



Technical Bulletin 169

2016

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Item: 169.1

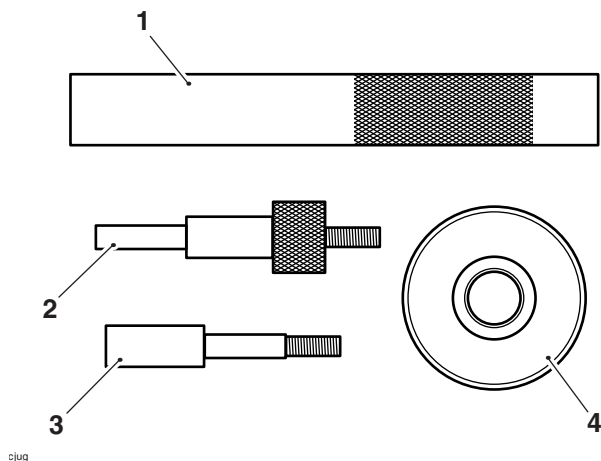
Description: Front Brake Lever

Model Affected: Daytona 675R, Speed Triple (from VIN 461332), Speed Triple R (up to VIN 735336), Speed Triple S, Speed Triple R (from VIN 735337), Thruxton 1200R

Brembo brake levers for radial master cylinders will no longer be supplied as a complete assembly.

The lever is now supplied without the pivot and push rod. If for any reason the pivot or push rod requires replacing the master cylinder must be replaced. This is because the push rod is adjusted to the master cylinder it is fitted to during manufacture.

A service tool part number T3880636 has been released to remove and refit the front brake lever pivot sleeve on motorcycles fitted with Brembo front brake levers.



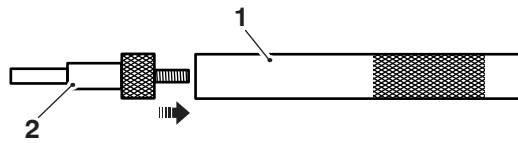
- 1. Mandrel
- 2. Extractor
- 3. Installer piece
- 4. Support piece

Pivot Sleeve Removal

Warning

When removing the brake lever pivot sleeve, always wear overalls, eye, face and hand protection. The brake lever sleeve is hardened and liable to splinter if broken. Debris from broken components could cause injury to eyes, face and any unprotected parts of the body.

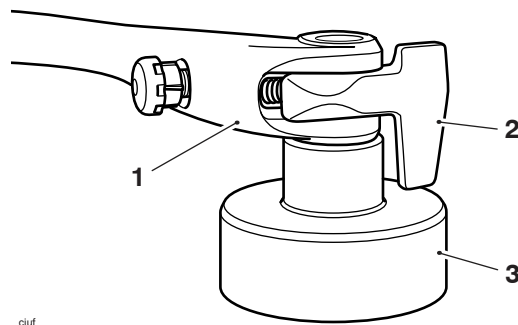
1. Release the fixings and remove the front brake lever as described in the Service Manual.
2. Rotate the brake lever adjuster wheel fully anticlockwise noting the start position for installation.
3. Fit the extractor to the mandrel as shown.



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1. **Mandrel**
2. **Extractor**

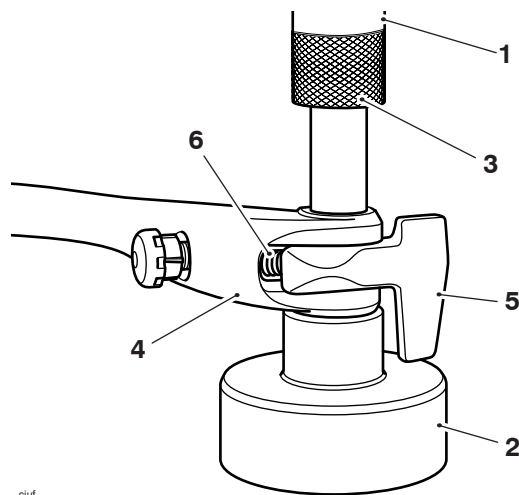
4. Position the brake lever assembly with the pivot facing towards the support piece as shown.



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1. **Brake lever**
2. **Pivot**
3. **Support piece**

5. Position the mandrel and extractor to the brake lever and press out the pivot sleeve from the brake lever assembly.



1. Mandrel
2. Support piece
3. Extractor
4. Front brake lever
5. Pivot
6. Return spring

6. Retain the brake lever pivot sleeve for reuse during assembly.

! Warning

Always wear eye, hand and face protection when separating brake lever components. Uncontrolled release of the brake lever components may cause the spring to become detached during dismantling. Flying springs may cause injury to eyes, face and any unprotected parts of the body.

