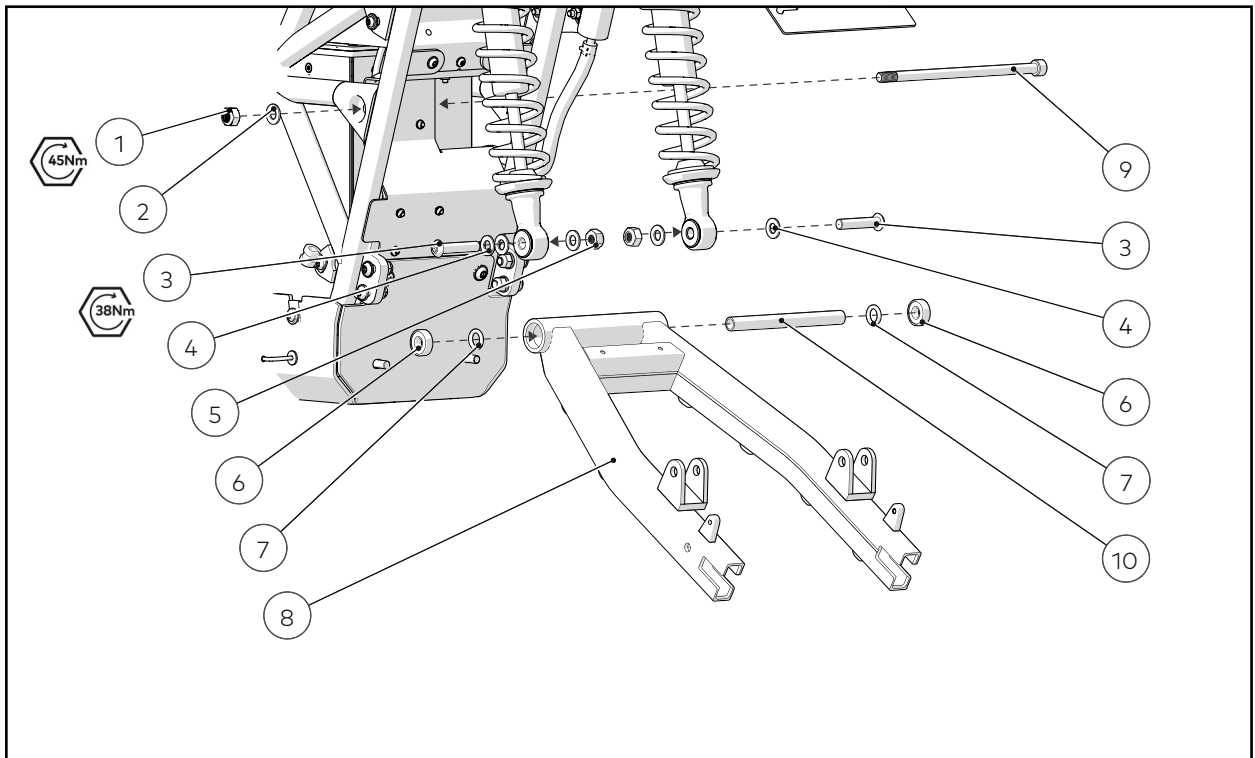
### REMOVE

1. Using a 8mm Hex Bit and 17mm Spanner, release and remove 2 fasteners

### REPLACE

1. Using a 8mm Hex Bit, 17mm Spanner and Torque Wrench, tighten the 2 fasteners

## SWING ARM



### NUMBERED ITEMS

1. Swing Arm Pivot Nut
2. Swing Arm Pivot Washer
3. Suspension Fastener
4. Suspension Washer (x 2 Present)
5. Suspension Nut
6. Swing Arm Bearing
7. Swing Arm O-Ring
8. Swing Arm
9. Swing Arm Fastener
10. Swing Arm Bearing Spacer

### TOOLS/CONSUMABLES REQUIRED

- Side Cutters
- 8mm Hex Bit
- 17mm Spanner
- 17mm Socket
- Breaker Bar
- Torque Wrench
- Cable Ties

### PRE-REQUISITE STEPS

Rear Wheel - Page 35

Rear Mud Flap - Page 59

Rear Brake Caliper - Page 43 - NOTE - Do Not Disconnect Brake Line

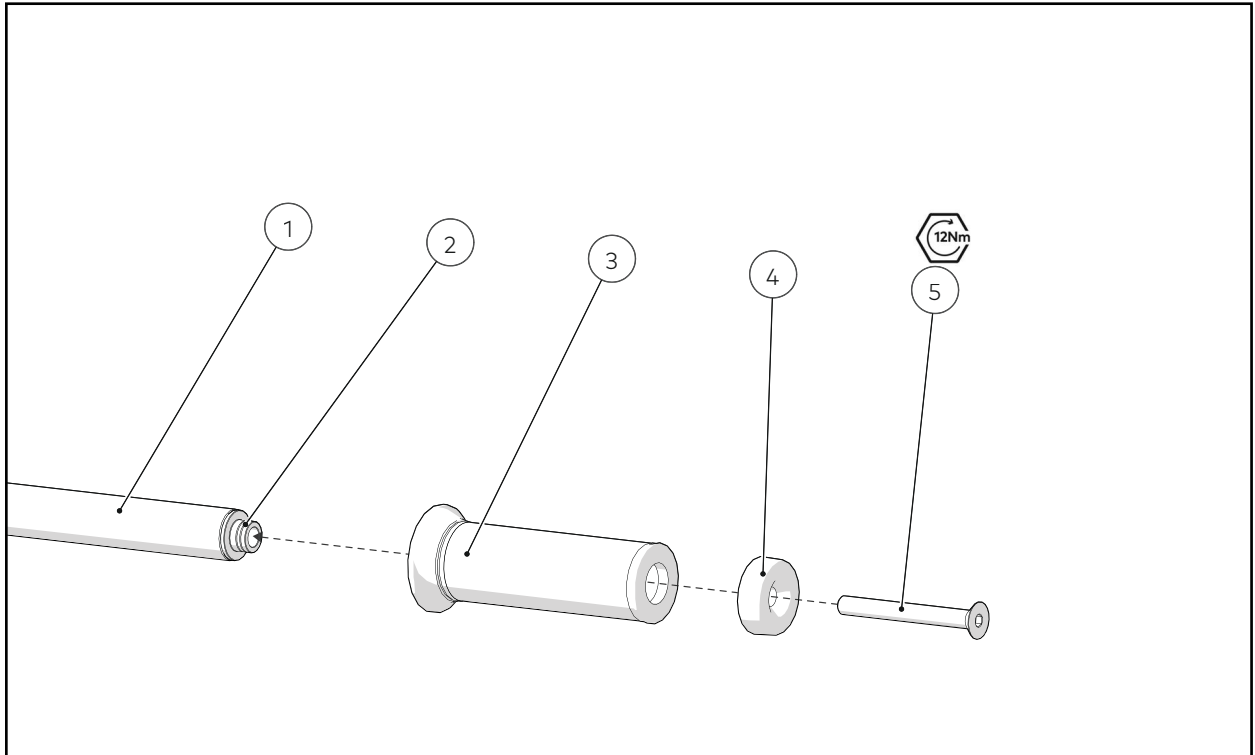
## **REMOVE**

1. Using Side Cutters, release the Motor Cables and Rear Brake Line from the Swing Arm
2. Using a 8mm Hex Bit and 17mm Spanner, release and remove the Lower Shock Fasteners
3. Using a 8mm Hex Bit, 17mm Socket and Breaker Bar, release and remove the Swing Arm Fastener

## **REPLACE**

1. Using a 8mm Hex Bit, Torque Wrench, 17mm Socket and Breaker Bar, tighten the Swing Arm Fastener
2. Using a 8mm Hex Bit, Torque Wrench and 17mm Spanner, tighten the Lower Shock Fasteners
3. Using Cable Ties, retain the Motor Cables and Rear Brake Line to the Swing Arm

