BRAMMO

HENSIVE FACTORY

SERVICE MANUAL

REVISION 1.6
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SUPERSEDES ALL PREVIOUS PUBLICATIONS

Table of Contents

Disclaimer

This service manual contains information that was available at the time of printing. BRAMMO, Inc. reserves the right to make changes at any time, without notice and without any further obligation.

Although every care has been taken to make this manual as complete and accurate as possible, Brammo, Inc. cannot accept any liability resulting from inaccuracies or omissions or the misuse of this manual.

Introduction

BRAMMO has created this detailed service manual for the 2010 BRAMMO Enertia, this technical text gives complete information on maintenance and repair of the Enertia. This document was designed for properly trained technicians in a shop equipped with the recommended tools. However, an owner with basic knowledge of tool use, shop procedures and a basic mechanical skill level should be able to follow the instructions in this service manual. Safety rules common in service areas has also not been listed.
Photos and drawings along with step by step instructions will guide you through every repair needed for the Enertia. This book contains all the instructions needed for servicing the BRAMMO Enertia and keeping it running.

While the Enertia is under warranty, we recommend that all service and maintenance be performed by a Brammo Certified Technician. Any work performed on an Enertia while under warranty by a non Brammo Certified Technician, or work not performed in accordance with this manual, may void the warranty unless a prior arrangement with Brammo has been made.

While a majority of the procedures listed in this service manual call for only a basic set of tools, some of the procedures may require the use of special tools. Using an inferior substitute for a special tool is not recommended as it can be dangerous to you and may damage the Enertia and void the warranty.

Follow the service manual's procedures carefully and don't take short cuts.

Remember to keep a complete and detailed record of any maintenance or repair that is done, including name of the person performing the work, the date, work that was done and any replacement parts that were used.

It is important that you keep this service manual in an easy to find location. This manual will help you better understand the BRAMMO Enertia and make repairs in a much timelier manner.

It is recommended that you read the service manual thoroughly to understand how to service the Enertia.

NOTE: some jurisdictions have special certifications to work with any on board lighting, brakes, or with batteries (US HAZMAT CLASS 9 ITEM).

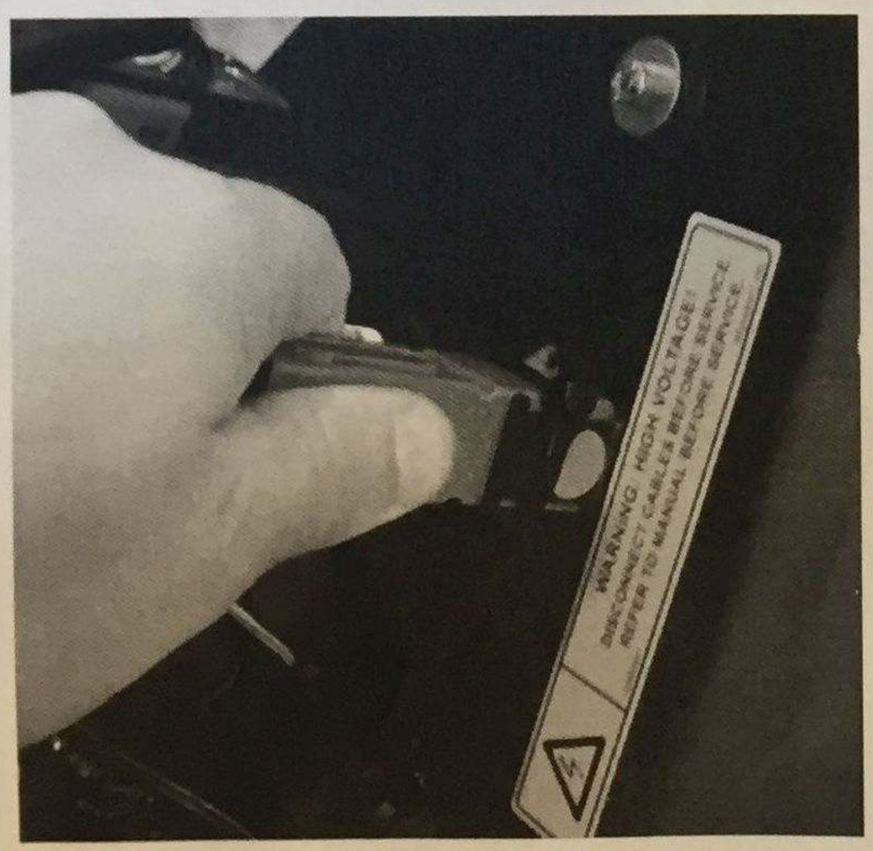
Safety

SAFETY RULE #1 - ALWAYS DISCONNECT THE MAIN BATTERY DISCONNECT PLUG.

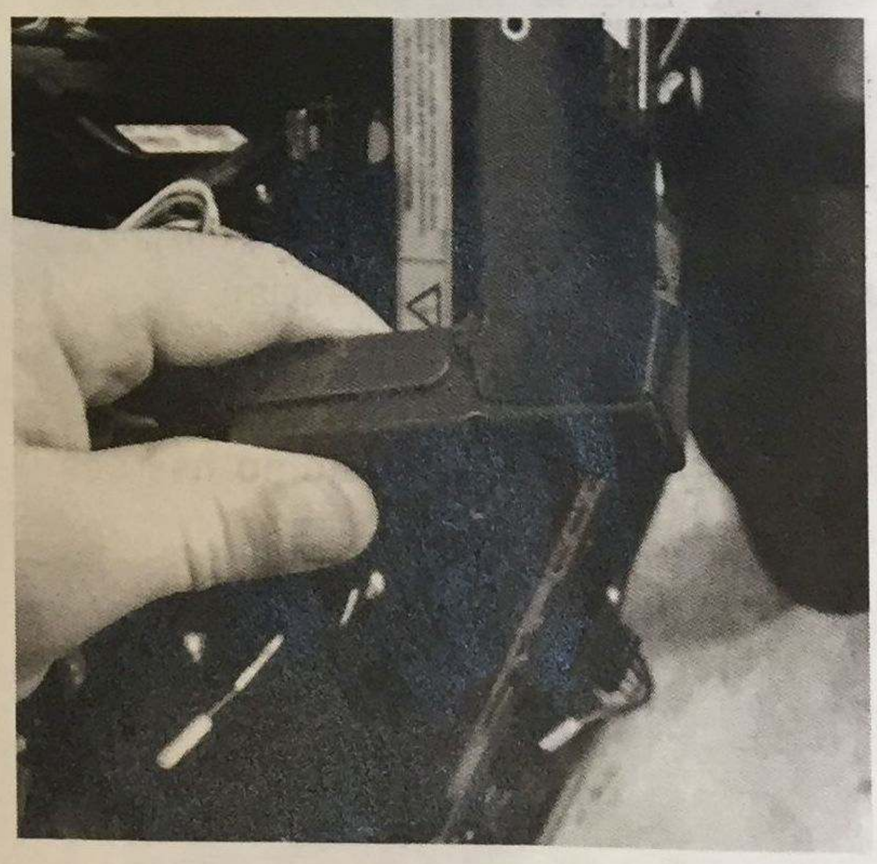
This will eliminate any possibility of accidentally shorting the batteries and causing potential injury to yourself or damage to the Enertia.

Just follow these two simple steps.

1. Disconnect the plug.



2. Cover with electrical tape.



When you are finished working on the Enertia, remove the tape and reconnect the plug.

Safety Page 2

In addition to disconnecting the main battery disconnect, following these simple and common sense rules can help maintain a safe and secure working environment. If ignored, you could be hurt, damage the powercycle, or void the warranty.

1. Never use harsh chemicals or gasoline as a cleaning solvent.
2. Use extra care when handling the batteries and any electrical components to eliminate any potential electrical shock.
3. Use the proper sized wrenches and sockets to avoid damage to nuts, other parts of the powercycle, and injury to yourself.
4. When loosening a tight or stuck nut, think about what would happen if the wrench should slip. Be careful; protect yourself accordingly.
5. Wear appropriate safety apparel; safety glasses and gloves.
6. Never use worn or damaged tools.
7. It is always good practice to keep your work area clean and organized.
8. Keep a fire extinguisher handy and be sure it is rated for electrical fires.
9. Keep a first aid kit available in the work area at all times

Other safety rules common in service areas have not been listed.

It is assumed that only properly certified service personnel will be making the repairs listed in this service manual.

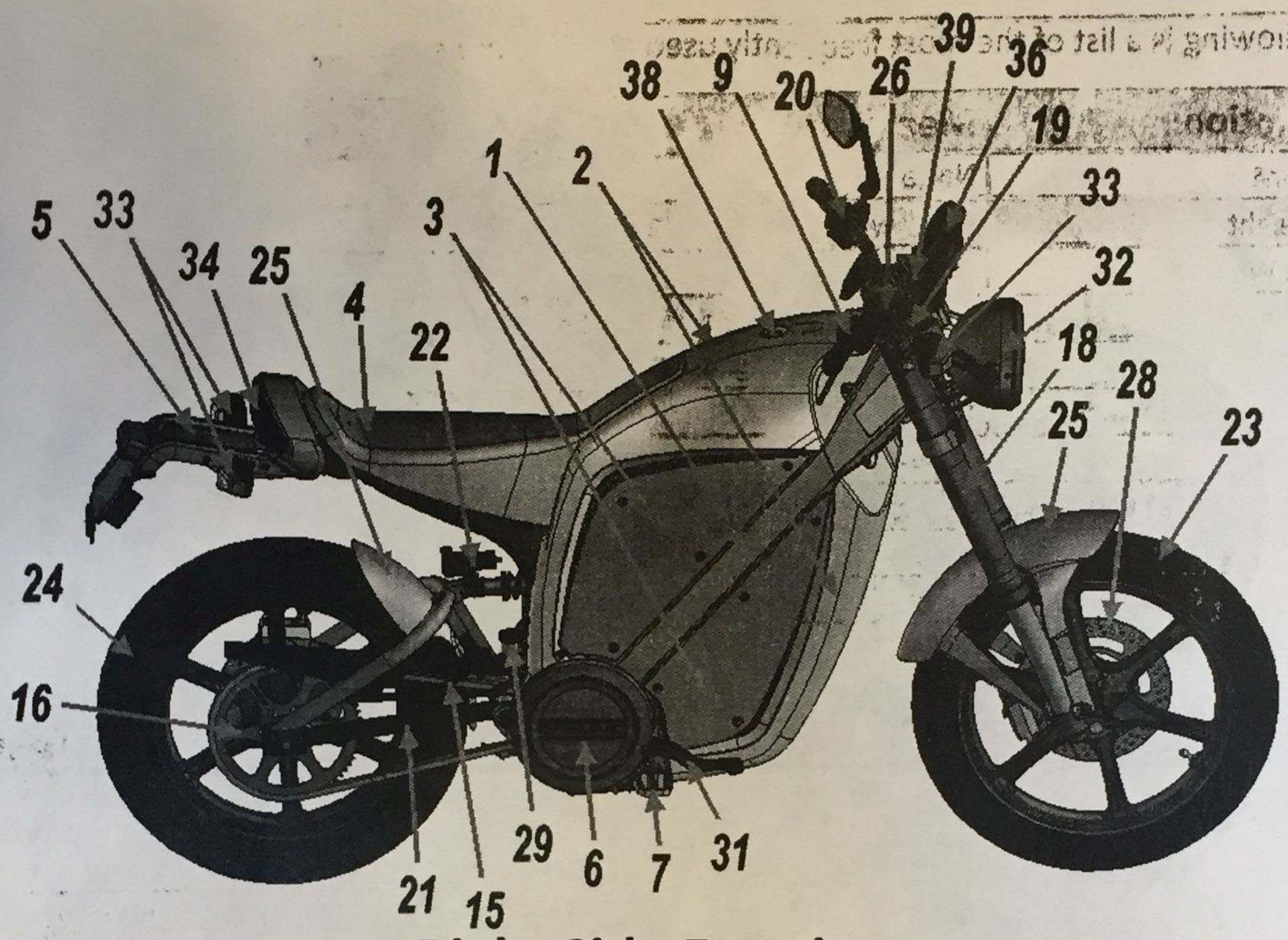
NOTE: some jurisdictions have special certifications to work with any on board lighting, brakes, or with batteries (US HAZMAT CLASS 9 ITEM).

Enertia Specifications

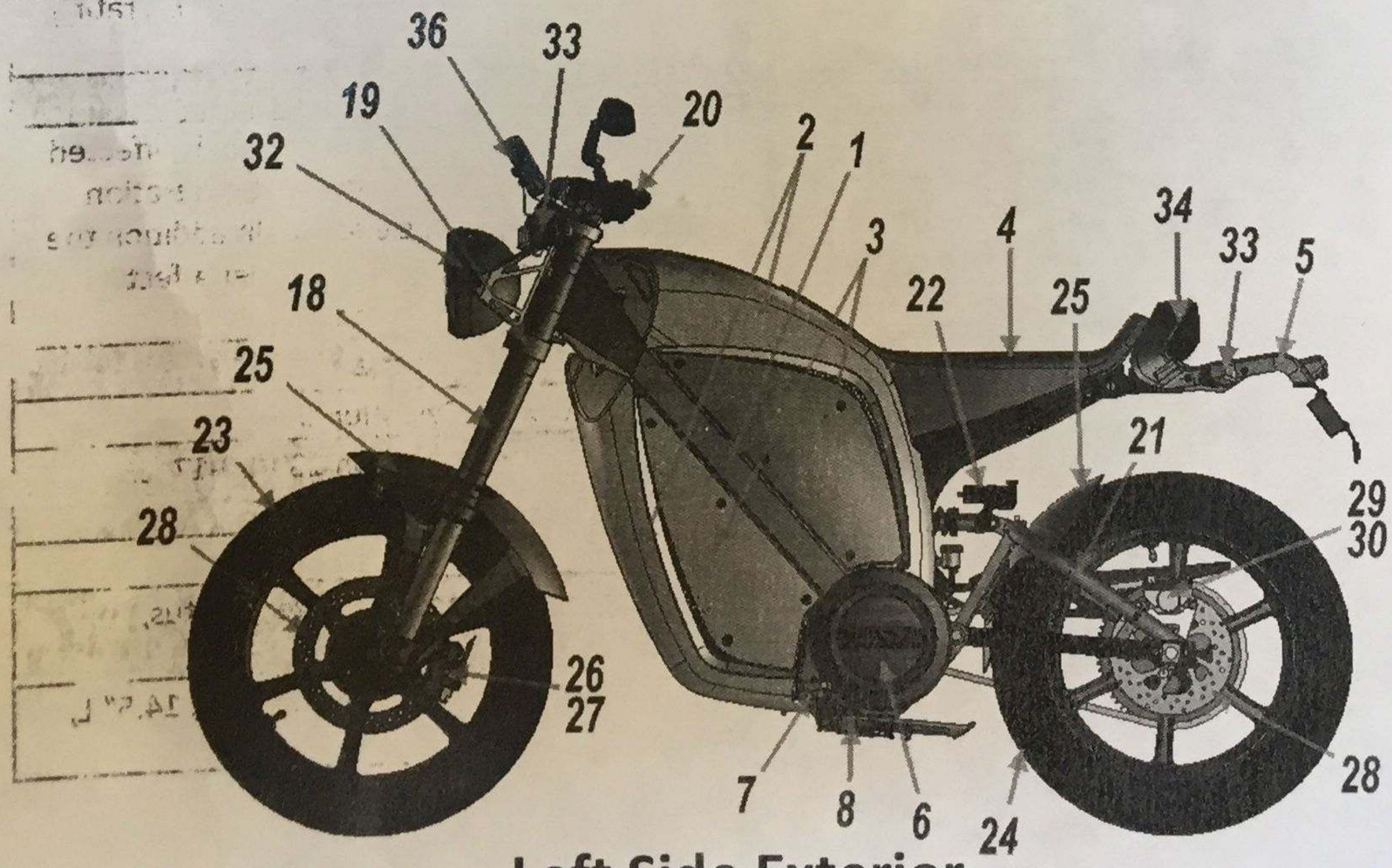
The following is a list of the most frequently used specifications and capacities.

Description	Measure
Emissions	None
Seat Height	32.0" with sag set at 1.38"
Vehicle Weight	324 lbs
Motor Type	Sealed, Brushless Permanent Magnet AC
Peak Motor Power	10 kW, 13.4 hp @ 4500 rpm
Peak Continuous Current	80 A
Max Torque	40 N-m, 29.5 ft-lb @ 0 -1450 rpm
Final Drive	Direct Chain Drive with Fixed Ratio (13:64) using 420 chain
Battery Type	Lithium Iron Phosphate
Battery Pack Capacity	3.1 kWh
Battery Pack Voltage	76.8 V (nominal)
Recharge Time	Approximately 4.5 hours. Actual charge times vary, depending on the state-of-charge batteries are at when charging begins and may be longer in very high-heat environments.
Battery Deep Discharge (80% Charge)	1,700 cycles to 80% capacity
Gross Vehicle Weight Rating (GVWR)	600 lbs: combined weight of Enertia (324lbs) and a maximum of 276 lbs rider and cargo combination
Tire Pressure	Front: 42 psi (cold) Rear: 42 psi (cold) - always check tire pressure rating on side wall
Max Speed	60 + mph
Average Range	45 miles. Actual results will vary. Like all electric vehicles range is affected by a number of factors including but not limited to; speed, acceleration, number of starts and stops as well as changes in elevation. In addition the weight of the rider, any payload and tire pressures will further affect range. For maximum range keep speed around 30mph.
Frame	Light Weight Extruded and Welded Aluminum Frame
Wheels	Front: 18 x 2.5 Cast Aluminum; Rear: 17 x 3.5 Cast Aluminum
Tires	Front: Avon 100/90-18, 56 V or equivalent; Rear: Avon 130/80-17, 65 V or equivalent.
Wheelbase	56.0"
Instrumentation	LCDs display speed, odometer, energy consumption, battery status, estimated range and system status
Storage Capacity	Under seat charge cord storage, optional BRAMMO saddle bags, 14.5" L, 10" H, 6" D (expands to 8" D)

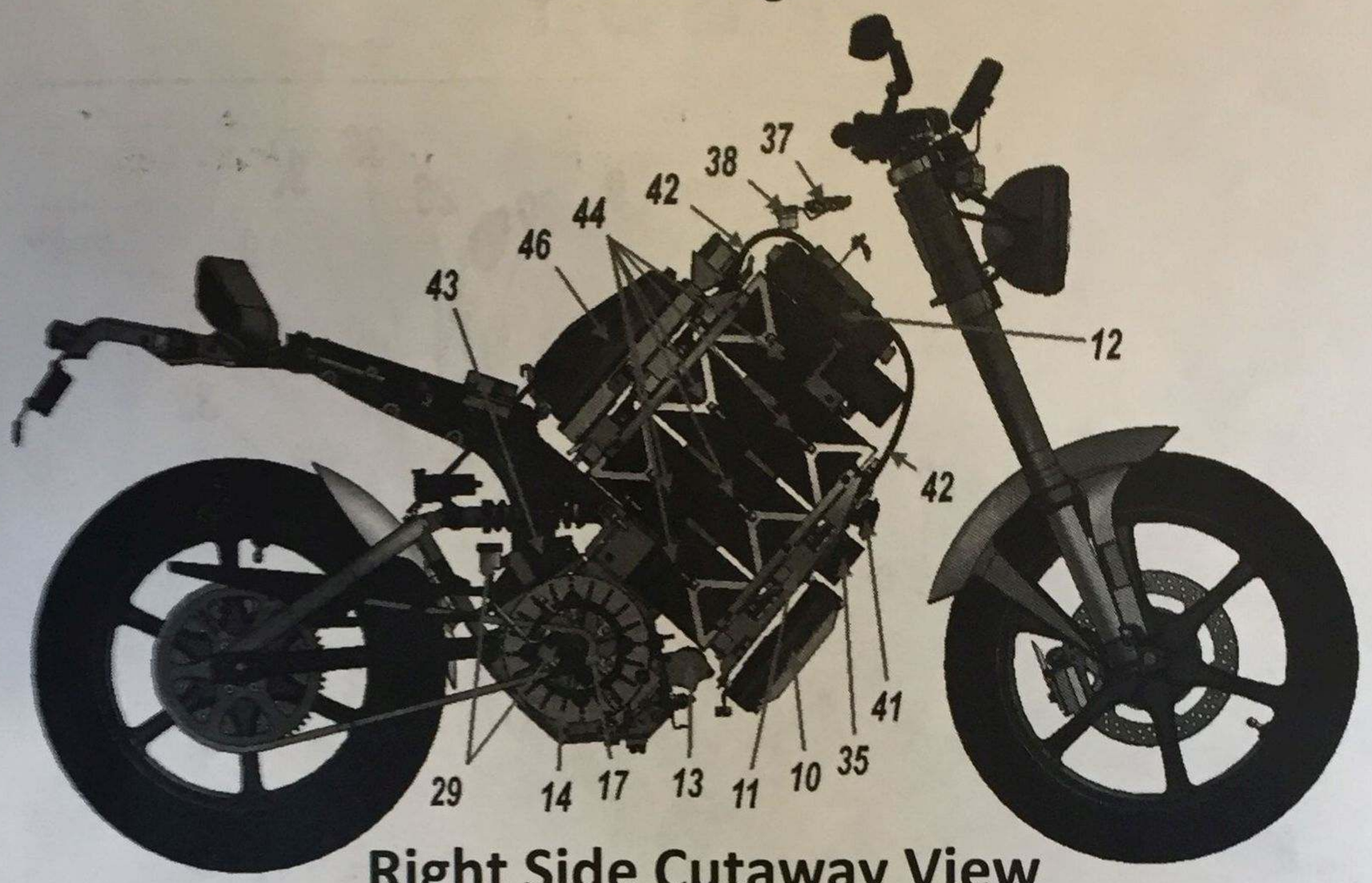
Parts List



Right Side Exterior



Left Side Exterior



Right Side Cutaway View

#	Description	Ch.	Part Number
1	Chassis	3.1	Not Available
2	Body Panel, Upper and Lower	3.2	*See Options List*
3	Body Panel, Side (all 4)	3.3	B0110-01CB0300
4	Seat Assembly	3.4	*See Options List*
5	Rear Shroud and Tail/Brake	3.5	B0110-01CB0500
6	Motor Covers, Left and Right	3.6	B0110-01CB0600
7	Foot Pegs, Left and Right	3.7	B0110-01CB0700
8	Kickstand Assembly	3.8	B0110-01CB0800
9	Throttle	4.1	B0110-01DE0100
10	Motor Controller w/ Heat Sink	4.2	B0110-01DE0200
11	Motor Controller (entire bracket)	4.2	B0110-01DE0201
12	VCU and Mounting Bracket	4.3	B0110-01DE0300
13	Contactor and Main Fuse	4.4	B0110-01DE0400
14	Motor	5.1	Not Available
15	Chain and Guard	5.2	B0110-01DM0200
16	Sprocket, rear	5.3	B0110-01DM0300
17	Sprocket, Front	5.3	Contact Brammo
18	Front Forks	6.1	B0110-01FS0100
19	Triple Clamp Assy. w/o Ignition	6.2	B0110-01FS0200
20	Handlebar Assy. w/o Mirrors	6.3	B0110-01FS0300
21	Swing Arm with Pivot Axle	7.1	B0110-01RS0100
22	Rear Shock	7.2	B0110-01RS0200
23	Wheel Assy, Front	8.1	B0110-01WH010
24	Wheel Assy, Rear	8.2	B0110-01WH0200
25	Fenders F & R	8.3	B0110-01WH0300
26	Brake System, Front	9.1	B0110-01BK0100
27	Brake Pads, Front	9.2	B0110-01BK0200
28	Brake, Rotor Set	9.3	B0110-01BK0300
29	Brake System, Rear	9.4	B0110-01BK0400
30	Brake Pad, Rear	9.5	B0110-01BK0500
31	Brake Pedal, Rear	9.5	B0110-01BK0501
32	Headlamp Assy	10.1	B0110-01LS0100
33	Turn Signal (Set)	10.2	B0110-01LS0200
34	Rear Brake Light	10.3	B0110-01LS0300
35	DCDC Converter	11.1	B0110-01EC0100
36	Dash w/ bracket	11.2	B0110-01EC0200
37	Exciter and Bracket	11.3	B0110-01EC0300
38	Body Power On Button	11.4	B0110-01EC0400
39	Ign, Immobilizer, Key Set	11.5	B0110-01EC0500
40	Key Replacement	11.5	B0110-01EC0501
42	Horn	11.6	B0110-01EC0600
42	Electrical Harness	11.7	Not Available
43	Motor Fan	11.8	B0110-01EC0800
44	Batteries	12.1	*See Options List*
45	Battery Charger	12.2	B0110-01BY0200

Parts List Page 3

ITEMS NOT AVAILABLE

Certain items on the Enertia are not replicable in the field. Among these are the chassis and seat strut, motor, and the wiring harness. If these items need repair or replacement please contact Brammo for instructions on replacement.

OPTIONS LIST

The Enertia is available with certain options and the part numbers will vary slightly for each option. The table below explains the options and the part numbers for each option.

Upper and Lower Body Panel (Set)

Color	Part Number
Subliminal Green	B0110-01030201
Graphite Silver	B0110-01030202
White Noise	B0110-01030203
Sunburnt Orange	B0110-01030204
Glacial Blue	B0110-01030205

Seat Assembly

Option	Part Number
Standard Seat	B0110-01030401
Premium Seat Upgrade	B0110-01030402

Battery – Each battery has an assigned number (1 of 6). Replacement batteries MUST be replaced with a battery of the same number.

Battery Number	Part Number
Battery # 1	B0110-01120101
Battery # 2	B0110-01120102
Battery # 3	B0110-01120103
Battery # 4	B0110-01120104
Battery # 5	B0110-01120105
Battery # 6	B0110-01120106

CONSUMABLES

Certain items on the Enertia will eventually wear out with use and will need to be replaced.

Part Description	Part Number
Tire, Front – Avon 100/90-18 (or equivalent)	B0110-01080101
Tire, Rear – Avon 130/80-17 (or equivalent)	B0110-01080201
Brake Pads, Front – Brembo	B0110-0109201
Brake Pads, Rear – Brembo	B0110-0109501
Chain – Size 420	B0110-0105201

Deciphering Part Numbers

To help decipher the code of the parts numbers, let's use the example of the replacement upper and lower body panels for an Enertia that is colored Sunburnt Orange, part number B0110-01CB024.
To break up the different components of the part number

Make	Model	Year		Variant	Section	Chapter	Identifier
B	01	10	-	01	03	02	04

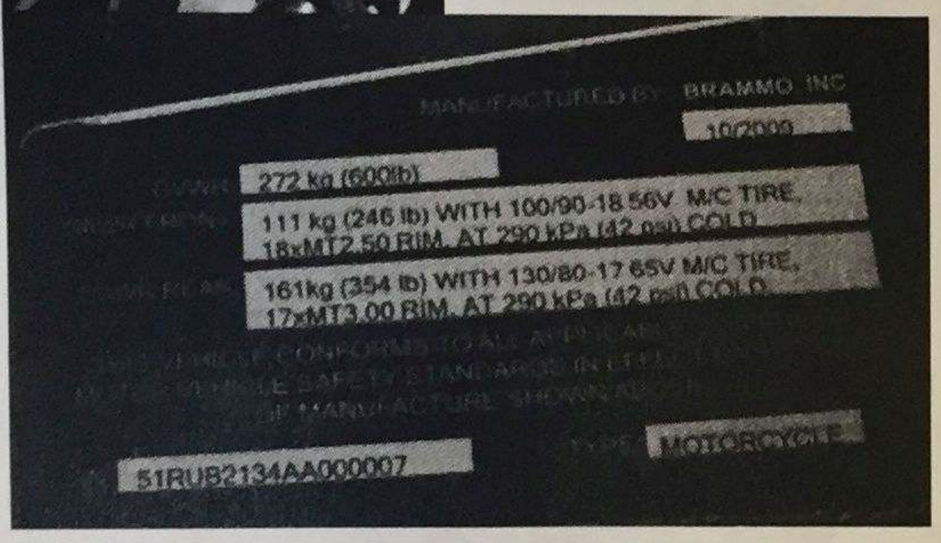
The make identifies B, for Brammo. All Brammo parts will have this.
Model indicates the model, where the Enertia will always be 01.
The year indicates the model year, which in this case is the 2010. These first three parts identify the vehicle the replacement parts will be going on. In this case the body panels are for a 2010 Brammo Enertia. On the right of the dash describe more in depth the exact part needed.
The variant indicates if there were any mid-year changes to the model, such as a redesigned bracket, etc, or if it is a limited edition, such as the LE series.
Group indicates the functional group the part falls under in the service manual. In this case the body panels are in the group CB, for Chassis and Body Panels.
Section identifies the service manual section that covers the removal and replacement of the part you are ordering, in this case, chapter 02 of the section 3.
Identifier specifically identifies any variants or options available to the part, in this case there are 5 different factory colors for the Enertia, and checking the options list (previous page) we see the color "Sunburnt Orange" is option 4.

The parts numbering system was designed so that if you have the part number, you can know exactly where to go in the service manual for instructions for the removal of the old part and the replacement with the new part.

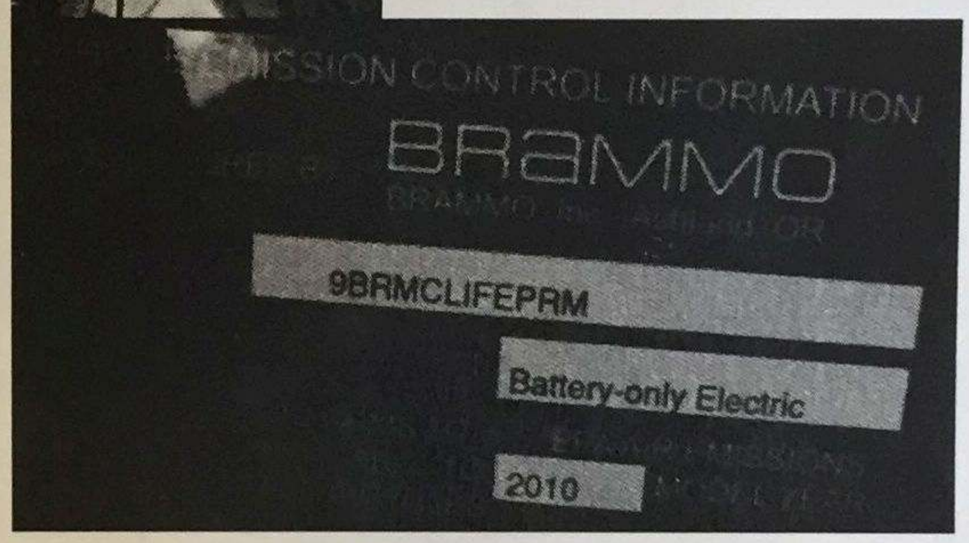
Vehicle Identification Number

The following describes the construction of Brammo Vehicle Identification Numbers (VIN). The VIN label can be found on the Enertia on the right side of the chassis, next to the head tube, and the code for deciphering the VIN at the bottom of this page. The emissions label is another label required by law that states the engine (motor) type and the emissions control system. The label is needed for registering the Enertia but will not be dealt with for service. It is attached to the chassis on left side of the Enertia.

VIN Label –
Detailed information about the vehicle including weight, tire size and date of manufacture.



Emission Control Label –
Required by law. Shows the engine (motor) type and emissions control system. Not needed in service.



VIN Decipher code

VIN POSITION	DESCRIPTION	CODES	
1, 2, & 3	WMI (assigned by SAE)	5-1-R	
4	Motorcycle type	U = Urban D = Dual Sport	S = Scooter T = Touring
5	Body Type	B= Base U= Upgrade	C= Custom
6	Engine Type	1 = Electric, 48 V 2 = Electric, 72 V 3 = Electric, 88V 4 = Electric, 96V 5 = Electric, 108V	6 = Electric, 120V 7 = Electric, 144V 8 = Electric, 220V 9 = Other
7 & 8	Net Brake Horse power	XX = XX HP Example: 01 = 01 HP	
9	Check digit	Per CFR 565.4	
10	Model Year	2009 = 9	2010 = A
11	Plant Location	A = Ashland	
12, 13, 14, 15, 16 & 17	Sequential Production number	000001 000002	

Ordering Parts and Tools

BRAMMO will provide all replacement parts, tools and consumables through "BRAMMO LIVE" (Details found in this book). Prior to ordering parts it is the responsibility of the Brammo certified technician to make the determination whether the part to be replaced will be covered by the BRAMMO warranty.

How to order warranty parts:

For those parts covered by the BRAMMO warranty the Brammo certified technician will need to have the VIN when ordering parts. BRAMMO will verify the VIN and ensure the Enertia is still under warranty and will ship the parts to the Brammo certified technician according to the service agreement. (Note: Batteries are a US Class 9 HAZMAT item and special shipping considerations must be made, so shipping times may be longer.)

For those parts not under warranty:

On the BRAMMO LIVE web site a complete list of Enertia parts, accessories, consumables and tools for servicing the Enertia can be found. The current price of the item will be listed. Upon ordering the parts the items will be shipped to the shop where the work will be performed, or to the address provided by the customer if the customer wishes to perform his/her own work.

Service Tools

What tools are needed:

A majority of the service procedures on the Enertia can be completed with only a metric Allen (Hex) wrench set, with a metric socket set needed occasionally. However, certain procedures require additional tools. The complete list of tools needed to perform any service procedure on the Enertia is below:

Spools of wire (various sized & colors)
Rack for holding wire
Wire strippers
Wire crimpers
Wire cutters
Heat shrink sleeve/tube
Heat gun
Ratchet
Deep well socket set - 4 to 19mm
22mm socket
27mm socket
Socket drive adapters
Hex head drivers 2mm thru 8mm
Wrenches:

8mm	14mm
10mm	17mm
11mm	19mm
12mm	
13mm	7/16"

T-Handled Hex Drivers

4mm	5mm

Metric Allen wrench set
Torque wrenches
Dead blow hammer
Set of taps (metric) and T-handle
Needle nose pliers
Duckbill pliers
Tape measure
Telescoping magnet (16lb.)
Snap ring tools (two sizes)
T25 torx driver
Screwdrivers (sets of flat head & Phillips)
Multimeter
Small air compressor
Loctite
Zip ties
Disposable Nitrile Gloves
Safety glasses
Tool box/cart
Powercycle stand
Extension cord for charging
12" Metal Ruler (Metric and Standard)
Ball Pein Hammer 12 oz.
Riveted Chain Link Kit – RK UCT 4060
10" Ratchet Drive Extension (1/2" drive)
Scissors
Vice-Grips (Medium, needle nose)
3/16" x 4" Drift Punch
Small Diagonal Cutters
Pem-Nut Removal & Installation Tools
Box Cutter & Safety Razors

A source list for purchasing the tools can be obtained by contacting BRAMMO.

Periodic Maintenance Chart

In order to keep the Enertia operating as efficiently as possible, be sure to perform these simple maintenance procedures in the interval suggested. If the Enertia is being operated in wet, muddy, or dusty conditions, check these more often.

The most important thing an owner can do to keep the Enertia running smoothly is to keep the chain clean and lubricated, and keep the chain tensioned properly.

All the information needed to perform the inspections can be found in the PM (Periodic Maintenance) section of this Service Manual.

Frequency / Inspection	Perform inspection every…	500 miles	1000 miles	4000 miles	8000 miles	Service Manual Chapter
Chain						1.1
Chain lubrication	Every 200 miles					
Chain adjustment		•	•	•	•	
Chain wear			•	•	•	
Brakes						1.2
Brake Fluid Level		•	•	•	•	
Pad Wear			•	•	•	
Rotor is smooth and round				•	•	
Brake line leak check		•	•	•	•	
Replace Brake Fluid	Every 2 Years					
Wheels & Tires						1.3
Tire pressure	Weekly					
Tire Tread Depth	Weekly					
Wheel/Tire Damage	Weekly					
Wheel bearings					•	
Steering & Suspension						1.4
Wipe Clean Front Forks	Weekly/as necessary					
Front Fork Operation					•	
Rear Shock Operation					•	
Steering Play					•	
Change Fork Oil/ Dust Seals	Every 12,000 miles					

Torque Spec Sheet

Below is a sheet that outlines the basic torque requirements for the fasteners on the Enertia.

	N-m	in-lb	ft-lb	
Fasteners into Aluminum	**Torque (N-m)**	**Torque (in -lb)**	**Torque (ft-lb)**	**Common Locations**
M3X0.5	0.7 - 0.9	6.2-8.0	.52-.66	
M4X0.7	1.2 - 1.6	11-14	0.9-1.2	
M5X0.8	4.9 - 5.5	43-49	3.6-4.1	Rear brake reservoir, motor cover plates, kickstand switch
M6X1	5.5 - 6.5	49-58	4.1-4.8	Frame rail bracketry (top and bottom), triple clamp, bracketry, front fender
M8X1.25	20- 21	173-181	14-15	Battery brackets, seat struts, motor mounts, ignition switch, upper clamp center pinch bolt.
M10X1.5	24 - 25	212-230	18-19	Footpeg brackets, kickstand mount
Fasteners into Brass Inserts				
M2.5X0.45	0.2 - 0.4	1.7-3.6	.15-.29	Lower body mesh, upper body mesh
M3X0.5	0.7 - 0.9	6.2-8.0	.52-.66	
M4X0.7	1.2 - 1.6	11-14	0.9-1.2	Upper body and side mesh panels
M5X0.8	4.9 - 5.5	43-49	3.6-4.1	License plate
M6X1	6 - 7	53-62	4.4-5.2	Seat latch
M8X1.25	11 - 12	97-106	8.1-8.9	Headlamp bucket
Fasteners into Steel Nuts				
M3X0.5	1.3-1.5	11-13	0.9-1.1	
M4X0.7	2.3-2.7	20-24	1.7-2.0	PEM nuts in sheetmetal, nyloc nuts
M5X0.8	4.7-5.3	42-47	3.5-3.9	PEM nuts in sheetmetal, nyloc nuts
M6X1	6.5-7.5	58-66	4.8-5.5	PEM nuts, seat strut nuts, jam nuts
M8X1.25	13-15	115-133	9.6-11	Swing arm jam nuts
M10X1.5	25-31	221-274	18-23	Shock mounts
Special Cases				
	18-22	159-195	13-16	Headset Top Bolt
	52-58	460-513	38-43	Front Axle Bolt, Rear Axle Nut
	12-16	106-142	8.9-12	Pivot Axle Nut
	0.9-1.1	8.0-9.7	.67-.81	Body Panel Mounting
	1.6-1.8	14-16	1.2-1.3	Rear Shroud Plastic Thread
	2.8-3.2	25-28	2.1-2.4	Turn Signal Nuts
	7.0-7.6	62-67	5.2-5.6	Rotor Screws
	.7-1.3	6-12	0.52-.96	Valve Stem Nuts
	19.7-20.3	174-180	14.5-15.0	All Caliper Mounting Bolts (M8)

Warranty Information

Product quality and customer satisfaction are critical ingredients to the success of BRAMMO. This information is designed as a tool to help you understand the warranty policy of the BRAMMO Enertia and how it applies to repairs.

Should a question or problem arise concerning service or warranty which is not covered in this section please contact BRAMMO immediately, prior to commencing repairs on the powercycle.

Warranty Qualifications

BRAMMO warrants the Enertia from any defects in material and workmanship provided the following criteria have been met:

- The vehicle must be removed from its shipping container and assembled by authorized personal.
- The vehicle must be serviced by Brammo certified technicians.
- The sales registration card must be completed and mailed to BRAMMO within 1 week of delivery to the original purchaser
    - Each subsequent owner must be registered with BRAMMO within 48 hours from the time in which the transfer of ownership took place

Warranty Periods:

- 12 Months general warranty of the FRU's (items not included are listed below).
- 24 Months for the batteries.
- 24 Months for the motor.

Warranty Exclusions:

- Normal maintenance and service, including, without limitation, adjustments to brakes, tire pressure and chain tension.
- The replacement of normal wear parts, including without limitation, all rubber parts, bulbs, lenses, wires, cables, fuses, tires, tubes, brake linings, and chains.
- Any repairs or replacements required as a result of accidents or collision.
- Any defects caused or repairs required as a result of abusive operation, negligence, accident, improper installation (modification) or inappropriate use as outlined in the owner's manual.
- Any products tampered with, modified, adjusted or repaired by any unauthorized party including the owner.
- Any damage caused or resulting from the use of inappropriate tools.
- Additional accessories installed by the owner which cause defect of additional parts.
- Any cosmetic damage to the surface or exterior.

Warranty Page 2

- Any damage caused by external or environmental conditions such as adverse weather, accidents, earthquake, etc.
- Any product received without appropriate model and frame serial number identification.
- Any product used for rental, racing, or demonstration purposes.
- Failure to use vehicle in the proper manner, maintenance, storage procedure in BRAMMO owner's manual (i.e. powercycle designed for "on the road use" and used as "off road vehicle").

Service Vehicle Record:

It is important that upon the completion of any repair completed on an Enertia powercycle that the authorized service agent complete and stamp the "Service Vehicle Record" in the Owner's Manual.

Brammo Live

BRAMMO engineered the Enertia to use the latest in high quality products. It is natural that BRAMMO would also offer service options that would follow the same high standards. To do so they created BRAMMO LIVE, and interactive portal that offers the user and the Brammo certified technician access to everything needed to operate and service the Enertia.

Some of the features currently available on the BRAMMO LIVE website are:

- Access to both the owner and service manuals
- Live troubleshooting & communication with BRAMMO
- Log maintenance performed on an Enertia
- Ordering of Enertia's, replacement parts, FRUs, tools and accessories
- Warranty Registration & Management

BRAMMO LIVE will require the use of Internet Explorer. Running the video chat session will also require the download of a free plug-in from Internet Explorer, which will automatically prompt the user to load upon the first launch of the video chat session.

Note: Video conferencing requires the use of a microphone, speakers and webcam. The placement of the webcam on a tripod or other equivalent mobile stand will aid in real time assistance of repair work.

Viewing of service and owner's manual documentation will require Adobe Reader which is readily available for free at http://www.adobe.com.

Privacy note: To ensure the users privacy BRAMMO LIVE will only deal with relevant powercycle information.

1.1 Chain Maintenance

1.1.10—Overview

More than any other component on the Enertia, a little maintenance will go a long way to extend the life of the chain. The chain maintenance is simple – keep the chain clean and lubricated. A chain that is not maintained will last only a couple thousand miles and you may need to replace not only the chain, but the front and rear sprockets as well, which can be a difficult and costly process. When the chain is simply kept clean and lubricated it can last for many thousands of miles.

1.1.20—Diagnosing a Problem

Telltale signs that the chain may need maintenance are usually very apparent before they become critical. Things to look for are: wear on the teeth of the rear sprocket, visible rust on the chain, a sagging (loose) chain, and excessive chain noise.

If the front or rear sprocket are visibly worn they should be replaced in order to keep the Enertia running at top performance. A worn sprocket set can noticeably degrade the riding experience.
To replace the rear sprocket follow the instructions in chapter 5.3.
To replace the front sprocket (which will wear less than the rear) please contact Brammo for assistance.

1.1.50—Setup and Tools

If the chain only needs to be lubricated, no tools are necessary, but a motorcycle stand is helpful.

If the chain needs to be adjusted, the following tools are needed:

- A 10 lb weight with a wire hook
- Carpenter's square (Speed square) or other 90 degree straight edge with measurement markings
- 13mm open end wrench
- 27mm socket
- Torque wrench (500 in lb capacity)

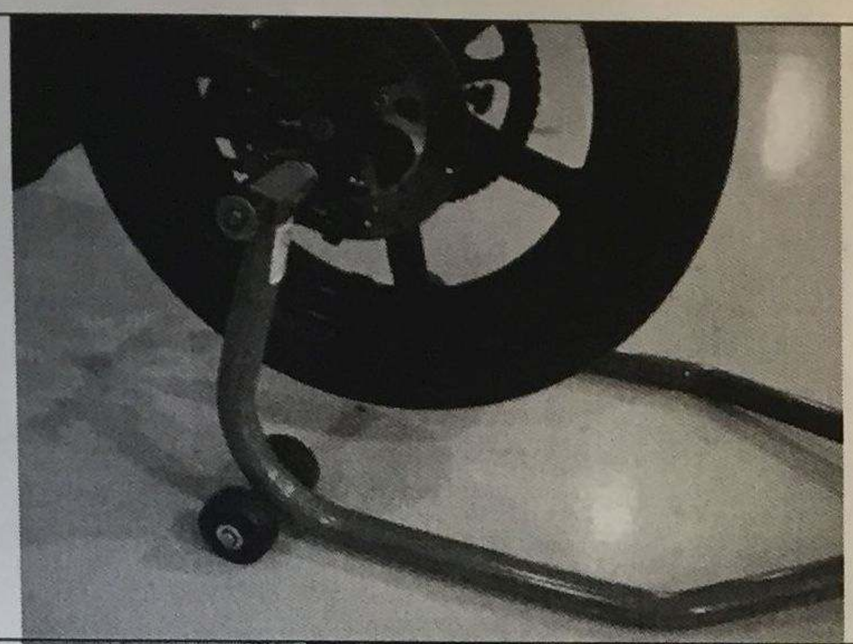
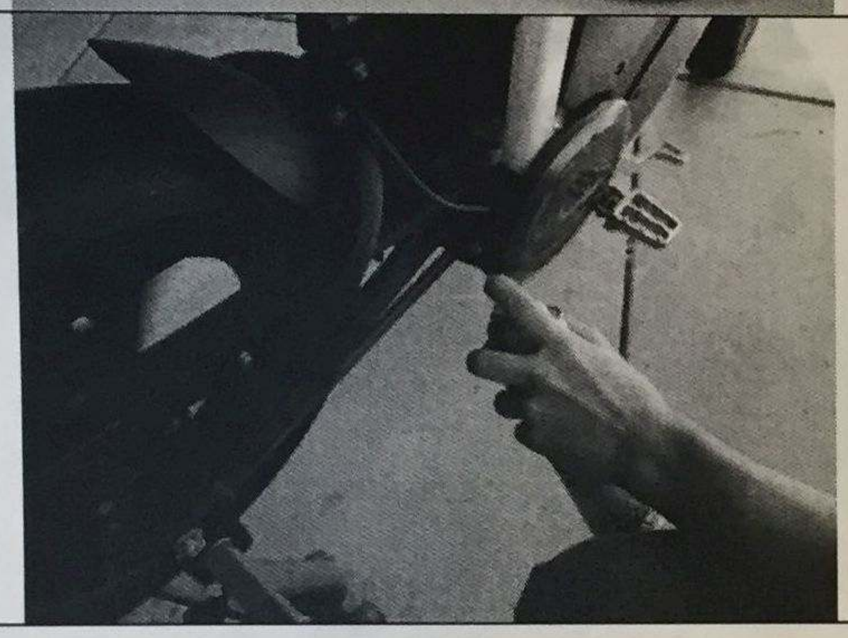
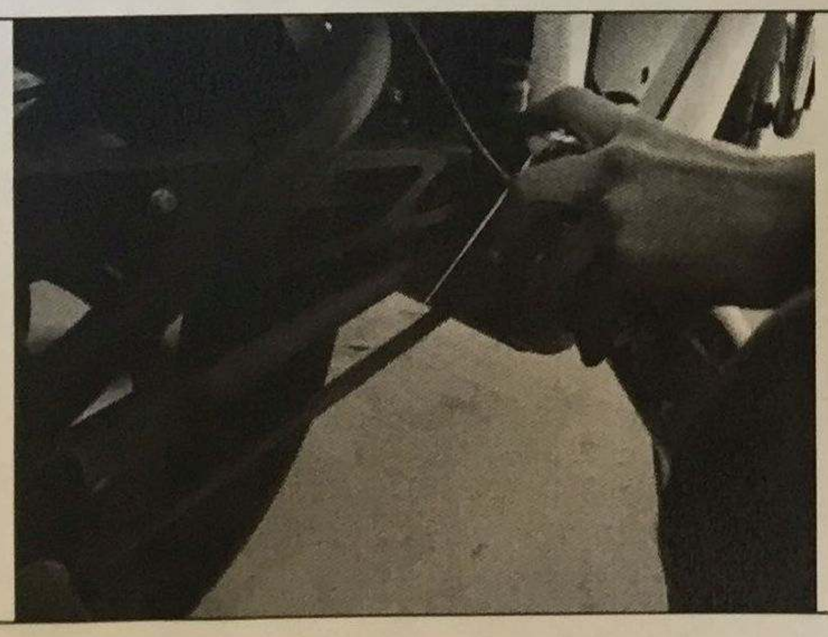
If chain replacement is necessary, the following tools in addition to the above tools are needed:

- Riveted chain link tool
- Telescoping 16lb magnet (to help pull the chain through the front sprocket area)

1.1.55—Materials Required

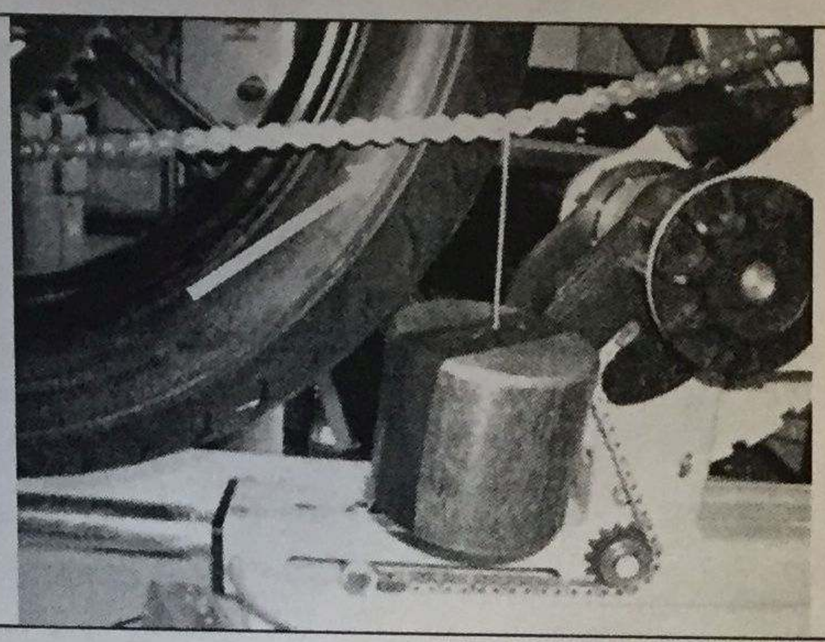
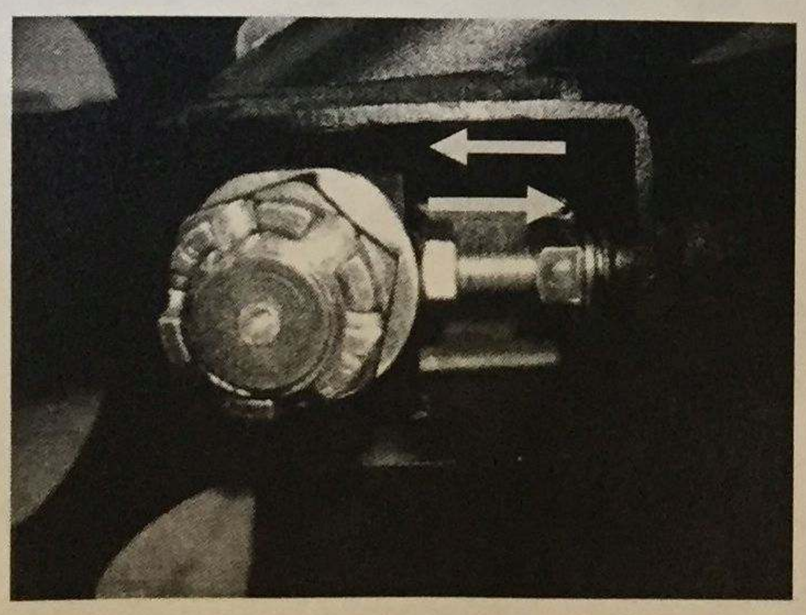
- New cotter pin for castellated nut
- Rags and a soft brush or old toothbrush to clean chain
- O-ring friendly chain cleaner
- O-ring friendly chain lubricant

1.1.71— Chain Lubricating Procedure

	• Lift the rear wheel using motorcycle stand if using a stand. This is the recommended since it makes the procedure much easier. If not using a stand, the chain rotation will be performed by rolling the bike forward or backward.
	• While rotating the rear wheel, spray the chain cleaner evenly over the chain until the chain has made at least one full revolution.
	• Using a clean rag, wipe the excess grime from the chain and rear sprocket while turning the rear wheel until the entire chain has been wiped clean. • Make sure to clean the area between teeth on the rear sprocket also. If necessary, use a brush.
	• While turning the wheel, evenly spray the chain as it runs across the sprockets for at least one full chain revolution, several revolutions is recommended. • The chain lubrication process is now complete.

1.1 Chain Maintenance

1.1.72— Chain Tensioning Procedure

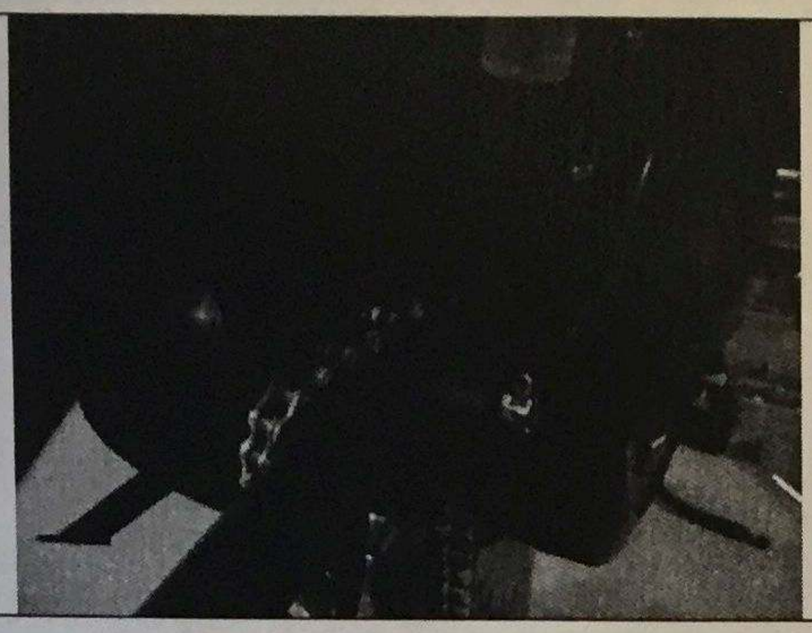
	• Lift the rear wheel using motorcycle stand. • Hang a weight on the chain at the point where the edge of the tire intersects the chain as shown. • If a weight is unavailable, use a fish scale or other device to apply 10 lbs of force to the chain.
	• Place the square with one side flush on the underside of the swing arm, and slide it until the other edge is lined up to where the weight is hanging from the chain. • The pins of the chain should be about 3.75 inches (9.5 cm) from the swing arm if the Enertia is supported by it's kickstand, or 3.5 inches (8.9 cm) is supported by a stand (not a motorcycle jack, but a stand that holds the rear axle) • If the chain is properly tensioned, you are done. Otherwise continue to retension the chain.
	• Start by using pliers to remove the cotter pin from the castellated nut and throw away the cotter pin. • Use a 27mm socket to loosen the castellated nut. One or two turns is all that it needs. • Use the 13mm wrench to loosen the jam nut. • Use the 13mm wrench to adjust the chain tensioning bolt as needed. Make sure the head of the bolt is on the axle block and not on the axle washer. • When the chain is at the correct tension, tighten the jam nut.

	• Use a tape measure to determine the distance from the center of the swing arm pivot to the center of the rear axle on the right (chain) side. • Adjust the chain tensioning nut on the LEFT side of the Enertia until the pivot/axle distance is the same as the right side. • Tighten the left jam nut.
	• Use the 27mm socket and a torque wrench, tighten the castellated nut on the rear axle to 486 in lbs +/- 26 in lbs (40 ft lbs +/- 2 ft lbs). • Once proper torque has been reached very slowly tighten the castellated nut until you can instert the cotter pin horizontally from the back of the Enertia towards the front. • Use pliers to bend one end of the cotter pin over the face of the axle towards the back of the Enertia. • The chain tensioning is now complete.

1.1.73— Chain Replacement Procedure

	• Cut the new chain so the length is between 61 7/8" and 62".
	• Lift the rear wheel using motorcycle stand.
	• Using the process found in the chain tensioning procedure, loosen the chain and move the axle as far forward as it will go.

1.1 Chain Maintenance



- Using the directions that came with your riveted chain tool, remove the old chain.
- Feed the new chain over the top of the front sprocket so there is an inch or so of free chain at the end.
- Use the telescoping magnet to draw the new chain out from the front sprocket until you can grasp it with your fingers.

- Using the directions that came with your riveted chain tool, install the new chain. (the axle may need to be moved forward to allow for enough slack).

- Tension the new chain.
- Lubricate the new chain.

- The chain replacement is now complete.

1.2 Brake Maintenance

1.2.10—Overview

The brakes are a very critical part of the Enertia. Without working brakes, or with brakes that are not in good condition, stopping becomes much more difficult. While the brakes require very little actual maintenance, it is always a good idea to inspect the brakes frequently to make sure nothing is wrong with the brakes. Brake inspections take very little time and little or no skill to perform.

1.2.20—Diagnosing a Problem

Telltale signs that something is wrong with the brakes are as easy as "that doesn't look right." The best check you can do before you ride the Enertia is that both brakes have brake pad left, the rotors are smooth, the brake fluid is at the right level in the reservoir, and the brake feels firm.

1.2.50—Setup and Tools

Brake inspections require no tools. However, if the front brake needs more fluid, a #2 Phillips screwdriver is needed.

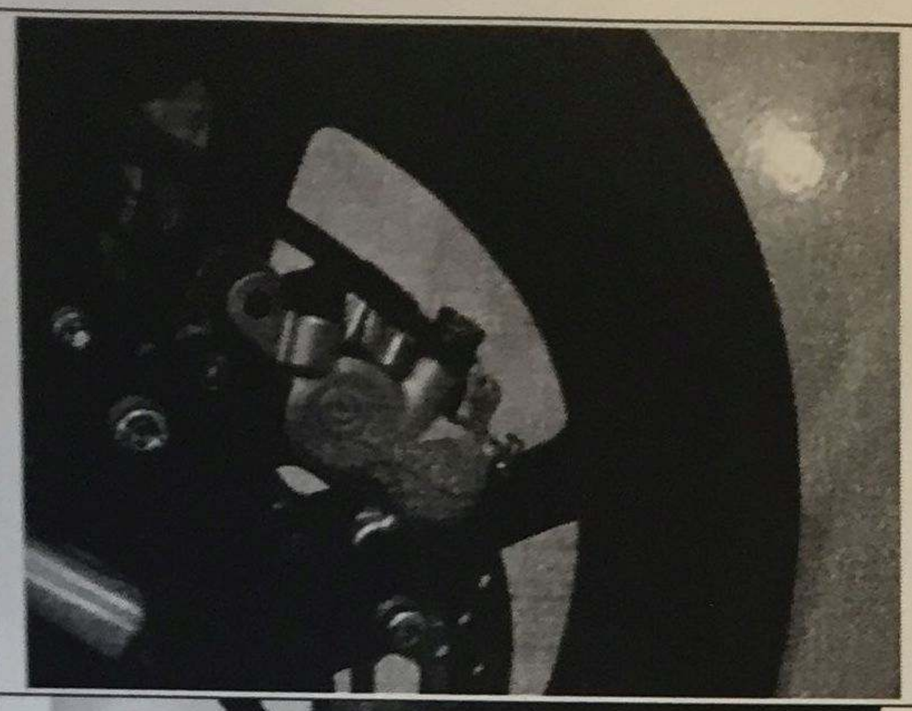
1.2.55—Materials Required

Brake inspections require no materials. If either front or rear brake reservoirs need fluid, DOT 4 brake fluid will be needed.

1.2.70—Maintenace Procedures

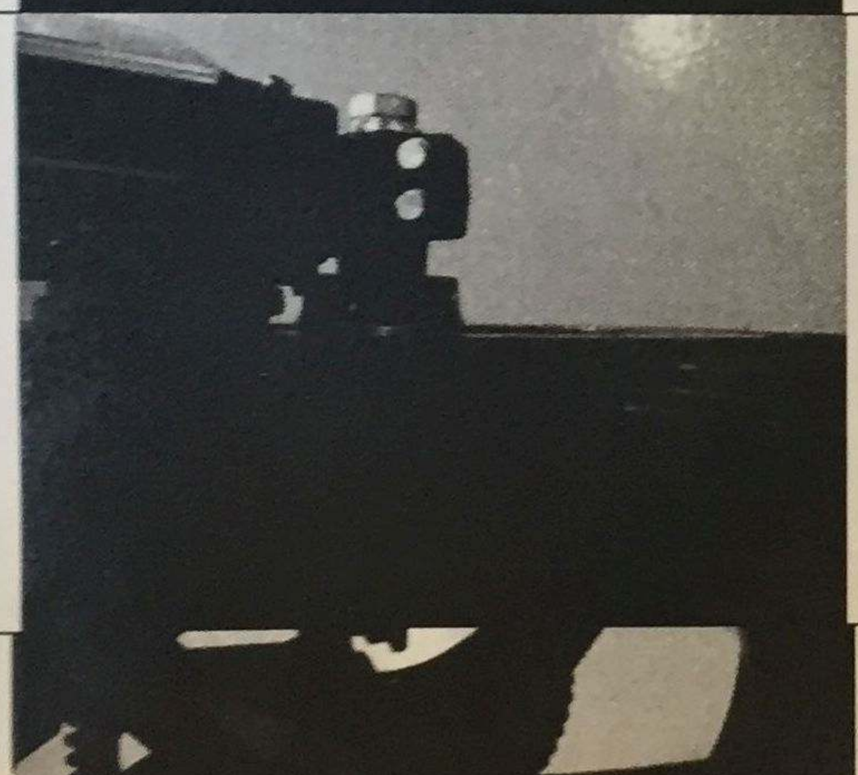
- Start the brake inspection check by looking at the front brake reservoir. Is the brake fluid level between the "Min" and the top of the sight window?
- If the reservoir needs fluid use a #2 Phillips to unscrew the reservoir cap and add DOT 4 brake fluid until the level is just below the top of the sight window.

1.2 Brake Maintenance

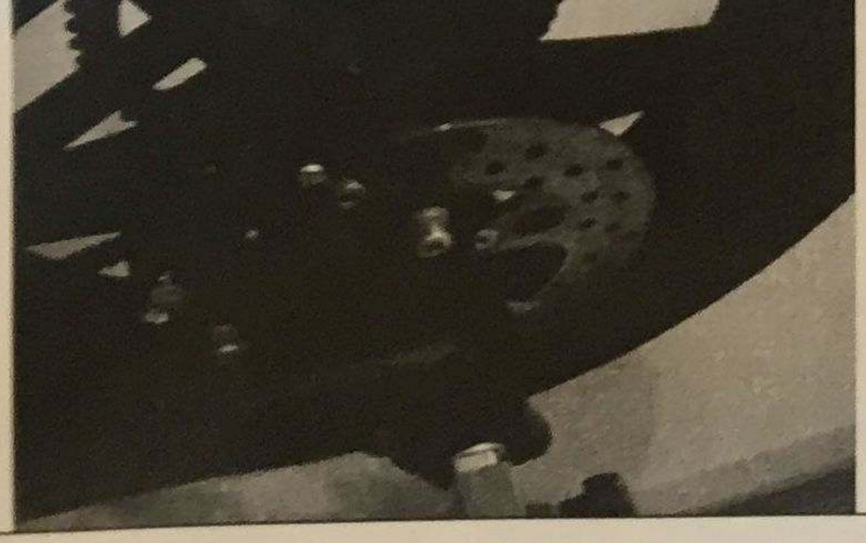


- Squeeze the front brake lever to make sure it is firm and that the brake is working.
- Follow the brake line down to the caliper, checking that the line is free of damage or kinks, and that there are no leaks (especially near the fittings.)
    - If the front brake lever, master cylinder, line, or calipers are damaged in any way, the system should be replaced per instructions in the service chapter 9.1.

- Check that the front brake pads have at least 1/8" of pad material left of both sides.
    - If less that 1/8" of brake pad remains, it's time to replace the pads per the instructions in the service chapter 9.2.



- Check that the front brake rotors are smooth all the way around on both sides. Also look at the rotor edge on to make sure the rotor is not warped.
    - If the front rotor is damaged in any way, the rotor should be replaced per instructions in the service chapter 9.3.



- Repeat the previous procedures for the rear brake.
    - The service chapter covering the rear brake system is 9.4
    - The rear brake pads are covered in 9.5
    - The rear brake rotor is in chapter 9.6

1.3 Wheel and Tire Maintenance

1.3.10—Overview

The wheels and tires of the Enertia should be checked regularly to ensure safe and enjoyable riding. Riding with damaged wheels or tires can be dangerous, and making sure the tires and wheels are in good condition will also ensure that the Enertia will get as many miles per charge as possible.

1.3.20—Diagnosing a Problem

Telltale signs that something is wrong with the wheels or tires are as easy as "that doesn't look right." Checking that the tires and wheels look like they are in good condition can be performed in just a couple seconds and can be combined with the brake inspection.

The wheels are a custom Brammo design and replacements will need to be ordered through Brammo Live.
The front tire is an Avon 100/90-18 (or equivalent) and the rear tire is an Avon 130/80-17 (or equivalent) and can be purchased wherever motorcycle tires are sold, or can be ordered through Brammo Live.

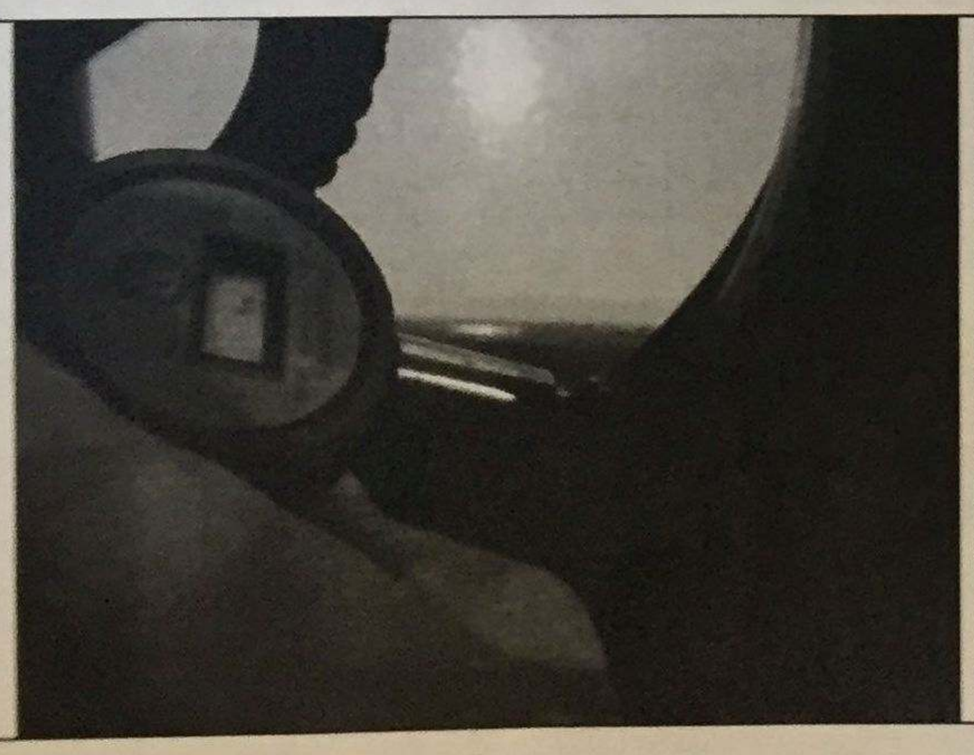
1.3.50—Setup and Tools

- Tire pressure gauge
- Small ruler or tire depth gauge

1.3.55—Materials Required

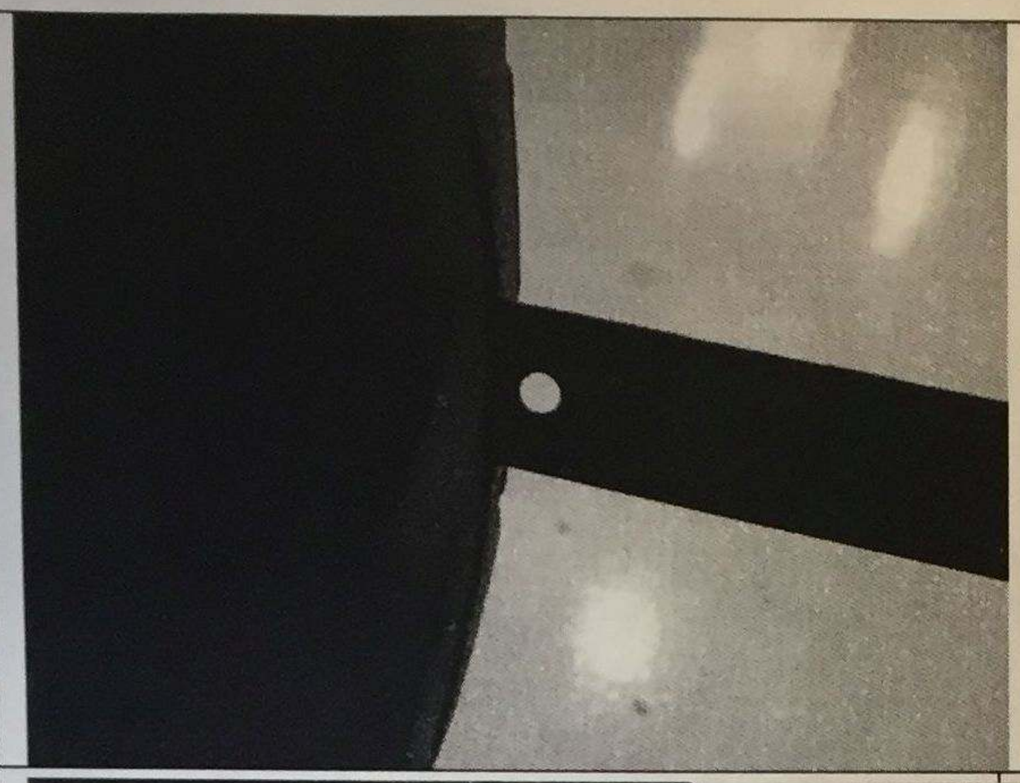
- Compressed air or a tire pump (if a tire is low on air pressure)

1.3.70—Maintenace Procedures

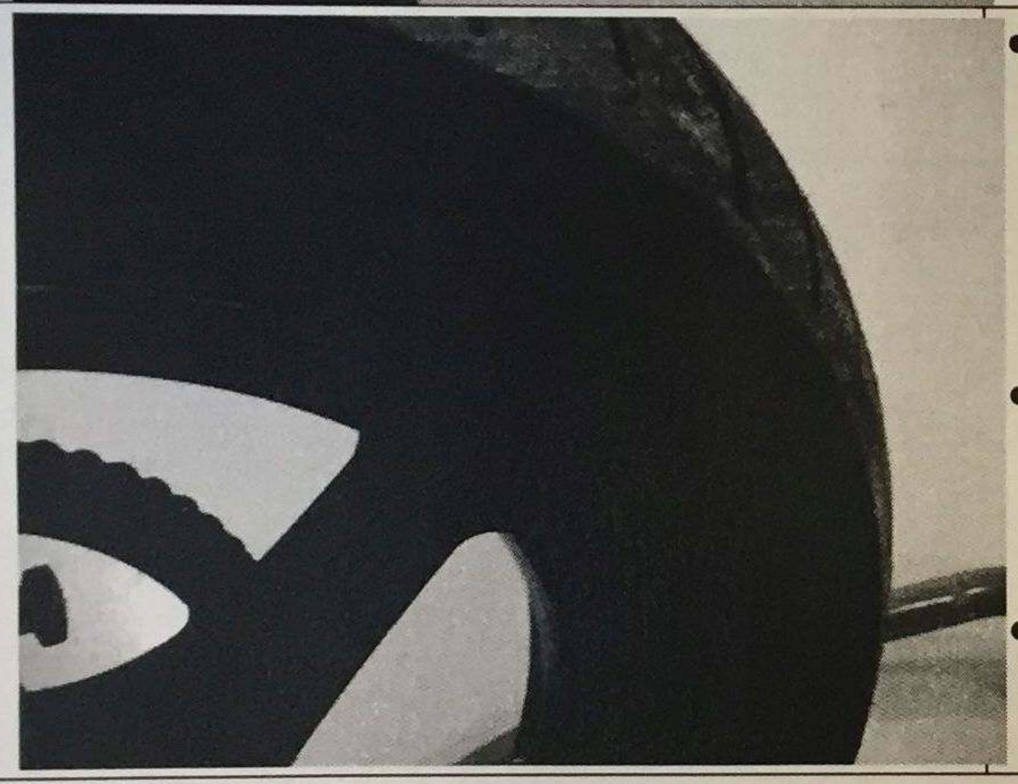


- Check the tire pressure of both tires.
- Make sure they both are inflated to the pressure recommended on the sidewall of the tire. Tires with low pressure will diminish the range and performance of the Enertia.

1.3 Wheel and Tire Maintenance



- Check the tread on both tires. Ensure each tire has at least 1/16” tread depth (almost 1/4” depth shown) and that both tires are free of cracks and there are no chunks of rubber missing, especially on the sidewall.



- Inspect the wheels, both along the rims, the spokes, and the center. Look for cracks in the paint, or dents in the rim. If there is any visible damage, or you suspect there may be damage that is not visible, Brammo recommends replacing the wheel.
- Instructions on replacing the front wheel can be found in chapter 8.1 and the rear wheel in chapter 8.2.
- The wheel and tire inspection is now complete.

1

1.4.10—Overview

While the steering and suspension is very unlikely to cause any issues, it may degrade slowly without the owner's notice. The inspection takes only a minute or two and only needs to be performed every 8000 miles.

Maintenance on the front forks should be performed every 20,000 miles per the fork manufacturer's recommendation.
For the most up to date fork maintenance procedures visit Marzocchi's website at http://www.marzocchi.com and click "moto", and download or view the instructions for the Shiver 45 Factory Works fork. The rework kit may be ordered through Marzocchi or through Brammo part number B0110-01FS0101

1.4.20—Diagnosing a Problem

Telltale signs that something is wrong with the steering or suspension is that something does not quite feel right. The steering will manifest problems by getting sticky or by making soft clicks as the bearings start to wear out. If there are any problems with the forks or shock it will probably start to leak a little.

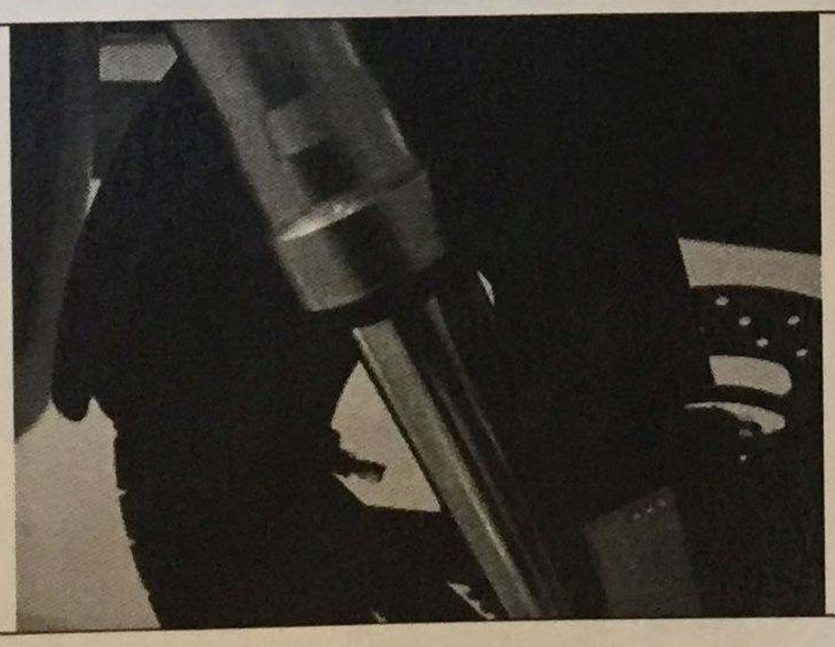
1.4.50—Setup and Tools

- No tools are needed.

1.4.55—Materials Required

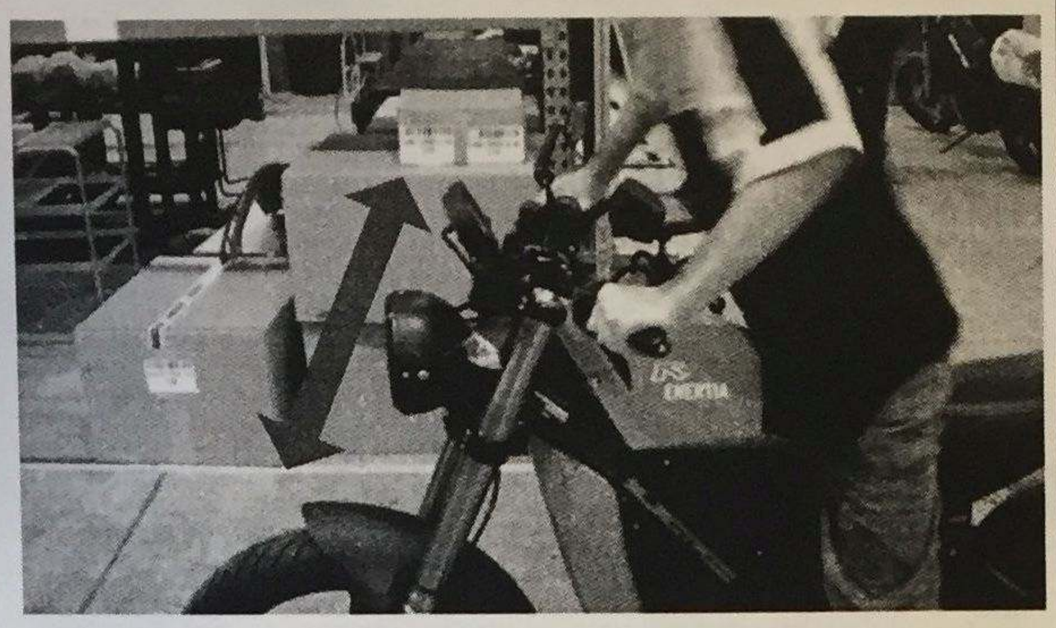
- No materials are needed.

1.4.70—Maintenace Procedures

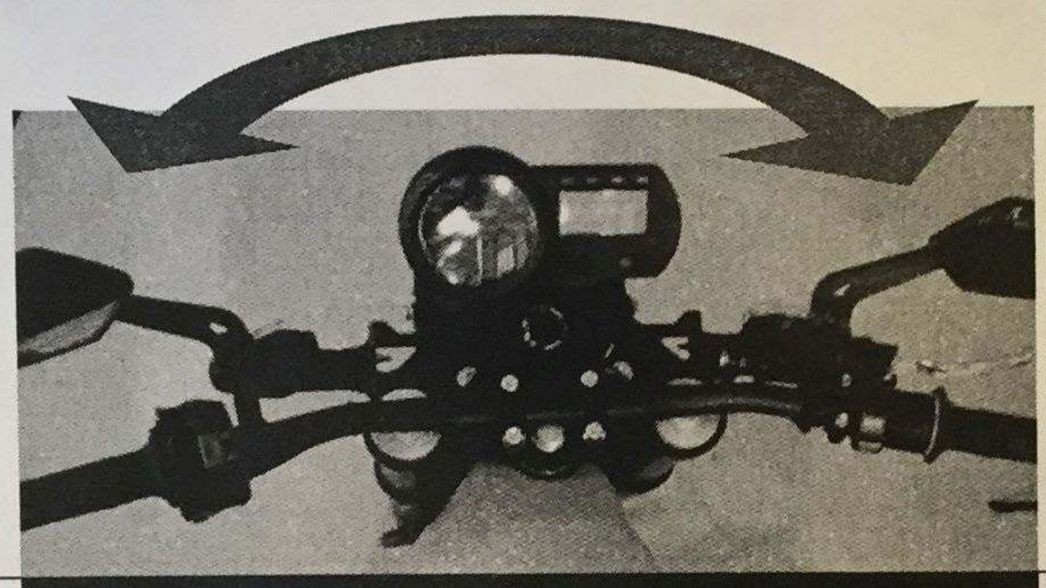


- Inspect the front forks to make sure they are free of dents or large deep scratches or nicks and that there is no oil leaking from the forks.

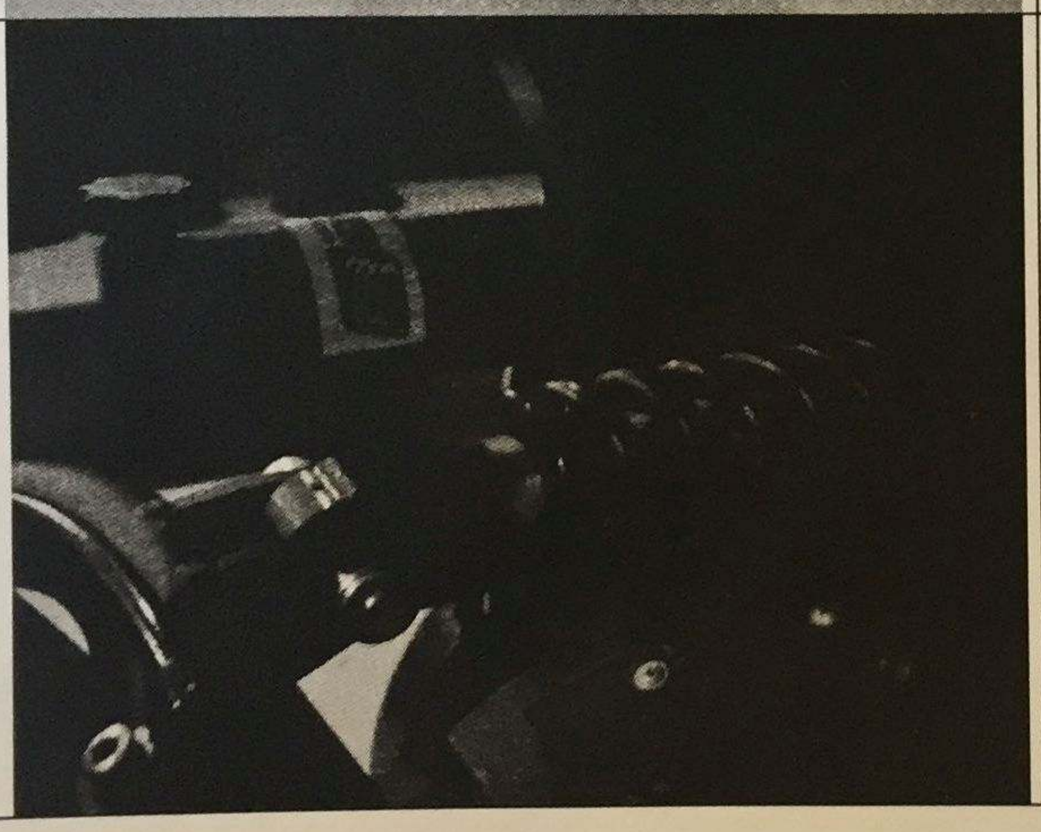
1.4 Steering and Suspension Maint.



- Sit on the Enertia with the kickstand up and firmly apply and hold the front brake.
- Quickly and firmly push down on the handlebars to compress the front forks. Make sure the motion is smooth and quiet, with no jerks or clicks in the motion.
  Do this 3-4 times.
- Also listen that there is no clicking from the head tube area.



- Turn the handlebars quickly back and forth a couple of times, making sure the motion is even and smooth.



- Sit down on the seat hard a couple of times to compress the rear shock. Check that the motion is smooth and even. Do this 3-4 times.
- Put the kickstand down and get off the Enertia and visually inspect the rear shock that there is no oil leaking and that the shock is free of cracks and dents.

- The steering and suspension inspection is complete.

	Chapter Title	1.5 Bulb Replacement

1.5.10—Overview

All the lights on the Enertia are standard bulb sizes and a replacement bulb can be obtained at a standard automotive supply store such as NAPA, AutoZone, or O'Reilly/Shucks/Kragen/Checker. This chapter covers the replacement of the bulbs only; if the entire light fixture needs to be replaced please see the LS – Lighting System section of this service manual.

1.5.20—Diagnosing a Problem

The most probable cause of a light on the Enertia not working is a burned out bulb. Since the bulbs are very inexpensive and easy to replace, it is recommended that before replacing entire light fixtures. This will resolve the issue most of the time.

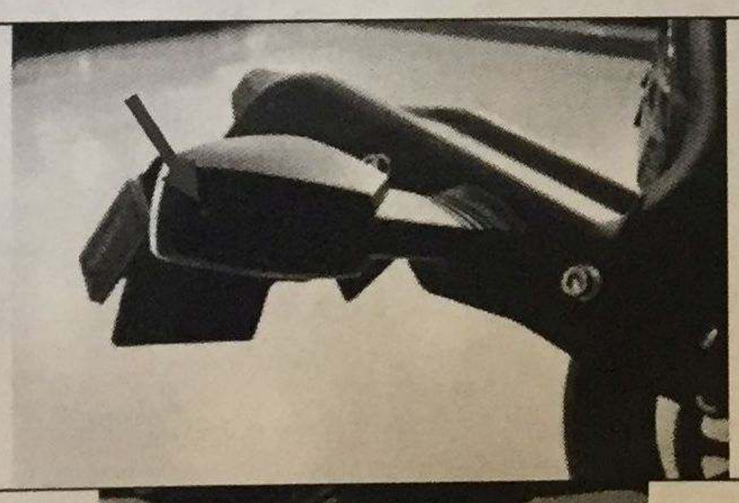
1.5.50—Setup and Tools

- #2 Phillips screw driver (Turn signals and tail/brake light)
- 2.5 mm Allen wrench (Headlight)
- 3.0 mm Allen wrench (license plate lamp)

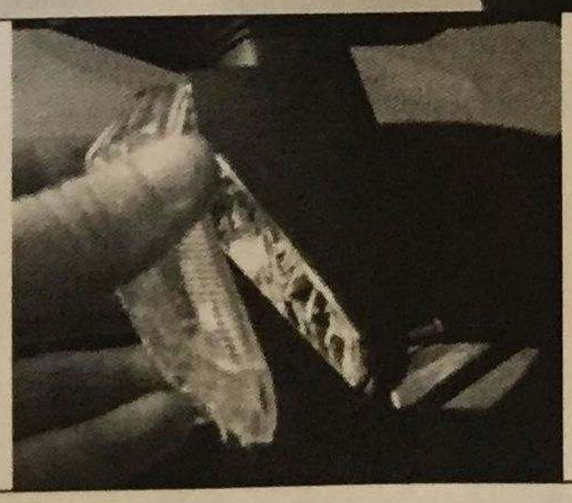
1.5.55—Materials Required

- New bulbs for the light you are replacing.
  - Turn Signal bulb – 916NA
  - Headlight bulb – 9003 or H4
  - Tail/Brake light bulb – BP1157
  - License Plate Lamp – 11004

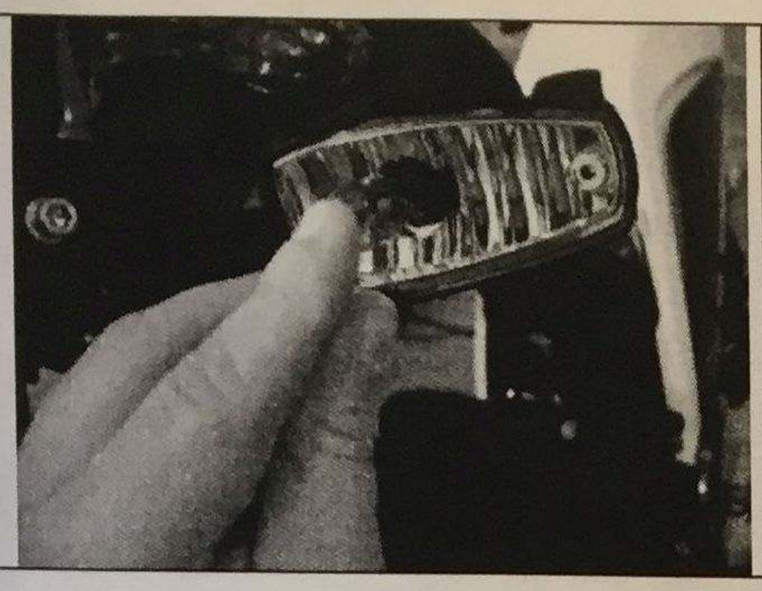
1.5.71 – Turn Signal Bulb Replacement



- Start by using a Phillips screw driver to unscrew the screw holding the clear cover on the turn signal.



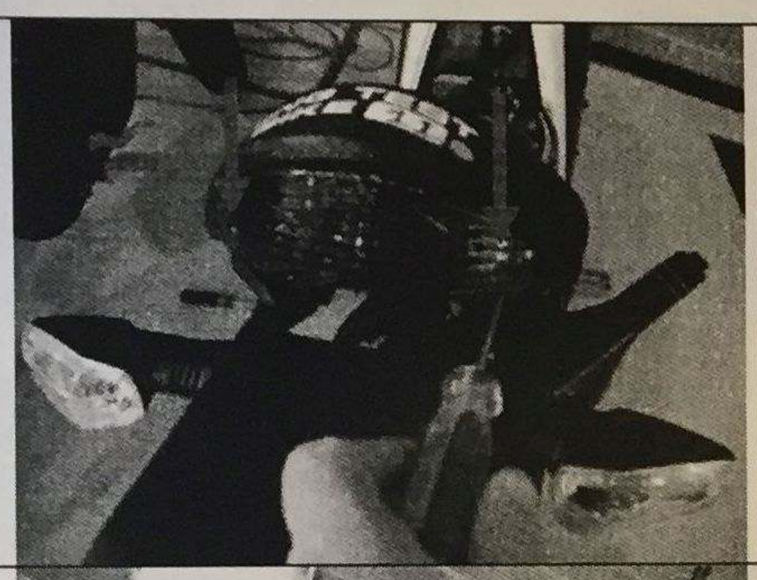
- Remove the clear plastic cover and remove the bulb by pulling it straight out without twisting.



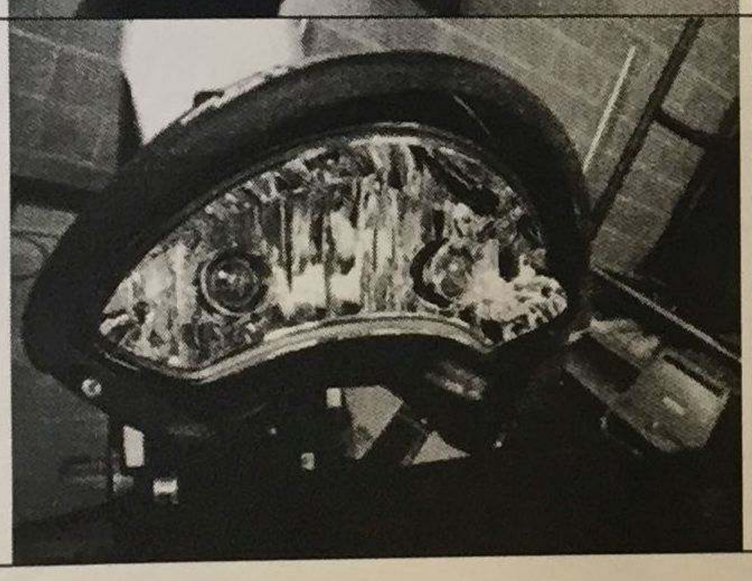
- Insert the new bulb by pushing it straight in.
- Replace the cover and insert the screw into the back and tighten.

- Turn signal bulb replacement is now complete.

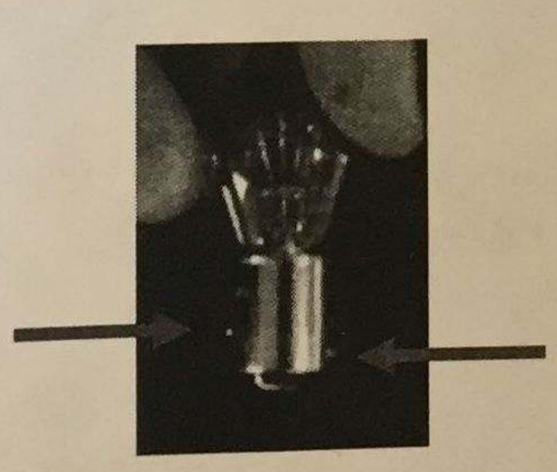
1.5.72 – Tail/Brake Light Bulb Replacement



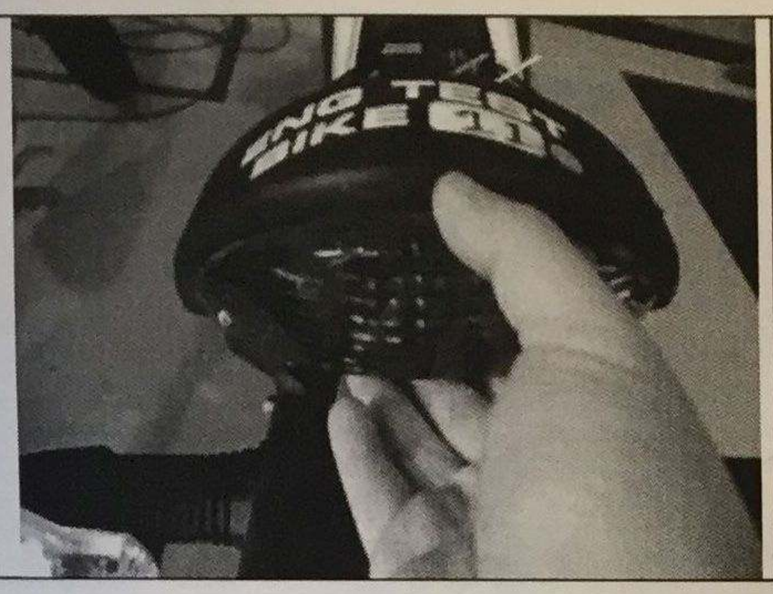
- Using a Phillips screw driver, remove the two screws that hold the lamp cover.
- Remove the lamp cover.



- To remove the bulbs, you must push the bulb IN then twist about 1/8 turn counter clockwise.



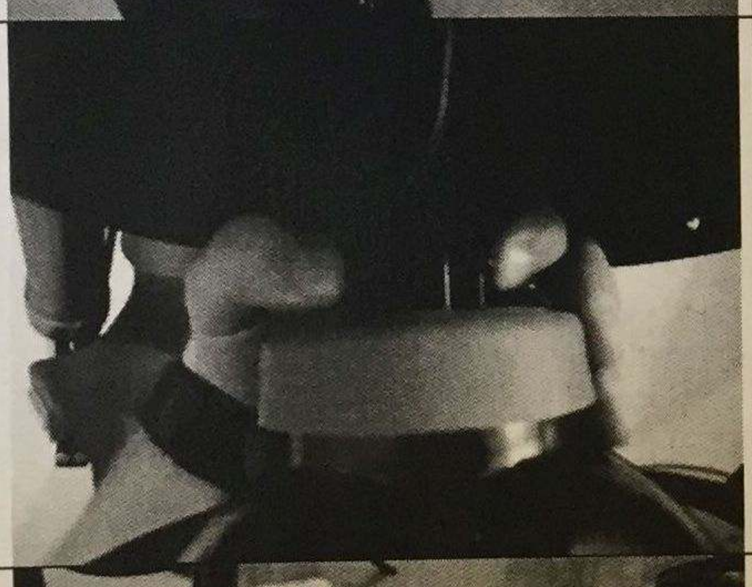
- To install the new bulb, insert the new bulb, push it in all the way (you should feel the spring) and turn about 1/8 turn, then let it up.
- Notice the two offset nubs at different heights. When inserting the new bulb, if it does not want to seat properly, take the bulb out, rotate it 180 degrees, and try again.



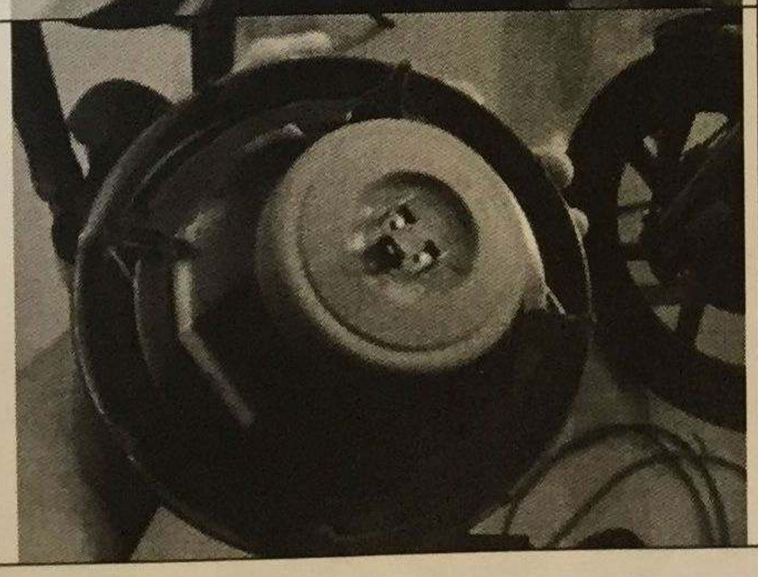
- Reinstall the cover, and tighten the screws.
- Tail/brake lamp bulb replacement is complete.

1.5.73 – Headlight Bulb Replacement

- Using a 2.5 mm Allen wrench remove the 4 screws that hold the head light into the fixture.
- If these next steps are performed carefully it should not be necessary to re-aim the head light.



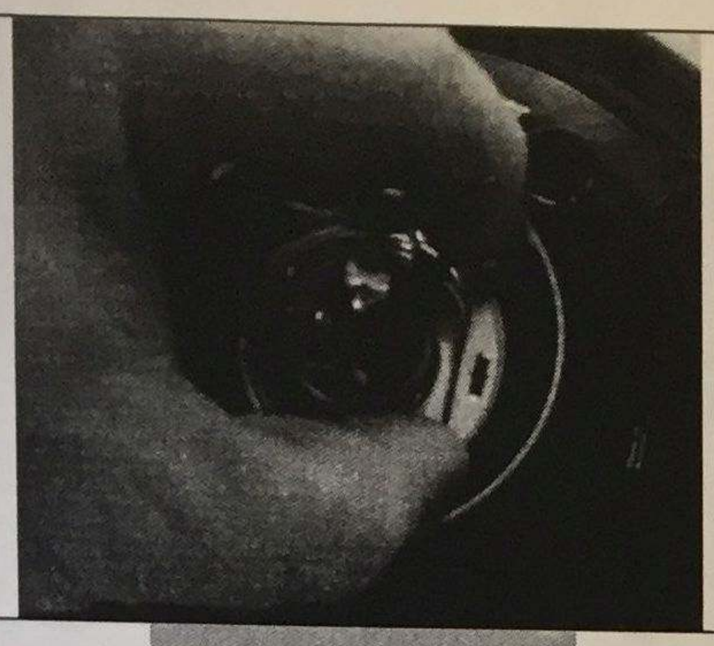
- Remove the connector by squeezing the two sides before pulling it off.



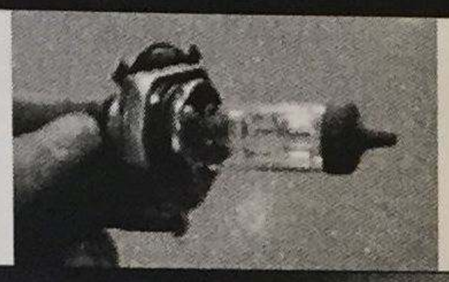
- Remove the rubber seal from the back of the head light assembly. It will just pull off the back of the lamp.