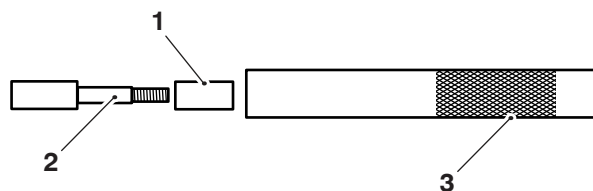
Note:

- **Note the orientation of the return spring, push rod and brake lever pivot for installation.**

7. Carefully remove the extractor from the brake lever assembly.
8. Collect the brake lever pivot sleeve from the support piece.

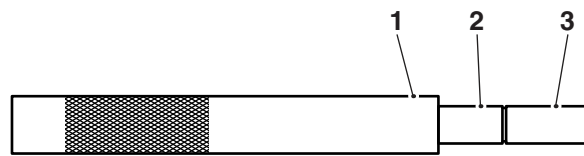
Pivot Sleeve Installation

1. Locate the pivot sleeve over the shank of the installer piece.



1. Pivot sleeve
2. Installer piece
3. Mandrel

2. Screw the installer piece into the mandrel.



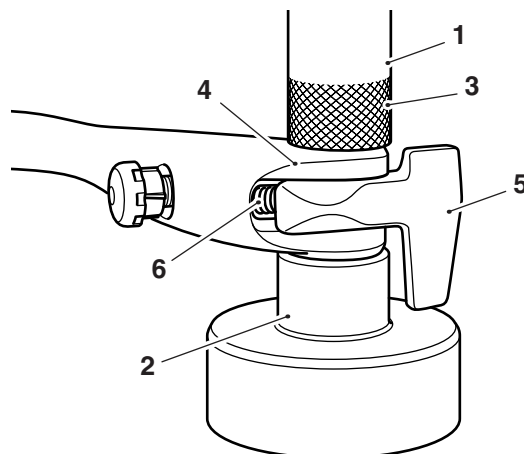
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1. **Mandrel**
2. **Pivot sleeve**
3. **Installer piece**

Warning

Do not attempt to adjust the push rod. The push rod is pre-set at the factory and is not adjustable. If for any reason the threaded part of the push rod is adjusted the brake master cylinder assembly must be replaced. Adjusting the push rod affects the braking characteristics of the front brakes when applied leading to loss of motorcycle control and an accident.

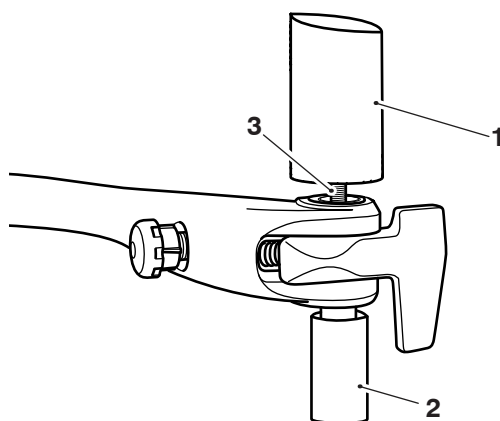
3. Align the brake lever to the brake lever pivot ensuring the return spring and push rod are located as noted during removal.
4. Using the service tool align the installer piece to the brake lever and gently push down on the mandrel locating the installer piece, through the lever and pivot.
5. Place the lower surface of the brake lever onto the support piece, and then using a press push the pivot sleeve through the brake lever pivot until the mandrel touches the upper brake lever surface.



cjue

1. **Mandrel**
2. **Support piece**
3. **Installer piece**
4. **Front brake lever**
5. **Pivot**
6. **Return spring**

-
6. Support the brake lever, hold the mandrel and turn the installer piece anticlockwise to release it from the mandrel.



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- 1. Mandrel
- 2. Installer piece
- 3. Thread

- 7. Visually check the pivot sleeve, return spring, brake lever pivot and push rod are installed as noted during removal.
- 8. Refit the front brake lever as described in the Service Manual.
- 9. Rotate the brake lever adjuster wheel clockwise to the position noted during removal.

When ordering replacement parts, refer to the EPC.

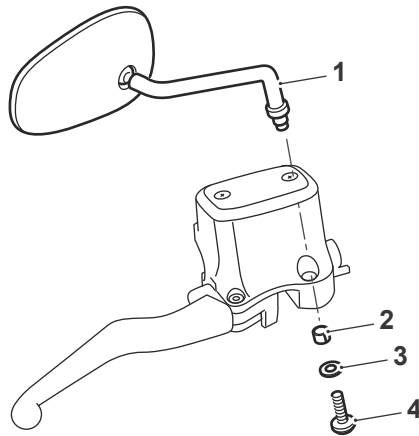
Please mark your copy of the Service Manual with this information. For electronic service manuals, store this information in a readily accessible place and refer to it often. This information will be included in the next service manual update.

Item: 169.2

Description: Mirror Tolerance Rings

Model Affected: Thunderbird ABS, Thunderbird Commander, Thunderbird LT, Thunderbird Storm, ABS, Thunderbird Nightstorm, Rocket III Touring, Rocket III Roadster ABS

New tolerance rings have been introduced when fitting the mirrors on the above models from VIN 718917. The new tolerance rings are 4 mm shorter than the previous tolerance rings and are introduced to improve assembly. The new tolerance rings are retrofittable to all of the above models. Installation and removal of the mirrors remains the same as detailed in the Service Manual.