## LH GRIP



### NUMBERED ITEMS

1. Handlebar
2. Handlebar Spreader
3. LH Grip
4. Bar End Cap
5. Fastener

### TOOLS/CONSUMABLES REQUIRED

- 5mm Hex Bit
- Torque Wrench

### REMOVE

1. Using a 5mm Hex Bit, release and remove the fastener

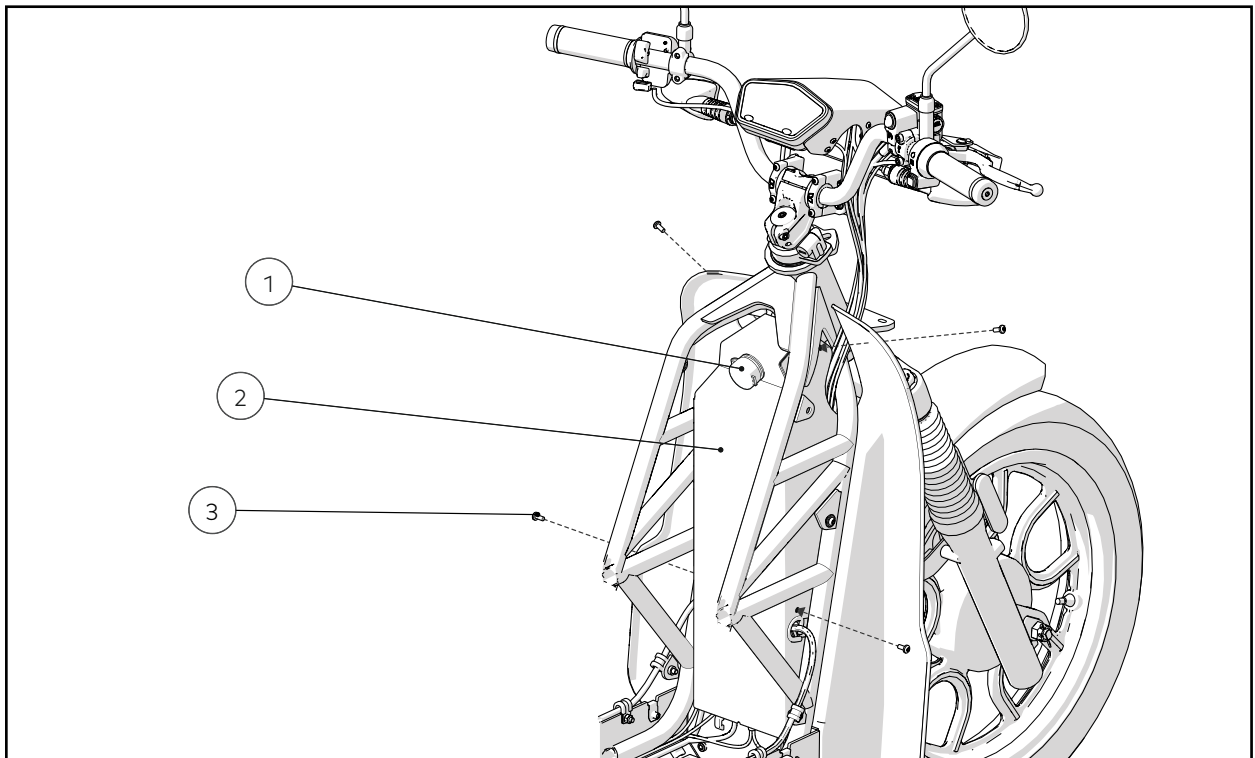
### REPLACE

1. Using a 5mm Hex Bit and Torque Wrench, tighten the fastener

# **Body**

**TECHNICAL SERVICE MANUAL**

## FRONT CONSOLE COVER



### NUMBERED ITEMS

1. USB Power Connector
2. Front Console Cover
3. Fastener

### TOOLS/CONSUMABLES REQUIRED

- T25 Torx Bit

### PRE-REQUISITE STEPS

Battery Removal - Page 70

Side Fairings - Page 55

### REMOVE

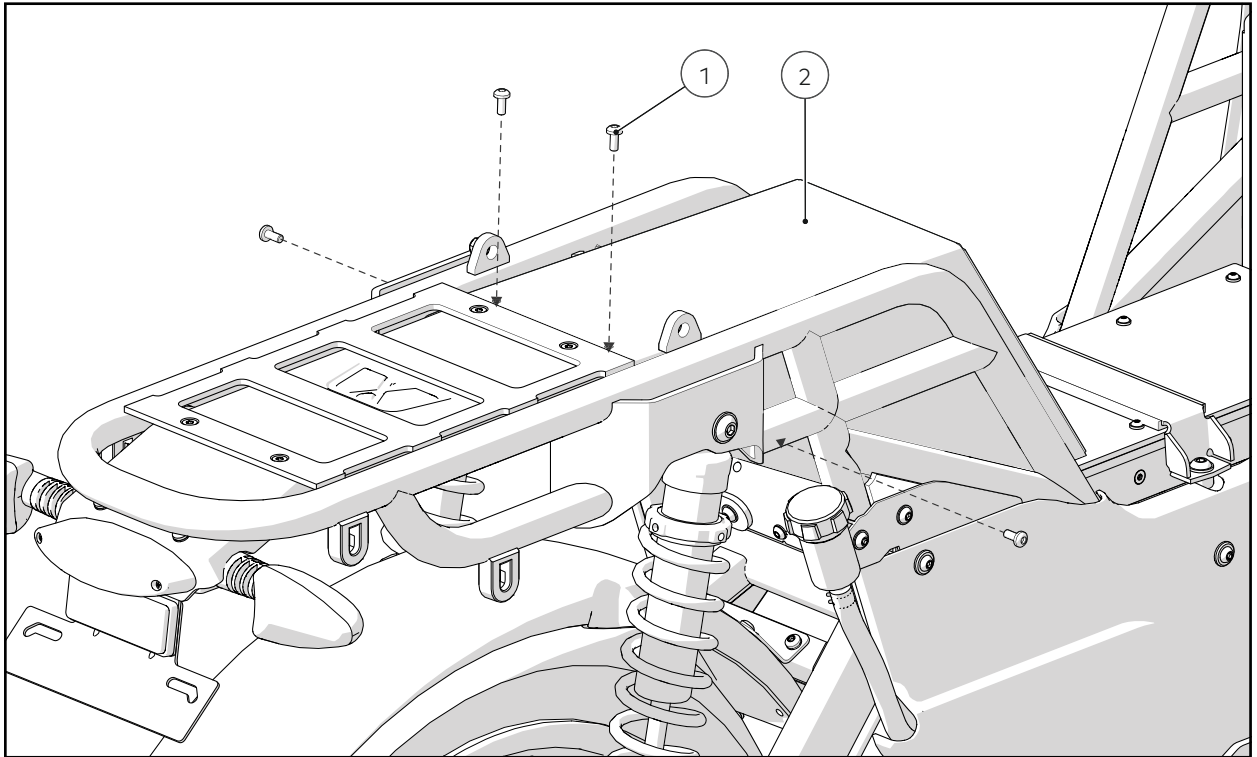
1. Using a T25 Torx Bit, release and remove the 4 fasteners
2. Disconnect USB Power Connector

### REPLACE

1. Connect USB Power Connector
2. Using a T25 Torx Bit, tighten the 4 fasteners



## REAR CONSOLE UPPER COVER



### NUMBERED ITEMS

1. Fastener
2. Rear Console Upper Cover

### TOOLS/CONSUMABLES REQUIRED

- T25 Torx Bit

### PRE-REQUISITE STEPS

Seat - Page 57

### REMOVE

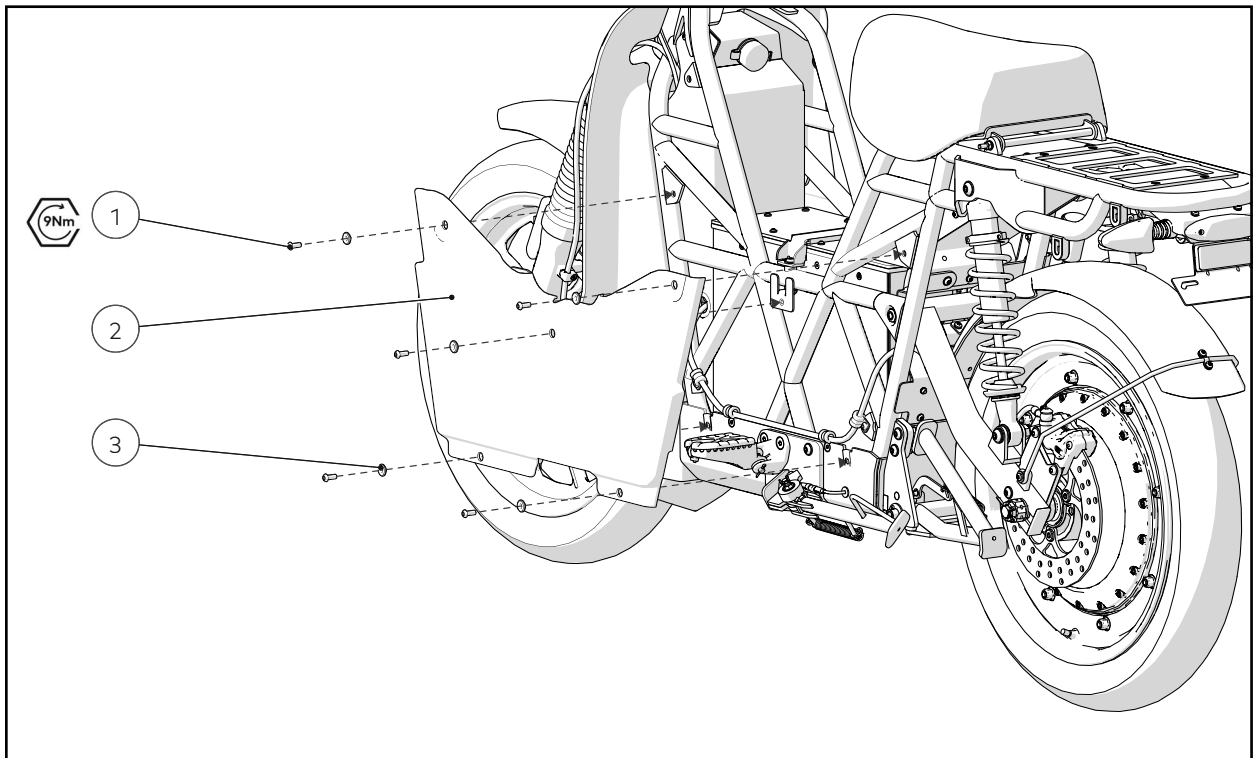
1. Using a T25 Torx Bit, release and remove the 4 fasteners

### REPLACE

WARNING - Ensure no cables are crushed during installation

1. Using a T25 Torx Bit, tighten the 4 fasteners

## SIDE FAIRING



### NUMBERED ITEMS

1. Fastener
2. Side Fairing
3. Washer

### TOOLS/CONSUMABLES REQUIRED

- 4mm Hex Bit
- Torque Wrench

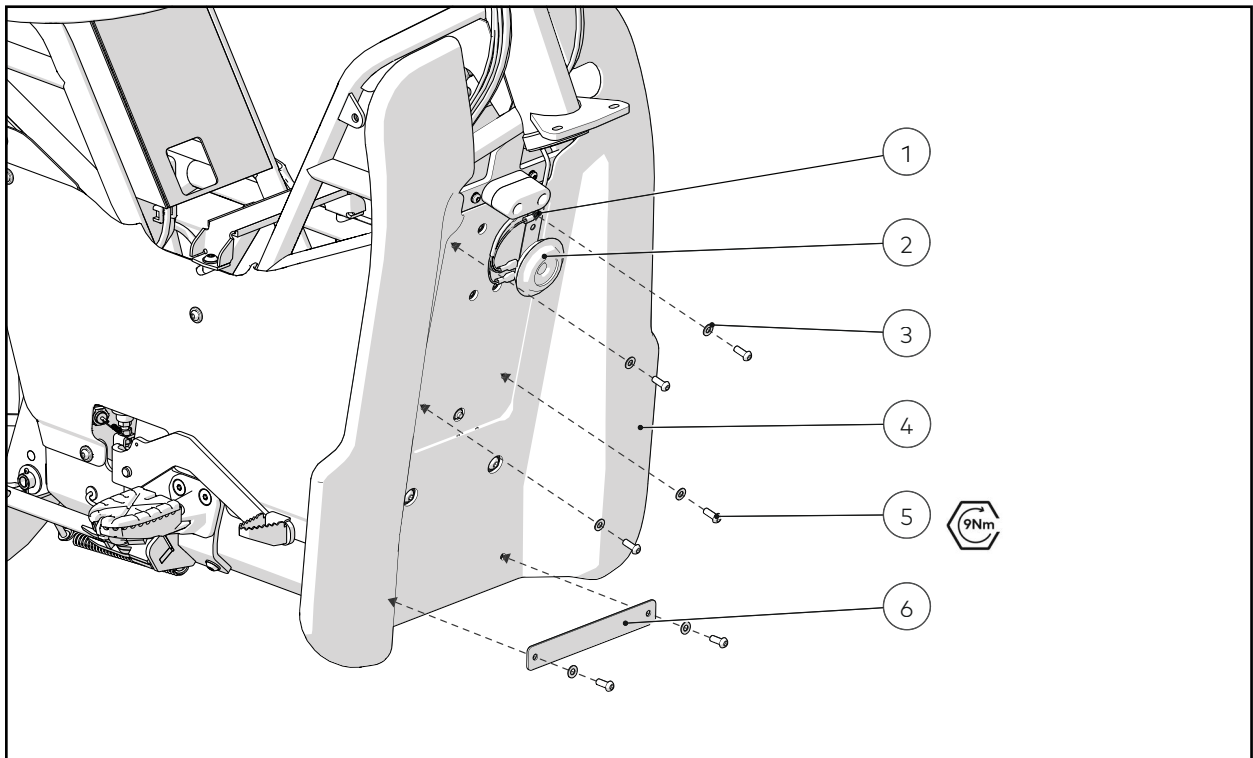
### REMOVE

1. Using a 4mm Hex Bit, release and remove the 5 fasteners

### REPLACE

1. Using a 4mm Hex Bit and Torque Wrench, tighten the 5 fasteners

## FRONT FAIRING



### NUMBERED ITEMS

1. Horn Ground Connector
2. Horn Assembly
3. Washer
4. Front Fairing
5. Fastener
6. Brace Plate

### TOOLS/CONSUMABLES REQUIRED

- 4mm Hex Bit
- Torque Wrench

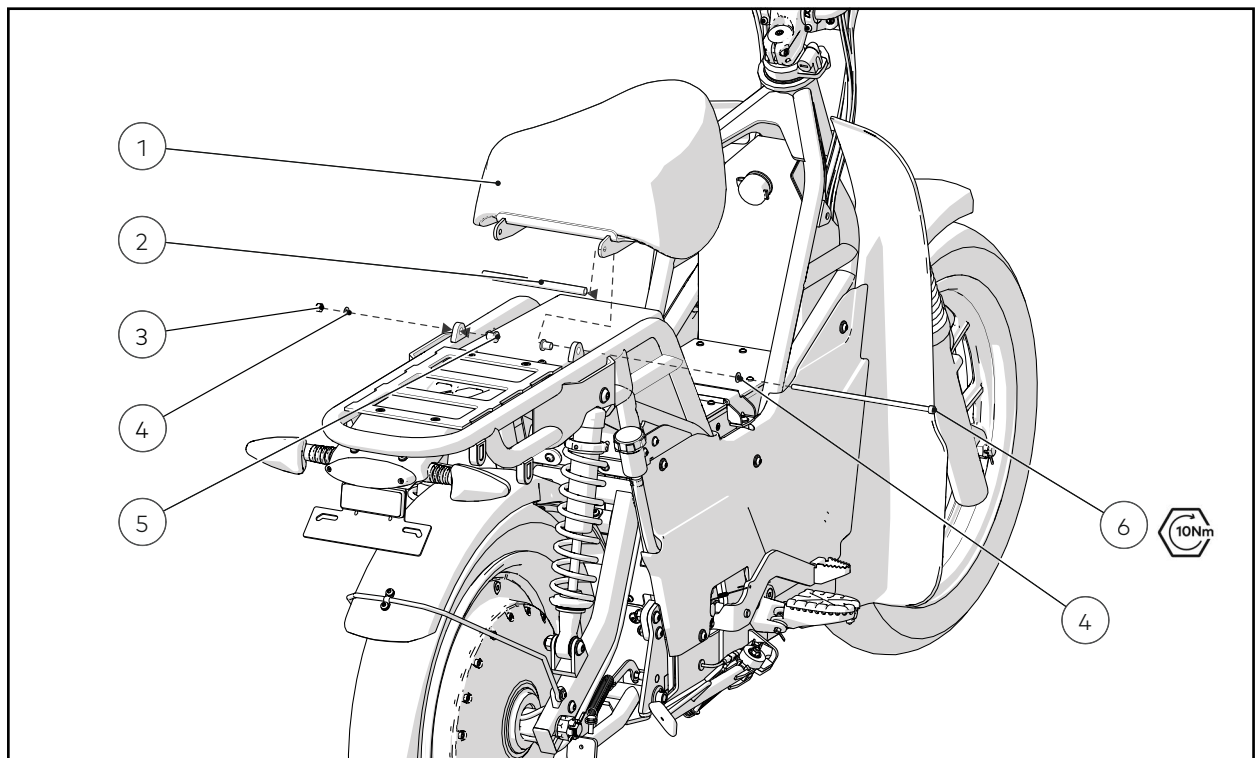
### REMOVE

1. Using a 4mm Hex Bit, release and remove the 6 fasteners

### REPLACE

1. Using a 4mm Hex Bit and Torque Wrench, tighten the 6 fasteners ensuring the Horn Assembly and Horn Grounding Strap are retained