Chapter Title

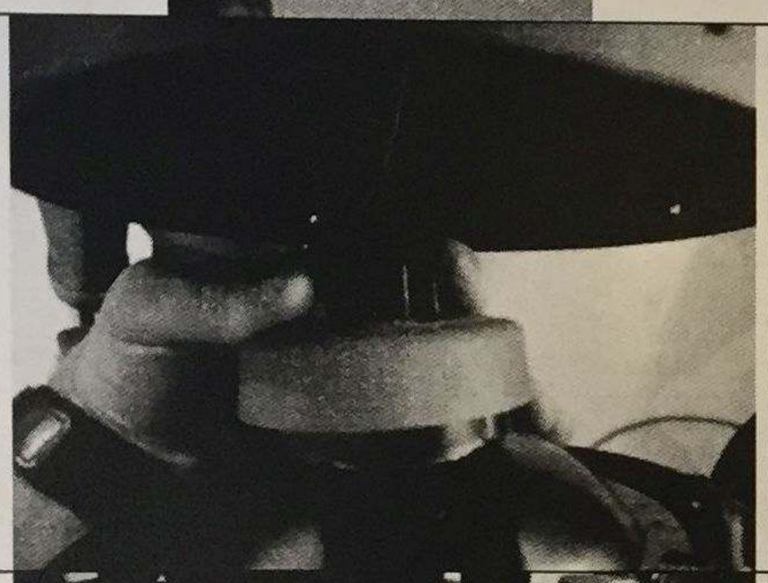
1.5 Bulb Replacement



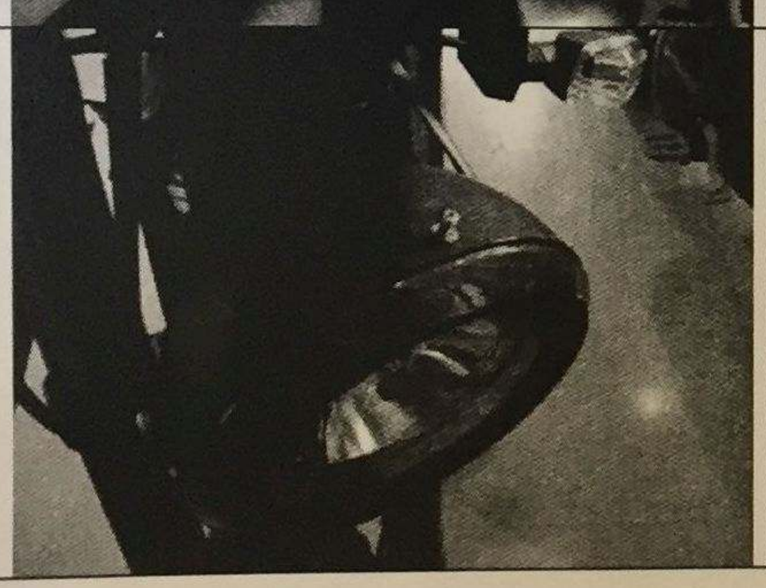
- Squeeze the spring clip and rotate it up to free the head light bulb.



- Remove the old bulb and inset the new one.
- **DO NOT TOUCH THE GLASS OF THE NEW BULB. Only hold the bulb by the metal base.**

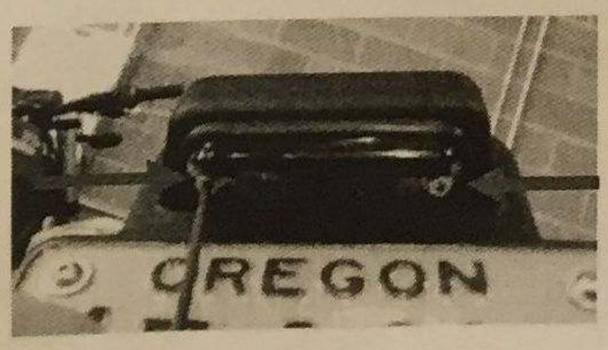


- Reinstall the spring clip.
- Push the rubber seal back over the assembly.
- Reinstall the connector.



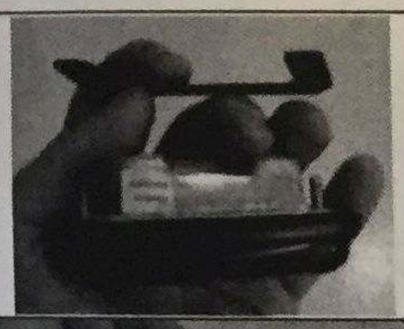
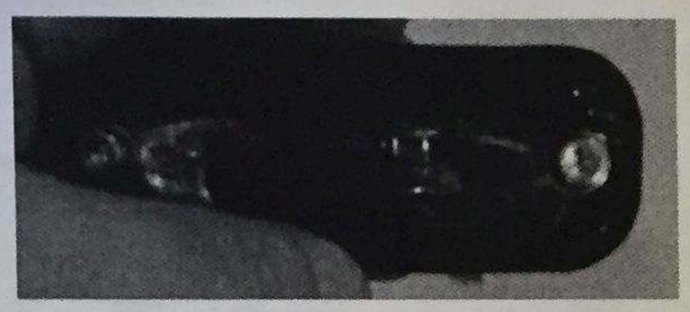
- Reinstall the 4 screws and washers. Tighten with the 2.5 mm Allen wrench until they are snug. Do not use excessive force to tighten the screws.
- The head light bulb replacement it complete.

License Plate Lamp Bulb Replacement



- Disconnect the two spade connectors from the back of the license plate lamp (underneath the tail shroud)
- Using a 3mm Allen wrench, remove the two screws that hold the lamp.
- As you remove the lamp, be sure to grab the metal bracket on the reverse side of the tail shroud.

1.5 Bulb Replacement

	• As you remove the lamp, be sure to grab the metal bracket on the reverse side of the tail shroud. • Note the orientation so it can be reinstalled the same way.
	• Remove and replace the bulb. To remove, simply pull it out, to replace, simply push it back in between the spring contacts.
	• Reinstallation is the reverse of the removal. • NOTE: When tightening the screws do not over tighten them as it may crack the lamp cover. • License plate lamp bulb replacement is complete.

Chapter Title	2.1 Software Fault List

This Document Covers the Following Components/Systems
The software faults generated by the electrical components of the Enertia.

2.1.10—Overview

The electrical components of the Enertia, the VCU, the dash, and the motor controller will generate fault messages. Below is a comprehensive list of the faults and the electronic component that generated it. These are for reference only. For troubleshooting see chapter 2.2 – Enertia Diagnostic Software. NOTE: not all the faults will display on the dash. It is recommended to connect to the Enertia using the diagnostic software (see 2.2).

Dash Warning Message	Warning / Error Description	Source
SERVICE REQ'D V1	VCU Temperature Too High	VCU
SERVICE REQ'D C2	Charger Fault	Charger
SERVICE REQ'D V3	BMS CAN processor failure	VCU
SERVICE REQ'D V4	DMC CAN processor failure	VCU
SERVICE REQ'D D4	DMC Not Communicating	DMC
SERVICE REQ'D B6	BMS Not Communicating	BMS
SERVICE REQ'D B7	Battery Fault: Module Lost	Battery
SERVICE REQ'D B8	Battery Fault: Temperature Sensor Failure	Battery
SERVICE REQ'D D9	DMC Internal Memory Error	DMC
SERVICE REQ'D D10	DMC Direction Selection Error	DMC
SERVICE REQ'D D11	DMC Seat or Tiller Switch not closed	DMC
SERVICE REQ'D D14	DMC Forbidden Input Selected	DMC
SERVICE REQ'D D15	DMC Internal 12V Supply Too Low	DMC
SERVICE REQ'D D17	DMC Battery Voltage Too Low	DMC
SERVICE REQ'D D18	DMC High Side Mosfet Error in neutral or while pulsing	DMC
SERVICE REQ'D D19	DMC Low Side Mosfet error while pulsing	DMC
SERVICE REQ'D D20	DMC Motor Over-Current	DMC
SERVICE REQ'D D21	DMC Contactor Coil Error	DMC
SERVICE REQ'D D22	DMC Battery Voltage Too High	DMC
SERVICE REQ'D D23	DMC Low side Mosfet error in Neutral	DMC
SERVICE REQ'D D24	DMC Controller error or contactor coil error	DMC
SERVICE REQ'D D25	DMC Contactor Error	DMC
SERVICE REQ'D D26	DMC Controller Error	DMC
SERVICE REQ'D D27	DMC Low Side Mosfet error before contactor closed	DMC
SERVICE REQ'D D28	DMC Wig Wag wire off error	DMC
SERVICE REQ'D D29	DMC CAN error	DMC
SERVICE REQ'D D30	DMC Over speed or encoder error	DMC
SERVICE REQ'D D31	DMC -- One or more motor sensor wires not connected	DMC
SERVICE REQ'D D32	DMC -- The motor speed sensor mechanically loose	DMC
SERVICE REQ'D D33	DMC @ demand 0 drive current > 50A. In Braking the current must be negative	DMC
SERVICE REQ'D D7	DMC Out of Range programming	DMC
SERVICE REQ'D B28	Battery Fault: Voltage Sensor Failure	Battery
SERVICE REQ'D B29	Battery Fault: Current Sensor Failure	Battery

2.1 Software Fault List

Dash Warning Message	Warning / Error Description	Source
RECHARGE REQUIRED B30	Battery Fault: Critically discharged alarm	Battery
SERVICE REQ'D B31	Battery Fault: Over Volt alarm	Battery
SERVICE REQ'D B32	Battery Fault: Sanity Error (No communication)	Battery
RECHARGE REQUIRED B33	Charge (SOC) is at 0%	Battery
SERVICE REQ'D H34	Discharge "pre-Charge" error	Harness
ALLOW COOLDOWN B35	Battery Fault: Over Temperature Shutdown	Battery
ALLOW COOLDOWN B36	Battery Fault: Over Temperature Alarm	Battery
DISCONNECT POWER	AC Connected	AC
KICKSTAND DOWN	Kickstand is down	Kickstand
CONNECT POWER	AC Not Connected	AC
SERVICE REQ'D B40	BMS Back in Idle Mode	BMS
SERVICE REQ'D B41	Battery Fault: insulation measurement failed	Battery
SERVICE REQ'D B42	Battery Fault: 120A Over Current Alarm	Battery
SERVICE REQ'D B43	Battery Fault: 150A Over Current Alarm	Battery
SERVICE REQ'D B44	Battery Fault: 200A Over Current Alarm	Battery
THERMAL CUTBACK D6	DMC Temperature Too High	DMC
THERMAL CUTBACK D5	Motor Temperature Too High	Motor
SERVICE REQ'D B47	Battery Fault: 250A Over Current Alarm	Battery
SERVICE REQ'D B48	Battery Fault: 300A Over Current Alarm	Battery
N/A	Dash not connected, or not working	Dash
N/A	Dash CAN Processor Failure	VCU
SERVICE REQ'D I51	Dash Power Current Too High	Dash
SERVICE REQ'D H52	Motor Controller Fan Power Overcurrent	DMC
RECHARGE REQUIRED B53	Battery Fault: Critically discharged warning	Battery
SERVICE REQ'D B54	Battery Fault: Over Volt warning	Battery
SERVICE REQ'D B55	Battery Fault: SOC Mismatch > 30%	Battery
ALLOW COOLDOWN B56	Battery Fault: Over Temperature Warning	Battery
BATTERIES LOW	Battery Fault: BMS SOC < 20%	Battery
SERVICE REQ'D V58	VCU +12V Out of Spec	VCU
SERVICE REQ'D V59	VCU +5V Out of Spec	VCU
ALLOW COOLDOWN B60	Battery Fault: 120A Over Current Warning	Battery
ALLOW COOLDOWN B61	Battery Fault: 150A Over Current Warning	Battery
ALLOW COOLDOWN B62	Battery Fault: 200A Over Current Warning	Battery
ALLOW COOLDOWN B63	Battery Fault: 250A Over Current Warning	Battery
ALLOW COOLDOWN B64	Battery Fault: 300A Over Current Warning	Battery
COOLDOWN CYCLE C65	Charger Temperature Too High	Charger
CYCLE THROTTLE SW	DMC Footswitch Sequence Error	DMC
ACCELERATOR STUCK?	DMC Accelerator deflected at power up	Harness
HEADLIGHT OFF	Headlights off in Drive Mode	Headlight
SERVICE REQ'D V69	SPI Flash Memory Failure	VCU
GET SERVICE V70	USB interface failure	VCU
GET SERVICE V71	USB Flash Power Fail	VCU
GET SERVICE V72	VCU Temperature Vref out of spec	VCU
ACCELERATOR STUCK?	Accelerator Deflected, should be in Idle	VCU

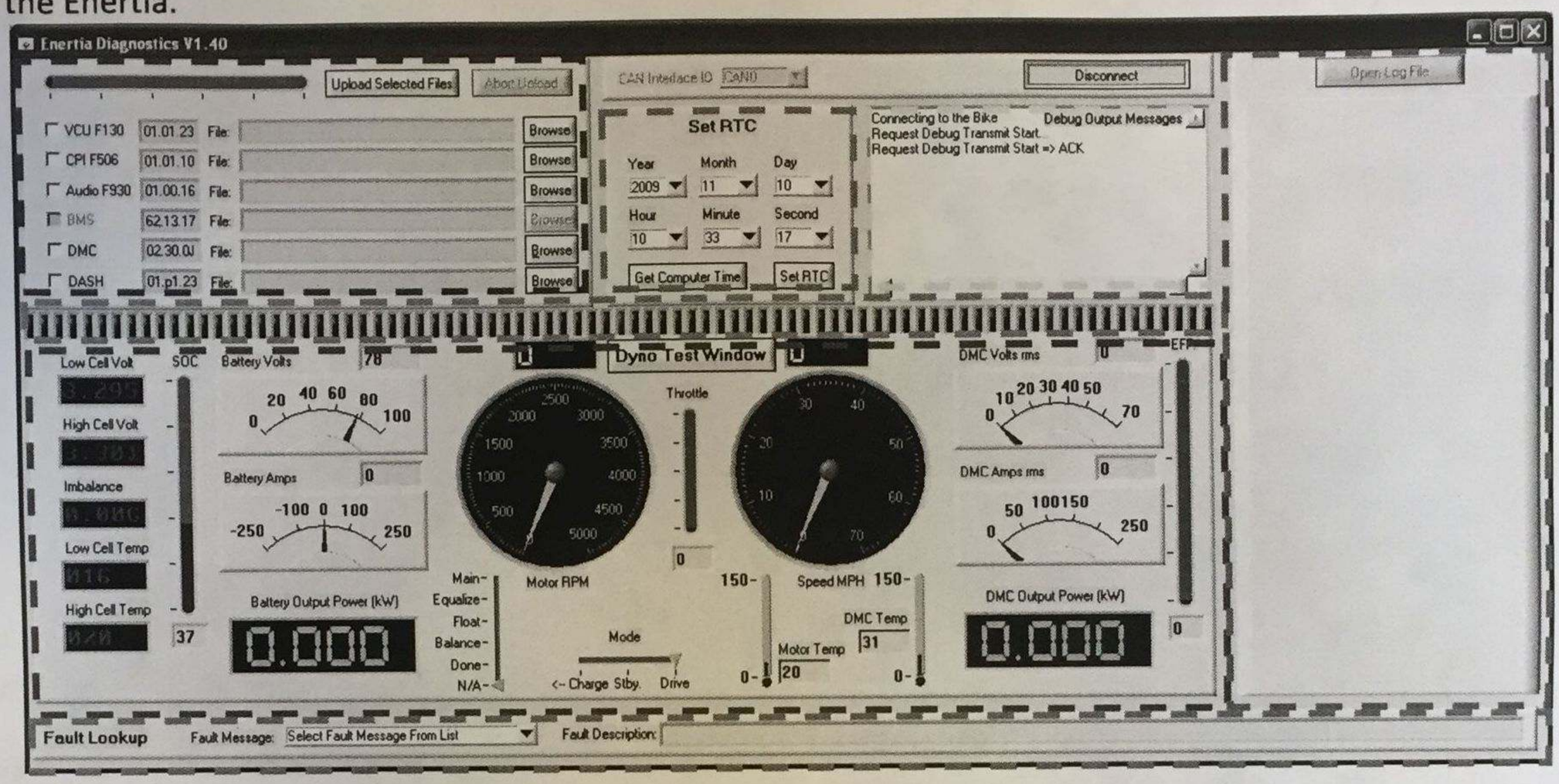
2.1 Software Fault List

Dash Warning Message	Warning / Error Description	Source
GET SERVICE H73	USB Flash Drive bad or removed	Harness
COME TO FULL STOP	Vehicle Speed not zero when throttle switch turned on	DMC
CYCLE THROTTLE SW.	Throttle Switch on at power up	Harness
GET SERVICE V77	Sound Failure	VCU
GET SERVICE V78	Real Time Clock Not Working	VCU
SERVICE MODE	Diagnostic Cable Connected	USB

2.2 Diagnostic Software

2.2.10—Overview

The diagnostic software for the Enertia allows a technician to troubleshoot electrical problems within the Enertia.



When the Enertia is connected the software will display this image. The screen has been divided to highlight different sections of the diagnostic software

- RED Box – This is the Enertia software reprograming area where new software files can be uploaded to the Enertia's VCU, Dash, and Motor Controller.
- ORANGE Box – "Set RTC" is used to set the Enertia's clock to the current time. (RTC = Real Time Clock)
- YELLOW Box – Debug Output Messages. This box can issue instructions while uploading software to the Enertia.
- GREEN Box – Fault display. Each red bar represents a possible fault, and when the fault is activated, it turns on (bright red).A fault is not always bad, for example, a fault is shown for having the kickstand down.
- BLUE Box – This area contains the bulk of the useful features of the Enertia's diagnostic software, showing the battery state of charge (SOC), the speed, the battery output in kW, the motor temp, and many other useful functions.
- GREY Box (right side) – This area is used for viewing log files generated by the Enertia which can help diagnose the root cause of problems.
- TAN Box (bottom) – "Fault Lookup" This allows you to look up any possible fault and the description.

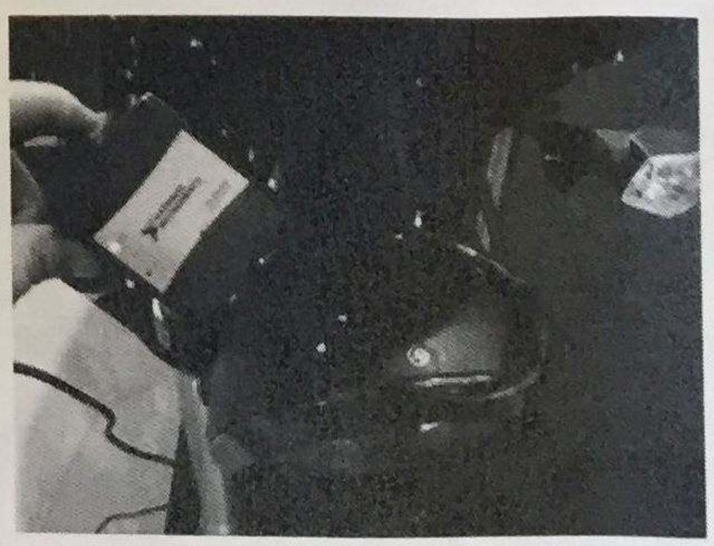


Figure 2.1.1 – the CAN to USB device connected to the Enertia.

2.2 Diagnostic Software

2.2.50—Setup and Tools

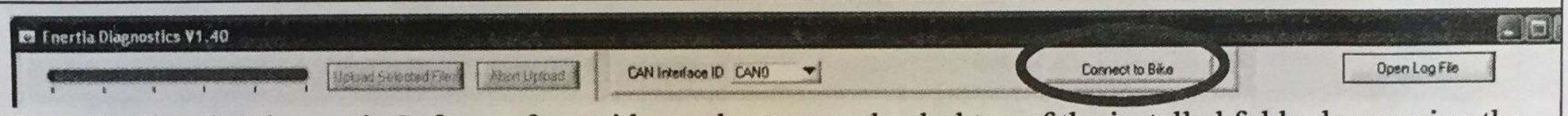
A CAN to USB device (shown on right)

A computer running a 32bit version of Windows® with an available USB port

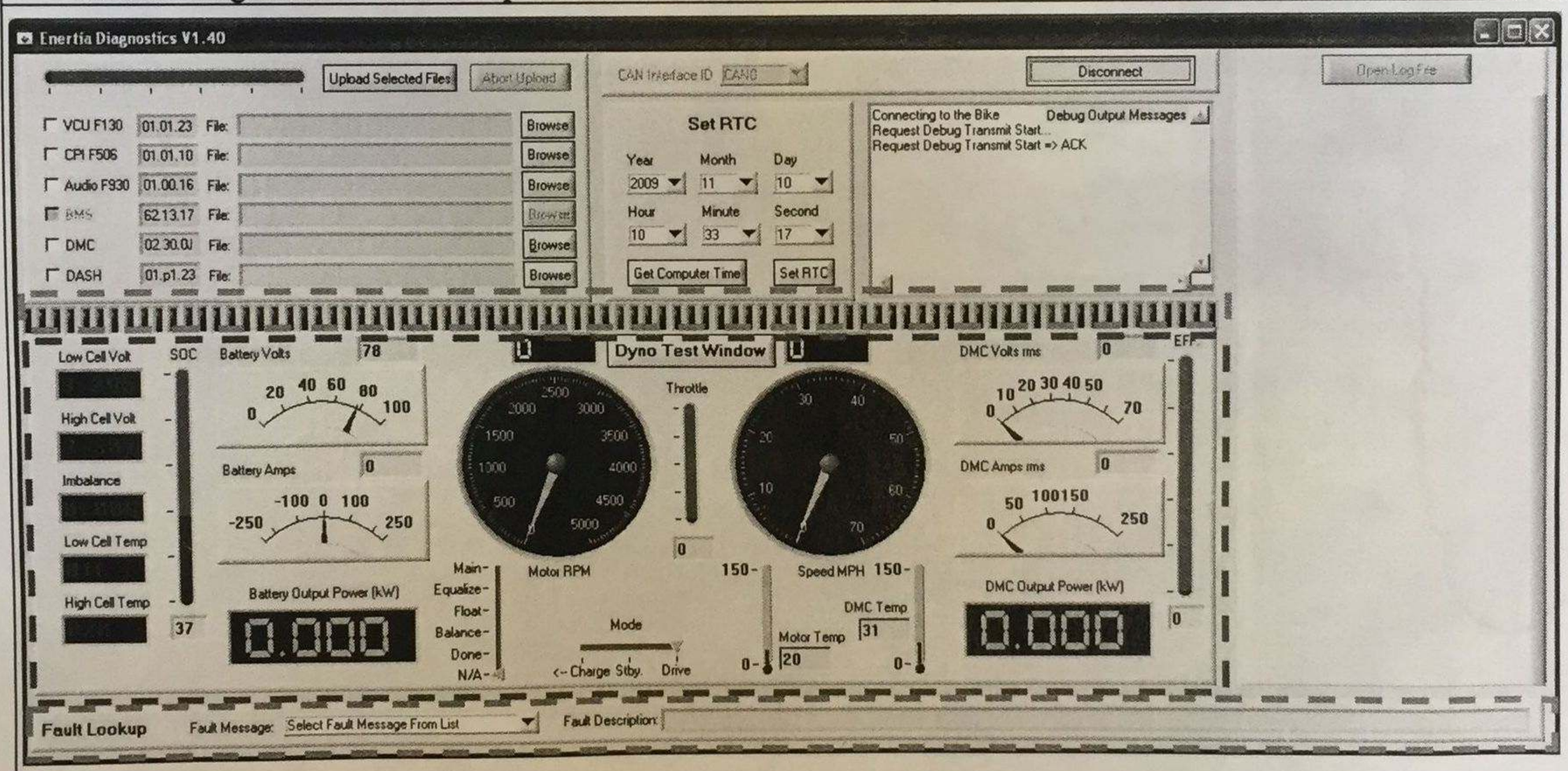
2.2.55—Materials Required

2.2.61 – Diagnostic Software Standard Use

- Connect the CAN to USB device to the Enertia.
- Start the Enertia in drive mode. CAUTION – Always treat the throttle like it is live. Even when connected to the Enertia with diagnostic software and will still drive.

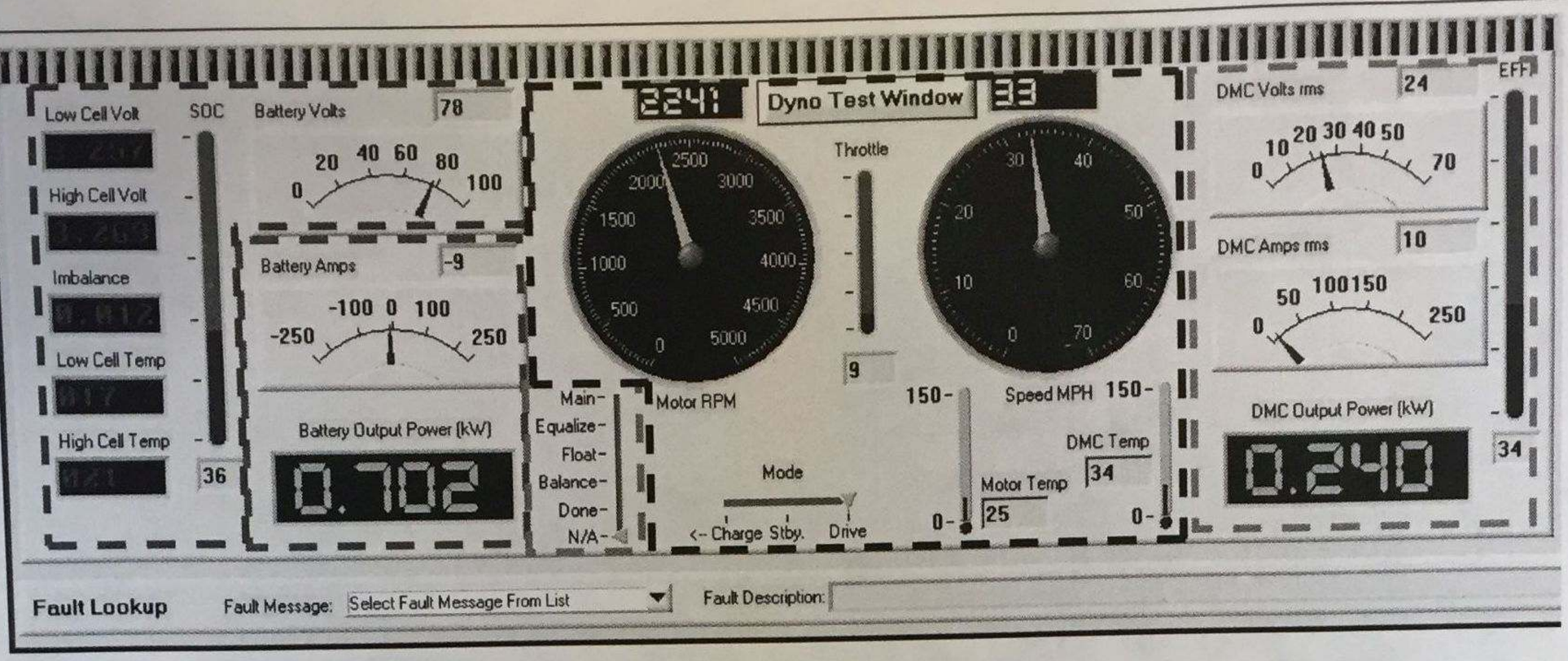


- Open the Enertia Diagnostic Software from either a shortcut on the desktop of the installed folder by opening the file called “Enertia Diagnostic.exe”.
- Once the diagnostic software is open click on the button on the top of the window that says, “Connect to Bike”.

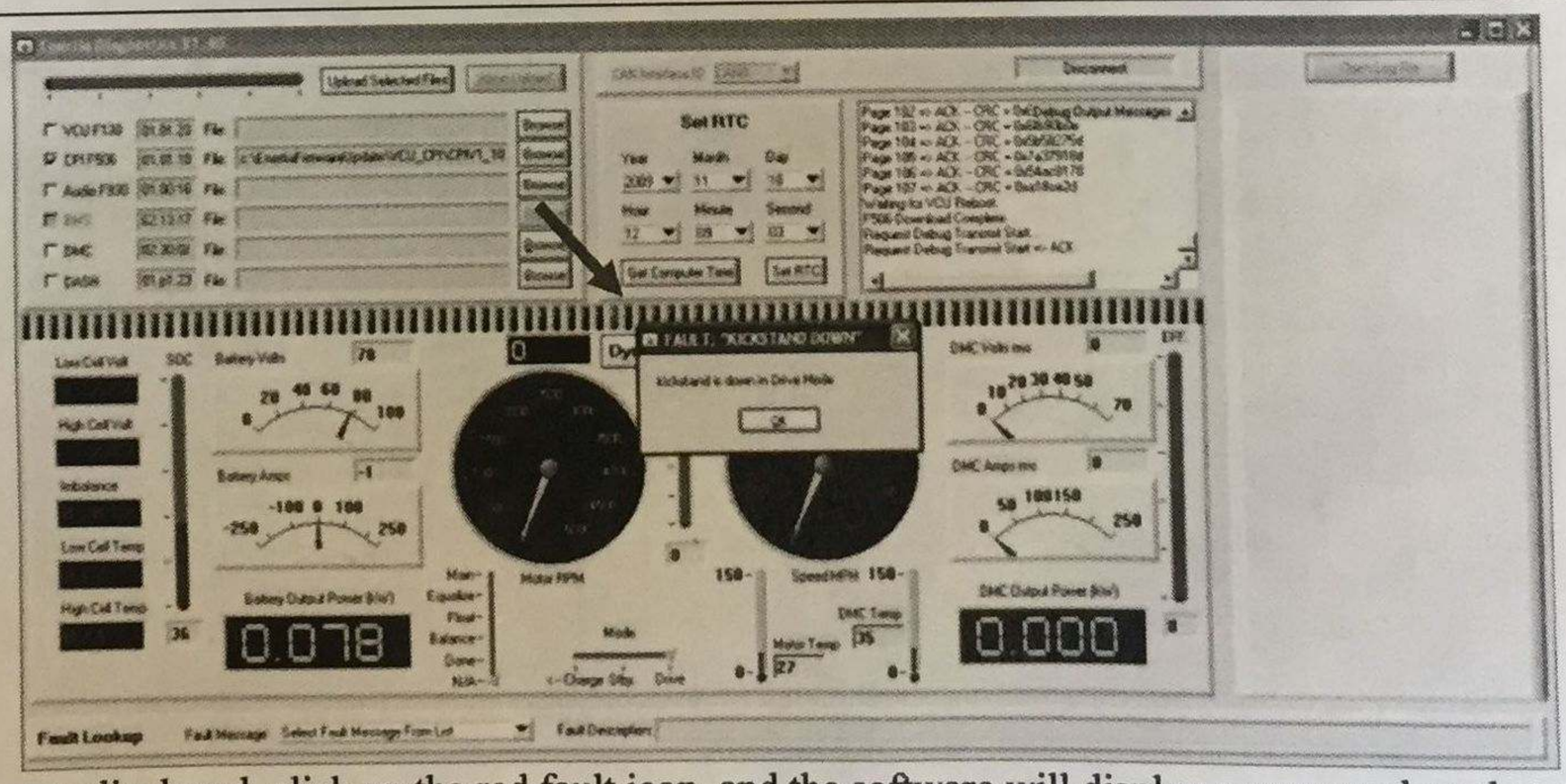


- When the bike is connected the software will display this image. Use the information in the green box, the blue box, and the tan box to troubleshoot the Enertia. In depth breakdown of the items in the blue box is below.

2.2 Diagnostic Software



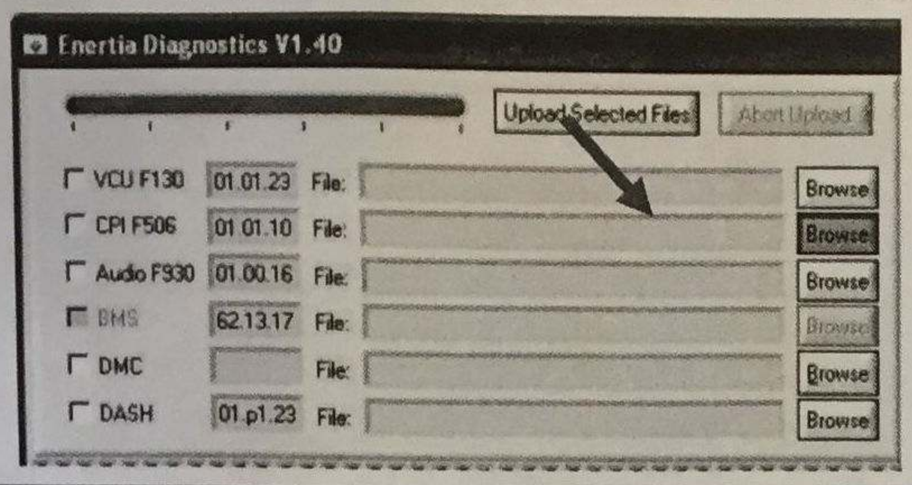
- The far left items (in red box) show the state and health of the batteries. A problem with a single battery might show as a high imbalance or if one battery is much warmer than the others. The SOC simply shows the state of charge, in this case 36% (displayed below the blue vertical bar).
- The items in the blue box show the amps that are leaving (discharging) or are going into (charging) the batteries. Also shows the battery output power. NOTE: the output power will be much lower when the Enertia is in a rear wheel stand vs a dyno or power use displayed while riding.
- The orange box shows information that only is shown during the charging of the Enertia. The two important ones to note are "Main" which is the main phase of the charging, and "float" which shows when the Enertia is fully charged. When the Enertia is not in charge mode it will show "N/A".
- The items in the black box display the speed and motor RPM (directly related since there is no transmision), the throttle percentage, the motor temp (in degrees C), and the temperature of the motor controller (in degrees C).
- The green box (far right) shows information about the motor controller and the power output of the motor controller.



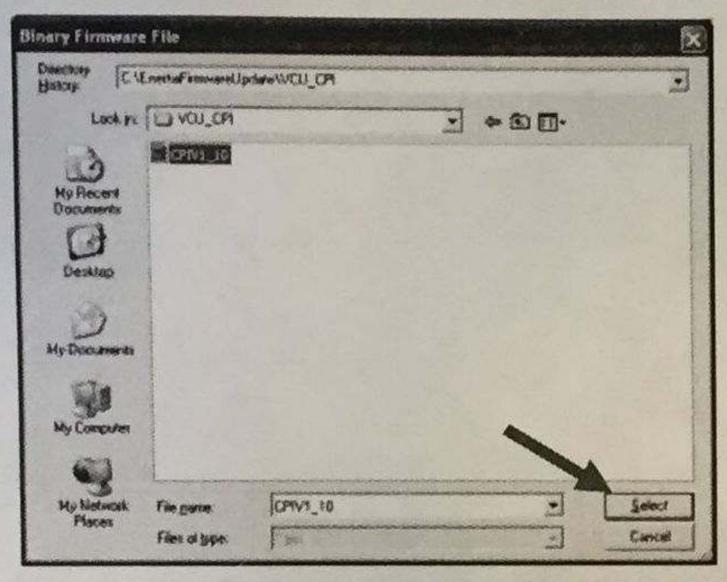
- If any faults are displayed, click on the red fault icon, and the software will display a message box that will show a description of the fault. In this example, the kickstand is down.

- Use electrical troubleshooting techniqes and the diagnostic software to troubleshoot any electrical problems the Enertia might have.

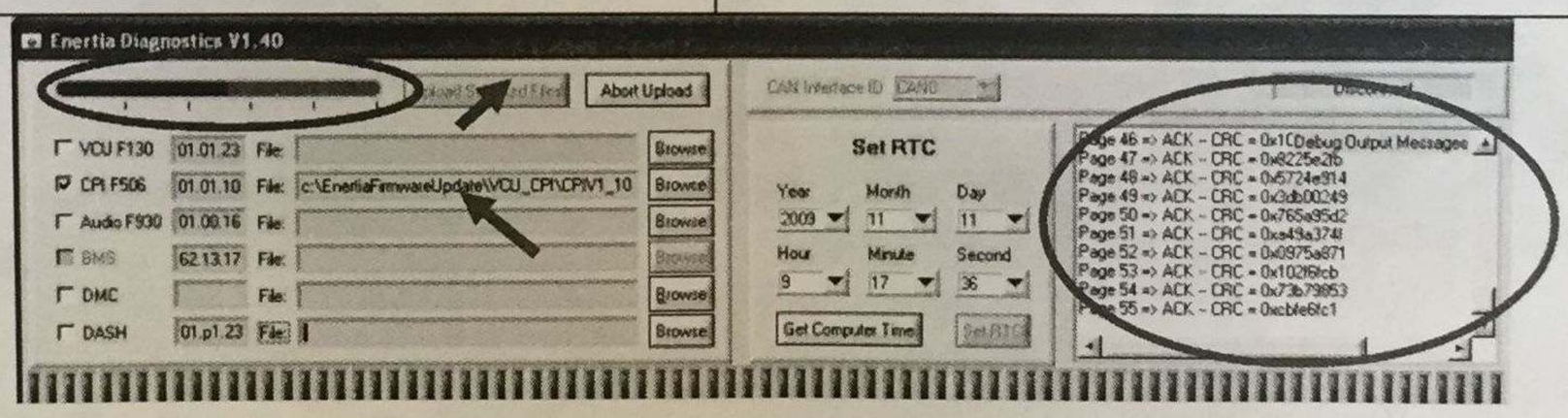
2.2.62 – Uploading New Software to the Enertia



- Connect to the Enertia using the USB to CAN device.
- Click "Browse" by the new section you want to upload software to, in this case we are going to upload new software to the CPI F506 (Part of the VCU).

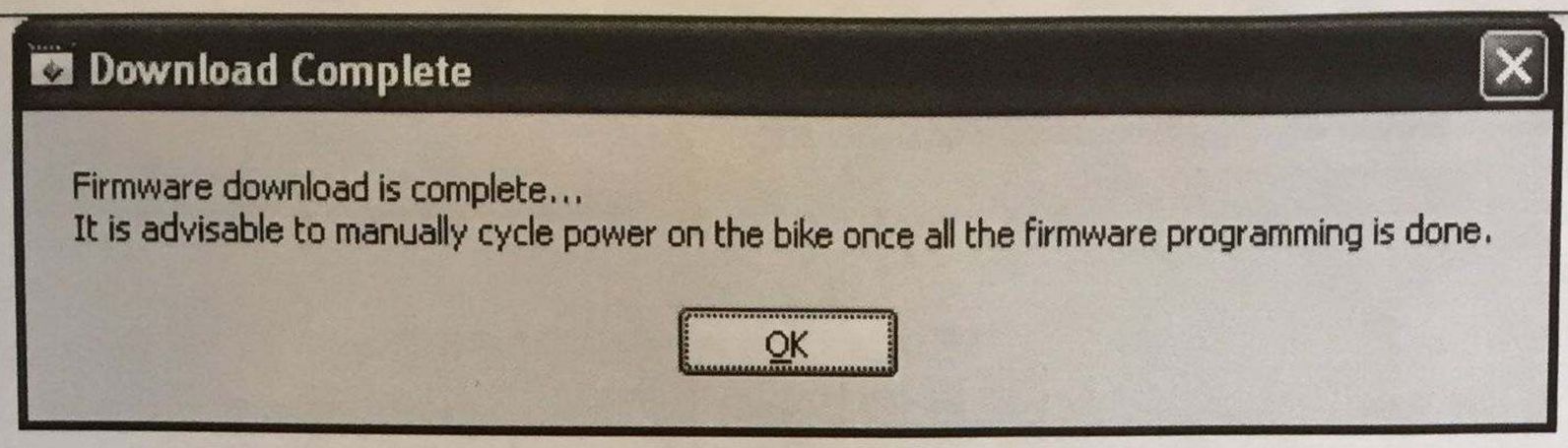


- Navagate to the folder where the software is located that you want to upload to the Enertia. In this case the file is "CPIV1_10"
- Click the "Select" button which will return you to the main diagnostic screen.
- You can upload several files at once by following the above procedure for the different software package.



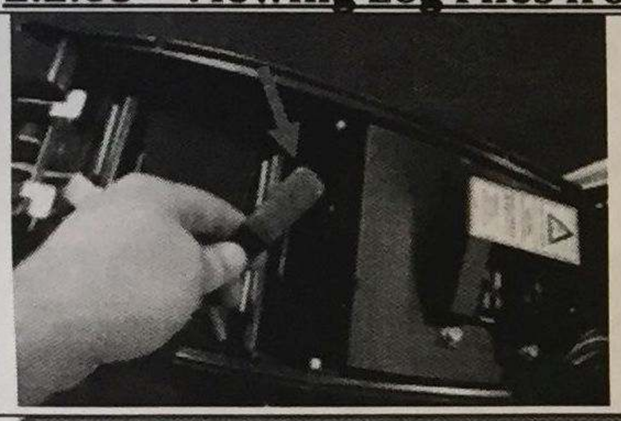
- Click the "Upload Selected Files" button (Green Arrow - won't be greyed out until after you click it)
- The program will start to upload the file to the Enertia. The file description box will turn yellow (grey arrow), there will be a progress bar at the top of the window (red circle) and the descriptions and any instructions will be displayed in the Debug Output Messages window (blue circle).

2.2 Diagnostic Software

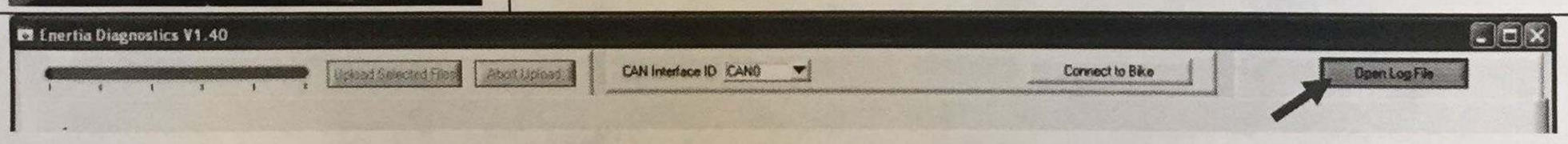


- When the process is complete the diagnostic software will display this message. Click "OK" and turn the Enertia off then back on again.
- The software uploading to the Enertia is complete.

2.2.63 – Viewing Log Files from the Enertia



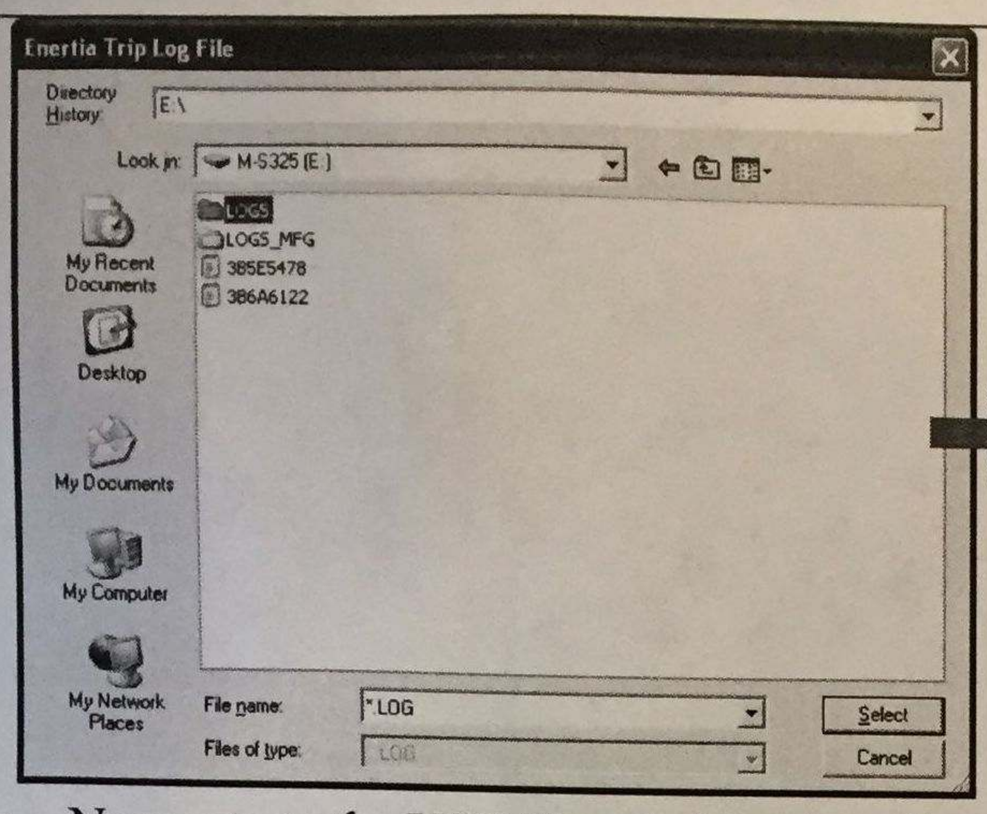
- To view the log files that are created by the Enertia while riding or charging, remove the USB thumb drive from the Enertia. It is covered by a red rubberized plastic cap and may be tucked under the fuse block, in which case the fuse block will need to be removed.



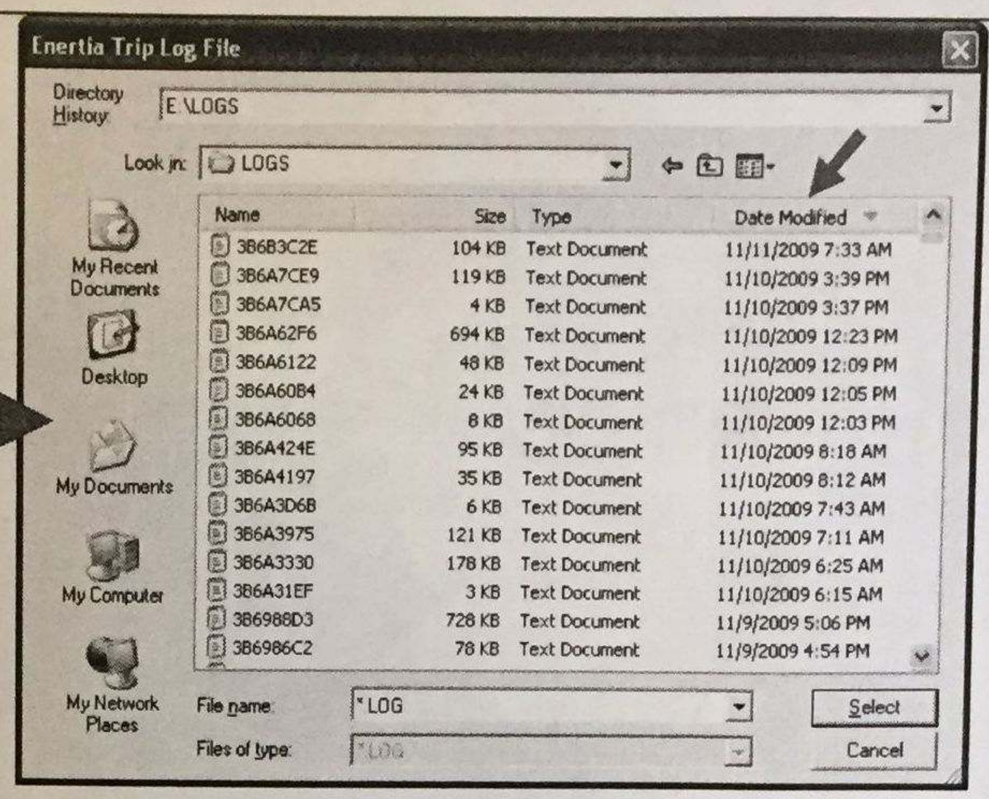
- Insert the USB thumb drive into an available USB port on a computer that has the Enertia Diagnostic software on it.
- Start the Enertia Diagnostic Software and click on the upper right button that says "Open Log File"

Chapter Title

2.2 Diagnostic Software

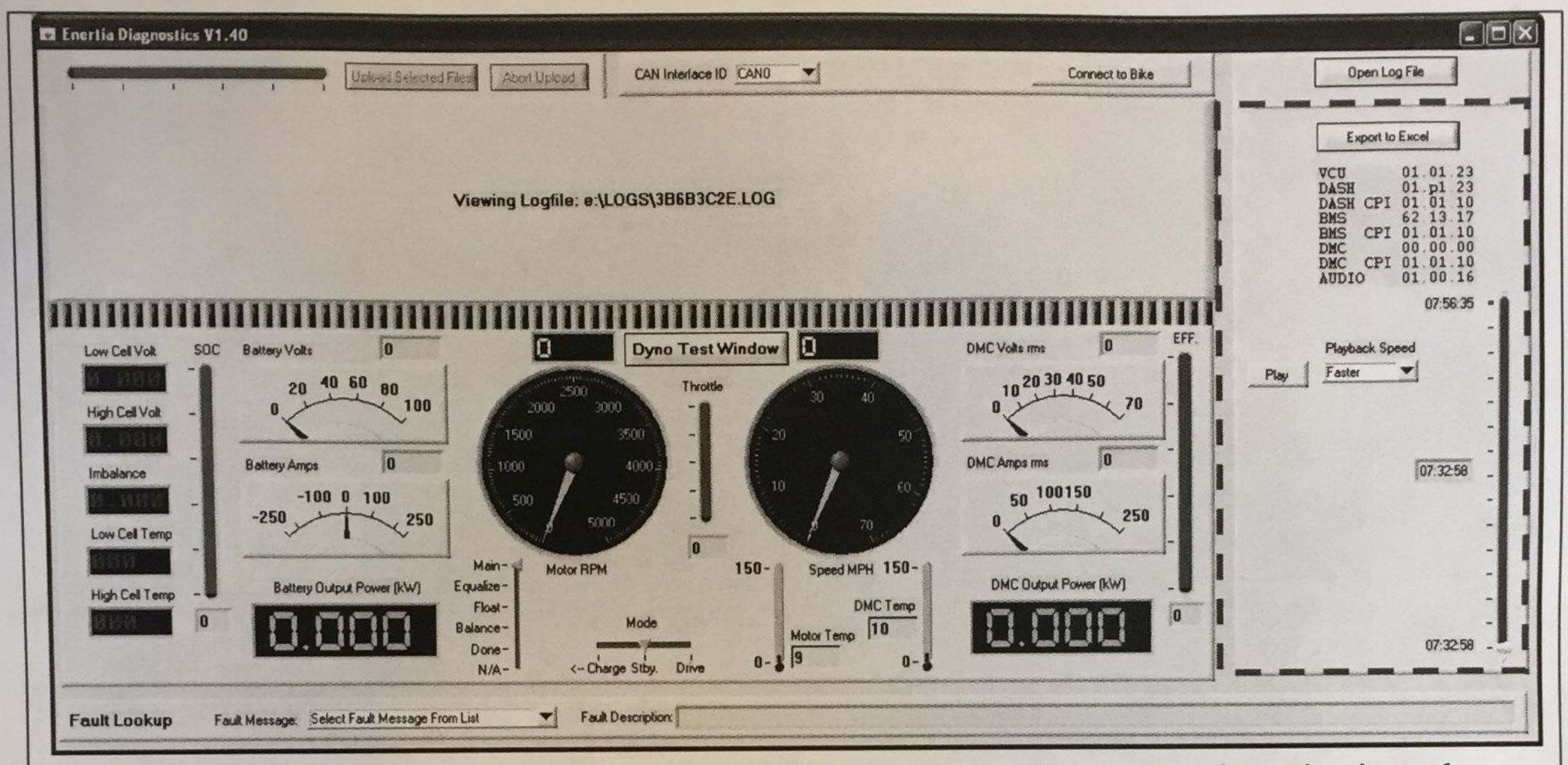


- Navagate to the USB Thumb drive (usually the D:\ E:\ or F:\ drive.)
- Select the "LOGS" folder and click "Select"



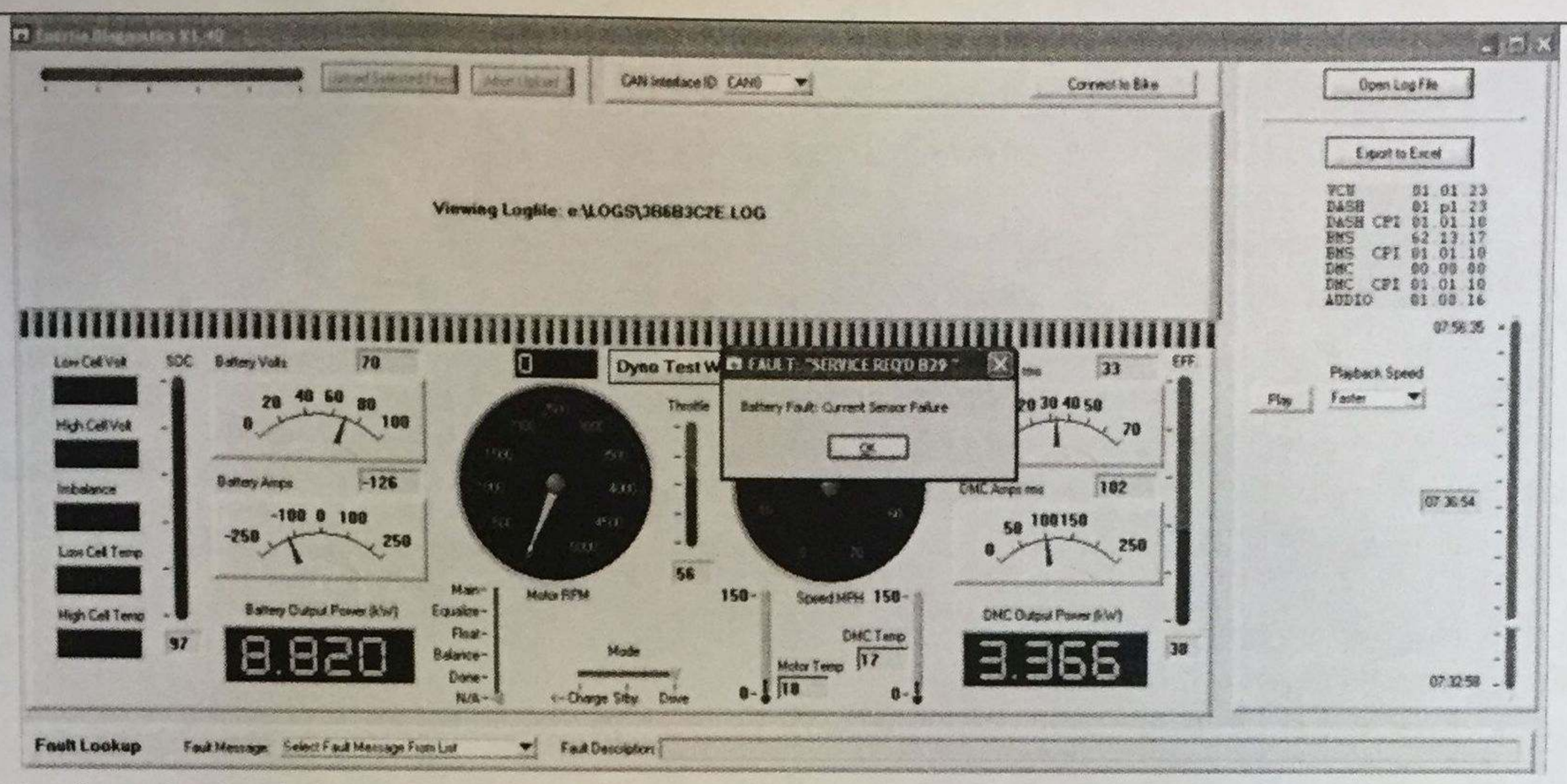
- Depending on the default Windows® preferences you may need to right click and go to View → Details and then click on the "Date Modified" column to sort by the time and date the log file was created.
- Select the file that you want to view.

2.2 Diagnostic Software



- Viewing logs are similar to being connected live to the Enertia, except when viewing a log the "file upload", "Set RTC" and "debug viewing window" are gone and there is the addition of the time controls on the right (Green box)
- At the top of the box is the "Export to Excel" button which will send all the data in the file (speed, battery output power, state of charge, etc) to a *.csv file that can be loaded into Excel and used to turn into graphs of the ride.
- Immediately below shows the software versions the Enertia had loaded for this ride.
- The time controls show the start time of the file at the bottom of the slider (07:32:58 in this case), the end time of the file at the top o fthe slider (07:56:35), and the current point in time being viewed shown in the box in the middle of the slider (at the beginning since we just loaded the file). The slider can be moved to a certain place in the ride to view a particular instance.
- The speed of the playback can be adjusted using the "Playback Speed" selector. This can be especially useful to speed up the playback to get a sense for the style of the ride being viewed, i.e. hard and fast, or slow and steady.

2.2 Diagnostic Software



- During playback if any faults occur they will display red on the fault indicator and just like in the connected diagnostic mode, in playback mode you can click on the fault indicator and it will display information about the fault. When searching for a fault which only is only displayed for a moment it may be easier to set the playback mode to a slower speed.
- Note: During playback mode faults may be displayed that were never displayed during the ride. This is often due to the lack of severity of the fault, or that the fault was intermintant. In this case the fault was only displayed for a second and dissapeared and did not reappear the duration of the ride, and was never displayed on the dash.
- When done viewing the Log, simply close the diagnostic program.

2.3 DMC Configurator Software

2.3.10—Overview

The DMC motor controller on the Enertia has separate diagnostic software than the Enertia and is used to check or reprogram settings on the Enertia's DMC motor controller. The only variable setting is the UV/1000 setting. The UV/1000 is a variable that affects how the electric motor coasts when there is no throttle applied but the Enertia is still moving. If it is set too low the motor will resist turning, and may activate the motor's release clutch mechanism. If the value is set too high the motor will tend to keep turning, and even slightly accelerate, causing the Enertia to "drive itself".

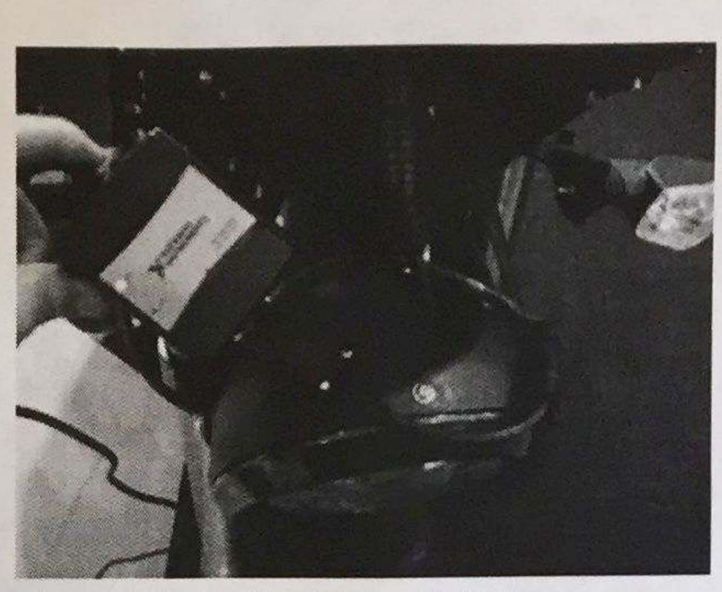


Figure 2.1.1 – the CAN to USB device connected to the Enertia.

2.3.50—Setup and Tools

A CAN to USB device (shown on right)

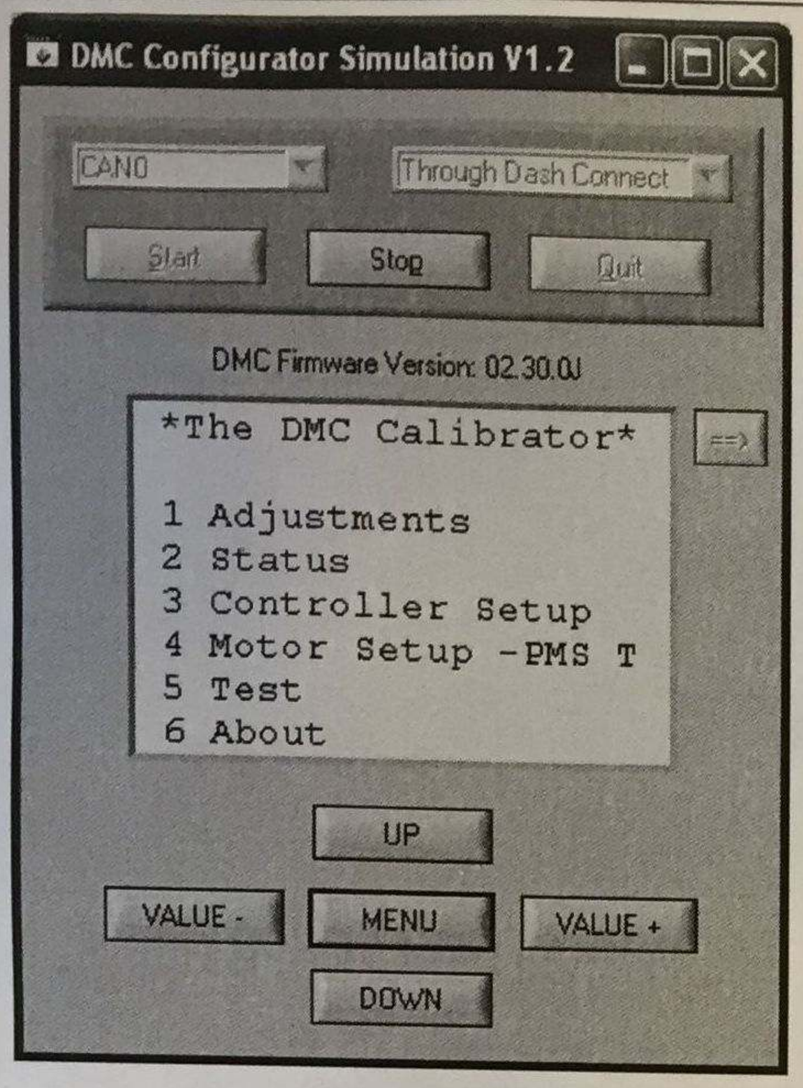
A computer running a 32bit version of Windows® with an available USB port

2.3.61 – Setting the UV/1000 value on the DMC Motor Controller

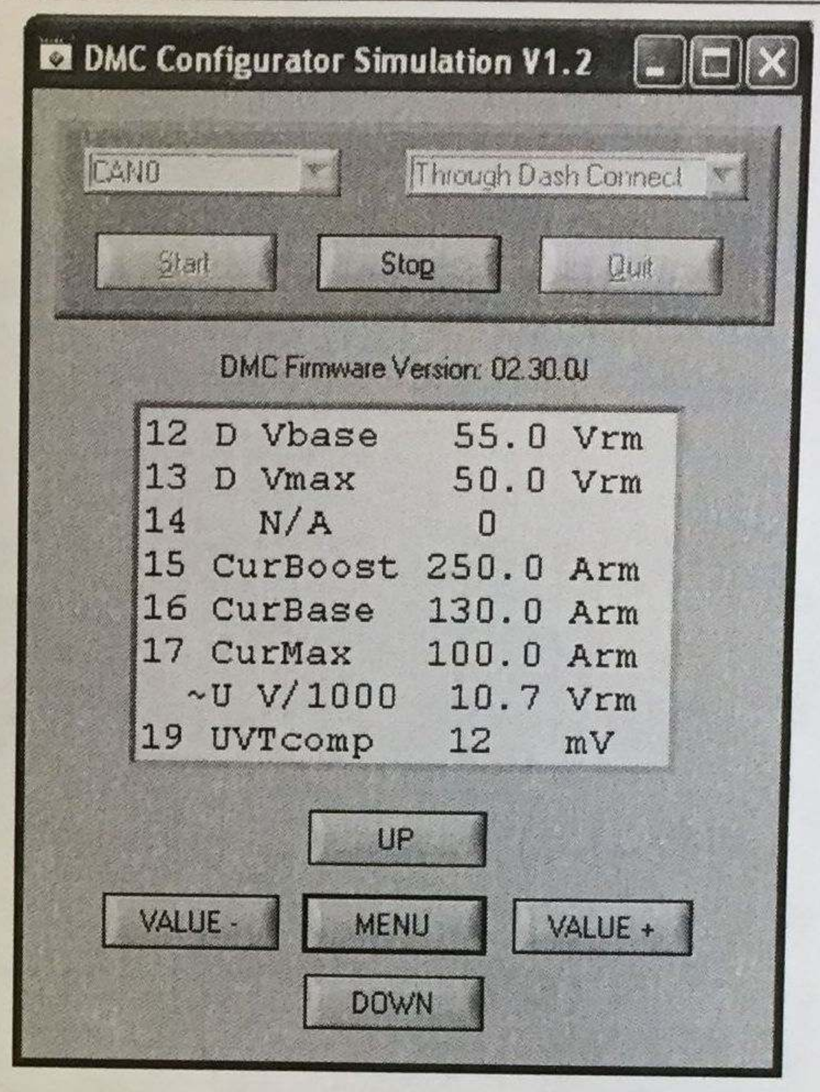
- Place the Enertia in a rear wheel stand.
- Connect the CAN to USB device to the Enertia.
- Start the Enertia in drive mode. CAUTION – Always treat the throttle like it is live. Even when connected to the Enertia with diagnostic software it will still drive.

- With the bike on a stand, accelerating the motor to 55 mph then release the throttle. Ensure that it SLOWLY decelerates all the way to 0 mph.
- If the bike quickly decelerates, increase U V/1000 by .1 and retest. (instructions below) If the bike doesn't decelerate or even accelerates, decrease U V/1000 by .1 and retest.(Instructions below)

2.3 DMC Configurator Software



- Open the DMC Configurator Simulation software and click the Start button.
- Click “Menu”.
- Using the “Down” button, select Option #4 “Motor Setup -PMS T”



- Using the down button go to number 18 “UV/1000”
- Adjust the UV/1000 rating as needed. If the Enertia seems not to coast as well as it should (slows more quickly) increment the rating by 0.1 and retest. If the Enertia seems to continue to power the motor even with 0 throttle, decrease the rating by 0.1

- Click the “Stop” button, and using the key in the ignition restart the Enertia.

2.3.62 – Viewing/Changing Other Settings on the DMC Motor Controller

- Place the Enertia in a rear wheel stand.
- Connect the CAN to USB device to the Enertia.
- Start the Enertia in drive mode. CAUTION – Always treat the throttle like it is live. Even when connected to the Enertia with diagnostic software it will still drive.
-

- Open the DMC Configurator Simulation software and click the Start button.
- Click “Menu”.
- Using the “Up” and “Down” button, select the nessesary option number.
- Use the “Value –” and “Value +” to change settings as sessesary to change all the settings to the values listed below.

2.3 DMC Configurator Software

1. ADJUSTMENTS		3. CONTROLLER SETUP			4. MOTOR SETUP –PMS T	
1. Accel	1.3 Sec	1. Lin/Curv	0		1. TempNom	110 oC
2. Decel	0.1 Sec	2. Spd/Torq	1		2. SpdRatio	66.3 Num
3. Creep	0.0 Vrm	3. Bpro/Off	0		3. SpdTeeth	0 Key
4. SpdMaxF	100.0 %V	4. Arol/Off	1		4. SpdPoles	8 Key
5. SpdMaxR	100.0 %V	5. Spd/Inch	0	Key	5. SPDmin	0 RPM
6. Sp1/Inch	100.0 %V	6. Spd3/Hbk	1		6. SPDboost	1350 RPM
7. Sp2/Time	100.0 %V	7. PsF/FR/S	0		7. SPDbase	4500 RPM
8. Sp3	100.0 %V	8. Ride/Wlk	0	Key	8. SPDmax	4950 RPM
9. DBrake	0.0 %	9. Key/Drv	1		9. Vmin	0.0 Vrm
10. NBrake	0.0%	10. Of/M/M&W	2		10. D Vmin	15.0 Vrm
11. FBrake	0.0%	11. Of/D/V/K	3		11. D Vboost	22.0 Vrm
12. DBrkRamp	0.3 Sec	12. GreenLED	0		12. D Vbase	55.0 Vrm
13. NBrkRamp	0.3 Sec	13. MTempTyp	1		13. D Vmax	50.0 Vrm
14. FBrkRamp	0.3 Sec	14. Accel8/9	1	Key	14. N/A	0
15. NBrkEnd	0.0 Sec	15. Si/DL/DR	0	Key	15. CurBoost	250.0 Arm
16. N/A	0	16. PosDir	0	Num	16. CurBase	130.0 Arm
17. MaxCurr	250.0 Arm				17. CurMax	100.0 Arm
18. BattV	80.0 V				18. U V/1000	
19. PStrDly	5.0 Sec				19. UVTcomp	12 mV
20. EBrkDly	0.5 Sec				20. B V/1000	10.6 Vrm
21. AccMin	0.2 V				21. B SPDmin	266
22. AccMax	4.8 V				22. CutBack1	80.0 %
23. AuxMin	3.0 V				23. CutBack2	60.0 %
24. AuxMax	2.0 V				24. CutBack3	50.0 %
25. MotMin	2.0 V				25. MaxCurB	125.0 Arm
26. MotMax	3.0 V				26. PFmax	50.0 Deg
27. VmaxSpd	10.0 KPH				27. PFgain	32
28. BDIreset	86.0 V				28. SenSetup	0 !
29. BDIempty	60.0 V				29. SenAngF	77.0 Deg
30. BDIwarn	10.0 %				30. SenAngR	85.0 Deg
31. BDIcut	0.0 %				31. NomCurr	150.0 Arm
32. BDIspeed	100.0 %V				32. Templ2t	100 oC
33. DMcut/Ac	10.0 %/S				33. I2tTime	15 Sec
34. DMrev/De	75.0 %/S				34. Ramp Trq	0.1 Sec
35. DMspeed	75.0 %				35. PgainSpN	6 Num
36. Reserved	0.0 –Vr				36. Ofset1	-1 bit
37. N/A	0				37. Gain 2	100 %
					38. Ofset3	-1 bit

Chapter Title	3.1— Chassis

This Document Covers the Following Components/Systems
Chassis – Which is not a field replaceable item.
Seat Strut – Which is not a field replaceable item.

3.1.10—Overview

The chassis is the backbone of the Enertia. The chassis is an aluminum frame, and is not serviceable. If the chassis is damaged to the point where it is no longer functional, it MUST be replaced by completely rebuilding the Enertia.

The seat strut assembly, though technically separate from the chassis, is included in this section since it is also an integral part of the frame. If the seat strut becomes damage such that it should be replaced, please contact Brammo for service.

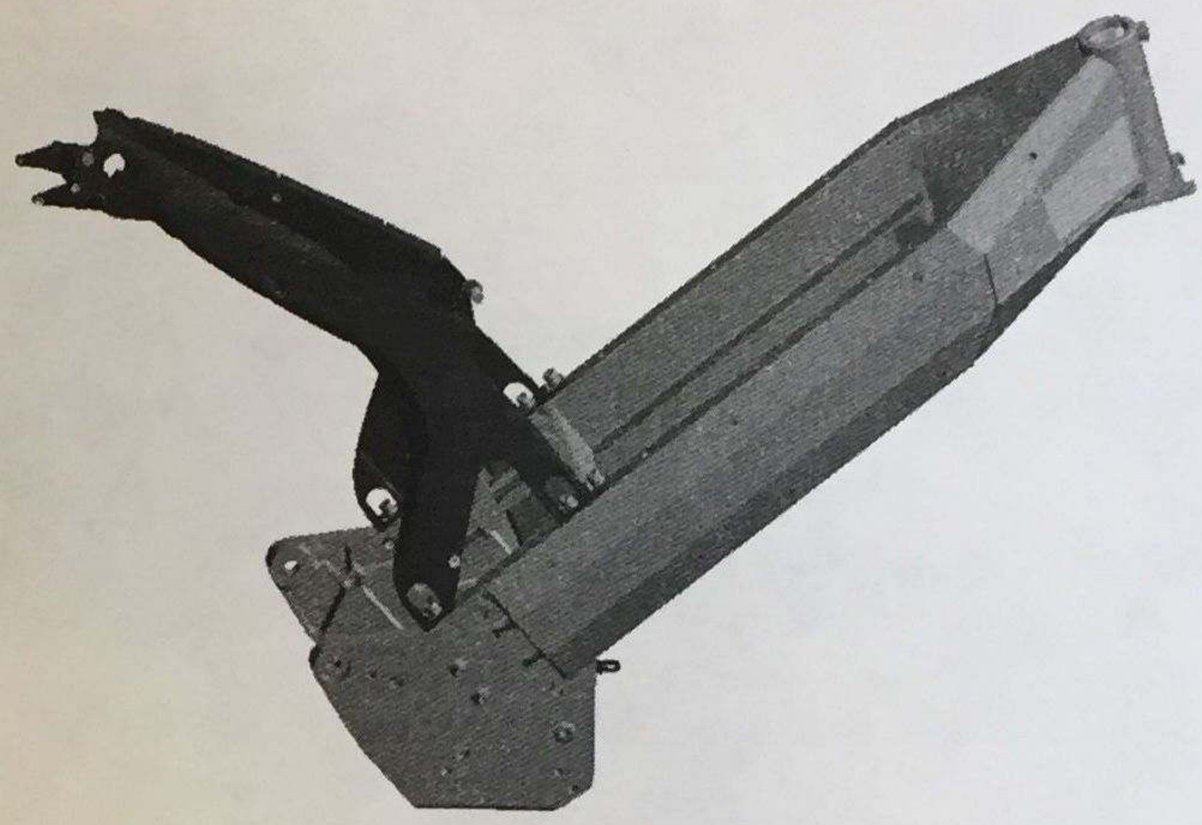


Figure 3.1.1 - Chassis and Seat Strut

3.1.60—Removal and Repair Procedure

This procedure must be performed at the Brammo Factory. Please send the Enertia back to Brammo.

Chapter Title	3.2— Top and Bottom Body Panels

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Top and Bottom Body Panels – Subliminal Green	B0110-0103021
Top and Bottom Body Panels – Graphite Silver	B0110-0103022
Top and Bottom Body Panels – White Noise	B0110-0103023
Top and Bottom Body Panels – Sunburnt Orange	B0110-0103024
Top and Bottom Body Panels – Glacial Blue	B0110-0103025

3.2.10—Overview

The body panels that cover the Enertia provide a protective barrier between the elements and the inner workings of the Enertia.

Figure 3.2.1 - Upper and Lower Body Panels

3.2.20—Diagnosing a Problem

If the body panels are cracked or scratched they can be replaced. Unless the defect appears to be a factory problem, the replacement of body panels due to scratches or cracks due to normal use is a non-warrantable issue.

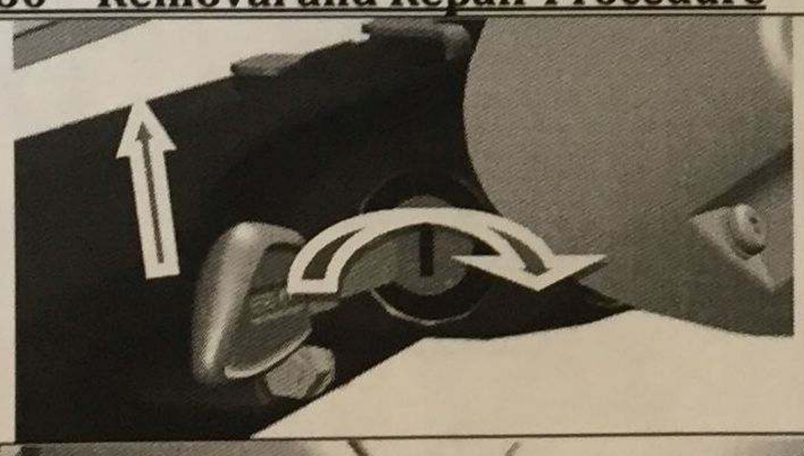
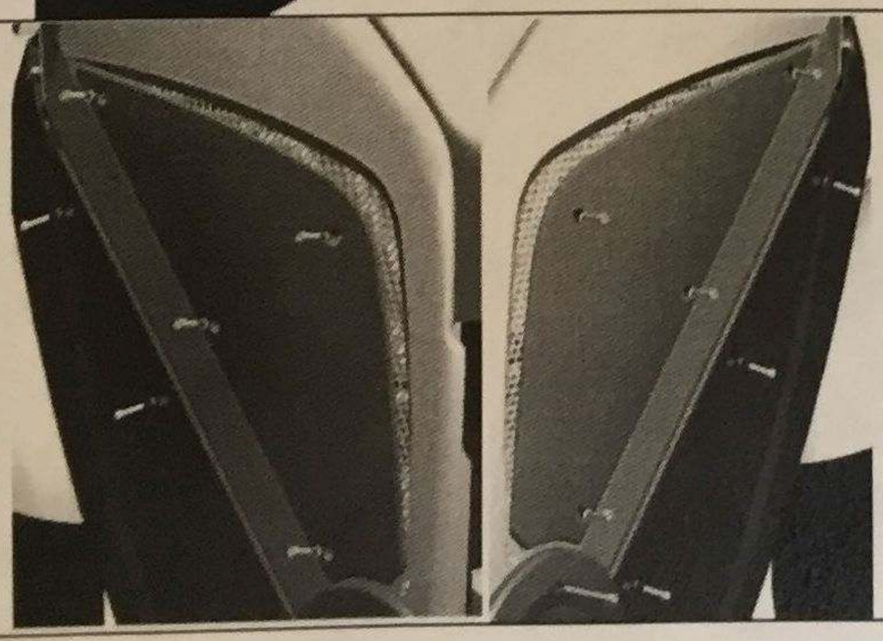
3.2.50—Setup and Tools

4 mm Allen wrench

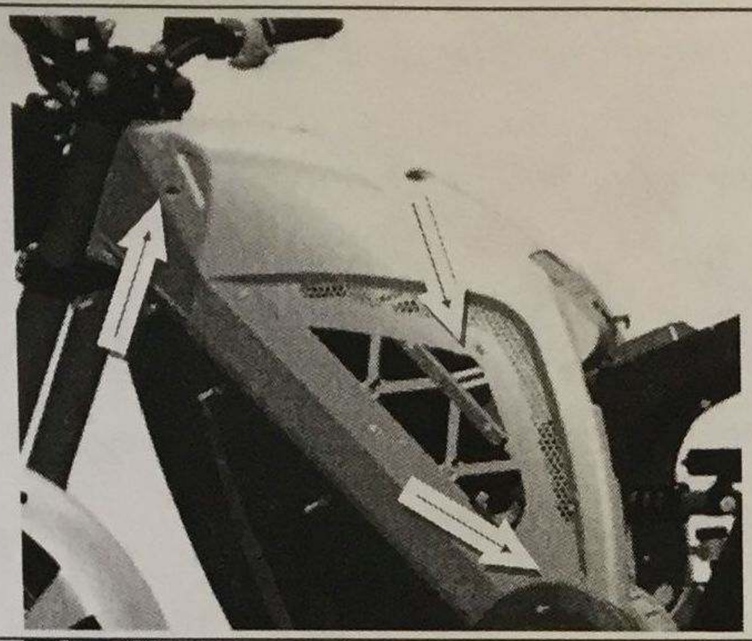
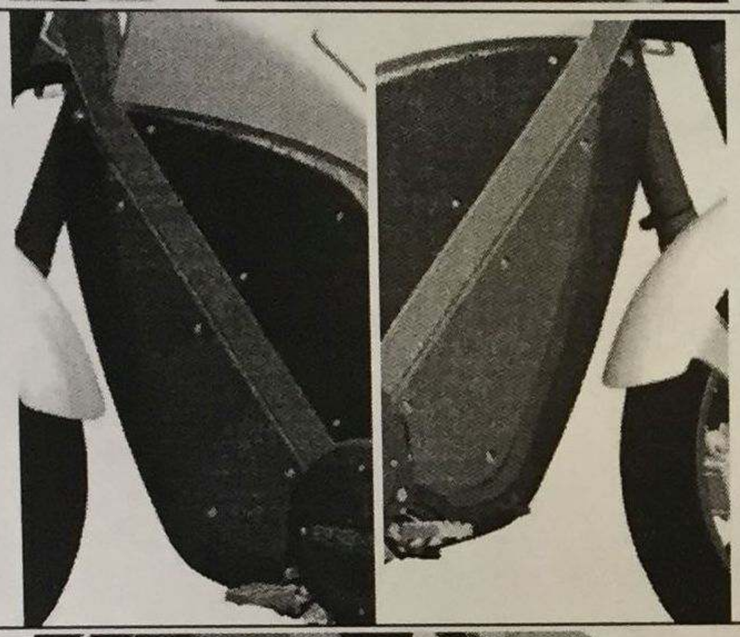
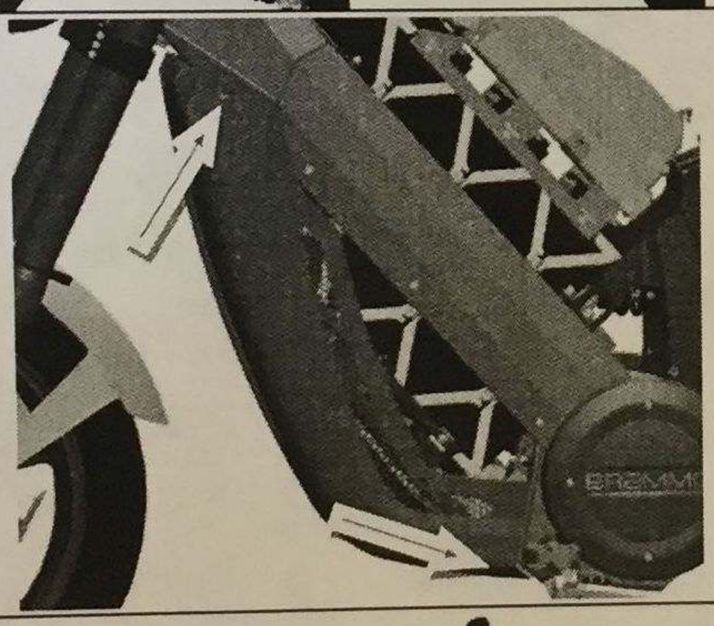
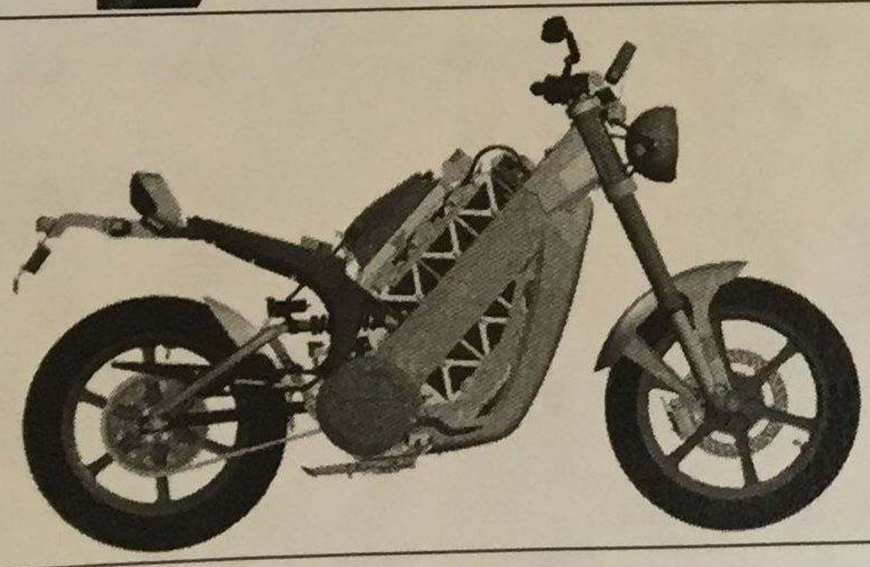
3.2.55—Materials Required

None

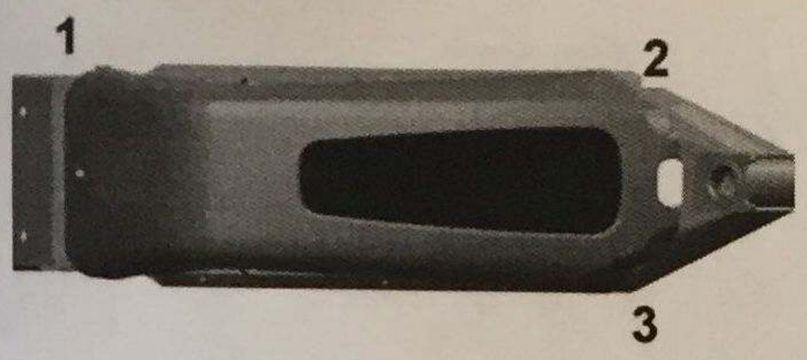
3.2.60—Removal and Repair Procedure

	Unlock and remove the seat.
	Use a 4mm Allen wrench to remove the top black side panels, both left and right.

3.2— Top and Bottom Body Panels

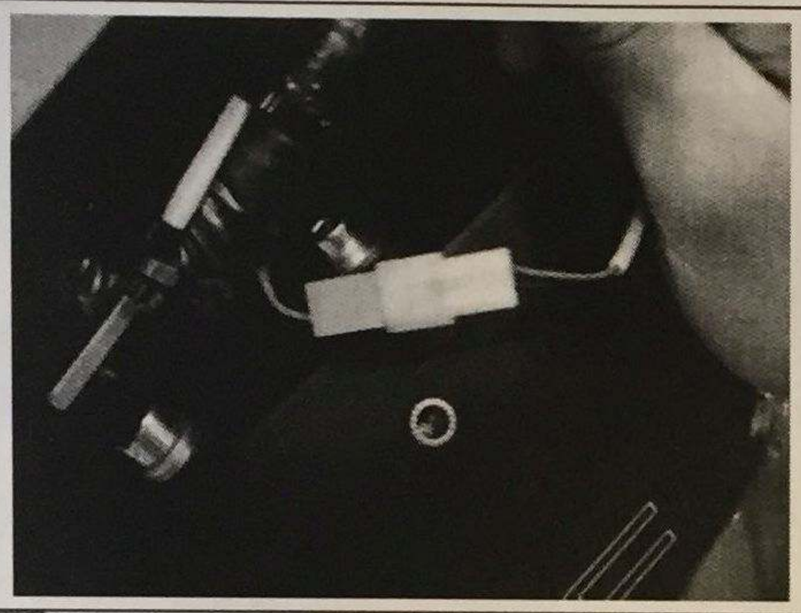
	Use a 4mm Allen wrench to remove the top body panel and disconnect the body power on button and exciter from the main harness.
	Remove the bottom black side panels, both left and right, using a 4mm Allen wrench.
	Use a 4mm Allen wrench to remove the lower body panel.
	Get new body panels. Position the bottom body panel on the chassis with the longer side on the front.

3.2— Top and Bottom Body Panels



Use loctite on screws, insert and and barely tighten in the order shown, then go back and in the order shown, torque the screws to 9 in lbs using a 4mm hex.

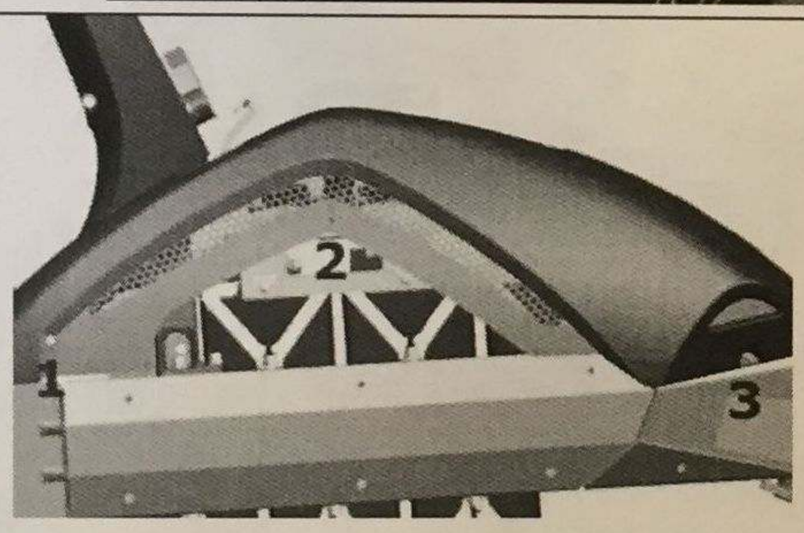
DO NOT OVER TIGHTEN AS THIS CAN CRACK THE BODY PANELS.



Connect the On/Off button to the wiring harness.

Apply Dielectric Grease to Sound Plug

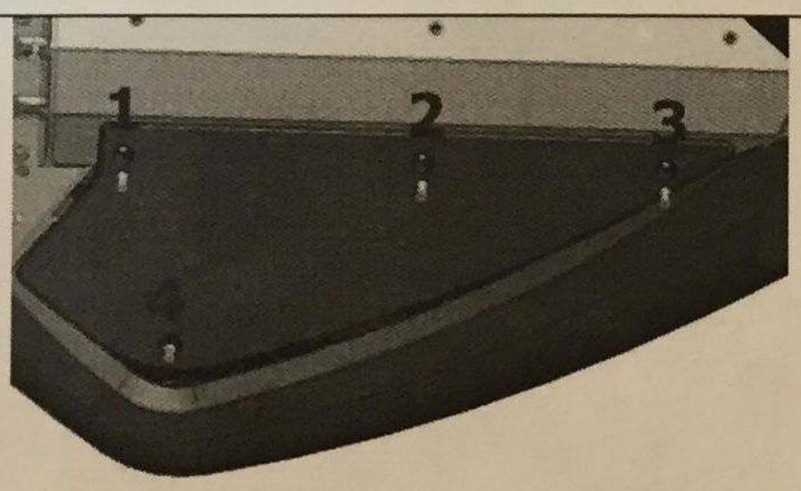
Connect the Exciter to the wiring harness and tuck up inside.



Insert the screws and and barely tighten in the order shown, then go back and in the order shown, torque the screws to 9 in lbs using a 4mm hex.

DO NOT OVER TIGHTEN AS THIS CAN CRACK THE BODY PANELS.

Repeat procedure the opposite side.



Lower Right Side Panel

Repeat the above procedure for the lower two side panels.

DO NOT OVER TIGHTEN AS THIS CAN CRACK THE BODY PANELS.

BRAMMO ENERTIA	Chapter Title	**3.3— Side Body Panels**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Side Body Panels	B0110-0103030
LE Carbon Fiber Side Panels	B0110-0103031

3.3.10—Overview

The body panels that cover the Enertia provide a protective barrier between the elements and the inner workings of the Enertia.

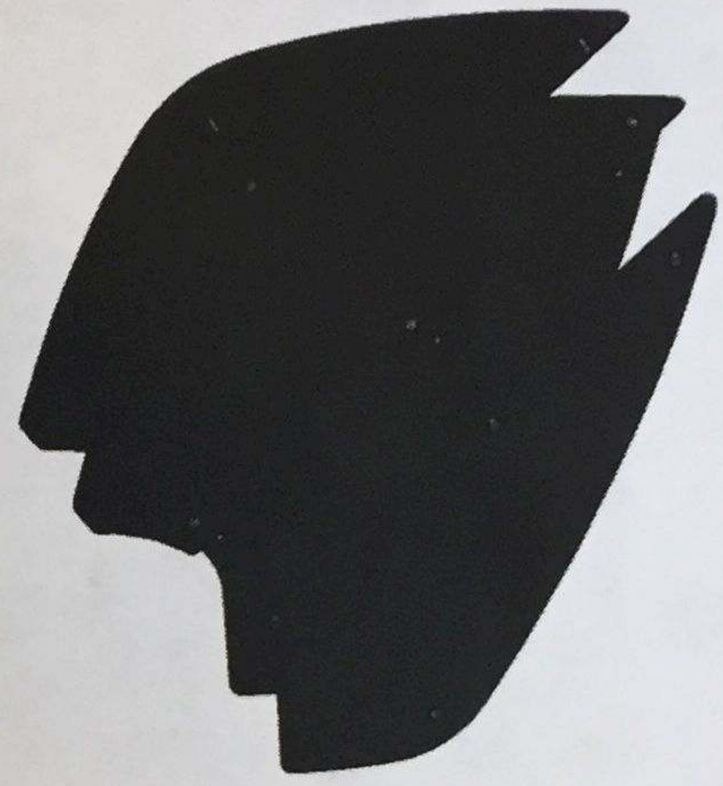


Figure 3.3.1 - Side Body Panels

3.3.20—Diagnosing a Problem

If the body panels are cracked or scratched they can be replaced. Unless the defect appears to be a factory problem, the replacement of body panels due to scratches or cracks or due to normal use is a non-warrantable issue.

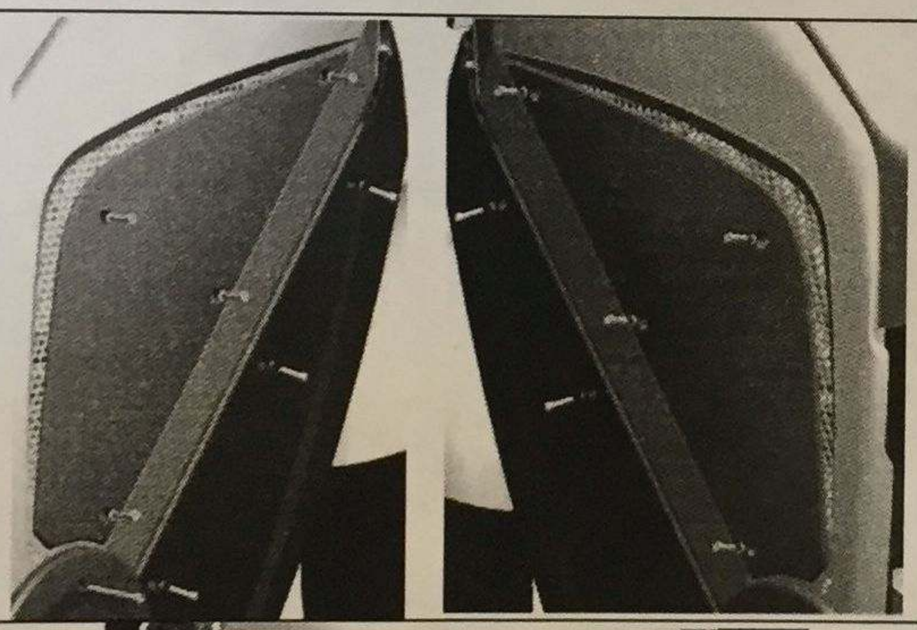
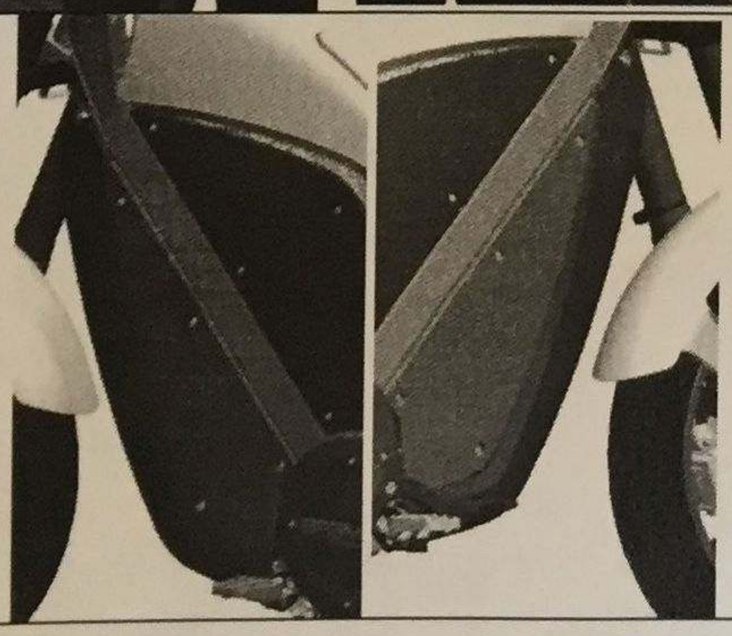
3.3.50—Setup and Tools

4 mm Allen wrench

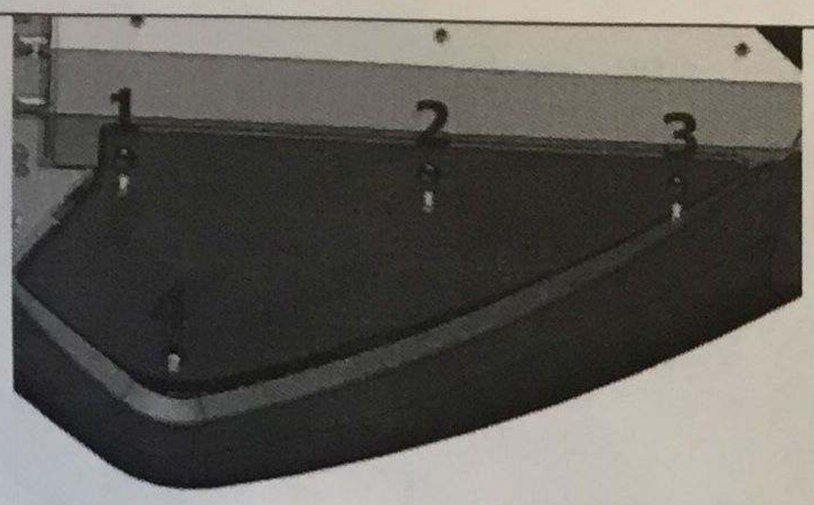
3.3.55—Materials Required

None

3.3.60—Removal and Repair Procedure

	Use a 4mm Allen wrench to remove the top black side panels, both left and right.
	Remove the bottom black side panels, both left and right, using a 4mm Allen wrench.

3.3— Side Body Panels

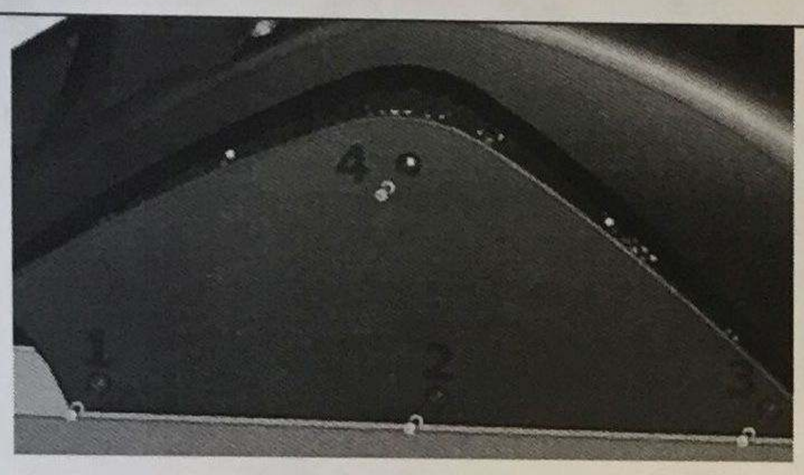


Lower Right Side Panel

Acquire replacement Side Panels.

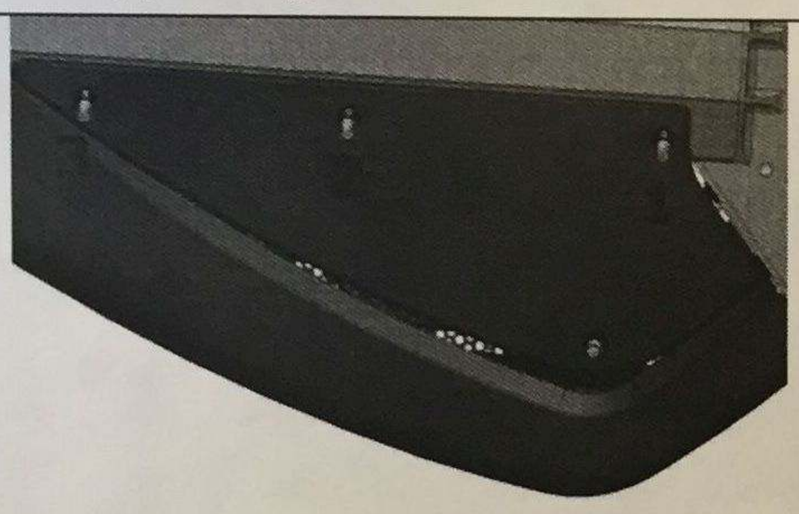
Use loctite on screws, insert and and barely tighten in the order shown, then go back and in the order shown, torque the screws to 9 in lbs using a 4mm hex.

DO NOT OVER TIGHTEN AS THIS CAN CRACK THE BODY PANELS.