When ordering replacement parts, refer to the EPC.

Please mark your copy of the Service Manual with this information. For electronic service manuals, store this information in a readily accessible place and refer to it often. This information will be included in the next service manual update.

Item: 169.3

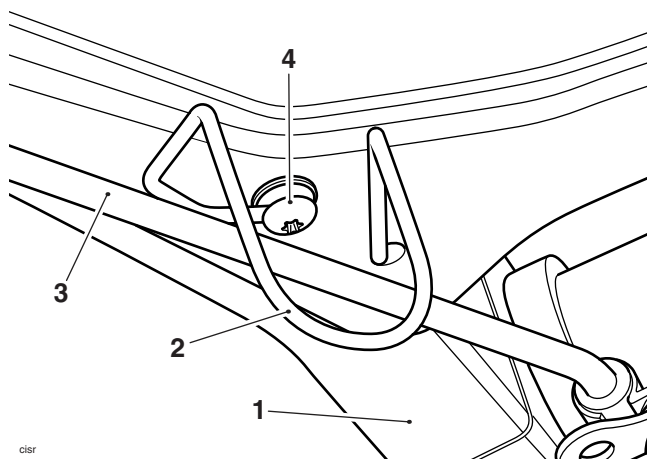
Description: Rear Brake Hose

Model Affected: Thunderbird ABS, Thunderbird Commander, Thunderbird Storm ABS, Thunderbird Night Storm

A revised rear brake hose with the addition of a wire guide has been introduced to the Thunderbird Commander and Thunderbird LT models from VIN 764829. The revised brake hose is 32mm longer in length and is fitted in conjunction with a wire guide on the swinging arm. The new brake hose is not retrofittable. A new swinging arm has been introduced to cater for the new wire guide and is retrofittable to all above models.

Note:

- The procedure for the assembly and removal of the brake hose is detailed in the Service Manual with the exception of the wire guide and associated fixing. These are detailed in the illustration below.
- The wire guide is fitted to the underside of the swinging arm. The fixing on the wire guide is encapsulated, and must be replaced if loosened or removed. Tighten the fixing to 5 Nm.



1. Swinging arm
2. Wire guide
3. Brake hose line
4. Fixing

When ordering replacement parts, refer to the EPC.

Please mark your copy of the Service Manual with this information. For electronic service manuals, store this information in a readily accessible place and refer to it often. This information will be included in the next service manual update.

Item: 169.4
Description: Dryseal Plugs
Model Affected: Various

Encapsulated Dryseal plugs have been introduced to the cylinder head and crankcase galleries at various engine numbers during manufacture. The Dryseal plugs are matched to their respective cylinder heads or crankcases, and should only be replaced in accordance with the parts listed in the EPC.

The encapsulated Dryseal plugs (part number T3450005) are shorter in length and can be visually identified by their encapsulated coating.

 Caution

Do not attempt to retighten a leaking dryseal plug.

Overtightening of a leaking dryseal plug may damage the crankcase or cylinder head.

Damaged casings will cause irreparable damage to the engine.

If for any reason a Dryseal plug with an encapsulated coating is loosened or removed it must be replaced and tightened to **25 Nm**.

When ordering replacement parts, refer to the EPC.

Application	Torque	Notes
Dryseal plug	25 Nm	Fit new fixing(s) if loosened or removed

Please mark your copy of the Service Manual with this information. For electronic service manuals, store this information in a readily accessible place and refer to it often. This information will be included in the next service manual update.

Item: 169.5

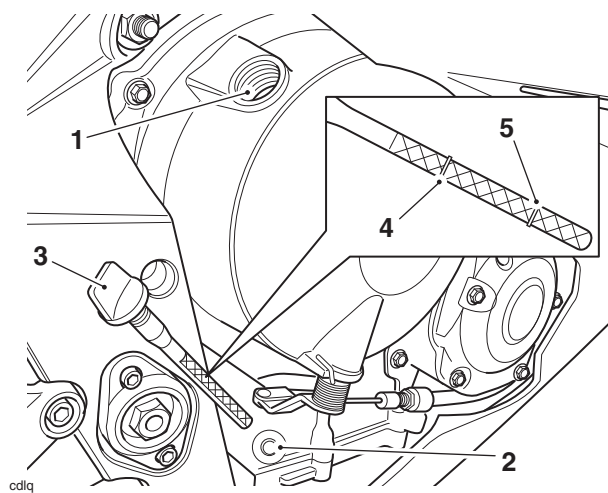
Description: Engine Oil Dipstick Upper and Lower Level Marking

Model Affected: Street Triple (from VIN 560477), Street Triple R (from VIN 560477), Street Triple 660 (from VIN 560477), Street Triple ABS (from VIN 560477), Street Triple R ABS (from VIN 560477), Daytona 675 (from VIN 564948), Daytona 675R (from VIN 564948), Daytona 675 ABS (from VIN 564948), Daytona 675R ABS (from VIN 564948)

A new engine oil dipstick has been introduced to the above models from engine number 667833 and is retrofittable. Parts will no longer support the old condition engine oil dipstick and any replacements supplied will be the new condition.