## SEAT



### NUMBERED ITEMS

1. Seat
2. Spacer
3. Nut
4. Washer
5. Bush
6. Fastener

### TOOLS/CONSUMABLES REQUIRED

- 5mm Hex Bit
- 10mm Spanner
- Torque Wrench

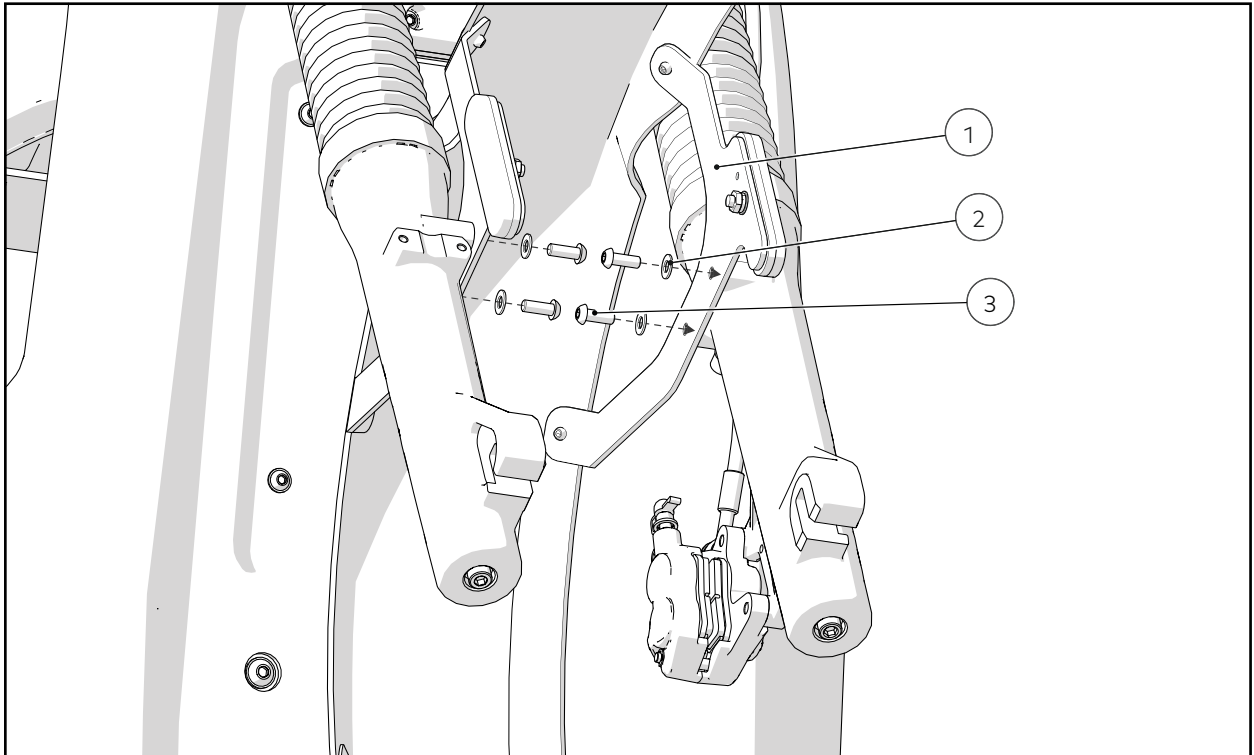
### REMOVE

1. Using a 5mm Hex Bit and 10mm Spanner, release and remove the Seat Pivot.  
NOTE - Retain Seat Bushings

### REPLACE

1. Ensure the Bushes have been installed
2. Using a 5mm Hex Bit, Torque Wrench and 10mm Spanner, tighten the Seat Pivot

## FRONT MUDGUARD



### NUMBERED ITEMS

1. Mudguard
2. Washer
3. Fastener

### TOOLS/CONSUMABLES REQUIRED

- 4mm Hex Bit

### PRE-REQUISITES

Front Wheel - Page 33

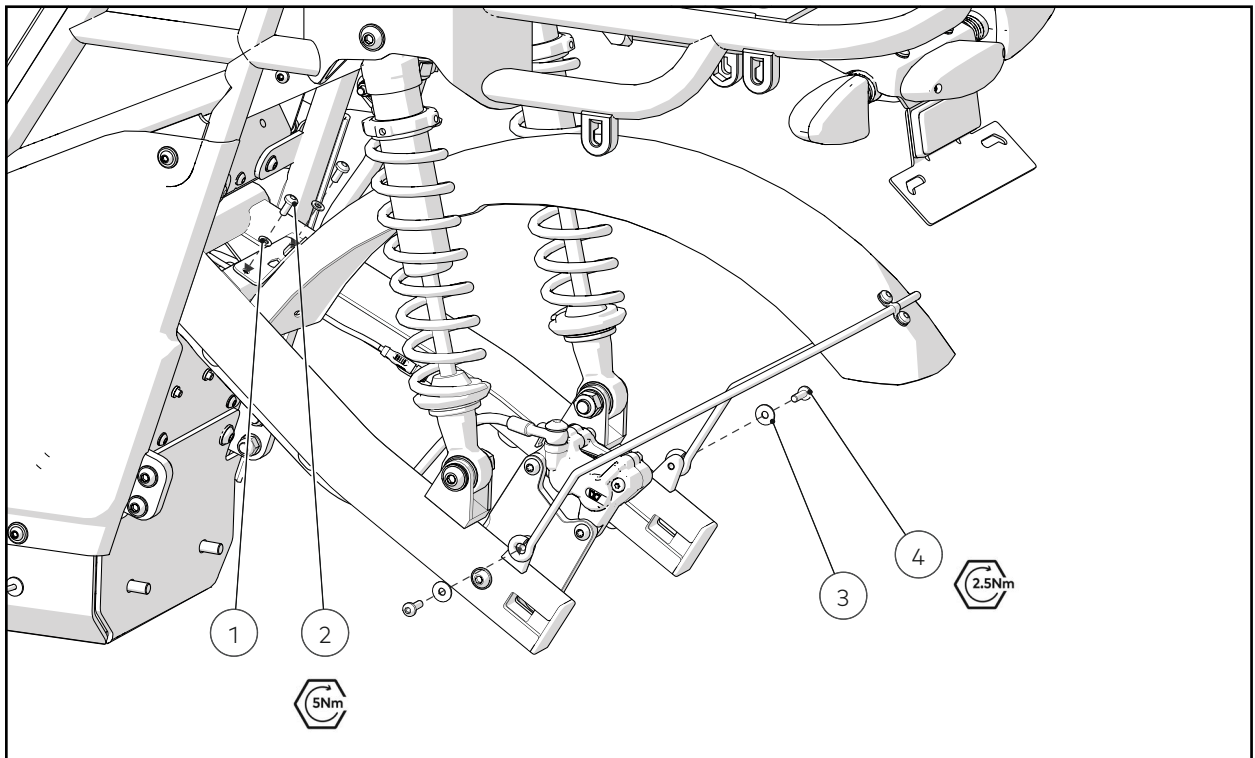
### REMOVE

1. Using a 4mm Hex Bit, release and remove the 4 fasteners

### REPLACE

1. Using a 4mm Hex Bit, tighten the 4 fasteners

## REAR MUDGUARD



### NUMBERED ITEMS

1. Upper Fastener
2. Upper Washer
3. Lower Fastener
4. Lower Washer

### TOOLS/CONSUMABLES REQUIRED

- 4mm Hex Bit
- Torque Wrench

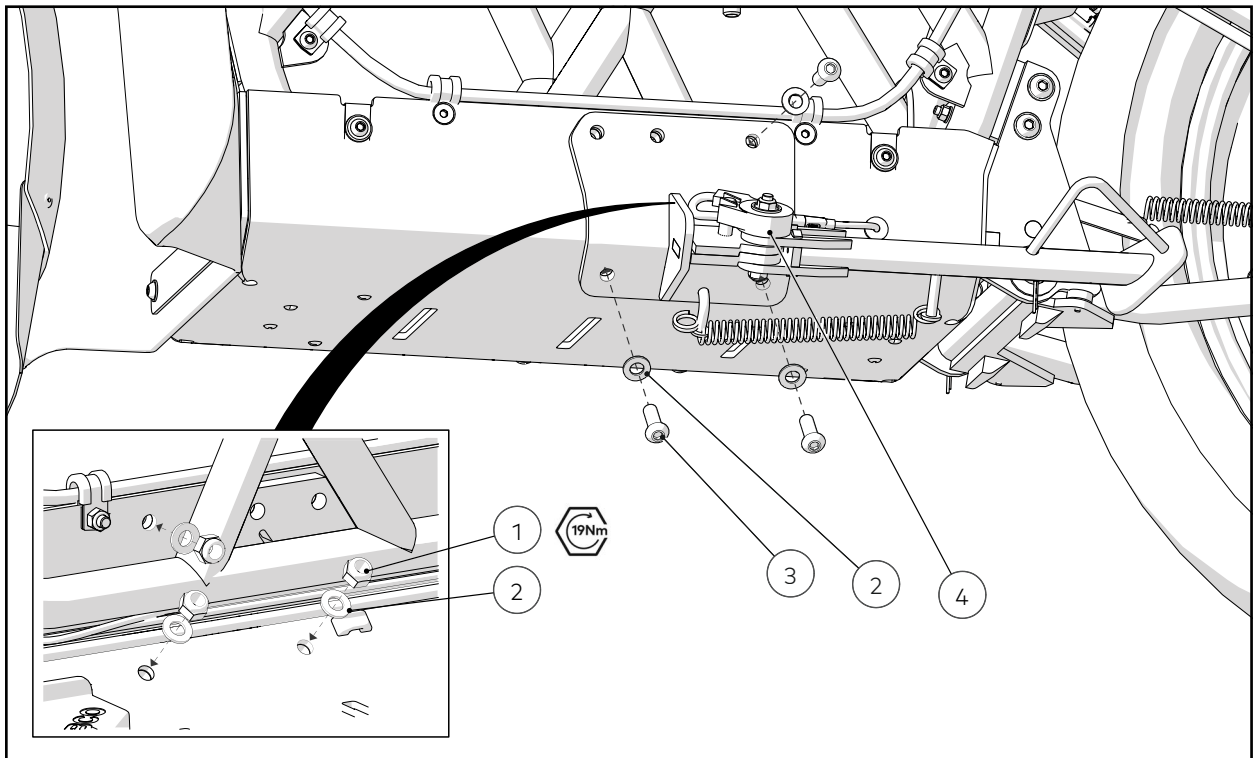
### REMOVE

1. Using a 4mm Hex Bit, release and remove the 4 fasteners

### REPLACE

1. Using a 4mm Hex Bit and Torque Wrench, tighten the 4 fasteners

## KICKSTAND



### NUMBERED ITEMS

1. Nut
2. Washer