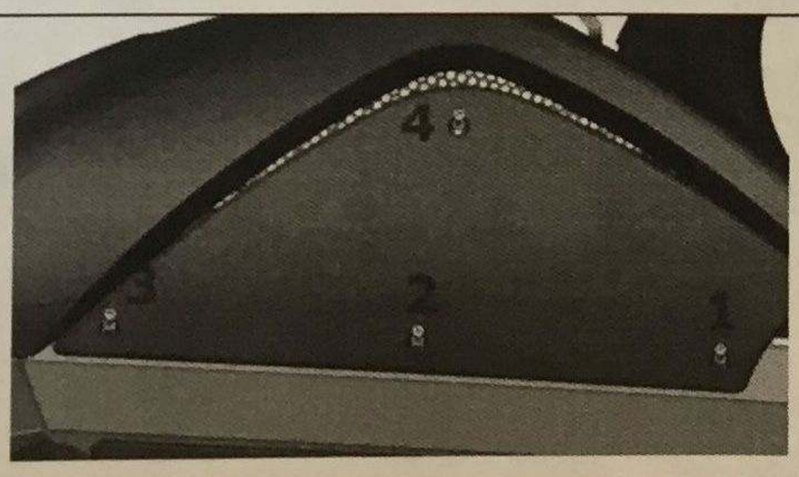
Upper Right Side Panel

Repeat the previous directions for the other 3 side body panels.



Lower Left Side Panel

Repeat the above procedure.



Upper Left Side Panel

Repeat the above procedure.

BRAMMO ENERTIA	Chapter Title	**3.4— Seat Assembly**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Seat Assembly – Standard	B0110-0103041
Seat Assembly – Premium Upgrade	B0110-0103042

3.4.10—Overview

The seat of the Enertia provides a comfortable platform to sit on while riding the Enertia.

Figure 3.4.1 – Seat Assembly

3.4.30—Diagnosing a Problem

If the seat is ripped or scratched it can be replaced. Unless the defect appears to be a factory problem, the replacement of the seat due to scratches or rips due to normal use is a non-warrantable issue.

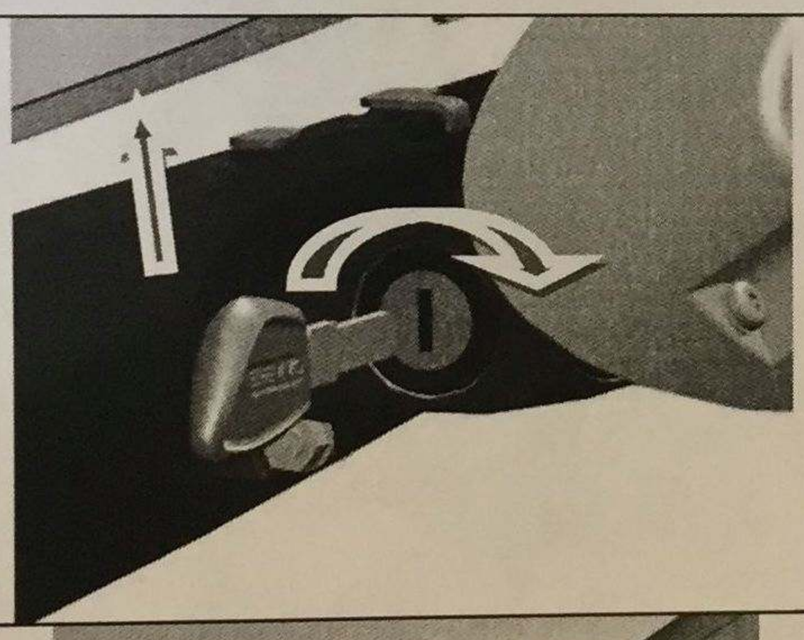
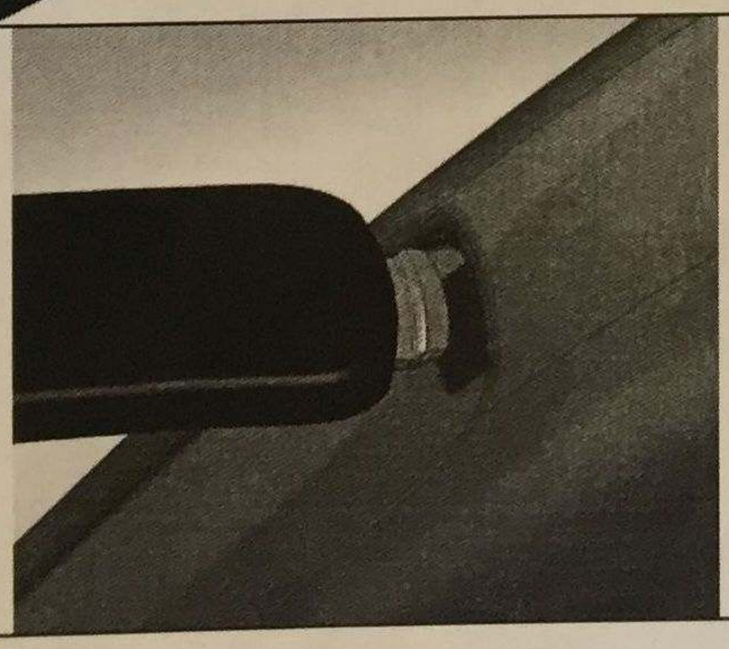
3.4.50—Setup and Tools

No tools are requires other than the key.

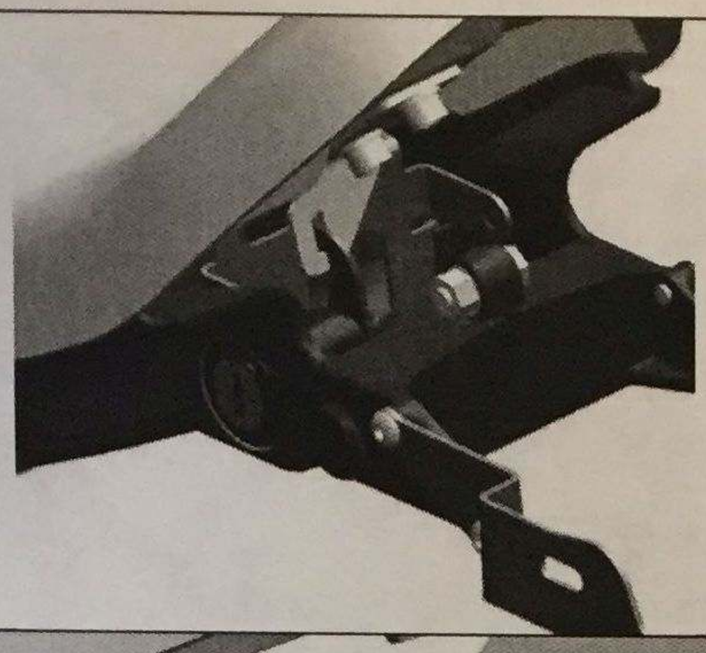
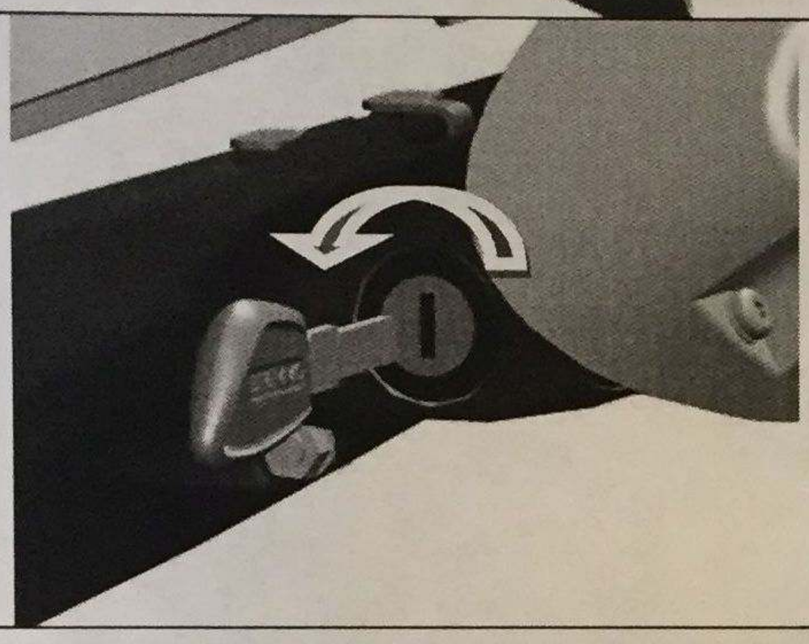
3.4.55—Materials Required

None Needed.

3.4.60—Removal and Repair Procedure

	Unlock and remove the old seat.
	Insert the plastic tab at the front of the new seat into the matching cut out in the upper body panel.

3.4— Seat Assembly

	Align the tongue on the seat to the HOOK, SEAT, FRONT on the seat strut assy. Slide the seat forward until the tongue is engaged into the hook.
	Using the key, lock the seat down.

Chapter Title	3.5—Rear Shroud Assembly

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Rear Shroud Assembly	B0110-0103050

3.5.10—Overview

The rear shroud extends off the back of the seat strut and provides a platform for the rear turn signals, the tail/brake light and the license plate and plate lamp are attached to the rest of the Enertia.

Figure 3.5 – Rear Shroud Assembly

3.5.30—Diagnosing a Problem

The problems that might occur with the tail shroud will be limited to cosmetic blemishes or cracks. For problems with any of the lights and on the tail shroud, see the specific section for the light.

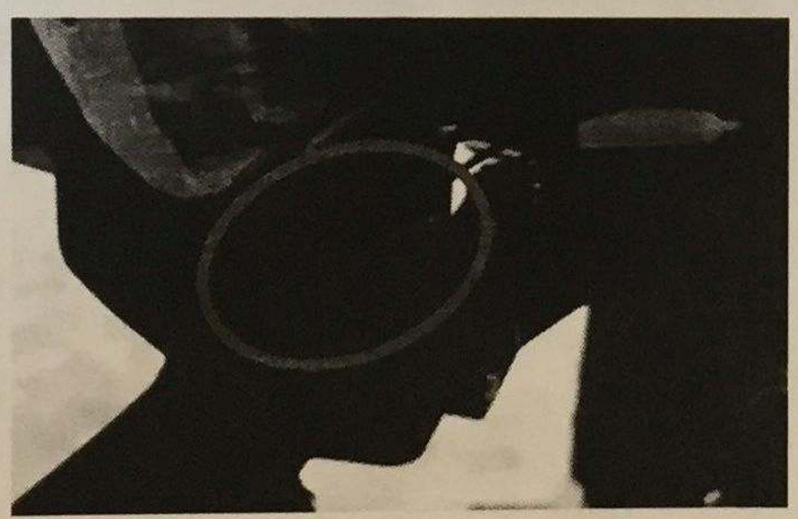
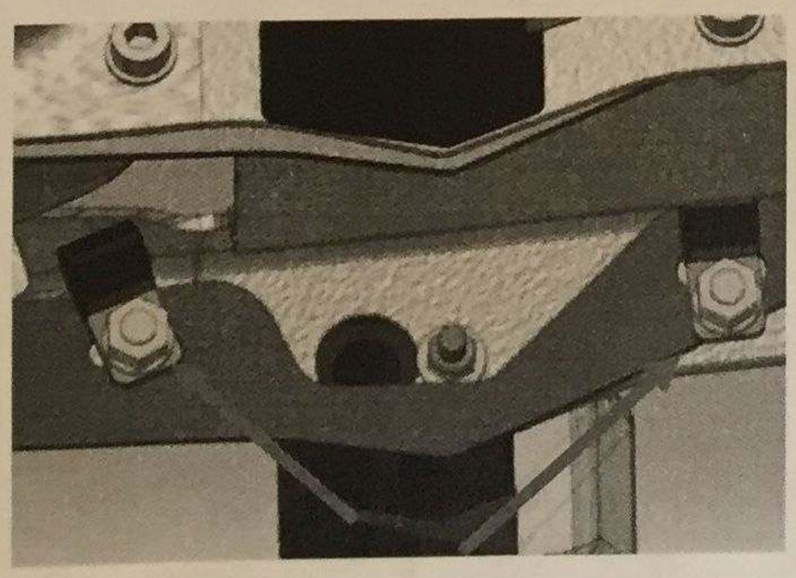
3.5.50—Setup and Tools

5 mm hex, 10 mm socket or wrench

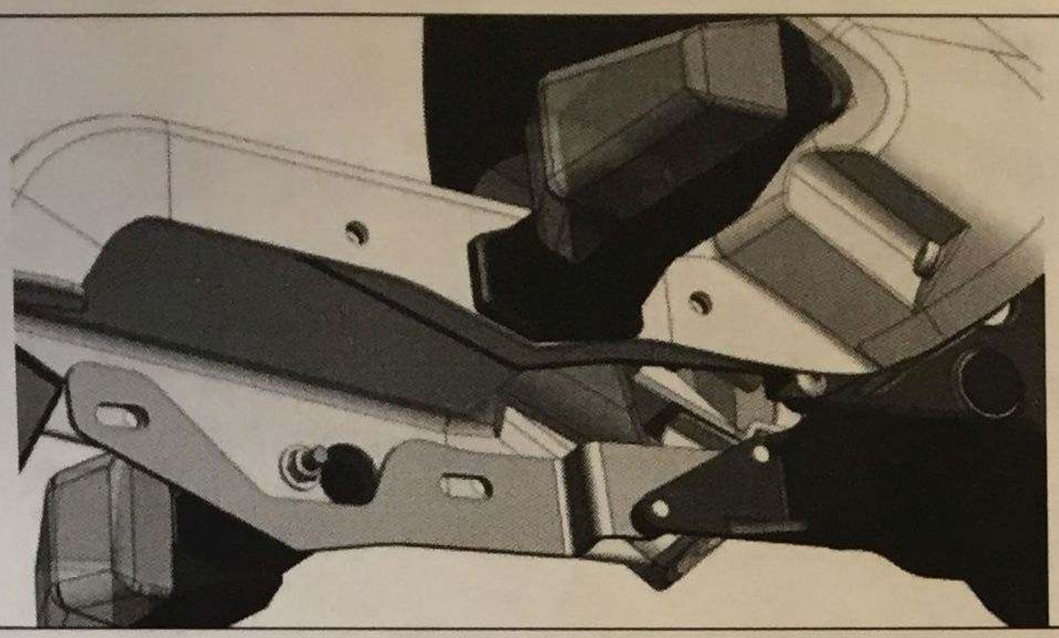
3.5.55—Materials Required

None

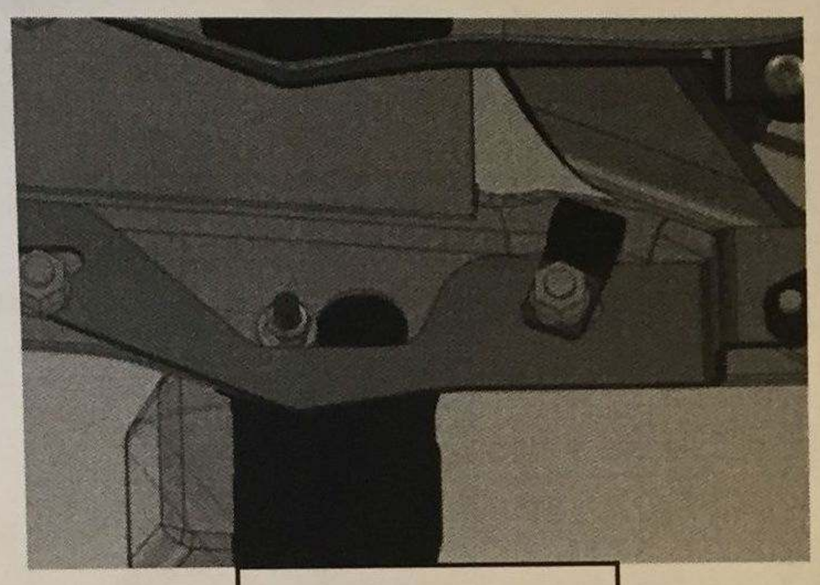
3.5.60—Removal and Repair Procedure

	Unlock and remove the seat.
	Disconnect all electrical from the tail shroud, left and right turn signal, license plate lamp, and tail/brake light. Also remove the license plate. Note – many of the connectors are hidden to protect them. The left turn signal connectors are shown.
	Unbolt the four fasteners that hold the shroud onto the Strut, two on each side using a 5mm Hex and 10mm socket or wrench. Keep a note of where the P-clamps are located and which wires are held up. Acquire replacement Shroud.

3.5—Rear Shroud Assembly

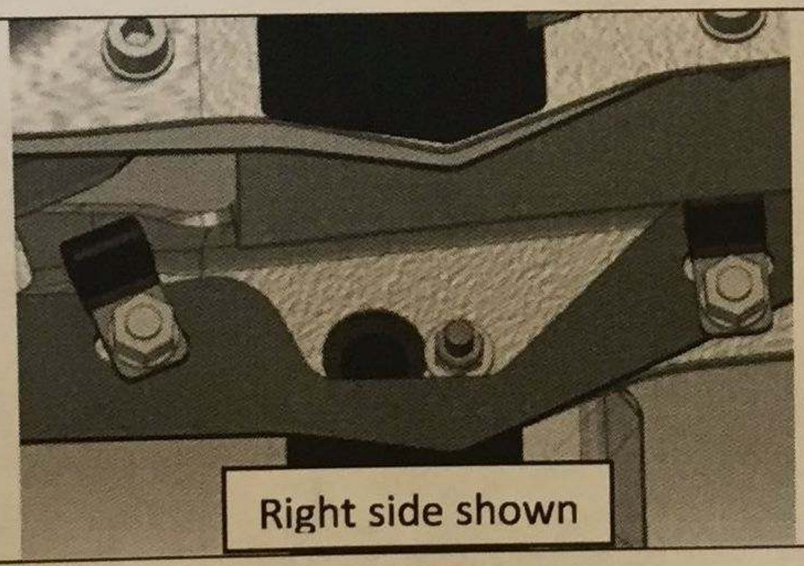


Align the new rear shroud over the two shroud brackets attached to the rear of the seat strut.



Left side shown

Attach the rear shroud to the seat strut using the four M6x18 screws. Do the following for all four screws. Insert through a M6 washer, followed by from the outside towards the inner part of the rear shroud, then the shroud bracket, another M6 washer, P-clamp, loctite, and an M6 nylock nut. Torque to 62 in lbs. using 5mm Hex and 10mm Socket



Right side shown

Install a P Clamp with one on left side and two on right side as shown in images and connect electrical.

Reattach all wires to the main harness.

Reinstall the seat.

BRAMMO ENERTIA	Chapter Title	**3.6 – Motor Covers**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Motor Covers	B0110-0103060

3.6.10—Overview

The motor covers are mostly aesthetic, however the right one does protect the rear brake master cylinder, and needs to be removed to service the rear brake master cylinder.

Figure 3.6 – Motor Covers

3.6.30—Diagnosing a Problem

If the motor covers are cracked or scratched they can be replaced. Unless the defect appears to be a factory problem, the replacement of motor covers due to scratches or cracks due to normal use is a non-warrantable issue.

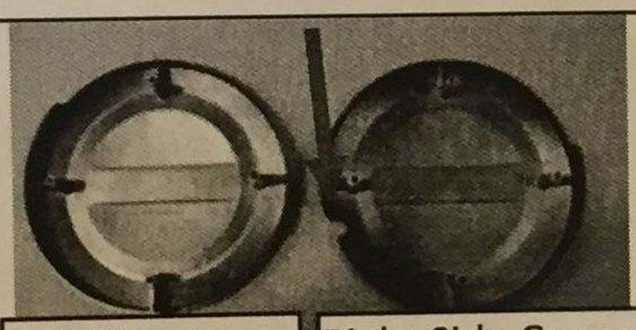
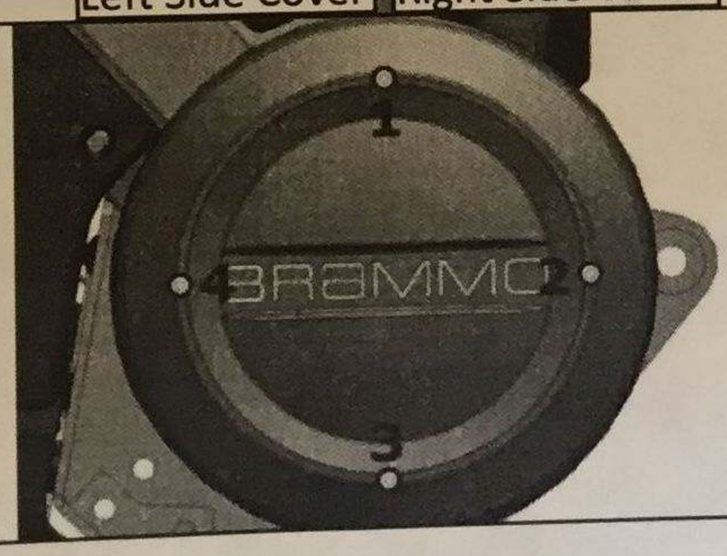
3.6.50—Setup and Tools

4mm Hex

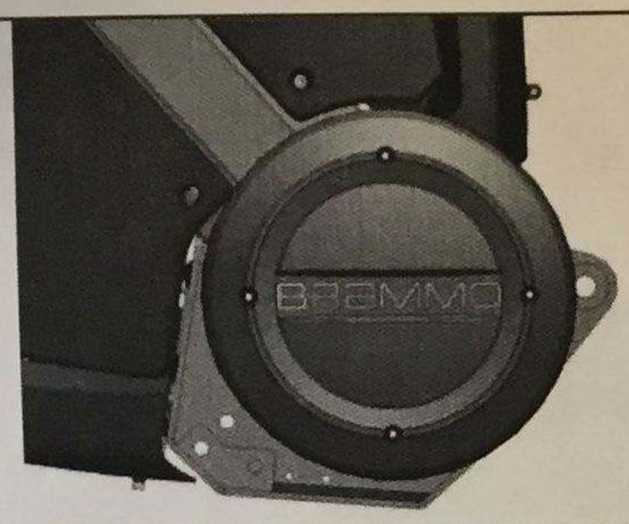
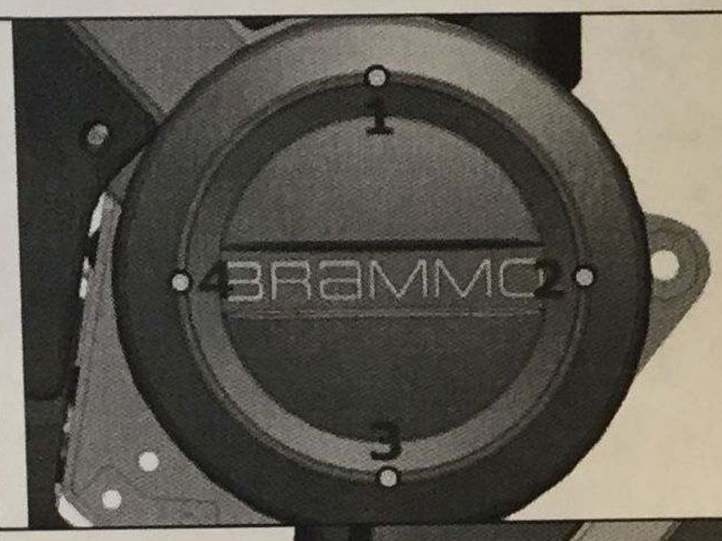
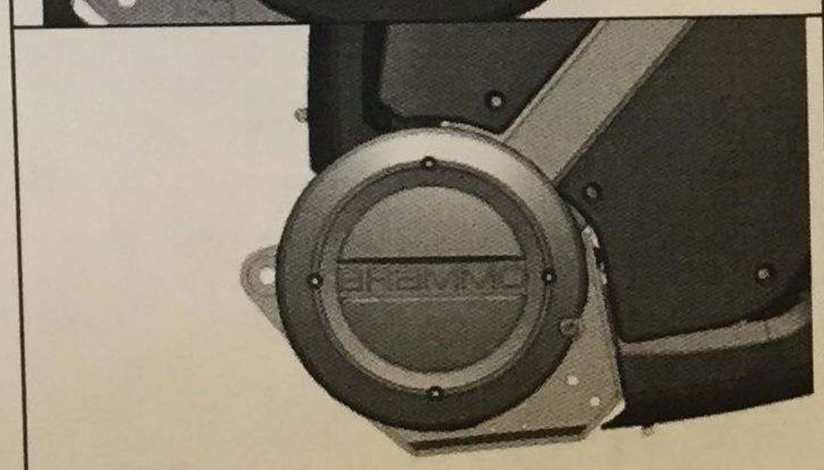
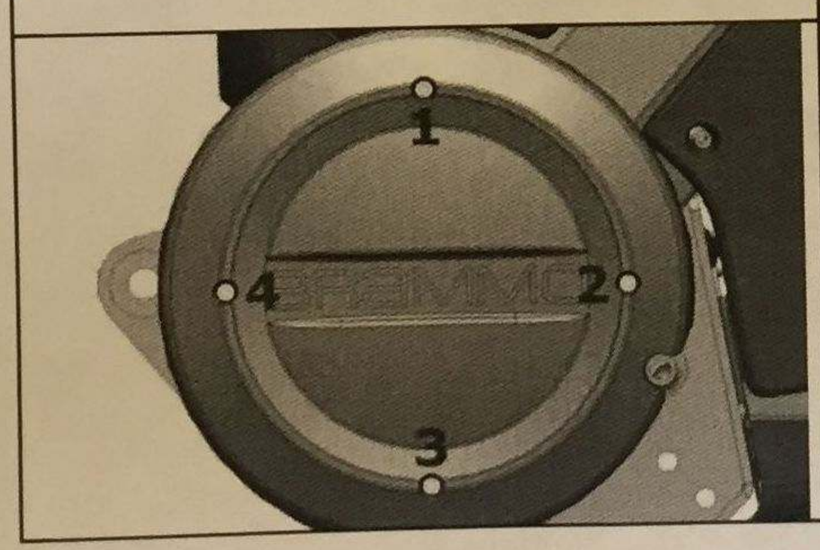
3.6.55—Materials Required

Loctite Blue 234

3.6.60—Removal and Repair Procedure

 Left Side Cover Right Side Cover	***NOTE: Left and Right Motor covers are different. The right motor cover has a additional cut out the left does not have. Pay attention to orientation while removing.**
	On the left chassis hip use a 4mm hex wrench to loosen and remove the four bolts connecting the Motor Cover to the chassis, and remove Motor Cover.

3.6 – Motor Covers

	Position the left motor cover over the left chassis hip so the Brammo logo is upright. Push the left motor cover until it sits in the inset.
	Apply loctite to (4) M5X50 screws as they are inserted in a clockwise order and slightly tighten. In the order shown, torque to 46 in. lbs.
	Position the right motor cover over the RIGHT chassis hip so the Brammo logo is upright. Push the right motor cover until it sits in the inset.
	Apply loctite to (4) M5X50 screws as they are inserted in a clockwise order and slightly tighten. In the order shown, torque to 46 in. lbs.

BRAMMO ENERTIA	Chapter Title	**3.7 – Foot Pegs**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Foot Peg Assembly	B0110-0103070

3.7.10—Overview

The foot pegs are designed to allow the rider to place their feet on the foot pegs and allow for easy use of the rear brake on the right side.

3.7.30—Diagnosing a Problem

The foot pegs are cast aluminum and it is extremely unlikely that there will ever be an issue with the foot pegs unless the Enertia is dropped or is involved in an accident. Visually inspect the foot pegs and if there is an issue the owner may wish to replace them due to cosmetic or functional reasons.

3.7.50—Setup and Tools

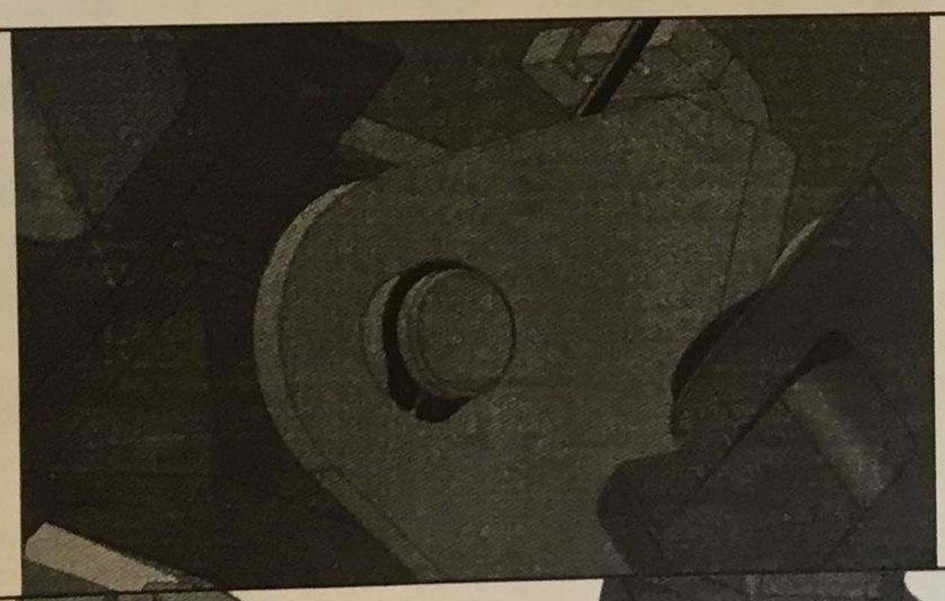
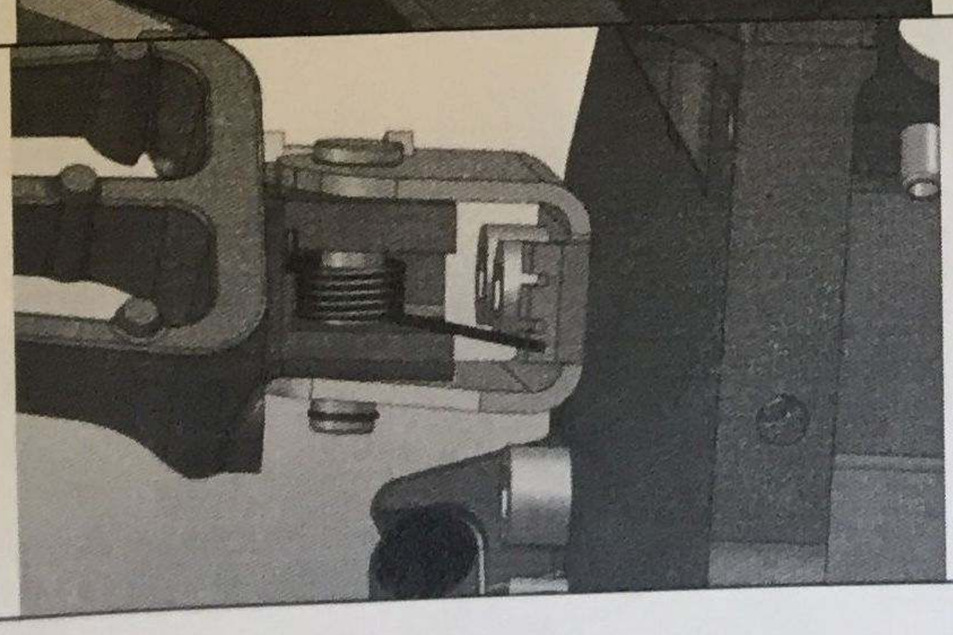
Small snap ring pliers, 8 mm hex

3.7.55—Materials Required

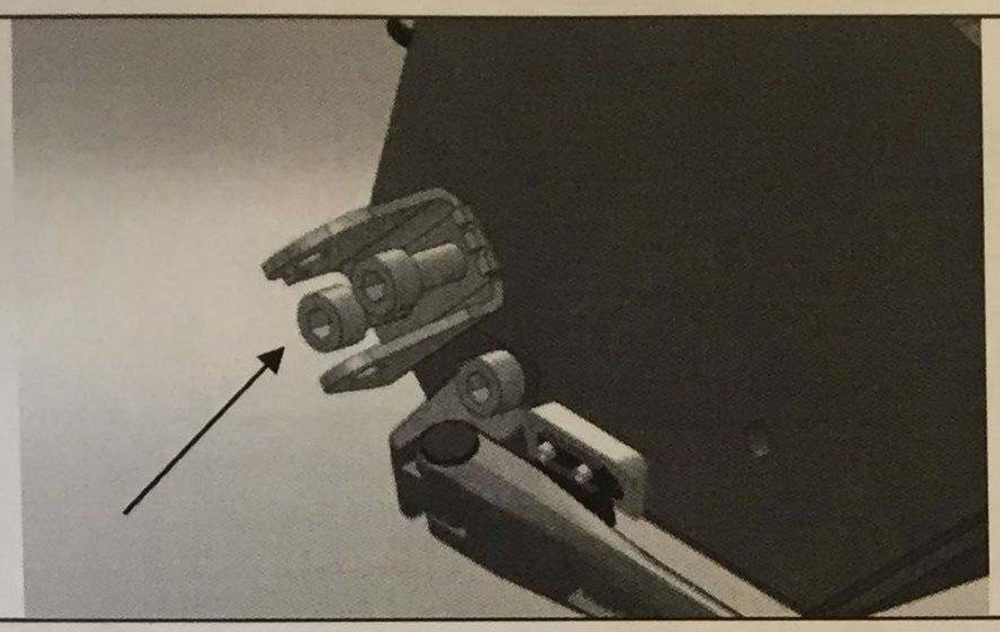
Loctite Blue 234
Replacement 3/8" snap ring

Figure 3.7.1 – Foot pegs

3.7.60—Removal and Repair Procedure

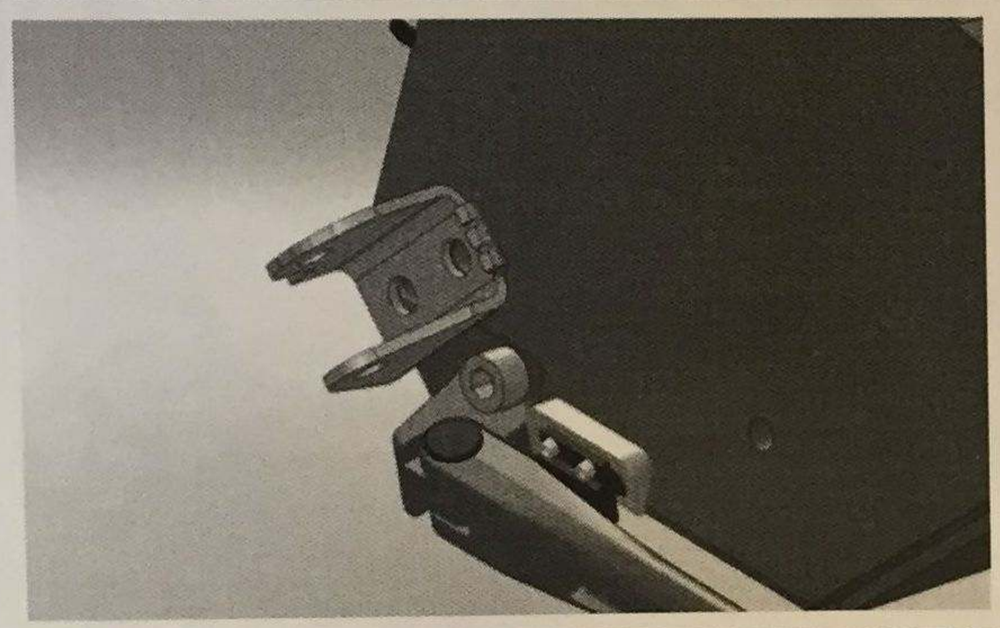
	Place the Enertia in a stand to hold it upright.
	Using the snap ring pliers remove the 3/8" snap ring from the clevis pin.
	Remove the foot peg from the footpeg mounting bracket by removing the clevis pin. While removing the clevis pin, keep your thumb over the spring to keep it from poping out.

3.7 – Foot Pegs



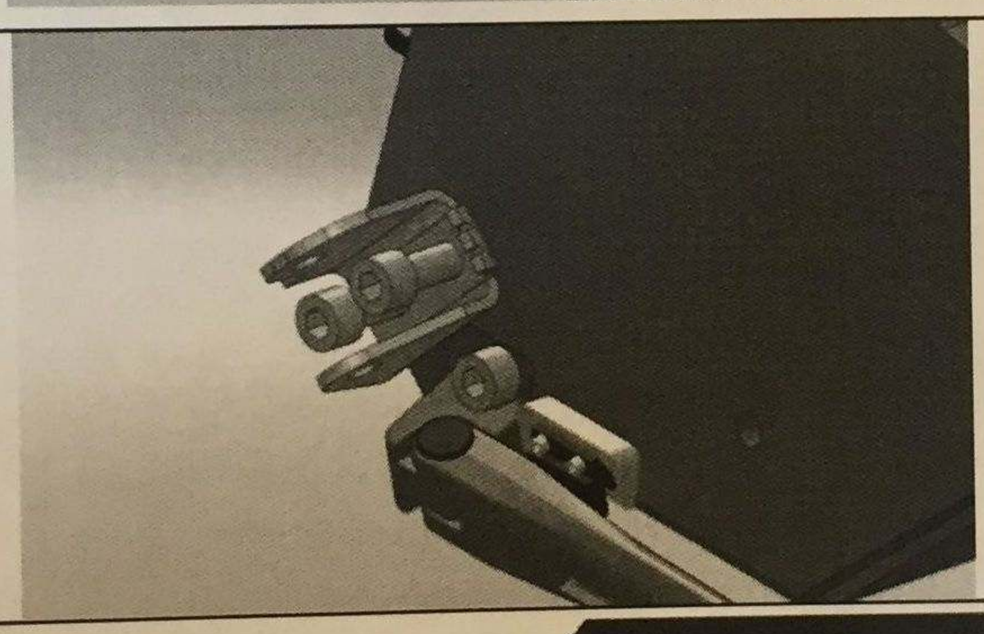
Using an 8mm Hex, remove the two M10 bolts from the side of the chassis. Remove Bracket and set aside.

Acquire Replacement Foot peg Assembly.

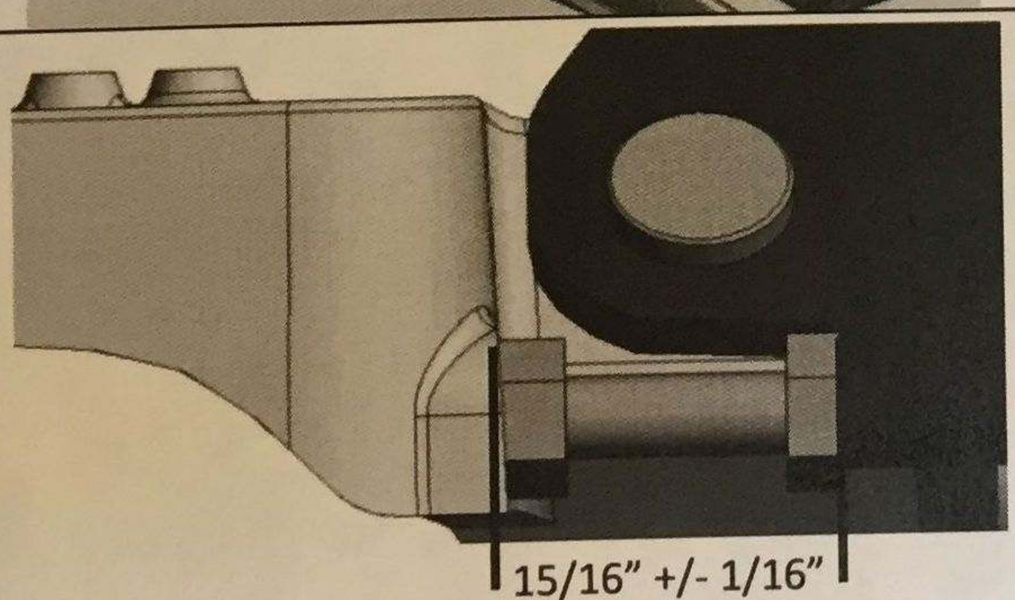


Align the left footpeg bracket to the threaded inserts on the left side of the chassis, just ahead of the kickstand as shown.

For the proper footpeg bracket orientation (making sure the left foot peg bracket is on the left side of the chassis) the footpeg bracket flange with the square cut will face forward.

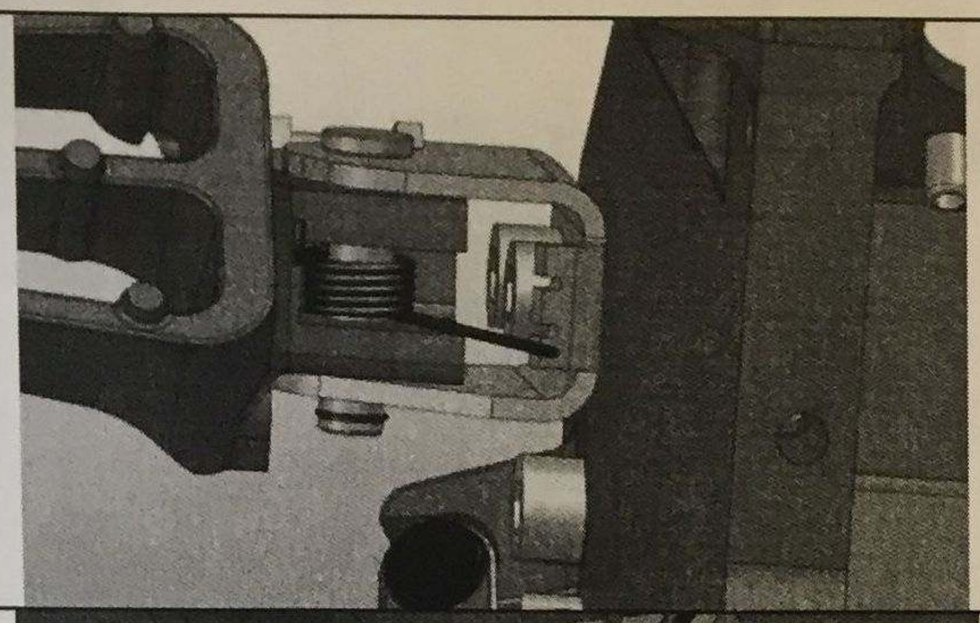


Apply Loctite to two M10X35 screws, and attach the left foot peg bracket to the chassis. Torque to 221 in. lbs. using 8mm Hex.



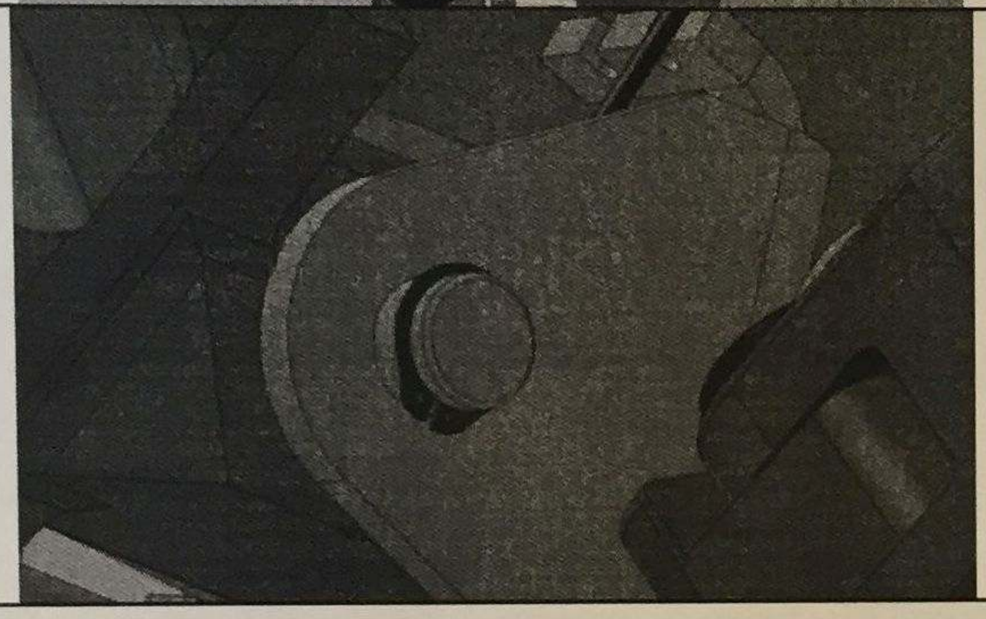
Using the 10mm socket adjust the bolt until there is 15/16" +- 1/16" from the top of the bolt head to the flush of the threaded hole. Tighten the nut to the footpeg.

3.7 – Foot Pegs



Attach the footpeg to the footpeg mounting bracket using the clevis pin, with the footpeg spring between the two bosses on the footpeg as shown.

TIP: Hold the spring in the bracket with the thumb of one hand while inserting the clevis pin with the other hand.



Using the snap ring pliers attach the new 3/8” snap ring to the clevis pin.

Repeat procedure for right side foot peg.

	Chapter Title	3.8 – Kickstand Assembly

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Kickstand Assembly	B0110-0103080

3.8.10—Overview

The kickstand is used to keep the Enertia from falling over when it is not in use.

3.8.30—Diagnosing a Problem

The kickstand is made from forged steel and any damage to it is most likely the result of misuse. If the kickstand is visibly bent, has cracks around the clevis pin, or in any way fails to keep the Enertia upright while parked the kickstand needs to be replaced.

Figure 3.8.1 – Kickstand Assembly

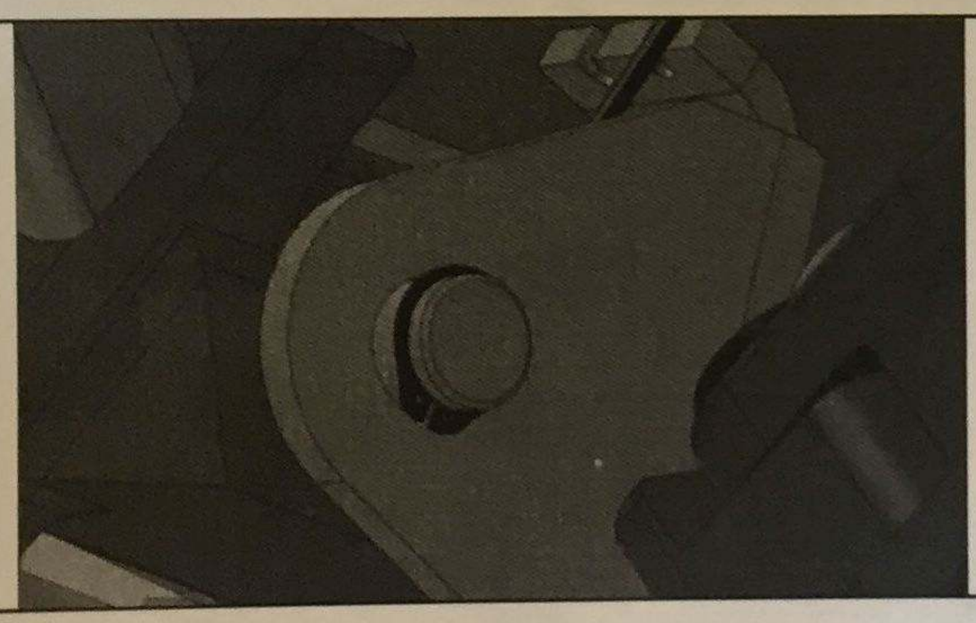
3.8.50—Setup and Tools

Small snap ring pliers, 8mm hex,

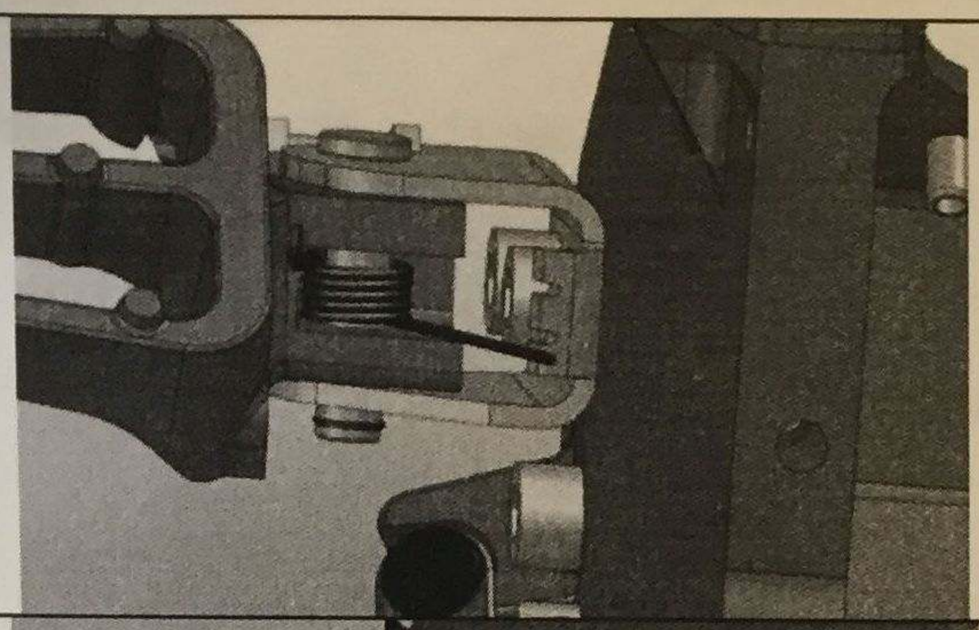
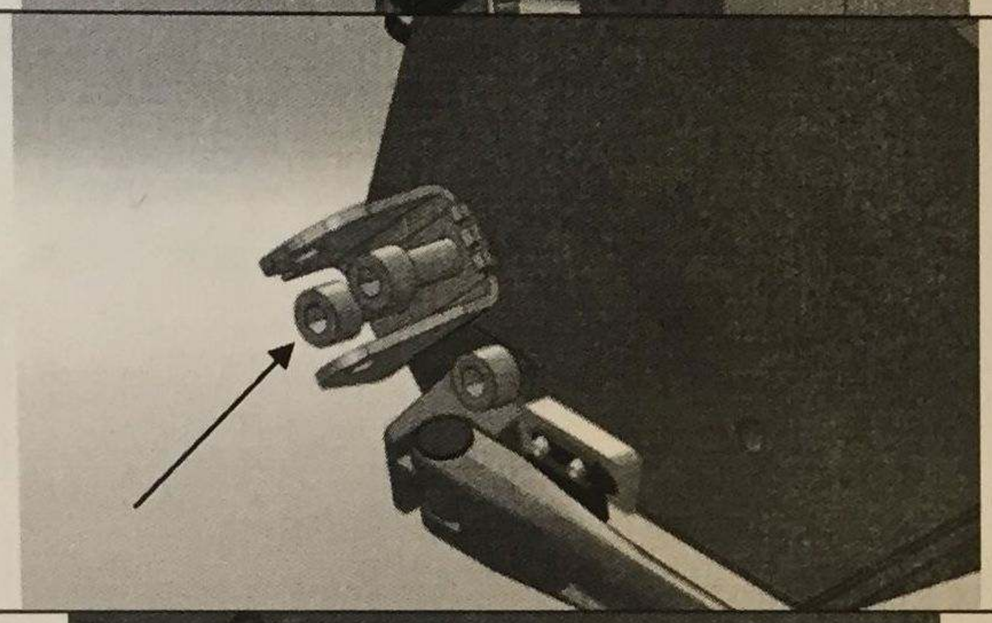
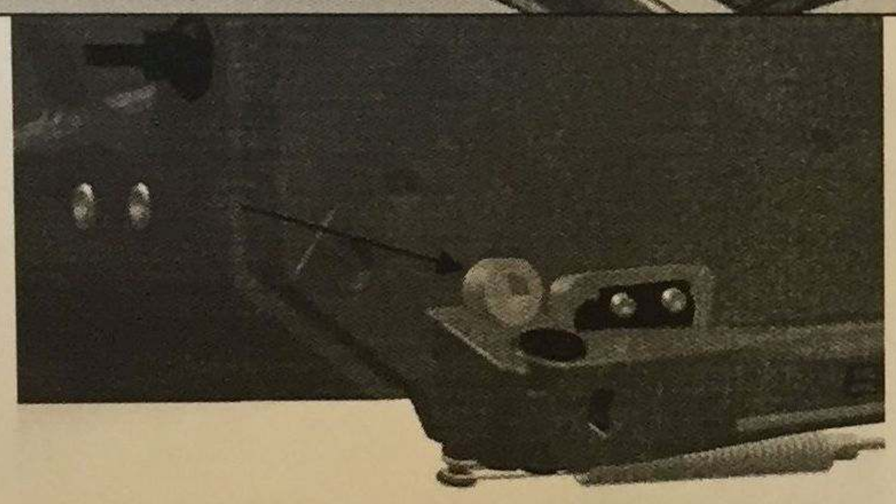
3.8.55—Materials Required

Loctite Blue 234
Replacement 3/8" Snap Ring

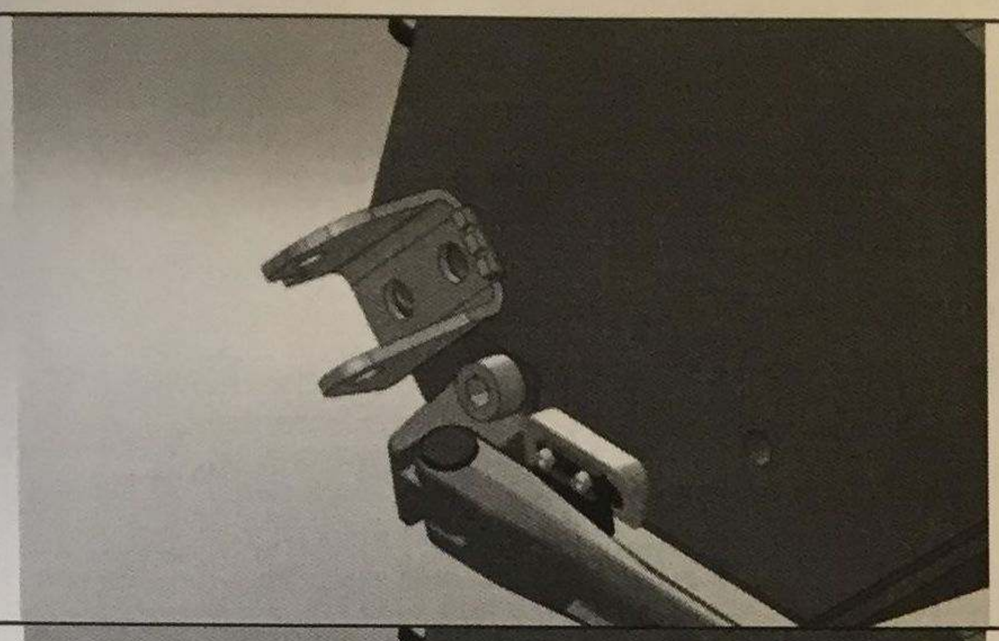
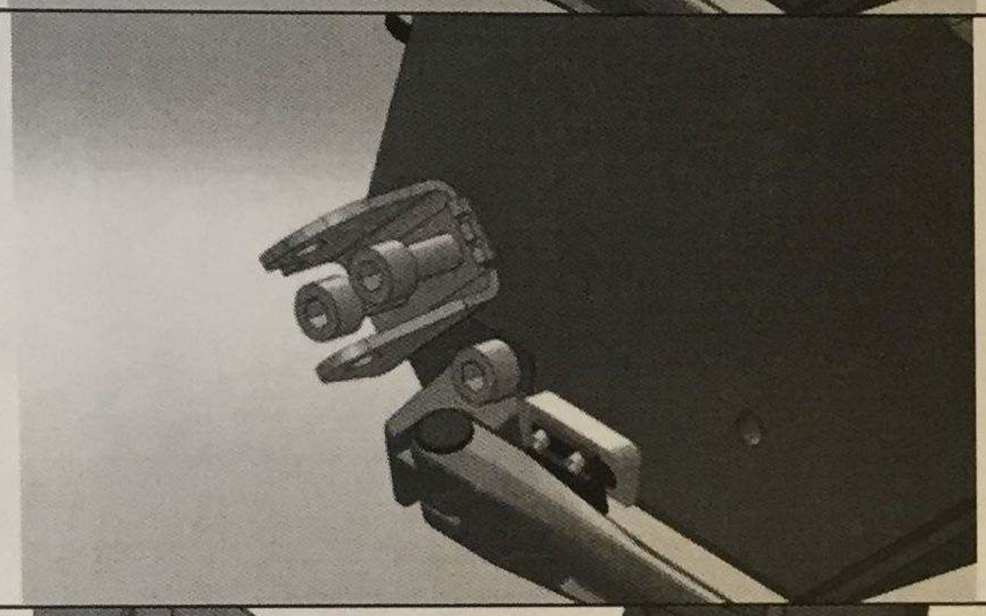
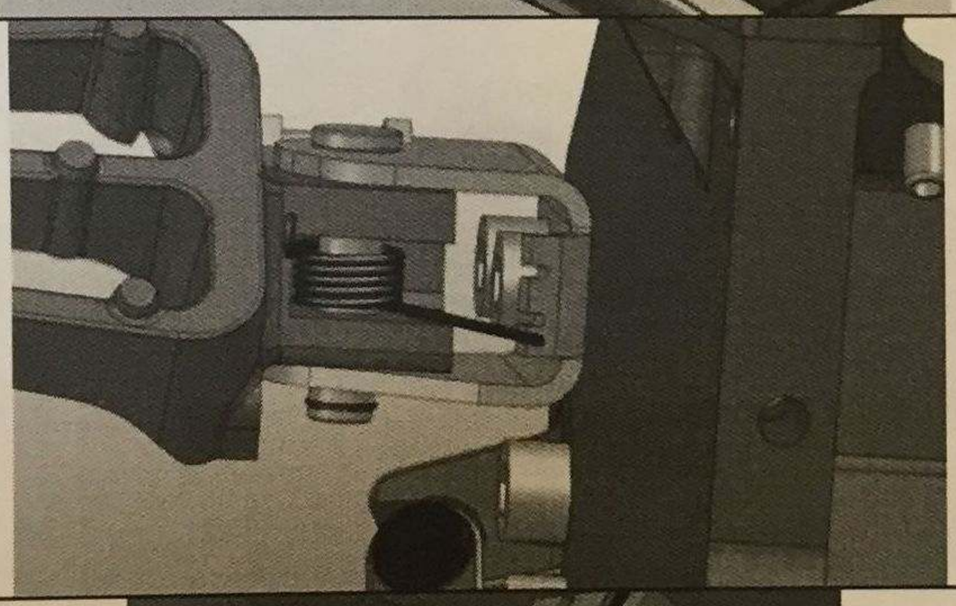
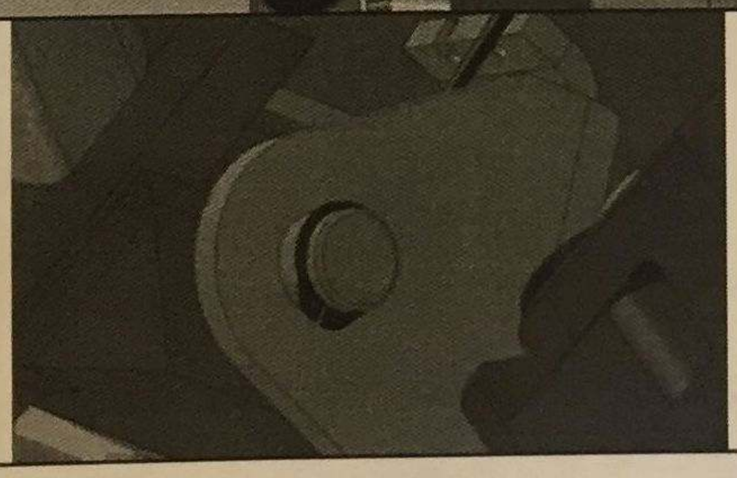
3.8.60—Removal and Repair Procedure

	Place the Enertia in a stand with the rear wheel off of the ground.
	On the left footpeg use the snap ring pliers to remove the 3/8" snap ring from the clevis pin.

3.8 – Kickstand Assembly

	Remove the footpeg from the footpeg mounting bracket by removing the clevis pin. Becareful of the spring between the two bosses on the footpeg. It will be under tension and can shoot out when the clevis is removed.
	Using an 8mm Hex, remove the two M10 bolts from the side of the chassis. Remove Bracket and set aside.
	Using an 8mm Hex, remove the M10 bolt holding the kickstand onto the chassis. Set old kickstand aside. Acquire Replacement Kickstand assembly.
	Apply loctite to the single M10X25 bolt and orient the kickstand to point to the rear of the bike, attach to the chassis as shown. Hand tighten using the 8mm hex bit. Bolt will be tightened after foot peg bracket is installed.

3.8 – Kickstand Assembly

	Align the left foot peg bracket to the threaded inserts on the left side of the chassis, just ahead of the kickstand as shown. For the proper foot peg bracket orientation (making sure the left foot peg bracket is on the left side of the chassis) the footpeg bracket flange with the square cut will face forward.
	Apply Loctite to two M10x35 screws, and attach the left foot peg bracket to the chassis. Torque the two foot peg M10 bolts and the Single Kickstand M10 bolt to 221 in. lbs. using 8mm Hex.
	Attach the foot peg to the foot peg mounting bracket using the clevis pin, with the footpeg spring between the two bosses on the foot peg as shown.
	Using the snap ring pliers attach the 3/8” snap ring to the clevis pin.
	Test Kickstand to ensure the sensor is working.

Chapter Title	4.1—Throttle

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Throttle	B0110-0104010

4.1.10—Overview

The throttle is a mechanism that controls the amount of power that will be sent to the Enertia's motor. The more power given to the motor the faster the Enertia will go. Twisting the throttle sends an electrical signal to the motor controller, which regulates power to the motor based on pre-programmed settings.

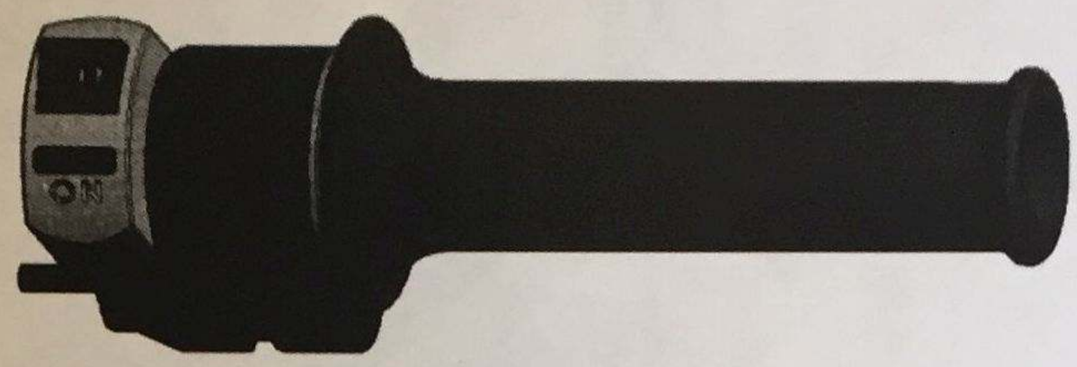


Figure 4.1.1 - Throttle

4.1.40—Diagnosing a Problem

If the throttle sticks and does not want to return to a neutral position, this may be due to dust and debris collecting underneath the throttle sleeve.

If twisting the throttle results in no acceleration, there may be a loose or intermittent connection in the throttle harness. Check all throttle electrical connections.

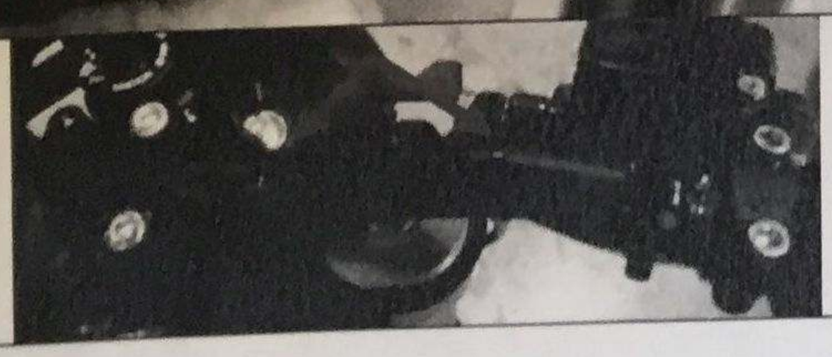
4.1.55—Setup and Tools

- #2 Phillips Screwdriver
- 5mm Allen wrench

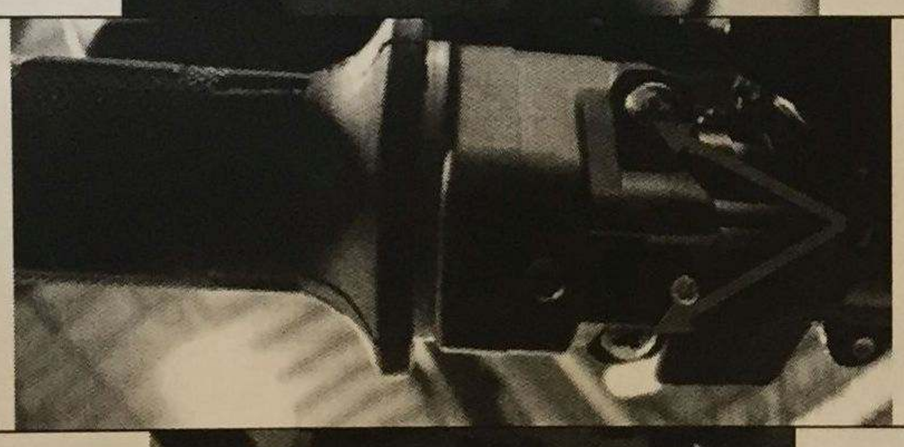
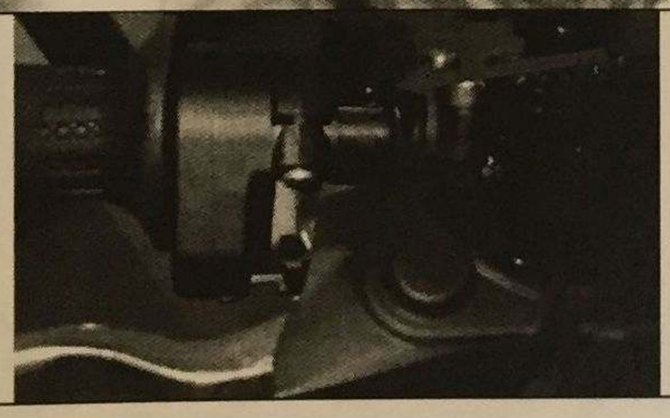
4.1.57—Materials Required

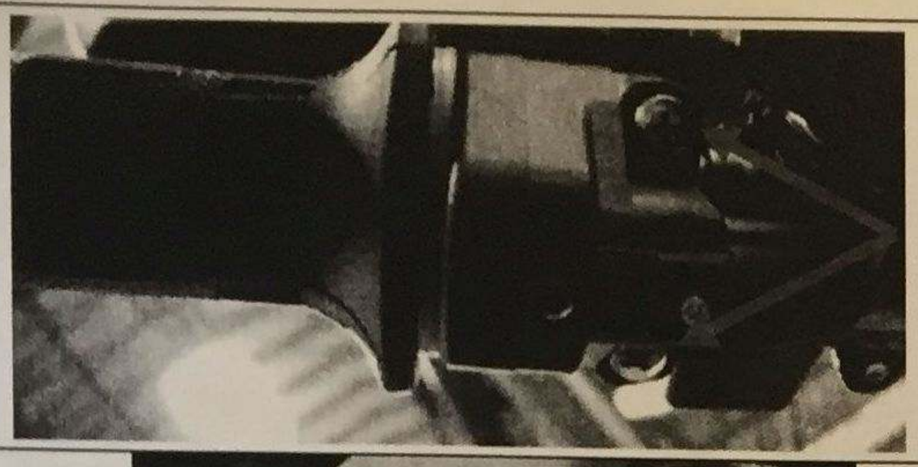
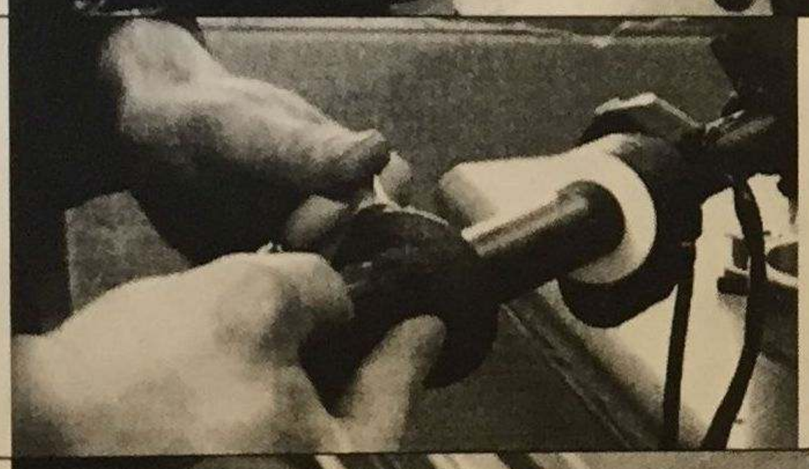
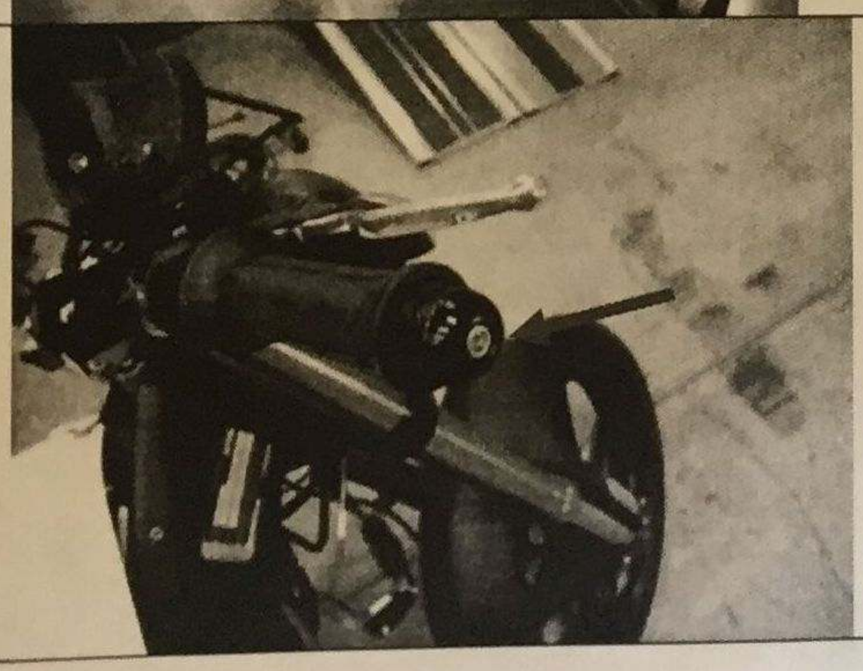
- Compressed Air

4.1.60—Removal and Repair Procedure

	Remove the lower body panel per Section 3.2
	Disconnect the throttle wiring from the main harness. To do this pull the white connector lock back all the way. Be careful while performing this though, because it is easy to break off the back of the tab. Once the tab is all the way back the connector will pull apart.
	Clip the 2 cable ties that hold the wiring to the right side handlebar.

4.1—Throttle

	Using a 4 mm hex, remove the fork harness guide and pull the throttle connector free.
	Remove the right handlebar plug using the 5 mm Allen wrench.
	Stick a compressed air nozzle under the end of the rubber hand grip and blow air under the grip and slide it off the throttle.
	Using the #2 Phillips screw driver, loosen the 2 Phillips screws.
	Using a #2 Phillips screwdriver, loosen the two screws on the back of the throttle on/off switch. (Only one screw is shown)
	Slide the throttle, throttle spacer, and throttle on/off switch from the handlebar.

	Slide the new on/off switch and throttle on the handlebar with spacer and make sure there is about 1/8-1/4” between the end of the spacer and the end of the handlebar. Tighten the two screws on the on/off switch and the two throttle screws with the Phillips screwdriver. (only throttle screws shown.)
	Feed the throttle connector down through the dash brackets and under the lower triple clamp and connect to the throttle connector on the harness.
	Install 2 new cable ties to the hold the wires to the handlebars. Reconnect the fork harness guide with the 4 mm hex.
	Using the compressed air install the right hand grip in the reverse. Push until it is snug against the two spacer washers.
	Reinstall the handlebar plug and tighten with a 5 mm hex.
	Test the throttle to ensure proper function.

Chapter Title	4.2 — Motor Controller & Heat Sink

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Motor Controller and Heat Sink	B0110-0104020
Motor Controller, Heat Sink, Bracket, DCDC Converter, Horn	B0110-0104021

4.2.10—Overview

The motor controller (DMC) is the device that controls the performance of the electric motor for the Enertia. It takes the impulses received from the throttle and then provides the correct amount of energy to the motor to achieve the desired power. Motor controller settings are pre-programmed and cannot be altered without the correct software and diagnostic equipment.

Figure 4.2.1 – Motor Controller and Heat Sink

The heat sink is an object that disperses heat generated by the motor controller keeping it from overheating.

4.2.40—Diagnosing a Problem

A failure in the motor controller can become noticeable through uneven drive speeds, incorrect acceleration curves, a non-driving Enertia, or a power cycle that wants to apply full throttle at all times. Contact BRAMMO LIVE to help diagnose motor controller issues.

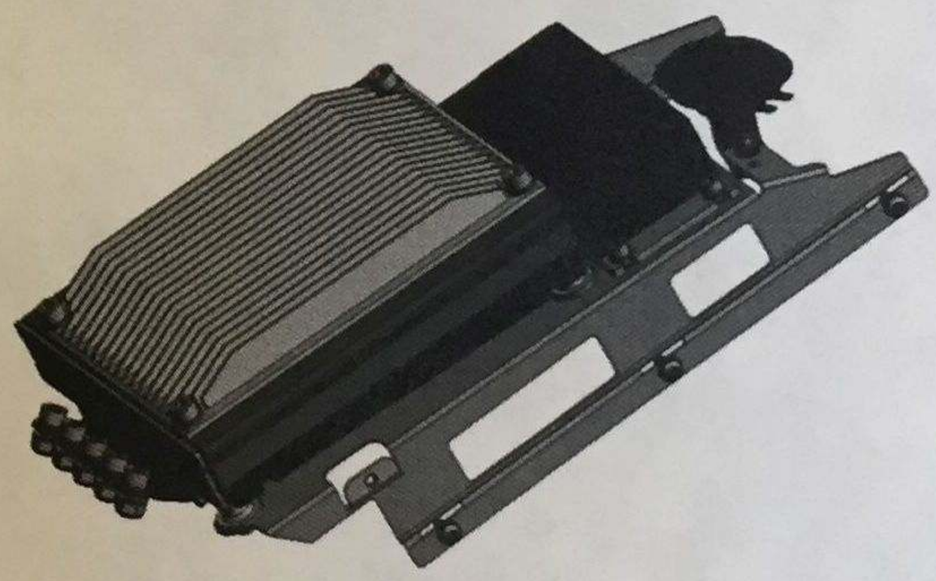


Figure 4.2.2 - Motor Controller, Heat Sink, Bracket, DCDC Converter, Horn

4.2.55—Setup and Tools

- Metric Allen wrench set
- Metric combination wrench set
- Heat gun
- Scissors

4.2.57—Materials Required

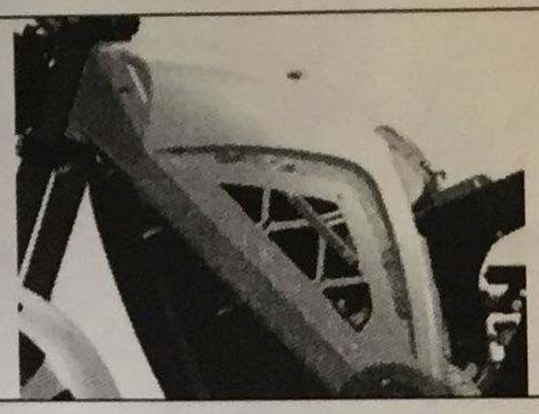
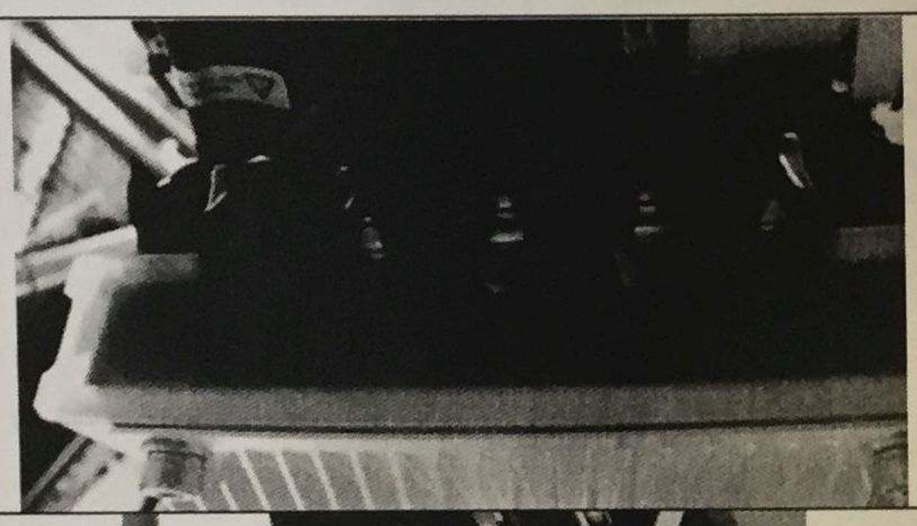
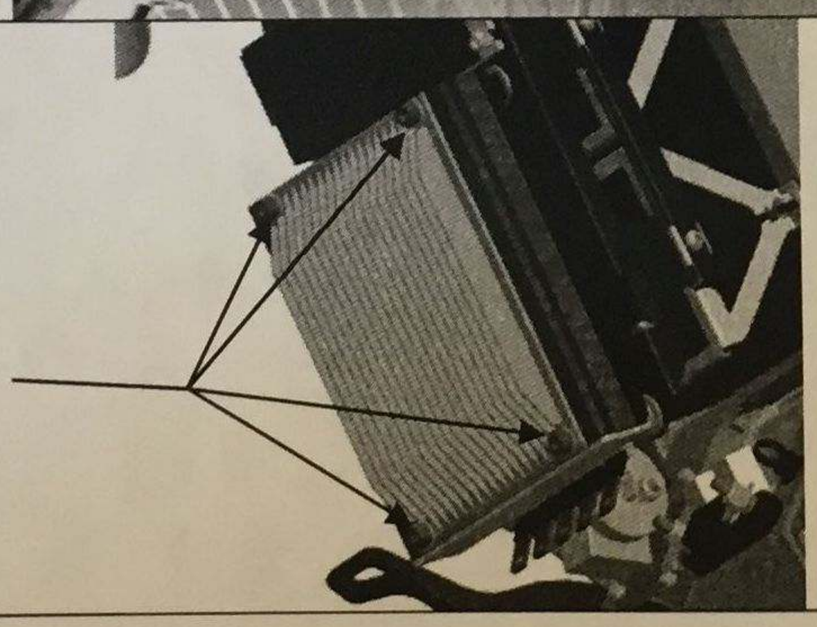
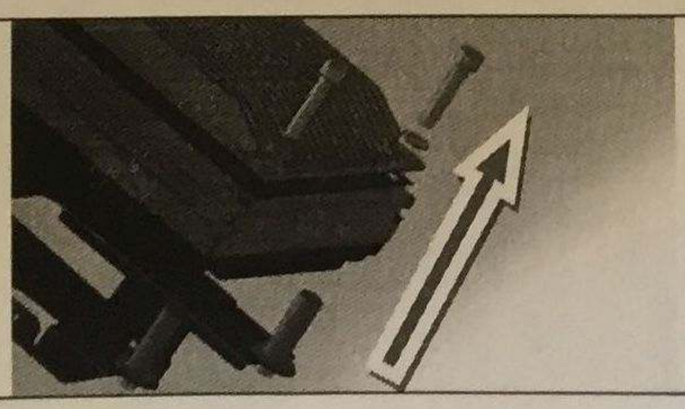
- 1” diameter heat shrink tube
- Replacement motor controller and heat sink
- Replacement thermal pad
- Loctite Blue 234

4.2.60—Removal and Repair Procedure

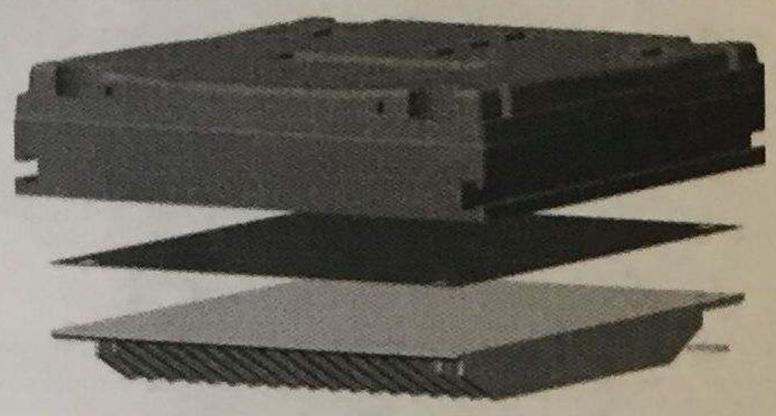
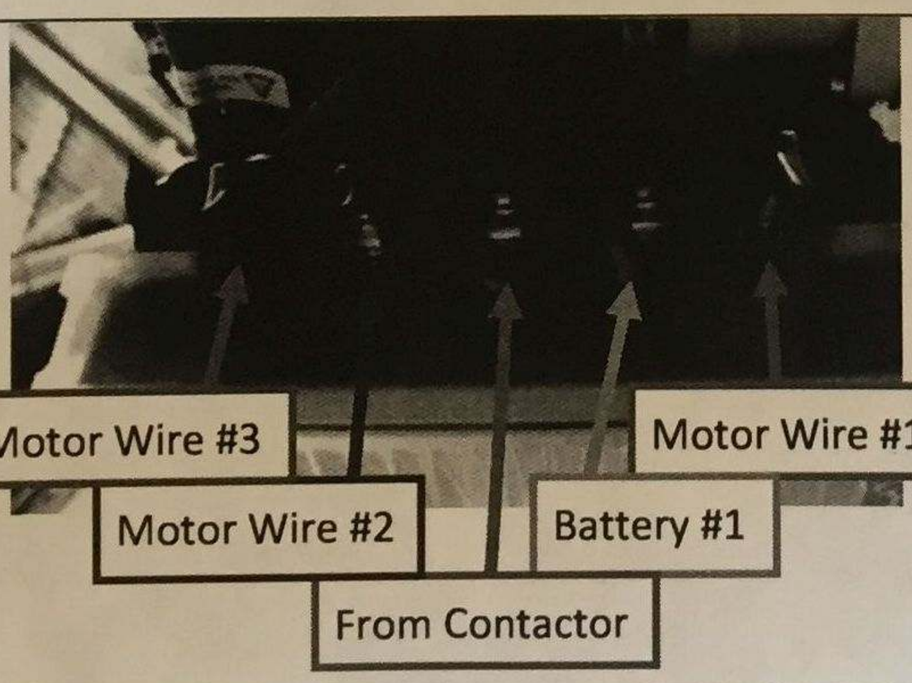
Motor Controller ONLY

	Place the Enertia in a stand with the rear wheel off of the ground.

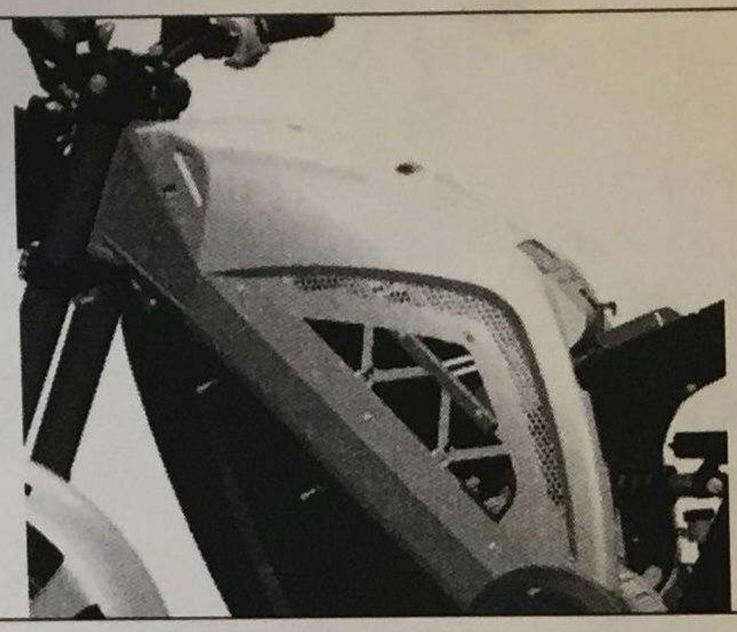
4.2 — Motor Controller & Heat Sink

	Remove the seat and body panels per 3.2.
	Disconnect the blue battery cable connector. This will prevent power from going from the battery chain to the rest of the powercycle. **COVER EXPOSED CONNECTORS WITH ELECTRICAL TAPE.**
	Use a utility knife or other blade to cut away the heat shrink on the bus bar connections. Using a ratchet and combination wrench, remove the bolts from the bus bars at the motor cable connections
	Use a 6mm Allen wrench to remove the four bolts holding the motor controller and heat sink onto the motor controller bracket.
	Gently lower the motor controller with one hand and disconnect the wire harnesses from the back side.
	Remove the old motor controller and heat sink.
	Get the new heat sink, thermal pad, and motor controller.

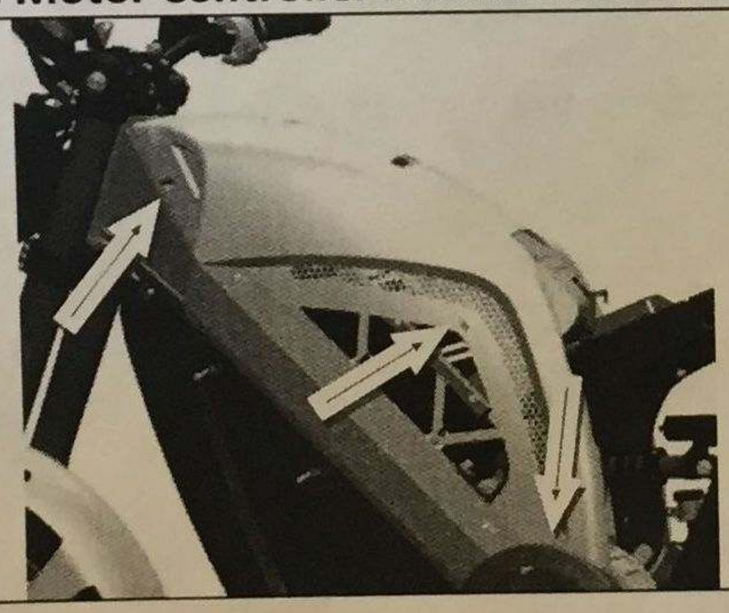
4.2 — Motor Controller & Heat Sink

	Place the heat sink fin side down on a work surface and align the thermal pad with the heat sink. Make sure all four holes are aligned.
	Place the motor controller on top of the thermal pad and align the holes. The silver side of the motor controller should be placed against the thermal pad.
	Hold the heat sink/thermal pad/motor controller stack in one hand and connect the three wire harnesses to the back of the motor controller.
	Place a bolt through one of the holes in the stack, hold the motor controller against the four standoff spacers, and hand thread the first bolt.
	Hand-thread the remaining three bolts through the heat sink and motor controller and into the standoff spacers.
	After applying Loctite, Use a 6mm Allen wrench and tighten the four motor controllers mounting bolts.
	Using a ratchet and combination wrench, attach the bolts through the bus bars and the motor cable connections in five places along the bottom of the motor controller. ***(Align the labels on the cables with the labels on the bus bars)*** Cover each bus bar connection with heat shrink.

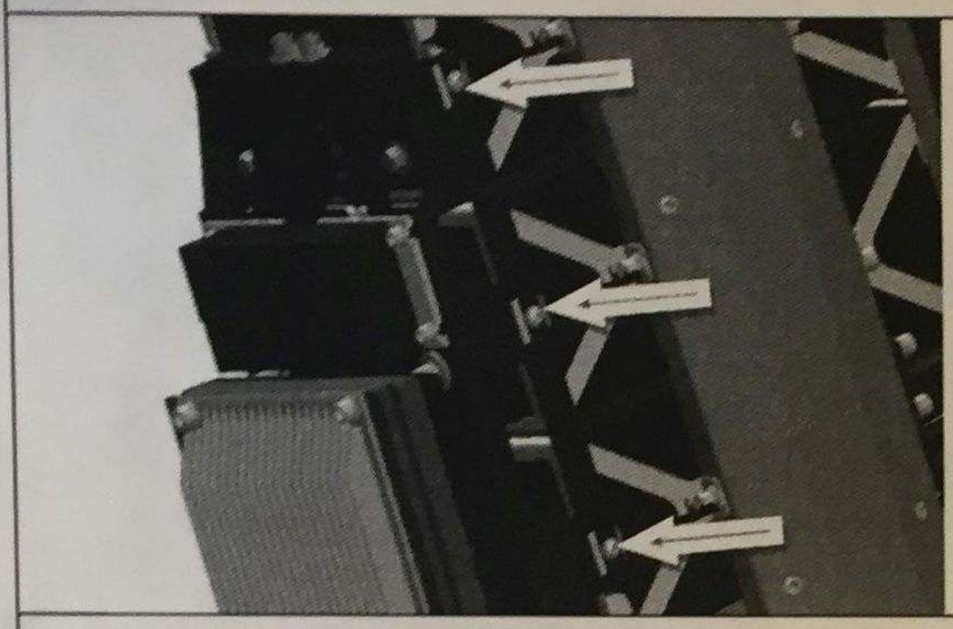
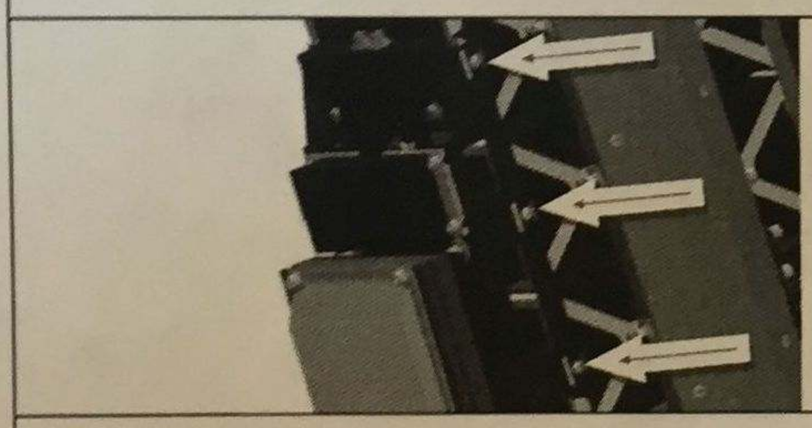
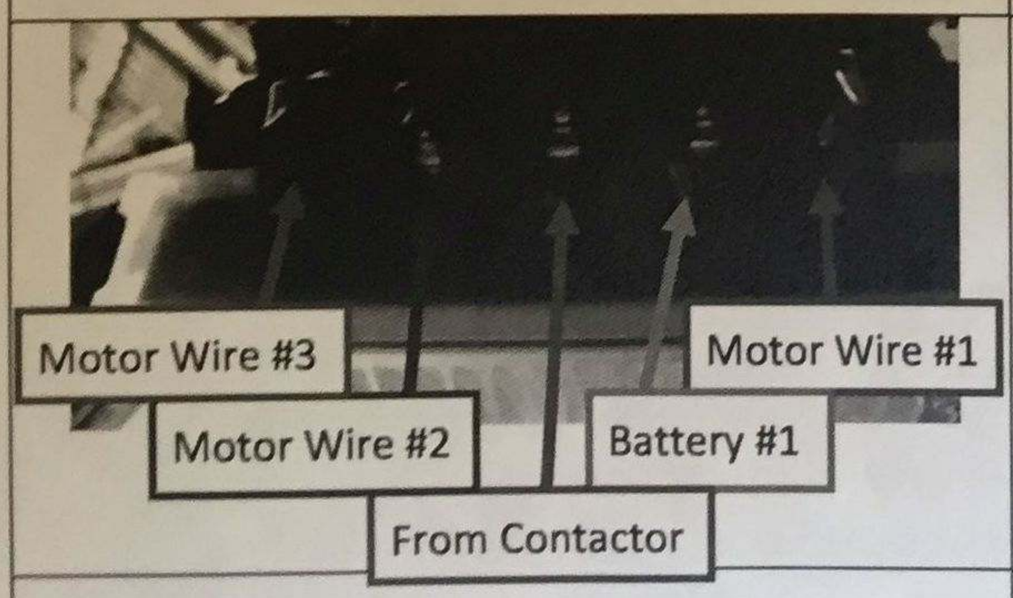
4.2 — Motor Controller & Heat Sink

	Reconnect the blue master plug. Make sure the kickstand is up and slowly twist the throttle to make sure the rear wheel spins. This will indicate that the motor is getting a good signal from the motor controller. Reinstall body panels and seat per 3.2
	Test ride the Enertia to verify proper function of the motor controller. ***(NOTE: Use caution when test riding a recently serviced Enertia. If an Enertia still has a failure, or if it has been improperly serviced, there may be risk of accident or injury.)***

Removal and Replacement Procedure –
Entire Motor Controller Bracket Assembly

	Remove the seat and all body panels per chapter 3.2
	Disconnect the blue battery cable connector. This will prevent power from going from the batteries to the rest of the powercycle. **COVER EXPOSED CONNECTORS WITH ELECTRICAL TAPE.**
	Use a utility knife or other blade to cut away the heat shrink on the bus bar connections. Using a ratchet and combination wrench, remove the bolts from the bus bars at the motor cable connections.

4.2 — Motor Controller & Heat Sink

	Disconnect the wires from the terminals on the horn.
	Disconnect the wire harness from the DC-DC converter on the lower right side of the powercycle.
	Remove the motor controller bracket and assembly by using a 4mm Allen wrench to remove six bolts (three per side). Carefully lower the motor controller bracket partway and disconnect the three connectors (A, B, and C) on the back of the motor controller.
	Carefully set aside the old motor controller bracket assembly. Take the new motor controller assembly and remove the tape that covers the connectors A, B, and C. Plug each connector into their respective mate.
	Lift the new bracket assembly into place and attach the 6 bracket screws using a 4mm Allen wrench. (3 per side)
	Reconnect the wiring harness to the DCDC converter. Reconnect the horn terminals.
	Using a ratchet and combination wrench, attach the bolts through the bus bars and the motor cable connections in five places along the bottom of the motor controller. ***(Align the labels on the cables with the labels on the bus bars)*** Cover each bus bar connection with heat shrink.
	Attach body panels and seat per chapter 3.2

Chapter Title	4.3 — Vehicle Control Unit (VCU)

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Vehicle Control Unit and Mounting Bracket	B0110-0104030

4.3.10—Overview

The Vehicle Control Unit (VCU) is the main control board that binds together all other systems found on the Enertia. The VCU sends this information to the dash where it is displayed in the form of speedometer, battery gauge, odometer, and all other information available on the Enertia's LCD screen.

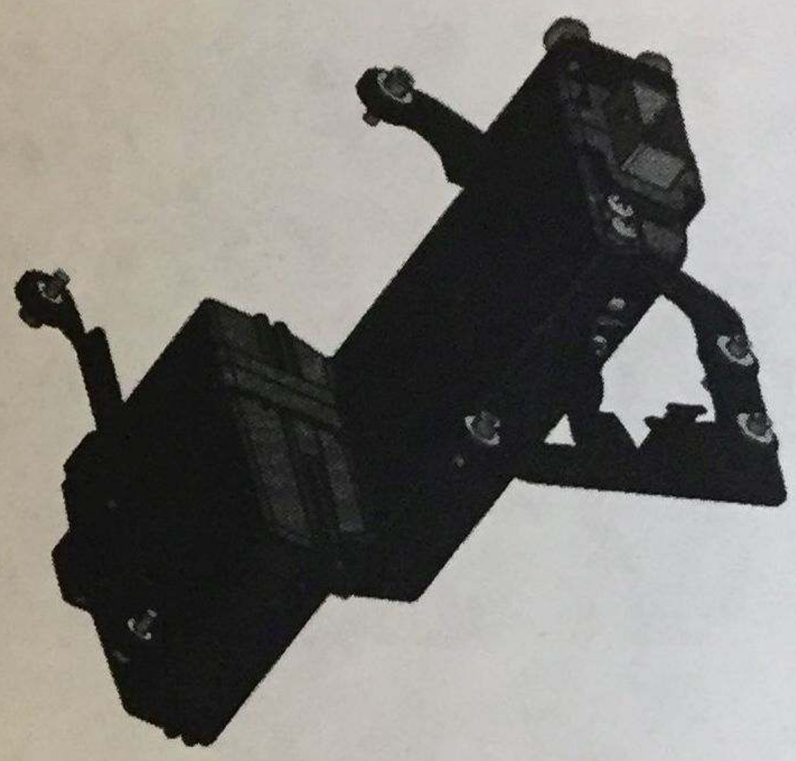


Figure 4.3.1 – VCU Assembly and Mounting Brackets

4.3.40—Diagnosing a Problem

A VCU problem may show up in various forms. Faulty speedometer readings, incorrect error messages, no LCD display, or even the inability to power on the Enertia may all be the result of a VCU failure. It is recommended to check the components that supply information to the VCU to verify that they are functioning properly. If no other failure mode can be determined, it may be necessary to replace the VCU.