The engine oil fill capacities are not affected by this change and remain as specified in the owner's handbook.

Note the position of the upper and lower markings on the new dipstick.



1. Oil filler
2. Dipstick location in crankcase
3. Dipstick
4. Upper marking
5. Lower marking

Note:

- An accurate indication of the level of oil in the engine is only shown when the engine oil is at normal operating temperature, the motorcycle is upright (not on the side or centre stand) and the dipstick has been fully screwed in.

When ordering replacement parts, refer to the EPC.

Dealers are requested to inform the owner of the new markings when supplying replacement parts.

Item: 169.6

Description: Crankcase Ground, Stud and Locknut

Model Affected: Tiger Sport (from VIN 750470), Speed Triple R (from VIN 735337), Speed Triple S (from VIN 735438)

The battery and wiring harness ground terminals are secured to the upper crankcase using a pre-encapsulated stud and locknut.

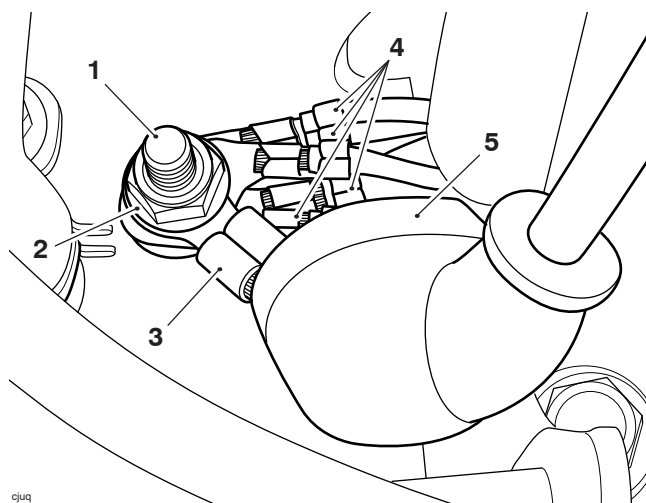
If for any reason the locknut and or stud are removed they must be replaced.

Warning

Ensure that the battery terminals do not touch the motorcycle frame as this may cause a short circuit or spark, which would ignite battery gases causing a risk of personal injury.

Disconnect the battery, negative (black) lead first.

Tighten the stud to **4 Nm** and the locknut to **10 Nm**.



1. Stud
2. Lock nut
3. Battery ground terminal
4. Harness ground terminals
5. Rubber cover

Reconnect the battery positive (red) lead first. Tighten the terminals to **4.5 Nm**.

When ordering replacement parts, refer to the EPC.

Please mark your copy of the Service Manual with this information. For electronic service manuals, store this information in a readily accessible place and refer to it often. This information will be included in the next service manual update.

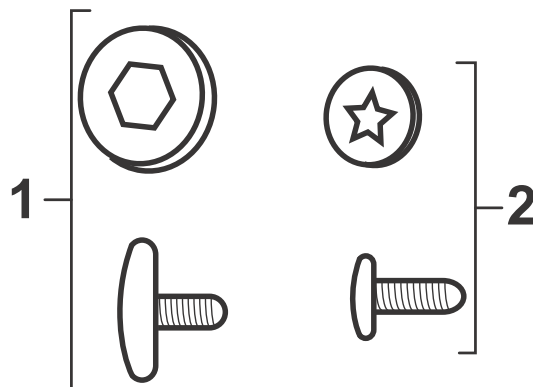
Item: 169.7

Description: Sidestand Switch Cable Guide Fixing

Model Affected: Street Twin, Bonneville T120, Bonneville T120 Black

The sidestand sensor cable guide to the frame fixing has changed to a M5 x 12 mm Torx head from VIN 756873. The Torx head fixing is retrofittable as a direct replacement to the button head fixing used on earlier models.

If removed for any reason the Torx head fixing must be tightened to **3 Nm**.



1. Fixing M5 x 8 mm - up to VIN 756872

2. Fixing M5 x 12 mm - from VIN 756873

When ordering replacement parts, refer to the EPC.