3. Fastener
4. Kickstand Assembly

### TOOLS/CONSUMABLES REQUIRED

- 5mm Hex Bit
- 13mm Spanner
- 14mm Spanner
- 10mm Socket
- Torque Wrench

### PRE-REQUISITE STEPS

Battery - Page 70

Side Fairing - Page 55

Footpeg and Mount - Page 65

### REMOVE

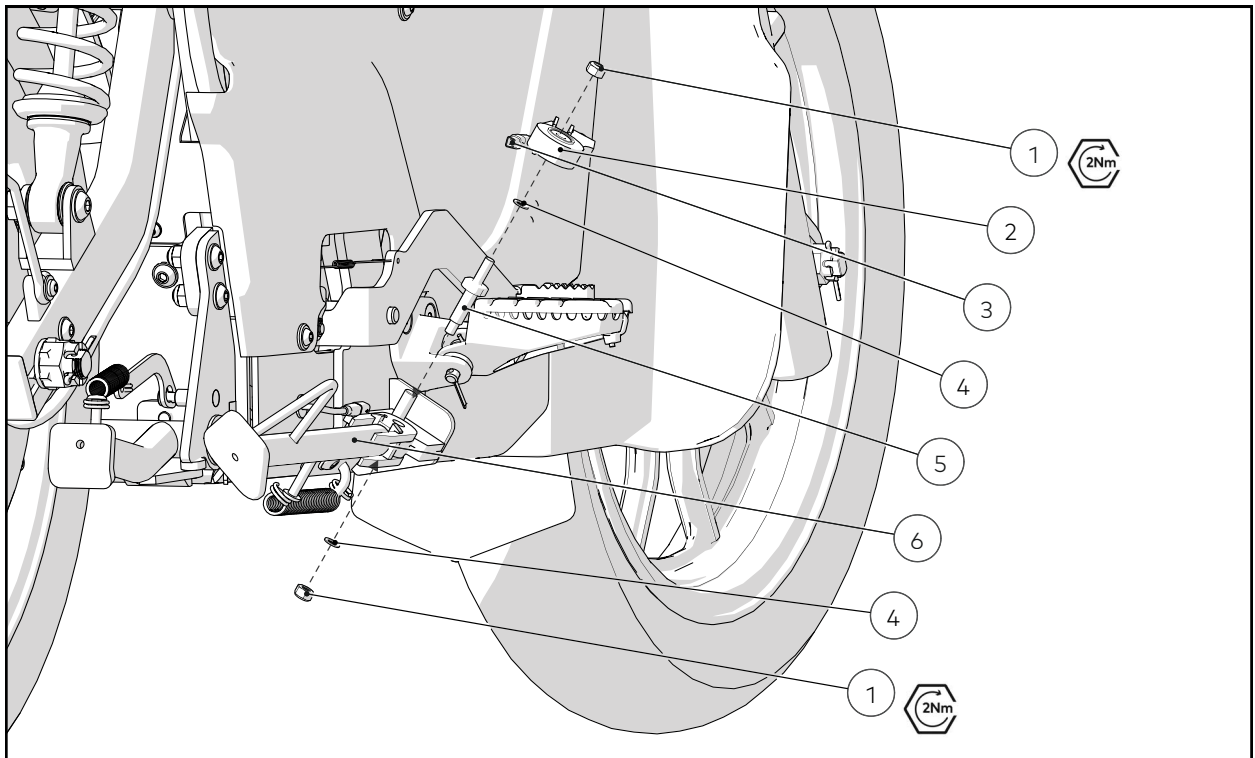
1. Unplug the Kickstand Switch Connector
2. Using a 5mm Hex Bit and 13mm Spanner, release and remove the Kickstand Bracket fasteners
3. Using a 14mm Spanner and 10mm Socket, release and remove the Kickstand fasteners

## **REPLACE**

1. Using a 5mm Hex Bit, 13mm Socket and Torque Wrench, tighten the Kickstand Bracket fasteners
2. Using a 14mm Spanner, 10mm Socket and Torque Wrench, tighten the Kickstand fasteners
3. Plug in the Kickstand Switch Connector



## KICKSTAND SWITCH / LEG



### NUMBERED ITEMS

1. Nut
2. Kickstand Switch
3. Switch Connector
4. Washer
5. Pivot
6. Kickstand Leg
7. Footpeg

### TOOLS/CONSUMABLES REQUIRED

- 10mm Spanner
- 10mm Socket
- 14mm Spanner
- Torque Wrench

### REMOVE

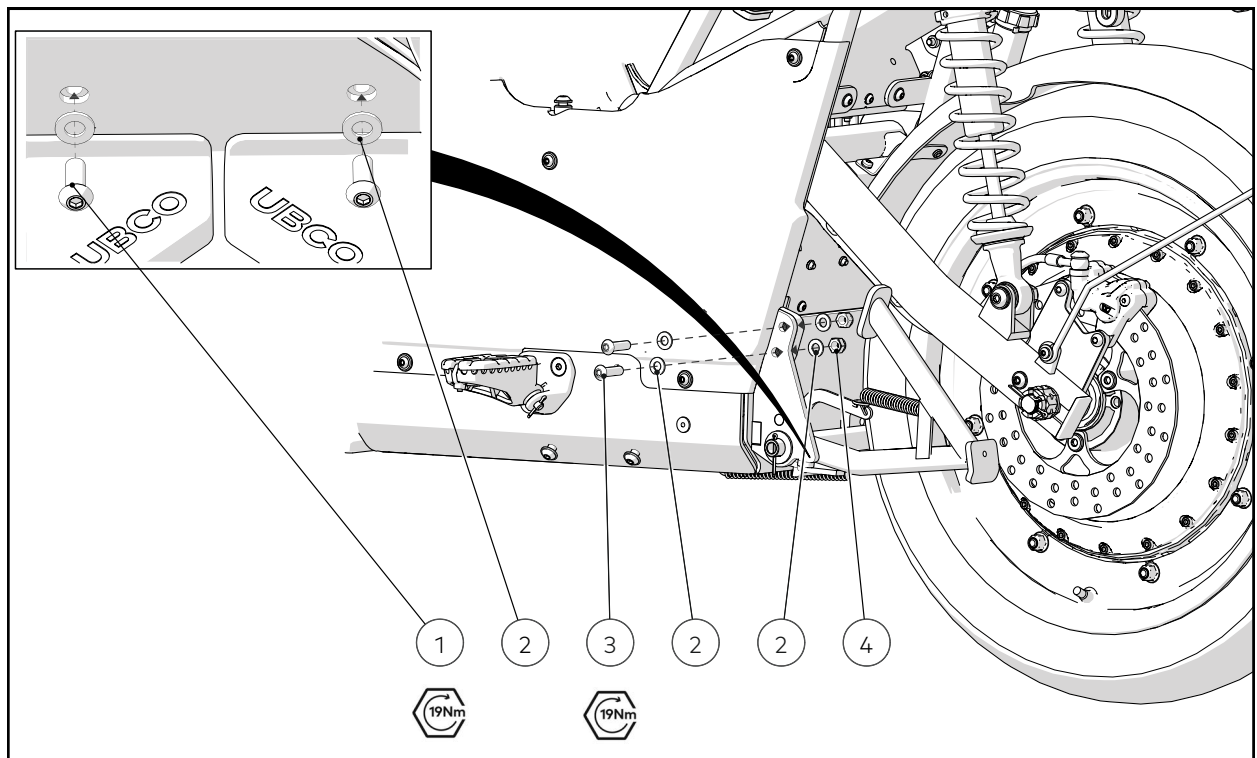
1. Unplug the Kickstand Switch Connector
2. Using a 10mm Spanner, remove the Upper Nut and Switch
3. Using a 10mm Spanner and 14mm Spanner, release and remove the Lower Nut and Pivot