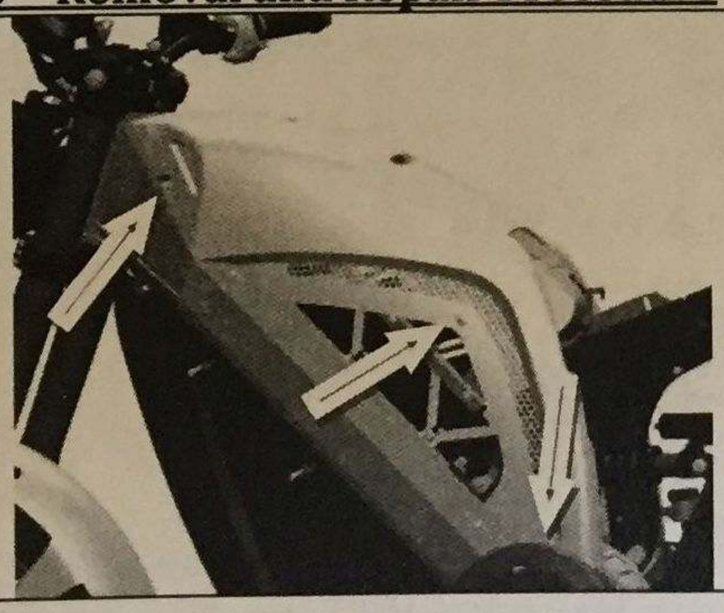
4.3.55—Setup and Tools

- Metric Allen wrench set

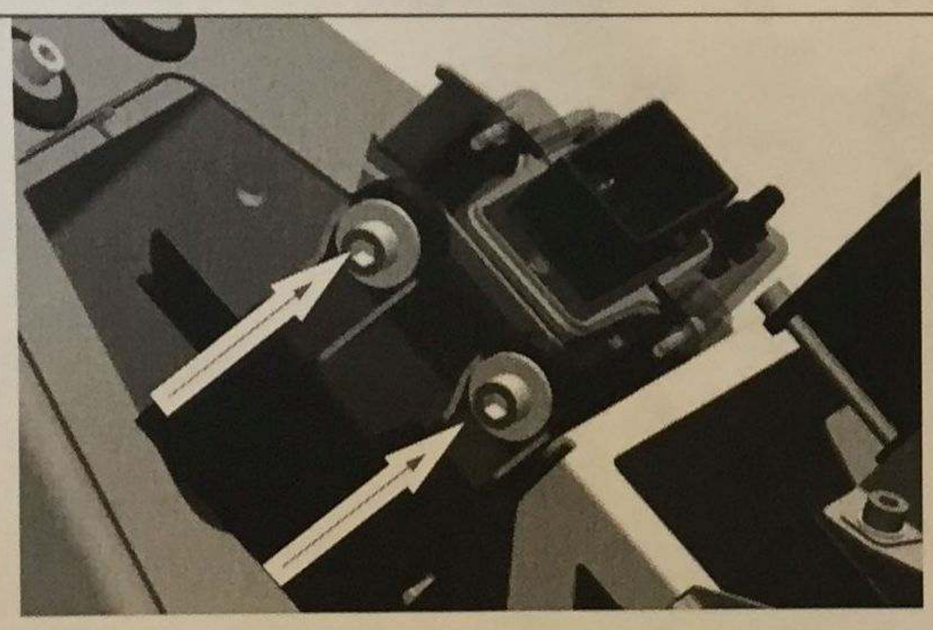
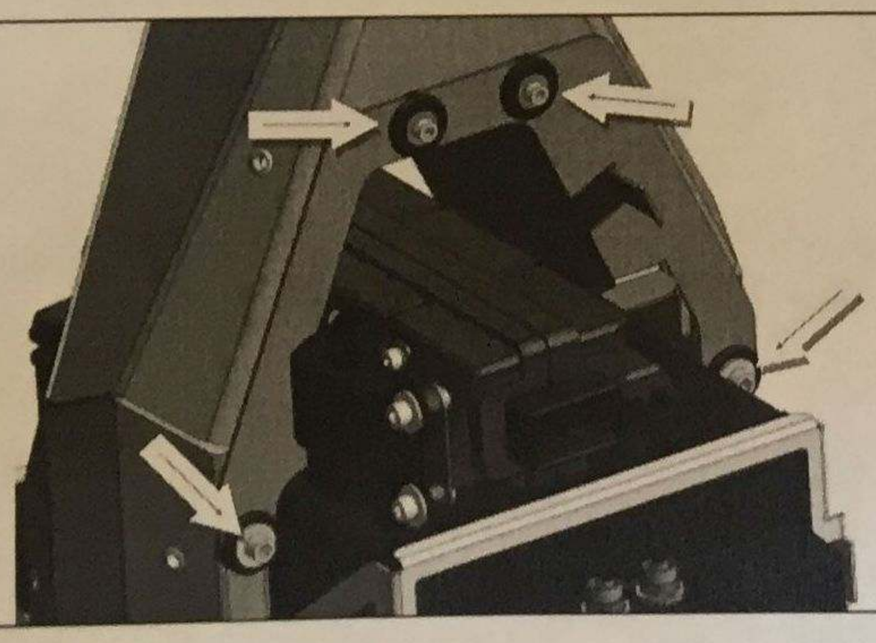
4.3.57—Materials Required

- Replacement VCU FRU
- Loctite Blue 234

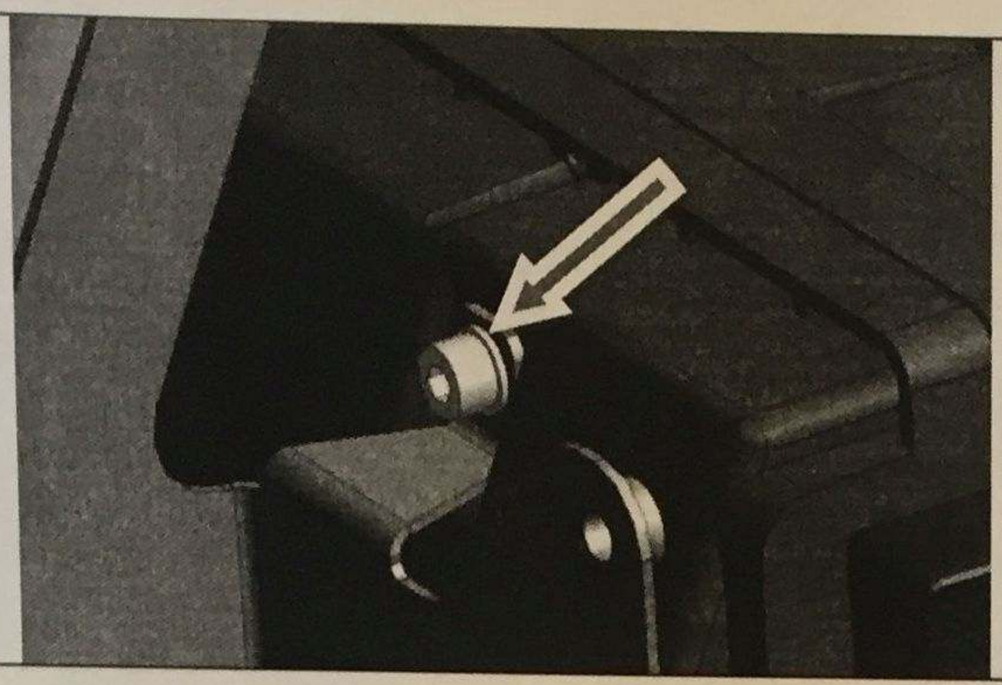
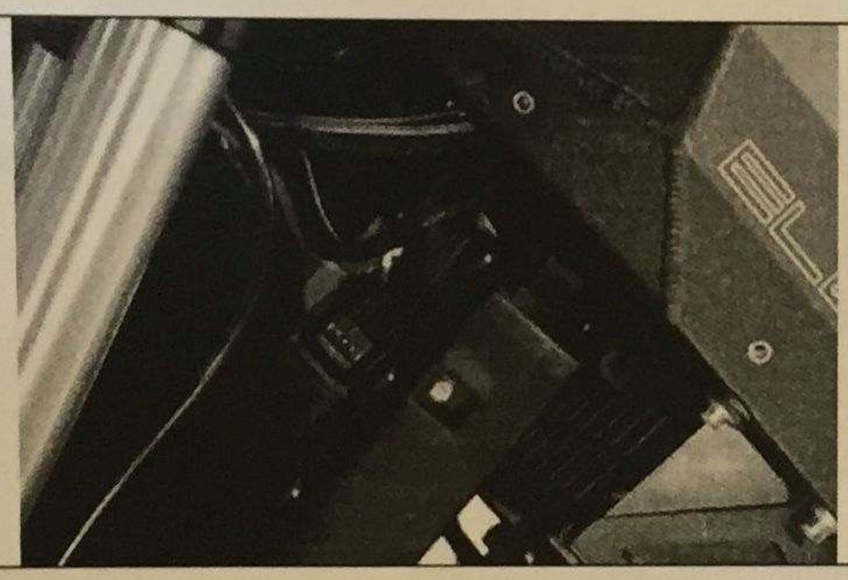
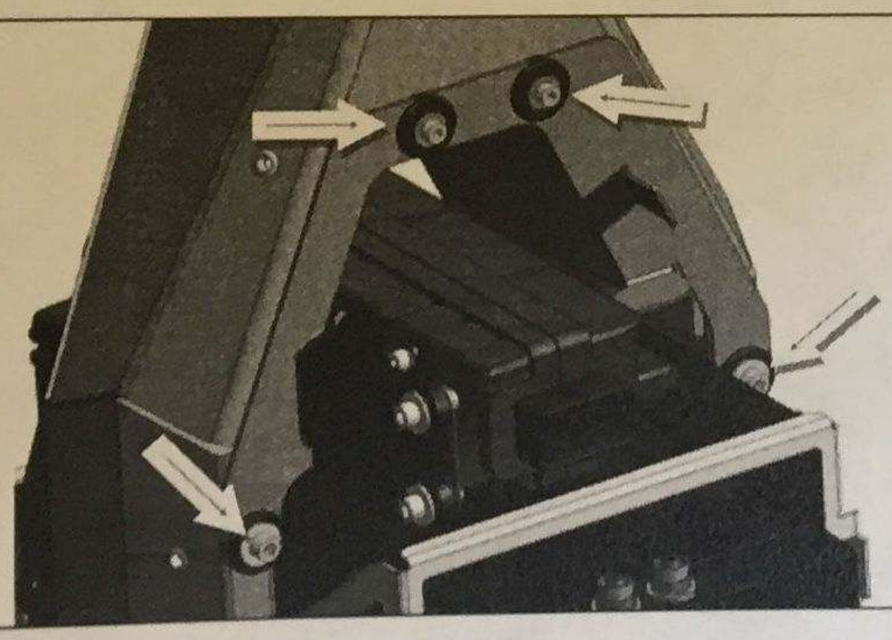
4.3.60—Removal and Repair Procedure

	Remove the seat and body panels per chapter 3.2 using a 4mm hex.

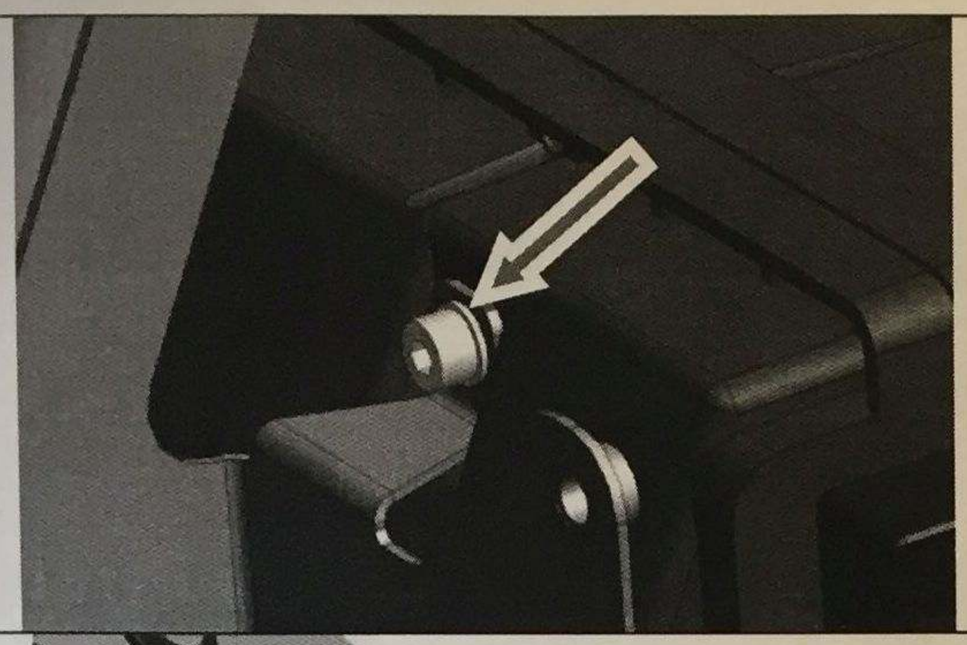
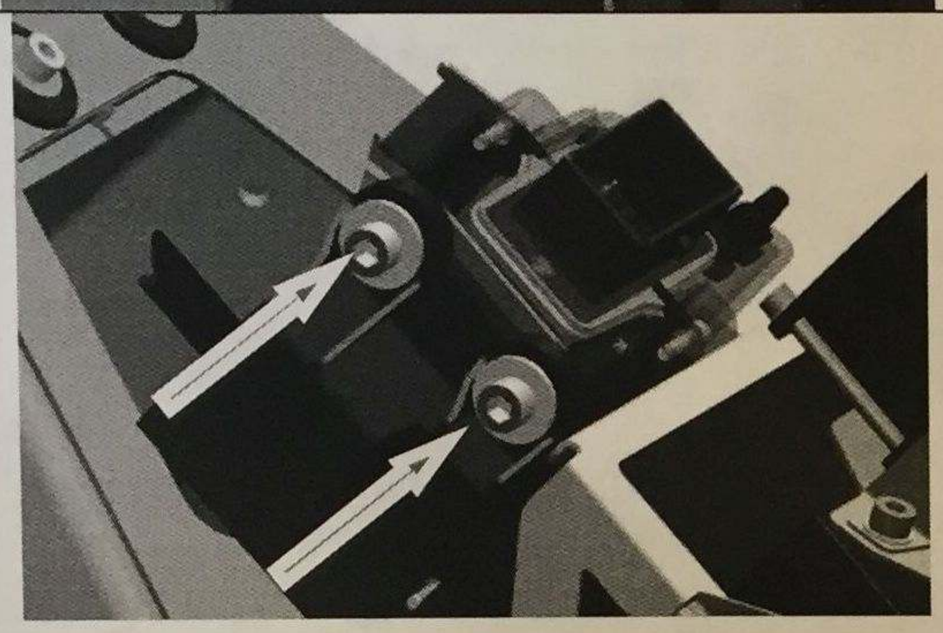
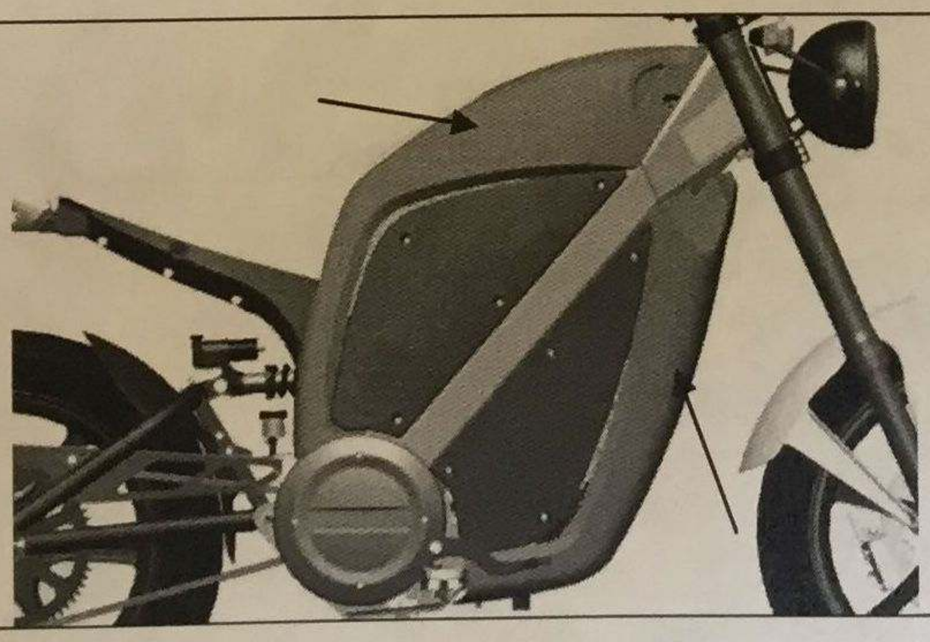
4.3 — Vehicle Control Unit (VCU)

	Disconnect the blue battery cable connector. This will prevent power from going from the battery chain to the rest of the powercycle. **COVER EXPOSED CONNECTORS WITH ELECTRICAL TAPE.**
	Disconnect the main harness plug at the top of the VCU. To disconnect the plug, push the catch lever back very slightly (red arrow #1), push down the locking nub (yellow arrow #2), and then push the catch lever all the way down (green arrow #3).
	Disconnect the main harness plug at the bottom of the VCU by following the instructions above.
	Remove the immobilizer from the left side of the VCU bracket by removing the two bolts with a 5mm Allen wrench.
	Remove all four bolts in the top of the VCU bracket with a 4mm Allen wrench.

4.3 — Vehicle Control Unit (VCU)

	Use a 4mm Allen wrench to remove two bolts (one from each side) attaching the VCU to the upper VCU bracket.
	Use a 5mm Allen wrench to remove the bolt attaching the VCU to the lower VCU bracket.
	Slide the VCU out of the bottom of the chassis. After the VCU is removed, remove the bottom VCU bracket from the chassis.
	Install the new bottom VCU bracket to the chassis. Insert the new VCU up through the bottom of the chassis. Align the top of the VCU in position with the upper VCU bracket.
	Use a 5mm Allen wrench to connect the bolt attaching the VCU to the lower VCU bracket.
	Use a 4mm Allen wrench to attach all four bolts (with washers) in the top of the VCU bracket, securing the bracket to the chassis.

4.3 — Vehicle Control Unit (VCU)

	Attach the VCU to the upper VCU bracket by using a 4mm Allen wrench to install two bolts (one on each side). Use loctite on the bolts. Torque bolts to 53 in lbs.
	Install the immobilizer to the upper VCU bracket. Use a 5mm Allen wrench to secure the two bolts. Use loctite on the bolts. Torque bolts to 44 in lbs.
	Connect the main harness plug at the top of the VCU by inserting the connector then pulling the catch lever up to lock it in place.
	Connect the main harness plug at the bottom of the VCU using the instructions above.
	Reconnect the blue battery cable connector and secure with a new zip tie.
	Reattach body panels and seat per chapter 3.2 Power on the Enertia.
	Check the function of the VCU by observing the dash display. Scroll through the various screens to ensure proper VCU communication.

	Test ride the Enertia to verify proper communication of speed, odometer reading, and battery gauges. ***(NOTE: Use caution when test riding a recently serviced Enertia. If an Enertia still has a failure, or if it has been improperly serviced, there may be risk of accident or injury.)***

Chapter Title	4.4—Main Fuse and Contactor

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Contactor	B0110-0105040
Main Fuse	B0110-0105041

4.4.10—Overview

The main fuse is an over-current protection device that can be found in the chassis hips. In the case of an over current (an electrical short or otherwise) the wire in the fuse will burn itself up, and the circuit will be left open as a safety feature to prevent the start of an electrical fire.
The main fuse is a 150 amp fuse.

The contactor is a very large electrical relay that is normally open and only closes when the Enertia is powered on. This ensures that the 72V from the battery wired in series is only supplied to the motor when the user is ready to ride.

Figure 4.4.1 – Main Fuse and Contactor

4.4.40—Diagnosing a Problem

CAUTION: The Enertia's battery system delivers 72V of electricity. Be sure to take proper safety precautions to avoid electric shock.

If the Enertia's battery is fully charged and turning the key in the ignition does cause any reaction, then it could be possible that the Main Fuse might have failed. Usually a blown main fuse will result in an Enertia that does not power on or show any signs of working, nothing electrical will work. This can be diagnosed by checking continuity between the two sides of the fuse when the lower body panel is removed. If the fuse is still functional, check all nuts and bolts in the battery-to-contactor electrical connections to make sure there are no loose connections. Also, check the connection of the two small wires from the contactor to the main harness. If loose connections are found, be sure to tighten properly and try again to power on the Enertia.

The contactor failure modes are "fail open" or "fail closed". If it fails open, the motor controller will try to close the contactor but will not be able to do so. The Enertia will not engage or drive. If it fails closed, the contactor will always try to supply power to the motor. This should be recognized as a failure by the motor controller and display an error message on the LCD screen.

4.4.55—Setup and Tools

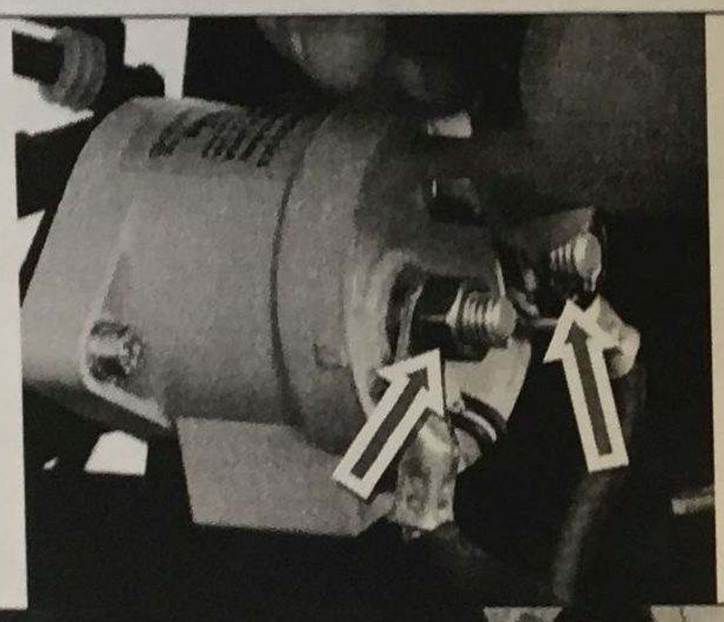
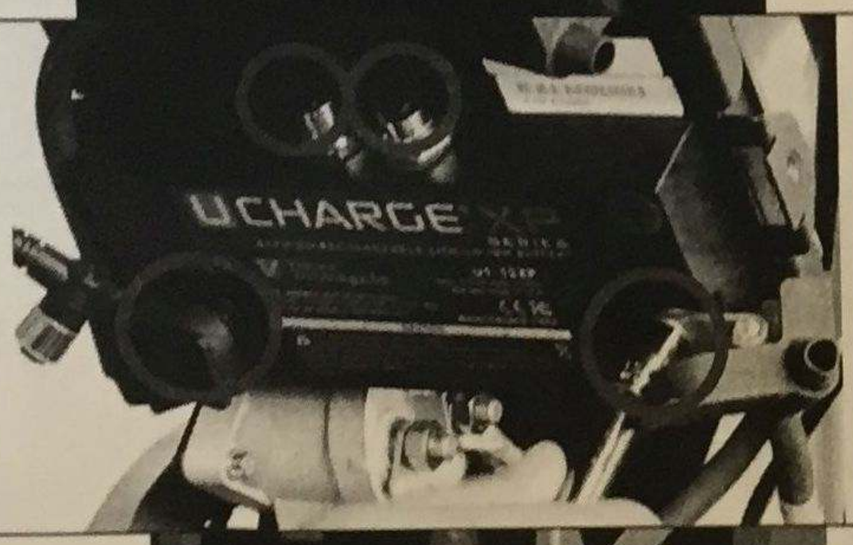
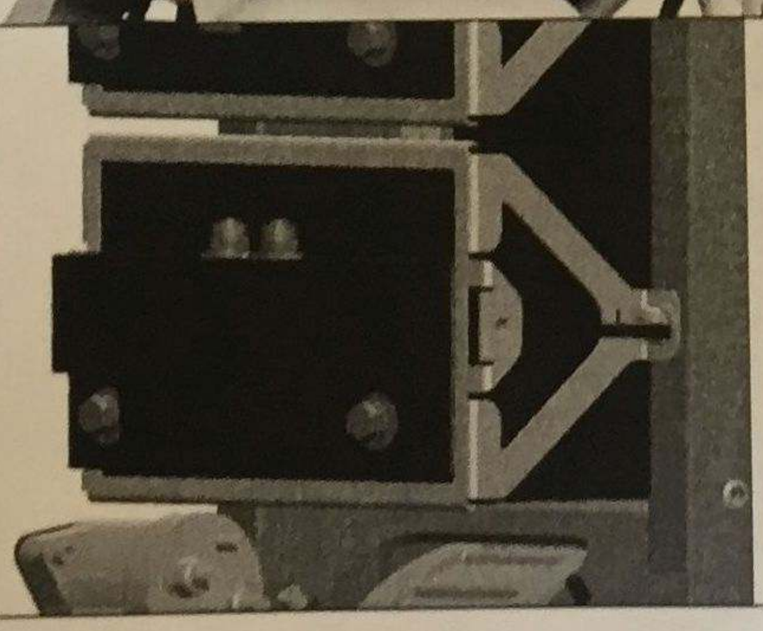
- Metric Allen wrench set

4.4.57—Materials Required

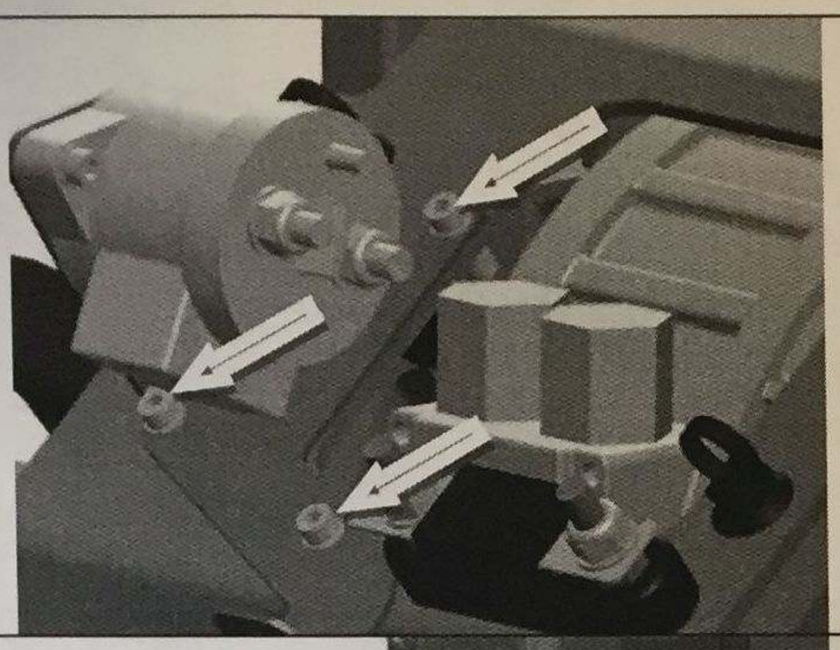
- Replacement fuse and contactor FRU
- Loctite Blue 234

4.4—Main Fuse and Contactor

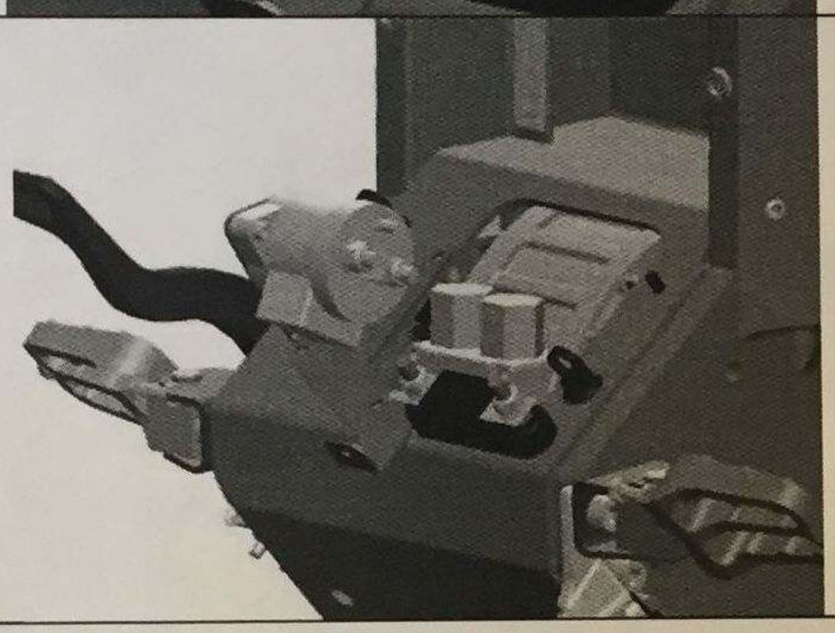
4.4.60—Removal and Repair Procedure

	Remove the Motor controller bracket assembly per chapter 4.2
	Disconnect the two small wires from the contactor to the main wiring harness.
	Use a 13mm combination wrench to remove the two nuts on the contactor and remove the cables from the front of the contactor.
	Disconnect cables from lower battery (battery #6). There are 2 communication cables, and 2 power cables. After the power cables have been removed, cover the terminals on the battery with electrical tape.
	Hold battery with one hand Using 6mm Allen wrench remove 2 bolts that hold battery to chassis.(one on each side) Remove Battery #6 and set aside.

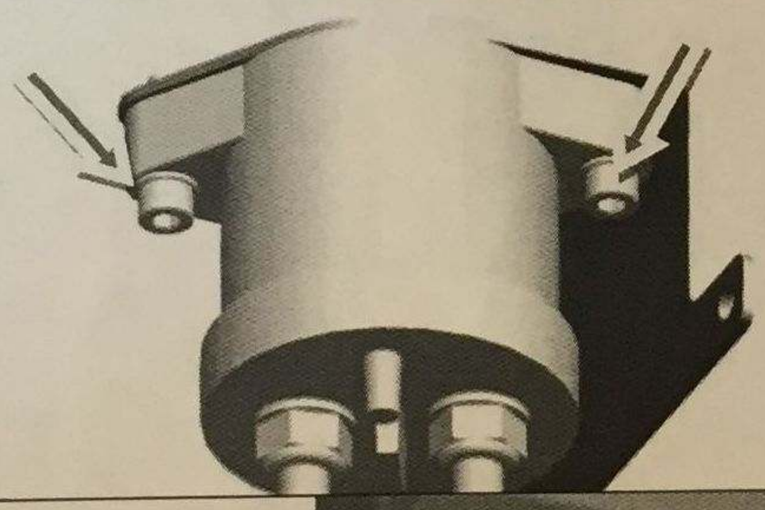
4.4—Main Fuse and Contactor



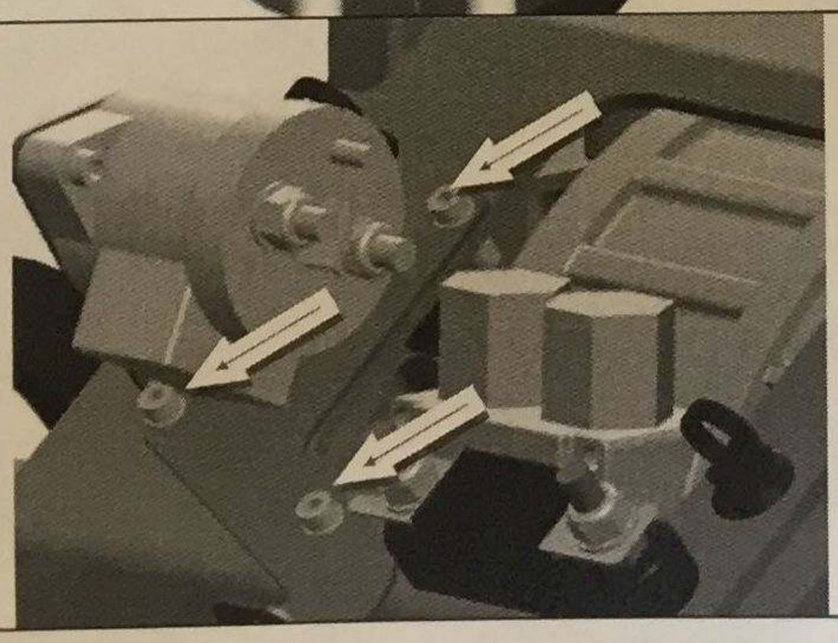
Use a 4mm Allen wrench to remove the three bolts (two below and one above the contactor) which hold the contactor bracket to the chassis.



Remove the contactor and bracket from the powercycle.

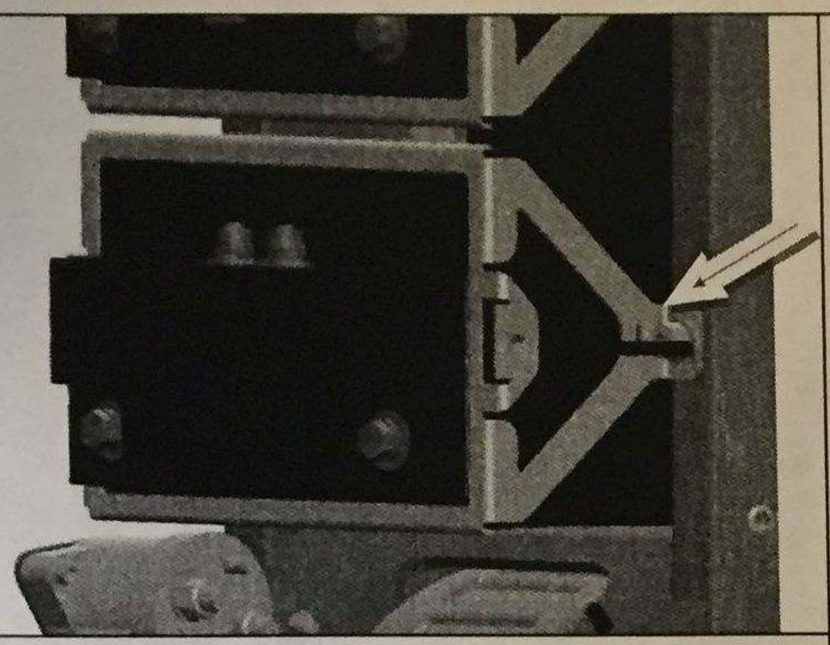
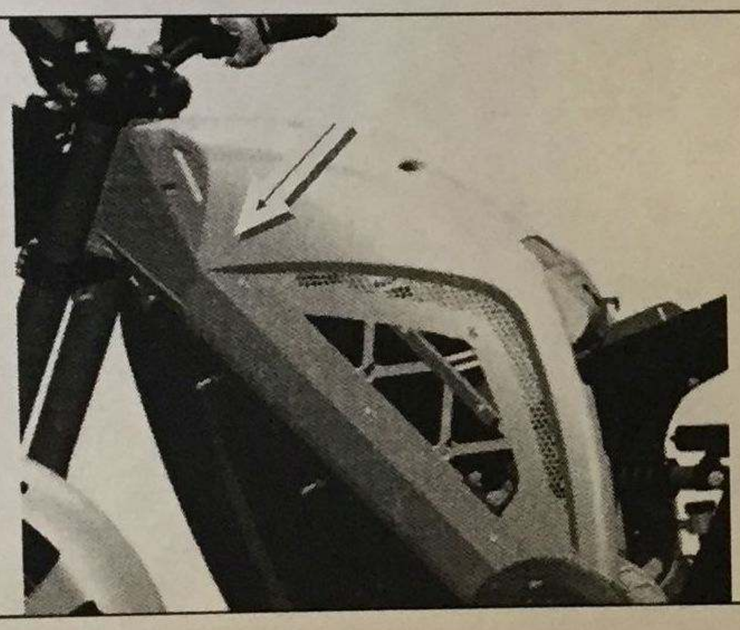


If re-using the same contactor bracket, use a 4mm Allen wrench to remove the two bolts mounting the contactor to the bracket.
Attach a new contactor to a bracket with two bolts.
Tighten bolts with a 4mm Allen wrench.



Attach the contactor bracket to the chassis with three bolts using a 4mm Allen wrench.

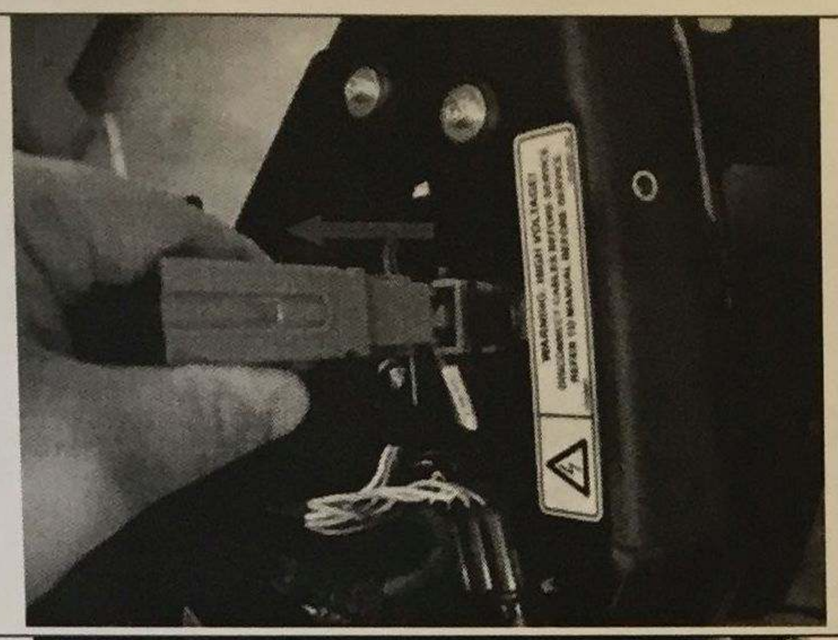
4.4—Main Fuse and Contactor

	Hold battery with one hand. Using 6mm Allen wrench reinstall the 2 bolts that hold battery to chassis.(one on each side) Reconnect the 2 communication and 2 power cables to the lower battery.
	Use a 13mm combination wrench to attach the power cables to the front of the contactor.
	Reconnect the two small wires from the contactor to the main wiring harness.
	Reconnect the motor controller bracket assembly per chapter 4.2
	Reconnect the body button and exciter wire to the main wiring harness and attach the body panels and seat per chapter 3.2
	Power on the Enertia to ensure the contactor is functioning properly.

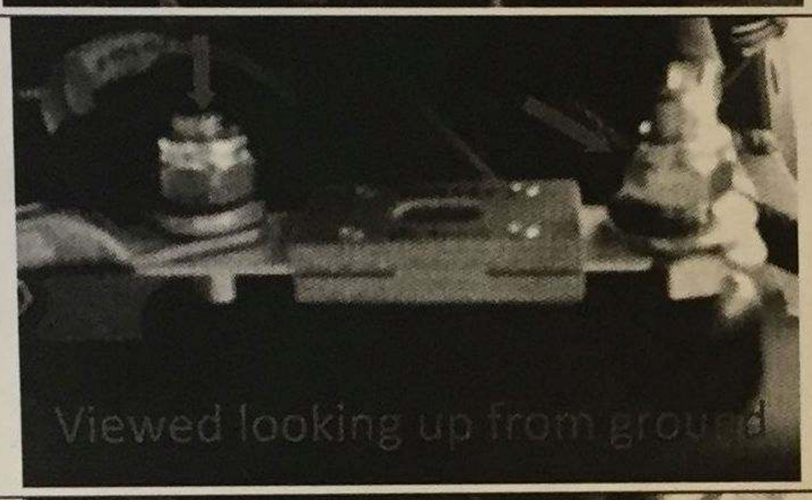
FUSE REMOVAL AND REPLACEMENT

	Remove the seat and all body panels per chapter 3.2

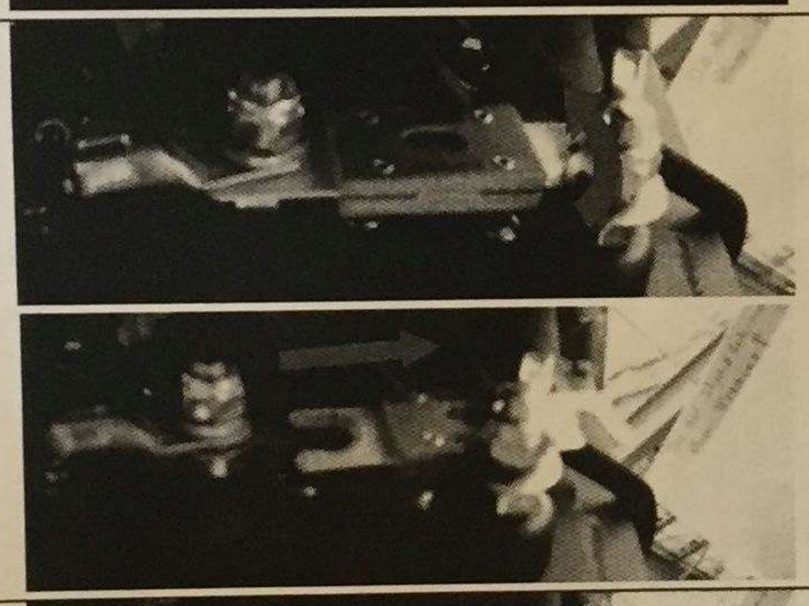
4.4—Main Fuse and Contactor



Disconnect the blue battery cable connector. This will prevent power from going from the battery chain to the rest of the powercycle. **COVER EXPOSED CONNECTORS WITH ELECTRICAL TAPE.**



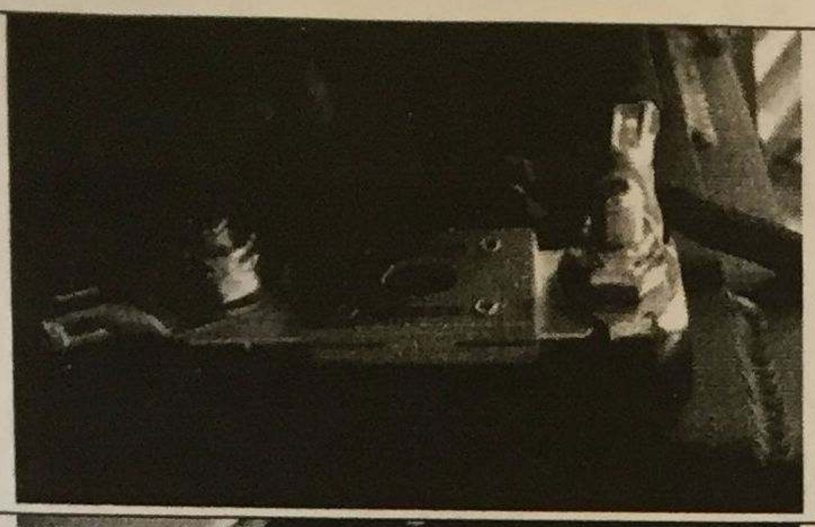
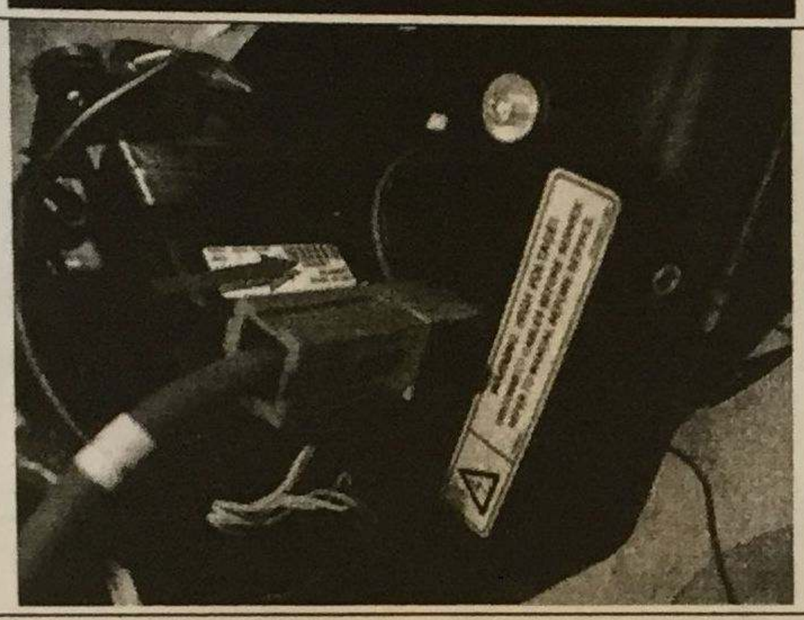
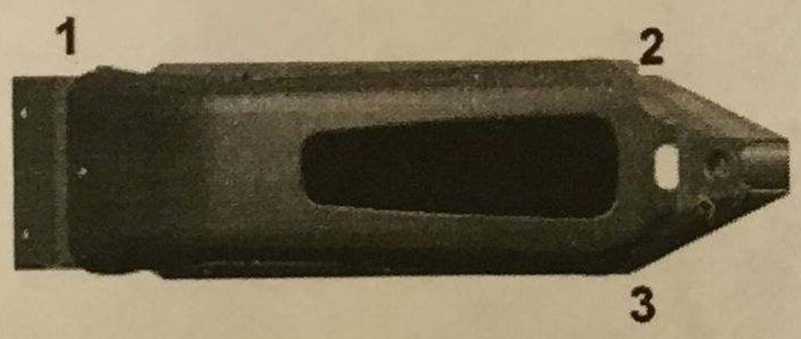
Using a 13mm short socket or wrench, loosen the Nylock nuts on the fuse posts. As viewed from below loosen the left nut first, then the right. The nuts only need to loosened so there is about 4-5mm of play between the nuts.



Push the right side of the fuse up first then pull out to the right to remove the old fuse.

Installation of the new fuse is the reverse of the removal (note proper orientation). Slide the new fuse in from the right first, then bring down onto the right post. Be sure that the prongs of the fuse are just above the bottom nut on each post.

4.4—Main Fuse and Contactor

	Check that the fuse is seated properly with the right side pulled over the post as far as it will go. Tighten the two posts (any order) until snug.
	Reconnect the blue battery cable connector.
	Reconnect the body panels and attach the seat per chapter 3.2
	Power on the Enertia to ensure the fuse is functioning properly. End of Procedure

Chapter Title	5.1—Motor

This Document Covers the Following Components/Systems
Motor – Which is not a field replaceable item. Please contact Brammo for replacement.

5.1.10—Overview

The motor that is installed in the Enertia is a high output permanent magnet brushless DC motor. It offers peak power of 18hp at 3600 RPM, with peak torque of 38N-m, 28 ft-lb. This gives the rider a top speed of over 55+ mph. The motor sits as low as possible and directly in line with the rider's centerline vertically, the motor output shaft delivers power to the rear wheel directly through the chain maximizing efficiency by eliminating mechanical losses that come with gear boxes.

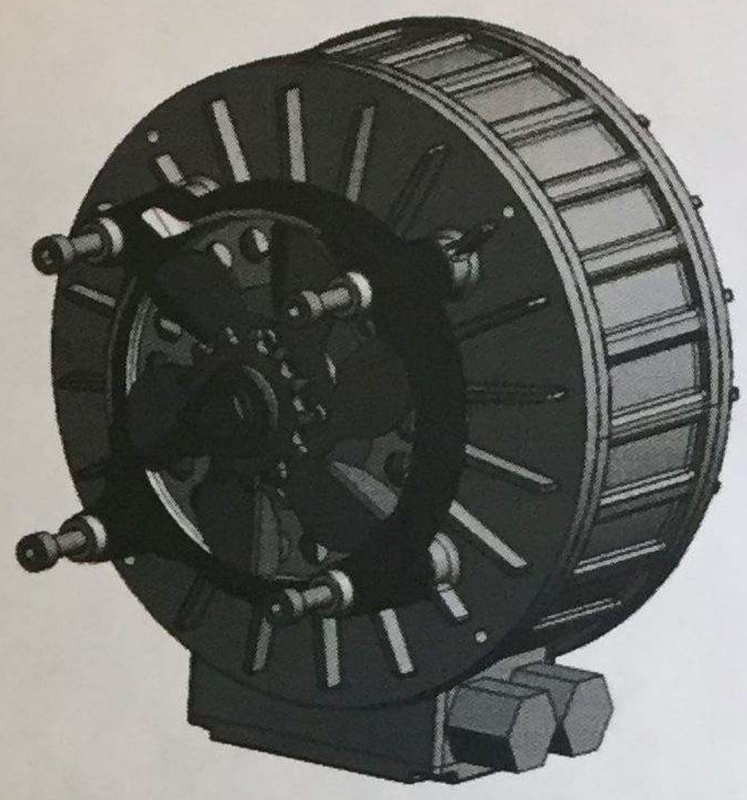


Figure 5.1.1 – Motor, also shown are the motor mount, fan and clutch, and front sprocket.

5.1.40—Diagnosing a Problem

A failure in the motor or motor controller can become noticeable through uneven drive speeds, incorrect acceleration curves, a non-driving Enertia, or a powercycle that wants to apply full throttle at all times.

An issue with the motor only is usually manifested in a grinding noise coming from the motor, or a motor that simply won't propel the Enertia forward with much power.

Contact BRAMMO LIVE to help diagnose motor or motor controller issues.

5.1.70—How to Return to Brammo

If a failure occurs where the motor must be replaced, contact BRAMMO LIVE to report the failure and make arrangements for the replacement of the motor.

	Chapter Title	5.2—Chain and Guard

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Chain & Guard	B0110-0105020
Chain Only	B0110-0105021

5.2.10- Overview

Chains transfer power from the engine to the rear wheel. If not regularly lubricated and correct tension maintained, the chain can undergo anywhere from minor to major damage. This damage is not only inflicted on the chain but the vehicle itself. A chain guard covers the chain to protect it from being damaged.

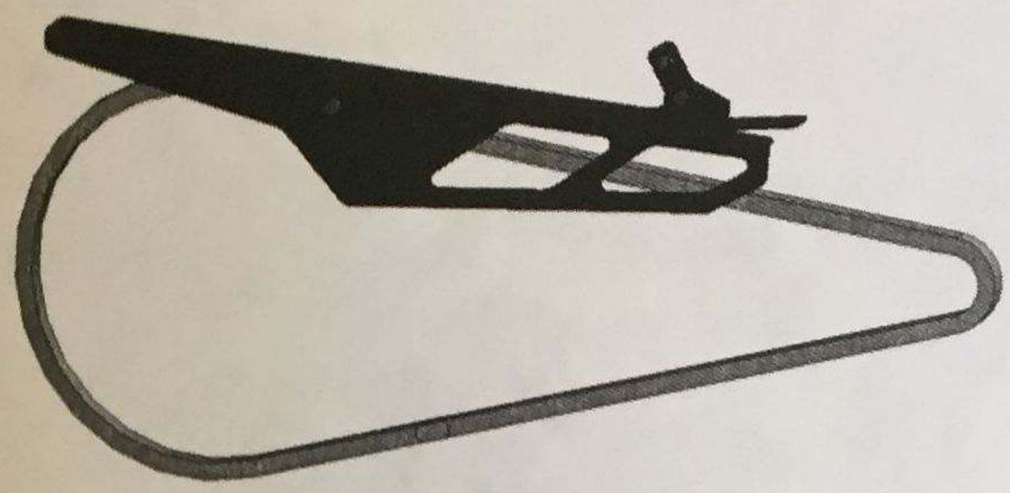


Figure 5.2.1 – Chain and Guard

Pin wear in a new chain will cause it to elongate or "stretch". This is the reason that frequent chain inspections are recommended.

5

5.2.20- Maintenance

For chain maintenance procedures see chapter 1.1.

5.2.40- Diagnosing a Problem

While the Enertia is in the stand, use a tape measure, take hold of the chain at a point halfway between the front and rear sprockets. Move the chain upwards and downwards, there should be about one inch of slack either up or down. Any more than that please follow the procedures in 1.1.

Visually inspect that the chain guard is not touching the chain, rotate the chain at least one full turn while inspecting. Also, inspect the chain for wear or deterioration and for poor alignment with the sprockets.

5.2.55- Setup and Tools

- Metric Allen wrench set
- Metric combination wrench set
- Pliers
- Screwdriver
- Tape measure
- Riveted Chain Tool

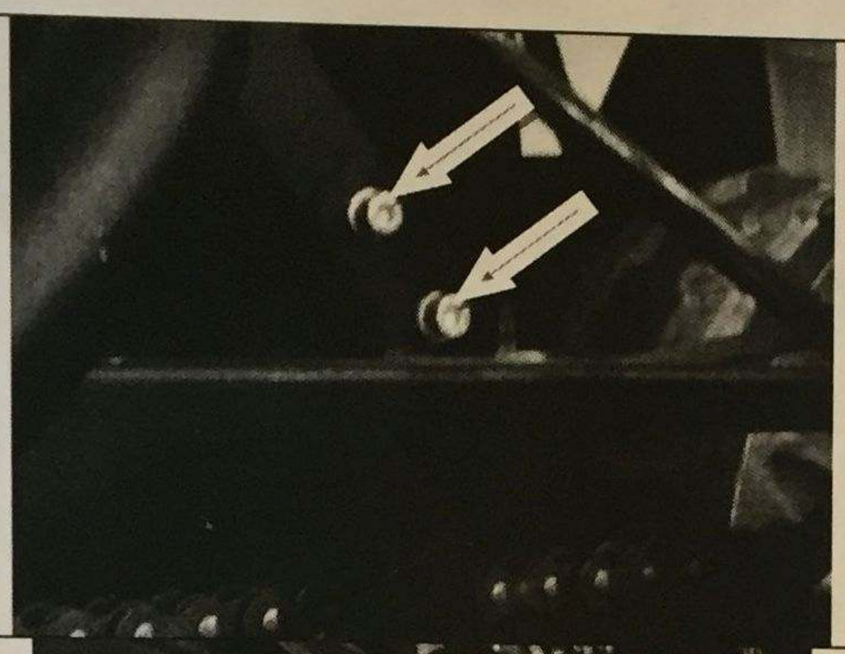
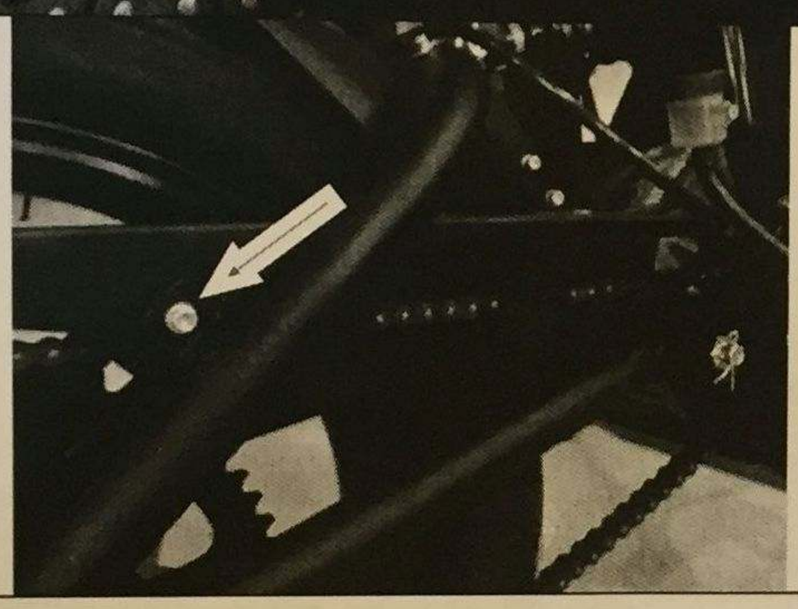
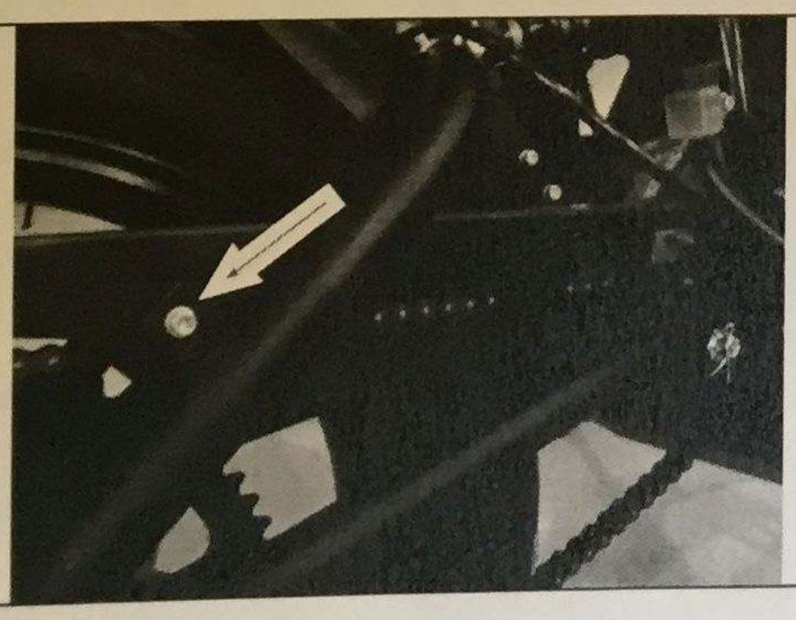
5.2.57- Materials required

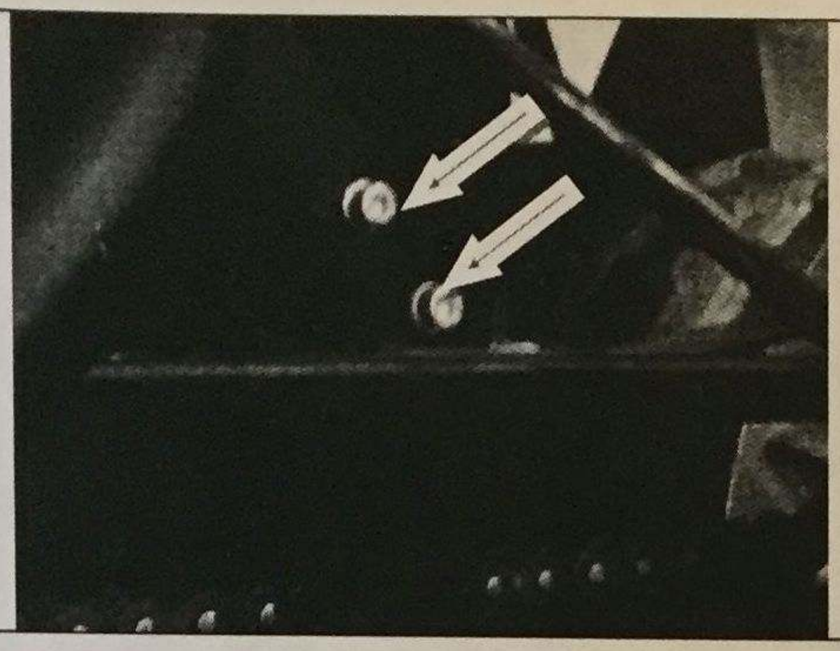
- Chain lubricant
- Replacement chain and chain guard
- Loctite Blue 234

5.2.60- Removal and Replacement Procedure

5.2—Chain and Guard

For the chain removal and replacement procedure, please see Section 1.1, which contains all chain maintenance procedures. The following shows the removal and replacement procedure for the chain guard only.

	It is recommended that the Enertia is placed in a stand for this procedure, but is not necessary.
	Remove the two bolts on the front end of the chain guard with a 4mm Allen wrench.
	Remove the bolt on the rear of the chain guard with a 5mm Allen wrench. Remove the chain guard
	If the chain is being replaced for wear, it is recommended that the rear sprocket be inspected thoroughly. Refer to chapter 5.3 for rear sprocket service information.
	Install the chain guard by installing the bolt and washer in the rear of the chain guard with a 5mm Allen wrench.

	After applying Loctite, install the two bolts and washers in the front of the chain guard with a 4mm Allen wrench.
	Turn on the Enertia and slowly twist the throttle to make sure the rear wheel spins easily with no undesirable noises or vibrations.

Chapter Title	5.3—Front and Rear Sprocket

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Rear Sprocket	B0110-0105030
Front Sprocket	Contact Brammo

5.3.10- Overview

The rear sprocket of the Enertia is a 64 tooth custom designed toothed gear. The rear sprocket is mounted directly to the right side of the rear wheel. The Enertia is a single speed drive train, there is no transmission.

Figure 5.3.1 – Rear Sprocket

The front sprocket of the Enertia is a 13 tooth custom designed toothed gear that is mounted directly to the output shaft of the motor through a safety clutch mechanism. The clutch is designed to allow the sprocket to spin if the motor shaft is suddenly stopped, but will not protect from rear wheel loss of traction due to poor road conditions or over use of the rear brake.

If the front sprocket needs to be replaced (most likely due to poor chain maintenance) please contact Brammo for instructions.

5

5.3.40- Diagnosing a Problem

Sprocket teeth are beneficial in warning the rider of poorly adjusted chains. It is wise to inspect the teeth as a precaution because they may not coincide with the chain. If the teeth show signs of wear, chances are there is an issue with the chain also. Visually inspect the rear sprocket for rust, wear, damaged or worn teeth, and misalignment.

Figure 5.3.2 shows two different rear sprockets in a side by side comparison. The one on the left was used on an Enertia where no chain maintenance was done, and the sprocket on the right is a new sprocket. Signs to look for in the teeth of the sprockets – rust on the sprocket, wearing of the teeth, and 'hooking' of the teeth. If the sprocket shows any of these signs, follow the procedures in chapter 1.1 – Chain Maintenance to lubricate and adjust the chain. Should the wear become any more than mild, it is recommended the sprocket and chain be replaced.

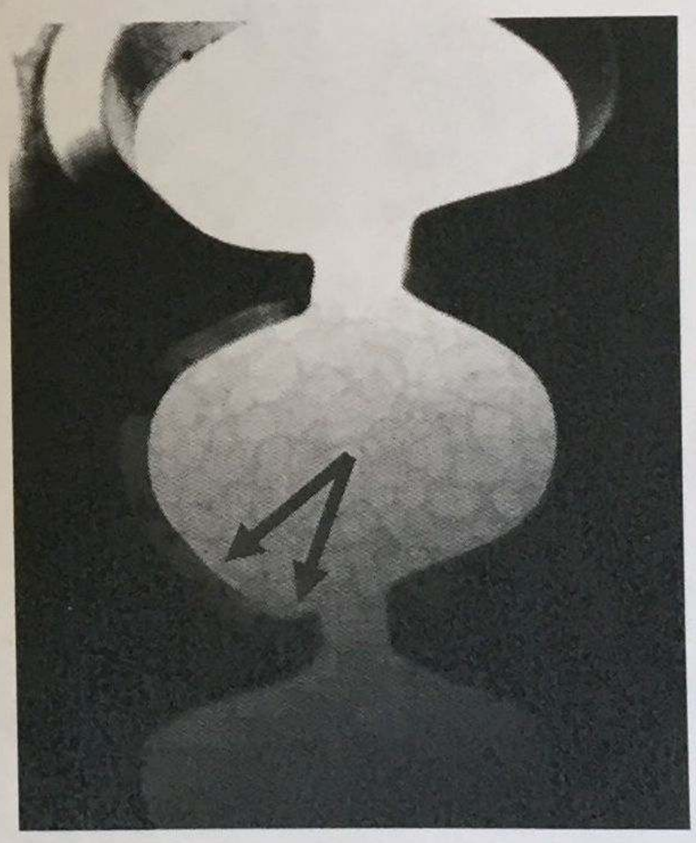


Figure 5.3.2 – Sprocket where no chain maintenance was performed after 2000 miles (Left) compared to a new sprocket (right). Notice the tooth wear (arrows)

5.3.55- Setup and Tools

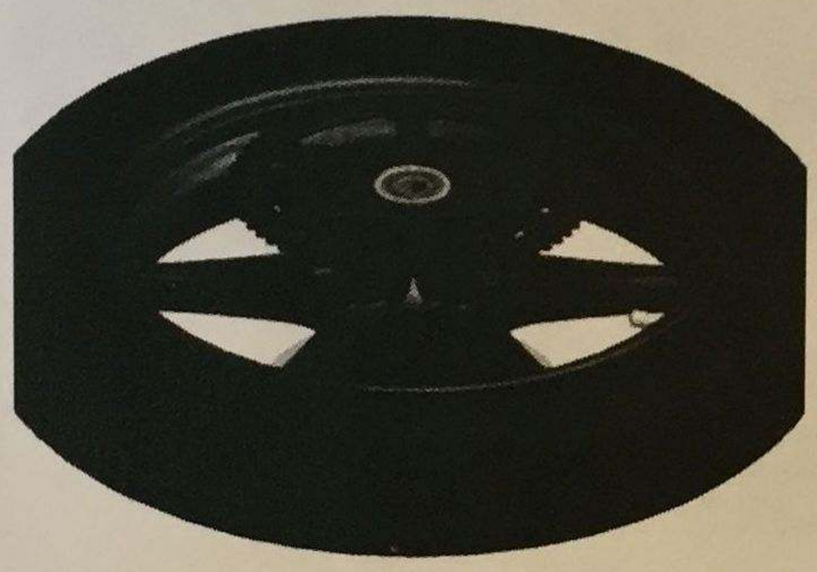
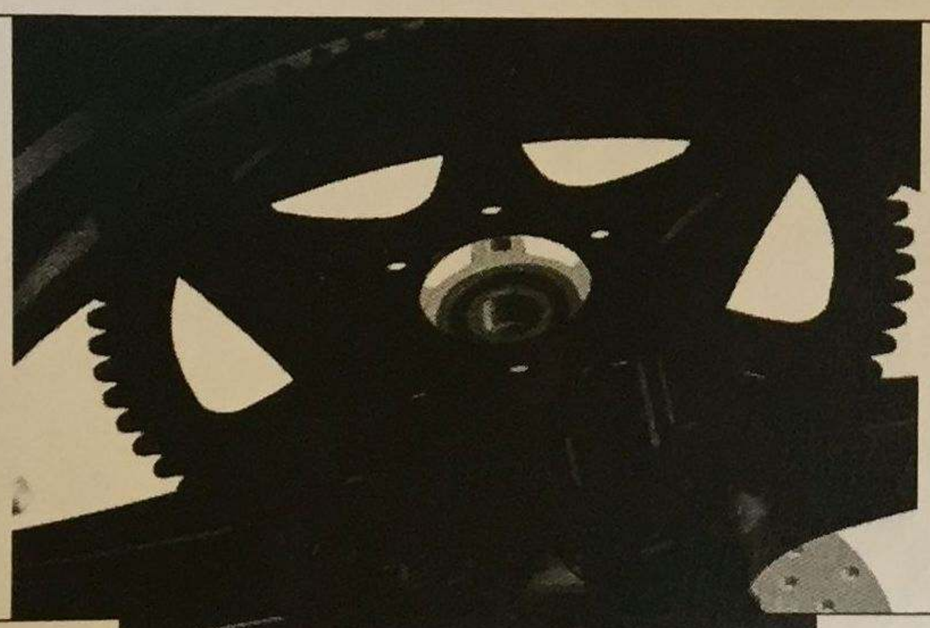
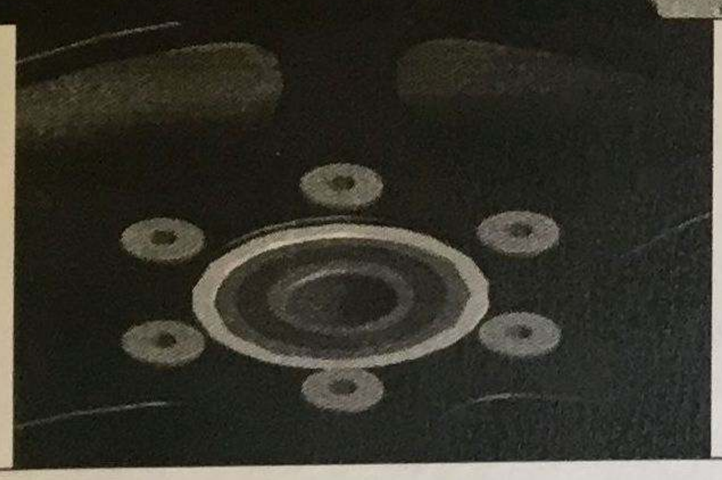
- Metric Allen wrench set
- Metric combination wrench set
- Pliers
- Screwdriver
- Clean Rag

5.3.57- Materials required

5.3—Front and Rear Sprocket

- Chain lubricant
- Replacement rear sprocket
- Loctite blue 234

5.3.60- Removal and Replacement Procedure

	Remove the chain per chapter 1.1 and guard as described in chapter 5.2
	Remove the rear wheel as described in chapter 8.2
	Place the rear wheel assembly on a workbench with the sprocket side up, setting it on the clean rag to help protect the brake rotor from damage.
	Remove the six bolts holding the sprocket in place using a 5mm Allen wrench. Remove the worn sprocket.
	Align a new sprocket on the rear wheel. Be sure the imprinted “BRAMMO” is facing up. Install the six bolts through the sprocket and into the rear wheel using a 5mm Allen wrench. Use Loctite on the bolts, torque to 84 in. lbs. Tightening in a criss cross pattern.
	Install the rear wheel assembly as described in chapter 8.2.

	Replace the chain and guard and inspect as described in chapter 1.1 and chapter 5.2.

BRAMMO ENERTIA	Chapter Title	**6.1—Front Forks**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Steering and Front Suspension	B0110-0106010

6.1.10- Overview:

The Enertia's forks connect the front wheel and axle to the chassis. The forks allow the bike to be steered via handlebars attached to the triple clamp assembly. The forks and their attachment points on the frame establish the critical geometric suspension parameters of rake and trail, which play a major role in defining how the Enertia handles and drives. The fork is simply a telescoping hydraulic shock absorber, it contains a large spring and is filled with oil that produces dampening of road vibration and bumps.

Figure 6.1.1 – Front Forks

6.1.40- Diagnosing a Problem:

The most common maintenance issue with forks is a leak of the internal oil. The customer will usually notice this as a reduced dampening in the suspension, or possibly oil on the forks. There are only a couple of places for forks to leak. At the o-ring at the bottom, between the lower and upper fork, the top of the fork and the pressure relief plug. If it is leaking at the top then the problem is with top cap. There is no seal or joint on the lower part of the fork to leak from unless the fork has a hole in it. The fork seal might be leaking oil down the fork leg. If the fork tubes are dinged or scratched and rough they will wear out any new fork seals that are put in. The solution is new fork tubes. A test ride may be necessary to diagnose a fork problem. Exercise caution when riding a Enertia with potential mechanical issues.

6.1.55- Setup and Tools

- Metric Allen wrench set
- Metric socket set
- Ratchet
- Wire Cutters

6.1.57- Materials required

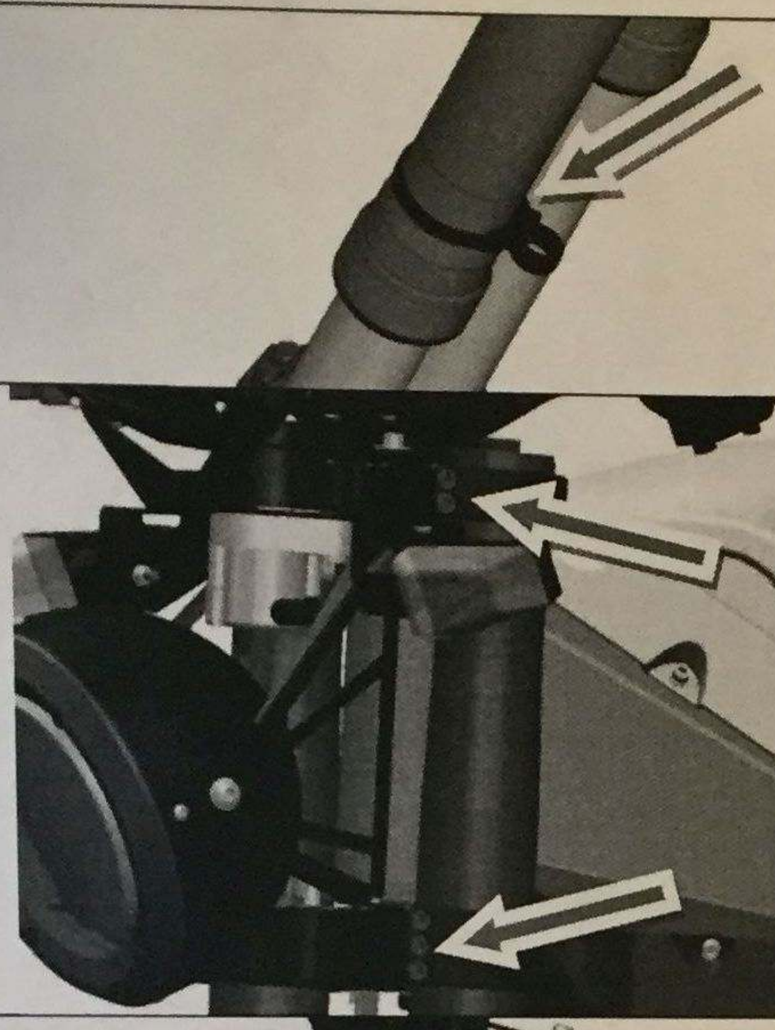
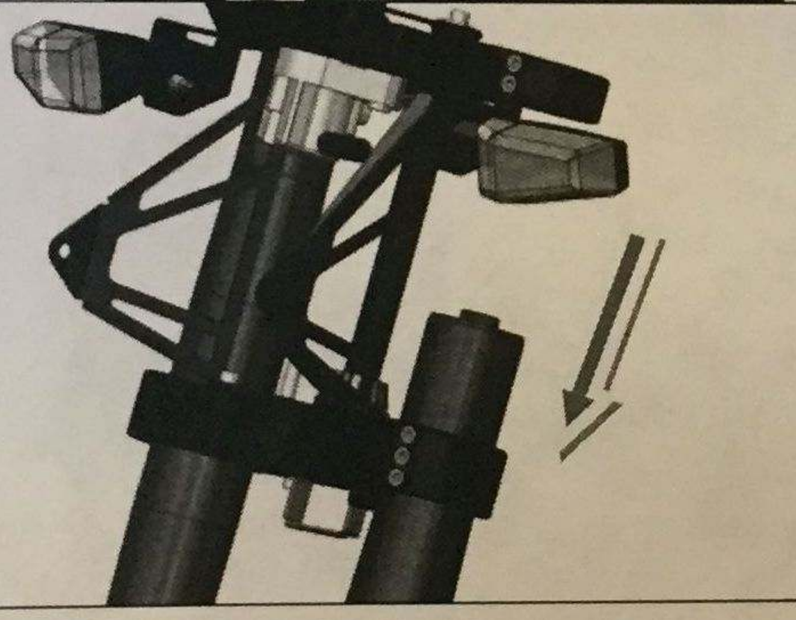
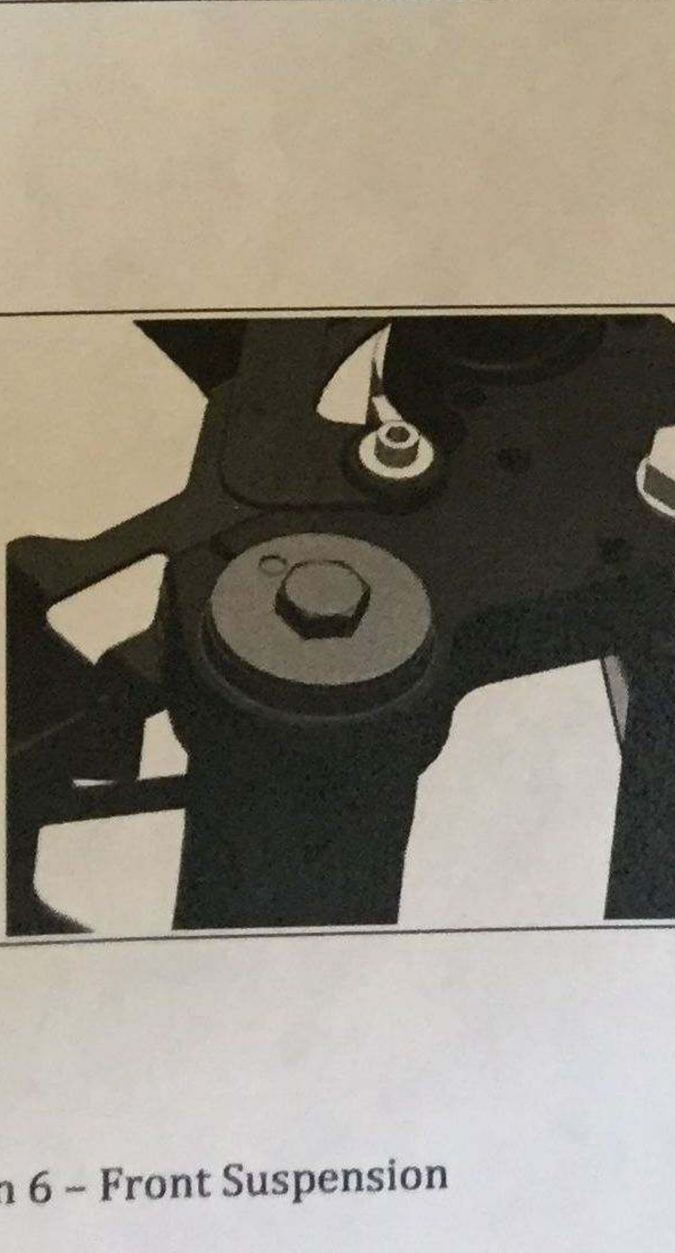
- Enertia Fork set
- Cable tie

6.1.60- Removal and Replacement Procedure

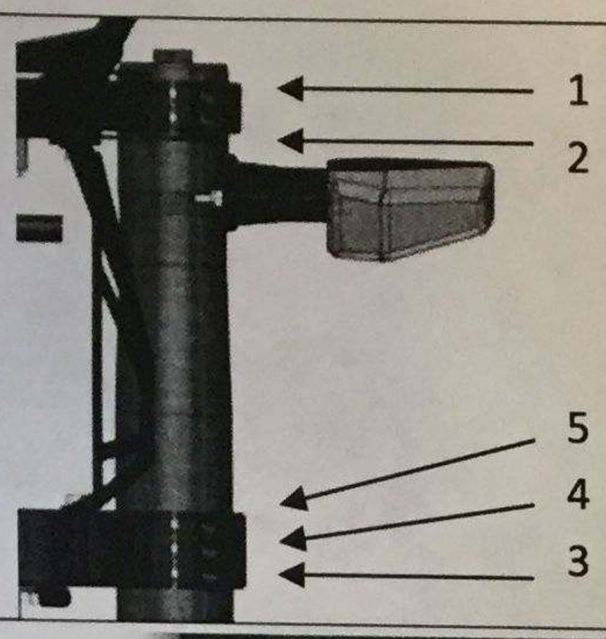
Left Fork is shown, right fork is the same.

	Remove the front wheel per chapter 8.1
	Remove the front fender per chapter 8.3
	Remove the front caliper per chapter 9.1

6.1—Front Forks

	Remove the standoff retaining clip from the fork by cutting the cable tie with wire cutters.
	Use a 5mm Allen wrench to loosen and remove the 5 bolts holding the fork in place (3 at the lower clamp, 2 at the upper clamp). a. Be sure to have a firm grasp on the fork. b. When the last bolt is removed, the fork will want to drop out of the clamp.
	Remove fork. Repeat the previous procedures to remove the right fork also.
	Apply loctite to the threads on the bolts (make sure not to smear the Loctite). Loosely install bolts to the triple clamp (3 at the lower clamp, 2 at the upper clamp). Do this on both sides.
	Position the new fork on the Enertia. Position into lower then upper triple clamp, aligning score ring at the top of the fork with the top surface of the upper clamp. (Take care not to scratch the fork tube with the ratchet). a. Make sure the pressure relief plug, or "bleed screw", is rotated to the front so that it can be accessed without interference from the handlebar. Do this for both sides.

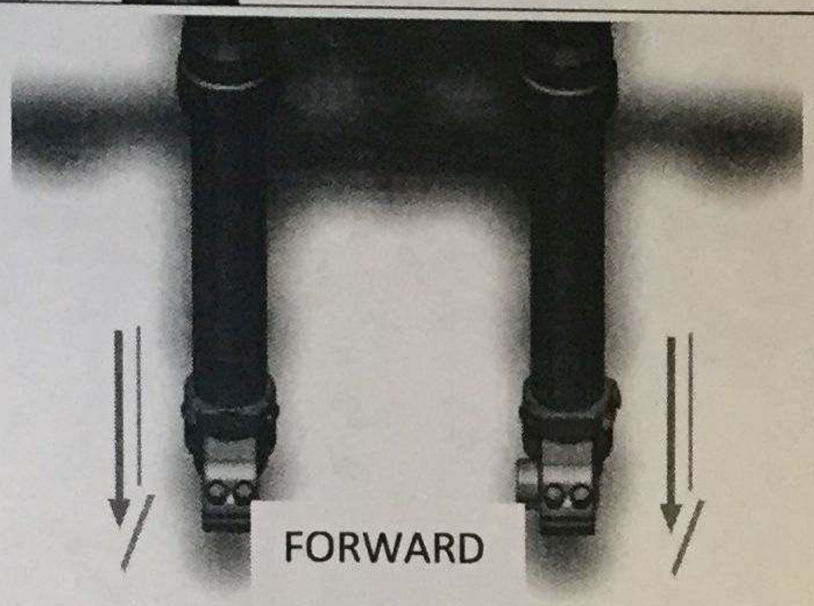
6.1—Front Forks



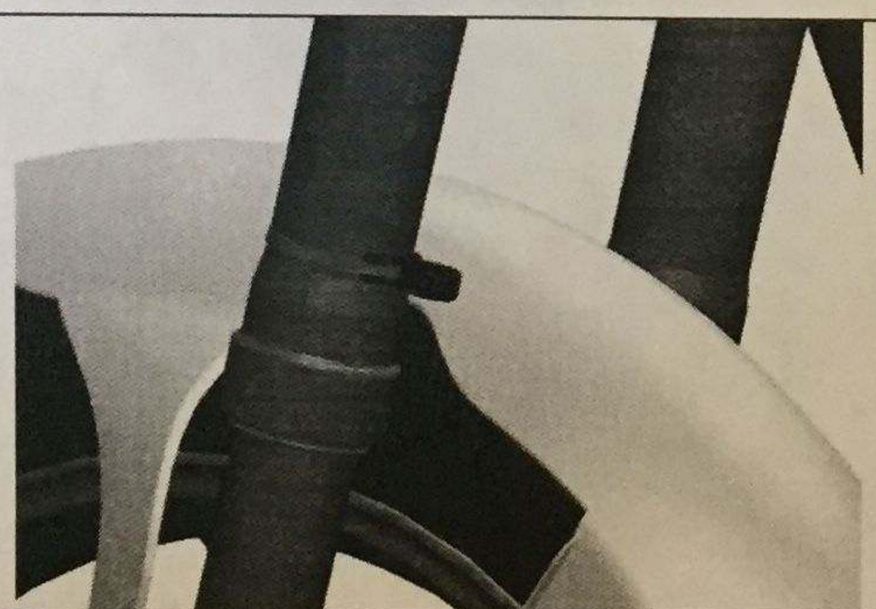
Using the 5mm Allen wrench, tighten the triple clamp bolts in this sequence:

a. Top bolt, upper clamp.
b. Lower bolt, upper clamp.
c. Bottom bolt, lower clamp.
d. Center bolt, lower clamp.
e. Top bolt, lower clamp.

Torque to 62 in lbs.
Do this for both sides.



Grasp the lower end of the forks and rotate them into the correct orientation.
Install front wheel per chapter 8.1
Install front fender per chapter 8.3
Install the front brake caliper per 9.1
Get a replacement cable tie.
Route the front brake line through the standoff.
Grasp the brake line standoff.
Feed the cable tie thru the standoff.



Place the wire tie around the other side of the fork and pull around into a vertical location.

Tighten the tie to secure the wires and cut off the tail with wire cutters.

Chapter Title	6.2—Triple Clamp Unit

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Triple Clamp Unit (Ignition not included)	B0110-0106020

6.2.10- Overview

The triple clamp attaches the forks to the chassis of the Enertia. It clamps the left fork, right fork, and steering tube in position. The triple clamp also provides a mounting location for the ignition switch, handlebars, headlamp, dash, and front turn signals.

The main components of a complete triple clamp FRU include the upper and lower clamps, the steering tube, the headlamp, the dash bracket, and the front turn signals.

Figure 6.2.1 – Triple Clamp Assembly

6.2.40- Diagnosing a Problem

Damage to the triple clamp is usually the result of an accident or abusive driving. Look for cracks in the upper and lower clamps around the mounting points for the forks and steering tube. If there is any question about the integrity of the triple clamp, it is recommended that the triple clamp be replaced.

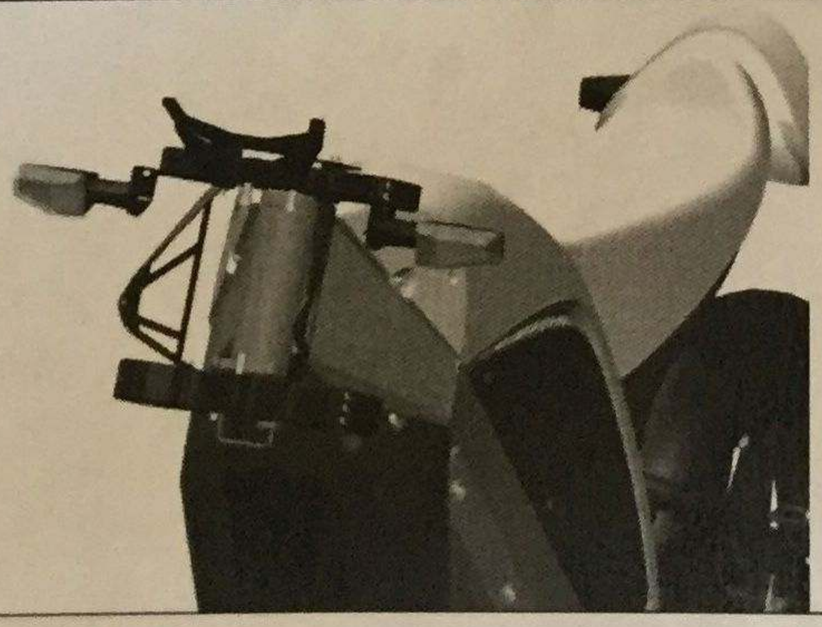
6.2.55- Setup and Tools

- Motorcycle stand or lift
- Metric Allen wrench set
- Metric socket set and ratchet
- Metric combination wrench set

6.2.57- Materials required

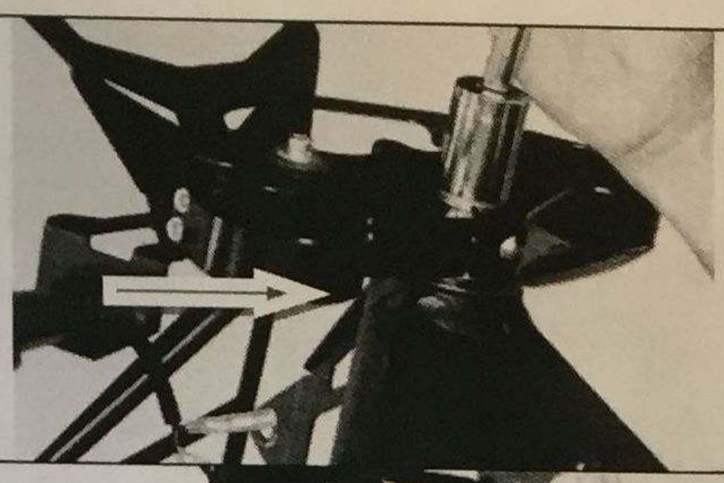
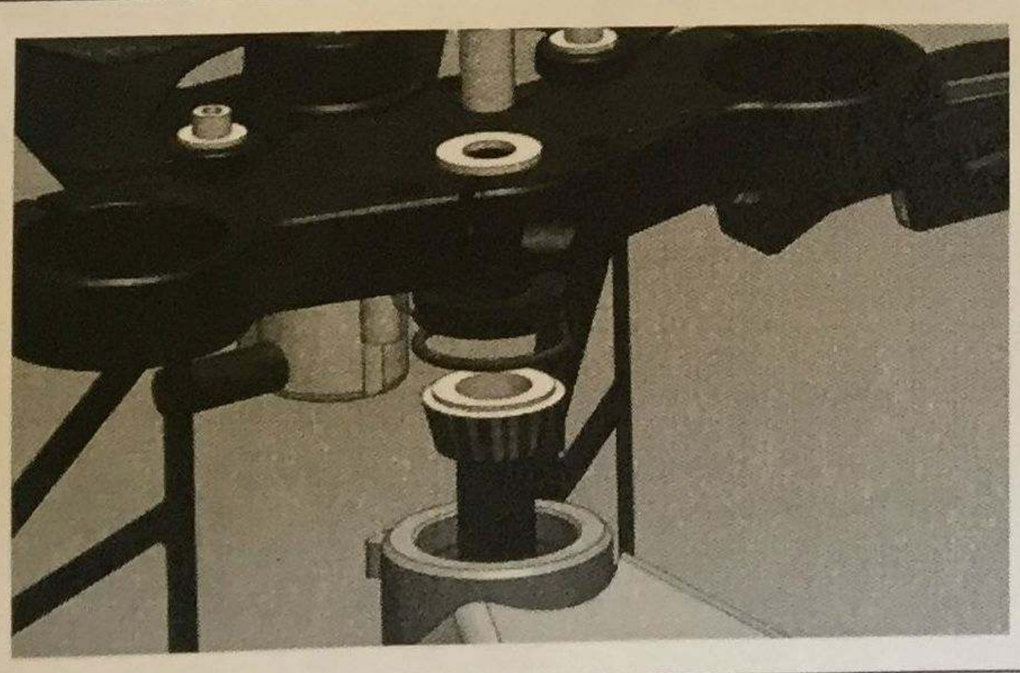
- Triple Clamp FRU
- Cable ties
- Bearing grease

6.2.60- Removal and Repair Procedure



Remove the front fender per chapter 8.3
Remove the front wheel per chapter 8.1
Remove the handlebar per chapter 6.3
Remove the headlamp per chapter 10.1
Remove the dash per chapter 11.2
Remove the ignition from the triple clamp per chapter 11.5
Remove Forks per Chapter 6.1

6.2—Triple Clamp Unit

	Disconnect the turn signal wires (both left and right) from the main wiring harness.
	Use a ratchet and 22mm socket to loosen the bolt on the top of the triple clamp. Also remove the bolts that connect the bottom of the headlamp brackets to the lower triple clamp.
	Hold on to the lower triple clamp and remove the steer tube bolt and washer. Remove the upper and lower triple clamps from the head tube by hand.
	Get the new triple clamp FRU assembly.
	Remove the bolt from the top of the fork steer tube. Note: This should not require any tools as the bolt should only be loosely threaded.
	Separate the upper and lower portions of the triple clamp assembly. Remove the top headset seal and bearing.
	After greasing lower bearing, feed the fork steer tube (and the lower triple clamp assy) up through the lower opening of the chassis headtube. Place the greased bearing and headset ring seal with o-ring (and any spacer washers) over the fork steer tube where it protrudes from the upper opening of the chassis headtube. Include any spacer washers just below the upper clamp.

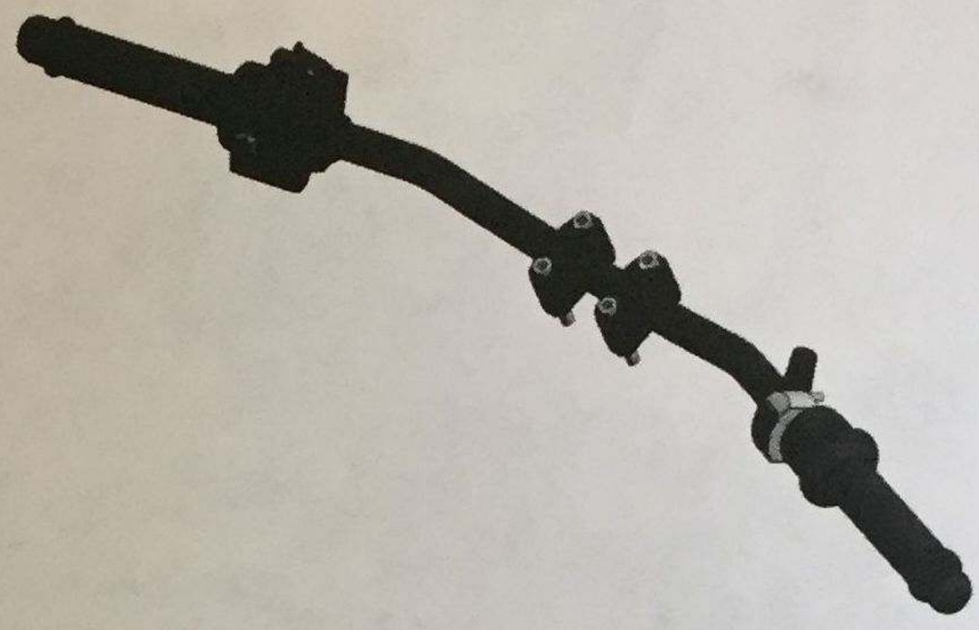
	Place the upper triple clamp over the fork steer tube and loosly install the bolt with Loctite into the fork steer tube.
	Check to make sure the bearing, O-ring, and headset ring seal are seated properly on both the bottom and top of the headtube. Install headlight bracket lower bolts to align the upper and lower triple clamps (both L and R).
	Install the front forks per chapter 6.1
	Tighten the bolt using a ratchet and 22mm socket. Use Loctite on the bolt and torque to 177 in lbs.
	Connect the left and right turn signal wires to the main wiring harness.
	Replace the ignition per chapter 11.5 Replace the dash per chapter 11.2 Replace the headlamp per chapter 10.1 Replace the handlebar per chapter 6.3 Replace the front wheel per chapter 8.1 Replace the front fender per chapter 8.3

	Chapter Title	6.3—Handlebar Assembly

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Handlebars	B0110-0106030

6.3.10- Overview

"Handlebars" refers to the steering mechanism for the Enertia. Handlebars not only provide the steering mechanism, but also provide a mounting place for controls such as brake, throttle, horn, light switch, and rear view mirrors.



The complete handlebar FRU includes the mirrors, throttle, grips, control switch, and handlebar clamps.

Figure 6.3.1 – Handlebar Assembly (does not include mirrors)

6.3.40- Diagnosing a Problem

Damage to the handlebars and associated components may be due to physical abuse, such as dropping the Enertia on its side, or through an electrical failure in the switch or throttle. Visually inspect all components for surface damage or improper positioning. If the Enertia has been dropped or damaged, remember to check the brakes for proper function. Place the Enertia on a stand with the rear wheel off the ground. Turn on the Enertia and check the switch and the throttle for proper function. A test ride may be necessary to properly diagnose a handlebar issue. Exercise extreme caution when riding an Enertia with potential mechanical or electrical issues.

6

6.3.55- Setup and Tools

- Stand
- Wire cutter
- Metric Allen wrench set

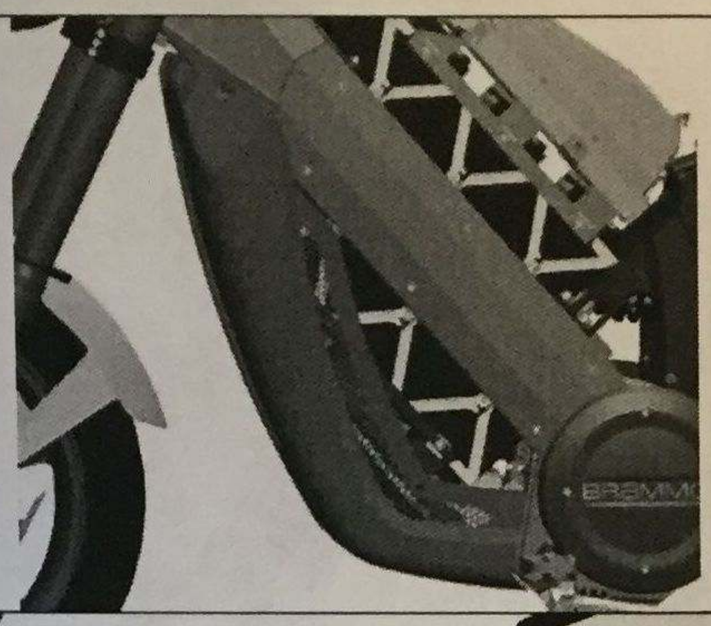
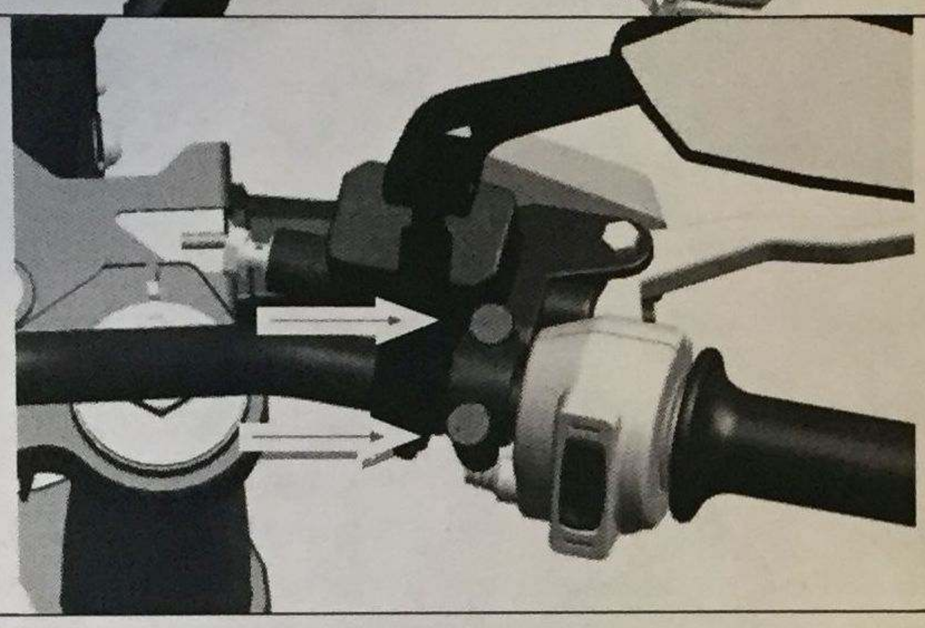
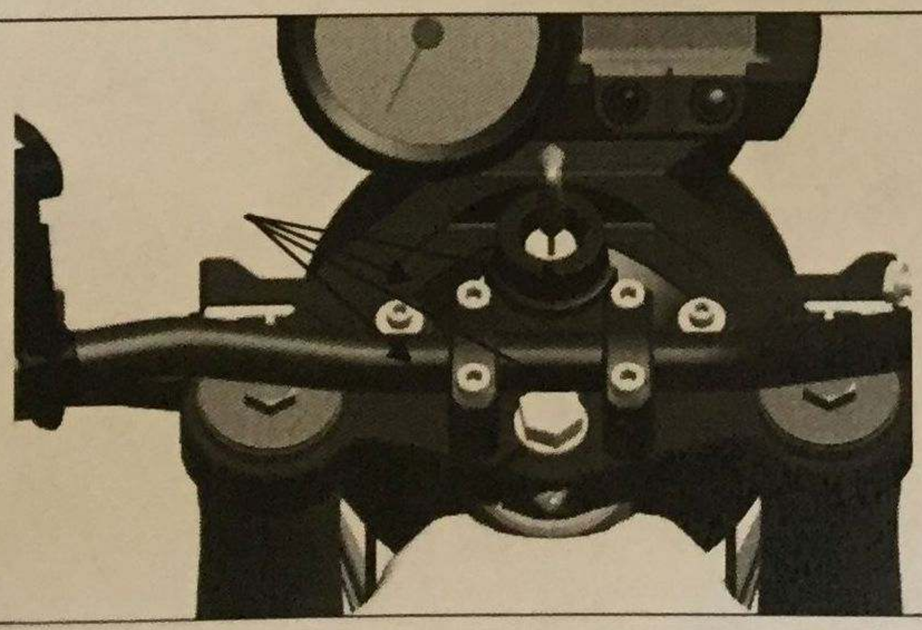
6.3.57- Materials required

- Handlebar FRU
- Cable ties

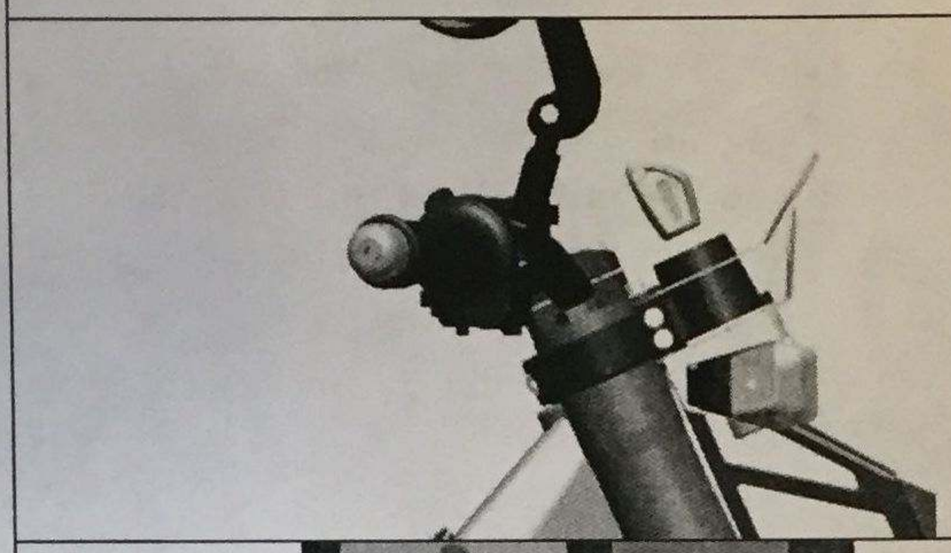
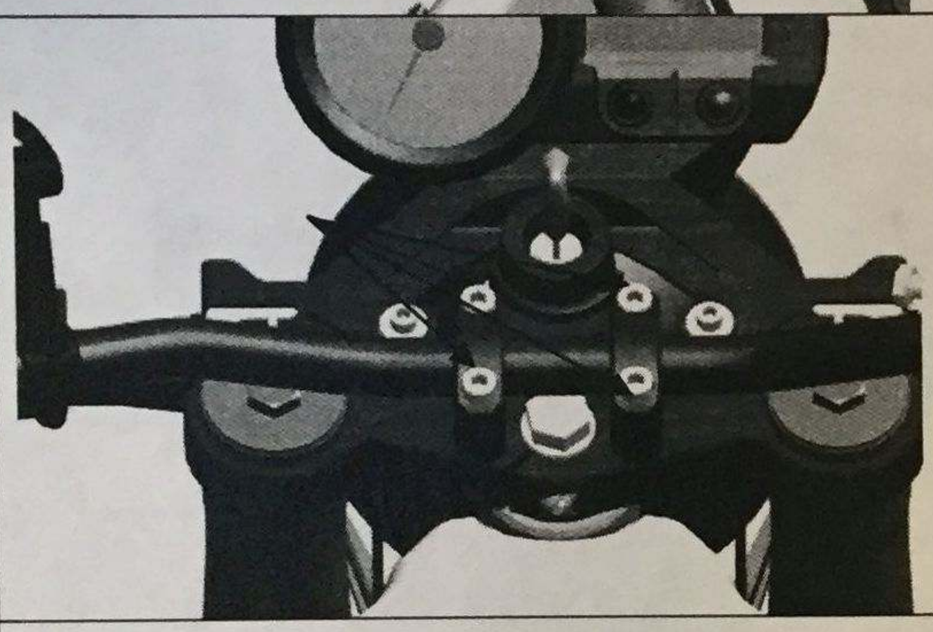
6.3.60- Removal and Replacement Procedure

	Place the Enertia in a stand with the rear wheel off the ground.