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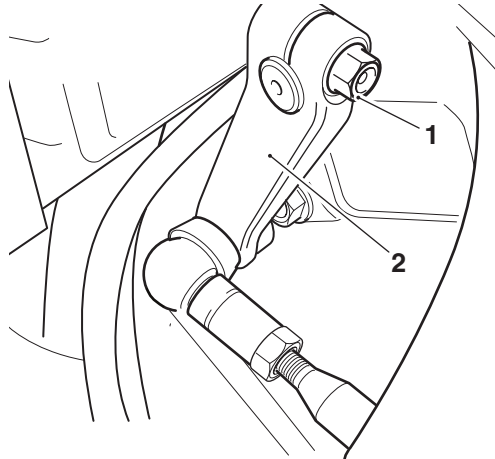
Item: 169.8

Description: Gearchange Lever Fixing

Model Affected: Street Triple ABS (from VIN 560477), Street Triple 660 (from VIN 560477), Street Triple Rx (from VIN 560477), Street Triple R (from VIN 560477)

The torque figure has changed. If loosened or removed for any reason the fixing(s) must be torqued as required.

Tighten the fixings to **9 Nm**.



1. Fixing

2. Gearchange lever

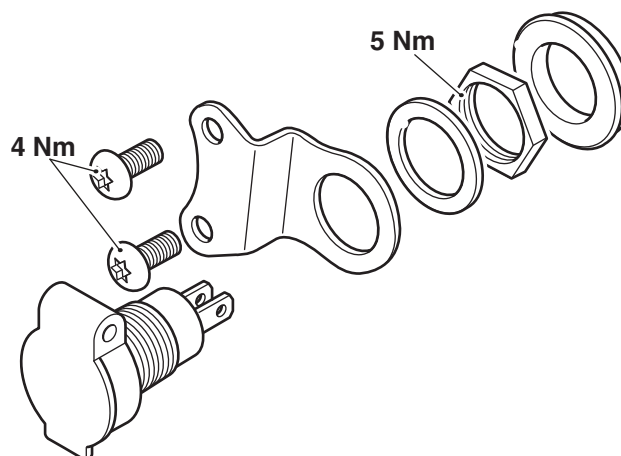
When ordering replacement parts, refer to the EPC.

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Item: 169.9
Description: Auxiliary Power Socket
Model Affected: Tiger Sport (from VIN 750470)

If for any reason the auxiliary power socket is removed or replaced the two micro encapsulated M6 x 12 pan head screws must be replaced and tightened to **4 Nm**.

Tighten the auxiliary power socket fixing to **5 Nm**.



When ordering replacement parts, refer to the EPC.

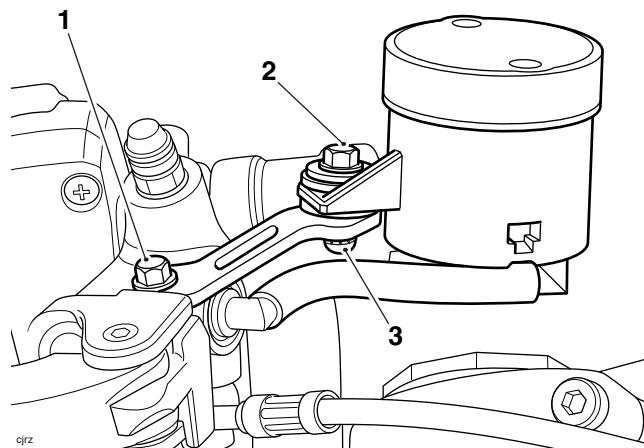
Please mark your copy of the Service Manual with this information. For electronic service manuals, store this information in a readily accessible place and refer to it often. This information will be included in the next service manual update.

Item: 169.10
Description: Front Brake Reservoir Bracket
Model Affected: Thruxton 1200R

The torque figure has changed. If loosened or removed for any reason the fixing(s) must be torqued as required.

Tighten the brake master cylinder fixing to **7 Nm**.

Counter hold the brake fluid reservoir lock nut and tighten the fixing to **7 Nm**.



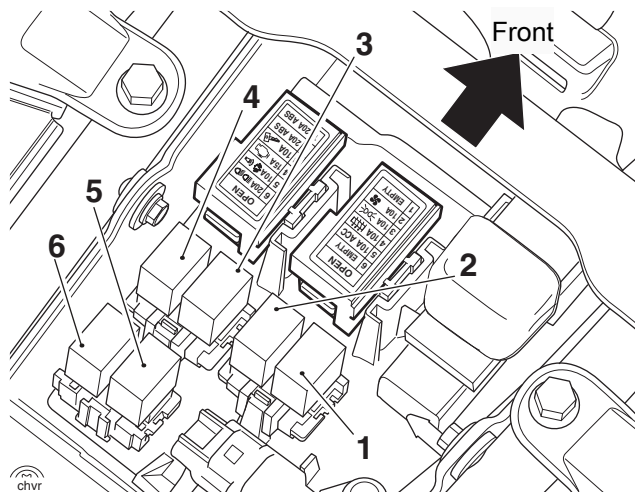
1. Fixing (Brake master cylinder)
2. Fixing (Brake fluid reservoir)
3. Lock nut (Brake fluid reservoir)

When ordering replacement parts, refer to the EPC.

Please mark your copy of the Service Manual with this information. For electronic service manuals, store this information in a readily accessible place and refer to it often. This information will be included in the next service manual update.