### REPLACE

1. Using a 10mm Spanner and 14mm Spanner, tighten the Lower Nut and Pivot

2. Install the Switch
3. Using a 10mm Spanner, tighten the Upper Nut
4. Plug in the Kickstand Switch Connector

## CENTRE STAND



### NUMBERED ITEMS

1. Inner Fastener
2. Washer
3. Bracket Fastener
4. Nut

### TOOLS/CONSUMABLES REQUIRED

- 5mm Hex Bit
- Torque Wrench

### PRE-REQUISITES

Rear Console Cover - Page 54

Battery - Page 70

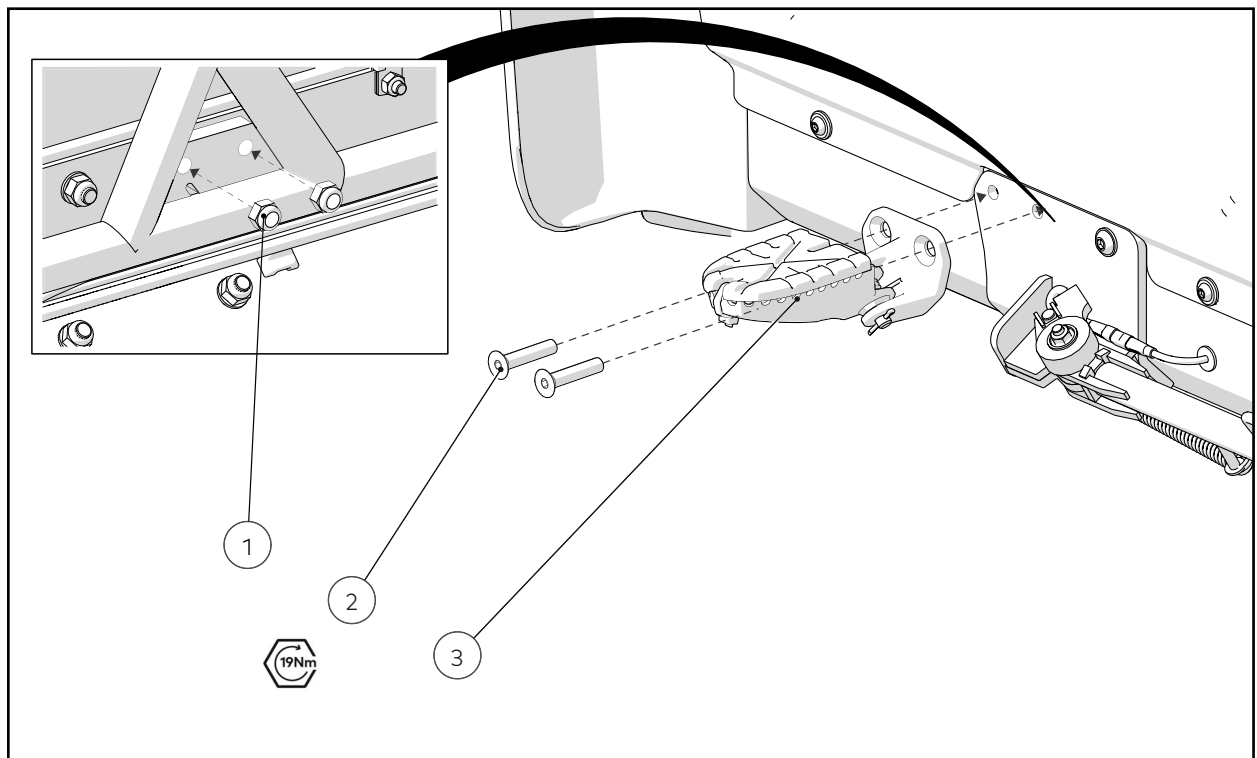
### REMOVE

1. Using a 5mm Hex Bit, release and remove the 6 fasteners retaining the Centre Stand to the Frame

### REPLACE

1. Using a 5mm Hex Bit and Torque Wrench, tighten the 6 fasteners

## FOOT PEG & MOUNT



### NUMBERED ITEMS

1. Nut
2. Fastener
3. Foot Peg & Mount

### TOOLS/CONSUMABLES REQUIRED

- 5mm Hex Bit
- 13mm Socket
- Torque Wrench

### PRE-REQUISITES

Battery - Page 70

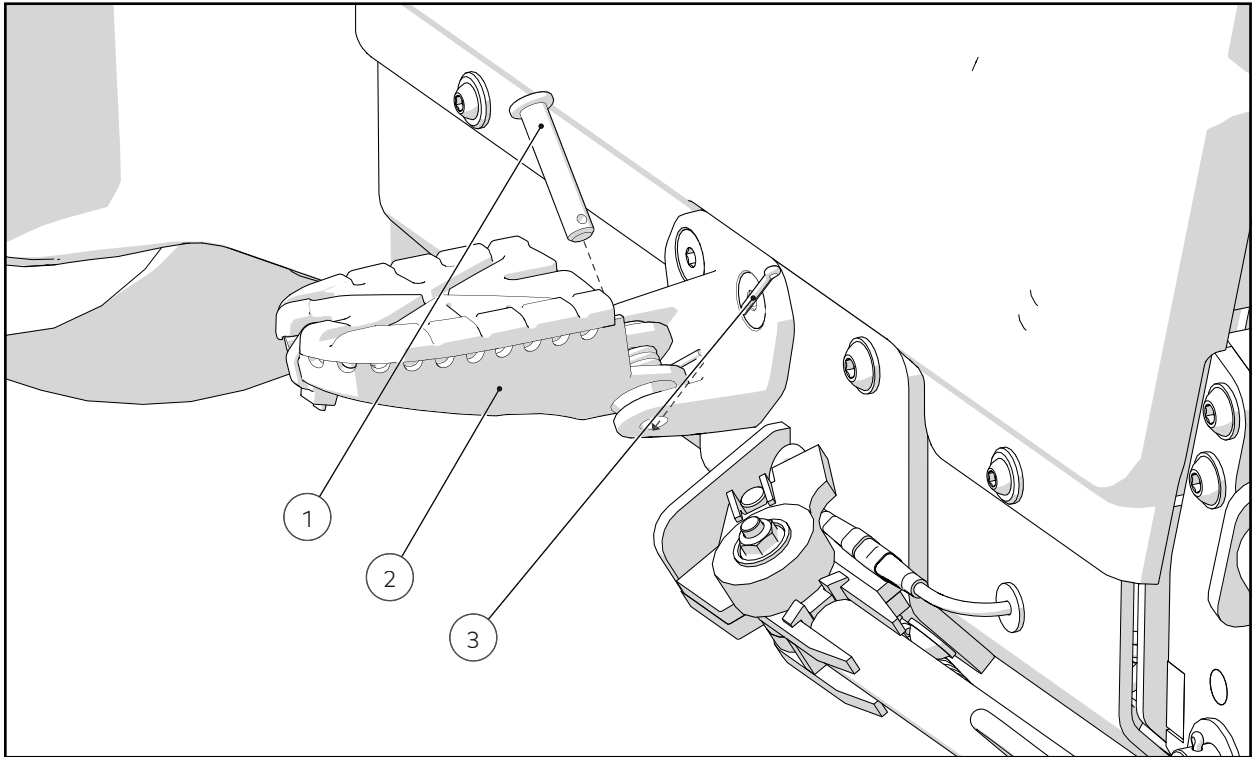
### REMOVE

1. Using a 5mm Hex Bit and 13mm Socket, release and remove the 2 fasteners

### REPLACE

1. Using a 5mm Hex Bit, Torque Wrench and 13mm Socket, tighten the 2 fasteners

## FOOTPEG



### NUMBERED ITEMS

1. Pin
2. Foot Peg
3. Split Pin

### TOOLS/CONSUMABLES REQUIRED

- Needle Nose Pliers

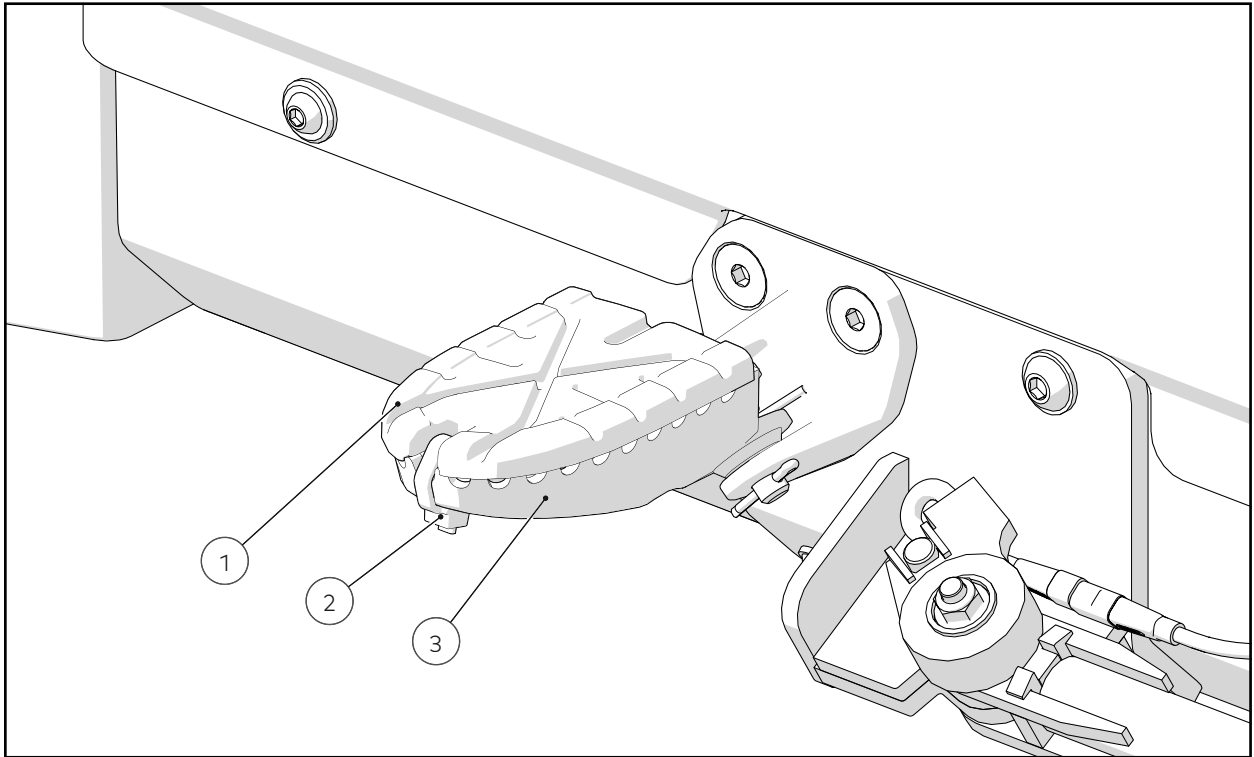
### REMOVE

1. Using Needle Nose Pliers, remove the Split Pin
2. Release and remove Split Pin, Spring and Foot Peg

### REPLACE

1. Assemble the Split Pin, Spring and Foot Peg
2. Using Needle Nose Pliers, fit the Split Pin

## FOOT PEG RUBBER INSERT



### NUMBERED ITEMS

1. Rubber Insert
2. Cable Tie
3. Footpeg

### TOOLS/CONSUMABLES REQUIRED

- Side Cutters
- Cable Tie

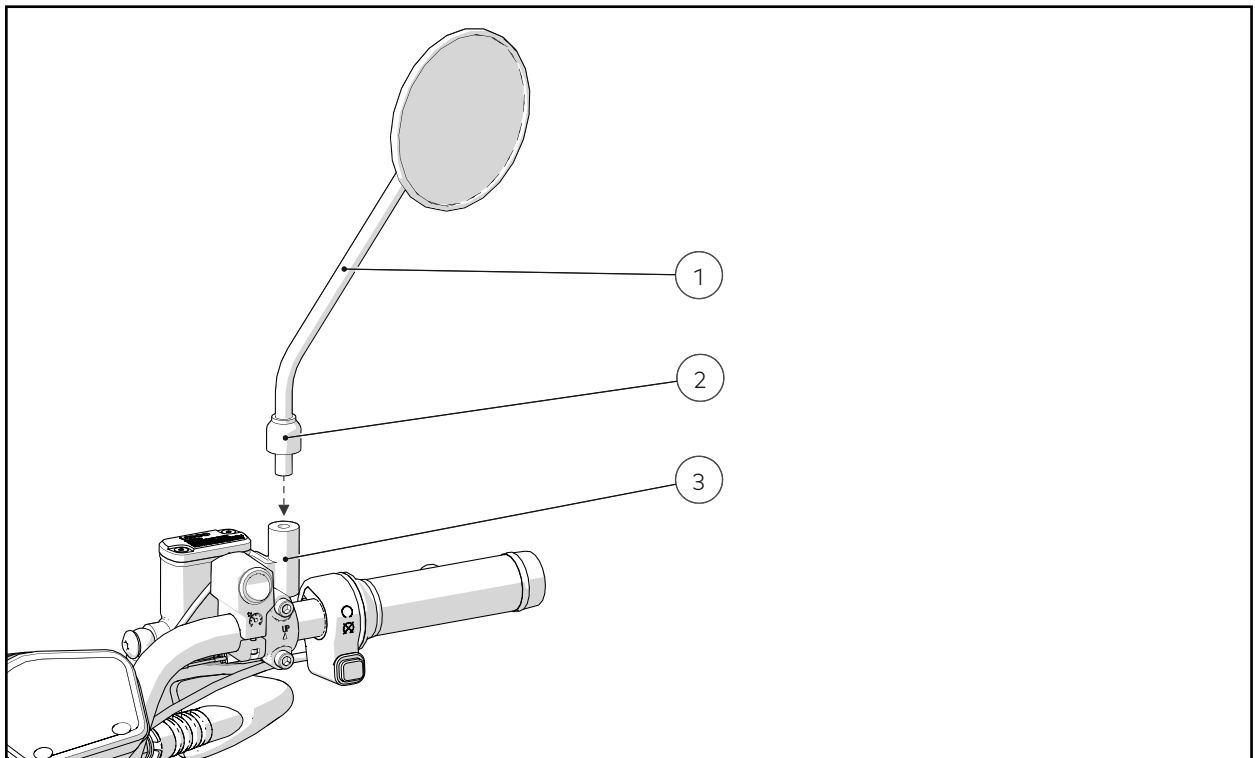
### REMOVE

1. Using Side Cutters, remove the Rubber Insert Cable Tie

### REPLACE

1. Install the Rubber Insert and use a Cable Tie to retain

## LH/RH MIRROR



### NUMBERED ITEMS

1. Rear View Mirror Assembly
2. Rear View Mirror Boot & Nut