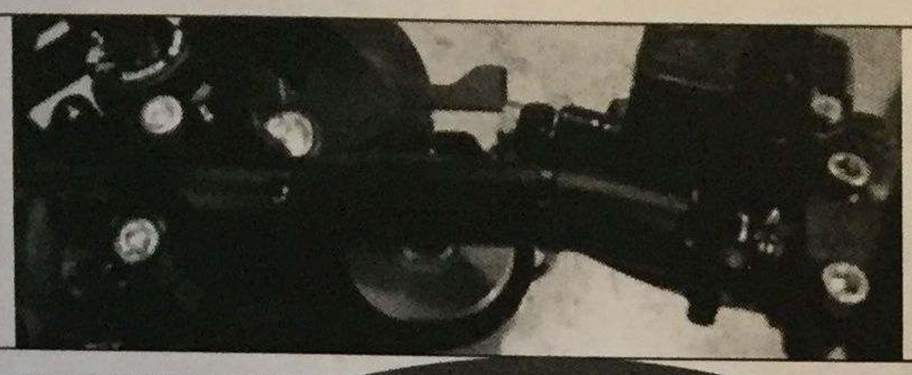
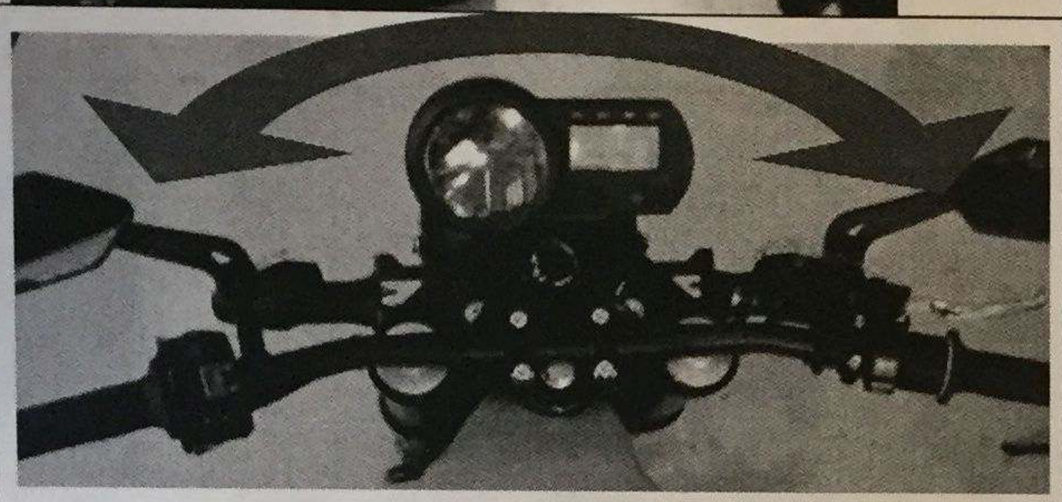
6.3—Handlebar Assembly

	Remove the seat and body panels per chapter 3.2
	Clip all cable ties from the handlebar. Remove two bolts from the front brake master cylinder assembly on the right hand side of the handlebar using a 5mm Allen wrench.
	Gently, allow the front brake lever/master cylinder to hang along the side of the forks.
	Disconnect the cable for the light controls multi-switch (left hand side of the handlebar) from the main harness.
	Disconnect the cable for the throttle (right hand side of the handlebar) from the main wiring harness. Remove the harness guide from the underside of the lower triple clamp.
	Use a 6mm Allen wrench to remove the four bolts from the handlebar mount in the center of the triple clamp. Be sure to have a firm grip on the handlebar; it will move when the last bolt is loose.
	Remove the old handlebar assembly and mounts.

6.3—Handlebar Assembly

	Locate the new handlebar assembly and mounts on the triple clamp. Thread all four bolts into the mount, but do not tighten completely until the handlebar position is set.
	Position the handlebars. The handlebars should be located evenly from side to side. They should be rotated so that the grips are parallel to the ground when the Enertia is vertical with both tires on the ground.
	When the handlebar position is set, tighten all four mounting bolts with a 6mm Allen wrench.
	Remove the mirrors from the old handlebar and reattach them to the new handlebar.
	Reconnect the brake master cylinder assembly to the right hand side of the handlebar. Check the brake lever for comfortable position before tightening the bolts fully with a 5mm Allen wrench.
	Route the cable for the light controls multi-switch through the dash bracket and behind the headlamp. Connect the cable to the main harness.
	Route the cable for the throttle down through the dash bracket and behind the headlamp. Connect the cable to the main harness.

6.3—Handlebar Assembly

	Use cable ties to securely fasten the cables for the throttle and the light control multi-switch to the handlebar. Reinstall the harness guide to the underside of the lower triple clamp.
	Slowly turn the handlebar to the extreme left and extreme right while looking at the newly routed cables. Make sure that the cables are not pinched during the turning of the handlebars. If cables are pinched, cut the cable ties and reroute them until cables are positioned correctly.
	Turn on the Enertia and check the function of the lights and throttle. Be sure to keep all tools and people away from the rear of the Enertia when testing the throttle.
	Remove the Enertia from the stand and walk it a few paces forward, checking the function of the front brake to ensure it was not damaged during repair.
	A properly trained and authorized technician should verify all functions of the Enertia before considering the repair complete.

BRAMMO ENERTIA	Chapter Title	**7.1—Swing Arm Assembly**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Swing Arm with Pivot Axle	B0110-0107010

7.1.10- Overview

The swing arm is the main component of the rear suspension of the Enertia. It is used to hold the rear axle firmly while pivoting vertically to allow the suspension to absorb bumps in the road. The bolts with jam nuts in the swing arm are also adjusted to move the position of the rear axle fore/aft for setting the chain tension.

The swing arm FRU contains the swing arm, the pivot axle, the rear fender, and attachment hardware.

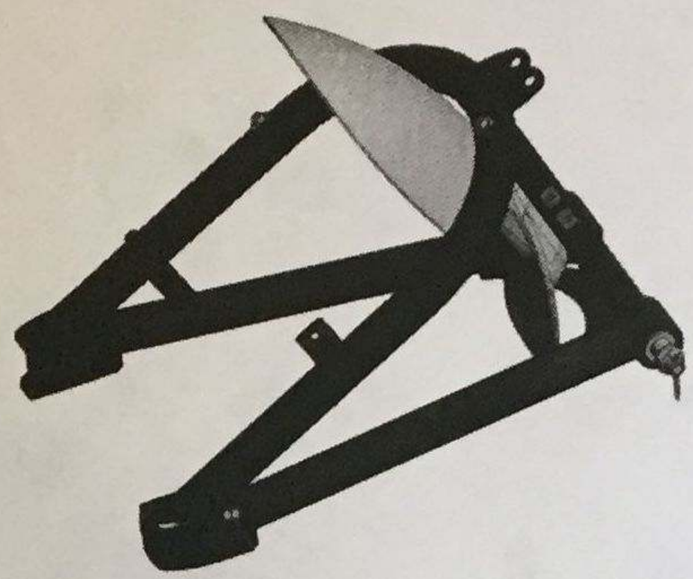


Figure 7.1.1 – Swing Arm, pivot axle, and fender.

7.1.40—Diagnosing a Problem

A swing arm may be damaged due to abusive driving or an accident. If the swing arm appears damaged, be sure to check surrounding components for similar defects due to an accident or misuse. Indicators of swing arm damage could be wheel misalignment, noticeable suspension issues, vibration during driving, or cosmetic damage.

7.1.55—Setup and Tools

- Metric Allen wrench set
- Metric combination wrench set
- Pliers
- Metric socket set and ratchet
    - A 19mm socket and a 19mm wrench are needed

7.1.57—Materials Required

- Chain lubricant
- Swing arm assembly FRU
- Cotter pin
- Bearing grease

7.1.60—Removal and Repair Procedure

	Place the Enertia on the stand.

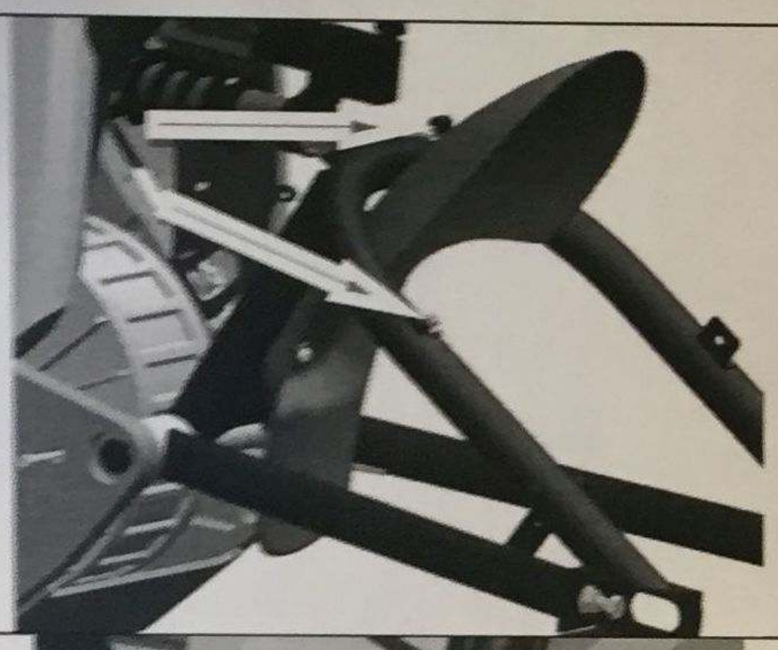
7.1—Swing Arm Assembly

Remove both motor covers from each side of the Enertia, four bolts per side, using a 4mm Allen wrench, per chapter 3.6

Remove rear chain guard and chain (see chapter 5.2).

Remove rear wheel (see chapter 8.2).

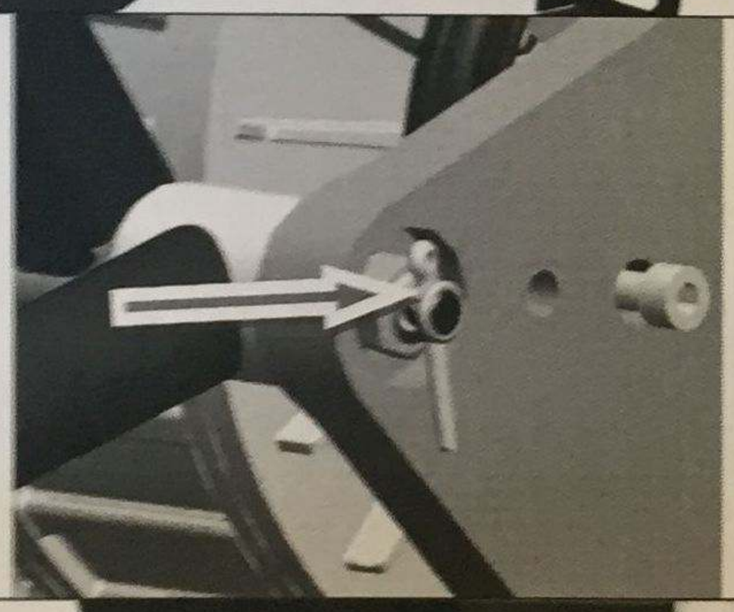
Remove rear brake caliper (see CHAPTER 9.5).



Remove Rear Fender using 4mm Allen wrench.

Use a 4mm Allen wrench to remove the two "P" clips holding the brake line to the swing arm.

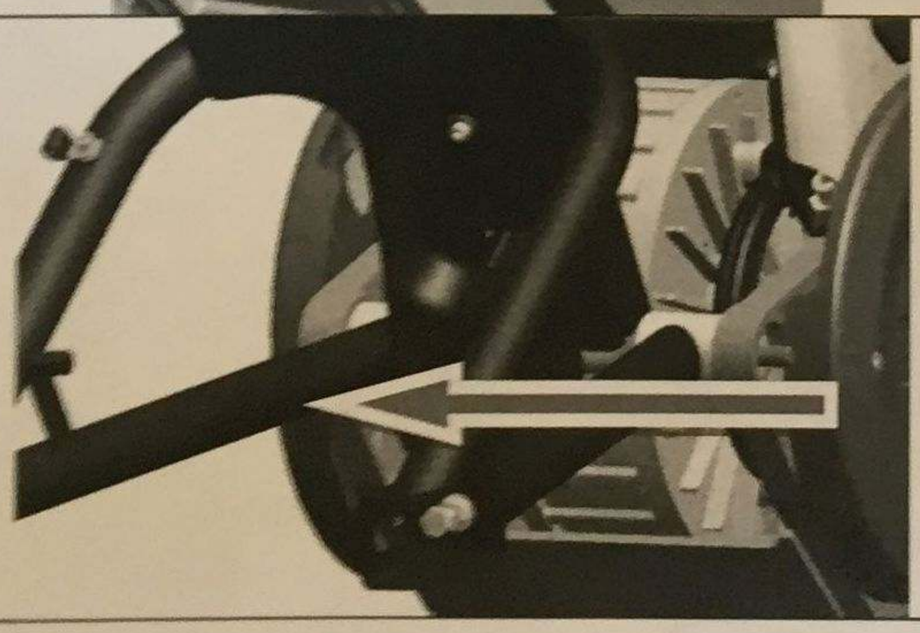
Remove Rear shock (see chapter 7.2).



Remove cotter pin from drilled nut on the swing arm pivot. Use pliers to straighten the pin, and then push/pull the pin out of the pivot axle.

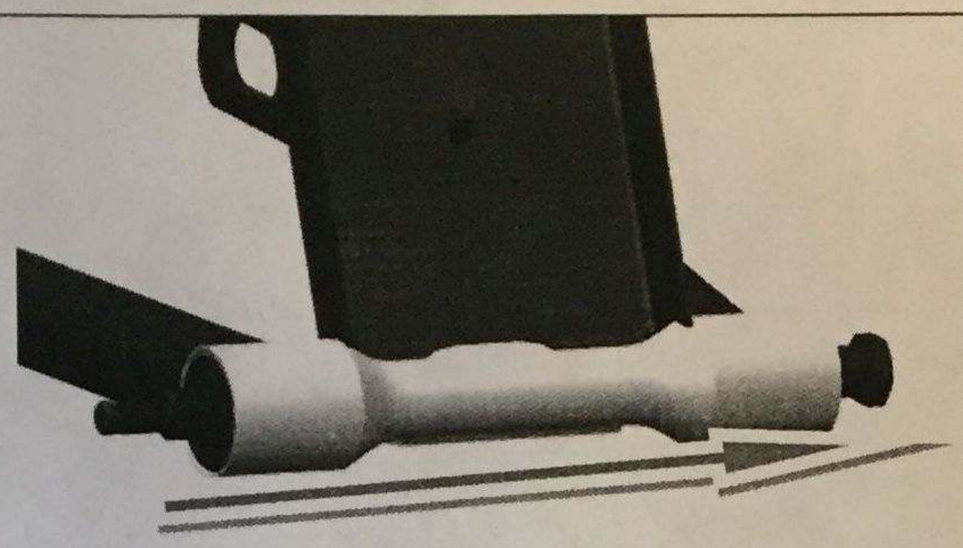
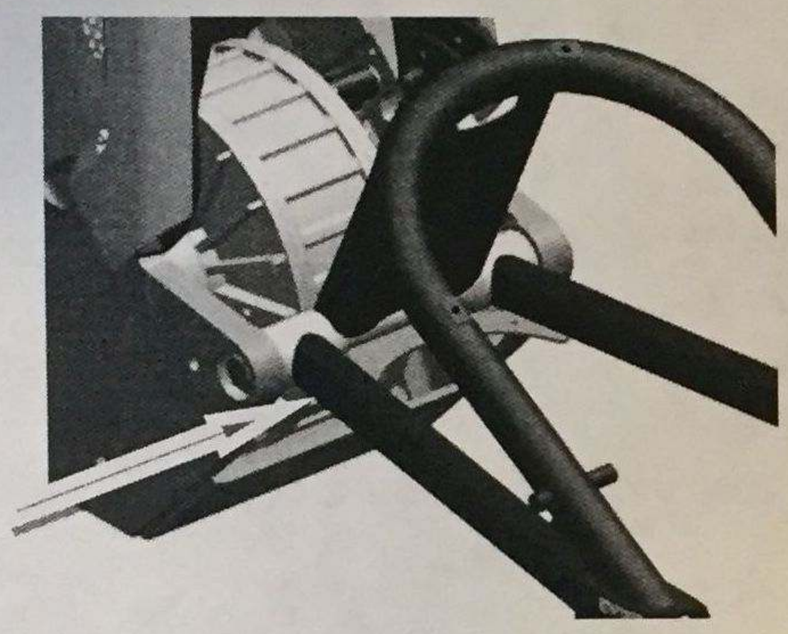
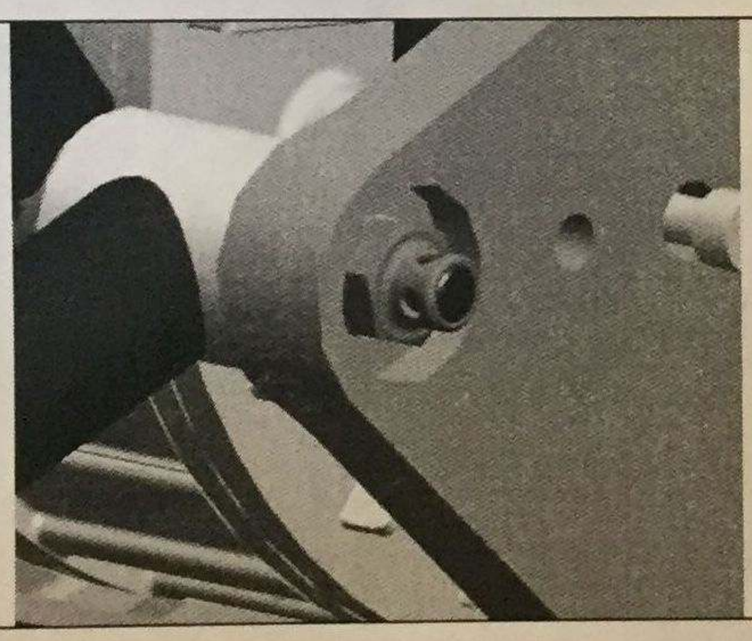
Place the19mm socket and wrench over either end of the pivot axle and break loose the nut.

Remove drilled nut with the ratchet.

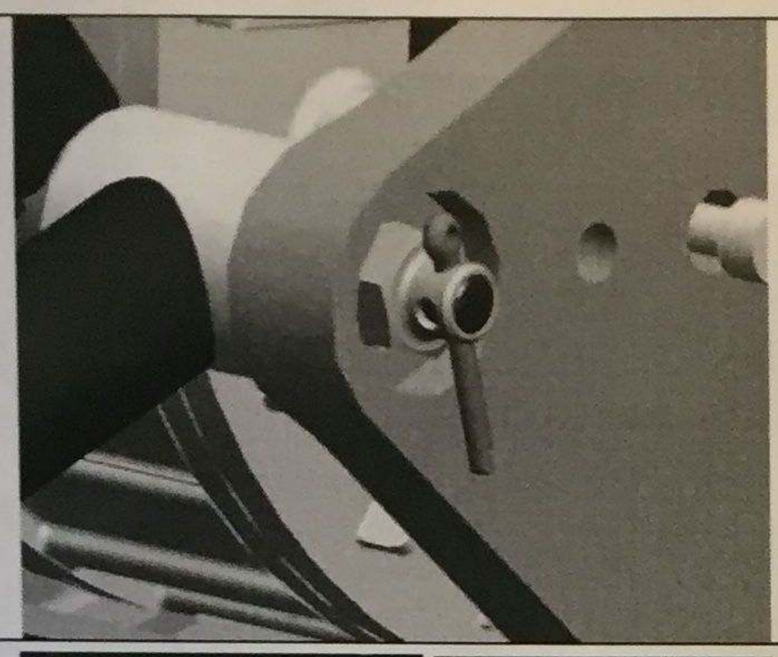
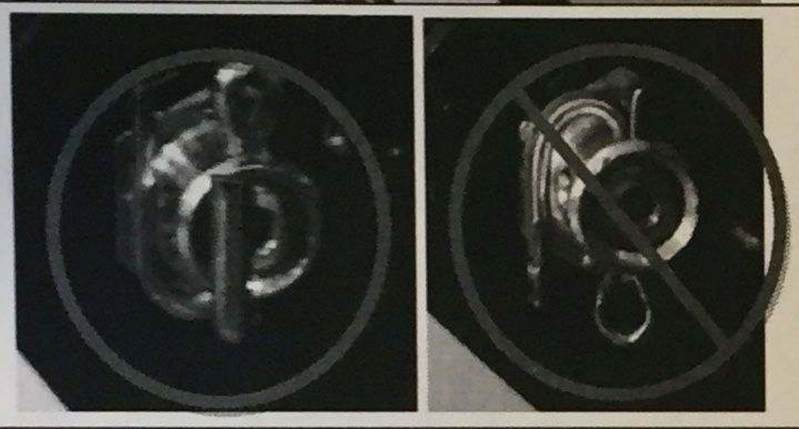
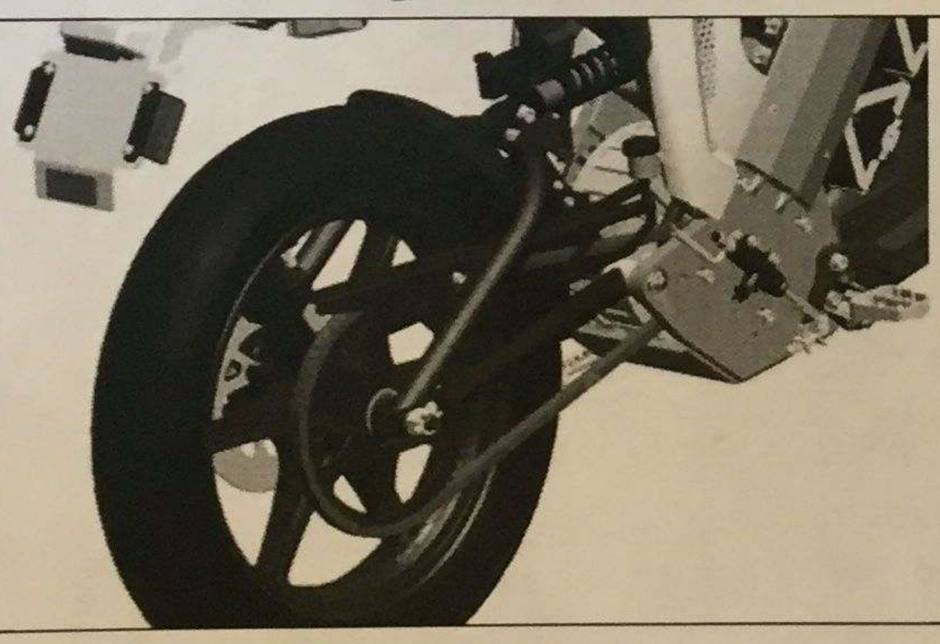


Get the end of the swing arm pivot axle at right, push to left, and finish by pulling out with left hand.

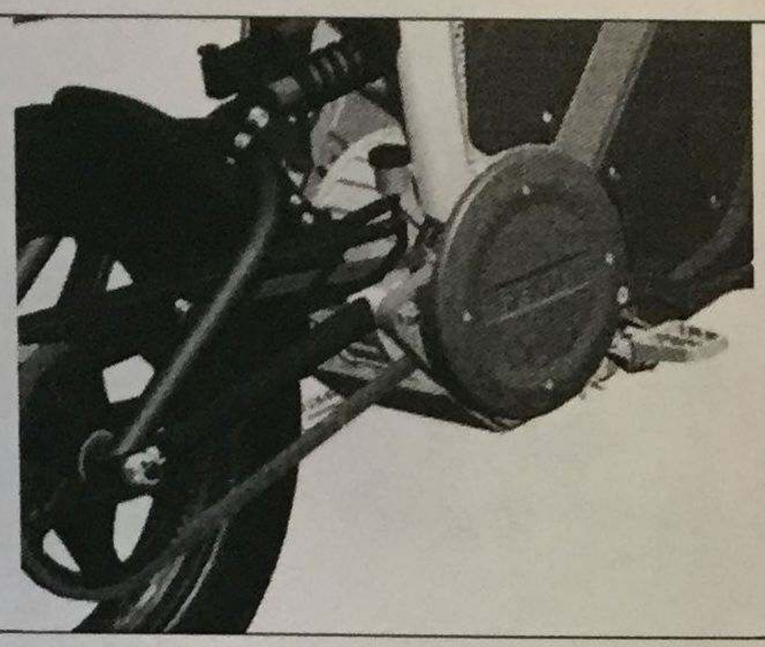
7.1—Swing Arm Assembly

	Get replacement swing arm. Get new cotter pin and replacement swing arm pivot axle and remove from axle. Push the pivot axle to the left, grasp with other hand and pull thru.
	After making sure swing arm pivot bearings are greased. Position end of pivot axle into left side of frame. Grasp the pivot arm and position into the mounting location at the frame pivot axle. After lightly greasing pivot axle, slide it thru the swing arm to the right side.
	Get drilled nut and finger tighten on the pivot axle.
	Position a 19mm socket on each end of the pivot axle.
	Tighten the nut with a ratchet. Torque to 124 in lbs.

7.1—Swing Arm Assembly

	Back off nut to align drilled with pin thru-hole on shaft.
	Using pliers, put the cotter pin thru the drilled nut on the pivot axle. CORRECT – one side is bent up over the face of the nut. WRONG – Pin is not bent over face of the nut
	Install rear shock rear mounting bolt (see chapter 7.2). Install Rear Fender (per chapter 8.3)
	Install rear wheel per chapter 8.2). Install brake assembly and P-clips per CHAPTER 9.5 Install chain and chain guard (see chapter 5.2).

BRAMMO ENERTIA	Chapter Title	**7.1—Swing Arm Assembly**

	Install motor covers to each side of the Enertia, using four bolts per side, with an Allen wrench. See chapter 3.6 for details.

Chapter Title	7.2—Rear Shock

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Rear Shock	B0110-0107020

7.2.10 – Overview

Shock absorbers are an important part of the Enertia's suspension. It is a mechanical device designed to smooth out or dampen shock impulse, and dissipate kinetic energy. In short the shock absorbers help cushion the Enertia on uneven roads.

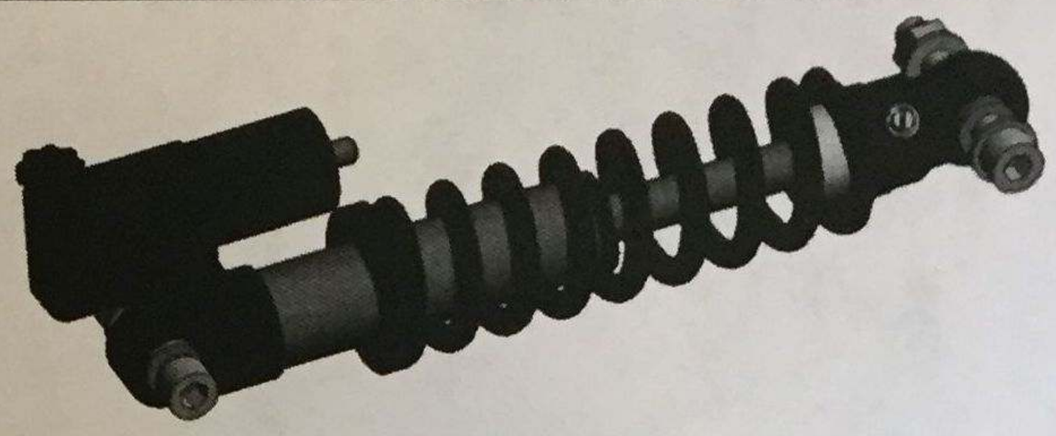


Figure 7.2.1 – Rear Shock

7.2.40—Diagnosing a problem

Often it is difficult to spot worn shocks, because they wear out so gradually that the rider gets used to the difference in ride comfort and control. Generally, the first indication of shock problems will be cupping of the tires (small chunks of rubber dug out around the circumference of the tire).

Excessive bouncing after hitting a bump, excessive lean going around corners, or nose diving when braking are other less noticeable indications of worn shocks.

Oil seepage at the shock is another warning that the shocks are not working as designed, however this generally requires a close inspection to spot.

7

7.2.55—Setup and Tools

- Metric Allen wrench set
- Metric Long ball hex head socket or T-grip Allen wrench set
- Wrench
- Metric Combination wrench set

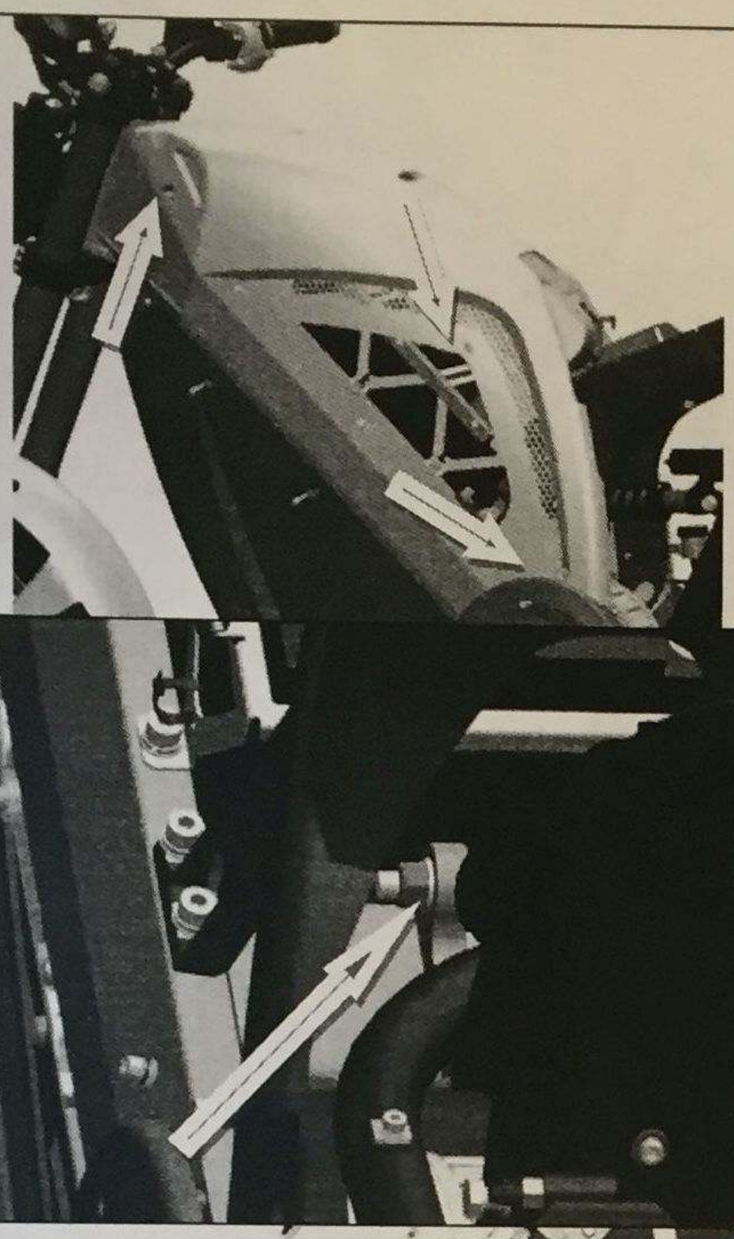
7.2.57—Materials Required

- Rear shock FRU

7.2.60—Removal and Replacement Procedure

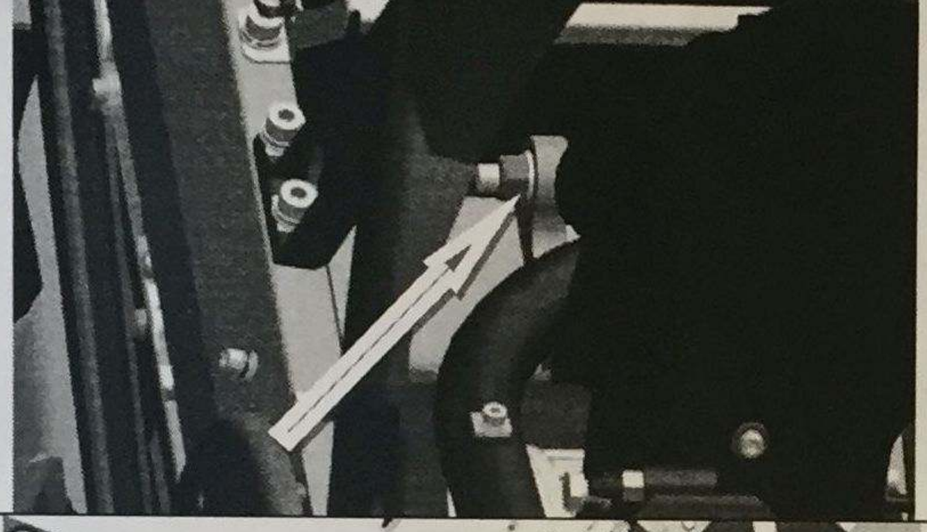
	Place the bike on a lift or center jack with rear wheel barely touching the ground. (Standard rear axle jack will NOT work).

Chapter Title: 7.2—Rear Shock

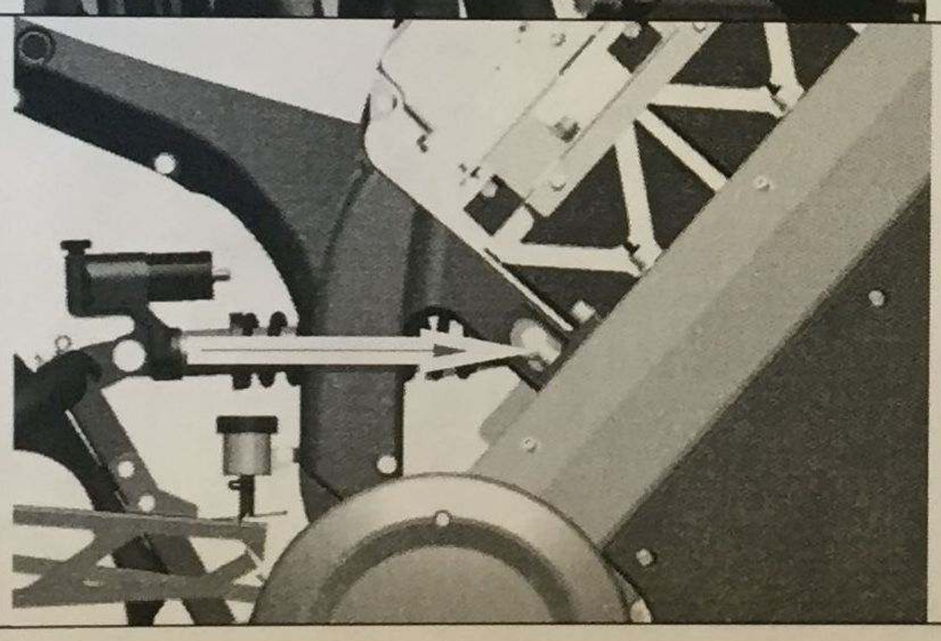


Remove the seat and the top body panel per chapter 3.2

This step is not absolutely required, but does provide for easier access to components inside the Enertia and will prevent accidental damage to the body panel.

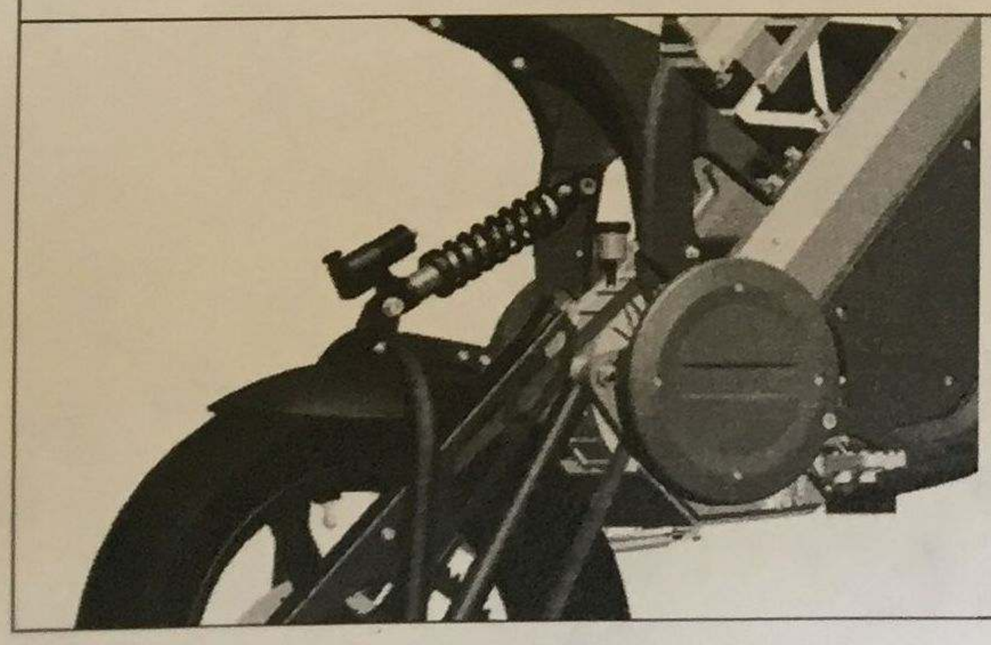


Position a 17mm combination wrench to the nut on the shock under the seat strut.



Place a long 8mm ball end Allen head socket or T-grip Allen wrench through the side of the seat strut and into the bolt at the front of the shock and turn to break locking torque.

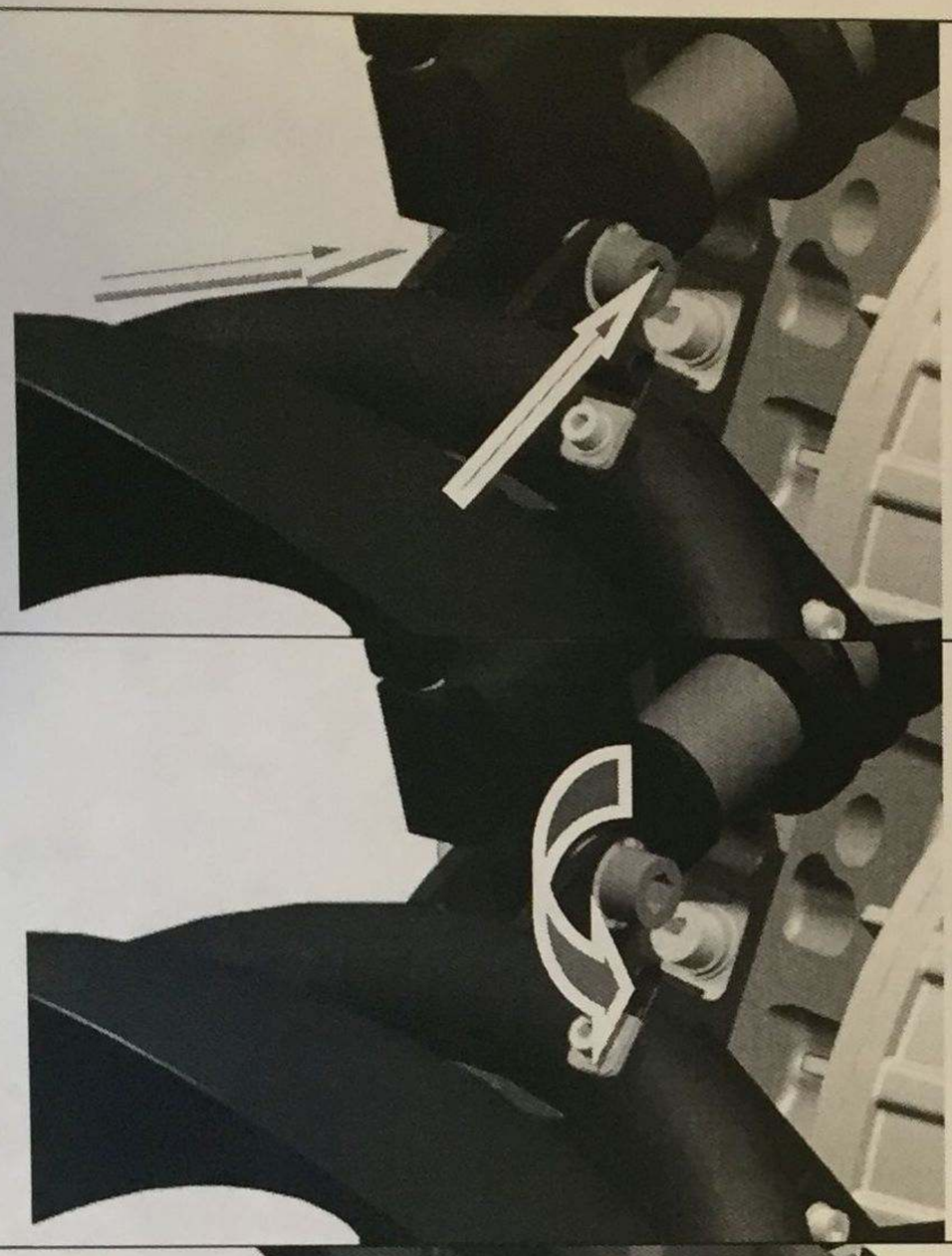
Turn bolt while holding the nut firmly to remove.



Grip the swing arm firmly and remove the bolt from the shock. Gently lower the swing arm until the rear wheel is resting on the ground.

7

7.2—Rear Shock



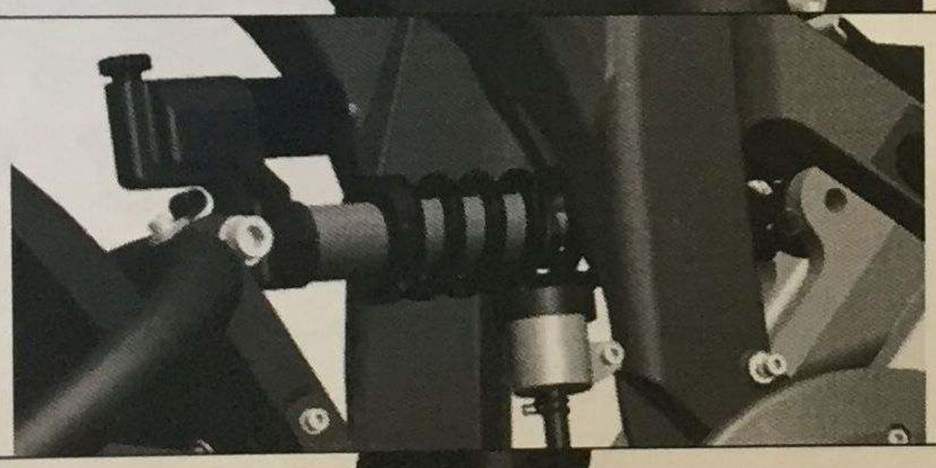
Position the 17mm wrench to the nut and the 8mm Allen wrench to the bolt at the rear of the shock and turn to break locking torque.

Turn bolt with the ratchet to remove the nut.

Remove the bolt from the rear of the shock.

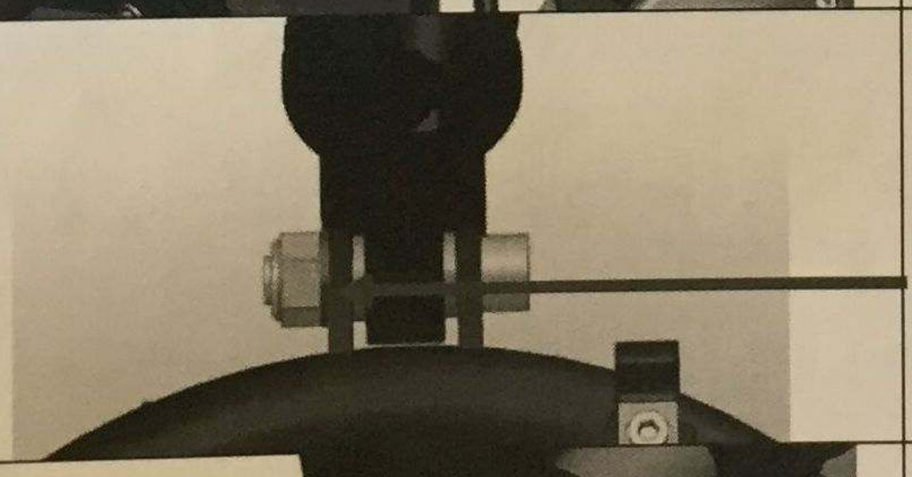
Remove the shock absorber from the Enertia.

Apply Loctite to the new bolts (be careful not to smear Loctite).



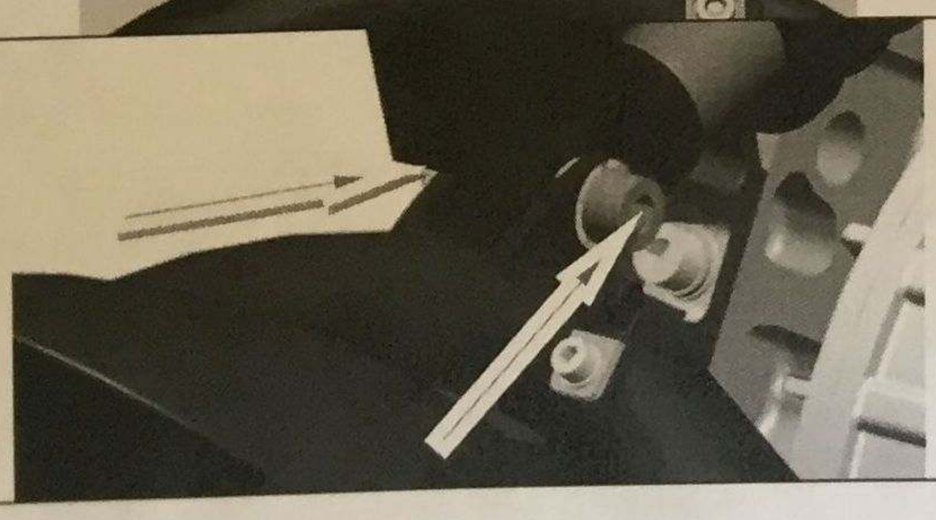
Position new shock into mounting brackets and place the bolt through the rear mount bracket and shock.

Lift the swing arm and place bolt through the front shock bracket and mount.



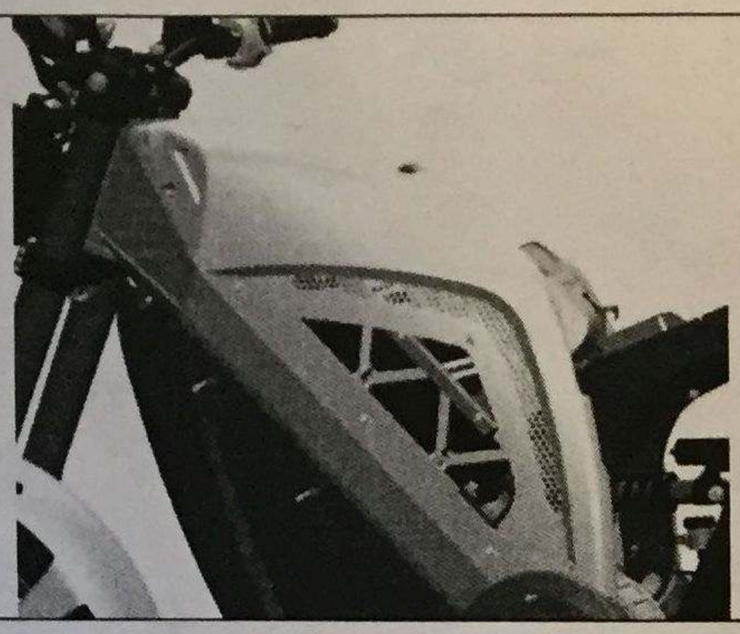
Install the bolt as shown on each end of the shock. Finger tighten both nuts.

NOTE: M10 Washer is used only on the side of the nut.



Tighten by placing 17mm combo wrench on the nut and an 8mm Allen wrench on the bolt.

BRAMMO ENERTIA	Chapter Title	7.2—Rear Shock



Reinstall upper body panel and seat per chapter 3.2

BRAMMO ENERTIA	Chapter Title	**8.1 – Front Wheel**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Front Wheel	B0110-0108010

8.1.10—Overview

Proper examination and maintenance of tires and wheels is an important step for a smooth ride and insuring the safety of the rider. Tires will wear differently for each rider. Riding habits, road conditions, and the environment can all affect tire life. Tires should be inspected frequently to ensure the safety of the rider. The Enertia front tire is an Avon 100/90-18 road tire.

The front wheel assembly FRU includes the wheel, bearings, and axle.

Figure 8.1.1, Front Wheel and Tire Assembly

8.1.20—Maintenance

For in depth tire maintenance, see chapter 1.3. The following is a brief overview.

Tire maintenance:

- Check that the tire is properly inflated (proper pressure will be imprinted on the tire sidewall)
- Visually inspect for cracks, cuts, bulges or uneven wear – change tire if any of these are observed
- Check from proper tread depth (must be greater 1/8")

Wheel maintenance:

- A visual inspection of the wheel looking for an cracks or chips

8.1.40—Diagnosing a Problem

While in the bike stand turn the wheel by hand and listen for a grinding or whine, this will indicate that the wheel bearings are bad and the wheel assembly needs to be replaced

8.1.55- Setup and Tools

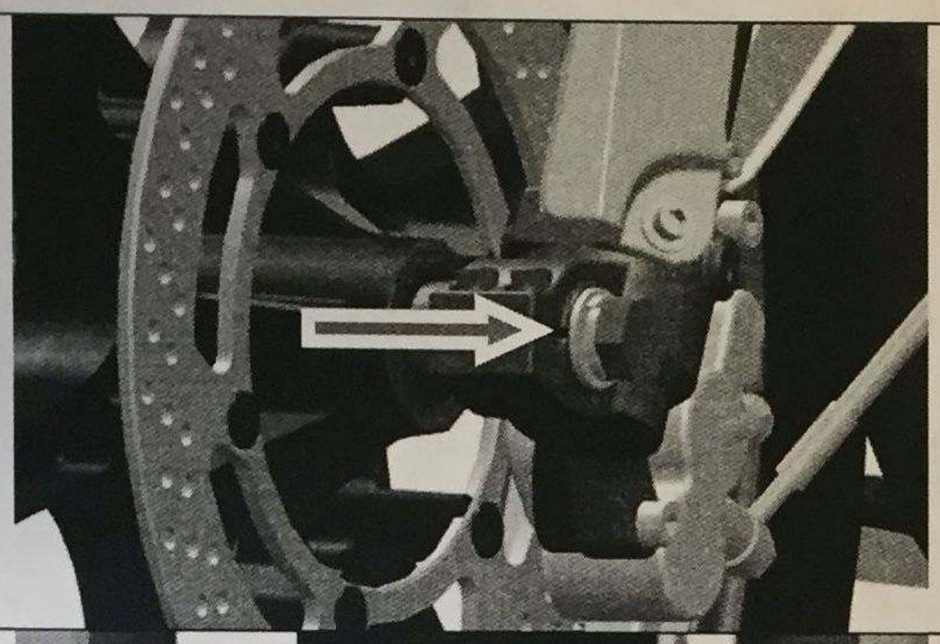
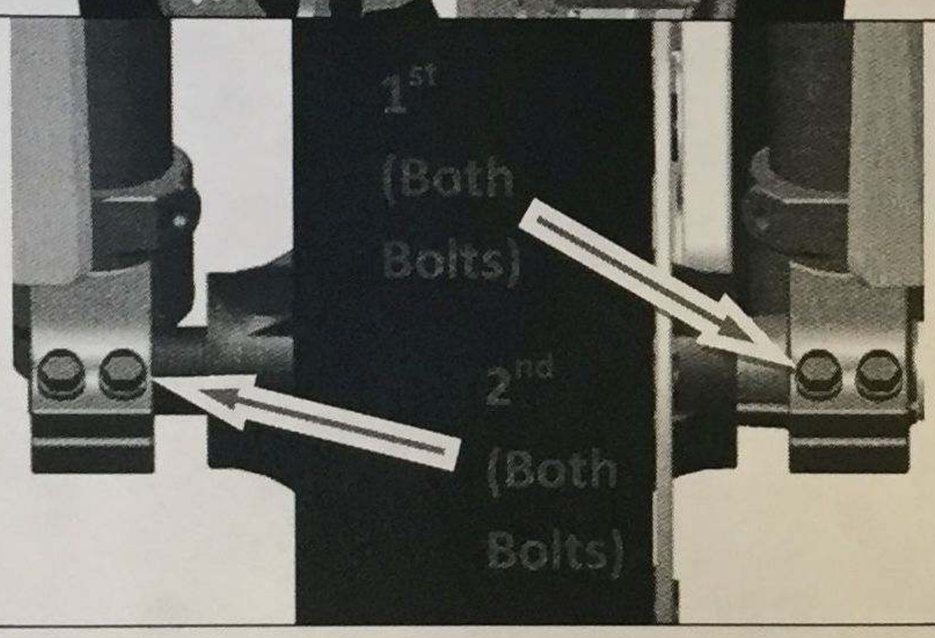
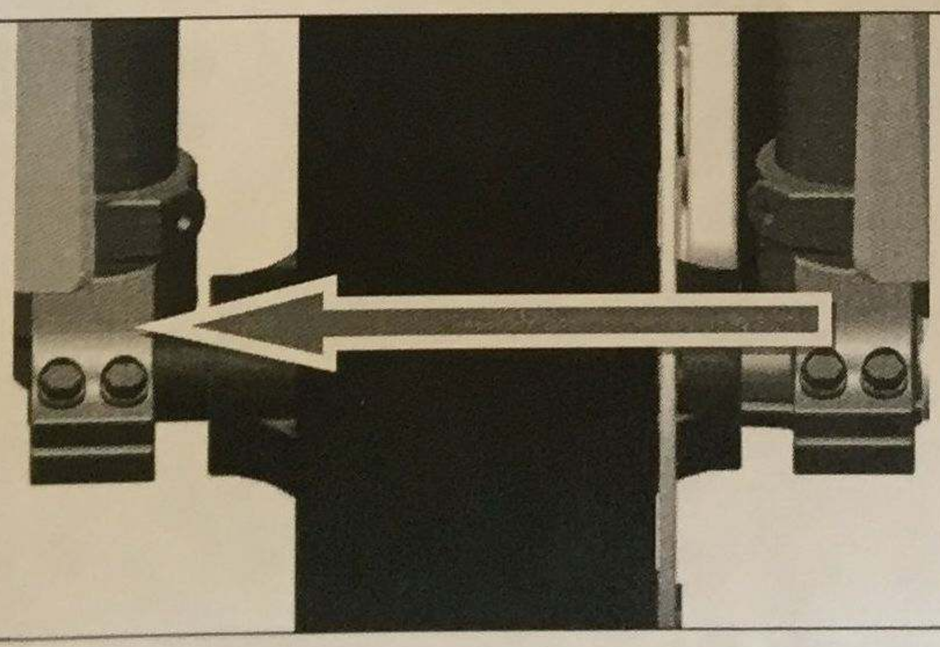
- Motorcycle stand or lift.
- Metric Allen wrench set
- Metric Combination Wrench Set
- Ratchet with Metric Sockets
- Mallet
- Dead blow hammer

8.1.57- Materials required

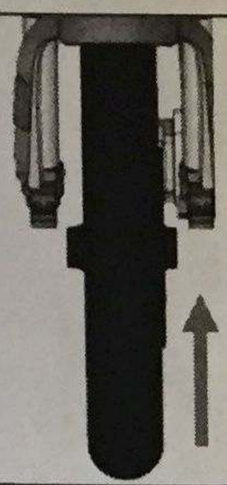
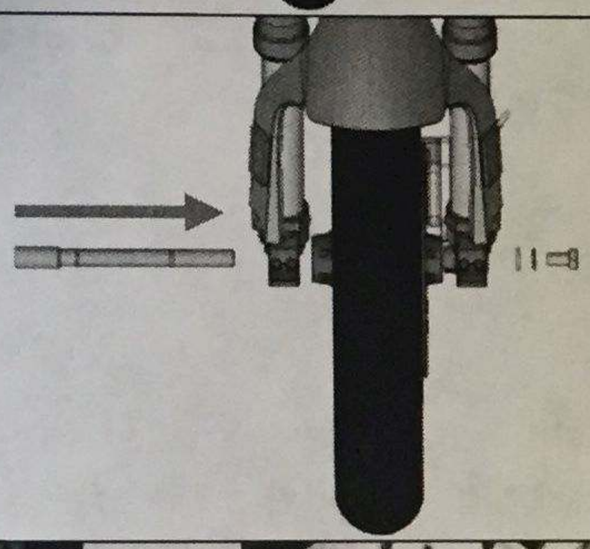
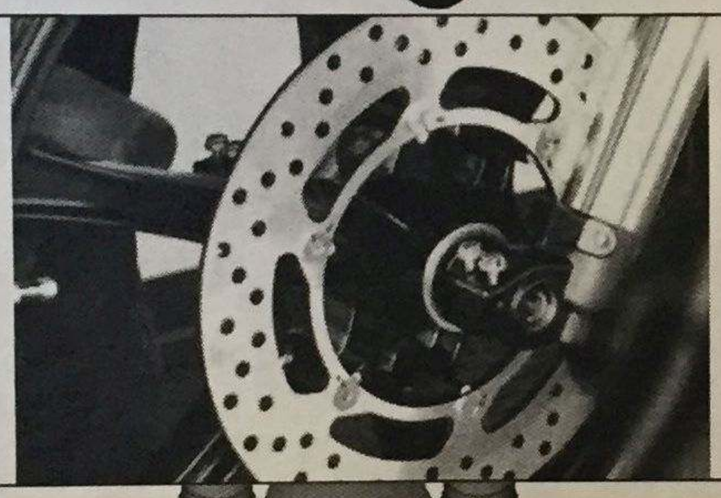
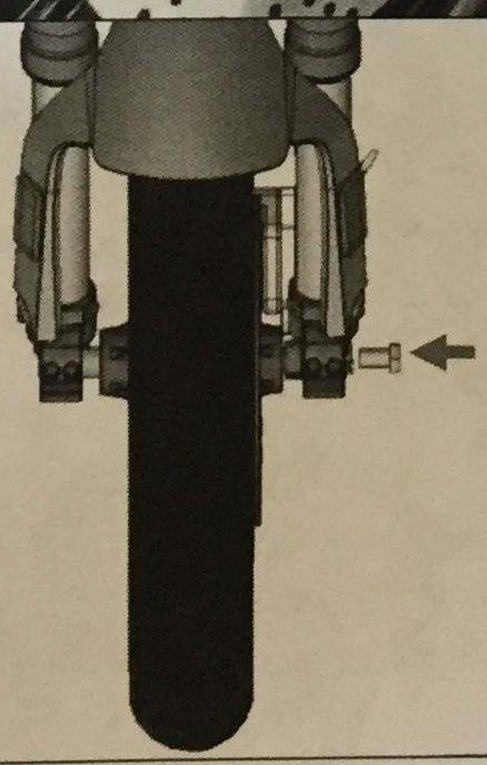
Front wheel assembly FRU
Loctite Blue 234
Bearing grease

8.1 – Front Wheel

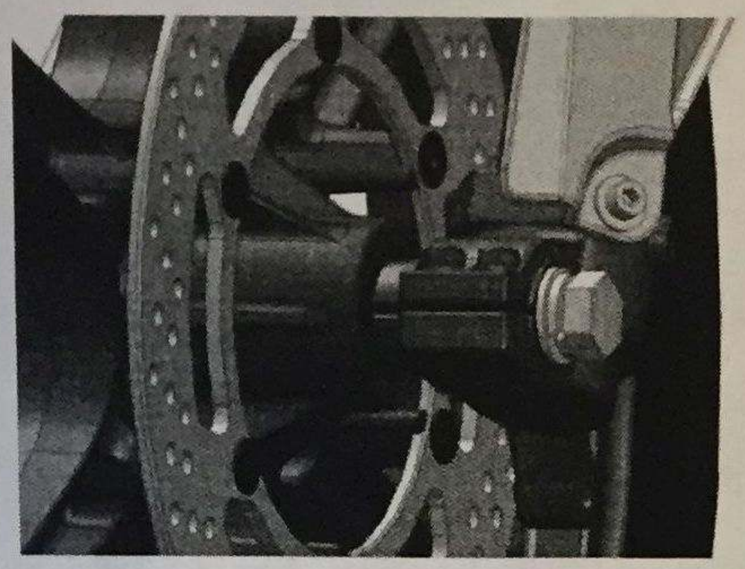
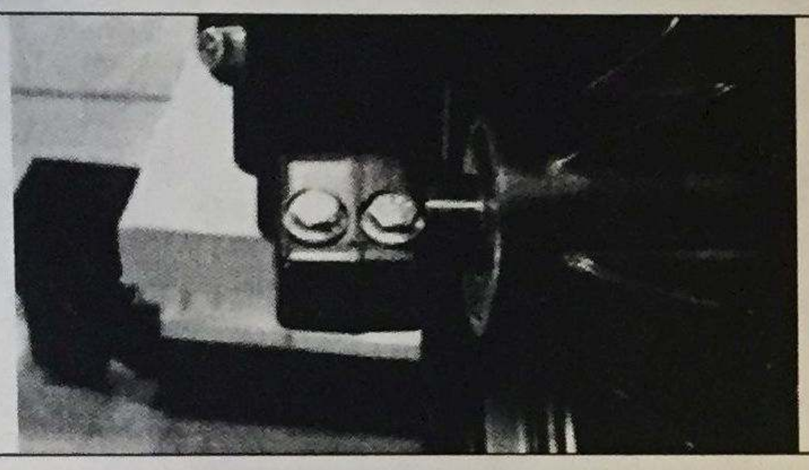
8.1.60—Removal and Replacement

	Place the Enertia on the bike stand with front wheel off the ground. Remove the front fender per Chapter 8.3
	Using a ratchet with 22mm socket, loosen the axle bolt. Using your fingers remove the remainder of the bolt and washers.
	Using a ratchet with 10mm socket, loosen the pinch clamp bolts (2 bolts) on the left side of the Enertia. Now loosen the pinch clamp bolts (2 bolts) on the right side of the Enertia.
	Get the mallet and drift pin. Position the drift pin to the axle shaft. ***(note: once the axle is removed from the fork, the front wheel assembly will drop. Make sure it is secured to prevent injury to the technician or damage to the Enertia.)***
	Tap the axle with the mallet thru to the left side (until you can grab it by hand).

8.1 – Front Wheel

	Firmly grip the wheel with one hand and finish removing the axle by hand, remove the wheel from the Enertia.
	Lift the new wheel in place between the front forks making sure to align the rotor between the brake pads.
	After lightly greasing axle, hold the wheel in place with one hand and slide the axle through the pinch clamp in the fork on the right hand side of the Enertia.
	Align the axle with the hole in the pinch clamp on the right hand side of the Enertia. Use a deadblow hammer to knock the axle fully flush with the left hand side of the fork pinch clamp.
	Apply Loctite then hand-thread the bolt with washers into the end of the axle.

8.1 – Front Wheel

	Using a ratchet with 22mm socket, fully tighten the axle bolt. Torque bolt to 41 ft. lbs. (492 in. lbs). To torque the axle, tighten the two pinch bolts on the right fork with a 10 mm socket or wrench just enough to keep the axle from rotating until the axle is fully torqued.
	Remove, apply Loctite to, and reinstall the left pinch bolts and torque to 53 in. lbs. using a 10 mm socket. Remove, apply loctite to, and reinstall the Right pinch bolts and torque to 53 in. lbs. using a 10 mm socket.
	Test ride the Enertia at slow speed to ensure front wheel has been installed properly.

Chapter Title	8.2 – Rear Wheel

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Rear Wheel	B0110-0108020

8.2.10—Overview

Proper examination and maintenance of tires and wheels is an important step for a smooth ride and insuring the safety of the rider. Tires will wear differently for each rider. Riding habits, road conditions, and the environment can all affect tire life. Tires should be inspected frequently to ensure the safety of the rider. The Enertia rear tire size an Avon 130/80-17 road tire.
The rear wheel assembly FRU includes the wheel, bearings, and axle.

Figure 8.2.1 – Rear Wheel and Tire Assembly

8.2.20—Maintenance

For in depth tire maintenance, see chapter 1.3. The following is a brief overview.
Tire maintenance:

- Check that the tire is properly inflated (proper pressure will be imprinted on the tire sidewall)
- Visually inspect for cracks, cuts, bulges or uneven wear – change tire if any of these are observed
- Check from proper tread depth (must be greater 1/8")

Wheel maintenance:

- A visual inspection of the wheel looking for an cracks or chips

8.2.40—Diagnosing a Problem

While in the bike stand turn the wheel by hand and listen for a grinding or whine, this will indicate that the wheel bearings are bad and the wheel assembly needs to be replaced

8.2.55- Setup and Tools

- Stand
- Needle nose pliers
- Ratchet and Metric deep-well socket set.
- Two Ratchets
- Dead blow Hammer
- Drift pin

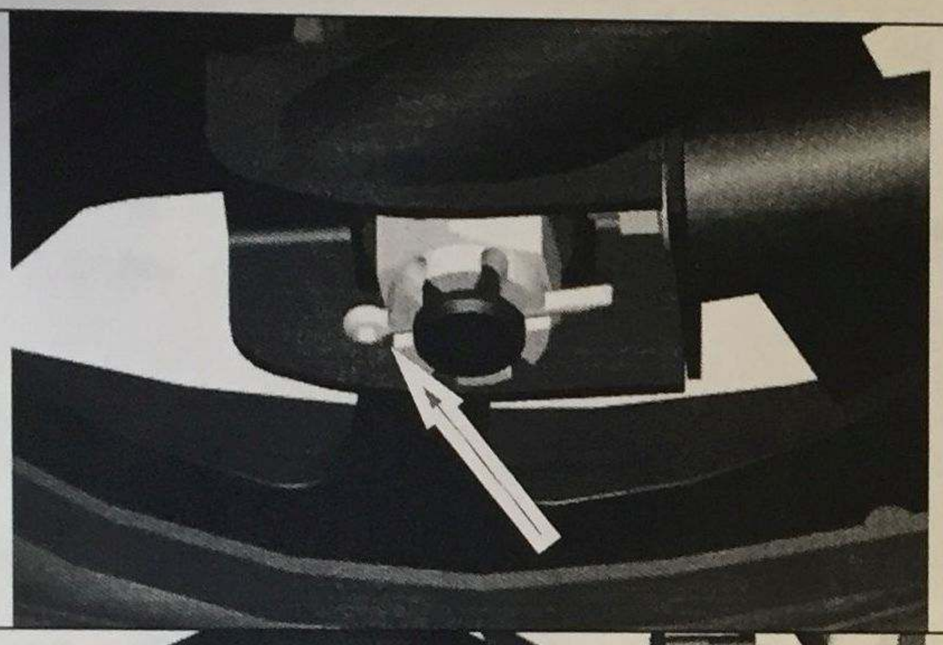
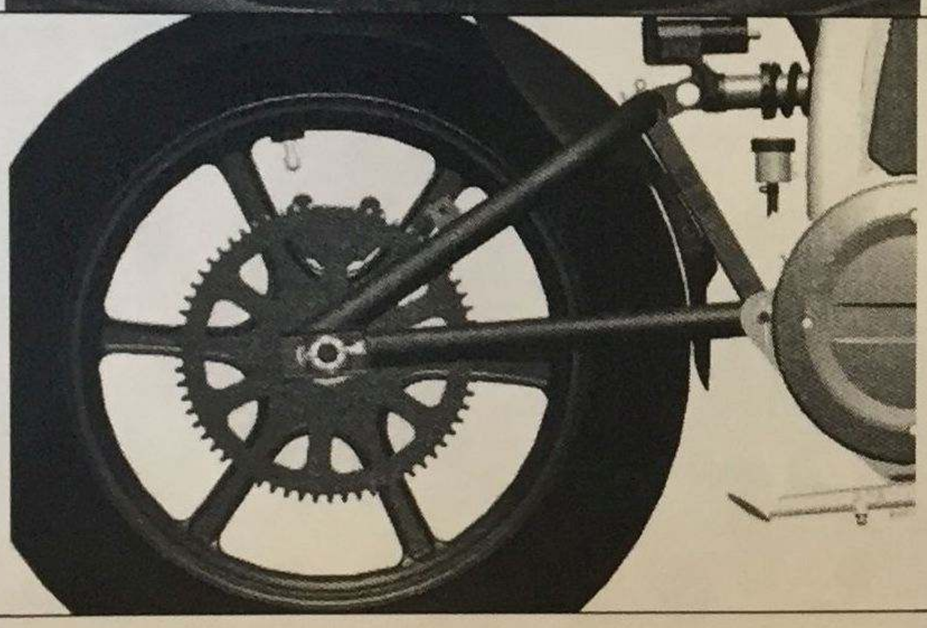
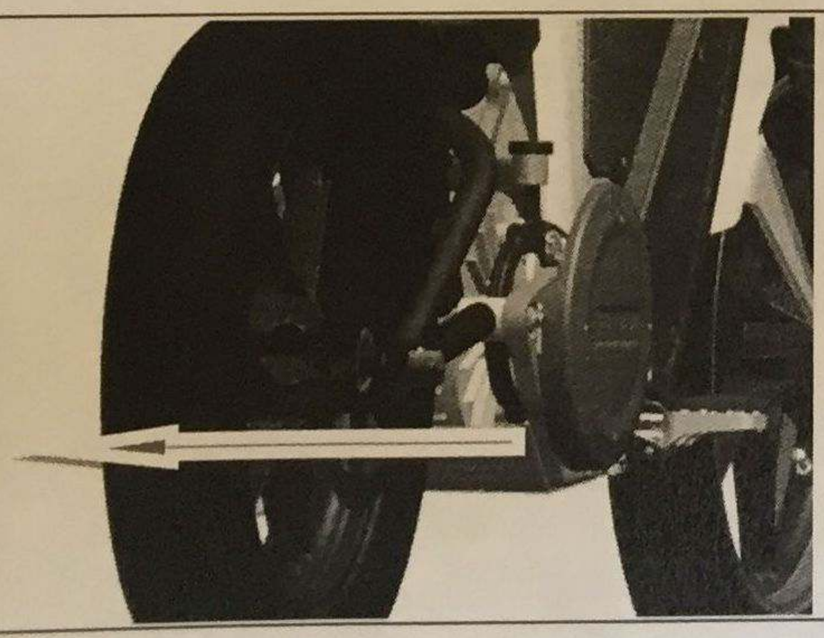
8.2.57- Materials required

- Rear wheel assembly FRU
- Cotter pin
- Bearing grease

8.2.60—Removal and Replacement Procedure

8.2 – Rear Wheel

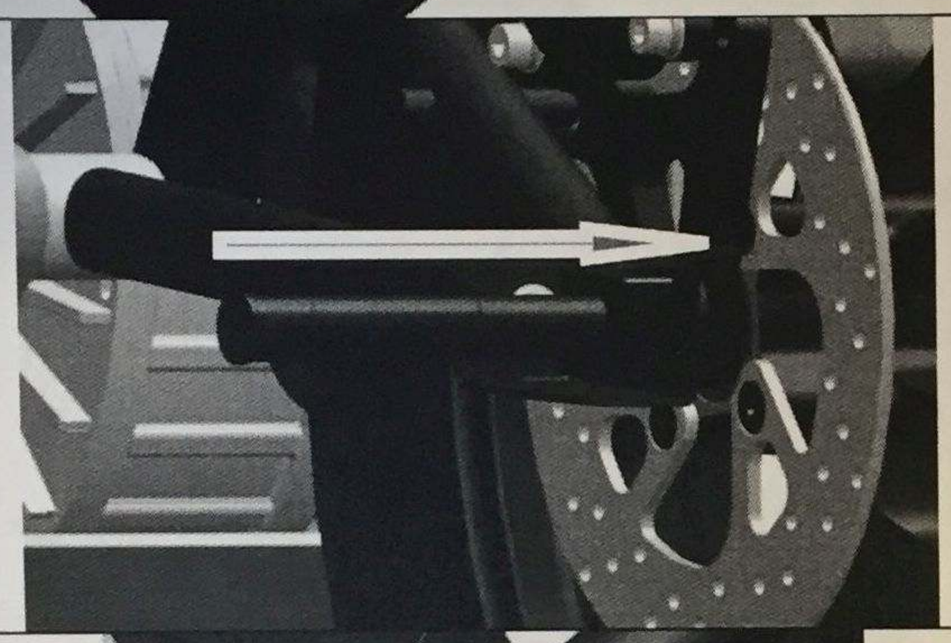
Replacing the Rear Wheel:

	Place the Enertia in a stand with the rear wheel slightly off the ground. A center jack often works better than a rear axle jack, but it is not required.
	It is recommended, but not required, to remove the rear brake caliper. Please follow chapter 9.5 for instructions.
	Using needle nose or duck bill pliers remove the cotter pin from the axle castellated nut Use a ratchet and 27mm socket to loosen the castellated nut from the rear axle.
	Remove the guard and chain as illustrated in DM2 Remove the rear brake caliper per chapter 9.5
	Using fingers remove the castellated axle nut and washer from the end of the axle.
	Use a hammer and drift pin to knock the axle from the right hand side of the swing arm. Firmly grip the rear wheel and pull the axle from the left hand side of the swing arm. ***(note: once the axle is removed from the block, the rear wheel assembly will drop. Make sure it is secured to prevent injury to the technician or damage to the Enertia.)***

8.2 – Rear Wheel

Remove the wheel from the swing arm.

Position new rear wheel into the swing arm, making sure to position the brake rotor between the brake pads

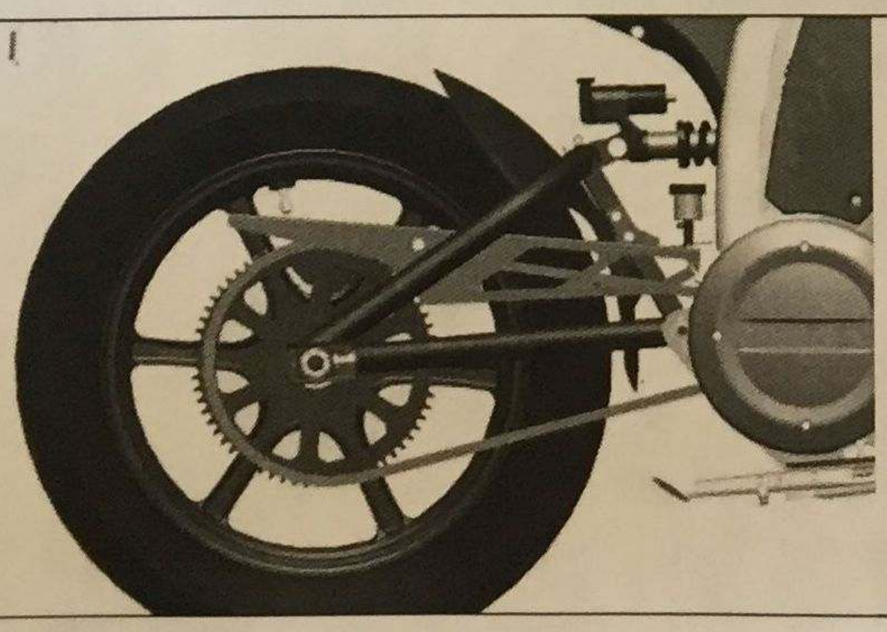


After lighly greasing axle, put thru the swing arm and wheel. Be sure to align the longest side of the block horizontally.

Make sure the spacer is included on the axle between the right side of the wheel and the swing arm.

Place the block on the right hand side of the swing arm. Be sure to align the shortest side horizontally.

If the rear brake caliper was removed earlier, reinstall per chapter 9.5 now.

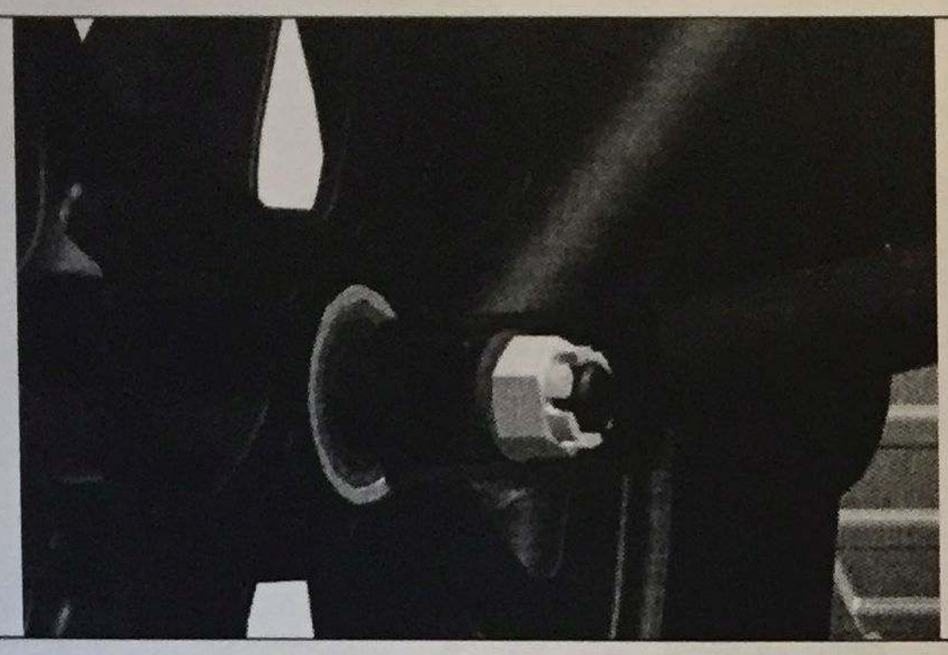


Put castellated nut and washer on the axle and finger tighten.

Also check that the jam nut is against the block and not the washer.

Replace the chain and guard as described in DM2, be sure to tension the chain correctly.

	Chapter Title	8.2 – Rear Wheel

	Use a ratchet and 27mm socket to fully tighten the castellated nut on the rear axle. a. Notches in the castellated nut must align with the through hole in the axle once fully tightened so that the cotter pin can be inserted.
	Using needle nose pliers, install a new cotter pin thru the axle at the castellated nut. Bend the tail of the cotter pin up, over the face end of the axle bolt.
	Test ride the Enertia at slow speed to ensure rear wheel has been installed properly.

Chapter Title	8.3 – Front and Rear Fender

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Fenders, Front and Rear	B0110-0108030
Fenders Set, LE Carbon Fiber Upgrade	B0110-0108031

8.3.10—Overview

The fenders of the Enertia act as a guard over each wheel to block the splashing of water, mud or other debris. The front fender also positions the side safety reflectors on the Enertia.

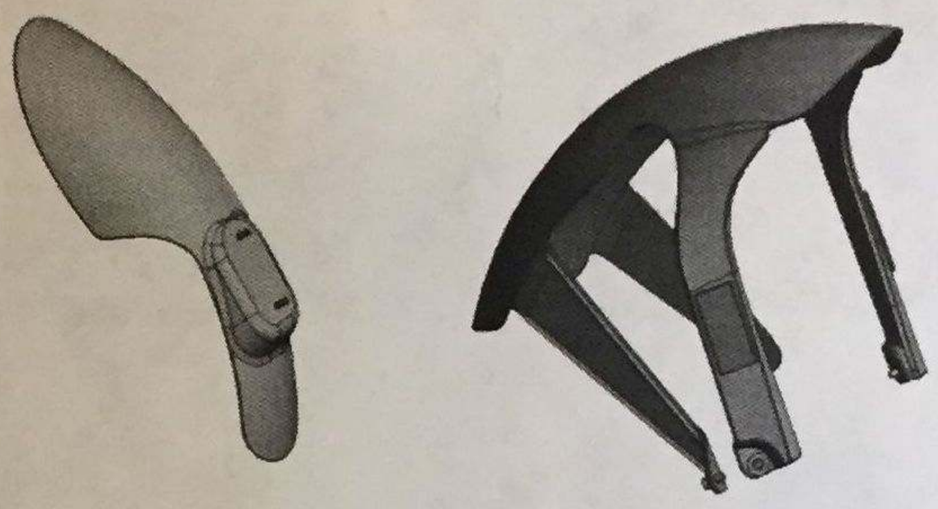


Figure 8.3.1 – Front and Rear Fender (Rear Fender to the Left, Front on Right)

8.3.40—Diagnosing a Problem

When reviewing the fenders visually inspect for cracks, scratches and chips. Check that the connections are secure and rotate the wheel to ensure that the wheels have proper clearance with the fenders.

8.3.55- Setup and Tools

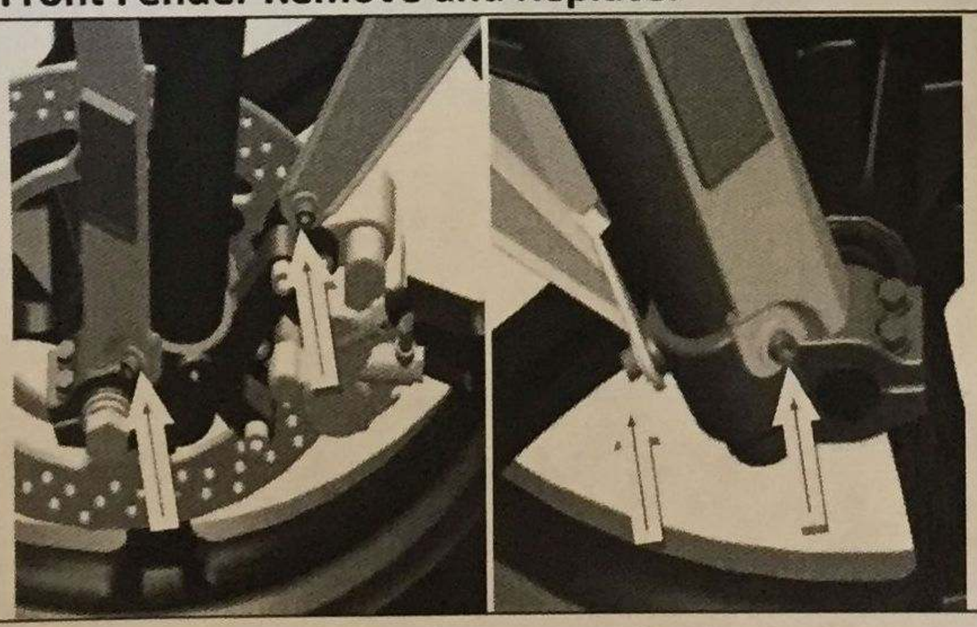
- Stand
- Metric Allen wrench set

8.3.57- Materials required

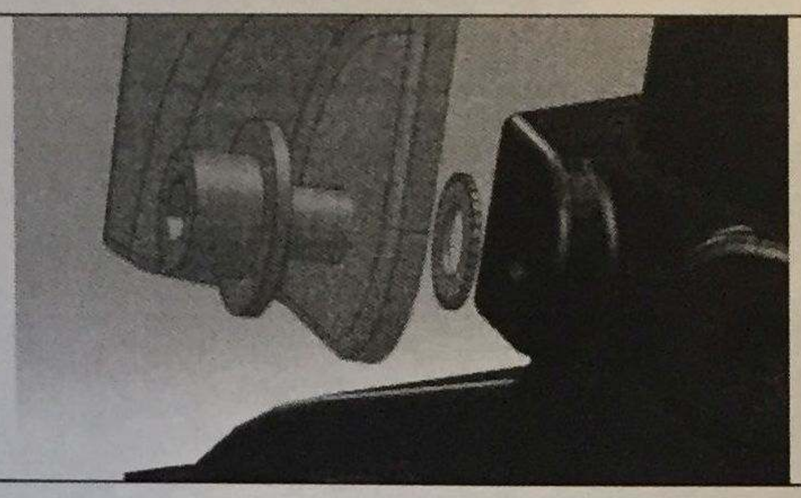
- Fender set FRU
- Loctite Blue 234

8.3.60—Removal and Replacement

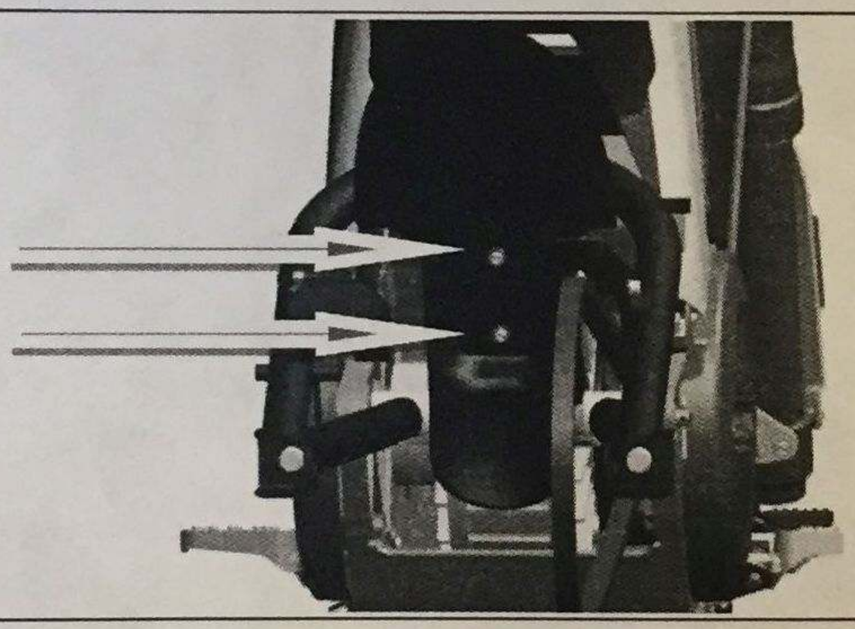
Front Fender Remove and Replace:

	Place the Enertia in the stand Use a 5mm Allen wrench to loosen the four fender bolts (two right, two left).
	Using your fingers remove the front and rear bolts and washers and remove fender from the Enertia
	Align the new fender on the Enertia. Using fingers start both left and right bolts with washers.

	Chapter Title	8.3 – Front and Rear Fender

	Use a 5mm Allen wrench to completely tighten all four bolts. Use Loctite on bolts, torque to 8 in lbs.

Rear Fender – Remove and Replace:

	Place the Enertia in the stand Remove the rear wheel per chapter 8.2
	Use a 4mm Allen wrench to remove the two bolts and washers from the fender. Remove the old fender from the Enertia, and align the new fender on the Enertia Use a 4mm Allen wrench to tighten the fender bolts. Use Loctite on the bolts, torque to 8 in lbs.
	Replace the rear wheel per chapter 8.2.

8

Chapter Title	9.1 – Front Brake System

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Front Brake System	B0110-0109010

9.1.10—Overview

The front brake accounts for the majority of braking force of the Enertia, approximately 70%, and should be used in conjunction with the rear brake, to ensure that the Enertia will be able to make a quick stop at any time should the circumstances require it. To operate the front brake, pull the right hand brake lever back toward the throttle. The braking is hydraulically operated, so to stop you do not need to pull hard on the lever. Instead you want to squeeze steadily and smoothly, while not pulling the brake back all the way to the grip.

The front brake system FRU will have the front master cylinder and lever, the front brake caliper, and the front brake line. It will ship pre-bled as an assembly, but final adjustment may be necessary.

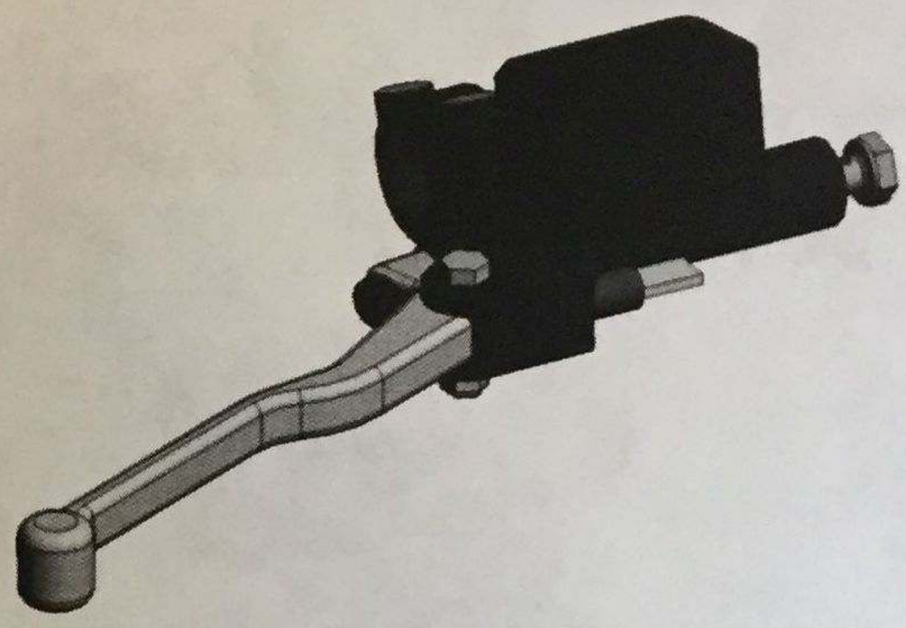


Figure 9.1.1 – Front Brake Lever

9.1.20—Maintenance

You may want to adjust the starting position of the brake lever depending on how close you want it to your hand. To do adjust the brake lever position, use the adjusting screw on the brake lever to get the lever at a comfortable position.

9.1.40—Diagnosing a Problem

If bleeding the brakes or replacing pads does not solve a braking problem, it may require replacing the entire brake system. Contact Brammo Live with questions or concerns about replacing an entire brake system.

9.1.55- Setup and Tools

- Metric Allen wrench set
- Wire cutters
- Phillips screwdriver
- Standard screwdriver

9.1.57- Materials required

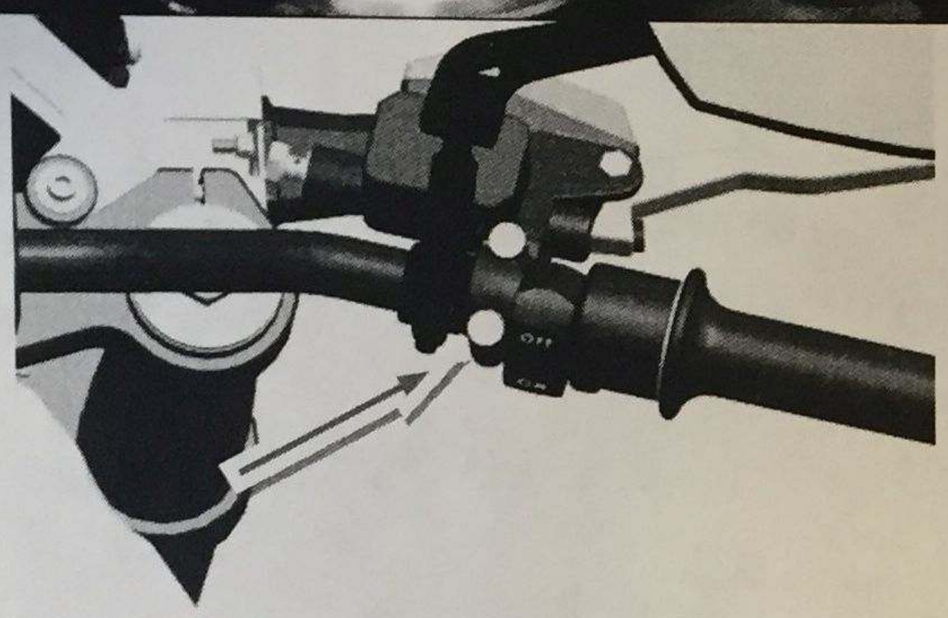
- Replacement front brake system FRU
- P-clamps
- Loctite Blue 234
- Dot 4 brake fluid

9.1.60—Removal and Repair Procedure

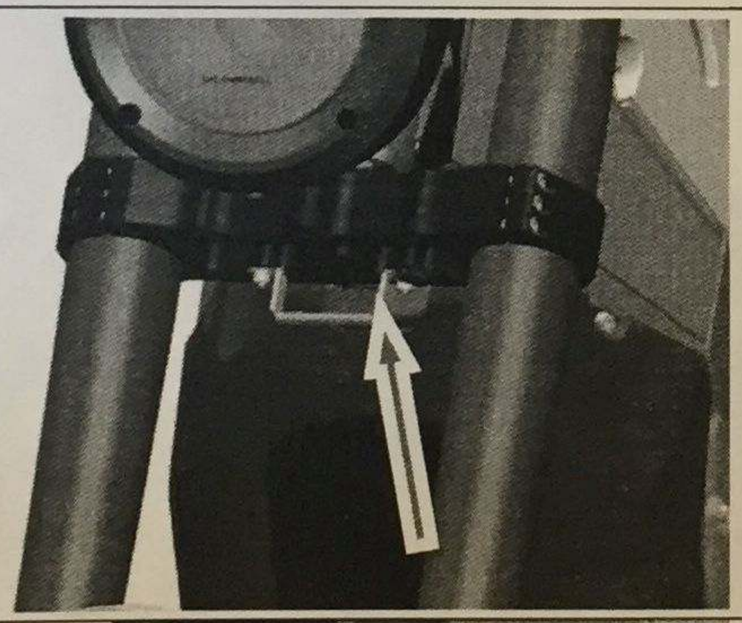
9.1 – Front Brake System

Disconnect the brake lever wire from the main wiring harness.

Cut the cable tie holding the brake lever wire to the right side of the handlebar.

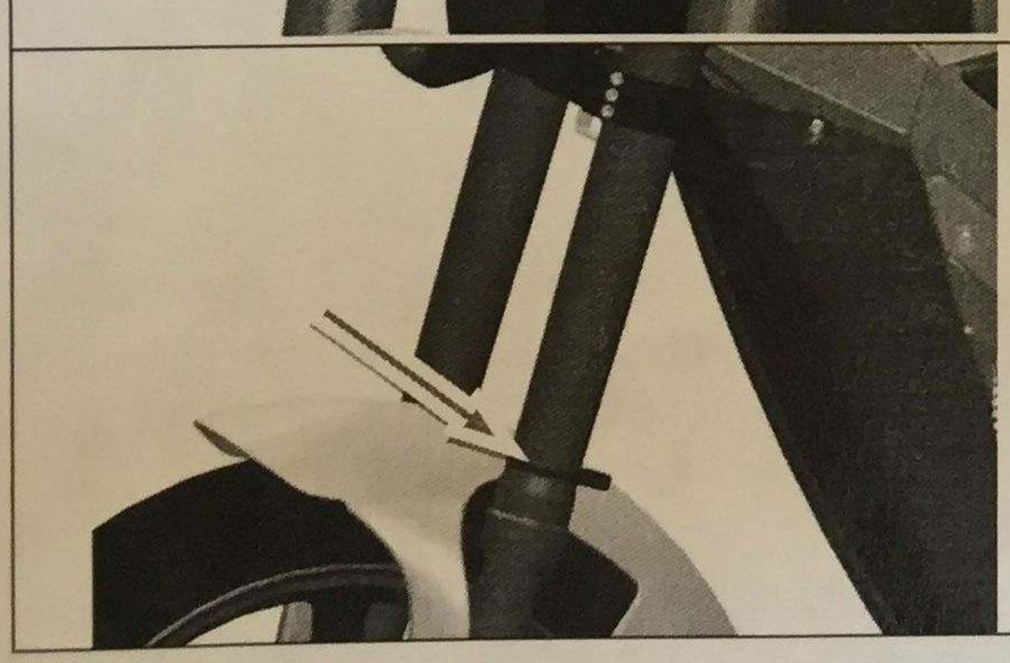


Use a 5mm Allen wrench to remove the two bolts from the front brake lever on the right hand side of the handlebars.



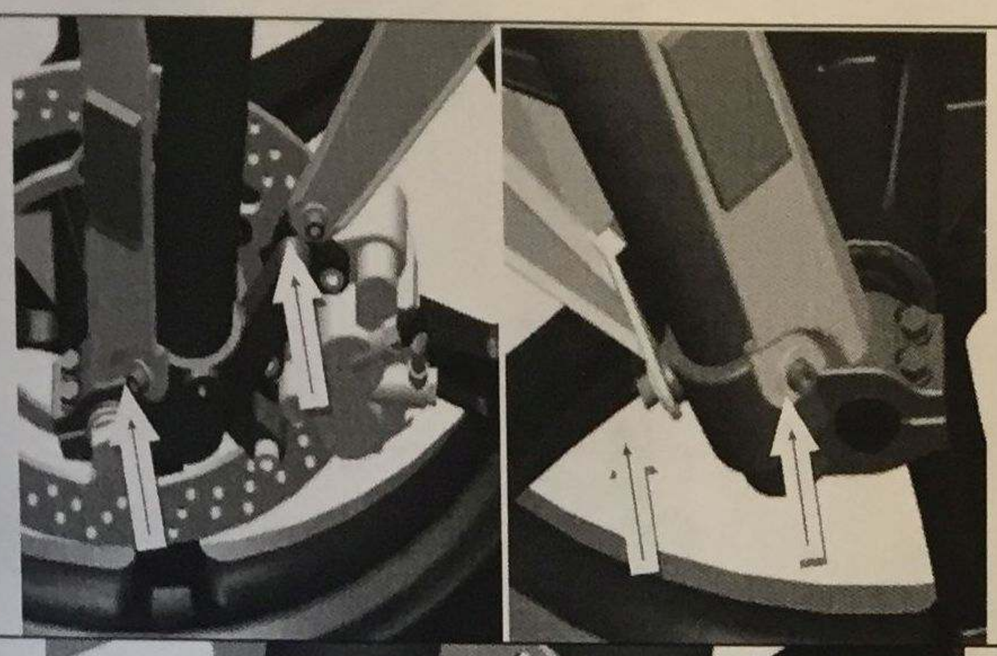
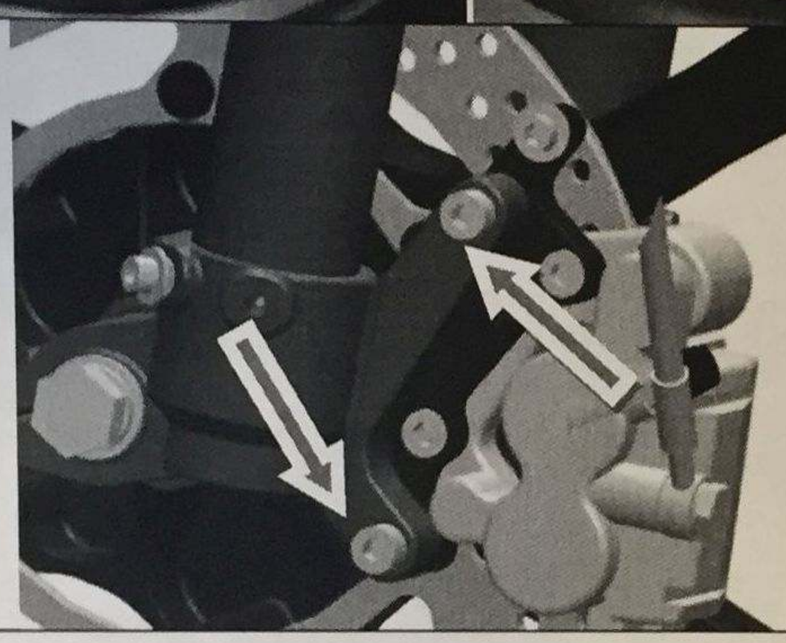
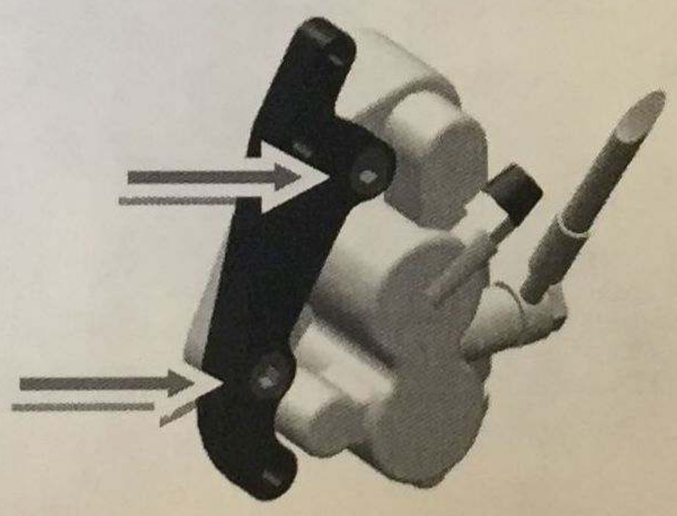
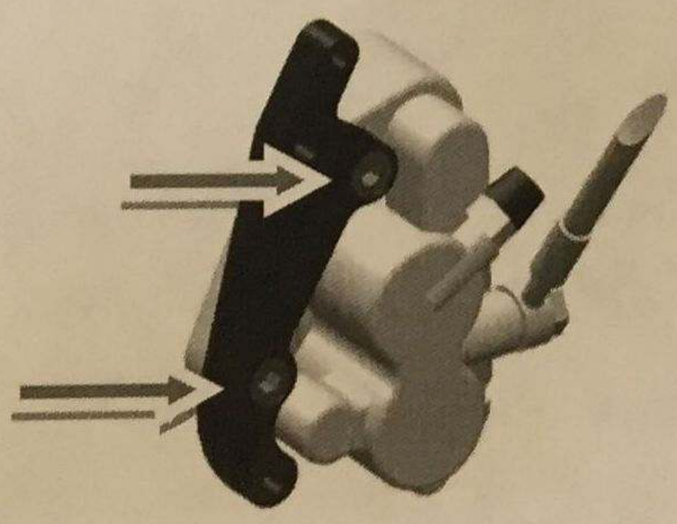
Use a 4mm Allen wrench to remove the P-clamp from the bottom of the lower triple clamp where the front brake line is held.