Item: 169.11
Description: Relay Designation
Model Affected: Tiger Sport (from VIN 750470)

A normally open (black) relay has replaced the starter circuit changeover (blue) relay from VIN number 760417 and is retrofittable. Parts will no longer support the old condition blue relay and any replacements supplied will be the new condition.



1. Headlamp relay
2. Powered top box relay (if fitted)
3. Starter relay
4. Fuel pump relay
5. Cooling fan relay
6. EMS relay

When ordering replacement parts, refer to the EPC.

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Item: 169.12

Description: Coolant Bypass Hose Parts Kit

Model Affected: Tiger Sport (from VIN 750470), Speed Triple R (from VIN 735337), Speed Triple S (from VIN 735438)

The outside diameter of the bypass hose has changed at the connection to the water pump, models with an earlier VIN use a 13.5-15.0 mm diameter clamp at the water pump and a 11.0-12.5 mm diameter clip at the cylinder head connection.

Parts kit T2101101 has been released for use when replacing the bypass hose with a later version. The kit contains a 11.0-12.5 mm diameter clip and a replacement hose. The hose connection at the cylinder head remains the same 11.0-12.5 mm and can be reused.

When ordering replacement parts, always refer to EPC.

Parts Kit T2101101 - Kit Bypass Hose

Up to VIN 764760 All markets except Brazil

Up to VIN 763964 Brazil market only

Kit Contents	Quantity
T3700035 - Clip Hose 13.5 -15.0 mm	1
T2101980 Hose Bypass	1

When ordering replacement parts, refer to the EPC.

Please mark your copy of the Service Manual with this information. For electronic service manuals, store this information in a readily accessible place and refer to it often. This information will be included in the next service manual update.

Item: 169.13

Description: Pannier Link Cable Scheduled Maintenance

Model Affected: Tiger Sport

It is recommended that the following revised scheduled maintenance is followed for the luggage system on all Tiger Sport models.

Operation Description	Odometer Reading in Miles (Km) or Time Period, whichever comes first					
		First Service	Annual Service	Mileage Based Service		
	Every	500 (800) 1 month	Year	6,000 and 18,000 (10,000 and 30,000)	12,000 (20,000)	24,000 (40,000)
Pannier link mechanism - check for correct operation and adjustment ‡	-	•	•	•	•	•
Pannier link cable - renew ‡	-				•	•
Accessory rack sliding carriage - check for correct operation ‡	-	•	•	•	•	•

‡Only if fitted

When ordering replacement parts, refer to the EPC.

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Item: 169.14
Description: Fuel Cap Cover Removal and Installation
Model Affected: Thruxton 1200 and Thruxton 1200R

The following instruction explains the process for removing and refitting the fuel cap cover.

Removal

! Warning

Observe the warning advice given in the General Information section on the safe handling of fuel and fuel containers.

A fire, causing personal injury and damage to property could result from spilled fuel or fuel not handled or stored correctly.

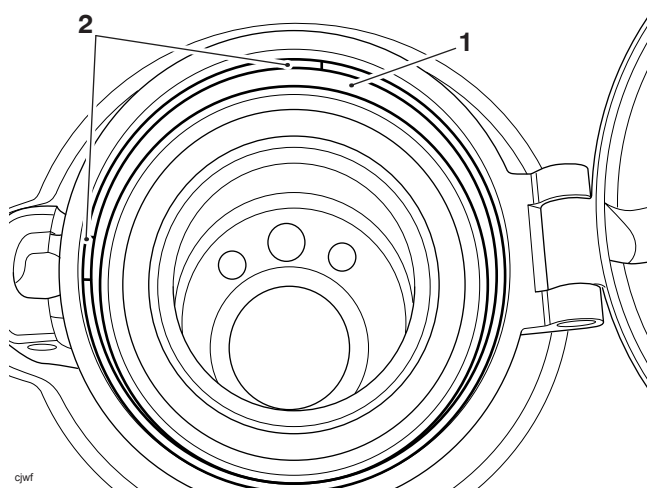
! Warning

Before starting work, ensure the motorcycle is stabilised and adequately supported. This will help prevent it from falling and causing injury to the operator or damage to the motorcycle.