3. Master Cylinder Assembly

### TOOLS/CONSUMABLES REQUIRED

- 14mm Spanner

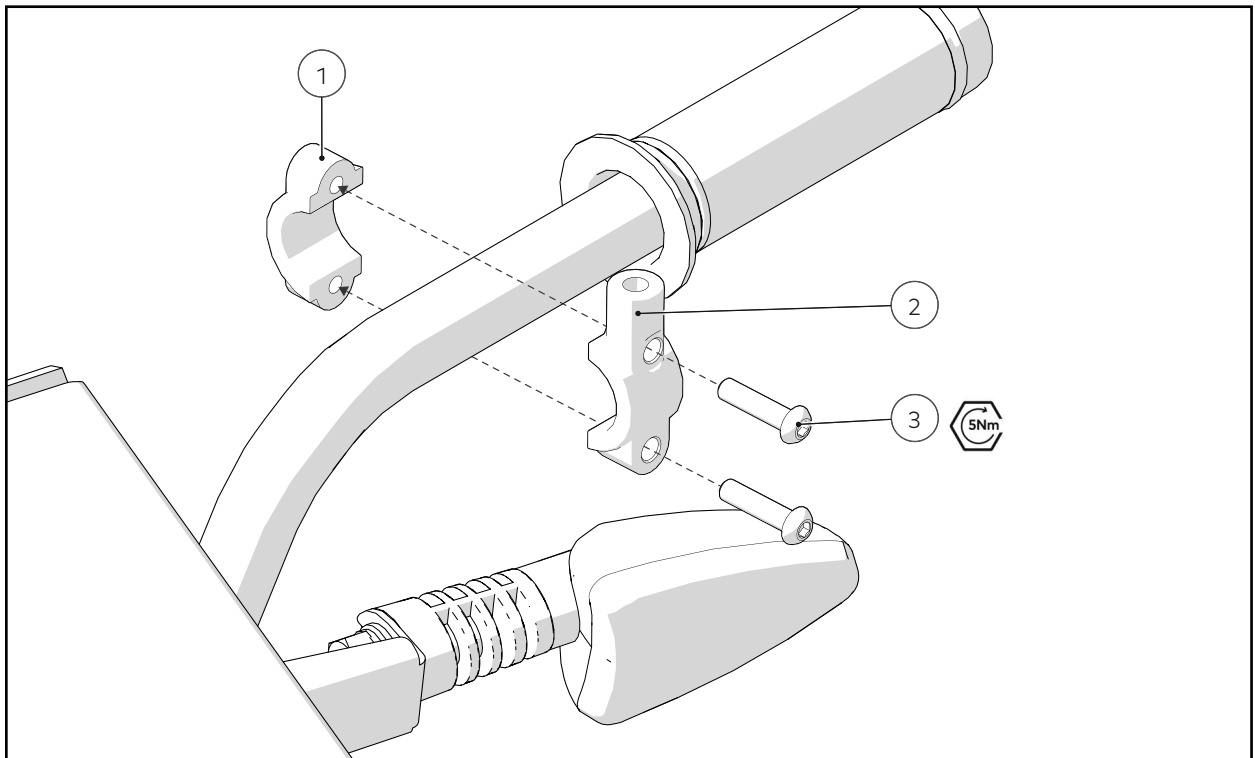
### REMOVE

1. Using a 14mm Spanner, release and remove Mirror Nut

### REPLACE

1. Thread the Mirror Assembly into the correct position for the rider
2. Using a 14mm Spanner, tighten the Mirror Nut

## MIRROR MOUNT



### NUMBERED ITEMS

1. Clamp Part 1
2. Clamp Part 2
3. Fastener

### TOOLS/CONSUMABLES REQUIRED

- 4mm Hex Bit

### PRE-REQUISITES

LH/RH Mirror - Page 68

### REMOVE

1. Using a 4mm Hex Bit, release and remove 2 fasteners

### REPLACE

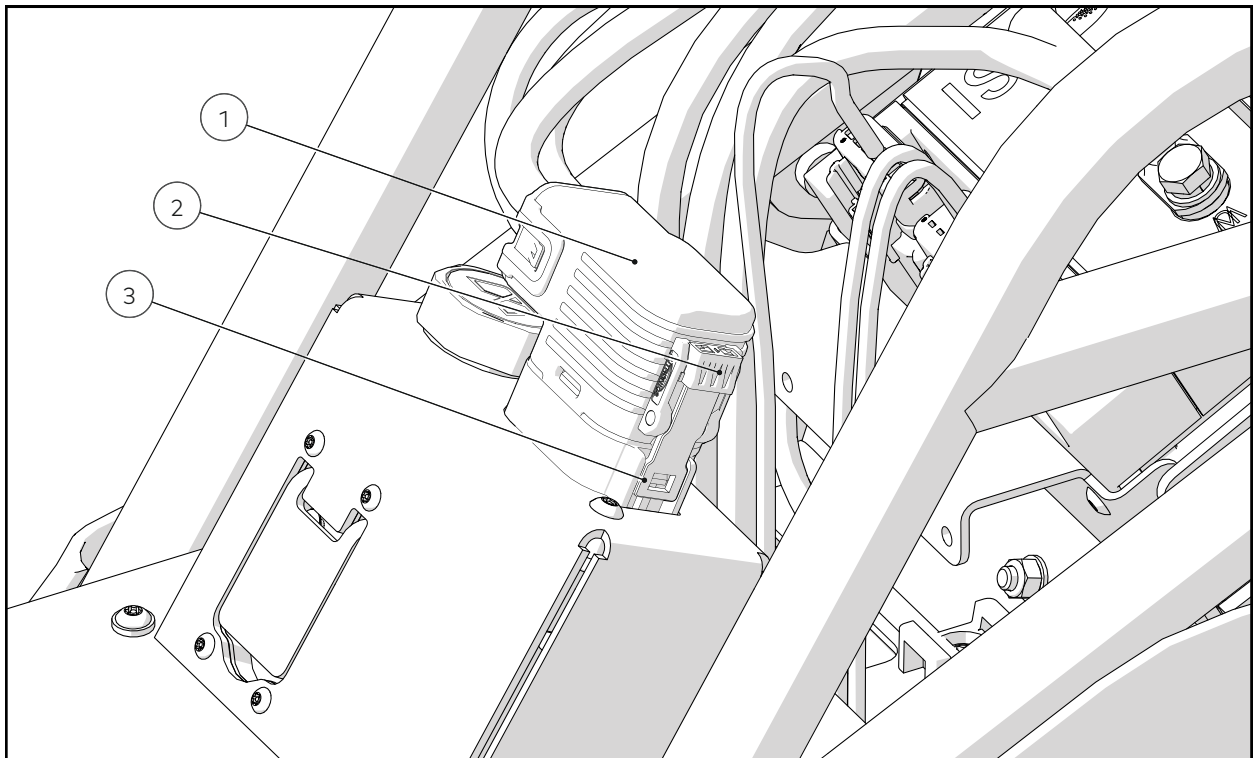
1. Using a 4mm Hex Bit and Torque Wrench, tighten the two fasteners



# **Electronics and Controls**

**TECHNICAL SERVICE MANUAL**

## DISCONNECT BATTERY



### NUMBERED ITEMS

1. Connector Body
2. Lock
3. Clip

### TOOLS/CONSUMABLES REQUIRED

- Di-electric Grease

### PRE-REQUISITES

Rear Console Upper Cover - Page 54

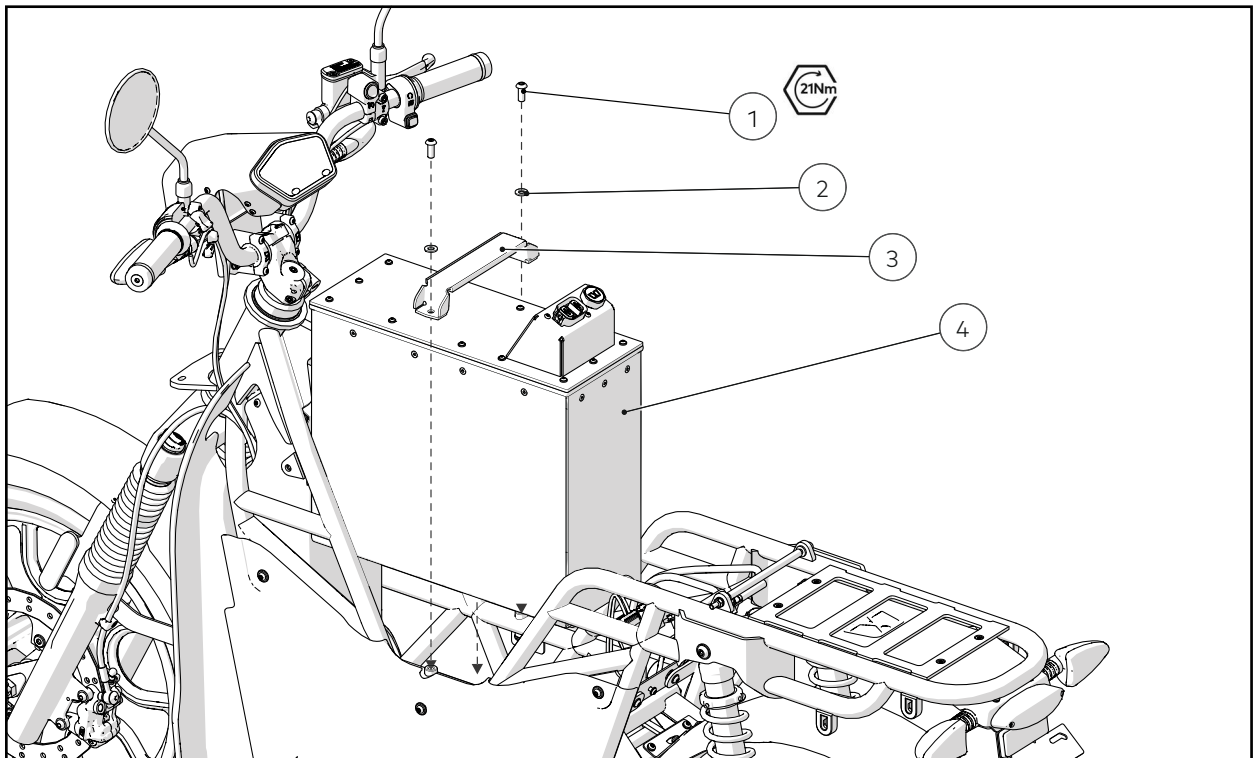
### REMOVE

1. Unclip and lift the battery connector off of the battery

### REPLACE

1. Fit the battery connector and ensure it is clipped in. NOTE - Lubricate

## BATTERY



### NUMBERED ITEMS

1. Fastener
2. Washer
3. Battery Clamp
4. Battery

### TOOLS/CONSUMABLES REQUIRED

- 5mm Hex Bit
- Torque Wrench

### PRE-REQUISITES

Rear Console Upper Cover - Page 54

Disconnect Battery - Page 70

### REMOVE

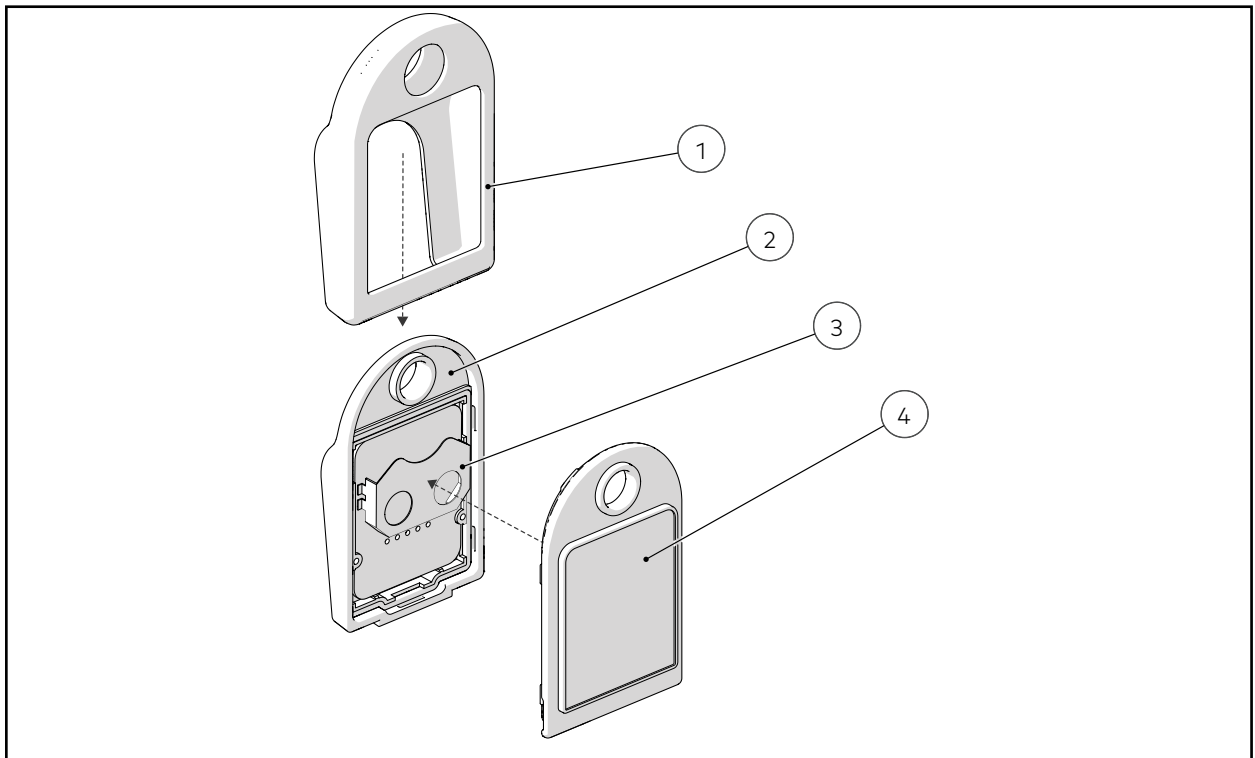
1. Using a 5mm Hex Bit, release and remove the 2 fasteners retaining the Battery Clamp
2. Check the condition of the Lifting Strap and if acceptable use it to lift out the Battery. **WARNING** - Heavy Lift 35kg

## **REPLACE**

WARNING - Ensure no cables are crushed during installation

1. Check the condition of the Lifting Strap and if acceptable use it to install the Battery. WARNING - Heavy Lift 35kg
2. Using a 5mm Hex Bit and Torque Wrench, tighten the 2 fasteners