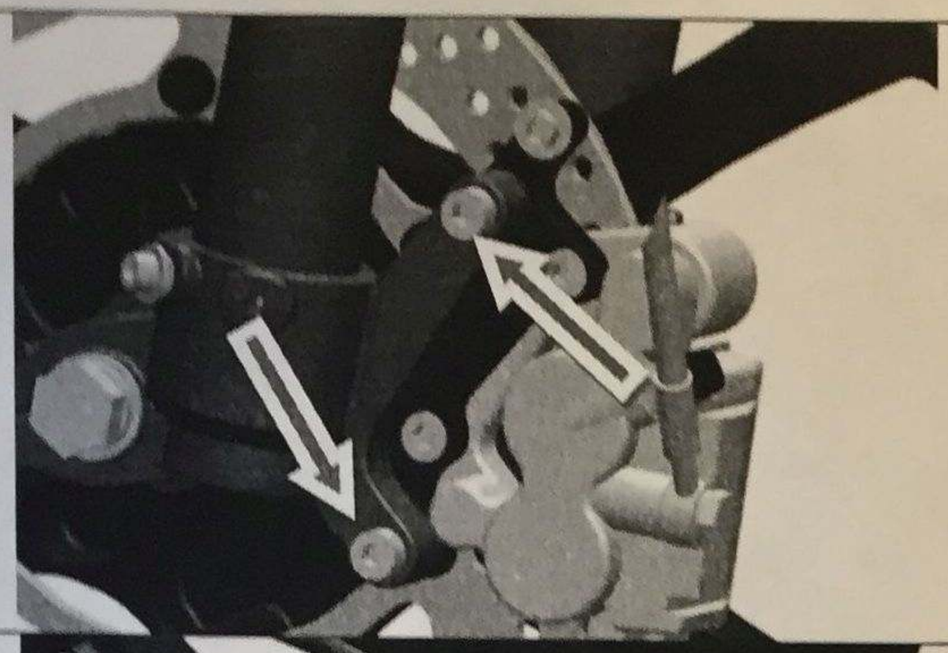
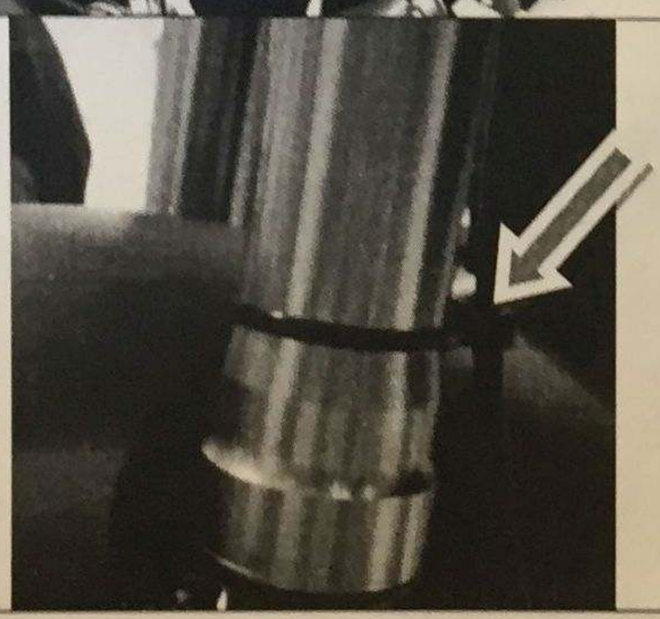
NOTE: It may be necessary to remove the harness guide clip and also remove the lower body panel to allow enough slack in the wires for the front brake master cylinder assembly to pass between the wires and the triple clamp.



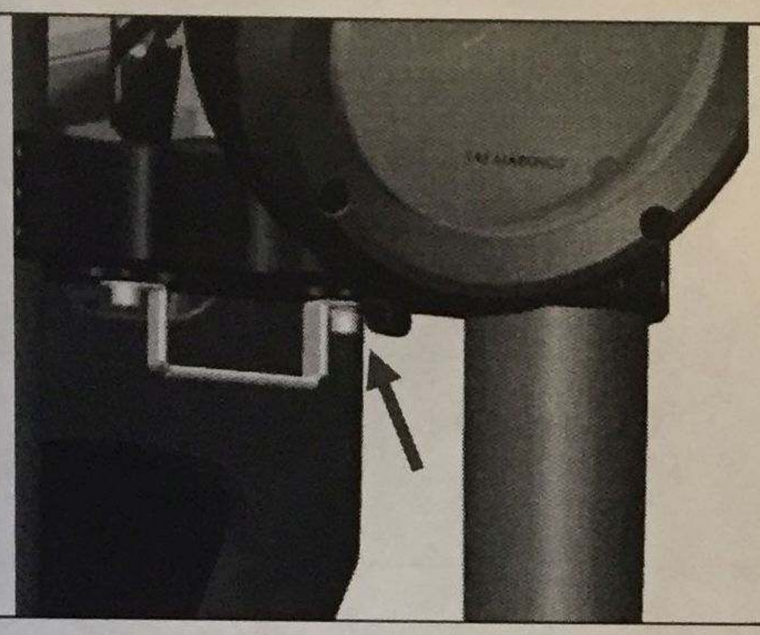
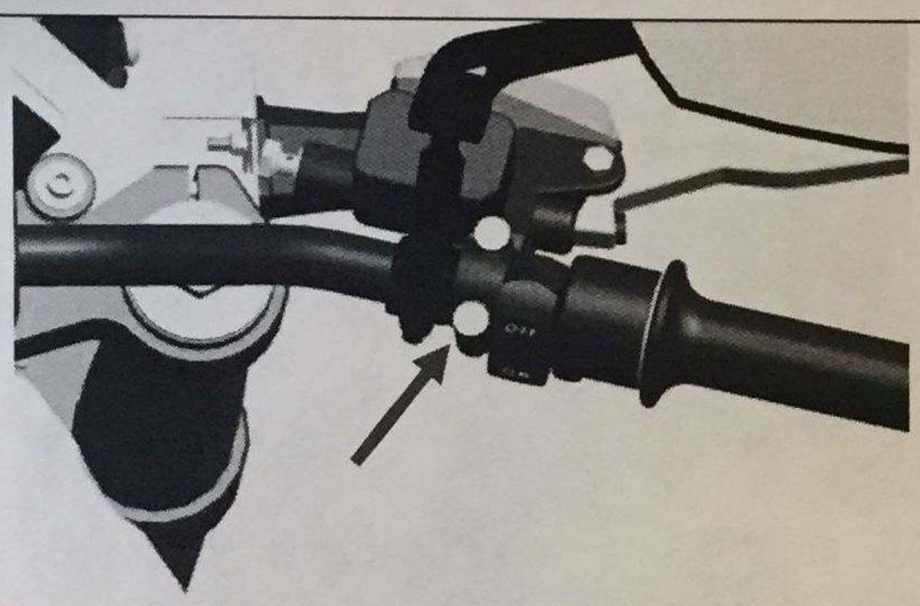
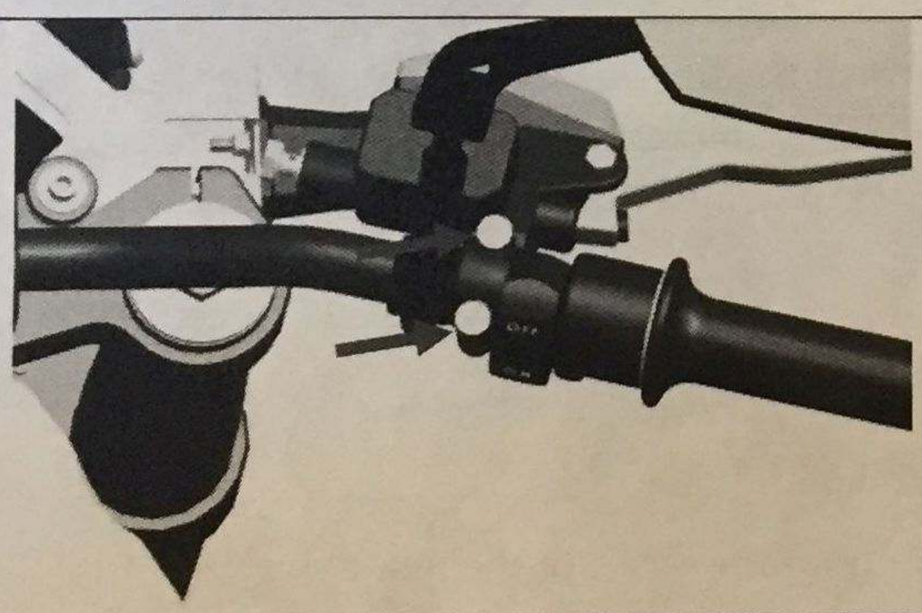
Cut the cable tie holding the brake line guide to the left fork.

9.1 – Front Brake System

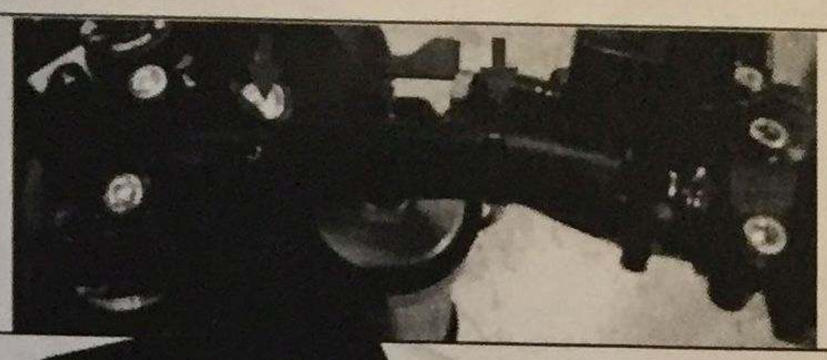
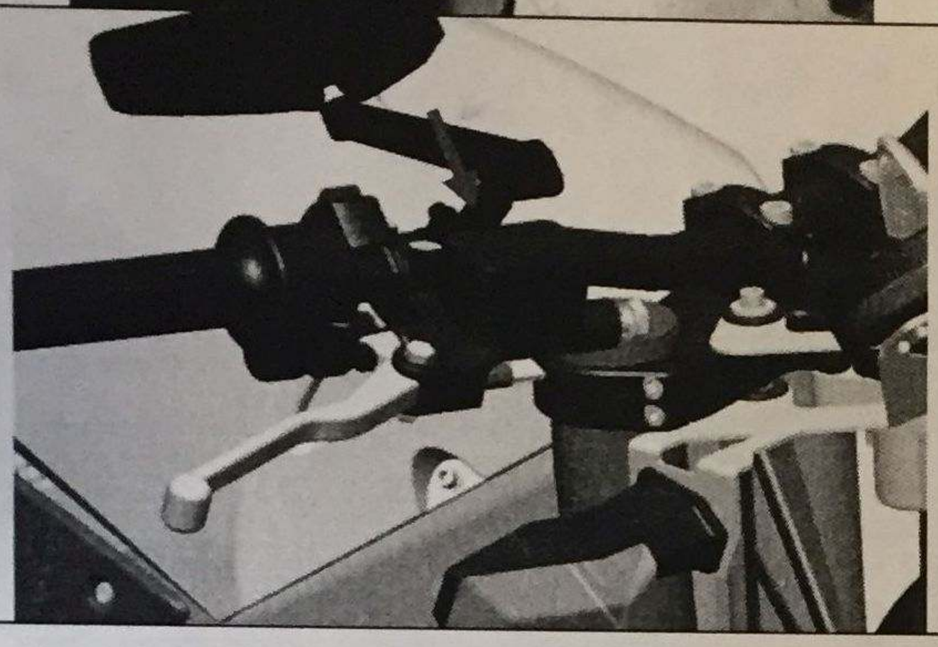
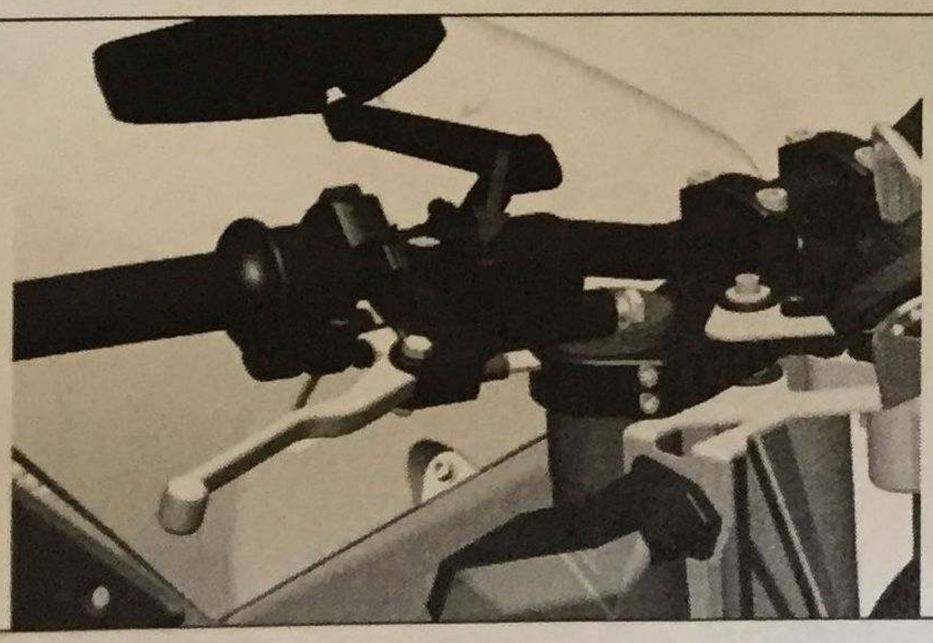
	Use a 5mm Allen wrench to remove the four bolts in the front fender (two left and two right) and remove the front fender per chapter 8.3.
	Use a 6mm Allen wrench to remove the two bolts in the front caliper adaptor bracket where it is mounted to the front fork. Remove the front brake caliper and adaptor from the Enertia.
	Use a 6mm Allen wrench to remove the two bolts connecting the caliper to the adaptor bracket.
	Connect the new front brake caliper to the caliper adaptor by applying loctite to the two bolts and attaching with a 6mm Allen wrench. Torque to 177 in lbs
	If the brake pads are closed, carefully pry them open with a flathead screwdriver to a sufficient gap for the front brake rotor to fit.

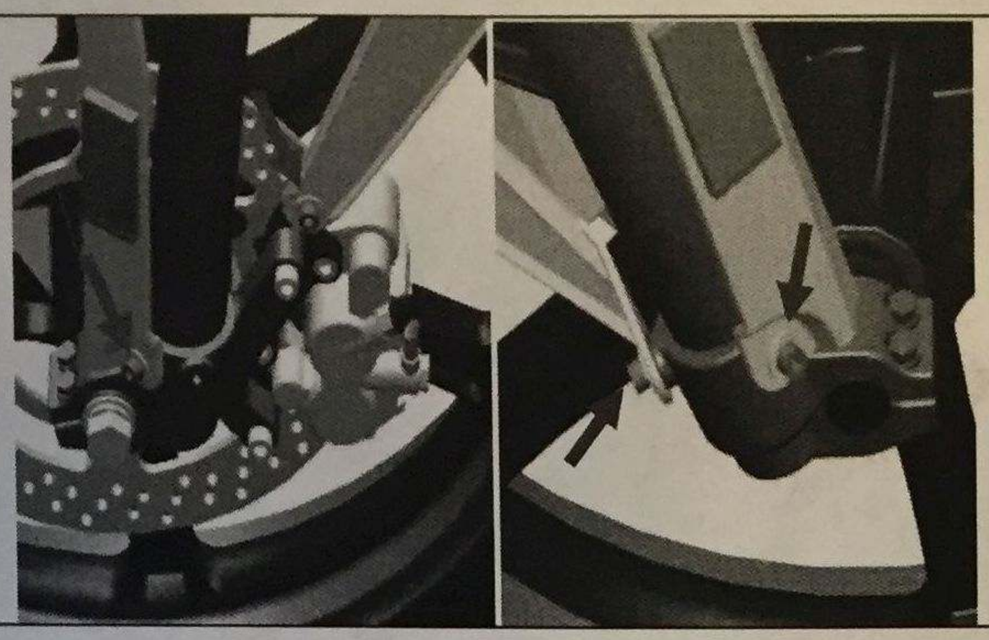
	Position the front brake rotor between the brake pads inside the front brake caliper.
	Use a 6mm Allen wrench to connect the front brake caliper adaptor to the left fork with two bolts. Use Loctite on the bolts. Torque to 124 in lbs.
	Place the front brake line through the brake line guide.
	Route the front brake line up the left fork and attach the brake line guide to the fork with a cable tie. Tighten the cable tie as tight as possible and make sure it is centered over the narrowest diameter of the fork.
	Cut the excess length from the secured cable tie.
	Route the front brake line along the front fork and under the lower triple clamp. The brake line should be between the other wiring and the triple clamp to protect the brake line. The red arrows show the brake line routing.

9.1 – Front Brake System

	Open a P-clamp and clasp it around the front brake line under the lower triple clamp.
	Attach the P-clamp to the lower triple clamp with one bolt. Use a 4mm Allen wrench to tighten the bolt.
	Route the front brake line up to the right side handlebar and position the front brake lever.
	Place the front brake lever clamp around the handlebar and align the holes.
	Attach the front brake lever to the handlebar by tightening two bolts with a 5mm Allen wrench.
	Route the brake line wire along the handlebar and down through the dash bracket behind the headlamp.
	Connect the front brake wire to the main harness behind the headlamp.

9.1 – Front Brake System

	Use a cable tie to secure both the front brake wire and the throttle wire to the handlebar. Cut the excess length of cable tie and discard.
	Use a Philips screwdriver to remove the top plate from the front brake master cylinder.
	Tap the brake line and squeeze the brake lever. Look for bubbles coming up through the master cylinder reservoir.
	Continue to squeeze the brake lever on and off while tapping the brake line until no bubble are present.
	The “feel” of the brake lever should be mostly firm when squeezed, not soft or “spongy”.
	If squeezing and tapping does not work the softness and air out of the system, you may need to use a rubber band to apply pressure to the front brake lever and let the system sit overnight. Use the rubber band to pull the lever towards the throttle.
	Add Dot 4 Brake Fluid to the master cylinder reservoir as needed.
	Use a Philips screwdriver to attach the plate on the top of the master cylinder with two screws.

	Reinstall the front fender per chapter 8.3
	Walk the Enertia forward several paces and squeeze the brake lever to make sure the front brake stops the Enertia.
	Test ride the Enertia at slow speeds and test the front brakes.
	Hard braking should not be performed right away on a newly installed brake set. It is recommended that you "take it easy" on the brake for the first 50 to 200 miles on a newly installed set.

BRAMMO ENERTIA	Chapter Title	9.2 – Front Brake Pads

This Document Covers the Following Components/Systems	
Part Name (Consumable)	*Replacement Part Number*
Front Brake Pads	B0110-0109020

9.2.10—Overview

The front brake pads provide the grabbing force to stop the front wheel. Replacing stock or worn brake pads is the quickest way to get increased braking power out of a system which may have increased stopping distance.

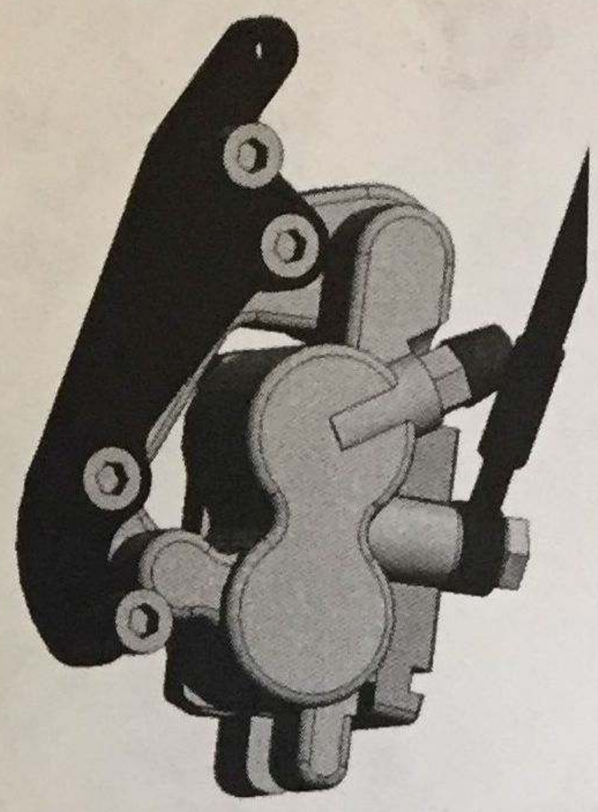


Figure 9.2.1 – Front Brake Pads (in the calipers)

9.2.20—Maintenace

Front brake pads should be inspected by a qualified technician as recommended in the owner's manual.

9.2.40—Diagnosing a Problem

Usually, the first sign of excessive brake-pad wear is a high-pitched squealing. This sound comes from a soft-metal wear indicator that rubs against the brake rotor to alert the driver that a change is needed. Other symptoms can include the brakes grabbing or vibrating, and the brake lever feeling softer to depress. A grinding sound means that replacement is overdue and the worn brake pads may be damaging the brake rotors.

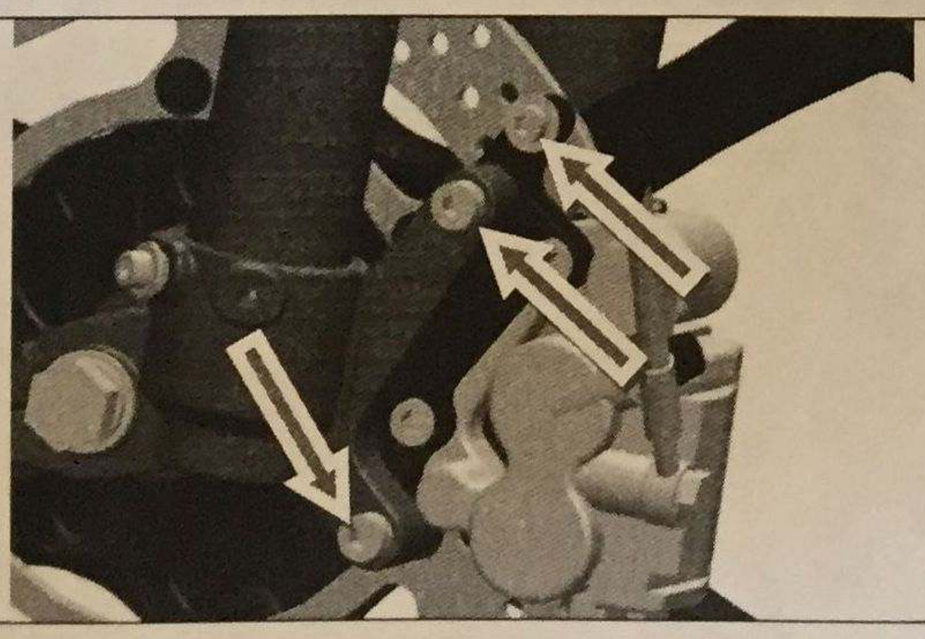
9.2.55- Setup and Tools

- Metric Allen wrench set
- Standard screwdriver
- Needle nose pliers

9.2.57- Materials required

- Replacement front brake pads
- Loctite Blue 234

9.2.60- Removal and Replacement Procedure



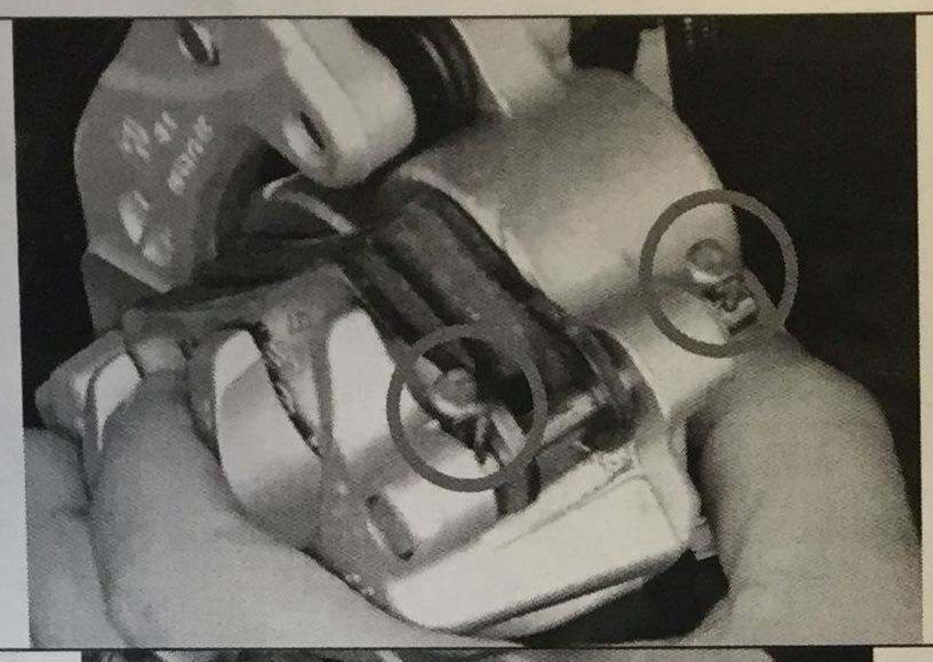
Use a 6mm Allen wrench to remove the two bolts in the front caliper adaptor bracket where it is mounted to the front fork.

Also remove the bolt that connects the front fender to the caliper adapter.

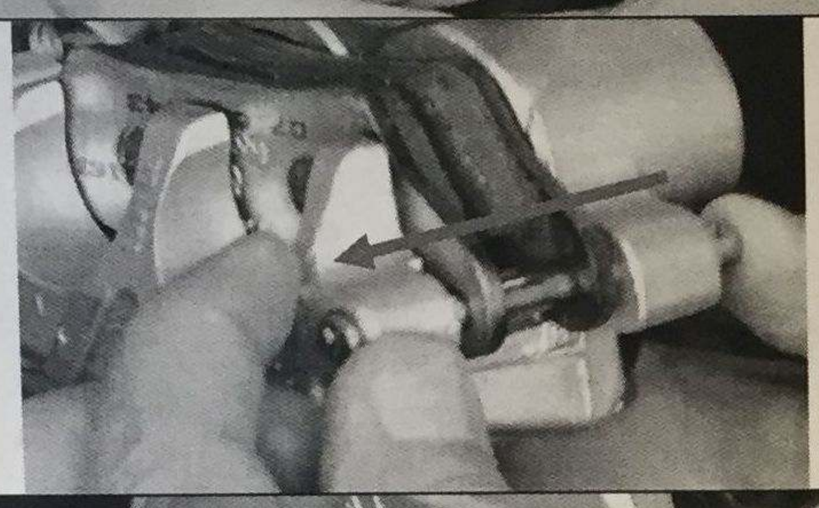
Carefully remove the front brake caliper and adaptor from the Enertia.

Chapter Title

9.2 – Front Brake Pads



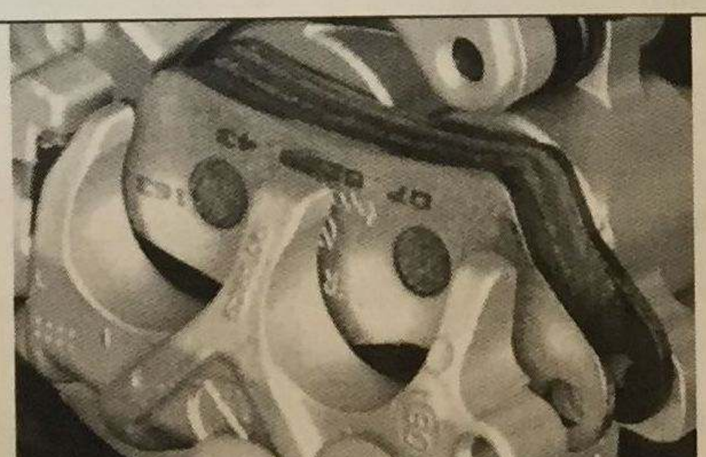
Use a flat end screwdriver to pop the two cotter pins from the end of the brake caliper.



Slide the brake pad pin out of the side of the brake caliper, releasing the brake pads.

Remove the old brake pads from the front brake caliper.

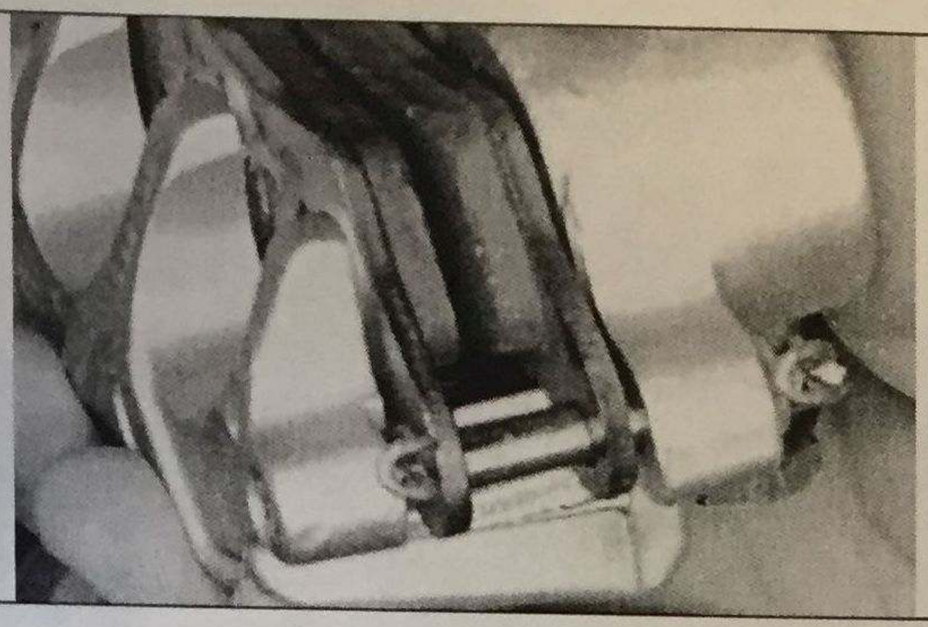
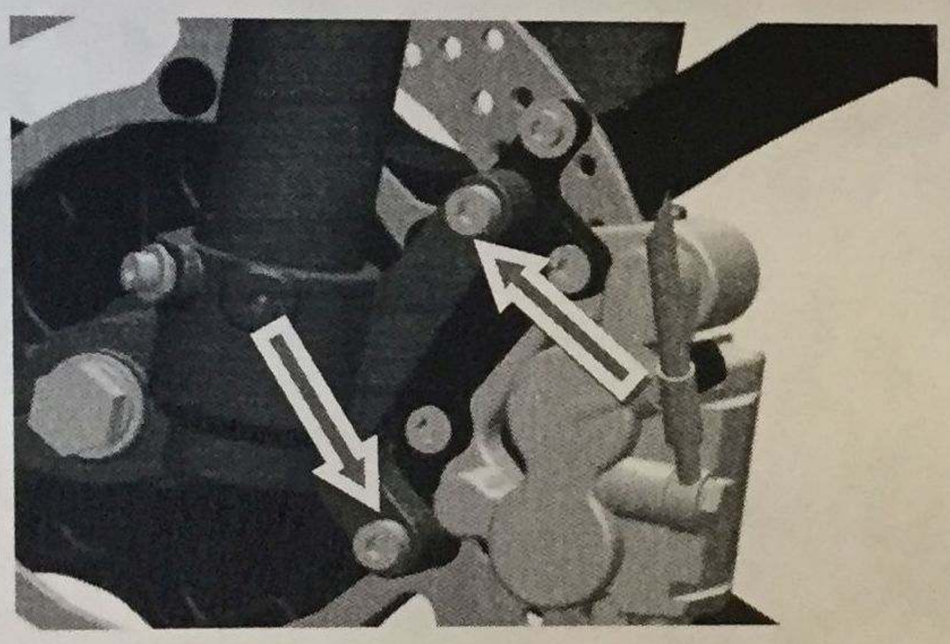
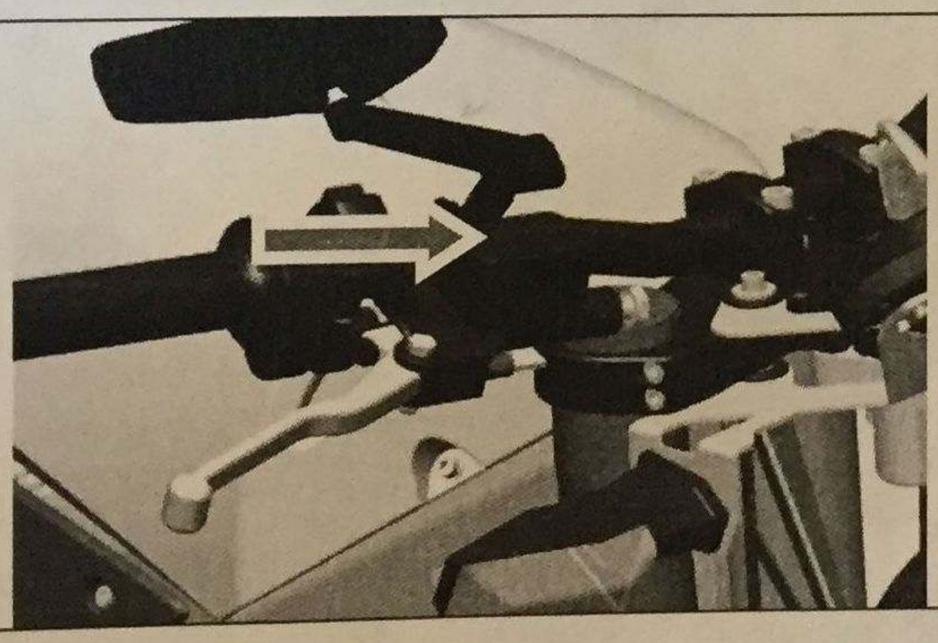
Use your fingers to press the brake pad cylinders back into the caliper.



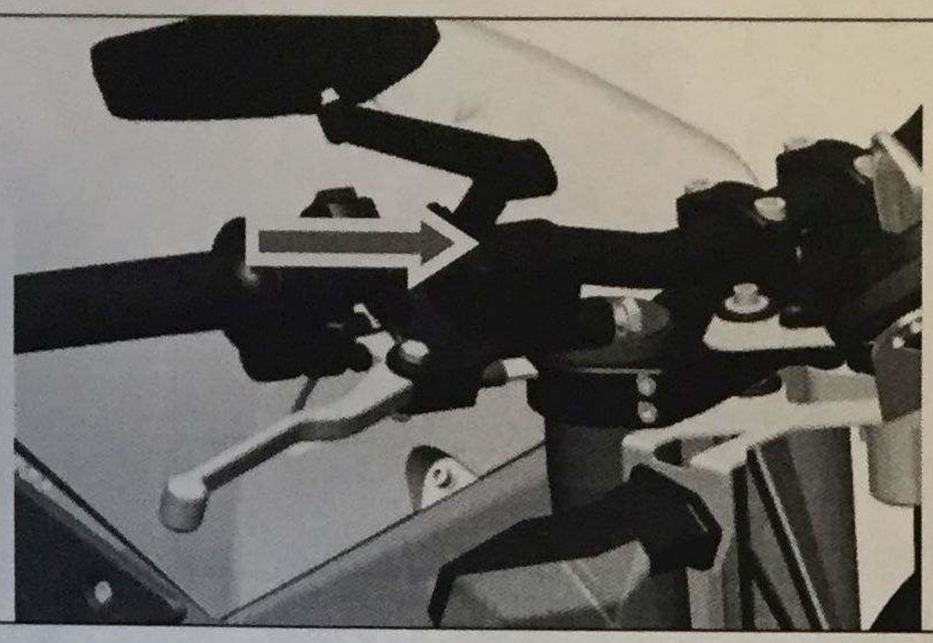
Align two new brake pads to mirror each other and place inside the front brake caliper. Make sure the flat ends of the brake pads are locked in place against the anti-rattle springs in the caliper.

9

9.2 – Front Brake Pads

	Install the brake pad pin completely through the front brake caliper and the hole in each brake pad. Install two cotter pins through the brake pad pin to secure it in place.
	If the brake pads are closed, use a screwdriver to open up the brake pads to a sufficient gap for the front brake rotor to fit.
	Position the front brake rotor between the brake pads inside the front brake caliper.
	Align the bolt holes in the front brake caliper adaptor with the holes in the left fork. Use a 6mm Allen wrench to connect the front brake caliper adaptor to the left fork with two bolts. Use loctite on the bolts. Torque to 124 in lbs. Reconnect the front fender to the caliper adapter.
	If the brakes are soft and spongy it may be necessary to bleed some of the air out of the system. Use a Philips screwdriver to remove the top plate from the front brake master cylinder.
	Tap the brake line and squeeze the brake lever. Look for bubbles coming up through the master cylinder reservoir.
	The “feel” of the brake lever should be firm when squeezed, not soft or “spongy”.
	Add Dot 4 Brake Fluid to the master cylinder reservoir as needed.

9.2 – Front Brake Pads

	Use a Philips screwdriver to attach the plate on the top of the master cylinder with two screws.
	Walk the Enertia forward several paces and squeeze the brake lever to make sure the front brake stops the Enertia.
	Test ride the Enertia at slow speeds and test the front brakes.
	Hard braking should not be performed right away on a newly installed brake set. It is recommended that you "take it easy" on the brake for the first 50 to 200 miles on a newly installed set.

BRAMMO ENERTIA	Chapter Title	**9.3 – Front Brake Rotor**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Front & Rear Brake Rotor (Set)	B0110-0109030

9.3.10—Overview

The rotors for the Enertia spin along with the wheel, and when the brakes are applied, the brake pads grab the rotor to stop the wheel from spinning. On the Enertia the front and rear brakes operate independently of each other, hand-operated controls for front and pedal operated for the rear. The front brake tends to be more effective; delivering approximately 70% of the stopping power, with the rear brake assisting to slow or stop the bike. Brake rotors are considered a key component of the Enertia safety and should be checked regularly. Details for rotor inspection are found in chapter 1.2.

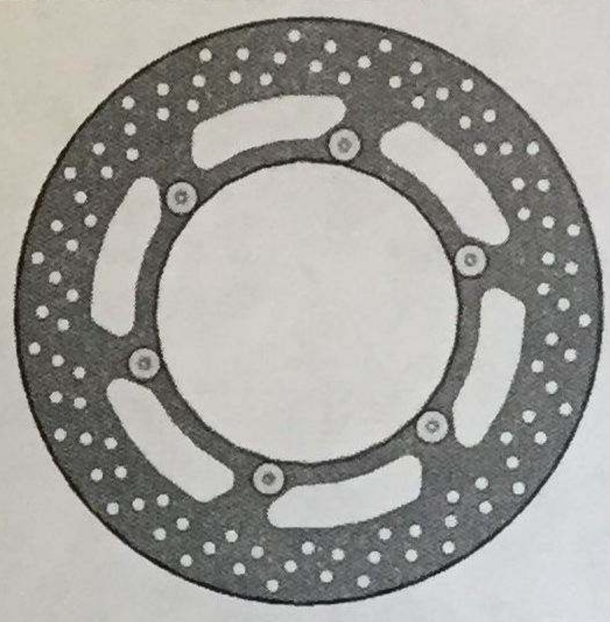


Figure 9.3.1 – Front Brake Rotor

9.3.40—Diagnosing a Problem

The rotor floats in the wheel between the brake pads so that it can handle the temperature influences which occur while braking. The pads are also fitted in the caliper around the rotor. Over time the brake pads need replacing, which is part of standard maintenance. Keep an eye on rotor damage due to incorrect placement of brake pads or misalignment. Damage to the rotor can result in a costly replacement.

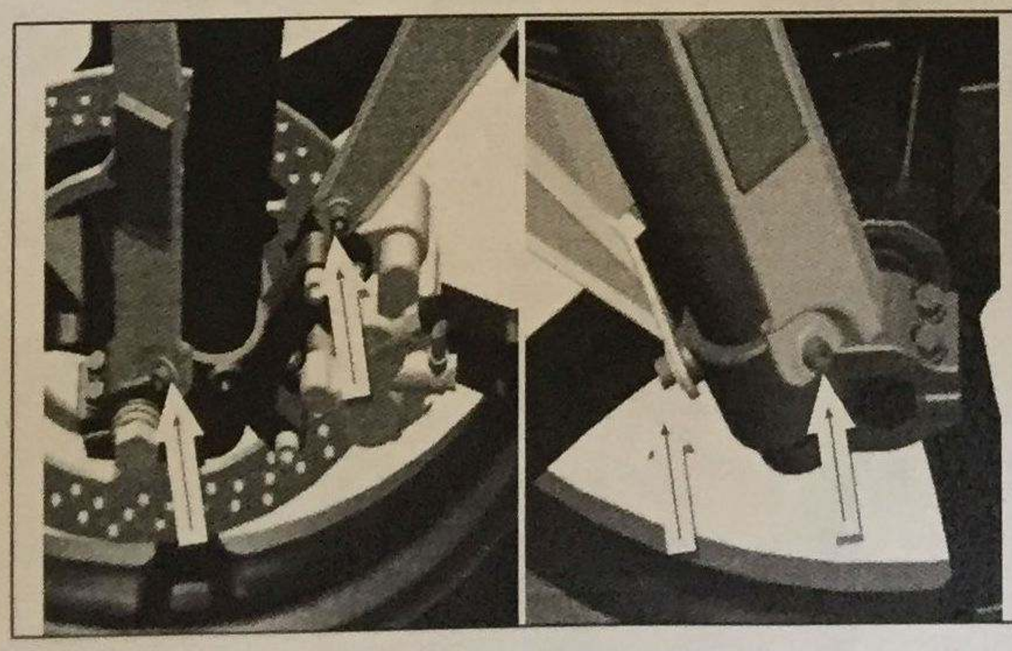
9.3.55- Setup and Tools

- Metric Allen wrench set
- Metric combination wrench set
- Standard screwdriver

9.3.57- Materials required

- Replacement front brake rotor
- Loctite Blue 234

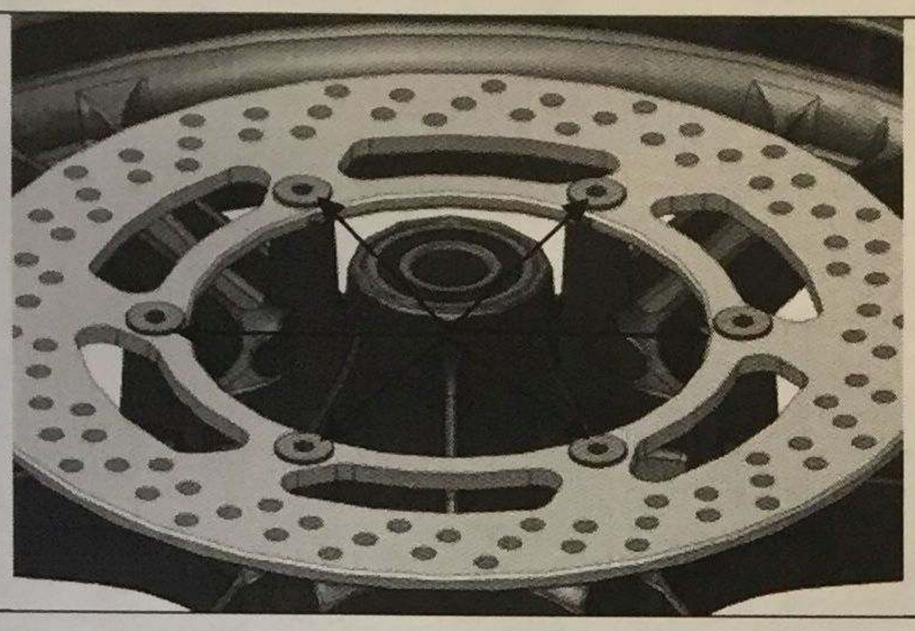
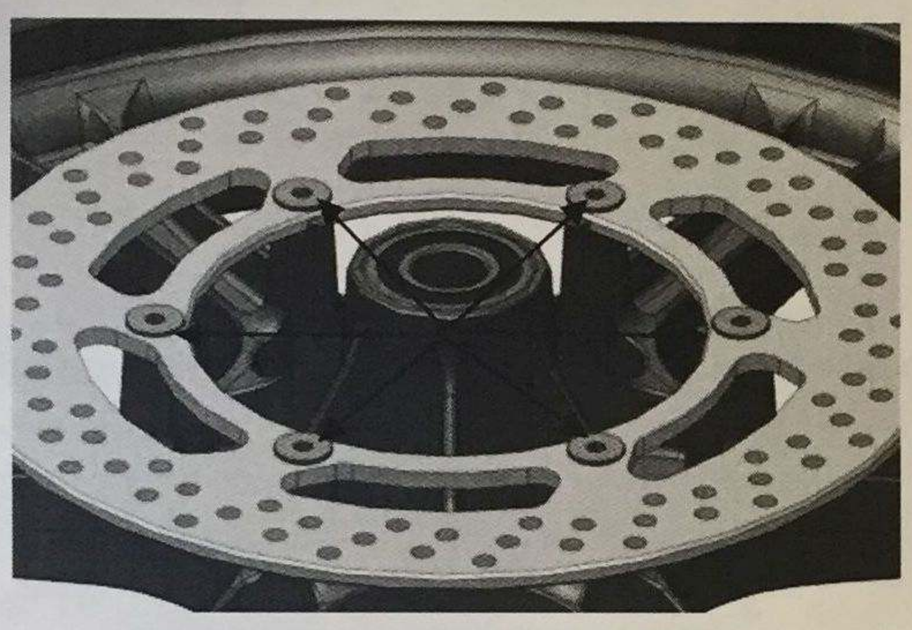
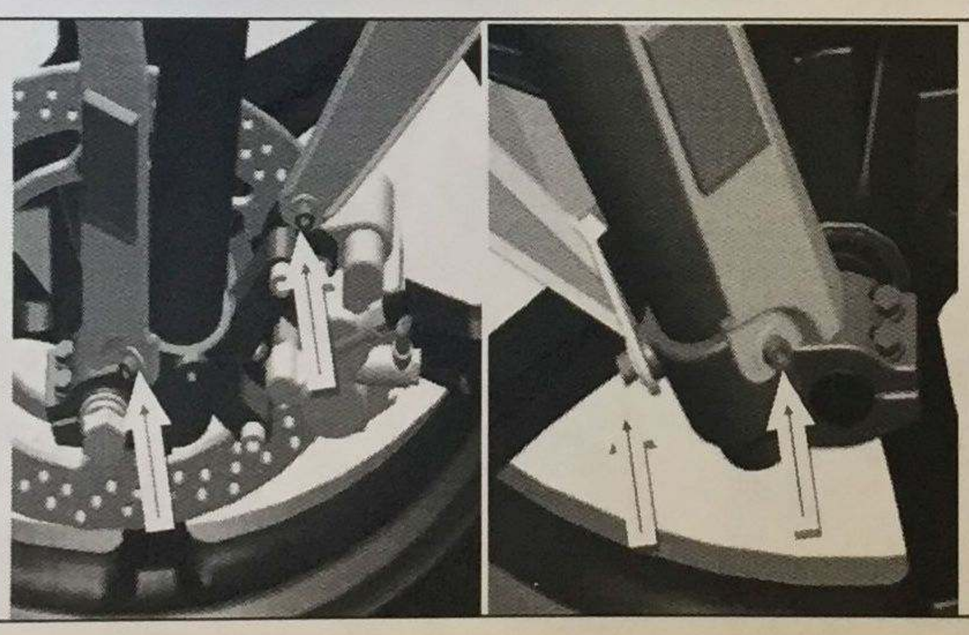
9.3.60—Removal and Replacement Procedure



Remove the front fender per chapter 8.3

Remove the front wheel per chapter 8.1

9.3 – Front Brake Rotor

	Place the front wheel assembly on a workbench with the brake rotor facing up. Use a 5mm Allen wrench to remove the six shoulder bolts from the front rotor and remove the rotor.
	Align a new rotor to the front wheel. Be sure to follow the rotational direction arrow marked on the rotor, this should make the rotor sit with wording and the arrow facing the wheel. Use a 5mm Allen wrench to install six shoulder bolts to fasten the rotor to the front wheel. Use Loctite on bolts. Torque to 84 in. lbs. using criss cross pattern.
	Install the front wheel per chapter 8.1 Install the front fender per chapter 8.3
	Walk the Enertia forward several paces and squeeze the brake lever to make sure the front brake stops the Enertia.
	Test ride the Enertia at slow speeds and test the front brakes.
	Hard braking should not be performed right away on a newly installed rotor. It is recommended that you "take it easy" on the front brakes for the first 50 to 200 miles on a newly installed rotor.

BRAMMO ENERTIA	Chapter Title

9.4 – Rear Brake System

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Rear Brake System	B0110-0109040

9.4.10—Overview

The rear brake is used much less frequently than the front brake. Some riders will only use the rear brake once the Enertia is nearly at a complete stop. Others use it specifically for holding position at a stoplight or on a hill. To operate the rear brake, rest your right foot on the right foot peg and press the brake pedal down slowly with your right foot. The braking is hydraulically operated, so the brakes take hold quite easily with little pressure on the pedal. Quickly depressing the rear brake pedal can result in a skid, especially if braking in a turn.

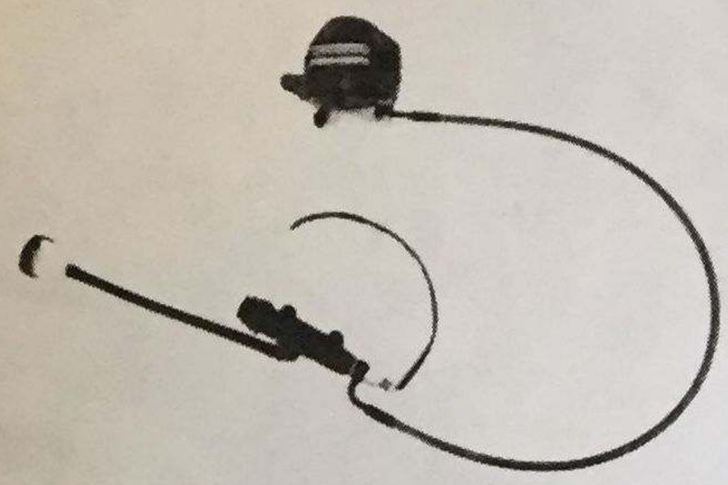


Figure 9.4.1 – Rear Brake System. Shown are the reservoir, master cylinder, brake line, caliper, and brake light wire.

9.4.20—Maintenance

The rear brake system should be inspected by a qualified technician as recommended in the owner's manual.

9.4.40—Diagnosing a Problem

If bleeding the brakes or replacing pads does not solve a braking problem, it may require replacing the entire brake system. Contact Brammo Live with questions or concerns about replacing an entire brake system.

9.4.55- Setup and Tools

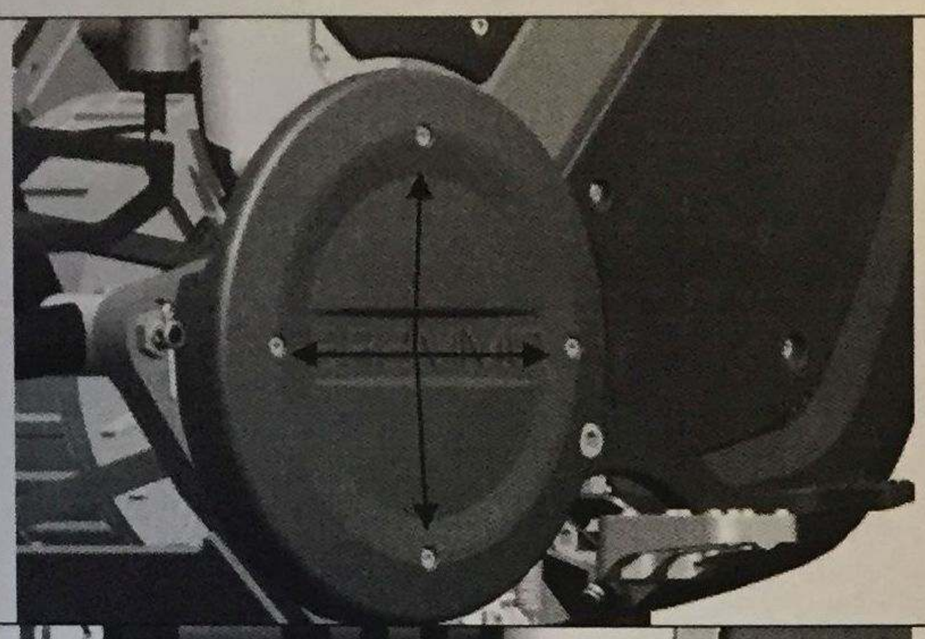
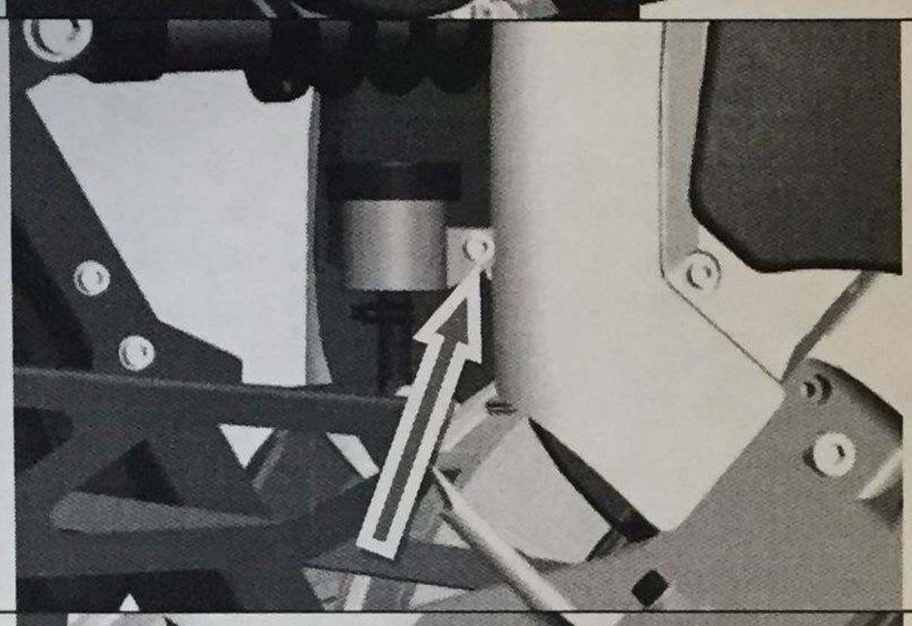
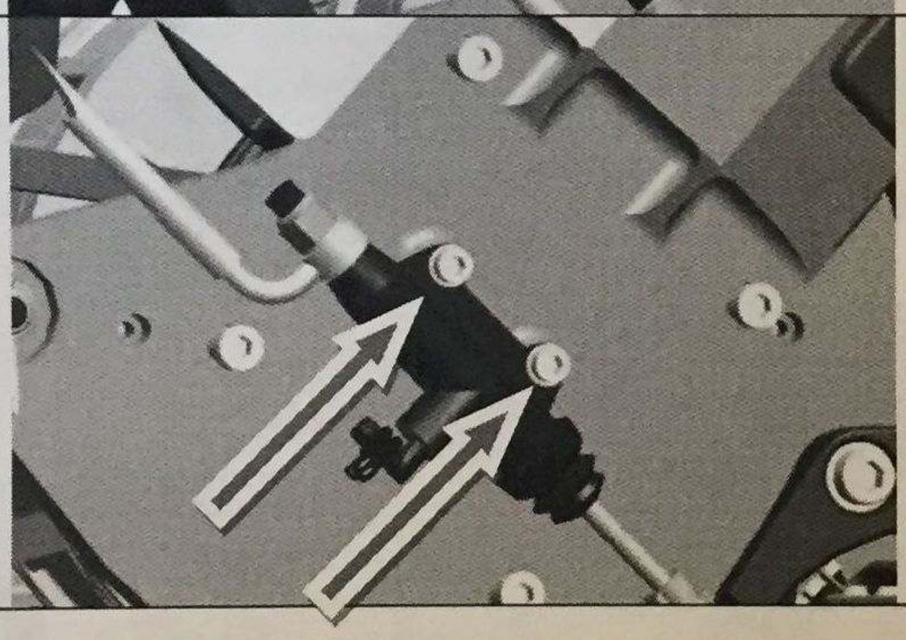
- Metric Allen wrench set
- Standard screwdriver

9.4.57- Materials required

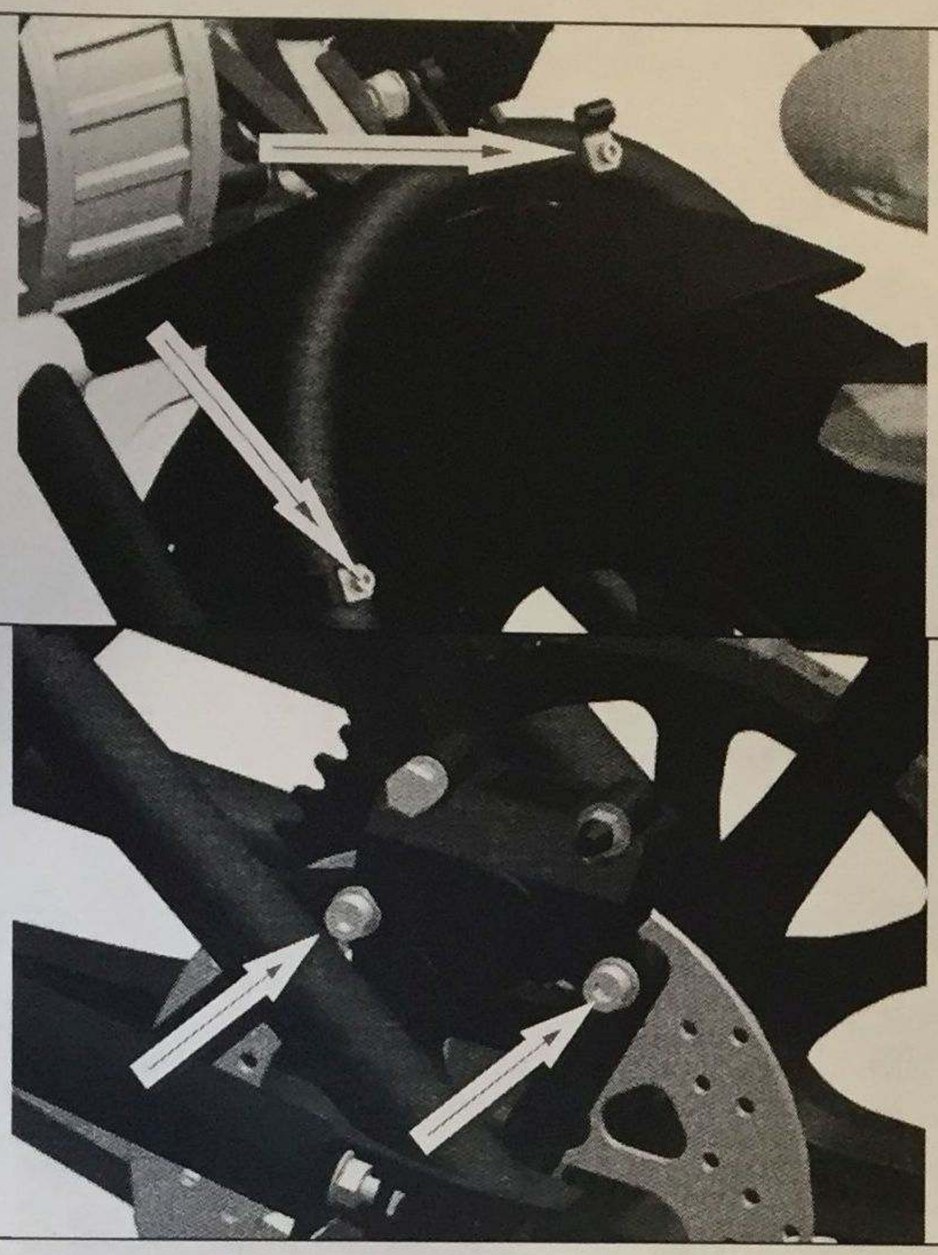
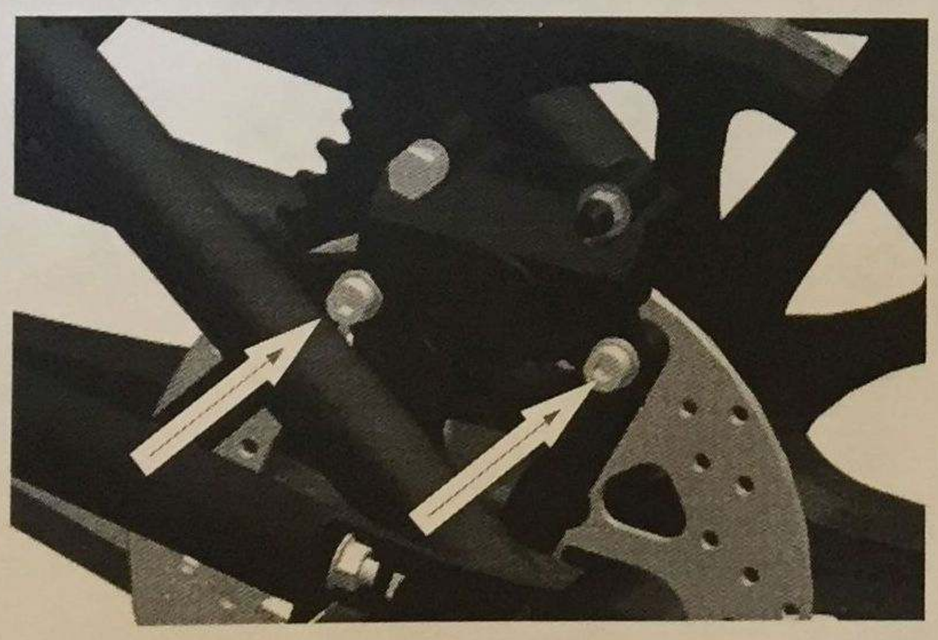
- Replacement rear brake system FRU
- P-clamps
- Loctite Blue 234
- Dot 4 brake fluid

9.4.60—Removal and Replacement Procedure

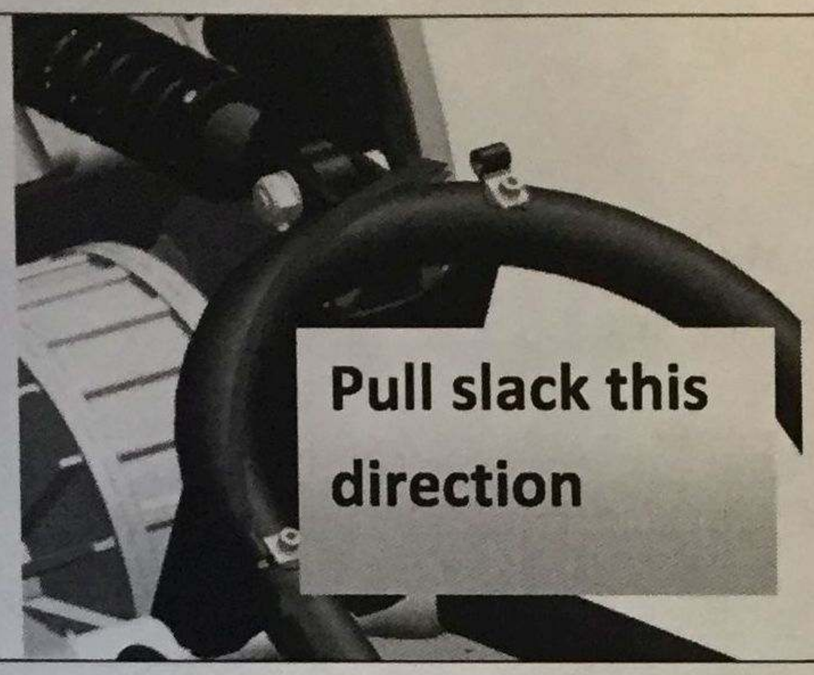
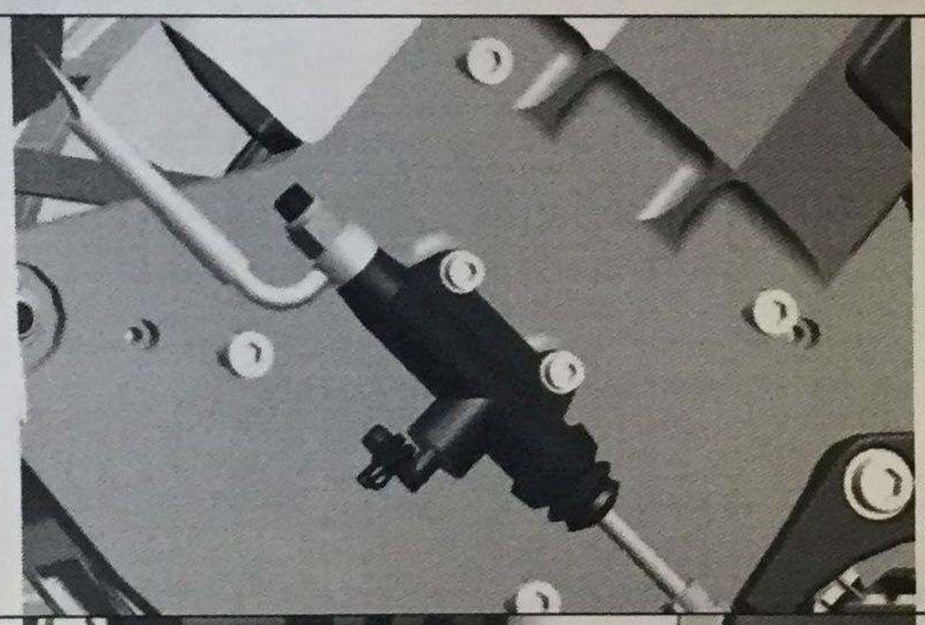
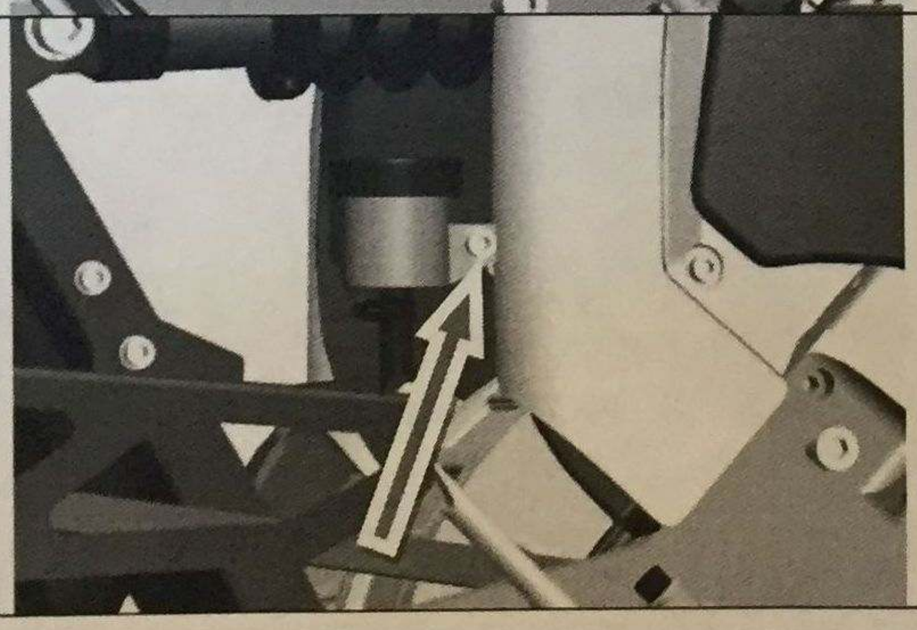
9.4 – Rear Brake System

	Remove the four bolts from the right side motor cover with a 4mm Allen wrench and remove the motor cover per chapter 3.6.
	Use a 10mm wrench to remove the nut on the back of bolt shown, then use a 3mm Allen wrench to remove the one bolt holding the rear brake reservoir to the seat strut.
	Use a 5mm Allen wrench to remove the two bolts holding the rear brake master cylinder to the chassis.
	Disconnect the rear brake light wire from the main harness.
	Slide the rear brake master cylinder off of the clevis pin on the rear brake pedal.

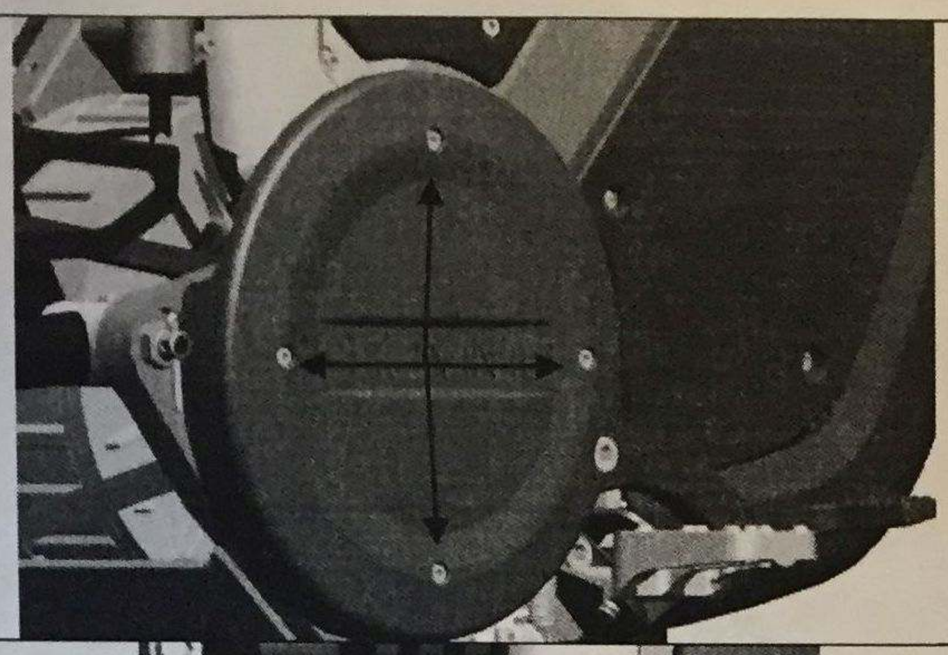
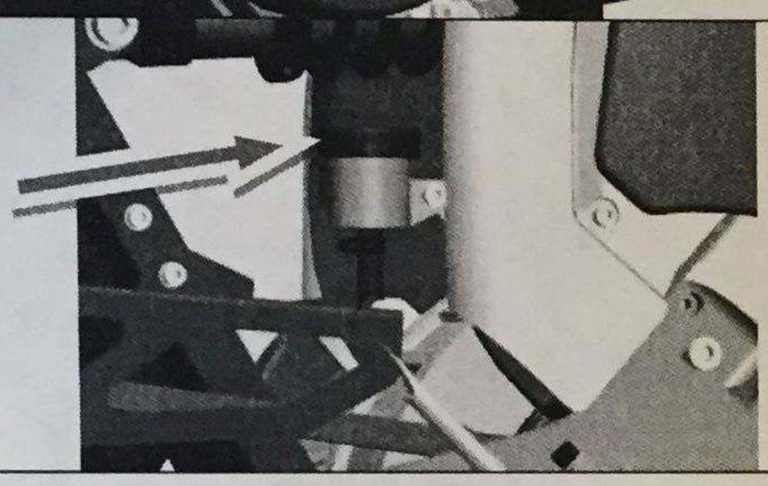
9.4 – Rear Brake System

	Use a 4mm Allen wrench to remove the two P-clamps holding the rear brake line along the swing arm. Use a 6mm Allen wrench to remove the two bolts holding the rear brake caliper to the rear brake caliper adaptor. Gently slide the rear brake caliper off of the rear brake rotor.
	If the brake pads in the new brake system are closed, use a screwdriver to open up the brake pads to a sufficient gap for the rear brake rotor to fit.
	Align the new brake caliper on the rear rotor and align the holes in the rear brake caliper with the holes in the rear brake caliper adaptor. Attach the brake caliper to the adaptor with two bolts. Tighten securely with a 6mm Allen wrench. Use Loctite on bolts. torque to 177 in lbs
	Open two P-clamps wide enough to fit over the rear brake line.
	Route the rear brake line along the upper left edge of the swingarm.

9.4 – Rear Brake System

	Be sure there is very little slack in the line between the caliper and the swing arm, pulling all slack to between the rear brake master cylinder and the swing arm. Use P-clips to secure the brake line to the swing arm. Use Loctite on P-clip bolts, tighten with a 4 mm allen wrench.
	Slide the rear brake master cylinder onto the clevis pin on the rear brake pedal.
	Connect the rear brake light wire to the main wiring harness.
	Align the rear master cylinder to the bolt holes on the chassis. Apply Loctite to bolts, then attach the rear master cylinder to the chassis with the two bolts. Tighten with a 5mm Allen wrench.
	Attach the rear brake fluid reservoir to the seat strut with one bolt. Tighten with a 3mm Allen wrench. Reattach the nut on the back with a 10 mm wrench.

9.4 – Rear Brake System

	Align the right side motor cover on the Enertia. Make sure the logo is in the correct position. Attach the motor cover to the chassis with four bolts. Tighten with a 4mm Allen wrench.
	If the brake is soft or spongy there may be air in the system that needs to be bled out. Unscrew the cap on the top of the brake fluid reservoir.
	Tap the brake line and depress the brake pedal. Look for bubbles coming up through the brake fluid reservoir. Continue to depress the brake pedal up and down while tapping the brake line until no bubble are present.
	If pressing and tapping does not work the softness and air out of the system, you may need to bleed the brakes through the bleed valve on the caliper.
	Add Dot 4 Brake Fluid to the rear brake fluid reservoir as needed.
	Screw the cap tightly onto the rear brake fluid reservoir.
	Walk the Enertia forward several paces and depress the brake pedal to make sure the rear brake stops the Enertia.
	Test ride the Enertia at slow speeds and test the rear brakes.
	Hard braking should not be performed right away on a newly installed brake set. It is recommended that you "take it easy" on the brakes for the first 50 to 200 miles on a newly installed set.

Chapter Title	9.5 – Rear Brake Pads

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Rear Brake Pad	B0110-0109050

9.5.10—Overview

The rear brake pads provide the grabbing force to stop the rear wheel. Replacing stock or worn brake pads is the quickest way to get increased braking power out of a system which may have increased stopping distance. Since the rear brakes are not used as frequently as the front, rear pads may last longer than front pads.

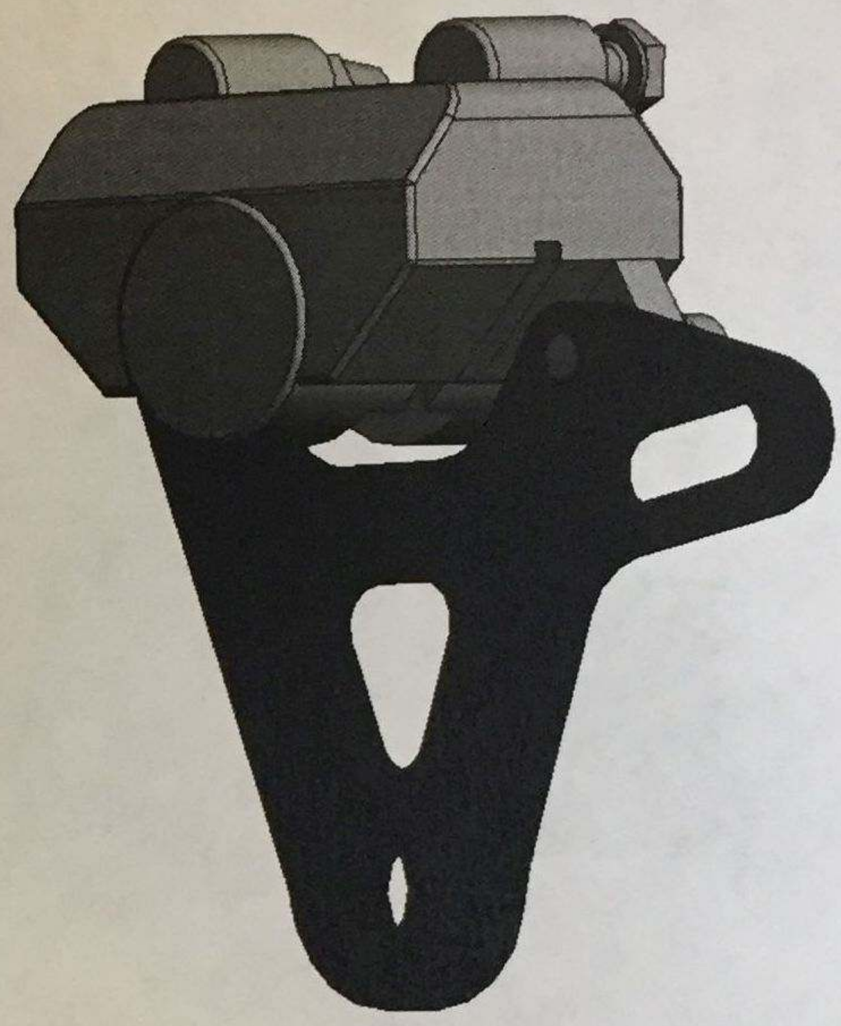


Figure 9.5.1 – Rear Brake Pads (mounting bracket and caliper also shown)

9.5.20—Maintenance

Usually, the first sign of excessive brake-pad wear is a high-pitched squealing. This sound comes from a soft-metal wear indicator that rubs against the brake rotor to alert the driver that a change is needed. Other symptoms can include the vehicle pulling to one side under braking, the brakes grabbing or vibrating, and the brake pedal feeling softer to depress. A grinding sound means that replacement is overdue and the worn brake pads may be damaging the brake rotors.

9.5.40—Diagnosing a Problem

Rear brake pads should be inspected by a qualified technician as recommended in the owner's manual.

9.5.55- Setup and Tools

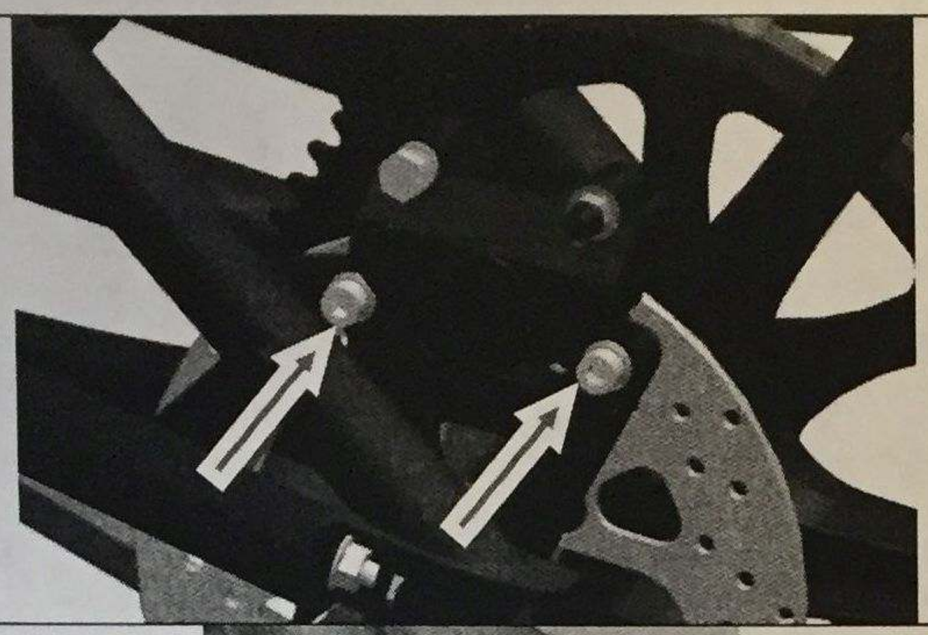
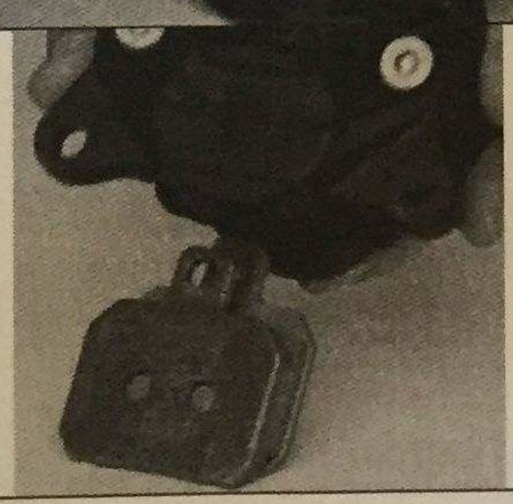
- Metric Allen wrench set
- Standard screwdriver
- Hammer
- Needle nose pliers

9.5.57- Materials required

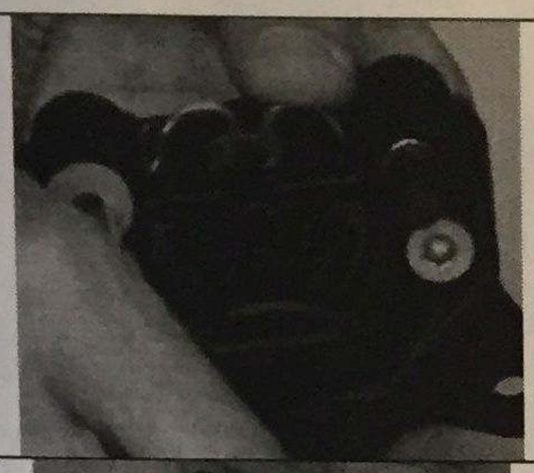
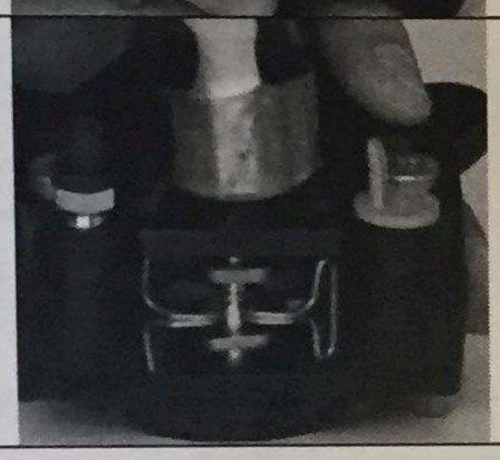
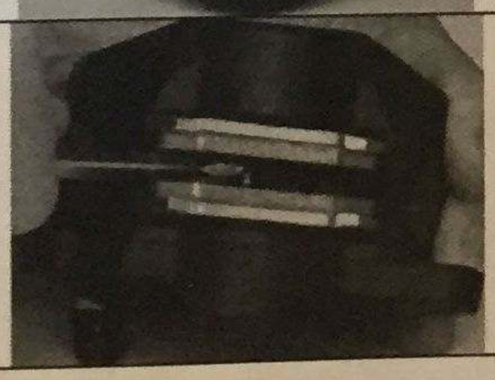
- Replacement rear brake pads
- Dot 4 brake fluid
- Loctite Blue 234

9.5.60—Removal and Replacement Procedure

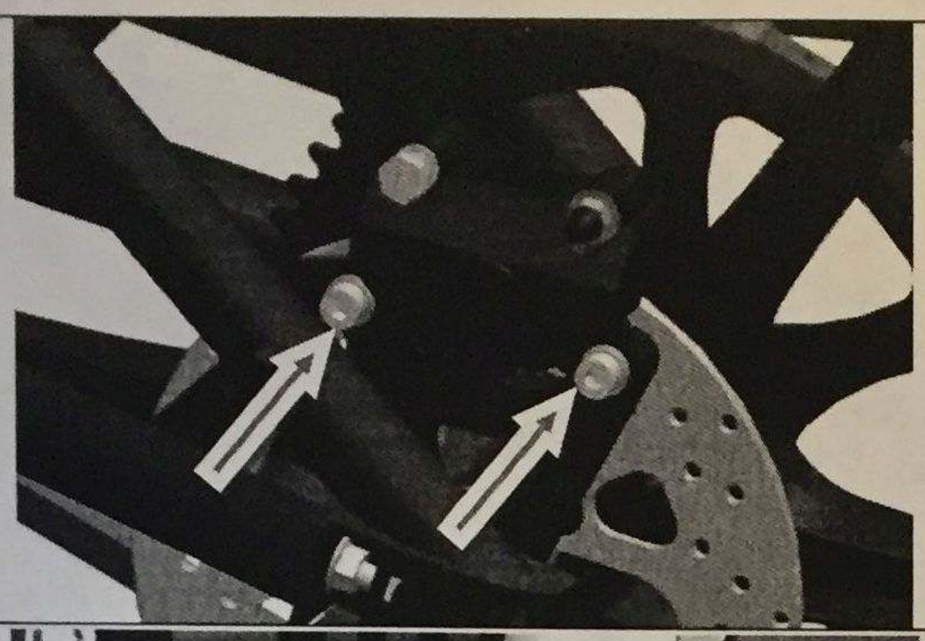
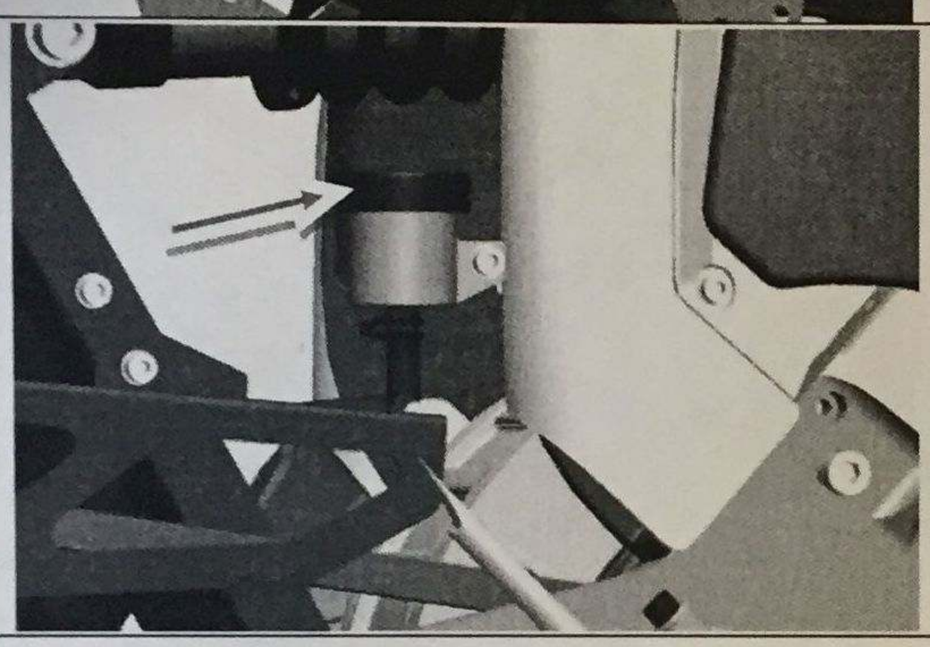
9.5 – Rear Brake Pads

	Use a 6mm Allen wrench to remove the two bolts in the rear brake caliper where it is mounted to the rear brake caliper adaptor. Carefully remove the rear brake caliper from the Enertia.
	Use a flat end screwdriver to pop the circlip from the end of the brake pad holding pin.
	Use a hammer to partially drive the brake pad pin out of the brake caliper.
	Use needle nose pliers to grab the brake pad pin and pull it out of the caliper.
	Once the pin is out of the caliper, the old brake pads will fall out easily and the retaining clip will be loose in the top of the caliper. Remove the old brake pads from the rear brake caliper.
	Use your fingers to press the brake cylinders back into the caliper, if necessary.
	Align two new brake pads to mirror each other and place inside the rear brake caliper.

9.5 – Rear Brake Pads

	Insert the retaining clip into the top of the caliper, with one end down inside and the other end outside. The clip will be at about a 45 degree angle.
	Install the brake pad pin through one side of the rear brake caliper and the hole in one brake pad.
	Use the hammer to tap the brake pad holding pin through the clip.
	Use a screwdriver to lift the retaining clip so that both ends are resting on the top of the rear brake caliper.
	Install the circlip on the end of the brake pad pin.
	If the brake pads are closed, use a screwdriver to open up the brake pads to a sufficient gap for the rear brake rotor to fit.
	Position the rear brake rotor between the brake pads inside the rear brake caliper.
	Align the bolt holes in the rear brake caliper with the holes in the rear brake caliper adaptor.

9.5 – Rear Brake Pads

	Use a 6mm Allen wrench to connect the rear brake caliper adaptor to the adaptor with two bolts. Use Loctite on the bolts. Torque to 177 in lbs.
	Unscrew the cap on the top of the brake fluid reservoir. Tap the brake line and depress the brake pedal. Look for bubbles coming up through the brake fluid reservoir. Continue to depress the brake pedal up and down while tapping the brake line until no bubble are present.
	The “feel” of the brake pedal should be firm when pressed, not soft or “spongy”.
	If pressing and tapping does not work the softness and air out of the system, you may need to bleed the brakes through the bleed valve on the caliper.
	Add Dot 4 Brake Fluid to the rear brake fluid reservoir as needed.
	Screw the cap tightly onto the rear brake fluid reservoir.
	Walk the Enertia forward several paces and depress the brake pedal to make sure the rear brake stops the Enertia.
	Test ride the Enertia at slow speeds and test the rear brakes.
	Hard braking should not be performed right away on a newly installed brake set. It is recommended that you “take it easy” on the brakes for the first 50 to 200 miles on a newly installed set.

BRAMMO ENERTIA	Chapter Title	**9.6 – Rear Brake Rotor**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Front & Rear Brake Rotor (Set)	B0110-0109030

9.6.10—Overview

The rotors for the Enertia spin along with the wheel, and when the brakes are applied, the brake pads grab the rotor to stop the wheel from spinning. On the Enertia the front and rear brakes operate independently of each other, hand-operated controls for front and pedal operated for the rear. The front brake tends to be more effective; delivering approximately 70% of the stopping power, with the rear brake assisting to slow or stop the bike. The brake rotors are considered a key component of Enertia safety and should be checked regularly.

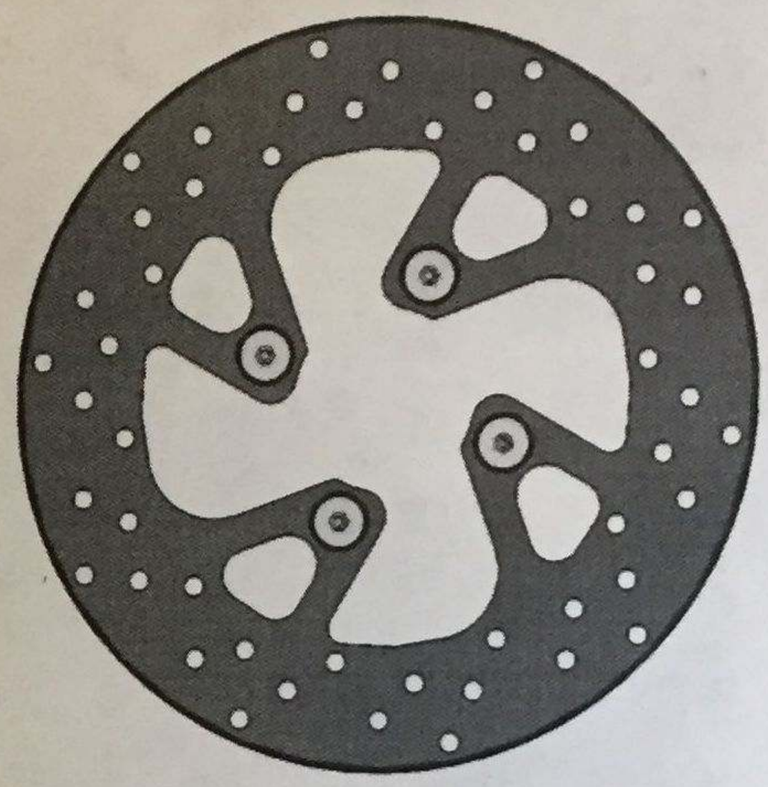


Figure 9.6.1 – Rear Brake Rotor

9.6.20—Maintenance

The rear brake system should be inspected by a qualified technician as recommended in the owner's manual.

9.6.40—Diagnosing a Problem

The rotor floats in the wheel between the brake pads so that it can handle the temperature influences which occur while braking. The pads are also fitted in the caliper around the rotor. Over time the brake pads need replacing, which is part of standard maintenance. Keep an eye on rotor damage due to incorrect placement of brake pads or misalignment. Damage to the rotor can result in a costly replacement.

9.6.55- Setup and Tools

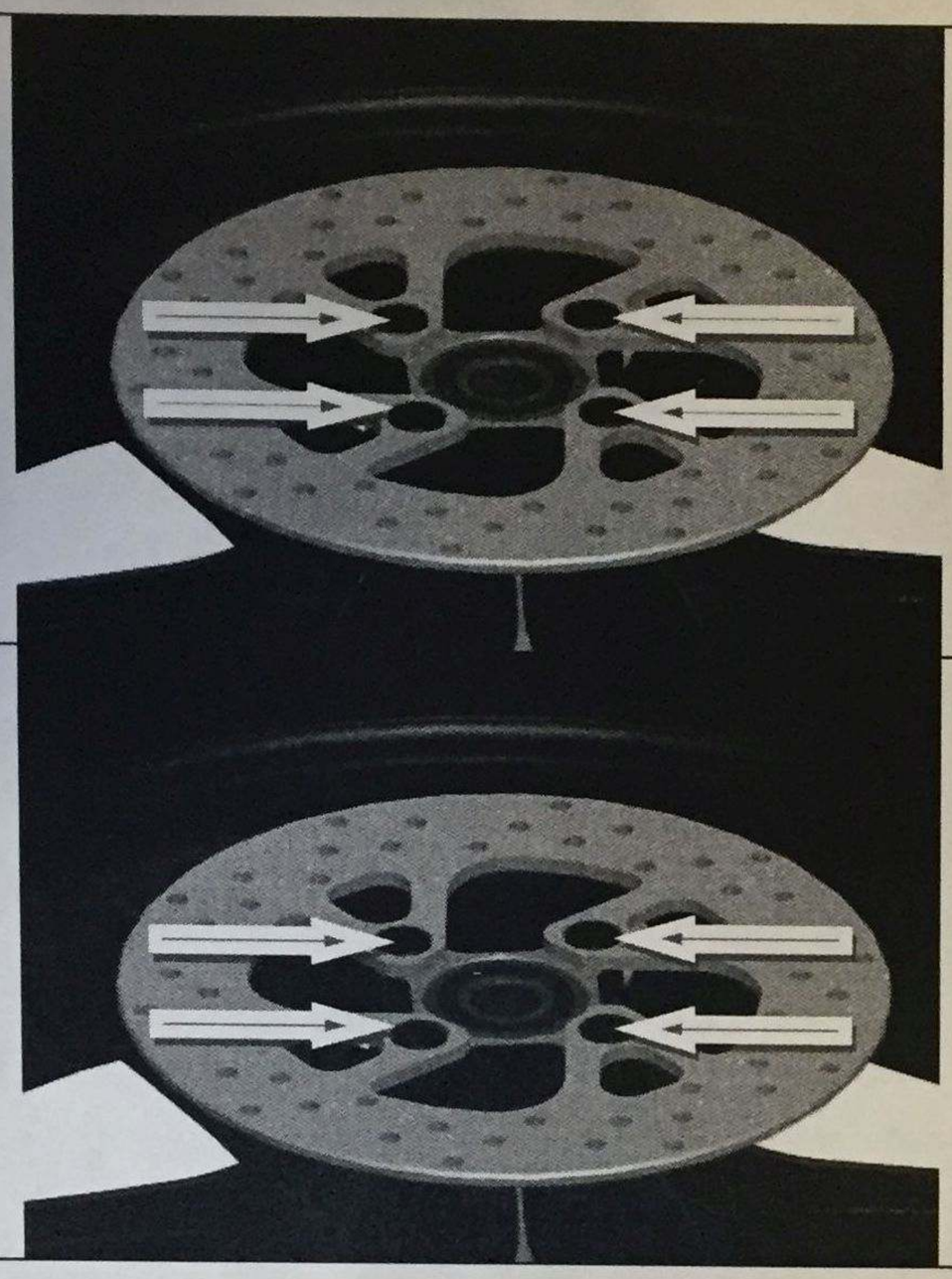
- Metric Allen wrench set
- Standard screwdriver
- Hammer
- Needle nose pliers
- Stand
- Ratchet and Metric deep-well socket set.
- Dead blow Hammer
- Drift pin

9.6.57- Materials required

- Replacement rear brake pads
- Dot 4 brake fluid
- Cotter pin
- Loctite blue 234

9.6.60—Removal and Replacement Procedure

9.6 – Rear Brake Rotor

	Remove the rear wheel per chapter 8.2
	Place the rear wheel assembly on a workbench with the brake rotor facing up. Use a 5mm Allen wrench to remove the four shoulder bolts from the rear rotor and remove the rotor.
	Align a new rotor to the rear wheel. Use a 5mm Allen wrench to install four shoulder bolts to fasten the rotor to the rear wheel. Use Loctite on bolts. Torque to 84 in. lbs. in a criss cross pattern.
	Install the rear wheel per chapter 8.1.
	Walk the Enertia forward several paces and depress the brake pedal to make sure the rear brake stops the Enertia.
	Test ride the Enertia at slow speeds and test the rear brakes.
	Hard braking should not be performed right away on a newly installed brake pad set. It is recommended that you "take it easy" on the brake for the first 50 to 200 miles on a newly installed set of pads.

	Chapter Title	9.7 – Rear Brake Pedal

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Rear Brake Pedal	B0110-0109070

9.7.10—Overview

The rear brakes for the Enertia are controlled by using a brake pedal located on the riders' right side. The Enertia rear wheel brake pedal comprises a brake tread rod, a tread plate, a tread plate base, a fastening plate, and a fastening element. The brake tread rod is fastened at one end to the Enertia frame and is attached at the other end with a pedal seat on which the fastening plate is retained securely.

Figure 9.7.1 – Rear Brake Pedal

The rear brake pedal FRU includes the brake pedal, spring, and rear brake pedal stop bracket.

9.7.20—Maintenance

Make sure the brake pedal is clean and travel its full length completely without any unnecessary friction or encumbrances.

9.7.40—Diagnosing a Problem

If the brake pedal does not return to the UP position after being depressed, make sure the spring at the rear of the brake pedal is not broken. Typically the entire brake pedal will not need to be replaced unless it has been damaged due to an accident or bike fall.