1. Open the fuel cap cover and remove the fuel cap.

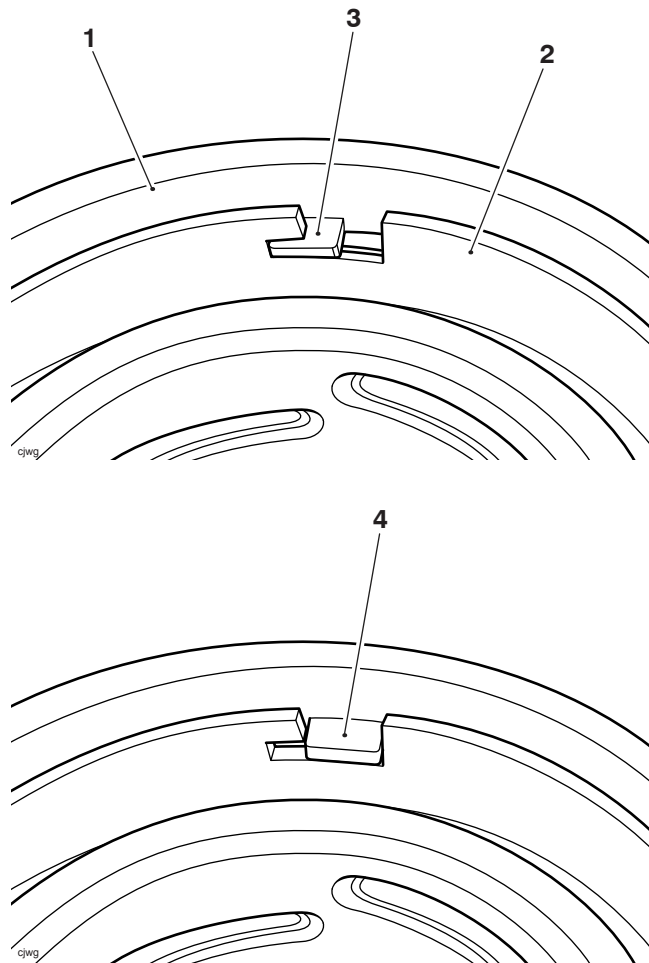
Note:

- Note that the chamfered edge of the plastic locking ring is uppermost for installation.
 - Note the four locating lugs on the plastic locking ring that fit into the cut outs in the fuel tank filler neck.
2. Using a suitable thin blade screwdriver, remove the plastic locking ring.



1. Plastic locking ring
2. Locating lug (2 shown)

3. Turn the fuel cap cover anticlockwise to release its four locating lugs from the fuel tank filler neck.



1. Filler cap cover
 2. Fuel tank filler neck
 3. Locating lug in locked position
 4. Locating lug in open position
4. Carefully lift off the fuel cap cover.

Installation

1. Installation is the reverse of the removal. Ensure the plastic locking ring is fitted as noted for removal.

Item: 169.15

Description: Owner's Handbook part number 3852288 - all markets, amended text Final Drive Ratio

Model Affected: Thruxton 1200 and Thruxton 1200R

The final drive ratio displayed in issue 1 of the Thruxton and Thruxton R handbook incorrectly states the Final drive Ratio.

The amended information is displayed in the following table:

Transmission	Thruxton	Thruxton R
Transmission Type	6 speed, constant mesh	6 speed, constant mesh
Clutch Type	Wet, multiplate	Wet, multiplate
Final Drive Chain	EK 525 ZVX3, 100 link	EK 525 ZVX3, 100 link
Primary Drive Ratio	93/74 (1.26)	93/74 (1.26)
Gear Ratio:		
1st	49/14 (3.5)	49/14 (3.5)
2nd	45/18 (2.5)	45/18 (2.5)
3rd	37/20 (1.85)	37/20 (1.85)
4th	37/25 (1.48)	37/25 (1.48)
5th	35/27 (1.3)	35/27 (1.3)
6th	34/29 (1.17)	34/29 (1.17)
Final Drive Ratio	42/16 (2.63)	42/16 (2.63)

Item: 169.16

Description: Frame Bolt Tightening Sequence

Model Affected: Tiger Explorer (up to VIN 740276), Tiger Explorer XC (up to VIN 740276)

The frame bolt tightening sequence and torque figures have been updated for the above models. When refitting an engine to the above models, follow the new frame bolt tightening sequence as described in the procedure below:

Note:

- This updated frame bolt tightening sequence replaces the sequence described in Technical News 160 (November 2014).
- When carrying out the cylinder head rework described in Technical News 144 (April 2013), the following frame bolt tightening sequence should be used when refitting the engine to the frame.

⚠ Warning

The following frame bolt tightening procedure **MUST** be followed precisely.

Failure to accurately follow the frame bolt tightening procedure may adversely affect motorcycle stability, leading to loss of motorcycle control and an accident.

⚠ Warning

Before starting work, ensure the motorcycle is stabilised and adequately supported. This will help prevent it from falling and causing injury to the operator or damage to the motorcycle.

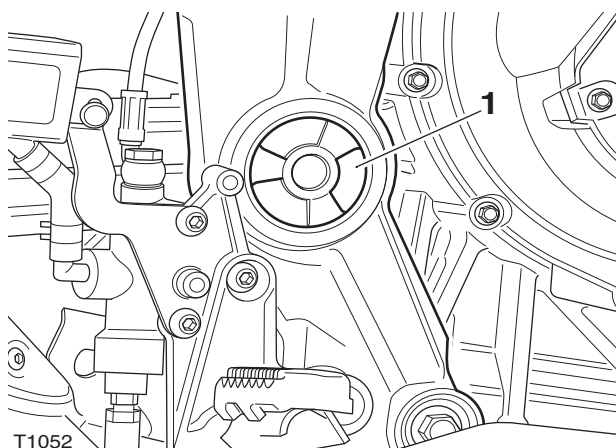
Note:

- The engine **MUST** be cold prior to starting the frame bolt tightening sequence.
- Complete steps 1 to 6 of the engine installation procedure as described in the Service Manual.
- Make sure that the engine is fully supported throughout the frame bolt tightening sequence.