## KEY FOB BATTERY



### NUMBERED ITEMS

1. Rubber Case
2. Upper Key Fob Case
3. Battery Holder
4. Lower Key Fob Case

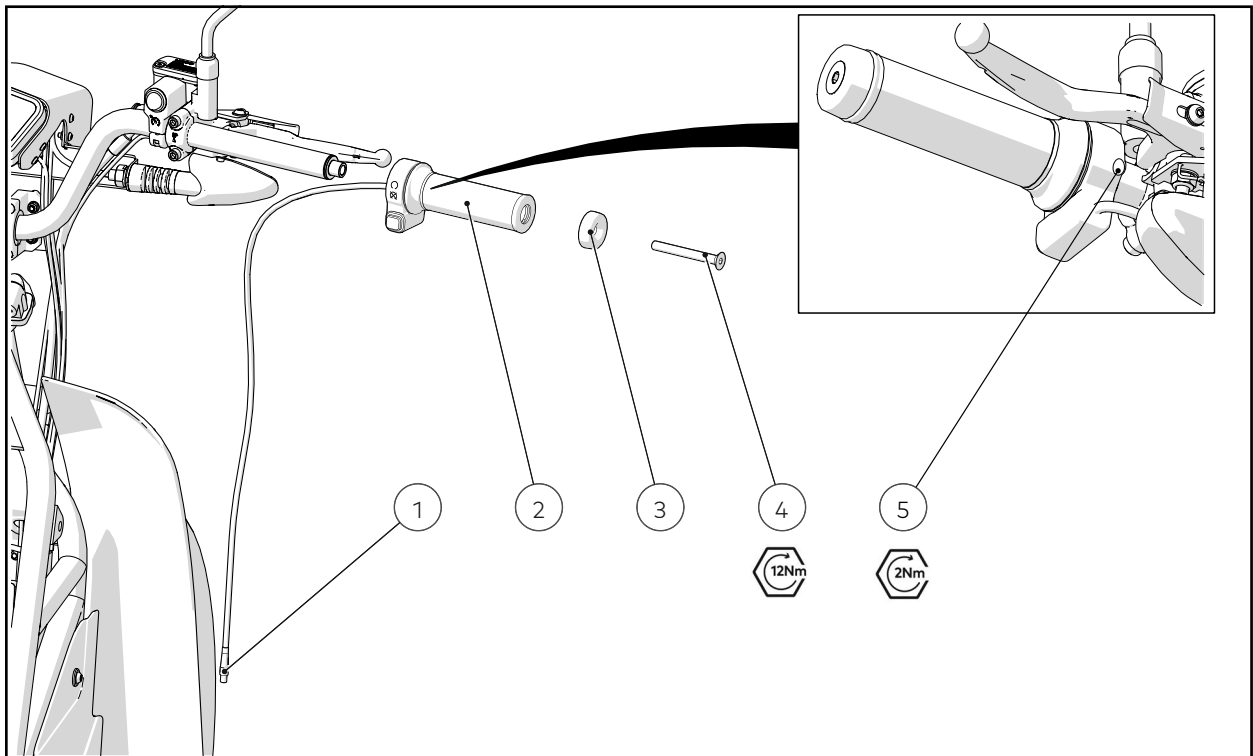
### REMOVE

1. Slide the Key Fob Case out of the Rubber Case
2. Separate the Upper and Lower Key Fob Case
3. Slide the Key Fob Battery out of the Battery Holder

### REPLACE

1. Insert a new Key Fob Battery into the Battery Holder
2. Snap the Upper and Lower Key Fob Cases together
3. Slide the Key Fob Case into the Rubber Case

## E-THROTTLE / KILL SWITCH



### NUMBERED ITEMS

1. E-Throttle / Kill Switch Connector
2. E-Throttle / Kill Switch
3. End Cap
4. Fastener
5. E-Throttle / Kill Switch Grub Screw

### TOOLS/CONSUMABLES REQUIRED

- 5mm Hex Bit
- 3mm Hex Bit
- Torque Wrench
- Side Cutters
- Cable Ties

### PRE-REQUISITES

Battery - Page 70

Front Console Cover - Page 53

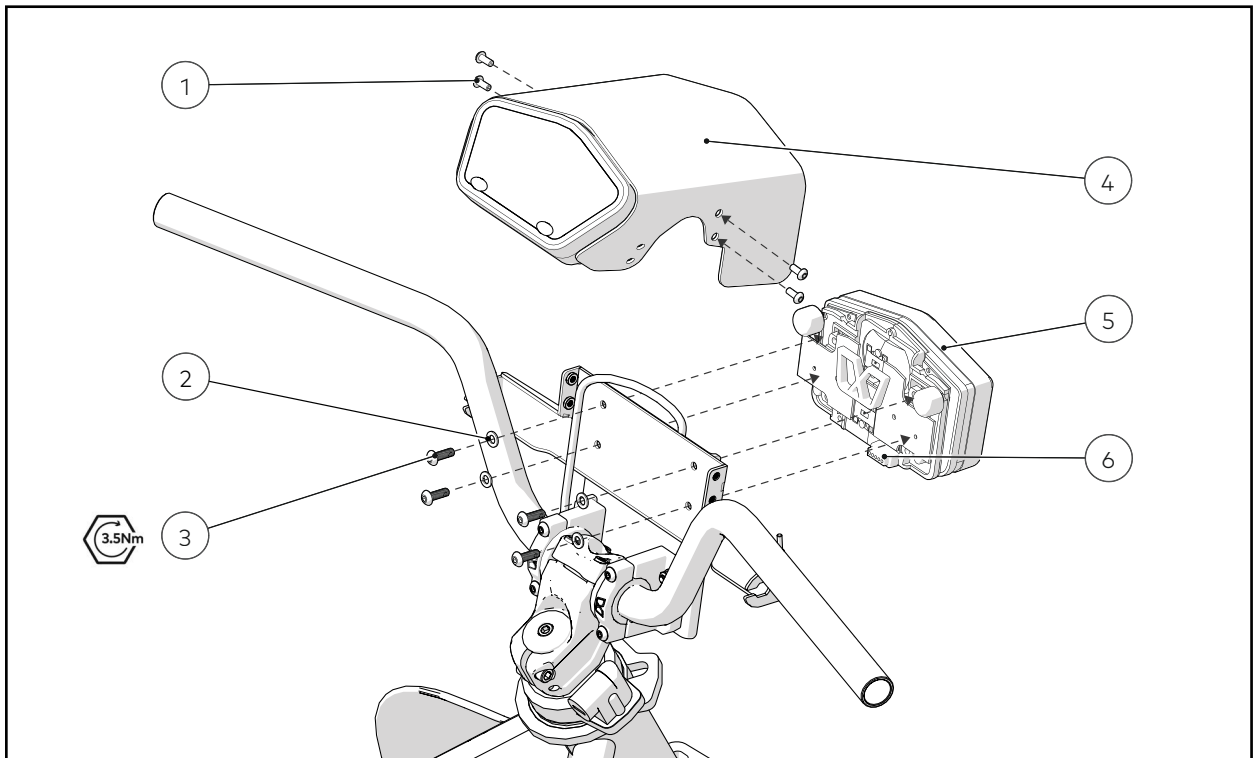
### REMOVE

1. Using a 5mm Hex Bit, release and remove the fastener
2. Unplug the E-Grip from the Main Harness
3. Using a 3mm Hex Bit, loosen the E-Grip Grub Screw
4. Using Side Cutters, release the E-Grip cable from the RH Cable Bundle

## **REPLACE**

1. Using a 5mm Hex Bit and Torque Wrench, tighten the fastener
2. Using a 3mm Hex Bit and Torque Wrench, tighten the E-Grip Grub Screw
3. Test to make sure the E-Grip can turn freely across its range of motion and the unit does not rotate on Handlebar
4. Plug the E-Grip into the Main Harness
5. Using a Cable Tie, retain the E-Grip cable to the RH Cable Bundle
6. Test to make sure the Handlebar can move freely across its range of motion

## HEADLAMP



### NUMBERED ITEMS

1. Cover Fastener
2. Washer
3. Headlamp Fastener
4. Headlamp Cover
5. Headlamp
6. Headlamp Connector

### TOOLS/CONSUMABLES REQUIRED

- T20 Torx Bit
- T25 Torx Bit
- Side Cutters
- Cable Ties

### PRE-REQUISITES

Battery - Page 70

Front Console Cover - Page 53

### REMOVE

1. Using Side Cutters, release any Cable Ties retaining the Headlamp Cable
2. Disconnect the Headlamp Connector
3. Disconnect Dash Connector
4. Using a T20 Torx Bit, release and remove the 4 Headlamp Cover Fasteners

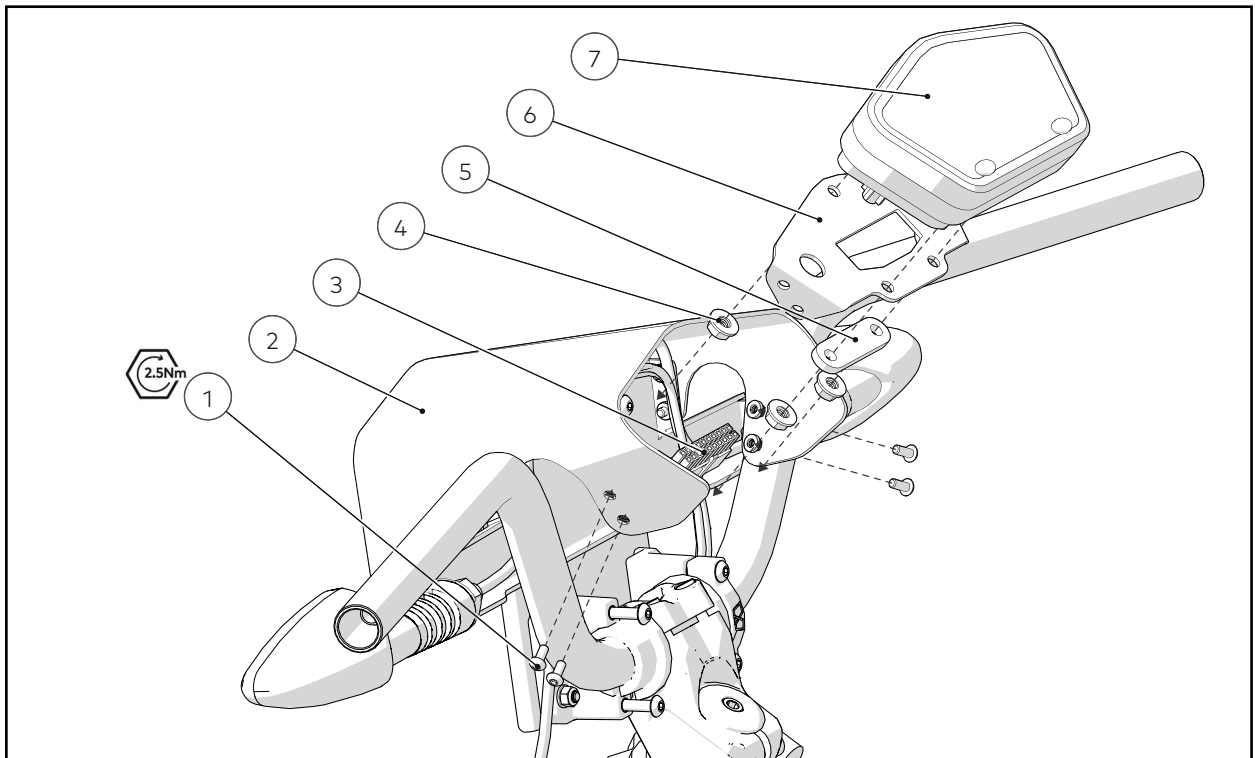


5. Using a T25 Torx Bit, release and remove the 4 Headlamp Fasteners

**REPLACE**

1. Using a T25 Torx Bit, tighten the 4 Headlamp Fasteners
2. Using a T20 Torx Bit, tighten the 4 Headlamp Cover Fasteners
3. Using the Method outlined on Page 28, adjust the Headlight Beam
4. Connect the Dash Connector
5. Connect the Headlamp Connector
6. Using Cable Ties, retain the Headlamp Cables