9.7.55- Setup and Tools

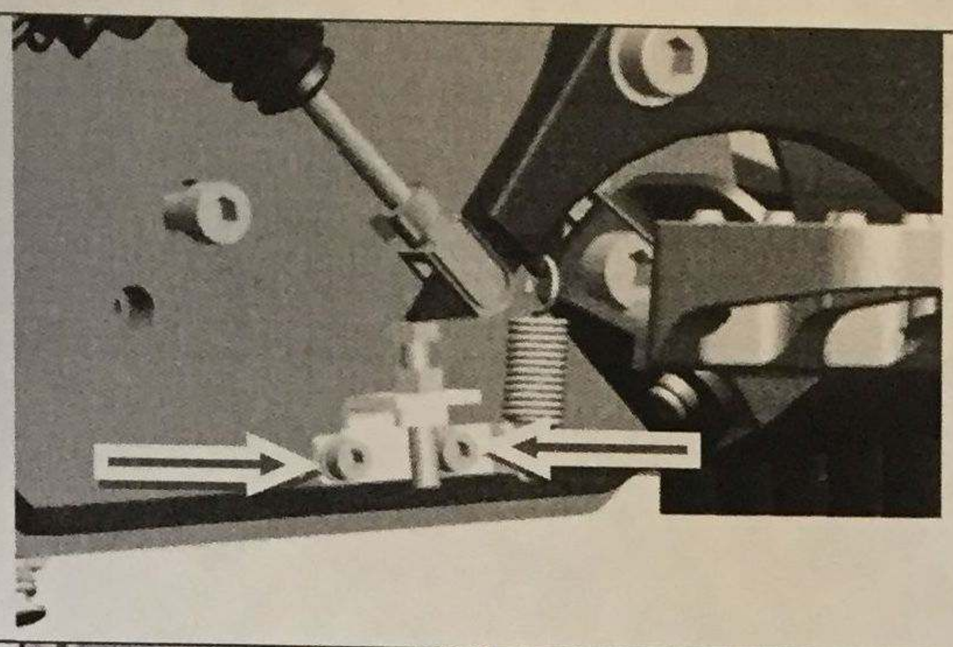
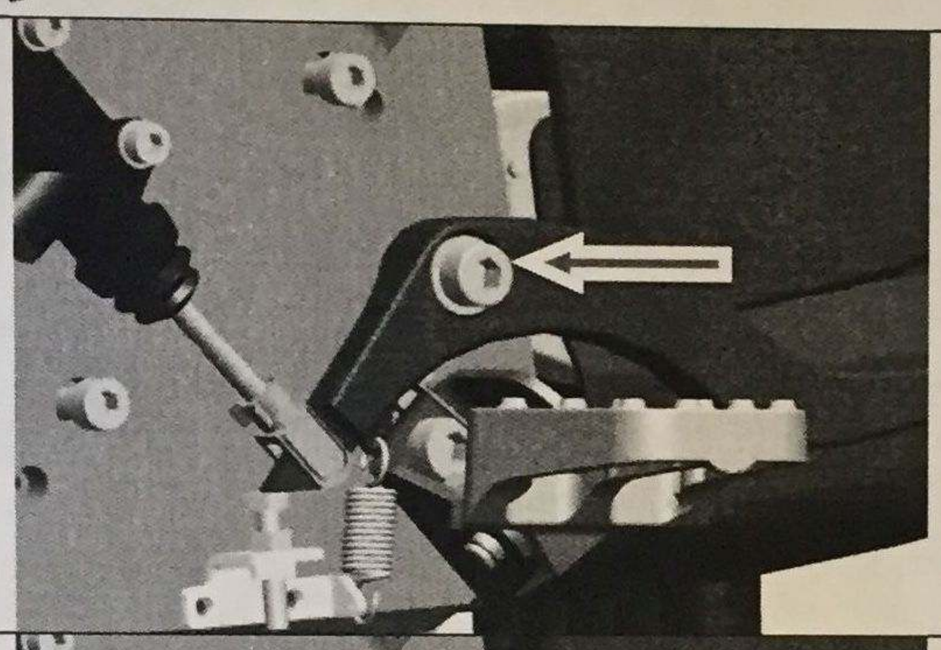
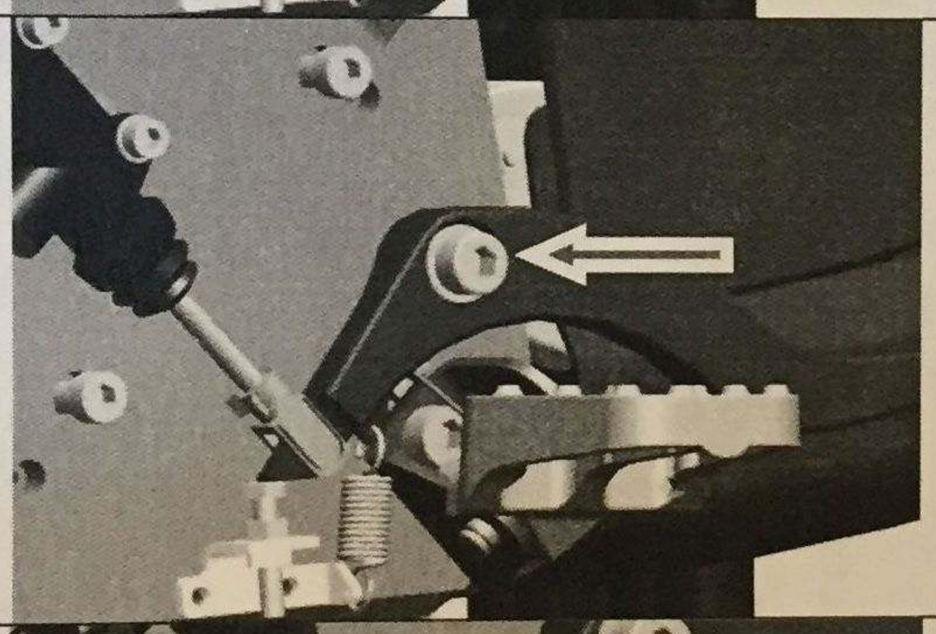
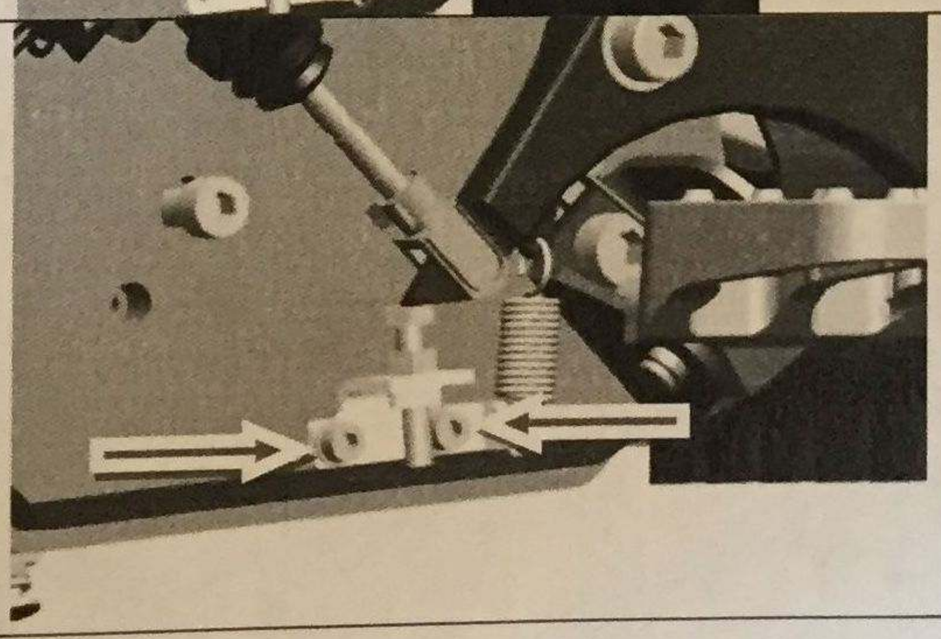
- Metric Allen wrench set
- Metric combination wrench set
- Standard screwdriver

9.7.57- Materials required

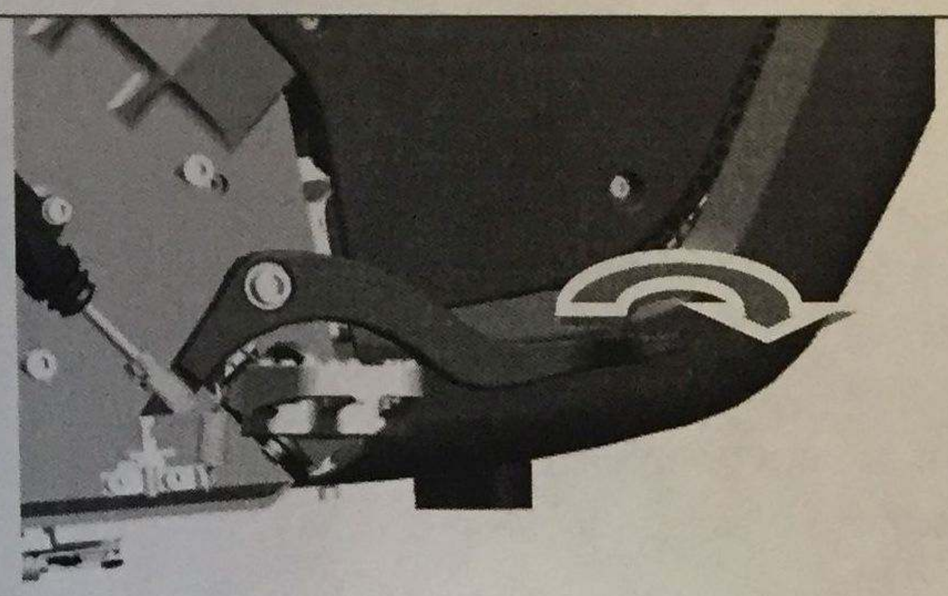
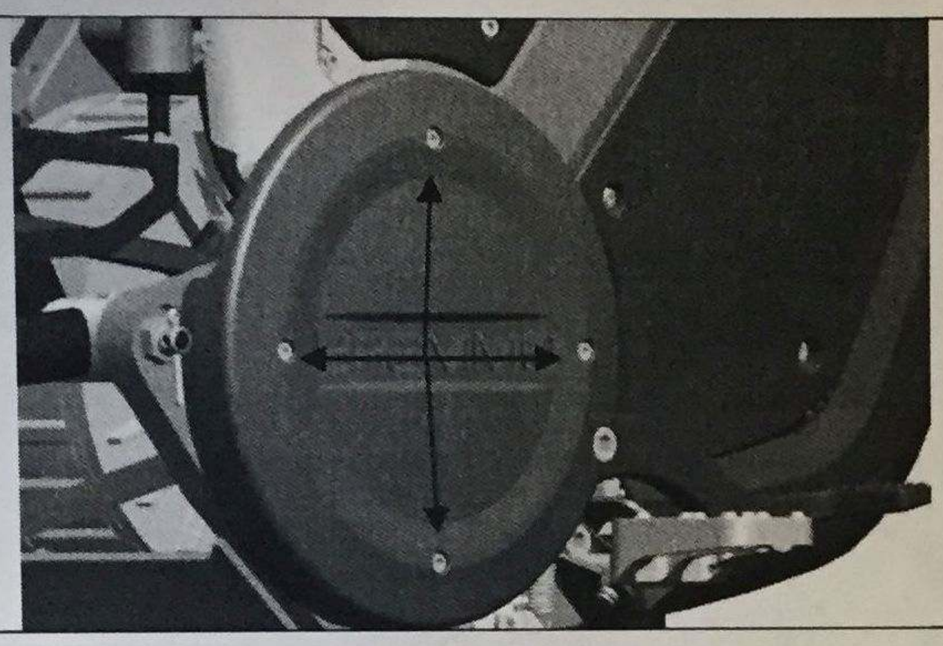
- Replacement rear brake pedal FRU set
- Loctite Blue 234

9.7.60—Removal and Replacement Procedure

9.7 – Rear Brake Pedal

	Remove the right motor cover from the Enertia per chapter 3.6. Use a 4mm Allen wrench to remove two bolts from the brake pedal stop bracket.
	Use an 8mm Allen wrench to remove the bolt from the rear brake pedal. Slide the clevis pin from the rear brake master cylinder and remove the rear brake pedal.
	Install the clevis pin of the new rear brake pedal into the rear brake master cylinder. Install the new rear brake pedal assembly to the chassis with one bolt. Use an 8mm Allen wrench to tighten securely. Use Loctite on bolt, torque to 106 in lbs.
	Align the rear brake stop bracket to the chassis and install with two bolts. Use a 4mm Allen wrench to tighten. Use Loctite on bolts, torque to 46 in lbs.

	Chapter Title	9.7 – Rear Brake Pedal

	Depress the brake pedal several times to makes sure it springs into place properly each time.
	Reinstall the right motor cover per chapter 3.6. Use Loctite on bolts, torque to 46 in lbs.
	Walk the Enertia forward several paces and depress the brake pedal to make sure the rear brake stops the Enertia.
	Test ride the Enertia at slow speeds and test the rear brakes.

BRAMMO ENERTIA	Chapter Title	**10.1 – Headlamp**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Headlamp	B0110-0110010

10.1.10- Overview

The headlamp for the Enertia is located in a protective bezel attached to the front forks of the Enertia. The headlamp is attached to the main wiring harness using a specially designed wire harness and connector.

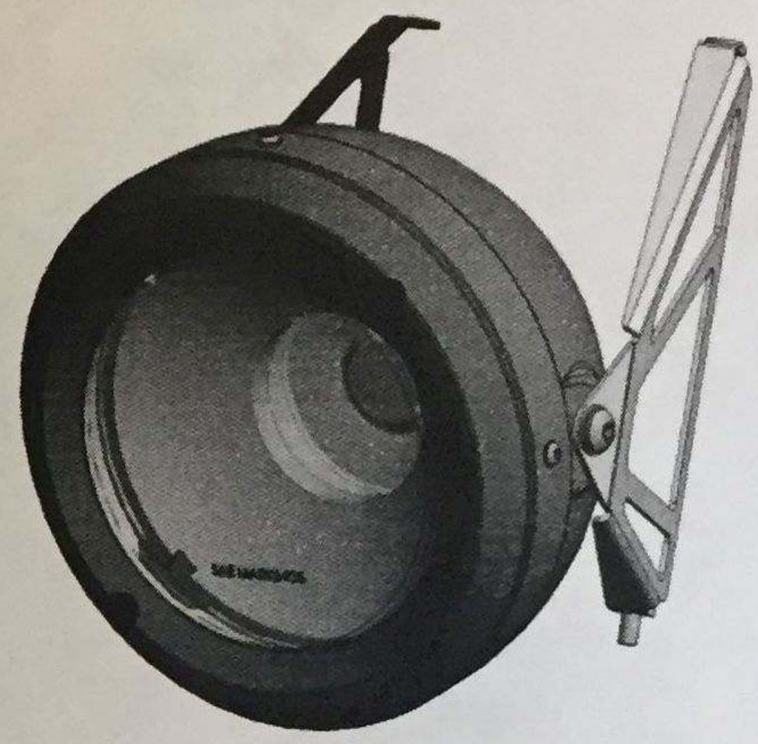


Figure 10.1.1 – Headlamp and Bracket Assembly

10.1.40- Diagnosing a Problem

When the headlamp is no longer illuminating the headlamp will need to be replaced or the wire harness providing power to the headlamp is no longer attached. The internal bulb of the Enertia headlamp can be replaced if necessary. Cosmetic damage or cracked lenses may require the entire headlamp assembly to be replaced.

Adjustments may be required to properly aim the headlamp per government regulations.

10.1.55- Setup and Tools

- Metric Allen wrench set
- Phillips Screwdriver

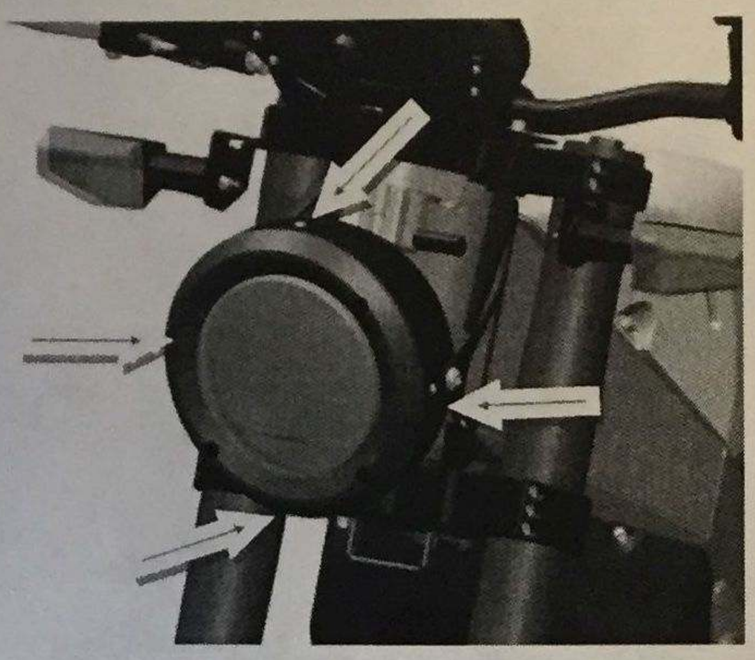
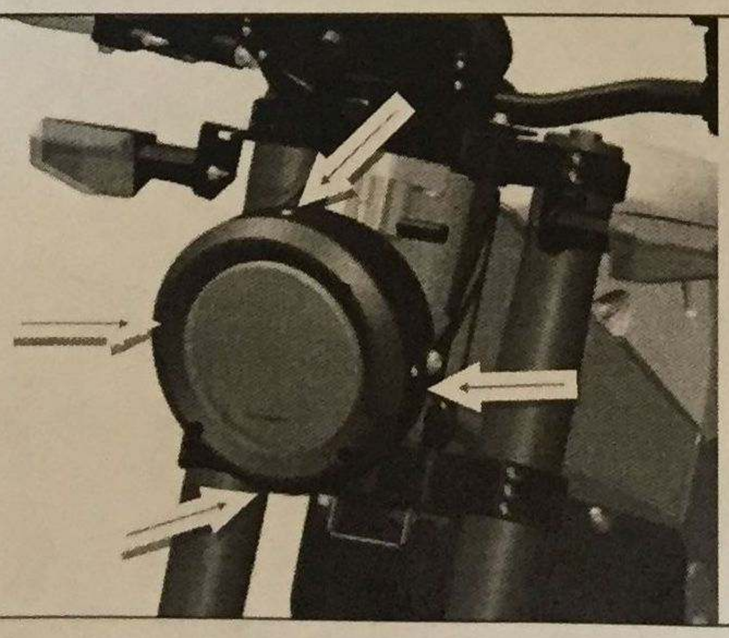
10.1.57- Materials required

- Replacement headlamp bulb
- Replacement headlamp FRU
- Tape measure
- Tape

10.1.60- Removal and Repair Procedure

Replacing Headlamp Bulb Only

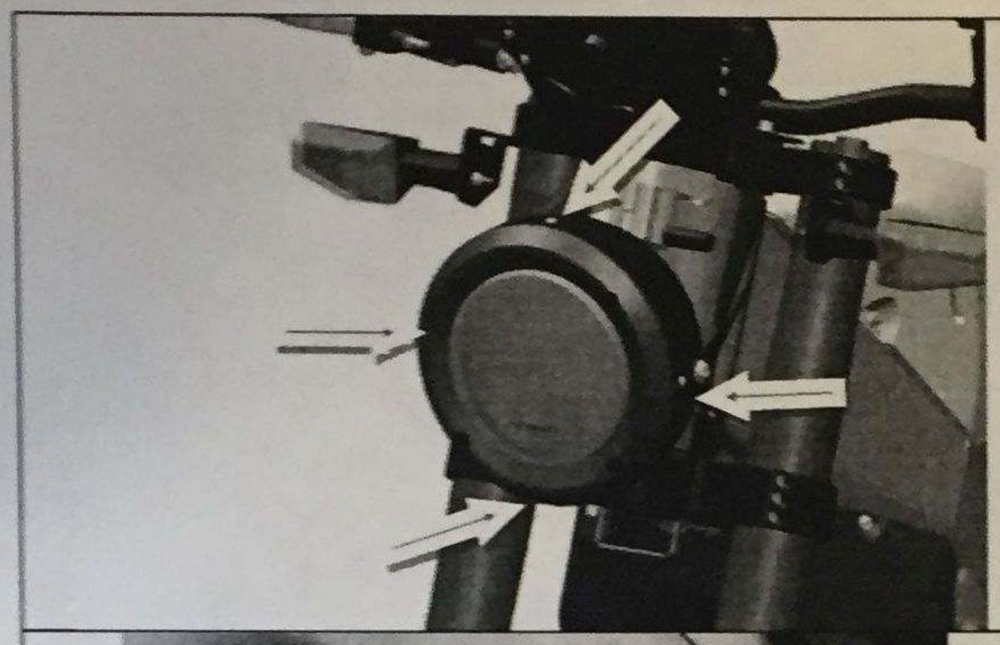
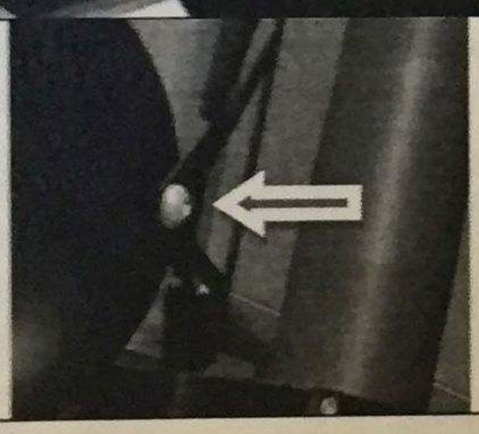
10.1 – Headlamp

	Make sure ignition key is removed and all switches are off to ensure that no power is going to the headlamp. CAUTION: Headlamp may be HOT! Allow sufficient cooling time before handling the headlamp or the bulb. Use a Phillips screwdriver to remove 4 screws from around the rim of the headlamp housing. Gently pull the headlamp and bezel from the housing.
	Disconnect the black connector from the headlamp. Remove the rubber seal from the back of the headlamp.
	Squeeze the two wire bulb retainers and lift out to release the bulb.
	Remove the old bulb from the headlamp.
	Place a new bulb into the headlamp, **being careful not to touch the lens with your fingers.** Make sure tabs on the bulb are aligned with the slots in the headlamp. Oils from fingers can shorten life of the bulb, avoid touching the bulb or wear clean gloves.
	Squeeze the wire retainers and lower in place to secure the bulb. Grasp the rear of the bulb and gently pull to ensure the bulb is secured in place.
	Align the slots in the rubber seal with the terminals on the bulb and fully seat the seal.
	Connect the black harness connector to the terminals on the back of the headlamp. Place the headlamp into the housing with lettering on the face of the lens right side up. Use a Phillips screwdriver to install four screws around the rim of the headlamp housing.

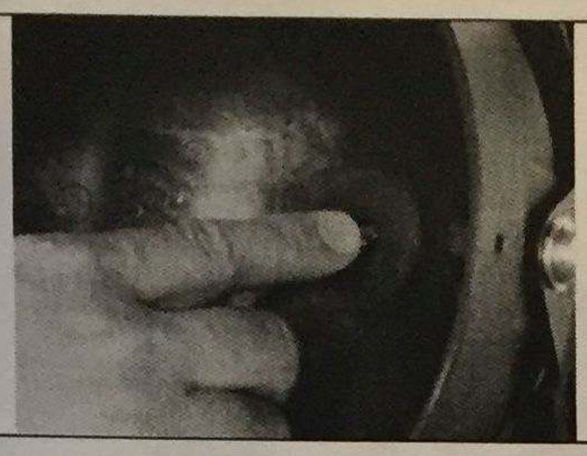
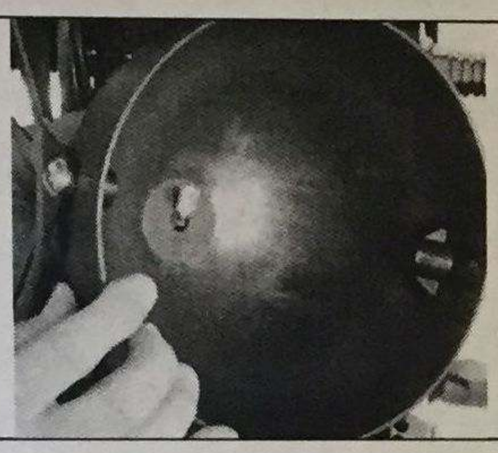
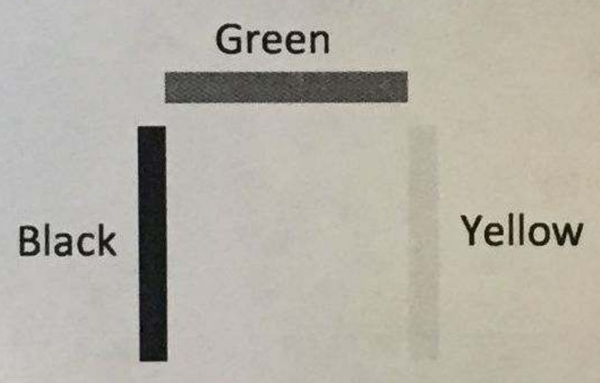
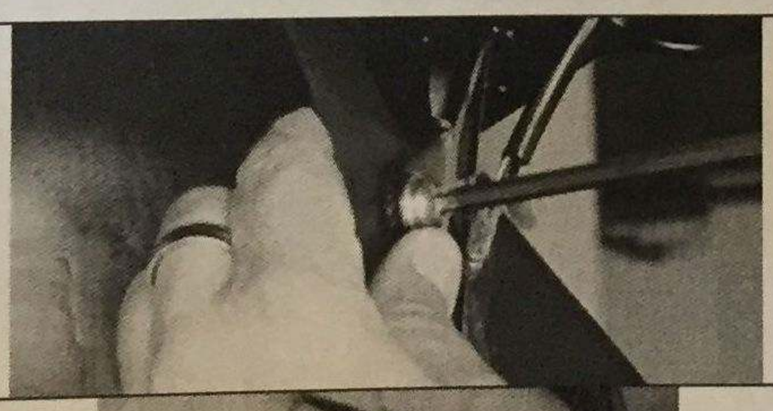
10.1 – Headlamp

	Turn on the Enertia and check the function of both high and low beams to ensure the headlamp is functioning properly.

Replacing Entire Headlamp Assembly (including lamp, bezel, and housing)

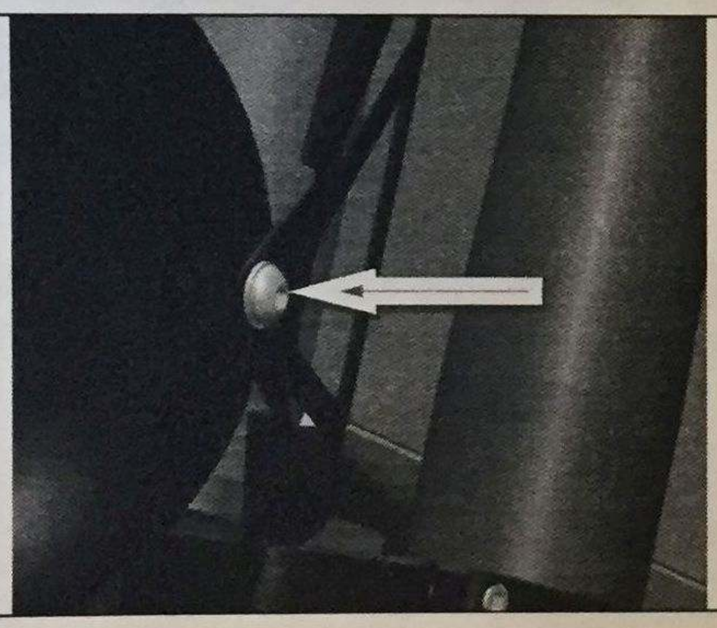
	Make sure ignition key is removed and all switches are off to ensure that no power is going to the headlamp. CAUTION: Headlamp may be HOT! Allow sufficient cooling time before handling the headlamp or the bulb. Use a Phillips screwdriver to remove 4 screws from around the rim of the headlamp housing.
	Gently pull the headlamp and bezel from the housing. Disconnect the black connector from the headlamp.
	Use a 5mm Allen wrench to remove the screws and washers from each side of the headlamp housing on the brackets.
	Press up on the retaining tabs in the back side of the connector (two per wire) and gently remove the black wire and terminal from the back of the connector.
	Using the same procedure, remove the green and yellow wires from the back of the terminal.

10.1 – Headlamp

	Thread the wires, one at a time, through the back of the headlamp housing.
	Make sure the housing is removed from the new headlamp assembly. If not, use a screwdriver to remove all four screws from the rim of the new headlamp housing.
	Thread the wires and terminals, one at a time, through the new headlamp housing.
 Viewed from BACK of connector	Plug the wire terminals into the black connector. Make sure to get correct orientation: 1. From back side of connector, green wire goes in the middle. 2. With green wire on top, yellow wire goes on right side (from back of connector). 3. With green wire on top, black wire goes on left side (from back of connector).
	Attach the headlamp housing to the brackets using a 5mm Allen wrench to attach the screws with new serrated washers in the sides of the housing.
	Connect the black connector to the back of the headlamp.

	Insert the headlamp into the housing and align the holes.
	Install 4 screws around the rim of the headlamp housing to secure the headlamp in place with a Phillips screwdriver.
	Turn on the Enertia and check the function of both high and low beams to ensure the headlamp is functioning properly.
	Adjust the headlamp angle per the "Headlight Aiming" procedure. (Below)

Headlight Aiming

	Position the Enertia on a level surface, 25 feet away from a wall.
	Measure the distance from the center of the headlight to the ground.
	Mark this same distance on the wall, matching the headlight to ground distance.
	Place a mark 2 inches below this mark on the wall.
	Use an Allen wrench to slightly loosen the two bolts on the headlamp brackets so that the headlamp can be easily adjusted.
	Mount the Enertia, power on the Enertia, and turn on the low beam headlamp.
	Adjust the angle of the headlamp so that the upper point of the low beam rests on the lower mark on the wall.
	Be sure to use a 5mm Allen wrench to tighten the bolts on each side of the headlamp, securing the headlamp to the bracket.

Chapter Title	10.2 – Turn Signals

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Turn Signals (Set)	B0110-0110020

10.2.10- Overview

Turn signals are an important safety feature on the Enertia. These indicators notify surrounding drivers of the rider's intentions to merge or turn. They also help drivers locate an Enertia in dark driving conditions. Riders should check the function of the turn signals prior to every ride. A failure in the turn signals can increase the risk of vehicle related accidents and injuries.

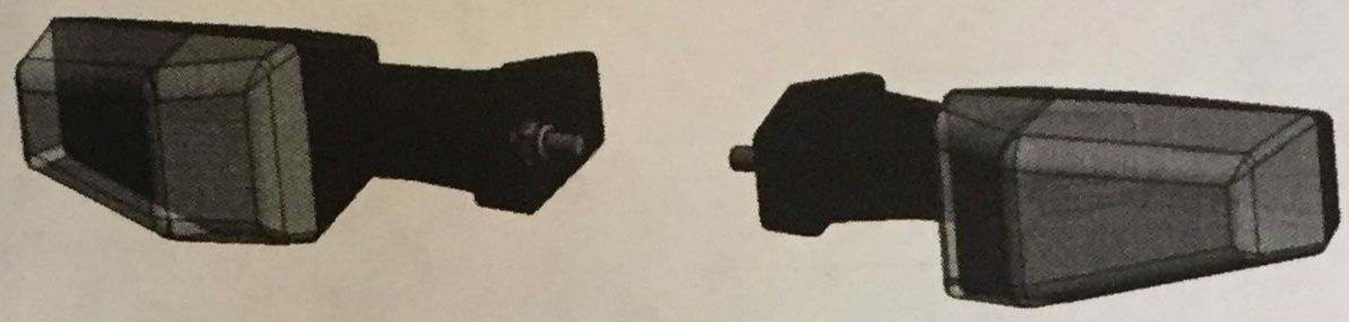


Figure 10.2.1 Turn Signal Set

10.2.40- Diagnosing a Problem

The usual cause of turn signal failure is a burned out bulb. For the bulb replacement procedure, please see 1.5. In the event that a new bulb does not fix the problem, it is always best to check the connection points of the wires to the main wiring harness. Loose or disconnected wires should be reconnected and then checked to verify proper function. If all wires are connected properly, the signal may need to be replaced. Cosmetic damage or a cracked/broken lens may also be cause for replacement.

The stock turn signal is also equipped with a breakaway feature that helps prevent the turn signal housing from being broken in case it is bumped. This can happen especially on the rear left turn signal as the rider mounts, dismounts, or unlocks the seat to gain access to the charging cord. If the turn signal is hanging from it's wires, it may be possible to reattach it to the attachment post and not replace the turn signal. See the reattachment instructions below.

Figure 10.2.2 Turn Signal Breakaway Feature

10.2.55- Setup and Tools

- Metric combination wrench set

10.2.57- Materials required

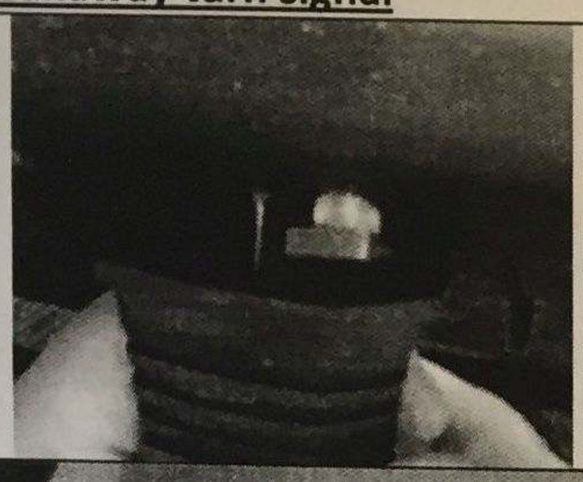
- Replacement turn signal

10.2.60 - Procedures

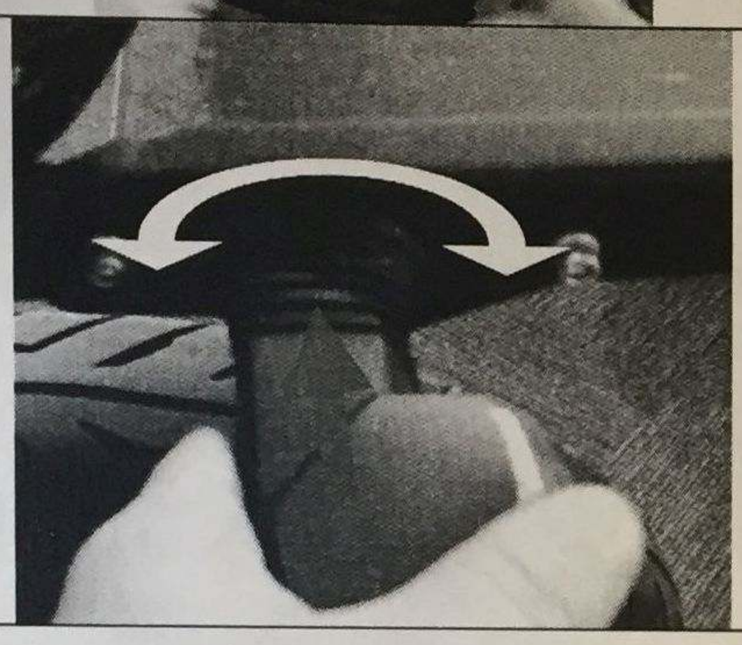
Chapter Title

10.2 – Turn Signals

Fixing a breakaway turn signal



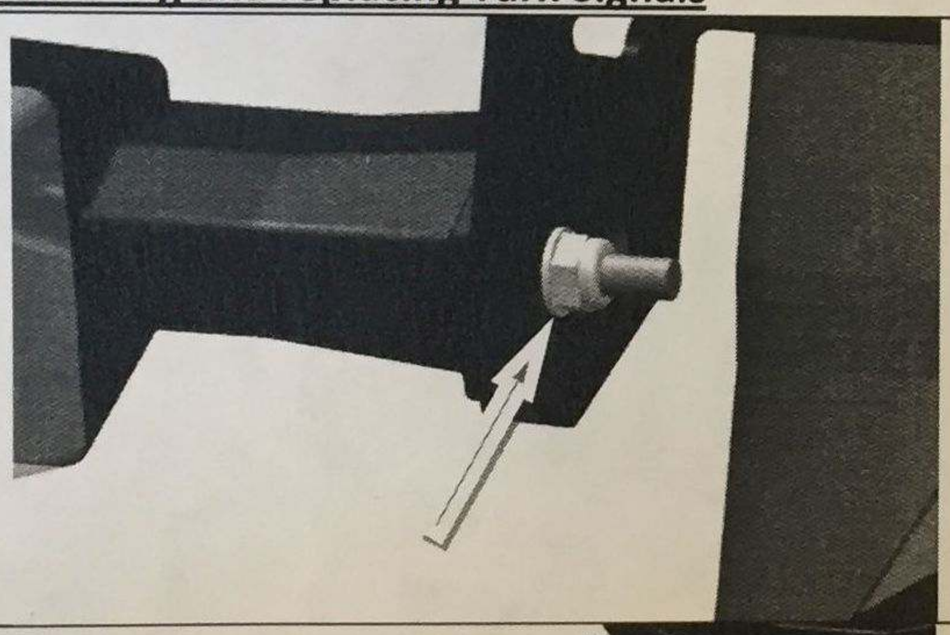
Grasp the turn signal firmly and fit one of the square edges of the turn signal post over the lip of the recess on the turn signal.



Pushing straight in FIRMLY (green arrow), twist the turn signal back and forth around the post to firmly set the post within the recess on the turn signal base.

If the turn signal repeatedly breaks away it may be necessary to replace the turn signal or replace with a lower profile aftermarket turn signal.

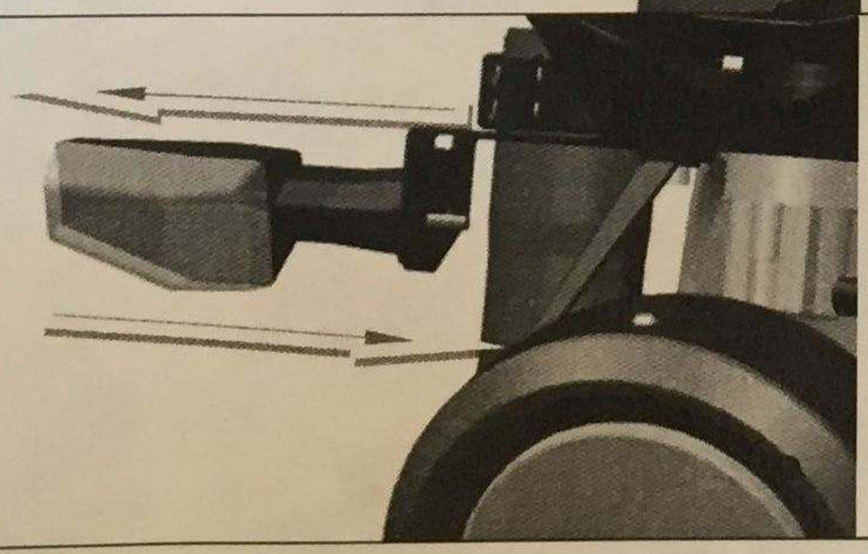
Removing and replacing Turn Signals



Disconnect the turn signal wires from the main wiring harness.

Firmly grasp the turn signal with one hand.

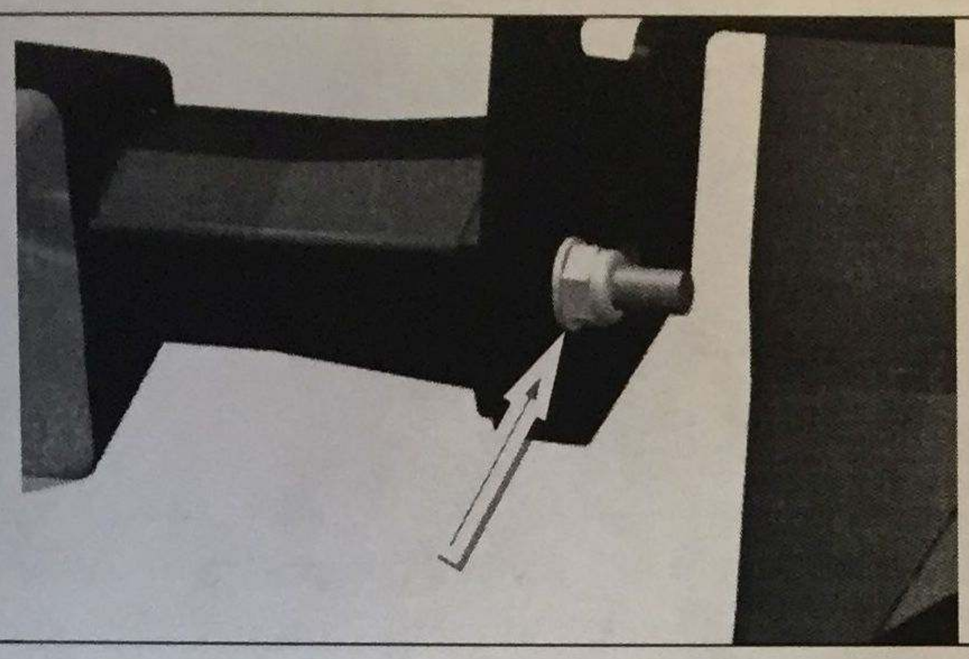
Use an 8mm combination wrench to remove the nut from the turn signal post.



Remove the old turn signal.

Position a new turn signal on the Enertia.

10.2 – Turn Signals

	Firmly grasp the turn signal with one hand and hand-start the nut on the turn signal post.
	Use an 8mm combination wrench to secure the turn signal to the bracket.
	Connect the turn signal wires to the main harness.
	Power on the Enertia.
	Check all turn signal lights for proper function.

BRAMMO ENERTIA	Chapter Title	**10.3 – Tail and Brake Light**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Tail and Brake Light	B0110-0110030

10.3.10- Overview

The tail, or rear shroud, on the Enertia contains many important safety features. The rear brake lamp is contained in this assembly. The rear shroud is the mounting point for the license plate, as well as the left and right rear turn signals. Riders should check the function of the brake lamp and turn signals prior to every ride. These indicators notify surrounding drivers of the rider's intentions to stop, merge, or turn. They also help drivers locate the Enertia in dark driving conditions. A failure in the brake lamp or turn signals can increase the risk of vehicle related accidents and injuries.

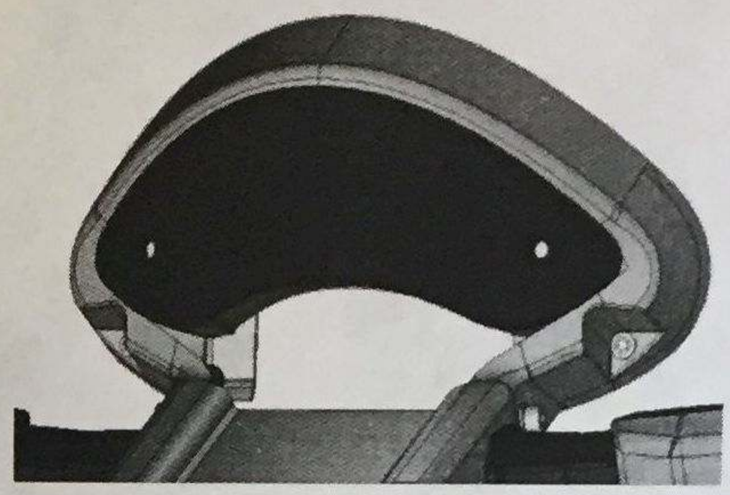


Figure 10.3.1 – Tail and Brake Light Assembly

10.3.40- Diagnosing a Problem

In the event of failure for brake lamps, turn signals, or license plate lamps, it is always best to check the connection points of the wires to the main wiring harness. Loose or disconnected wires should be reconnected and then checked to verify proper function. If all wires are connected properly, the light may need to be replaced.

Cosmetic damage or a cracked/broken rear shroud can be replaced as an entire assembly.
The tail/brake light is part of the rear shroud FRU and should be replaced as a unit. If installing an aftermarket tail/brake lamp, the procedure is below.

10.3.55- Setup and Tools

- Metric Allen wrench set
- Metric combination wrench set
- T25 Torx driver

10.3.57- Materials required

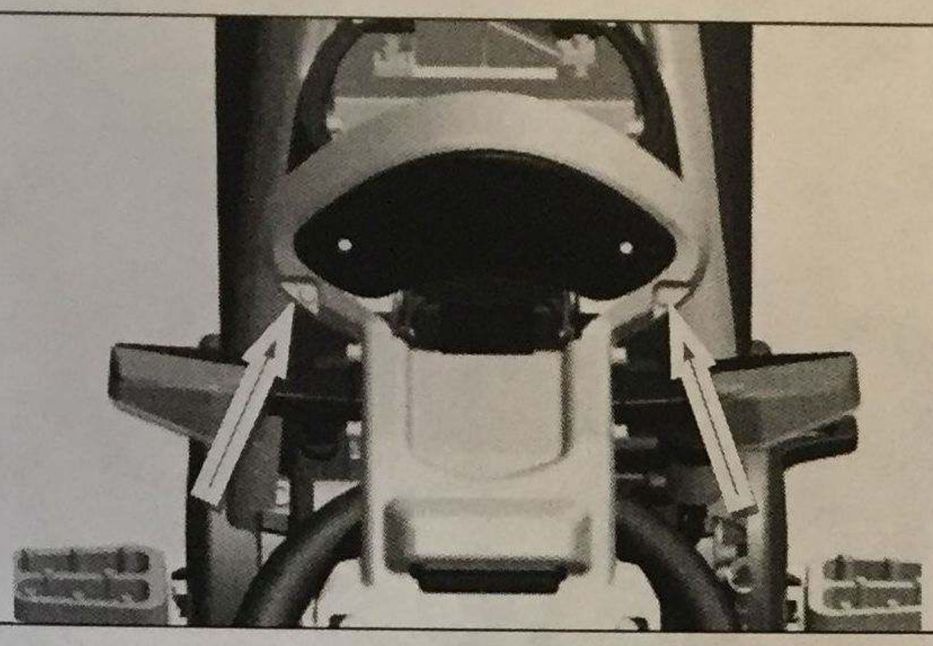
- Replacement brake lamp, or
- Replacement rear shroud FRU

10.3.60- Removal and Repair

Replacing Brake Lamp Only

10

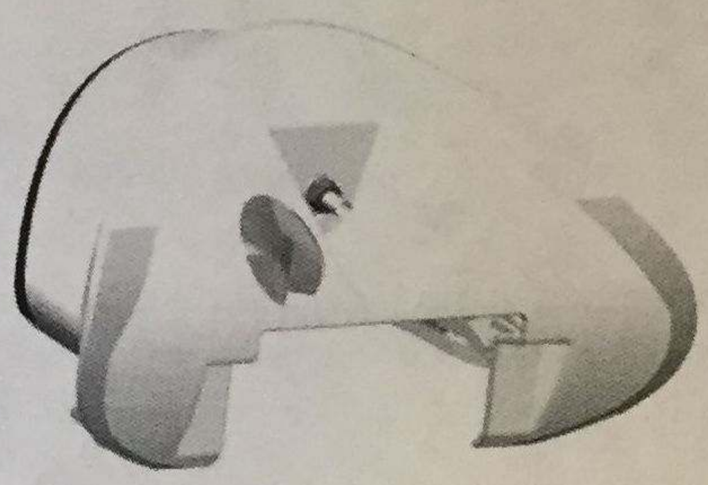
10.3 – Tail and Brake Light



Remove seat per chapter 3.4

Disconnect the brake lamp from the main wiring harness.

Use a T25 Torx driver to remove two bolts, one on each side of the brake lamp.

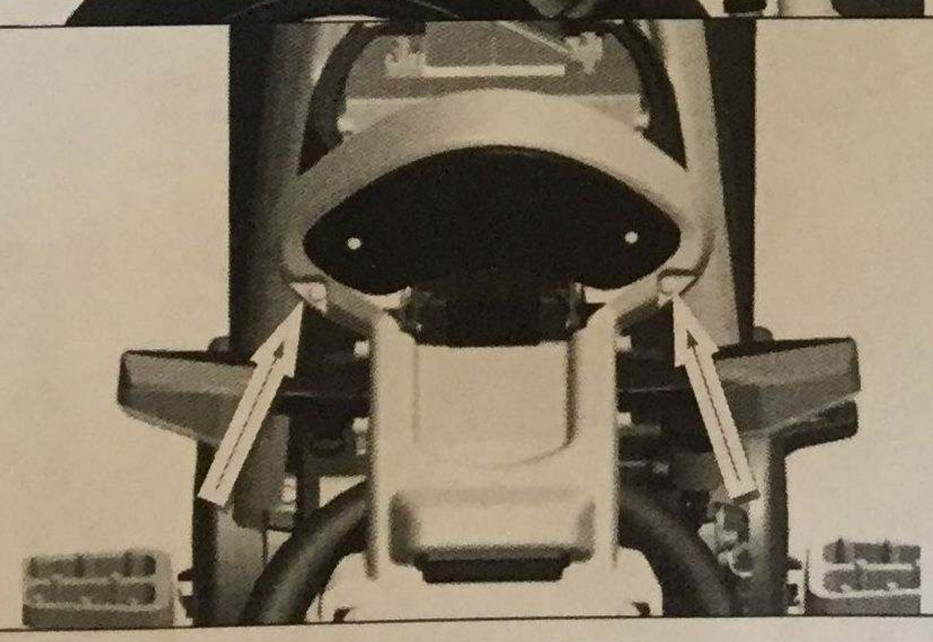


Remove the brake lamp from the rear shroud by moving it toward the seat strut.

Use a 10mm wrench or socket to remove the nut from the back of the brake lamp assembly.
Separate the brake lamp from the plastic housing.
Place a new brake lamp into the housing.
Use a 10mm wrench or socket to install the nut on the back of the housing, securing the brake lamp in place.

Install the brake lamp assembly into the rear shroud from the seat strut side.

Align the plastic housing with the tab in the rear shroud.



Install two bolts, one on each side of the brake lamp, with a T25 Torx driver.

Connect the brake lamp wires to the main wiring harness.

Replace the seat and lock securely.

Power on the Enertia and turn on the lights.

BRAMMO ENERTIA	Chapter Title	**10.3 – Tail and Brake Light**

	Check the function of the rear running light, and ensure the brake light works when activating both the front brake lever and rear brake pedal.

Replacing the entire Rear Shroud

	See chapter 3.5 – Rear Shroud Assembly

BRAMMO ENERTIA	Chapter Title	**11.1 – DC/DC Converter**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
DC-DC Converter	B0110-0111010

11.1.10 – Overview

The DC-DC converter takes the 72V from the battery chain and converts it to 12V to power the Enertia's electrical components, such as lights, dash, horn, etc.

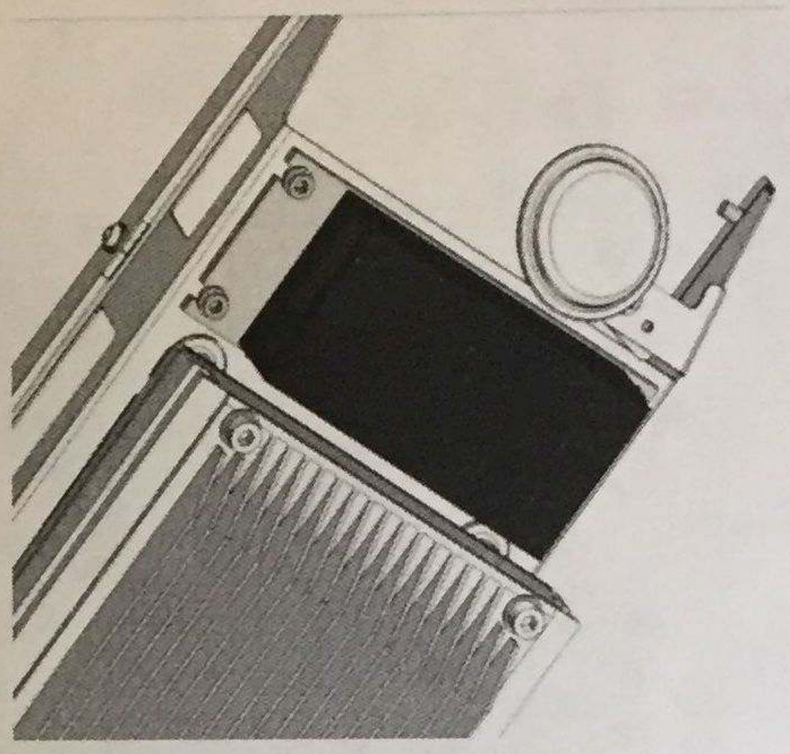


Figure 11.1.1 – DCDC Converter (shown on the motor controller assembly)

11.1.40 – Diagnosing a Problem

A failure in the DC-DC converter would be seen as a complete shutdown of the Enertia's electrical components. If lights, dash, horn, etc., do not work, or if fuses blow when turning on these components, there may be an issue with the DC-DC converter.

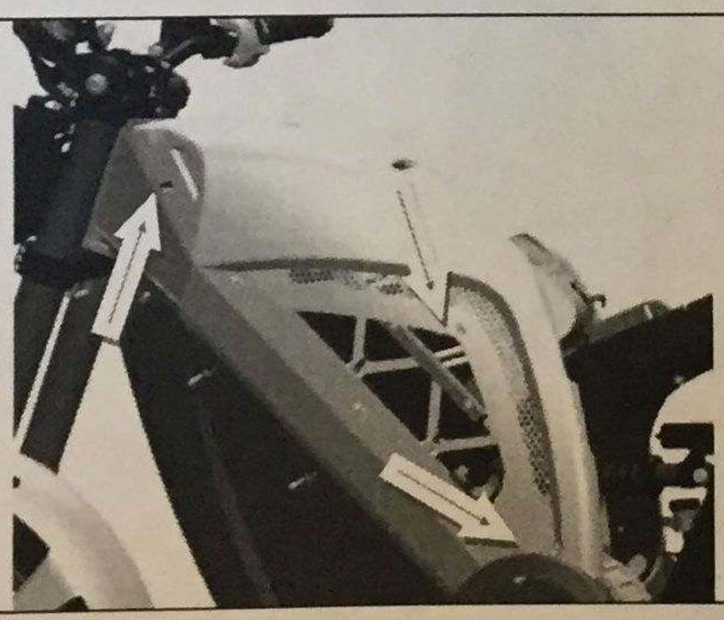
11.1.55- Setup and Tools

- Metric Allen wrench set

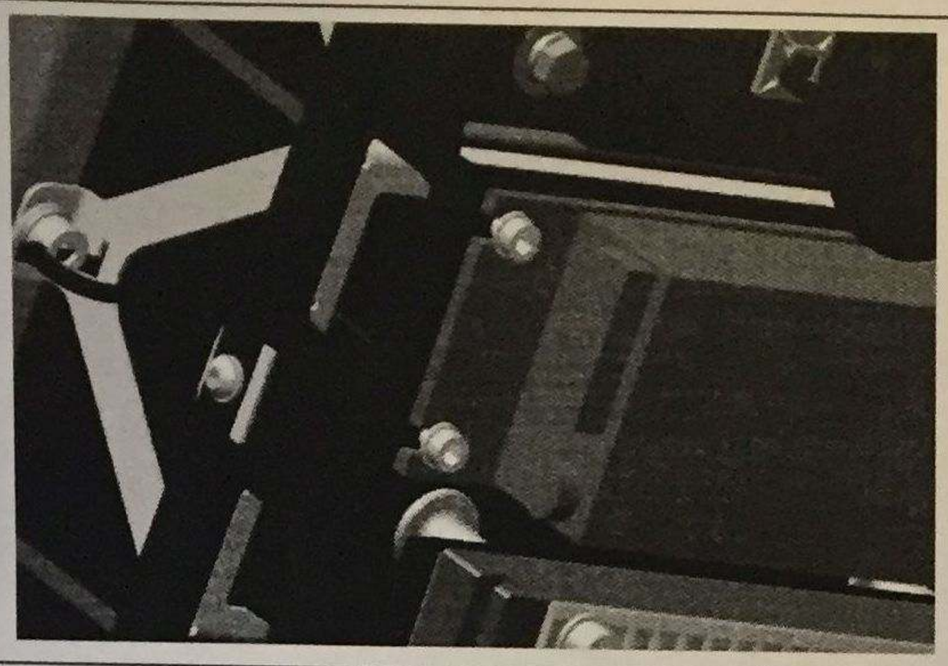
11.1.57- Materials required

- Replacement DC-DC converter
- Loctite Blue 234

11.1.60 – Removal and Repair Procedure

	Remove seat and body panels per chapter 3.2 Disconnect the blue battery cable connector. This will prevent power from going from the batteries to the rest of the powercycle. **COVER EXPOSED CONNECTORS WITH ELECTRICAL TAPE.**

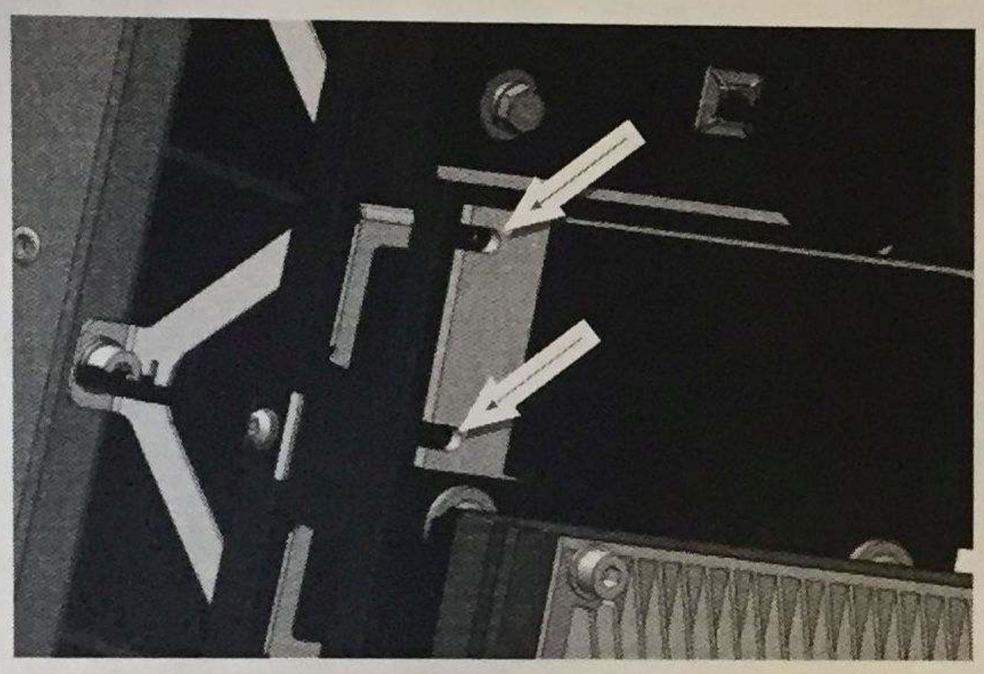
Chapter Title: 11.1 – DC/DC Converter



Disconnect the harness connector from the DC-DC converter on the lower right side of the Enertia.

Use a 5mm Allen wrench to remove the four bolts connecting the DC-DC converter to the motor controller bracket.

Remove the old DC-DC converter.



Place the new DC-DC converter on the Enertia and align the slots with the holes in the motor controller bracket, making sure that the connector is on the right hand side of the Enertia.

Connect the DC-DC converter to the motor controller bracket by installing four bolts with a 5mm Allen wrench.

Use Loctite on bolts.

Insert the wire harness connector into the DC-DC converter.

Connect the blue battery cable connector.

Reinstall the body panels and seat per chapter 3.2.

Power on the Enertia and verify that the electrical systems are all functioning properly.

BRAMMO ENERTIA	Chapter Title	**11.2 – Dash & Bracket**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Dash & Bracket	B0110-0111020

11.2.10 – Overview

The dash is the information center of the Enertia. It displays constant updates of the Enertia's status for the user. The Dash has the speedometer on the left side and an LCD screen on the right side. The LCD screen can be cycled through various display modes to provide different information at any given time. The speedometer and the LCD screen are backlit for easy viewing in dark driving conditions.

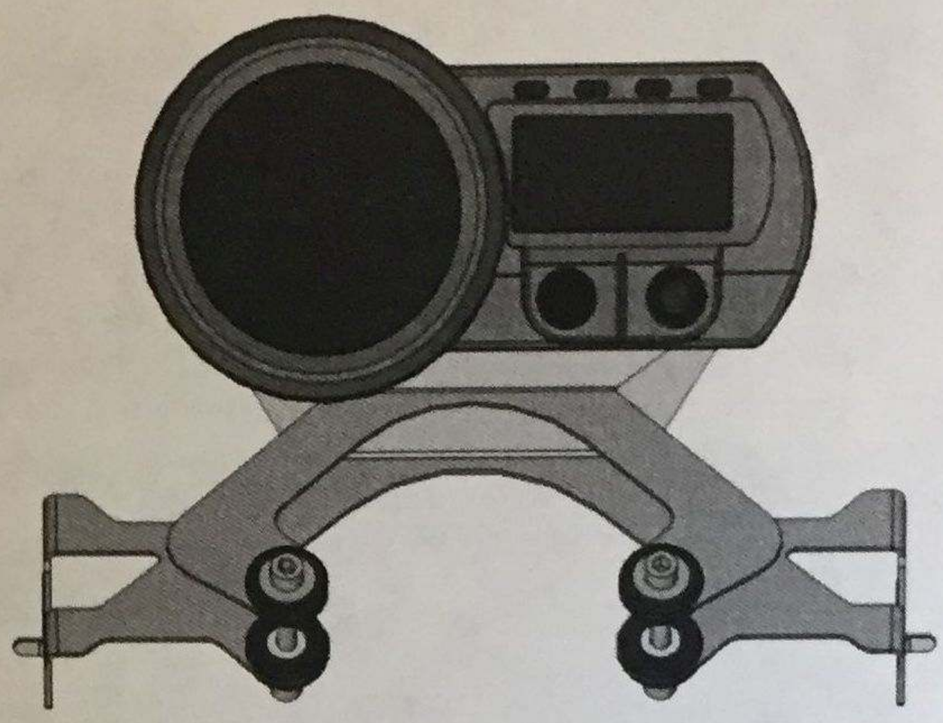


Figure 11.2.1 – Dash and Bracket

11.2.40 – Diagnosing a Problem

Diagnosing an issue with the dash will be a visual inspection while the Enertia is powered ON. Burned out backlights, incomplete LCD displays, non-functioning buttons, or a non-responsive speedometer may all be cause for dash replacement. If the dash is completely nonfunctional, check the dash communication cable behind the dash to be sure it is installed correctly and secure prior to dash replacement.

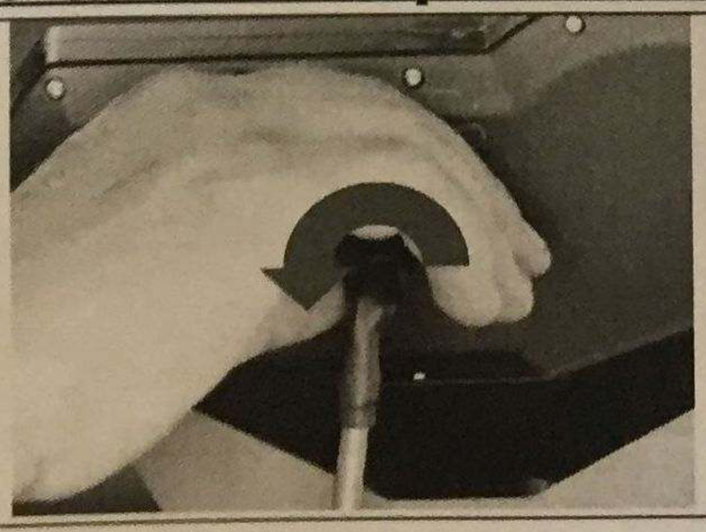
11.2.55- Setup and Tools

- Metric Allen wrench set

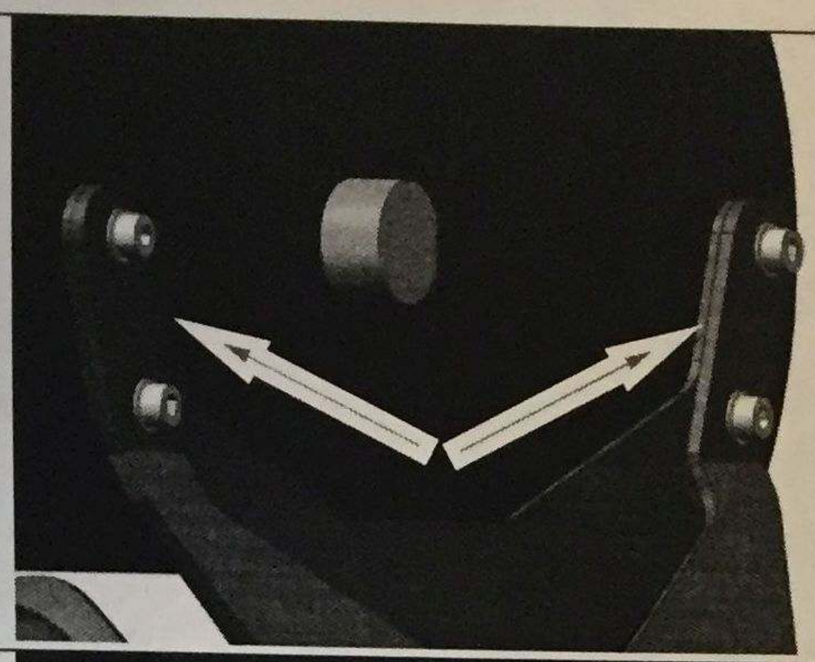
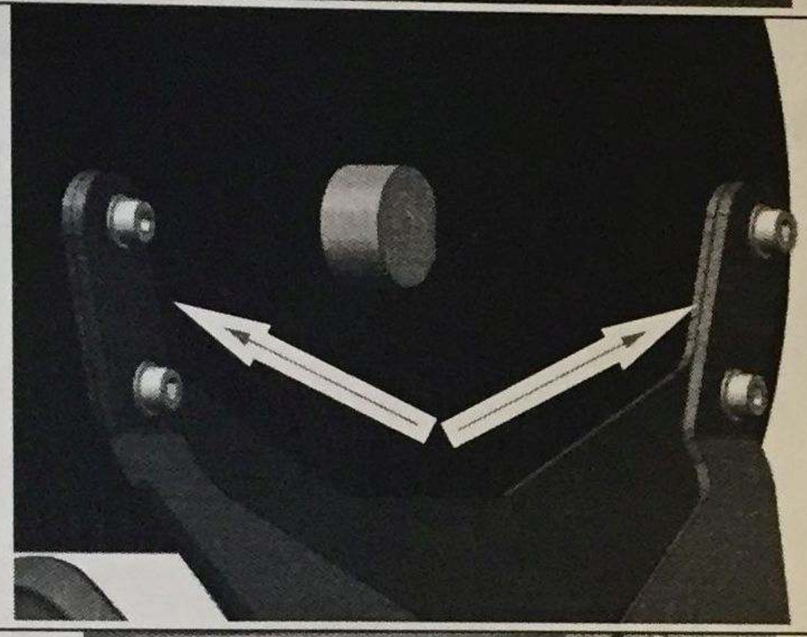
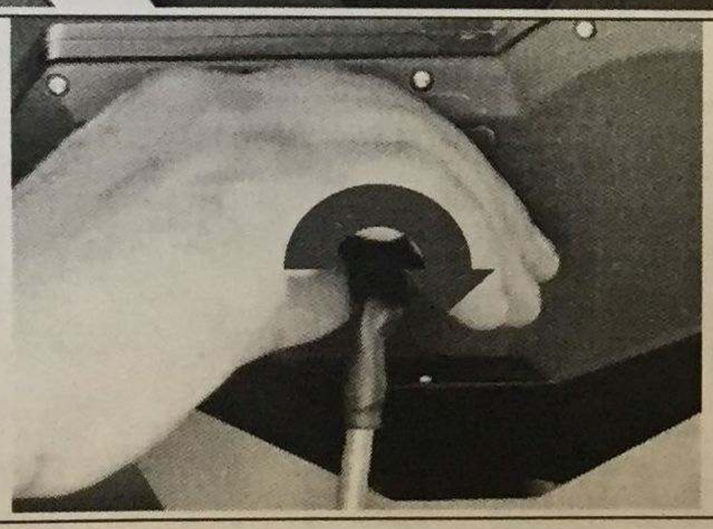
11.2.57- Materials required

- Replacement dash FRU
- Loctite Blue 234

11.2.60 – Removal and Repair Procedure

	Disconnect the communication cable from the back of the dash by twisting the collar counter-clockwise.

11.2 – Dash & Bracket

	Use a 2.5mm Allen wrench to remove four bolts from the back of the dash display. Remove the old dash. Place a new dash on the bracket and align the holes in the bracket with the holes in the dash.
	Use a 2.5mm Allen wrench to install four bolts with the lock washers in the back of the dash through the bracket. Connect the communication cable to the back of the dash and twist the collar clockwise to lock in place.
	Power on the Enertia and verify that the dash display is functioning properly. You may want to place the Enertia on a stand with the rear wheel off the ground and slightly twist the throttle to verify that the speedometer is working.

Chapter Title	11.3 – Motor Fan

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Motor Fan	B0110-0111030

11.3.10 – Overview

The motor fan is a thermostatically controlled fan that helps to dissipate the motor heat that is created by driving the Enertia.

11.3.40 – Diagnosing a Problem

The motor fan will turn on automatically when the temperature of the motor reaches a certain level programmed into the Enertia's software. The likely hood of any problem with the motor fan is very low. To test if the fan is working or not, ride the Enertia hard for several miles, accelerating quickly with lots of stop and go. This should bring the motor temperature up enough for the fan to turn on.
If the fan does not turn on, check the electrical connection to the main harness. If no problem is apparent, replace the motor fan.

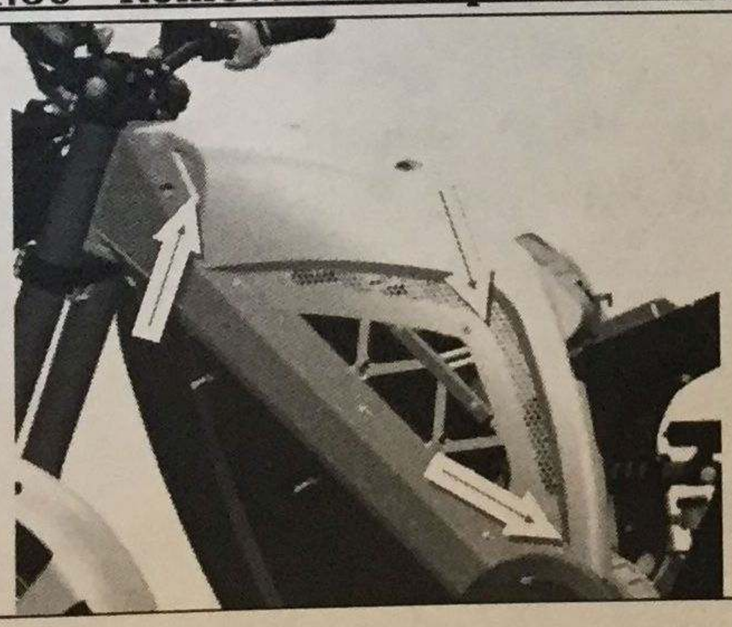
11.4.55- Setup and Tools

- Metric Allen wrench set
- 17 mm combination wrench

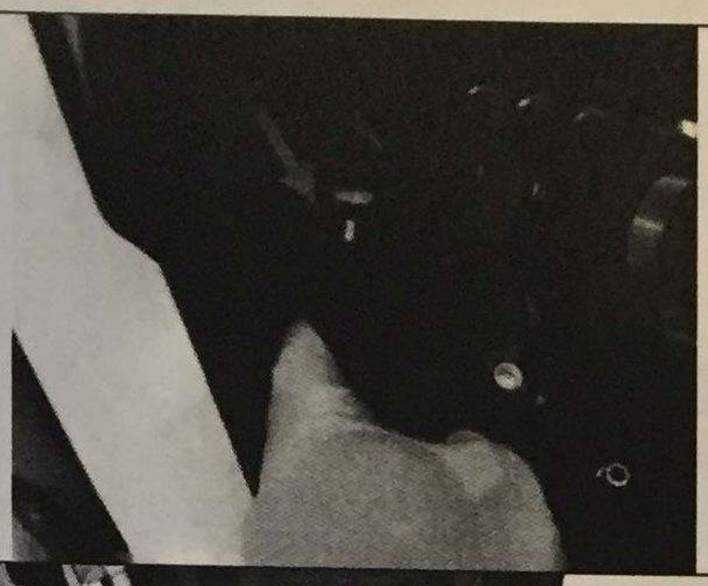
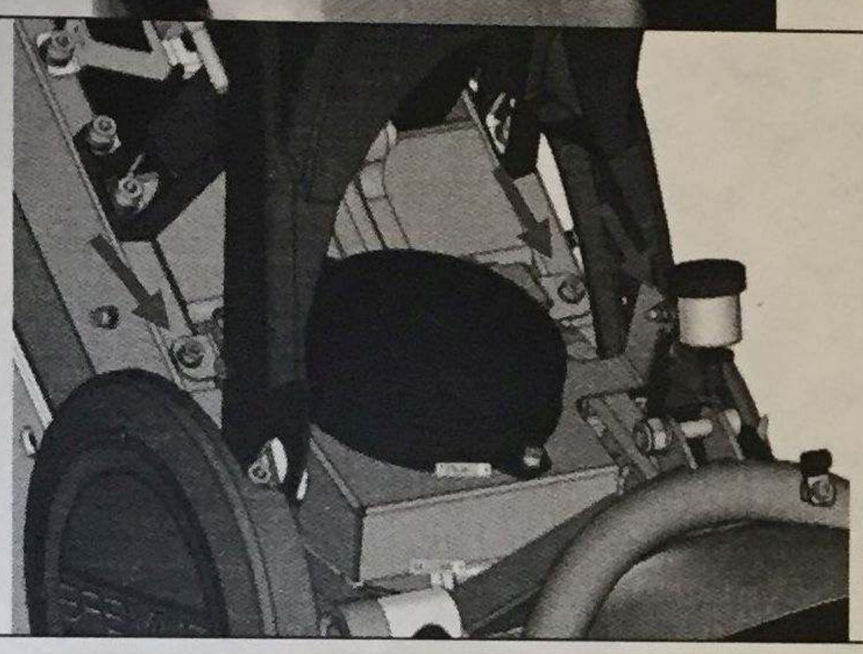
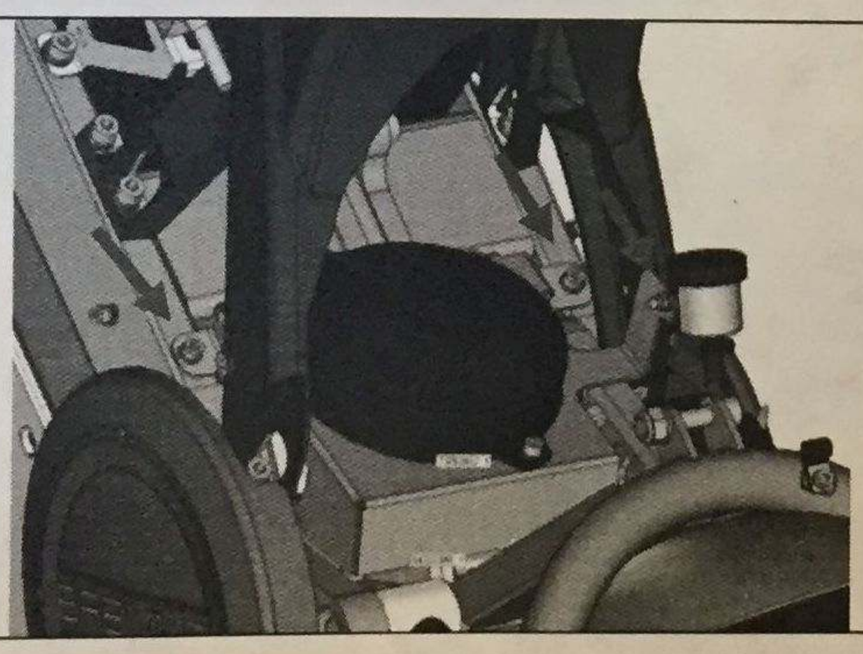
11.4.57- Materials required

- Replacement Motor Fan
- Loctite Blue 234

11.4.60 – Removal and Repair Procedure

	Remove the seat and the top body panel (top only) per chapter 3.2
	Remove the rear shock per chapter 7.2

	Chapter Title	11.3 – Motor Fan

	Disconnect the electrical connection from the fan to the main harness.
	Using a 5 mm Allen wrench, remove the two screws that hold the motor fan bracket to the chassis. Using an 8 mm wrench, remove the nut on the back of the screw that holds the rear brake reservoir.
	Remove the old fan and bracket and install the new fan and bracket.
	Re attach the nut to the screw shared with the rear brake reservoir, tighten using an 8mm wrench, and reconnect the two screws to the chassis (with Loctite) and tighten using a 5 mm wrench.
	Reconnect the rear shock per chapter 7.2
	Reconnect the upper body panels and seat per chapter 3.2
	Test ride the Enertia to check the operation of the motor fan. Ride hard for a couple miles, using the throttle heavily to try to create enough heat in the motor to trigger turning on the motor fan.

Chapter Title: 11.4 – Body ON Button and Exciter

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Body Power On Button	B0110-0111040
Exciter and Bracket	B0110-0111045

11.4.10 – Overview

The body power on button and the exciter are technically separate items, but due to their close proximity and operation, they are included together in this chapter.

Figure 11.4.1 – Body Power on Button

The body power on button is located in the center of the upper body panel on the Enertia. This button activates the Enertia's systems; turning the key to the ON position is not enough to start the Enertia. The power button is illuminated by a green backlight when activated.

The exciter is a piece that attaches to the underside of the upper body panel and turns the entire upper body panel into a sounding board for the Enertia's start up sound.

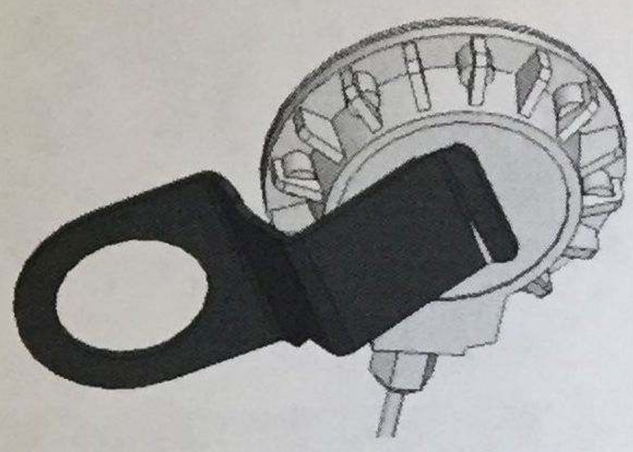


Figure 11.4.2 – Exciter and Bracket

11.4.40 – Diagnosing a Problem

If depressing the power button for at least 3 seconds after the key is turned to the ON position does not start the Enertia, the power button has failed or there is a loose connection. Check for loose connections in the power button harness by removing the seat, side panels, and upper body panel, and then inspect the connection from the On/Off button to the main wiring harness.
If the light does not illuminate after the key is turned to the "ON" position and the button is depressed, but the Enertia does turn on, the backlight may be burned out.

A problem with the exciter will be easy to detect, it will either not make the start-up sound, or it will sound garbled or warped.
Often this will be due to the bracket holding it loosening, and can be solved by simply tightening the body power on button nut on the underside of the upper body panel.

11.4.55- Setup and Tools

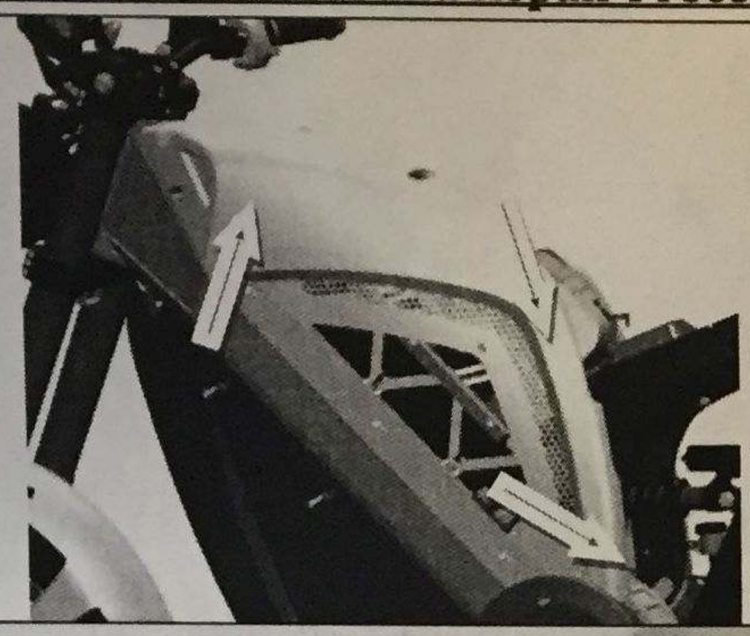
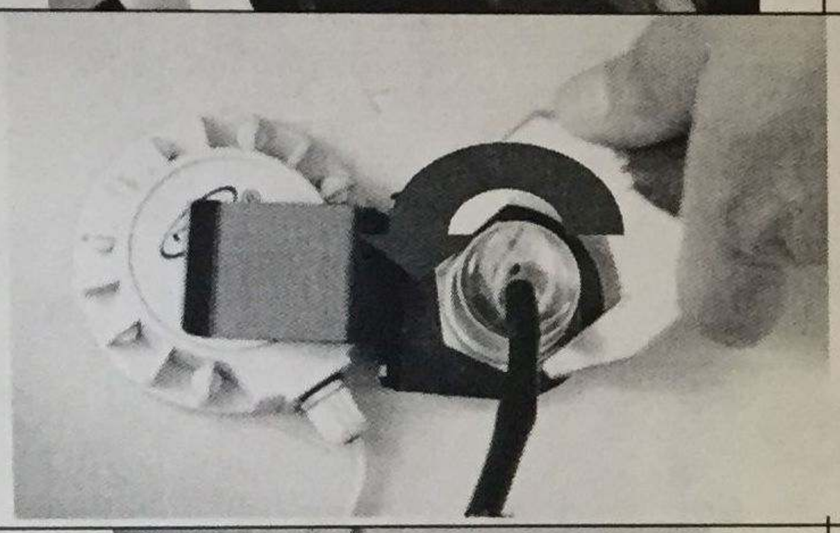
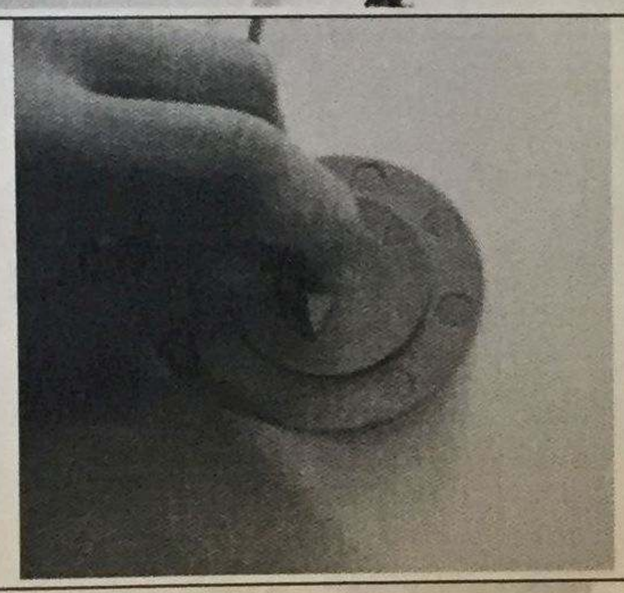
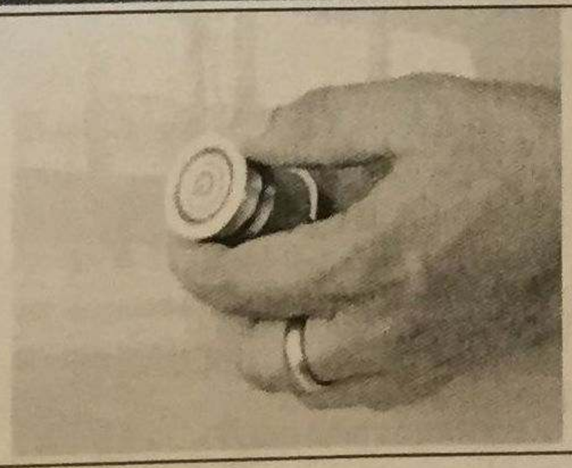
- Metric Allen wrench set
- Crescent wrench (up to 1.5" jaws)

11.4.57- Materials required

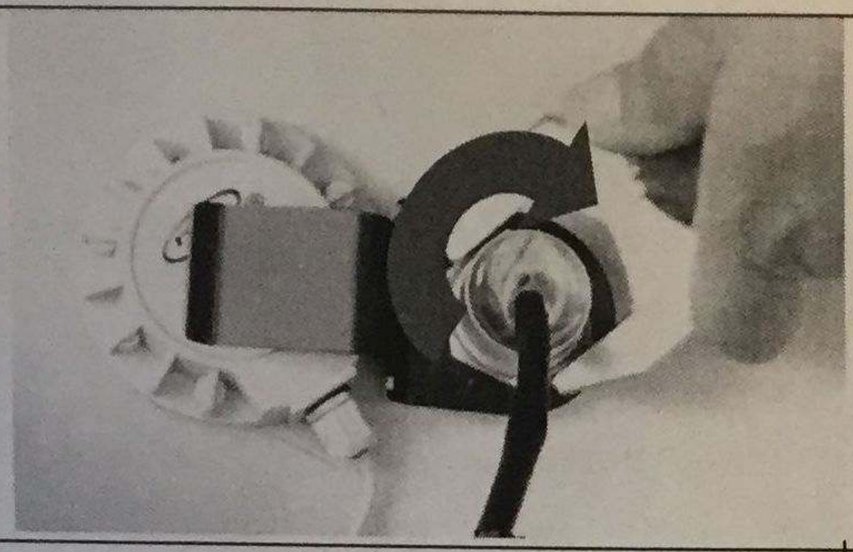
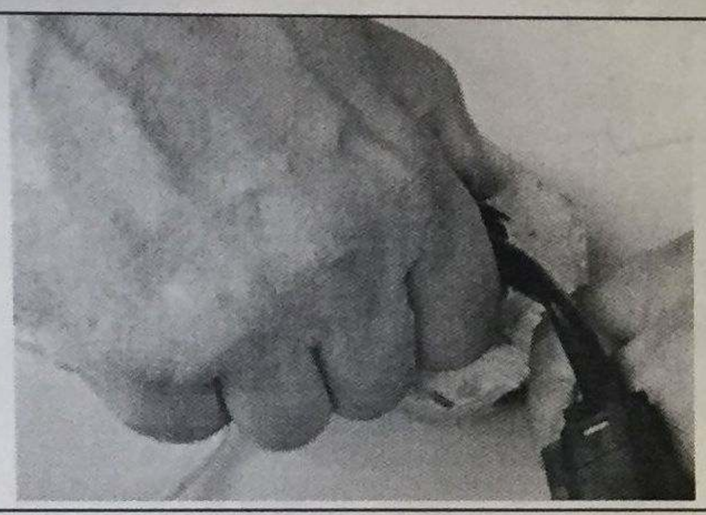
- Replacement power button
- Loctite Blue 234

11.4 – Body ON Button and Exciter

11.4.60 – Removal and Repair Procedure

	Remove the seat and the top body panel (top only) per chapter 3.2 Disconnect the power on button and exciter from the main harness.
	Use a crescent wrench to loosen the nut on the back side of the power on button. Remove the nut from the back of the button by hand. Set aside the exciter bracket. Remove the old button from the body panel.
	**If replacing the exciter follow this step –** Pull the old exciter off the body panel. It is attached with double sided tape but it should be very easy to pull off with just your hand. Peel the tape covering off the new exciter and place in the same place and orientation on the body panel as the old exciter.
	Place the new button and wire through the top of the body panel. Make sure that the black O-ring is seated at the top lip of the button (this O-ring seals the button to prevent water intrusion).

11.4 – Body ON Button and Exciter

	Replace the Exciter bracket. Place a new nut on the back side of the button and hand-thread until snug against the body panel, but do not completely tighten.
	Look at the orientation of the face of the button on the top of the body panel. Turn the button base until the line on the button is pointed toward the front of the body panel.
	Hold the button in this orientation with one hand. Use a crescent wrench to tighten the nut. ***(NOTE: Do not over-tighten and crack the body panel)***
	Connect the power button and exciter connector to the main harness.
	Reattach the top body and seat per chapter 3.2
	Turn the key to the ON position.
	Press the On/Off power button. Make sure the Enerita energizes ON and the green backlight illuminates.

BRAMMO ENERTIA	Chapter Title	**11.5—Key, Ignition & Immobilizer System**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Key, Ignition & Immobilizer System	B0110-0111050
Single Key Replacement	B0110-0111051

11.5.10 – Overview

The key, ignition, and immobilizer work together as an important part of the security and functional systems of the Enertia.

The ignition cylinder is used to select the function of the Enertia (ON, OFF, LOCK, CHARGE) and also has a steering lock as a theft deterrent. The handlebars must be turned to the FAR RIGHT or FAR LEFT in order to get the key to the LOCK or CHARGE positions.

Each key has a transponder inside which is pre-programmed to work with the Enertia. When the key is inserted and turned to power the Enertia ON, a signal is sent from the key to the immobilizer. If the immobilizer recognizes the signal, it allows the Enertia to start. If it does not recognize the signal, the Enertia remains dormant.

If a customer loses one key, it is possible for replacements to be made through Brammo. **If both keys are lost, the entire key, ignition, immobilizer, and seat lock must be replaced!**

The seat lock is matched to the keys as part of a set from the manufacturer.

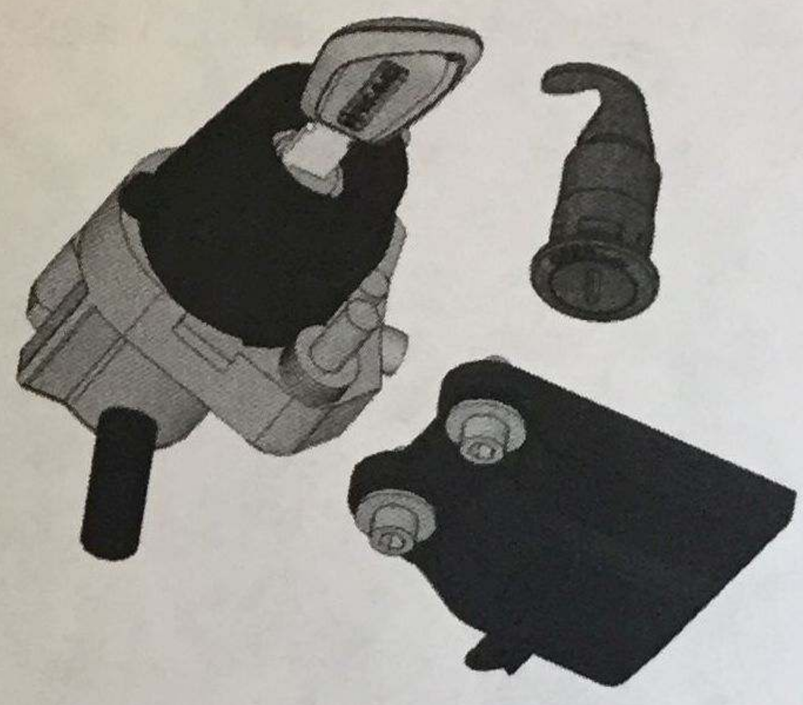


Figure 11.5.1 – Key, Ignition, Immobilizer, and Seat Lock

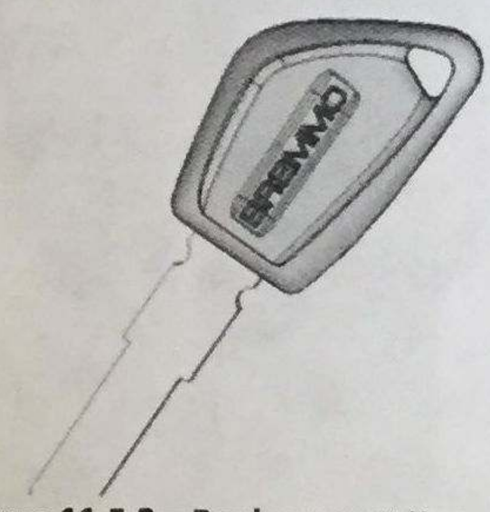


Figure 11.5.2 – Replacement Key

11.5.40 – Diagnosing a Problem

If a key works in the seat lock and turns in the ignition cylinder but does not power the Enertia ON, the immobilizer may not recognize the signal from the transponder inside the key. Follow the Key Reprogramming procedure.

If a key is lost, a new key may be ordered from Brammo. Contact Brammo Live for replacement key ordering. When the new key is received, follow the Key reprogramming procedure.

NOTE: If the ignition must be replaced, the entire set of keys, ignition, immobilizer, and seat lock must be replaced.

11.5.55- Setup and Tools

- Metric Allen wrench set
- ZADI Master Key
- Wire cutter

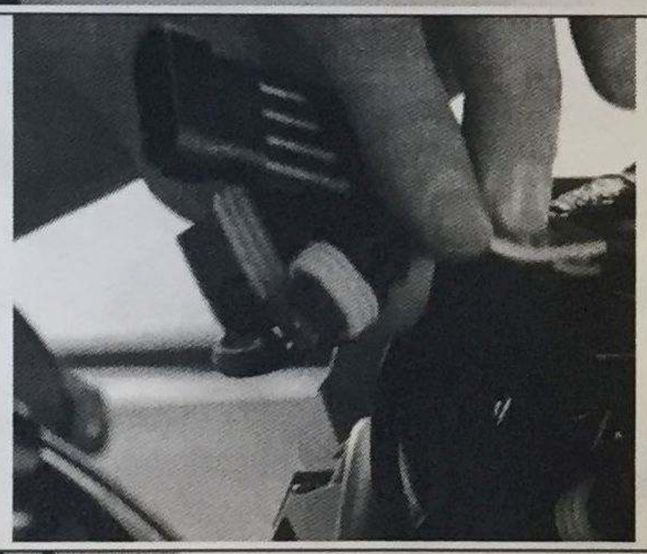
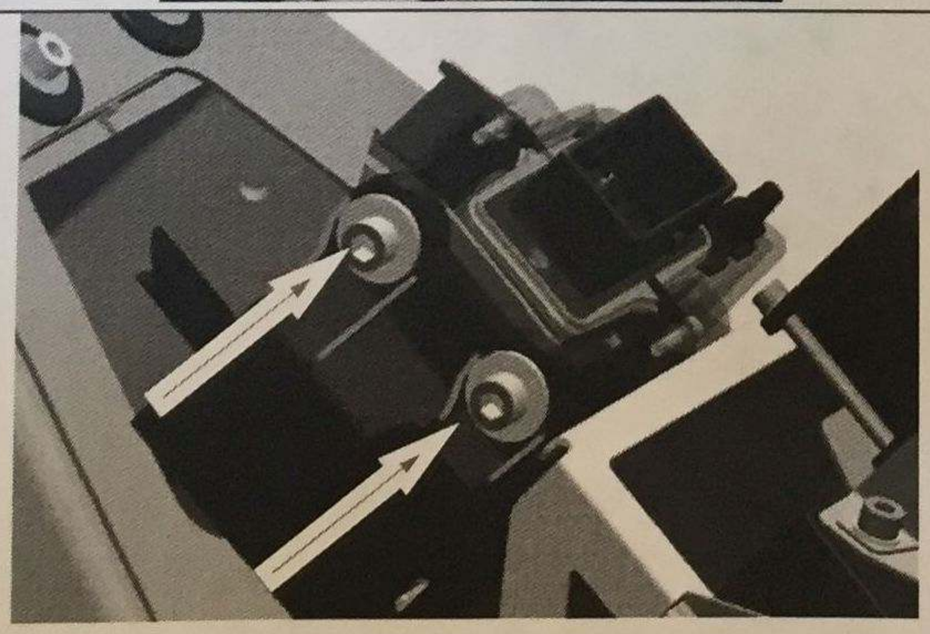
11.5.57- Materials required

	Chapter Title	11.5—Key, Ignition & Immobilizer System

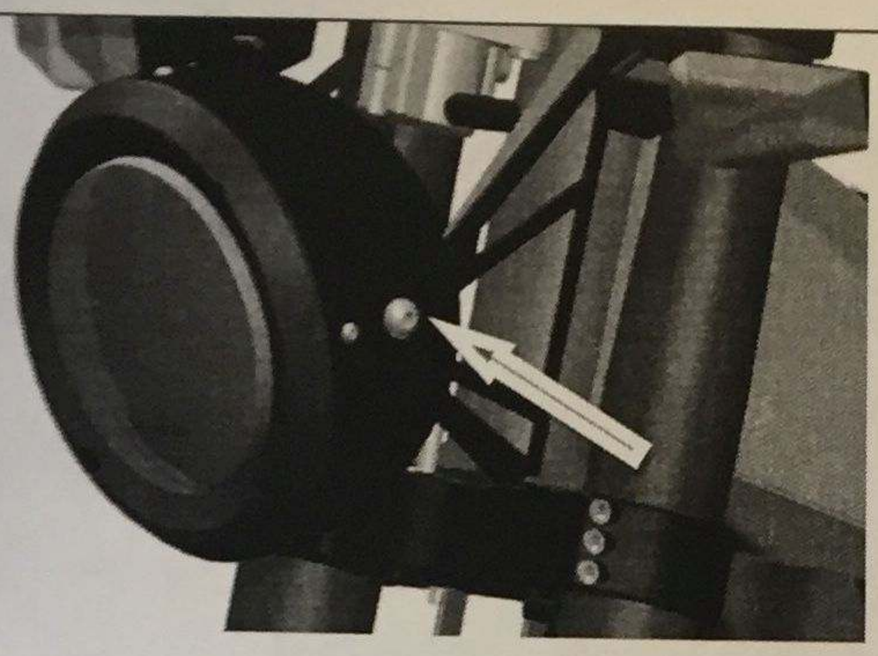
- Replacement Key, Ignition, Immobilizer, Seat Lock FRU set
- Loctite Blue 234
- Cable ties

11.5.60 – Removal and Repair Procedure

Procedure for replacing entire set

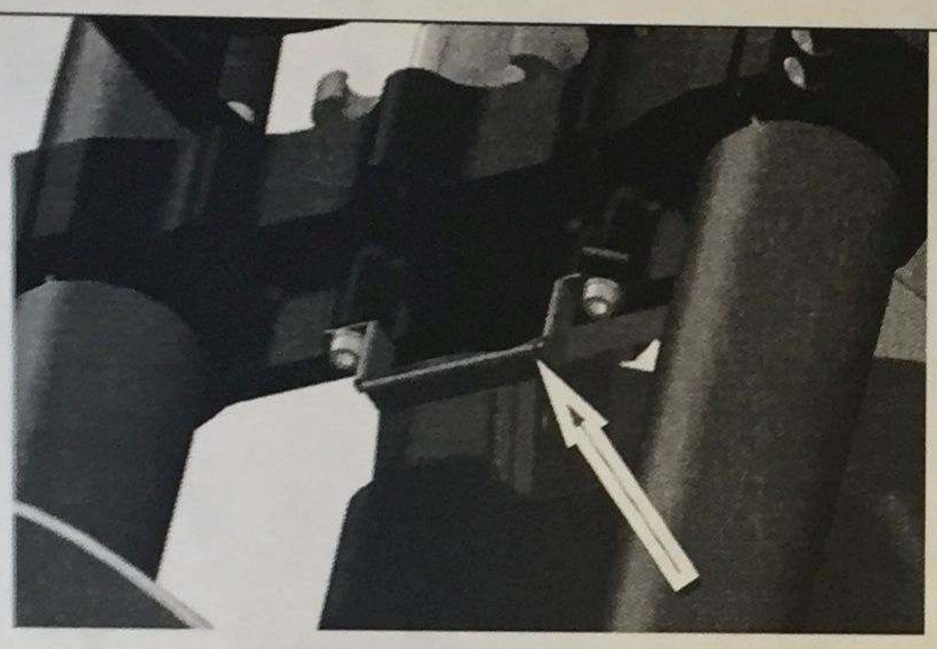
	Remove the upper body panel and seat per chapter 3.2.
	Squeeze the seat lock bracket so that it is free of the retaining pin and slide the bracket up and out of the rear of the seat strut. Remove the seat lock from the left side of the seat strut.
	Follow from the immobilizer (top left side mounted to the VCU bracket) to the end of the cable and disconnect the three plugs at the end of the immobilizer harness.
	Use a 5mm Allen wrench to remove the two bolts that mount the immobilizer to the VCU bracket and remove the immobilizer.