## DASH



### NUMBERED ITEMS

1. Cover Fastener
2. Cover
3. Dash Connector
4. Dash Nut
5. Small Mount Plate
6. Large Mount Plate
7. Dash

### TOOLS/CONSUMABLES REQUIRED

- T20 Torx Bit
- 10mm Spanner
- Torque Wrench

### REMOVE

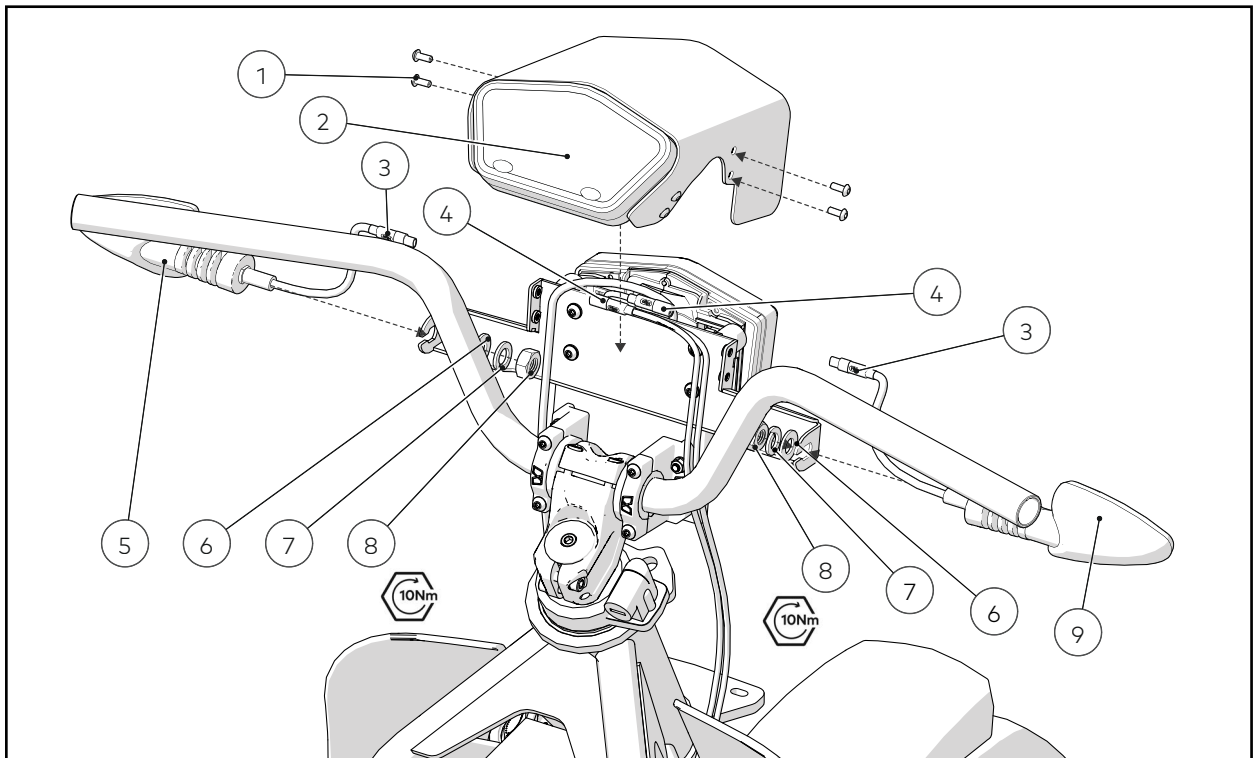
1. Using a T20 Torx Bit, release and remove the 4 Dash Mount Plate Fasteners
2. Disconnect the Dash from the Harness
3. Using a 10mm Spanner, release and remove the 3 Dash Nuts

### REPLACE

1. Using a 10mm Spanner, tighten the 3 Dash Nuts
2. Connect the Dash to the Harness

3. Using a T20 Torx Bit and Torque Wrench, tighten the 4 Dash Mount Plate Fasteners

## FRONT INDICATORS



### NUMBERED ITEMS

1. Cover Fastener
2. Dash
3. Indicator Connector
4. Harness Connector
5. Left Hand Indicator
6. Washer
7. Spring Washer
8. Nut

9. Right Hand Indicator

### TOOLS/CONSUMABLES REQUIRED

- T20 Torx Bit
- 17mm Spanner
- Torque Wrench

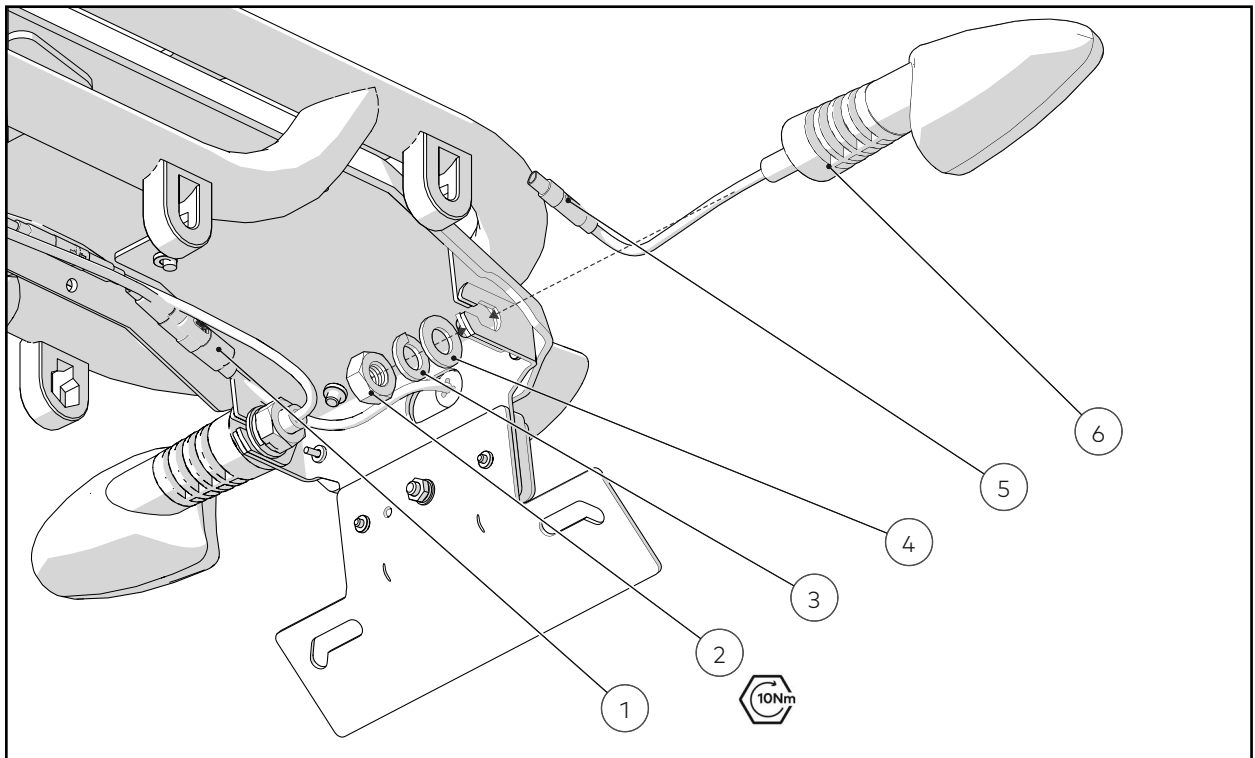
### REMOVE

1. Using a T20 Torx Key, remove the 4 fasteners attaching the Dash Cover to the Bike
2. Disconnect Front Indicators from the On Road Harness
3. Using a 17mm Spanner, release and remove the 2 nuts holding the Indicators to the Bike

## **REPLACE**

1. Connect the Indicators to the On Road Harness and test that the Indicators are on the correct side of the Bike
2. Using a 17mm Spanner, tighten the 2 nuts holding the Indicators.
3. Using a T20 Torx Socket and Torque Wrench, tighten the 4 fasteners attaching the Dash Cover to the Bike

## REAR INDICATORS



### NUMBERED ITEMS

1. Harness Connector
2. Nut
3. Spring Washer
4. Washer
5. Indicator Connector
6. Indicator

### TOOLS/CONSUMABLES REQUIRED

- 17mm Spanner
- Torque Wrench
- Cable Ties

### REMOVE

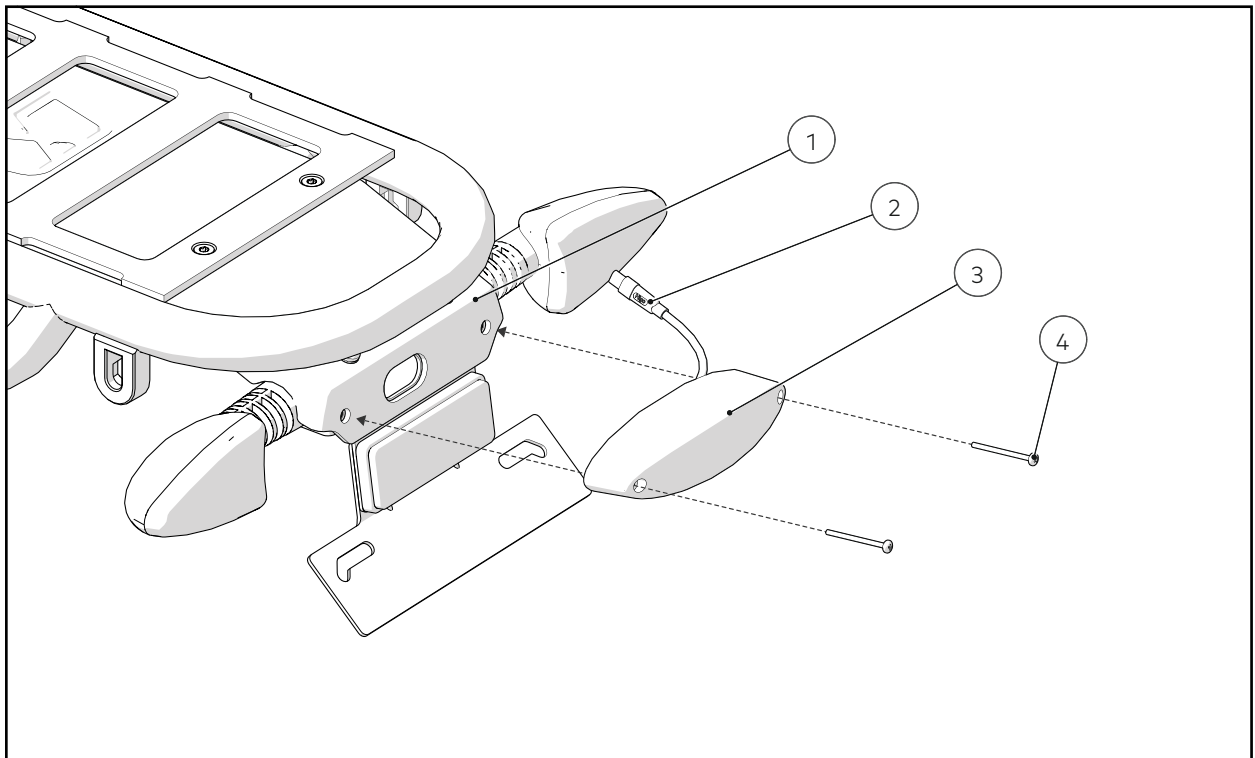
1. Disconnect Rear Indicators from the Rear Light Harness
2. Using Side Cutters, remove any Cable Ties retaining the Rear Indicator Cables to the Bike
3. Using a 17mm Spanner, release and remove the 2 nuts holding the Indicators to the Bike

### REPLACE

1. Connect the Indicators to the Rear Light Harness, place in position and test to ensure Indicator position is correct

2. Using a 17mm Spanner, tighten the 2 nuts holding the
3. Using Cable Ties, retain the Rear Indicator Cables to the Bike

## TAILLIGHT



### NUMBERED ITEMS

1. Tailight Mount Plate
2. Tailight Connector
3. Tailight
4. Fastener

### TOOLS/CONSUMABLES REQUIRED

- #1 Philips Screwdriver

### REMOVE

1. Disconnect the Rear Tailight connector
2. Using a #1 Philips Screwdriver, remove the 2 fasteners from the Rear Tailight

### REPLACE

1. Connect the Rear Tailight after threading the wire through the hole
2. Using a #1 Philips Screwdriver, tighten the 2 fasteners