11.5—Key, Ignition & Immobilizer System



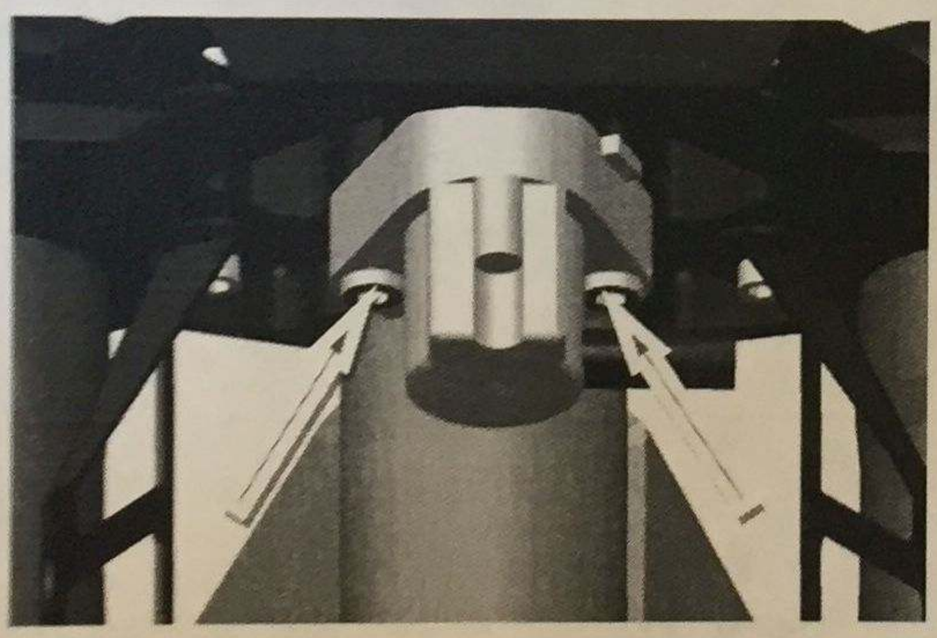
Use a 5mm Allen wrench to remove the two bolts (one on each side) from the headlamp brackets.

Gently lower the headlamp so that it is hanging in front of the triple clamp.



Follow the two wires from the bottom of the ignition up through the chassis and detach the two connectors from the wiring harness.

Use a 4mm Allen wrench to remove the wire harness holder from the bottom of the lower triple clamp.

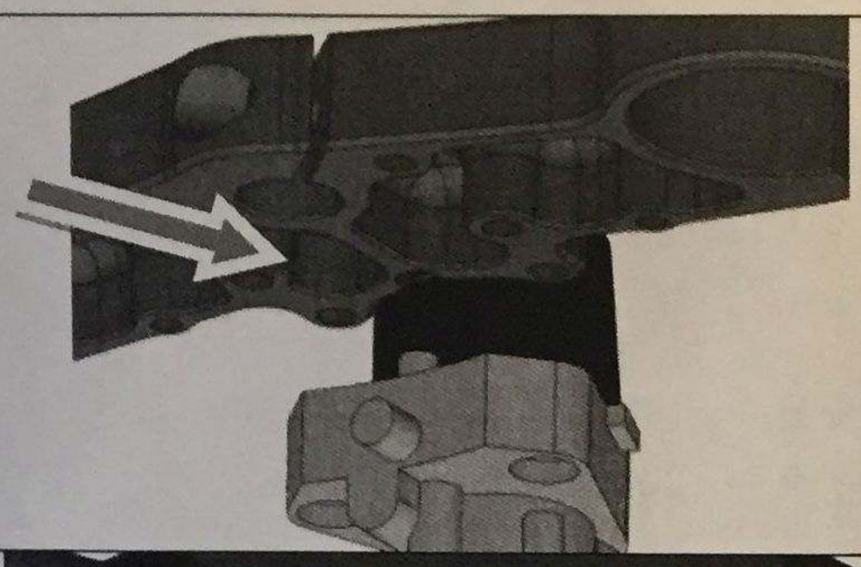
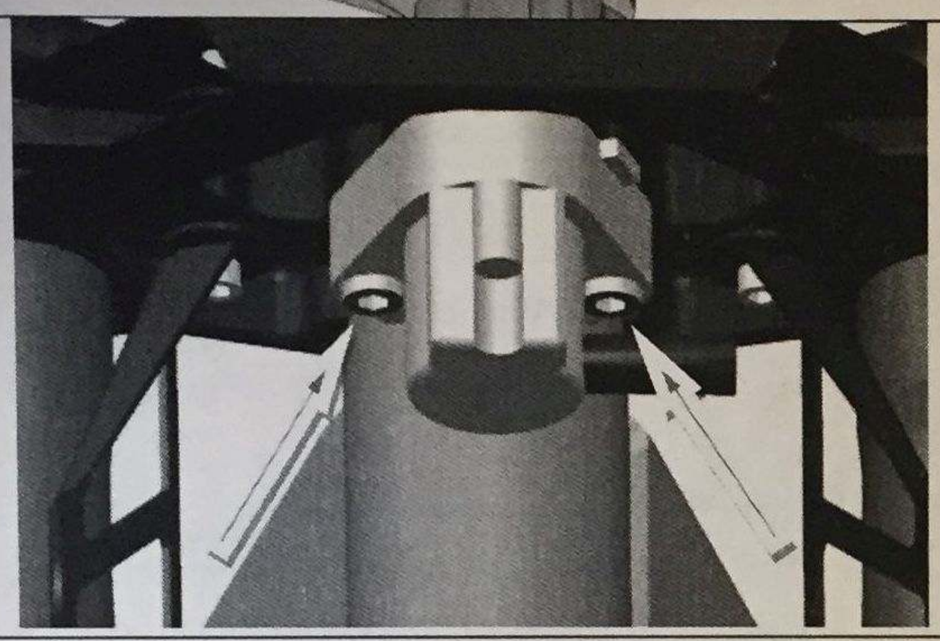
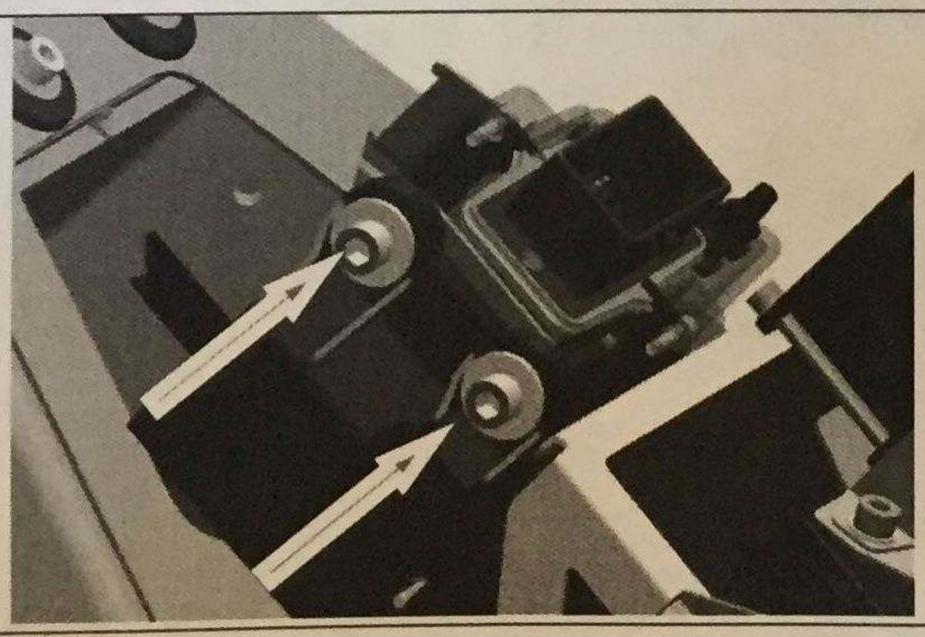


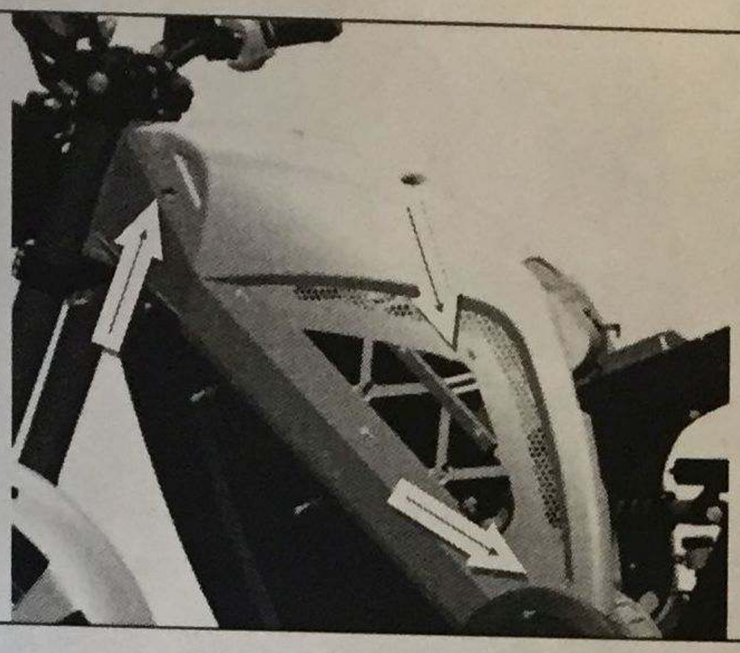
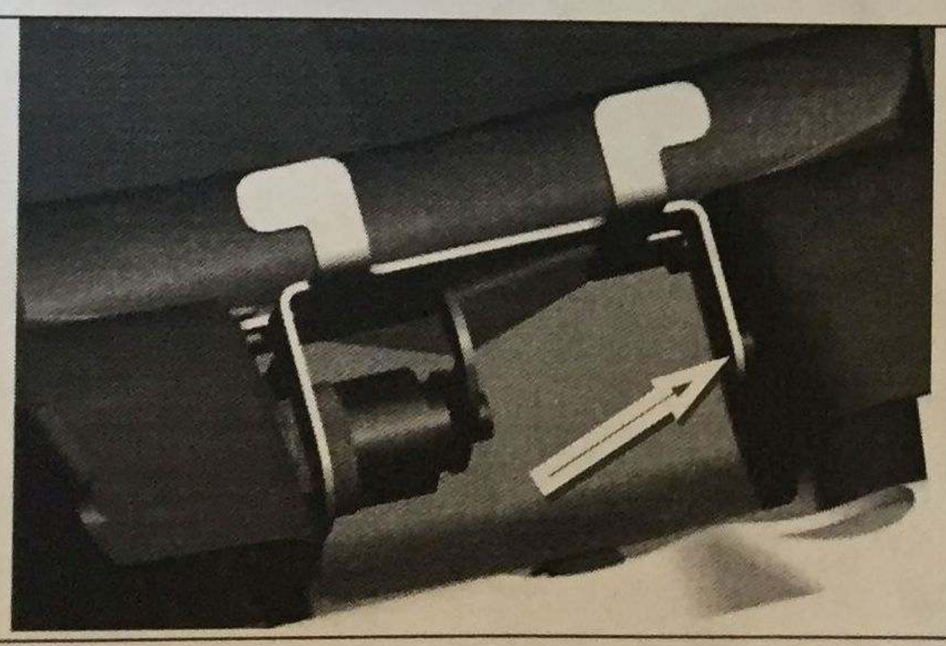
Remove the two bolts (one from each side) from the bottom of the ignition where it is mounted to the top triple clamp using a 6mm Allen wrench.

Remove the ignition from the top triple clamp by lowering it down and through the front forks.

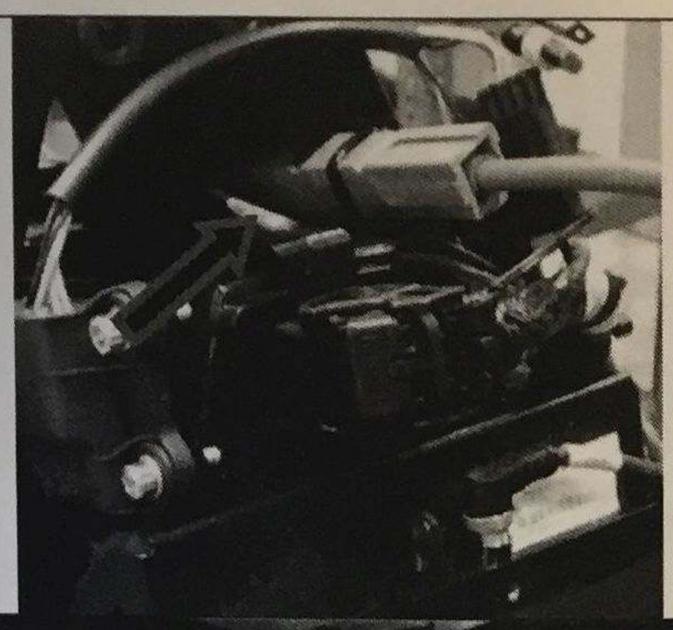
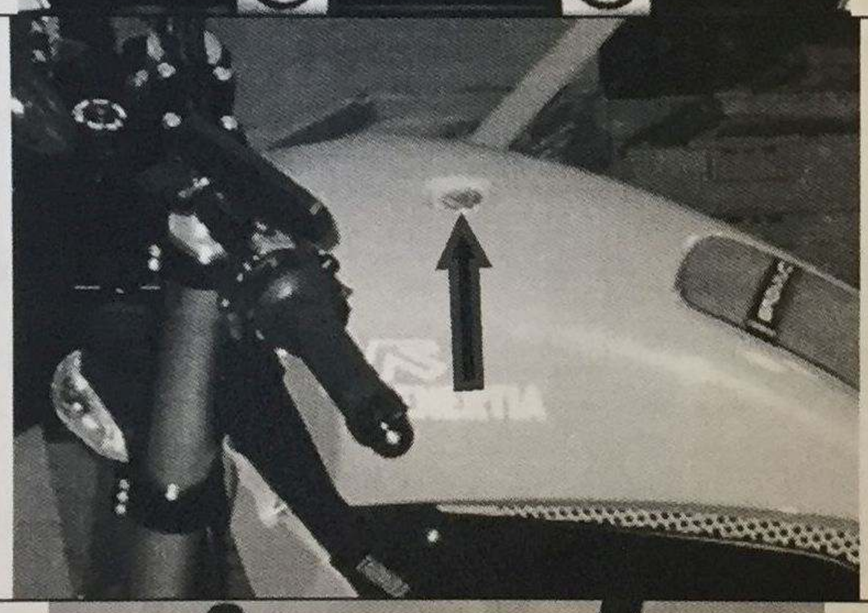
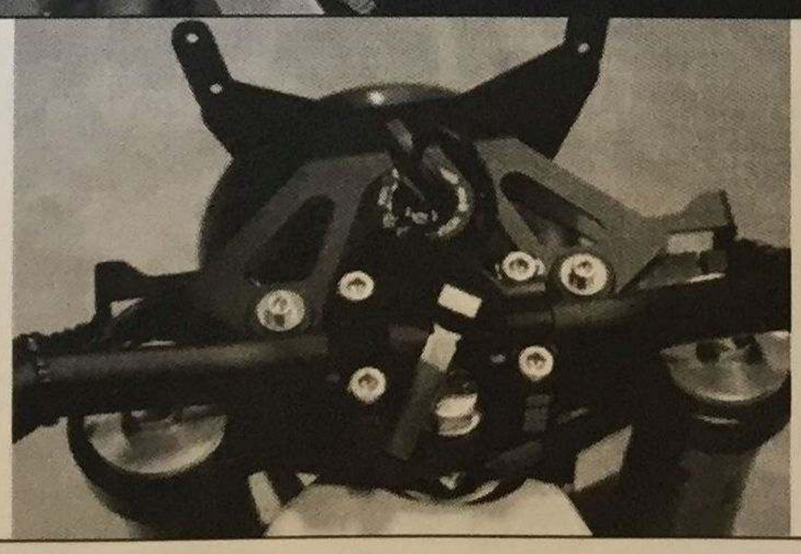
Discard the old ignition, seat lock, and immobilizer and quarantine these parts. They cannot be used again.

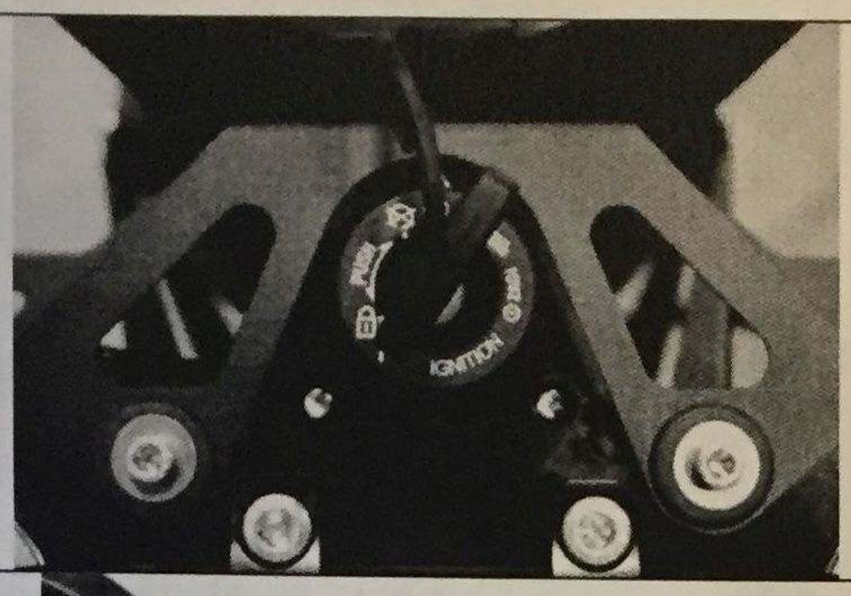
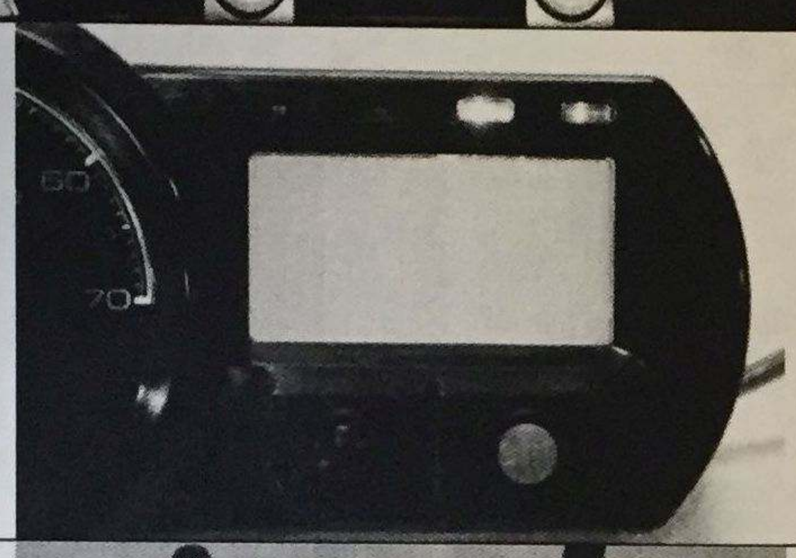
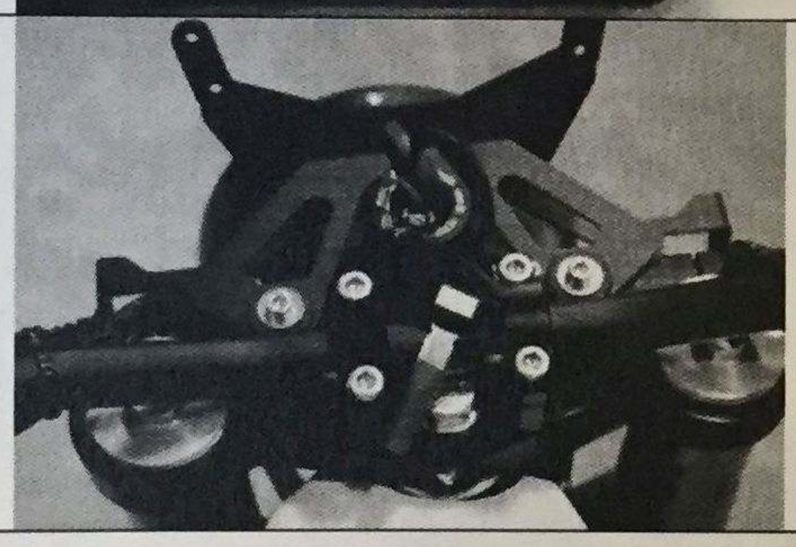
11.5—Key, Ignition & Immobilizer System

	Position the new ignition under the upper triple clamp and align the holes.
	After adding Loctite to the bolts, attach the new ignition to the upper triple clamp by using a 6mm Allen wrench to install two bolts through the ignition and into the triple clamp. Route the two wires from the ignition down and around the front of the lower triple clamp.
	Attach the wire harness holder to the bottom of the lower triple with two bolts. Make sure the wire are held securely, but not pinched, and tighten with a 4mm Allen wrench.
	Route the ignition wires up through the bottom of the chassis and plug the two connectors into the wire harness.
	Attach the headlamp and set the position per chapter 10.1
	After adding Loctite to the fasteners, use a 5mm Allen wrench to secure the immobilizer to the upper left side of the VCU with two bolts.
	Attach the three harness connectors of the new immobilizer to the main wiring harness.

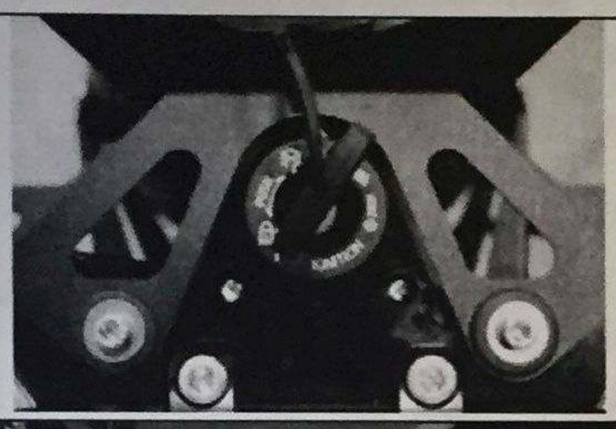
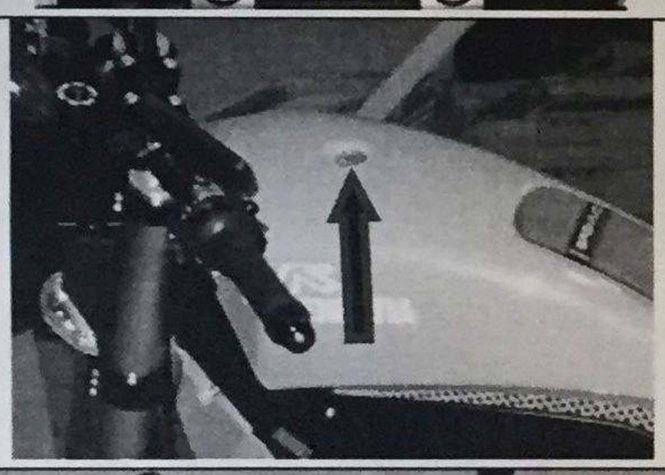
	Follow the "Initial Key Programming Procedure" to teach the immobilizer the new set of keys.
	Reconnect the power button to the main wiring harness reinstall the upper body panels per chapter 3.2
	Place the new key in the new lock and while holding the barrel turn the key to the extreme left. This is the LOCKED position.
	With the seat lock in the locked position, insert the new seat lock into the left side of the seat strut. The seat latch should be pointed up.
	Slide the seat lock bracket down over the barrel of the seat lock.
	Make sure the wires are gathered underneath the seat lock bracket (to prevent pinching)
	Press the seat lock bracket down and squeeze the tab inward so that it fits over the pin on the right hand side of the seat strut.
	Place the key into the seat lock and turn the latch. To the left, the latch should be up. To the right, the latch should be down.
	Reinstall the body panel and seat per chapter 3.2

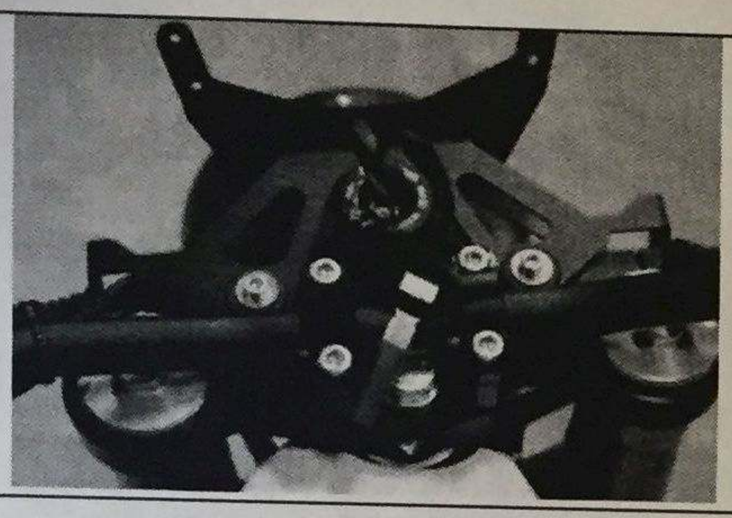
Initial Key Programming Procedure

	Disconnect battery at blue plug. Wait 30 seconds Reconnect plug The following steps must becompleted within 2 minutes.
	Turn key to “charge” position.
	Press and hold start button Do not release start button until instructed LEDs on dash should flash for app. 10 seconds
	Turn key to “off” Remove key. *Continue holding start button…*

	Insert other key and turn to “charge” position *Continue holding start button…*
	LEDs on dash should flash. Wait for solid green LED on right side. *Continue holding start button…*
	Turn key to off Release “start button”
	Right LED should blink red. IF it is solid red, wait 2 minutes and restart programming.
	End of Instructions.

Key Reprogramming Procedure

	This procedure is for programming a new key set to the immobilizer in the event that one of the original keys was lost. This procedure requires at least one of the original keys that shipped with the Enertia, as well as a ZADI Master Key.
	Start with the Enertia OFF, no key in the ignition. Red LED at the top right of the dash should be blinking.
	Insert one of the original keys and turn the ignition to the CHARGE position.
	Press the power button to turn on the Enertia.
	Turn the key to the OFF position and remove the key. The red LED at the top right of the dash should be blinking.
	Insert the ZADI Master Key within 20 seconds of turning OFF the Enertia. The red LED on the dash should be solid red now.
	The immobilizer has now cleared all keys from memory (including the original keys). Up to four keys can be programmed to the immobilizer at this time.
	Remove the ZADI Master Key from the ignition.
	Insert a key to be programmed to the ignition.
	Turn the key to the CHARGE position.

	Press and HOLD the Enertia power button. The red LED on the dash should turn off for 0.4 seconds.
	Release the Enertia power button.
	Rotate the key to the OFF position and remove the key. This key is now programmed for the Enertia.
	For each key to be programmed for this Enertia, you must go through the previous 5 steps from “Insert a key…” through “Rotate the key to the OFF position…”
	Once all keys are programmed, wait for the teaching sequence to time out. At the end of the timeout, the red LED will flash once for each key that was programmed.
	All keys not taught in this sequence will have been erased from memory and are no longer usable with this Enertia.

Chapter Title	**11.6—Horn**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Horn	B0110-0111060

11.6.10 – Overview

The horn is an important safety feature on the Enertia. It is used to warn others of the presence of an Enertia. The horn is activated by pressing the red button located near the bottom of the light control multi-switch on the left side of the handlebars.

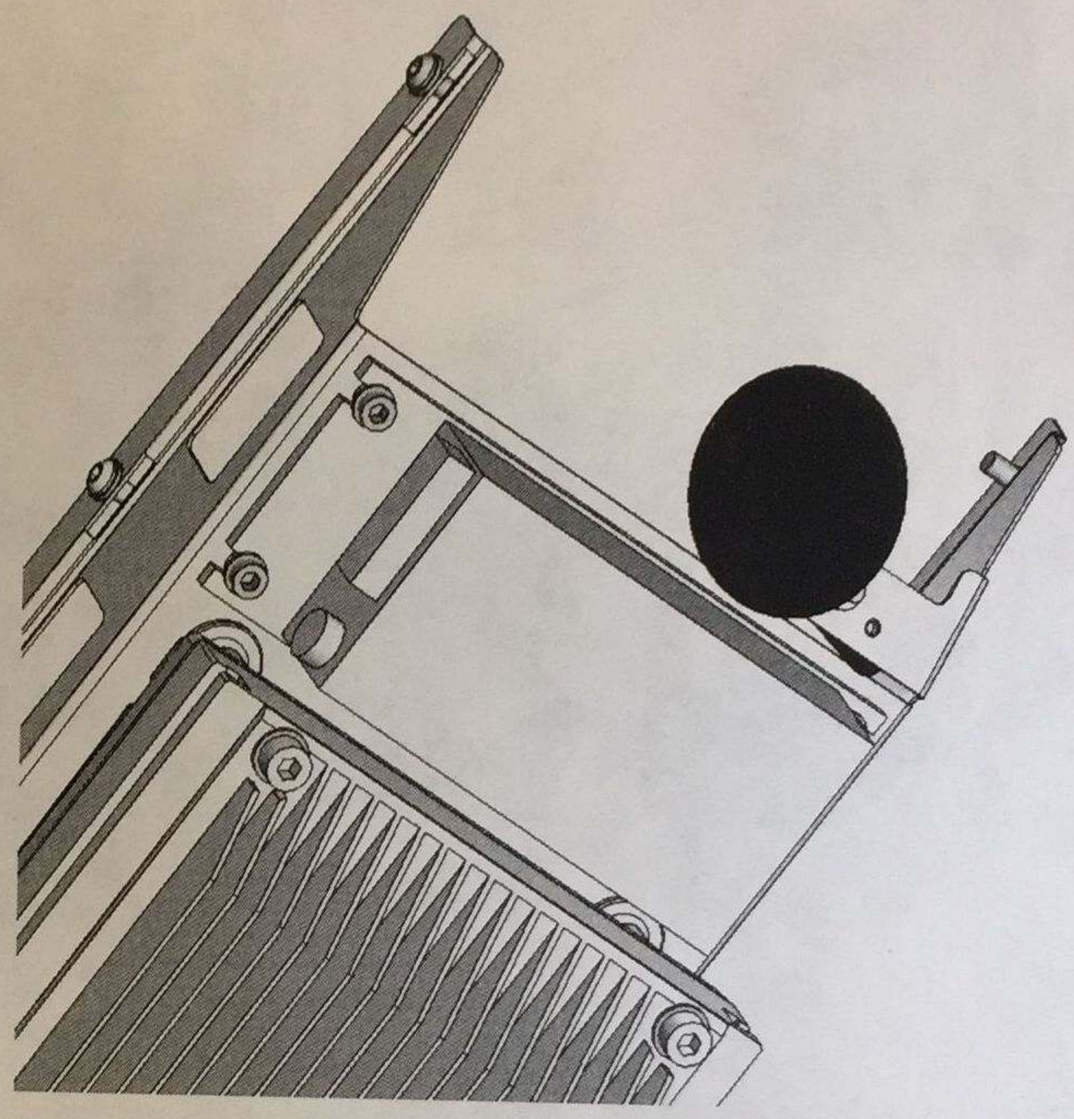


Figure 11.2.1 – Horn (shown on motor controller assembly)

11.6.40 – Diagnosing a Problem

If the horn is not working, first check that the light control multi-switch harness is connected to the main harness. This connection point is behind the headlamp within the bundle of wires that connect to the main wiring harness.

If the multi-switch is connected properly but the horn is still not working, check that the horn is connected to the wiring harness underneath the Enertia. You must first remove the bottom side panels, and then remove the lower body panel in order to investigate this. The horn is mounted at the top of the motor controller bracket underneath the Enertia. There should be two small wires connected to each terminal on the horn.

11.6.55- Setup and Tools

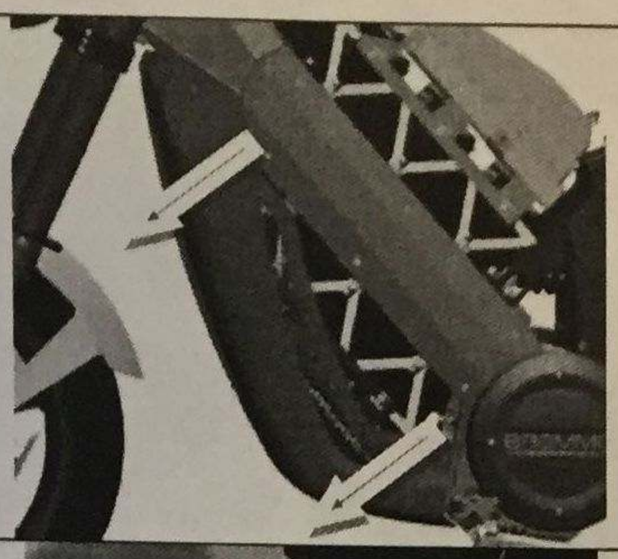
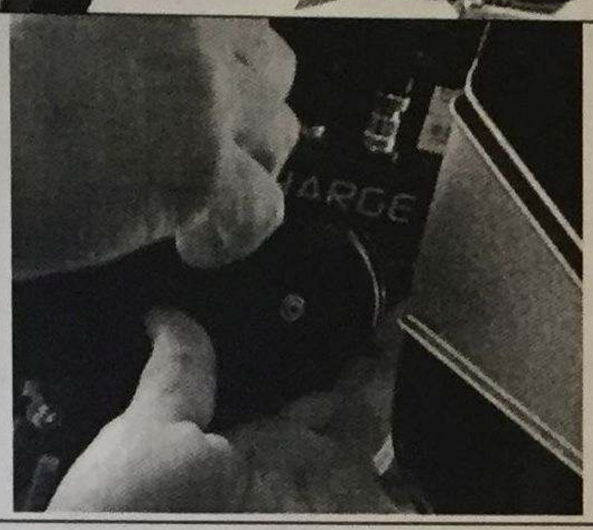
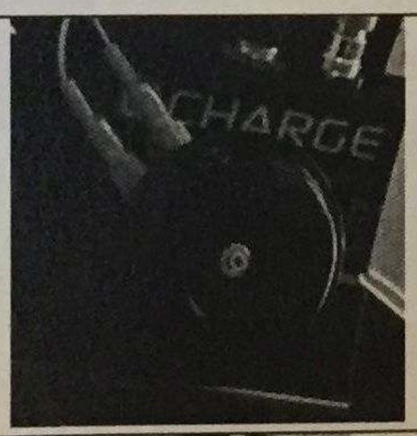
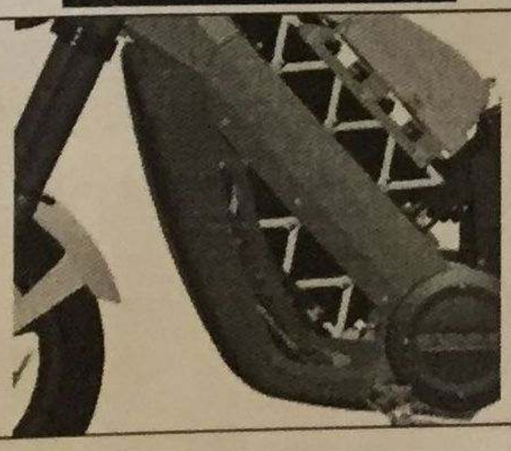
- Metric Allen wrench set
- Metric combination wrench set

11.6.57- Materials required

- Replacement horn

11.6.60 – Removal and Repair Procedure

	Chapter Title	**11.6—Horn**

	Remove the seat and body panels per chapter 3.2
	Disconnect the two wires from the horn terminals at the underside of the Enertia.
	Use a 5mm Allen Wrench to remove the horn from the motor controller bracket.
	Align a new horn on the motor controller bracket.
	Use a 5mm Allen Wrench to install the horn to the motor controller bracket.
	Connect the two wires to the horn terminals.
	Reattach the body panels and seat per chapter 3.2.
	Power on the Enertia and press the horn button near the left handlebar grip to ensure the horn is working properly.

BRAMMO ENERTIA	Chapter Title	**11.7—Electrical Harness**

This Document Covers the Following Components/Systems
The electrical harness is not a field replaceable item. If the harness needs replacement or repairs, contact Brammo.

11.7.10 – Overview

The Enertia has two main wiring harnesses, one upper and one lower. The upper harness strings from the rear shroud to the fuse block, along the batteries to the top of the VCU. The lower harness reaches from the contactor up along the lower batteries and into the bottom of the VCU. The lower harness also connects the throttle, light control switch, dash, motor controller, and horn together through the VCU.

11.7.40 – Diagnosing a Problem

A wiring harness issue may be difficult to diagnose due to the complexity of the wiring system. Check to make sure that no wires have been cut, damaged, or pulled out of connectors if you are trying to troubleshoot electrical errors.

11.7.60 – Removal and Repair Procedure

Contact Brammo Live for assistance on servicing a wiring harness problem. If it appears the harness will need to be replaced, the Enertia must be sent to Brammo for Service.

Chapter Title	12.1 - Battery

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Battery #1	B0110-0112010
Battery #2	B0110-0112020
Battery #3	B0110-0112030
Battery #4	B0110-0112040
Battery #5	B0110-0112050
Battery #6	B0110-0112060

12.1.10- Overview

Brammo has incorporated six Lithium Phosphate battery modules to power the Enertia. These six individual modules are in constant communication with each other and the Battery Management System (BMS) to ensure that all battery charge levels and temperatures are in check.

The Enertia has the batteries positioned on the chassis in an "H" shaped beam with 3 upward-facing batteries and 3 downward-facing batteries. This design offers the Enertia balance and compactness while also protecting the batteries from the elements. The six 12V batteries are wired in series to deliver 72V to the Enertia's motor.

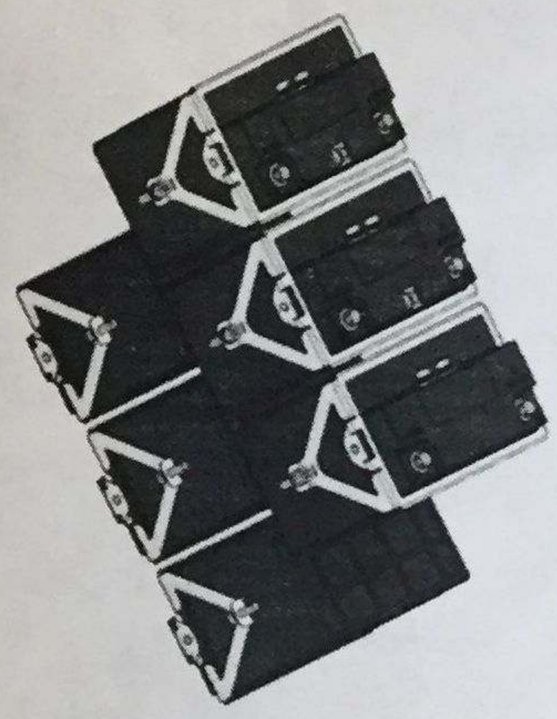


Figure 12.1.1 – Batteries with Brackets

Each battery has a unique number, 1 through 6, within the battery chain. Starting from the top near the seat and going toward the handlebars, the batteries are numbered 1, then 2, then 3. Underneath the Enertia from the forks to the motor are batteries 4, then 5, then 6. Each battery has a barcode label with the battery number printed on it for easy identification. It is important that when replacing batteries you keep this number sequence intact. For example, always replace a Battery 2 with a Battery 2, or a Battery 5 with a Battery 5. The Enertia BMS communicates with the batteries in the chain and expects to see 6 unique identifiers. The Enertia will not function if batteries are replaced incorrectly.

WARNING!

- **Electric shock warning:** The Enertia contains 6 connected batteries delivering 72 volts of electricity.

Within the VCU (Vehicle Control Unit) there is a switch which stays connected as long as there is sufficient voltage within the batteries. If a rider runs down the batteries to a point where there is insufficient voltage to keep this switch closed, the switch will open effectively shutting down the Enertia. This is a safety circuit to prevent the customer from draining the batteries to a point of rendering them useless and unable to be recharged. This shutdown will have been preceded by warnings to the rider on the LCD dash display. Once this shutdown takes place, the Enertia should not be driven until recharged.

	Chapter Title	12.1 - Battery

Safety Note

Always follow the Brammo recommended safety procedures when working on the Enertia's electrical systems and components. The service technician should always take proper precautions to eliminate the possibility of electric shock.

12.1.40- Diagnosing a Problem

If the Enertia is no longer charging, or if the charge is no longer lasting as long as it should it may be time to replace one or more of the batteries. Use the Brammo supplied diagnostic software to identify which battery needs to be replaced.

NOTE: When pulling high current from the batteries (riding fast or accelerating quickly), the dash may display that the batteries are more drained than would be expected. Then while driving slow or stopped the battery life may start to increase. This is normal and due to the chemical reactions in the battery, and does not indicate a problem. Example - getting on the freeway and riding full throttle for a couple miles then taking an exit. The dash may display 24% battery life as you exit the freeway, and while stopped at the end of the off ramp the dash may display 25% or 26% after a minute or two. This is normal and is not cause for battery replacement.

12.1.55—Setup and Tools

- Metric Allen wrench set
- Cutting Pliers
- 7/16" Ratchet with extension and socket, or
- 7/16" combination wrench
- Metric socket set and ratchet
- Metric combination wrench set

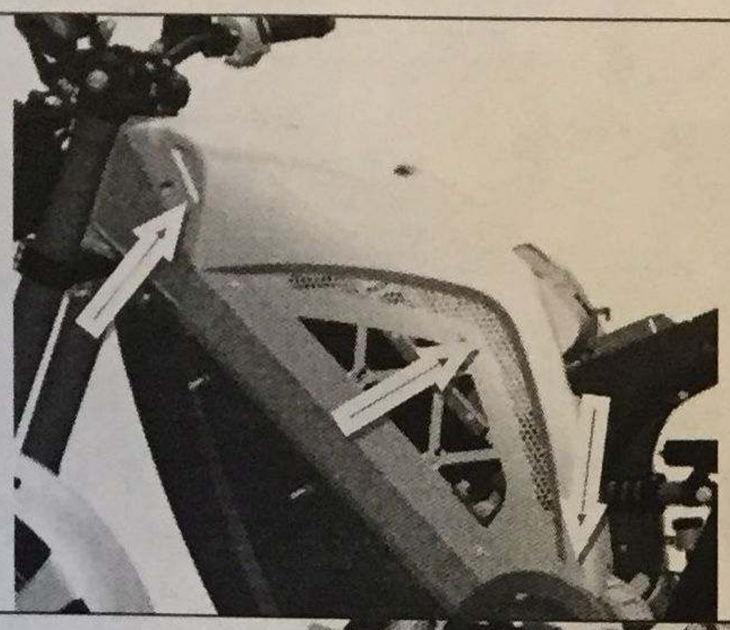
12.1.57—Materials Required

- Electrical Tape
- Loctite Blue 234
- Cable ties
- 1" diameter plastic shrink tube
- Replacement battery

12.1.60- Removal and Replacement Procedure

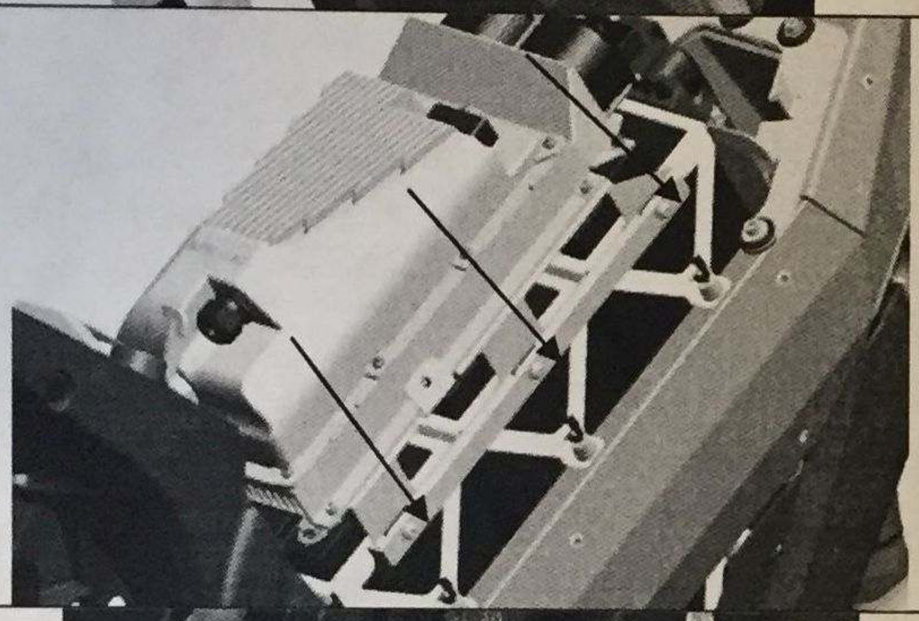
Upper Battery Replacement:

12.1 - Battery



Remove Seat and upper body panels per chapter 3.2.

Disconnect the blue battery cable connector. This will prevent power from going from the batteries to the rest of the powercycle. **COVER EXPOSED CONNECTORS WITH ELECTRICAL TAPE.**



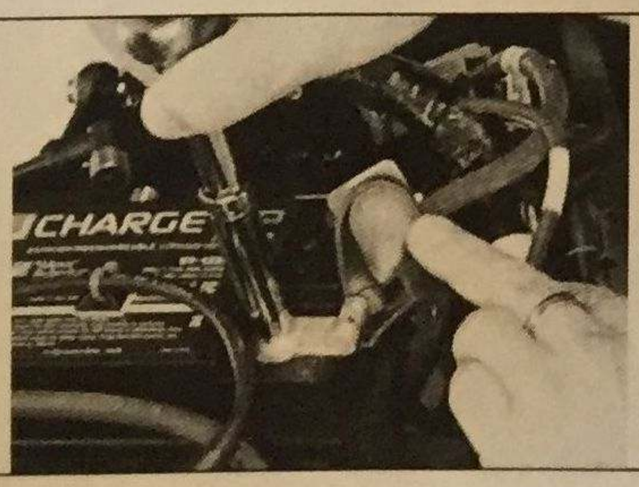
Unplug the charger and charger fans from the main upper harness. Lay the charger on the seat strut or disconnect from the fuse block.

Use a 5mm Allen wrench to remove the six charger bracket bolts and remove charger bracket.(Three per-side)

Using the cutting pliers snip the cable ties that bind the cables to the battery brackets.

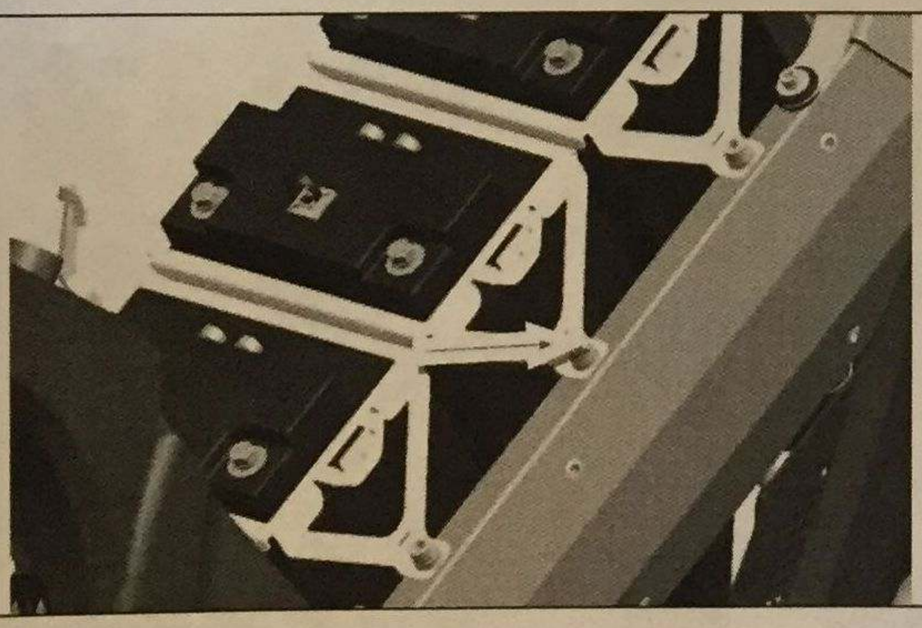
Using your fingers loosen and remove the barrel connectors of the communication cables on the battery.

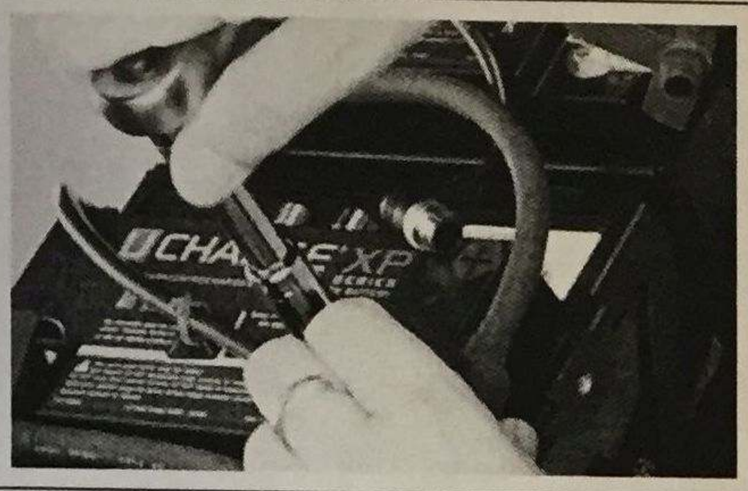
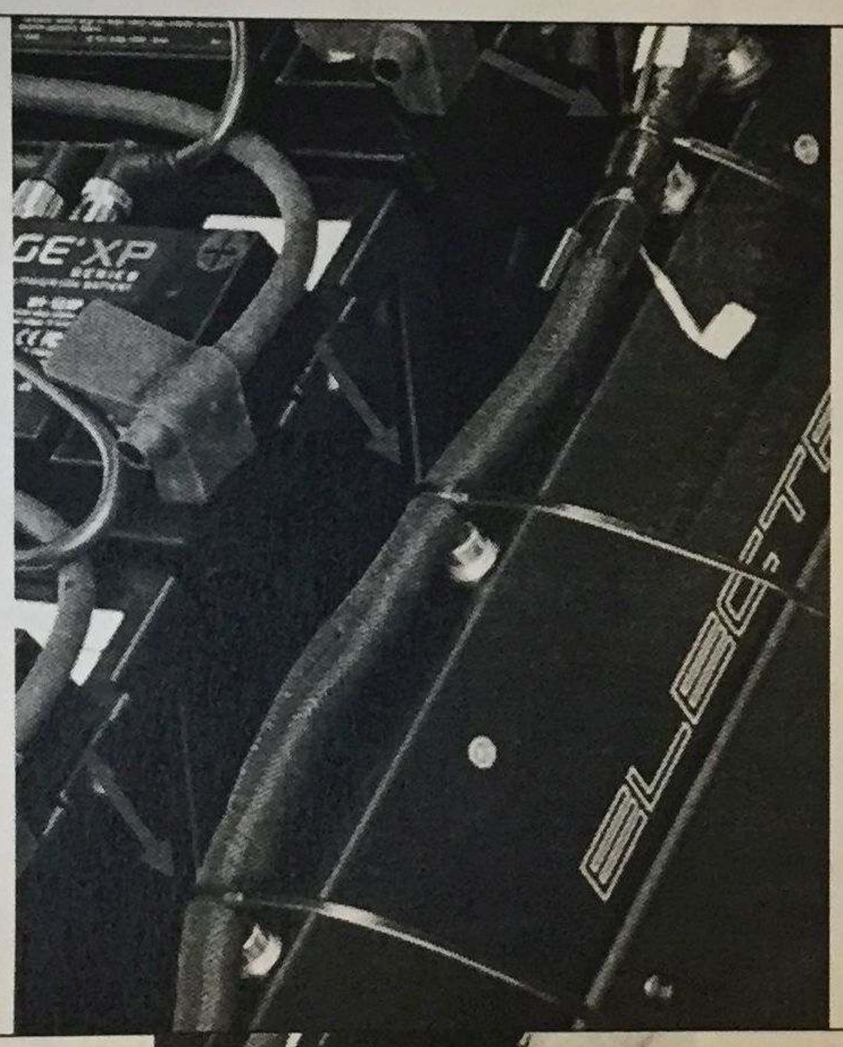
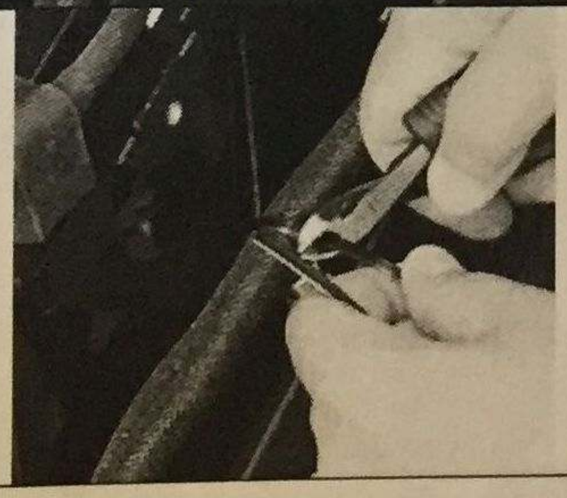
Move the terminal boots from the terminal lugs.



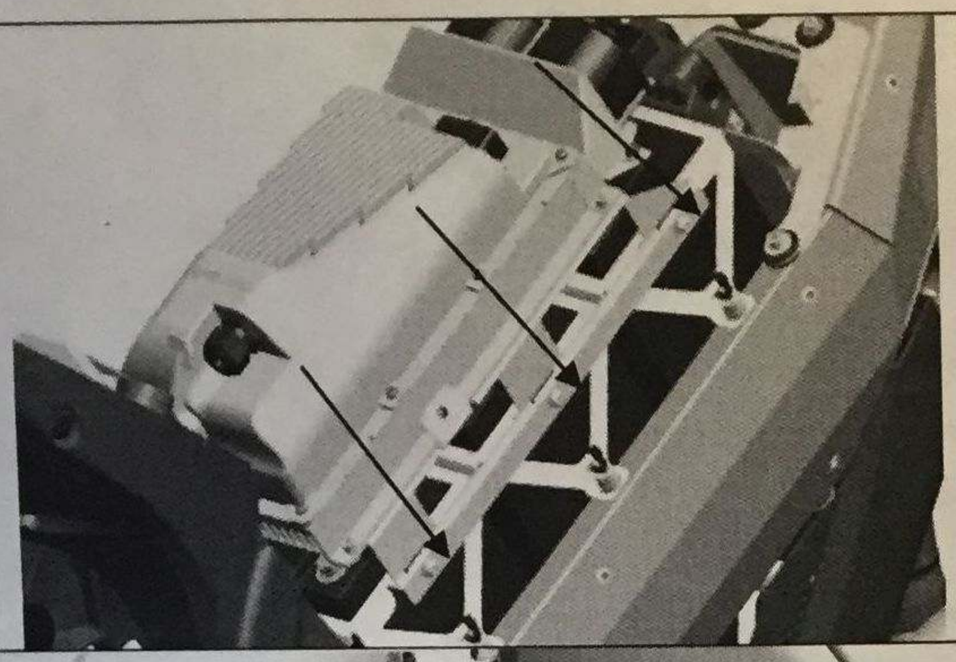
Using the 7/16” ratchet with the extension and socket (or a combination wrench) loosen the positive (+) terminal bolt.

Using your fingers finish removing the bolt.

	Place electrical tape over the terminal of battery cables for protection.
	Using the ratchet with the extension and 7/16" socket (or a combination wrench), loosen the negative (-) terminal bolt.
	Using your fingers finish removing the bolt.
	Place electrical tape over the terminal of the battery cables for protection. (Note: Use extra care not to allow positive and negative wires to touch)
	Use a 6mm Allen wrench to remove the bolts from the battery bracket on each side of the chassis. Grasp the battery with both hands and lift the battery and bracket form the frame and out of the Enertia. Remove the bracket from the old battery and place over the replacement battery.
	Prior to installing the new battery apply Loctite to all of the bolts EXCEPT THE TERMINAL BOLTS, careful not to smear the Loctite.
	Place the new battery with the bracket into the chassis and align the bracket holes with the mounting points in the chassis.
	After adding Loctite to the bolts, install on each side of the chassis to mount the battery with a 6mm Allen wrench.
	Remove the tape from the negative battery cable.
	Using your fingers insert and finger tighten the negative terminal bolt thru the lug to the negative terminal.

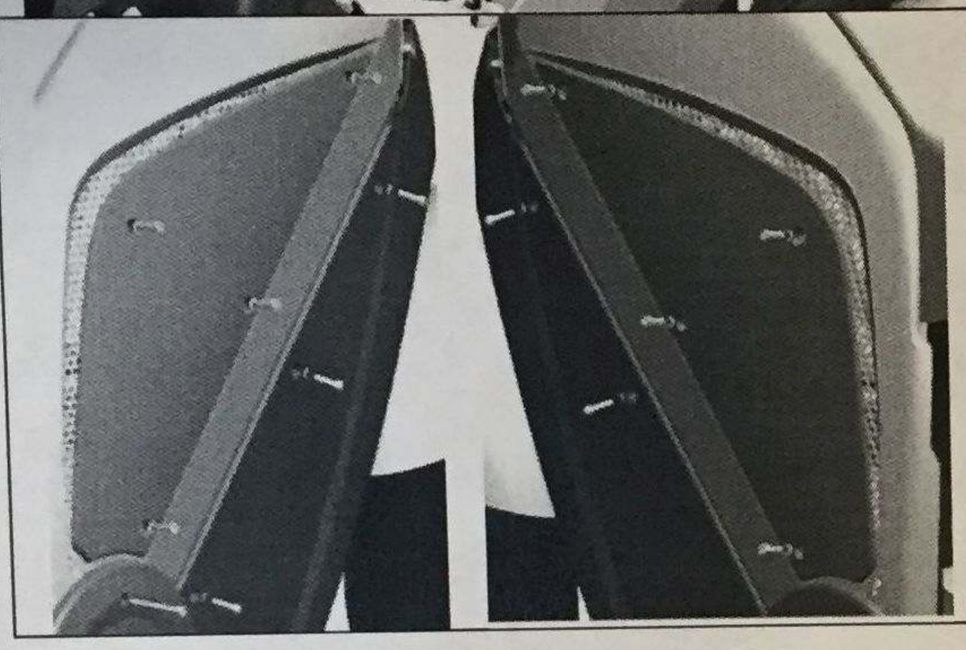
	Using the 7/16” socket wrench (or combination wrench), firmly tighten the negative terminal bolt.
	Remove the tape from the positive battery cable. Using your fingers insert and finger tighten the positive terminal bolt thru the lug to the positive terminal. Using the 7/16” socket wrench (or combination wrench) firmly tighten the positive terminal bolt.
	Attach the barrel connector on the battery communication cables to the battery and tighten.
	Get three (3) cable ties. Kink the end and position the 1st cable tie into the side of the battery bracket. Gather the wiring and position near the cable tie and tighten cable tie. Position 2nd and 3rd cable ties to mounting standoff at the battery bracket and tighten. Gather the wiring and position near the cable tie and tighten.
	Using cutting pliers snip the exposed tail of all the cable ties.

12.1 - Battery



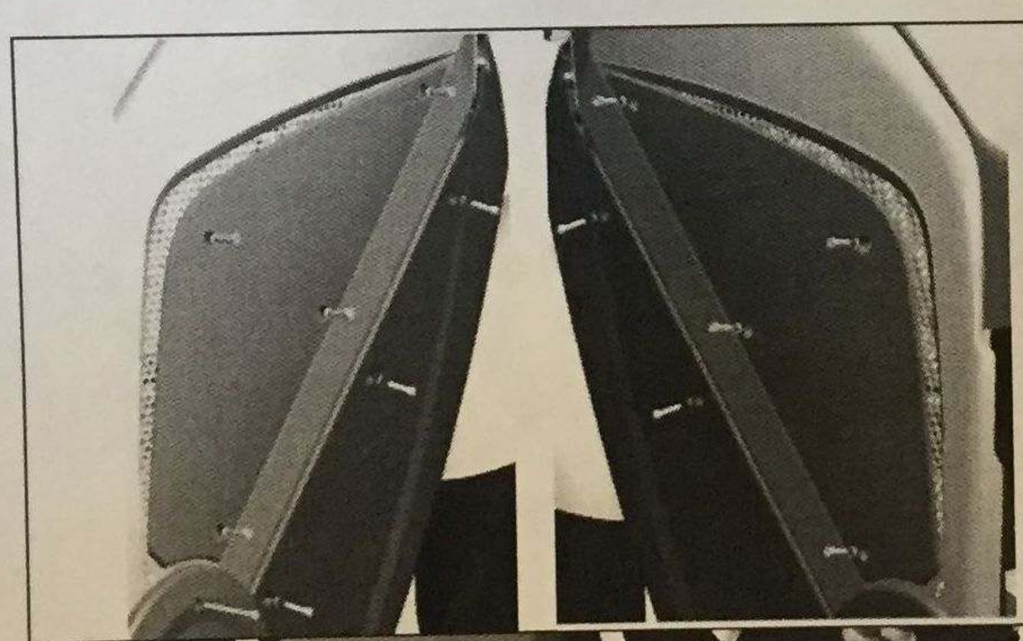
Install the charger bracket with a 5mm Allen wrench and reconnect the charger to the main wiring harness and fuse block assembly. Use Loctite on the screws.

Connect the blue battery cable connector at the top of the chassis.



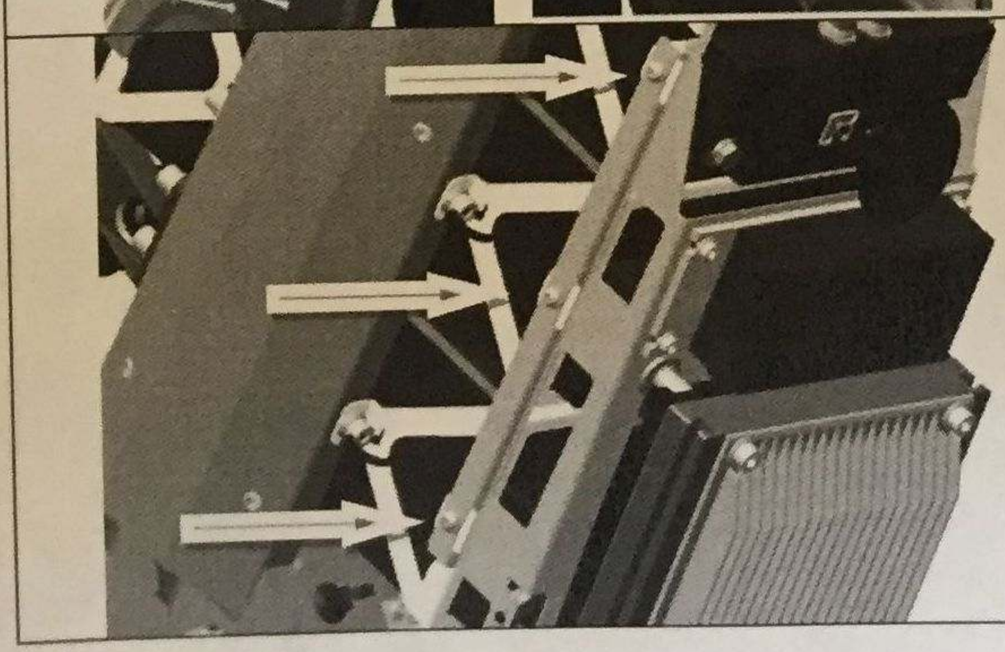
Reinstall the body panels and seat per chapter 3.2 and chapter 3.3

Lower Battery Replacement:



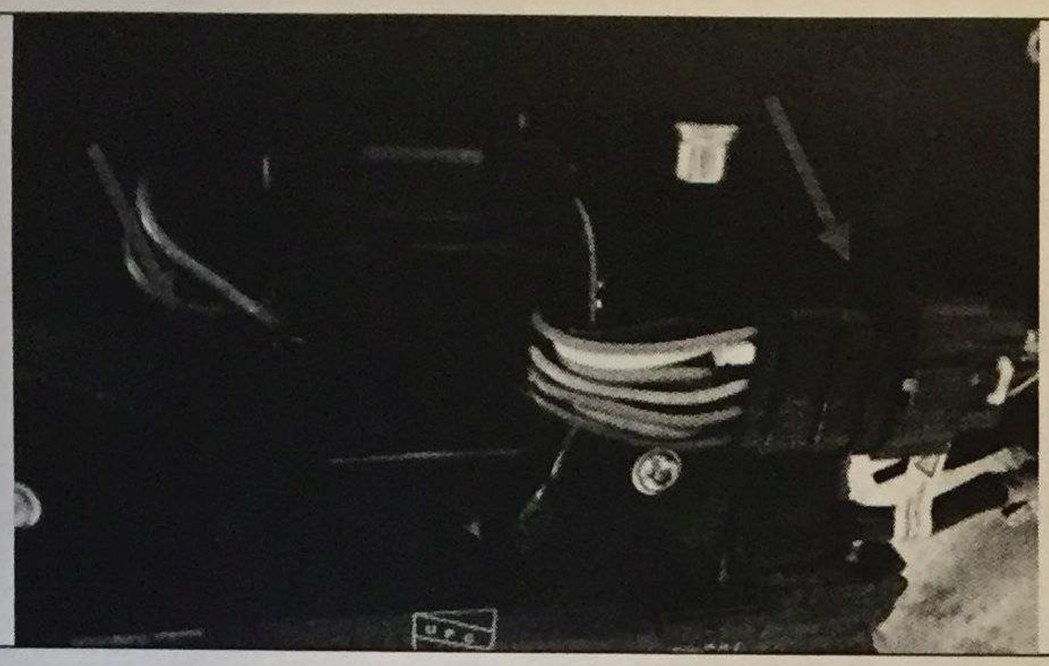
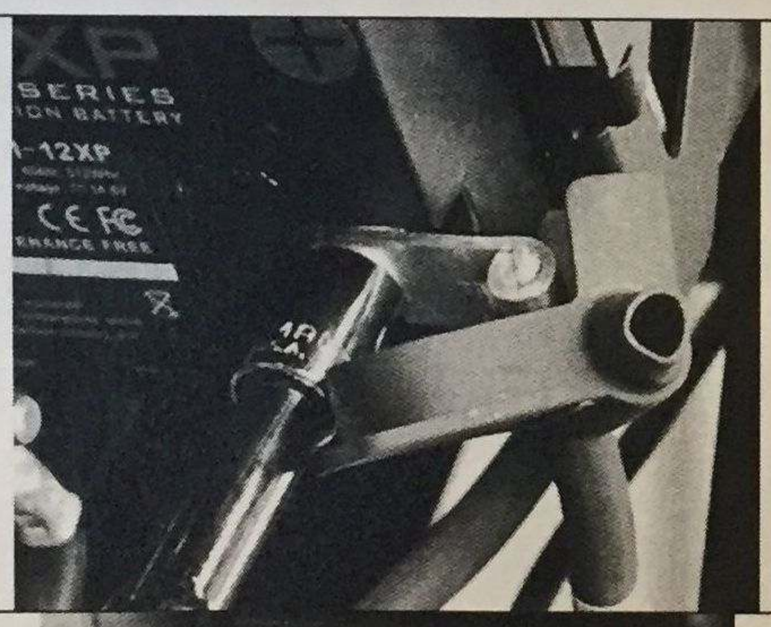
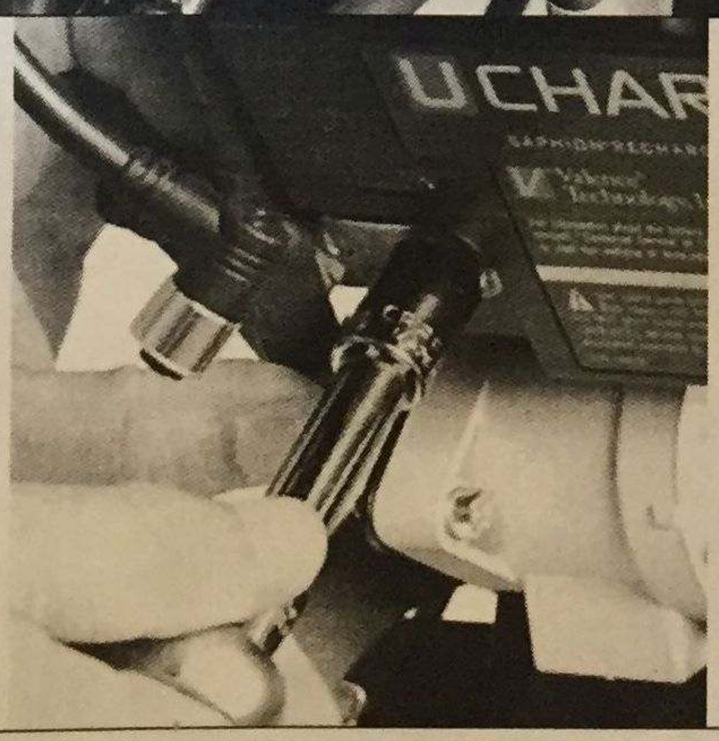
Remove seat and body panels per chapter 3.2.

Disconnect the blue battery cable connector. This will prevent power from going from the batteries to the rest of the powercycle. **COVER EXPOSED CONNECTORS WITH ELECTRICAL TAPE.**

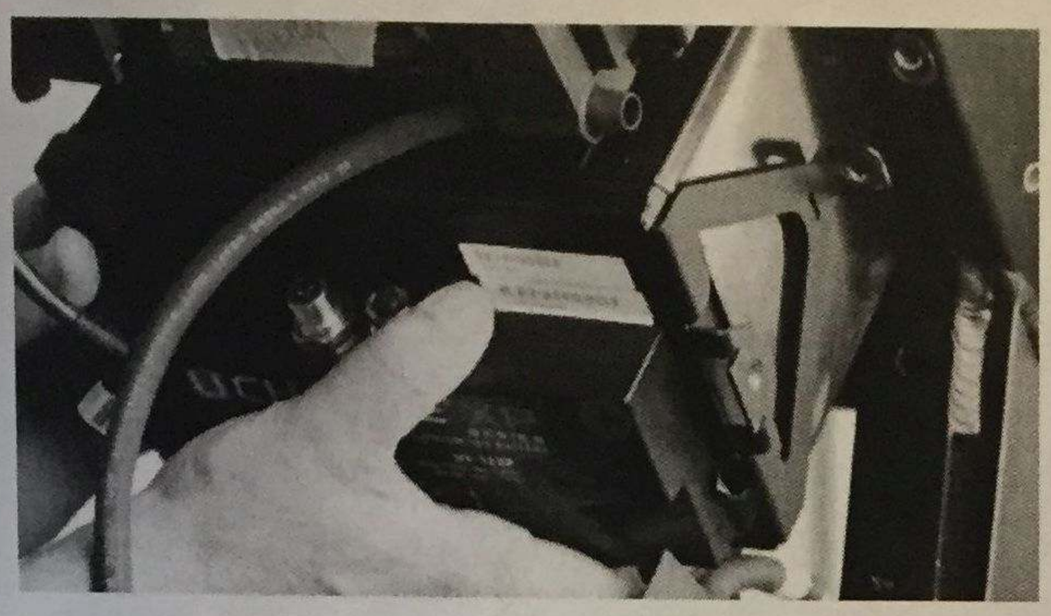
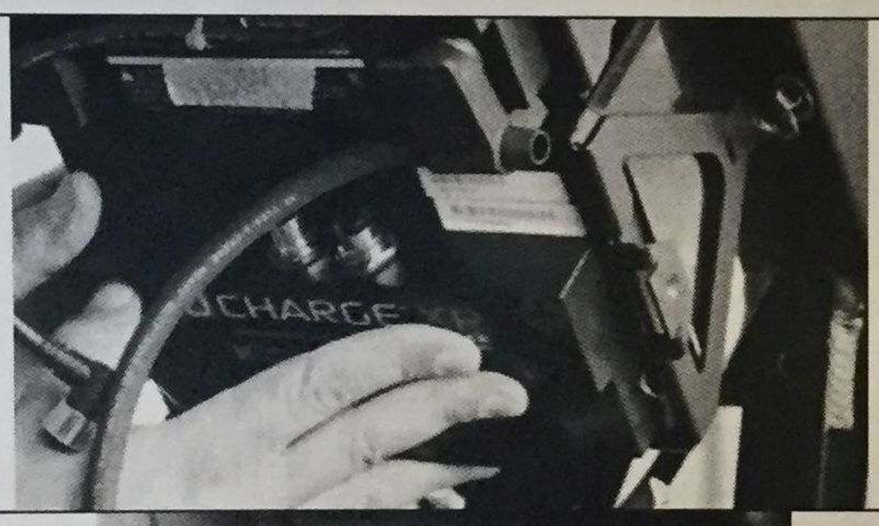
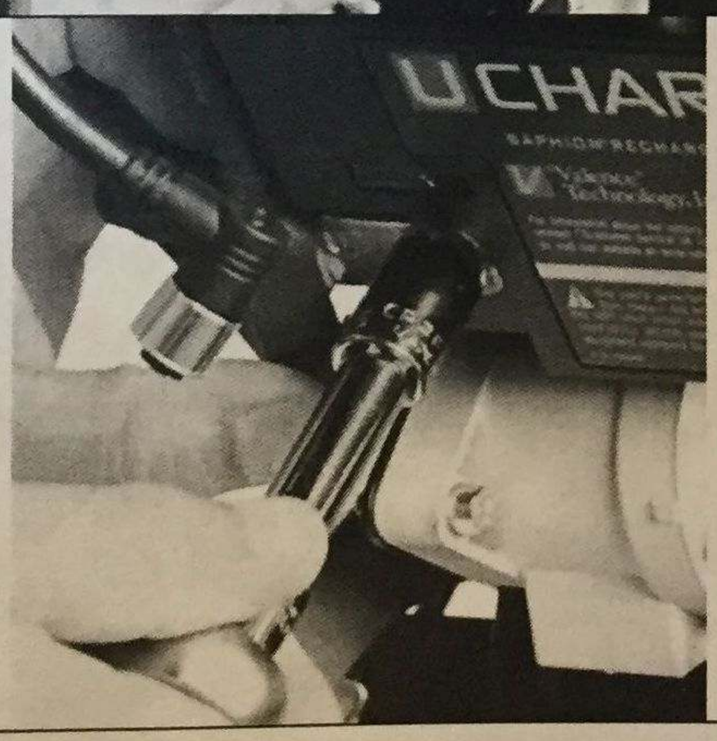


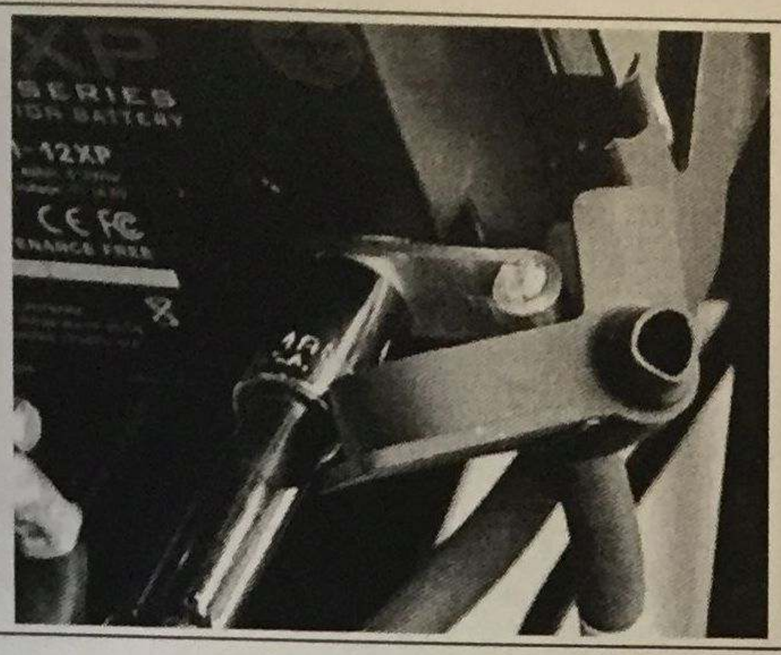
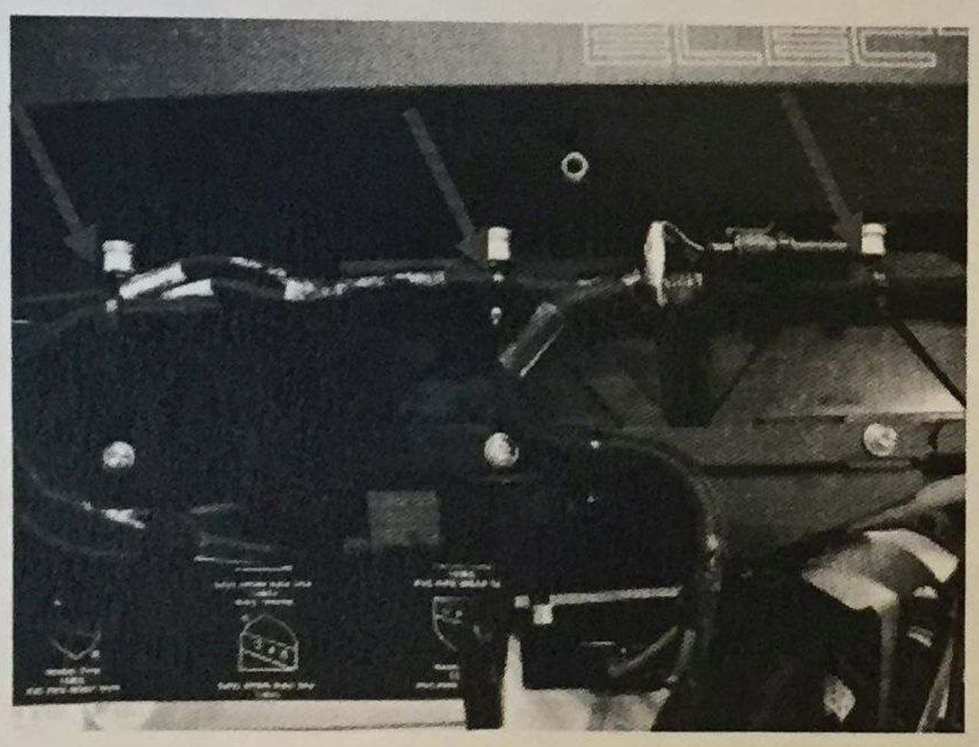
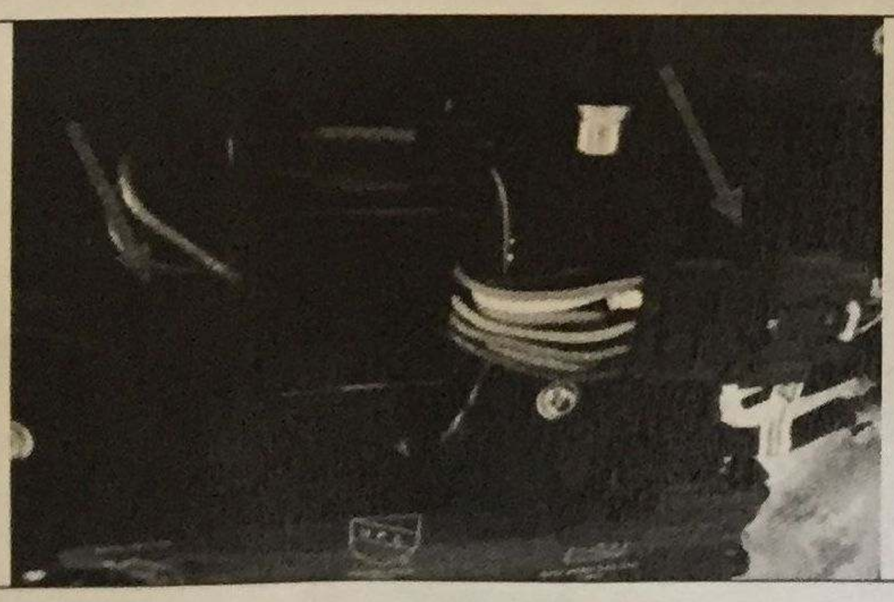
Remove the six bolts (three from each side) on the motor controller bracket with a 5mm Allen wrench.

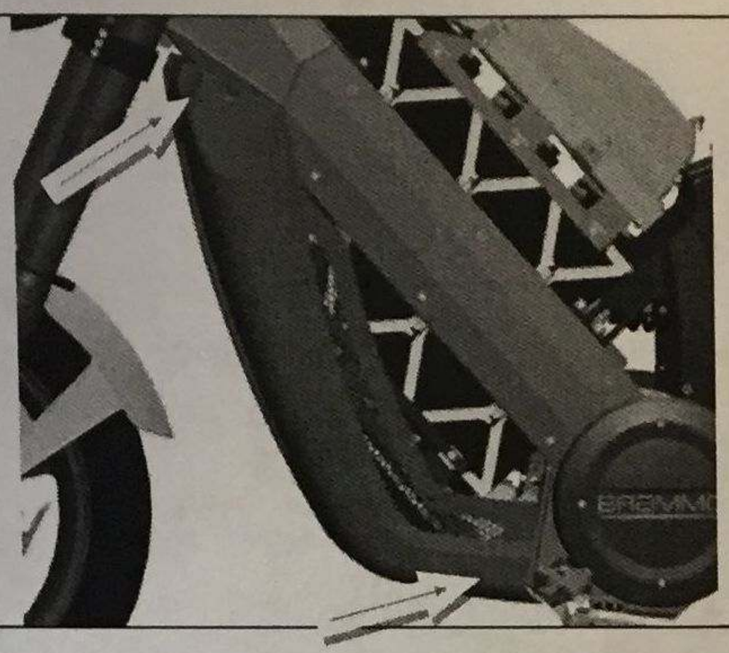
Lower the motor controller bracket assembly with one hand and use the other hand to disconnect the harnesses from the back of the motor controller.

	Using the cutting pliers snip the cable ties that bind the cables together.
	Depending on the battery that is going to be replaced, the MEIB may also need to be disconnected by unplugging it from the harness and clipping the 2 zip ties that hold it in place (indicated by the red arrows).
	Using your fingers loosen and remove the barrel connectors of the communication cables on the battery.
	Move the terminal boots from the terminal lugs.
	Using the ratchet with the extension and 7/16” socket (or combination wrench), loosen the positive (+) terminal bolt. Using your fingers finish removing the bolt. Place electrical tape over the terminal of the battery cables for protection.
	Using the ratchet with the extension and 7/16” socket (or combination wrench), loosen the negative (-) terminal bolt. Using your fingers finish removing the bolt. Place electrical tape over the terminal of the battery cables for protection. ***(NOTE: use extra care not to allow positive and negative wires to touch)***

Chapter Title	12.1 - Battery

	Use a 6mm Allen wrench to remove the battery bracket bolt from one side of the chassis. Firmly hold the battery with one hand and remove the battery bracket bolt from the other side of the chassis. ***(NOTE: each battery weighs 15 lbs. and will want to slide out from the bottom of the chassis when the final battery bracket bolt is removed.)***
	Remove the bracket from the old battery and place over the replacement battery
	Prior to installing the new battery apply Loctite to all of the bolts except the terminal bolts, careful not to smear the Loctite.
	Place the new battery with bracket into the chassis and align the bracket holes with the mounting points in the chassis. Add Loctite to the bolts and install on each side of the chassis to mount the battery with a 6mm Allen wrench.
	Remove the tape from the negative battery cable. Using your fingers insert and finger tighten the negative terminal bolt through the lug to the negative terminal. Using the 7/16” socket wrench (or combination wrench) firmly tighten the negative terminal bolt.

	Remove the tape from the positive battery cable. Using your fingers insert and finger tighten the positive terminal bolt thru the lug to the positive terminal. Using the 7/16” socket wrench (or combination wrench) firmly tighten the positive terminal bolt.
	Attach the barrel connector on the battery communication cables to the battery and tighten.
	Get four (4) cable ties.
	Kink the end and position the 1st cable tie into the side of the battery bracket. Gather the wiring and position near the cable tie and tighten cable tie. Position 2nd and 3rd cable ties to mounting standoff at the battery bracket and tighten. Position 4th cable tie into the side of the battery bracket. Gather the wiring and position near the cable tie and tighten. Using cutting pliers snip the exposed tail of all the cable ties.
	Reattach the motor controller bracket assembly and reconnect per chapter 4.2
	Reconnect the MEIB using 2 zip ties in the places indicated.

	Connect the blue battery cable connector at the top of the chassis.
	Reinstall the body panels and seat per chapter 3.2

	Chapter Title	**12.2 - Charger**

This Document Covers the Following Components/Systems	
FRU Part Name	*Replacement Part Number*
Charger and Bracket	B0110-0112020

12.2.10- Overview

Battery chargers replenish the energy used by an electric vehicle. The battery charger converts the alternating current (AC) distributed by the utility companies into the direct current (DC) needed to recharge the batteries. The cord used to connect to the AC power source can both be found under the seat of the Enertia. The charger is located underneath the top body panel of the Enertia.

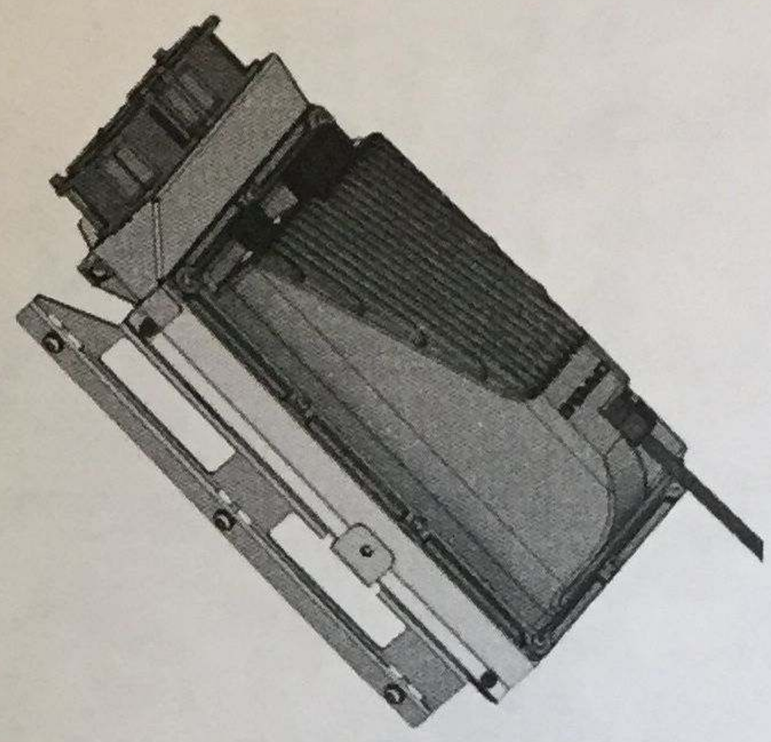


Figure 12.2.1 – Charger Assembly

Within the VCU (Vehicle Control Unit) there is a switch which stays connected as long as there is sufficient voltage within the batteries. If a rider runs down the batteries to a point where there is insufficient voltage to keep this switch closed, the switch will open effectively shutting down the Enertia. This is a safety circuit to prevent the customer from draining the batteries to a point of rendering them useless and unable to be recharged. This shutdown will have been preceded by warnings to the rider on the LCD dash display. Once this shutdown takes place, the Enertia cannot be driven or recharged without following a specific procedure (detailed in chapter 12.2.40). The shutdown mode may appear to be an issue with the VCU, the batteries, or the charger – but it is a designed shutdown to prolong the life of the Enertia and its electrical system.

12.2.40- Diagnosing a Problem

If the Enertia is no longer charging when plugged in, the most common problem will be the customer ran down the batteries triggering the VCU switch to open and shut down the Enertia. Follow this procedure to reset the VCU switch:

1. Remove the upper side panels from the Enertia.
2. Remove the top body panel, but DO NOT disconnect the power button harness from the main wiring harness.
3. Press the button on the right side of the VCU and look at the small light next to the button.
    a. If the light is red, continue with this procedure.
    b. If the light is green, it is not an issue with the VCU switch. Use diagnostic software to find the root cause of the problem.
4. Turn the ignition key to the Charge position.
5. Plug in the charger cord to a standard 100V AC outlet.
6. Press and hold the VCU button. Do not release this button. The light should be red.
7. While holding the VCU button, press the tank button to activate the charging cycle.
8. Continue to hold the VCU button until the light on the VCU changes from red to green.
9. Once the VCU light is green, you may release the VCU button.
10. Allow the Enertia to go through a FULL charge cycle to bring the batteries back to 100% charge.

If there is a true charger failure, the charger FRU can be replaced through a simple procedure.

Chapter Title	**12.2 - Charger**

12.2.55—Setup and Tools

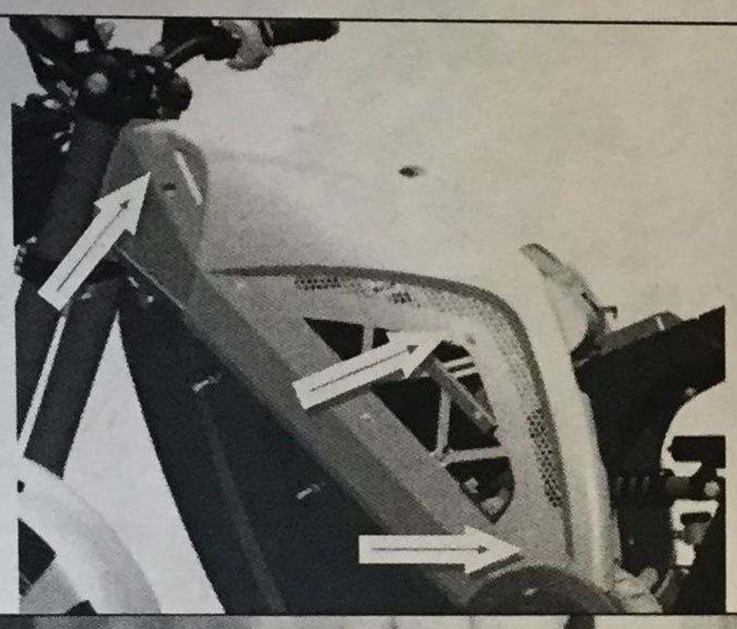
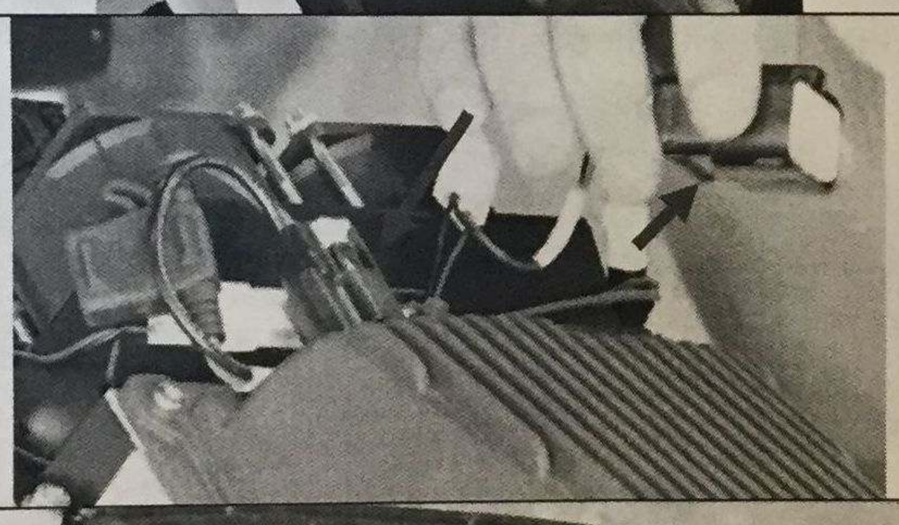
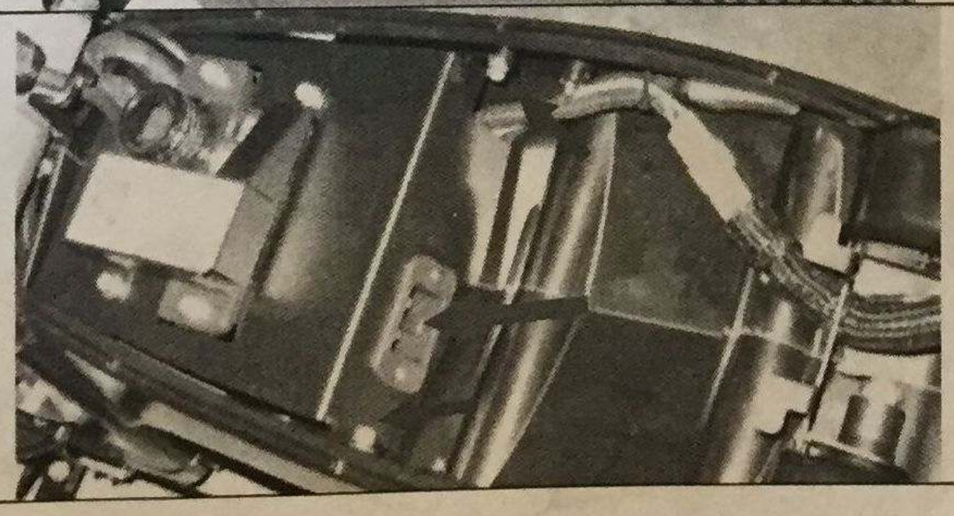
- Metric Allen wrench set

12.2.57—Materials Required

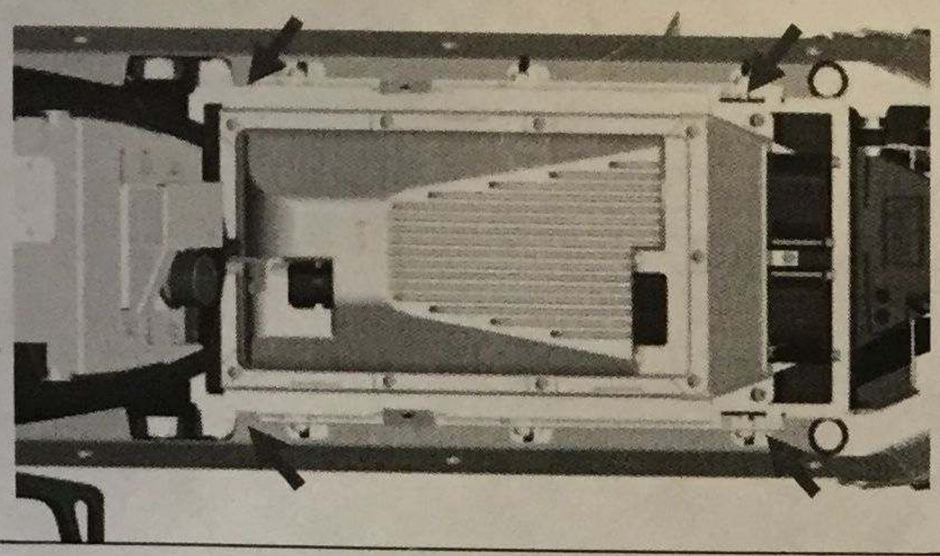
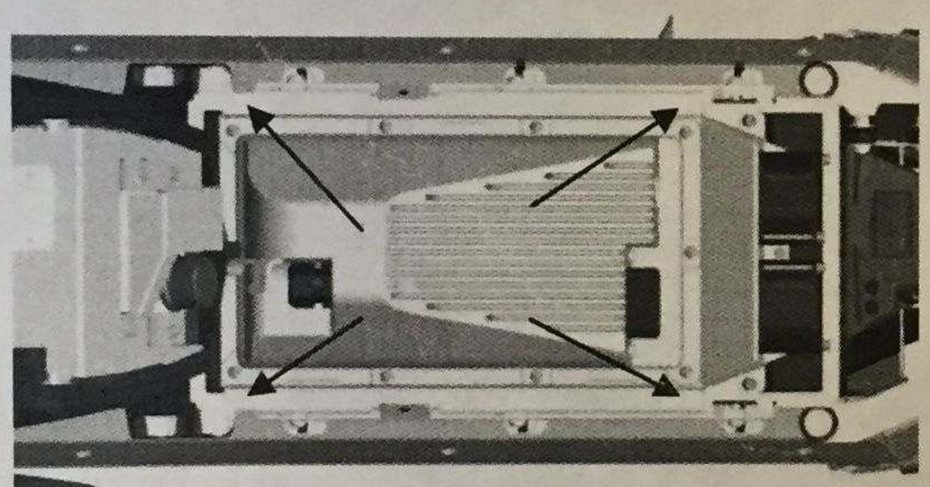
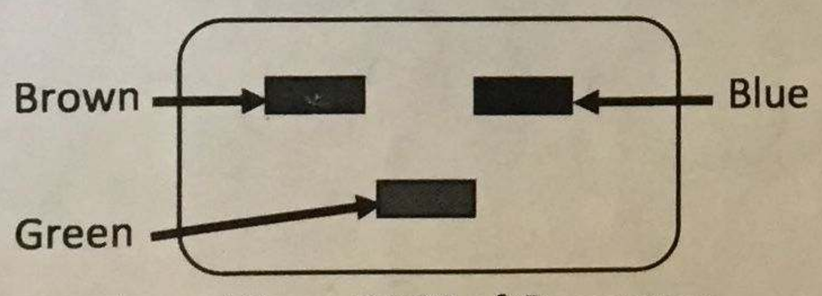
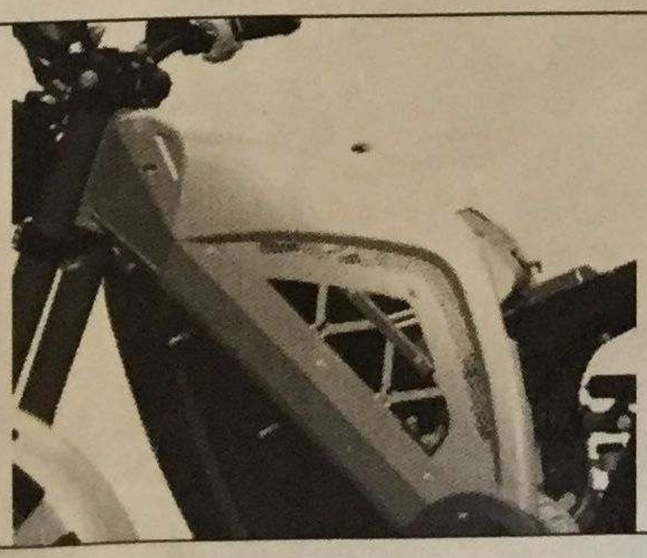
- Loctite Blue 234
- Replacement charger FRU

12.2.60- Removal and Replacement Procedure

Replacing the charger:

	Position bike in stand. Remove seat and body panels per chapter 3.2. Disconnect the blue battery cable connector. This will prevent power from going from the batteries to the rest of the powercycle. **COVER EXPOSED CONNECTORS WITH ELECTRICAL TAPE.**
	Disconnect the harness connector from the charger and the fan connector from the harness.
	Remove the two screws (red arrows) that hold in the fuse block and remove the wires from the charger where they plug in to the back of the charger plug (green arrow).

12.2 - Charger

	Using a 5mm Allen wrench, break the torque on the four (4) mounting bolts. Using your fingers remove the remainder of the bolt and washers. Grasp the charger and lift from the bracket.
	Put Loctite on all four (4) of the replacement mounting bolts.
	Place the replacement charger into the mounting bracket.
	Using your fingers start all four (4) bolts (with washers).
	Using a 5mm Allen wrench, firmly tighten the four (4) mounting bolts. Replace the harness plugs and secure into the side of the replacement charger and charger fans.
 Viewed From BACK of Connector	Reconnect the charger at the fuse block assembly and reinstall fuse block. The terminals attach to the back of the connector as shown to the right.
	Connect the blue battery cable connector at the top of the chassis. Reinstall the body panels and seat per chapter 3.2