1. Supporting the underside of the engine, raise the rear of the engine and align it to the frame.

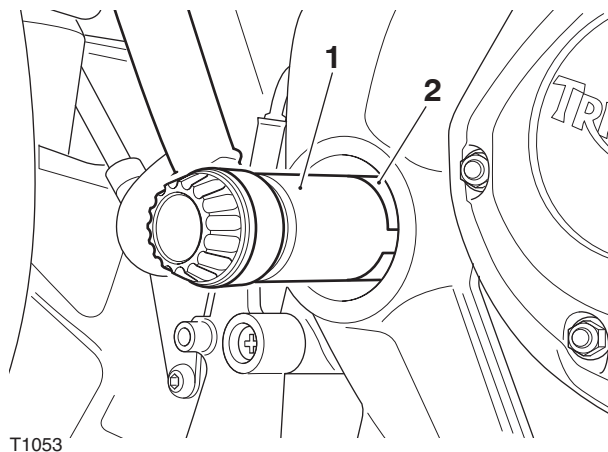
Note:

- The right hand swinging arm pivot pin must be loosened before the frame bolts can be tightened.
2. Carefully remove the cover from the right hand swinging arm pivot pin.



1. Cover

3. Using service tool T3880062, remove the locking ring from the right hand swinging arm pivot pin.



1. T3880062 - Lock Ring Wrench 38 mm

2. Locking ring

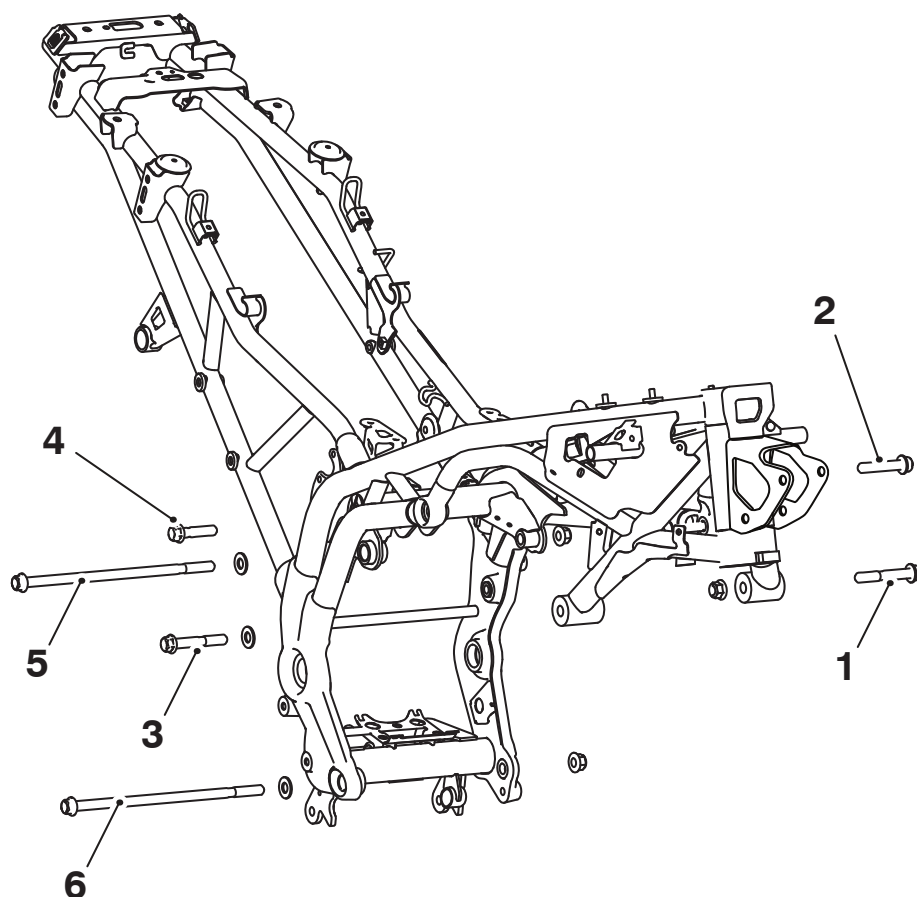
4. Loosen the right hand swinging arm pivot pin but do not fully remove.



Caution

Unless the following engine mounting bolt tightening sequence is precisely followed, severe frame damage can occur.

Frame Bolts Exploded View



1. Left hand front cylinder head bolt
2. Left hand rear cylinder head bolt
3. Right hand front cylinder head bolt
4. Right hand rear cylinder head bolt
5. Upper crankcase bolt
6. Lower crankcase bolt

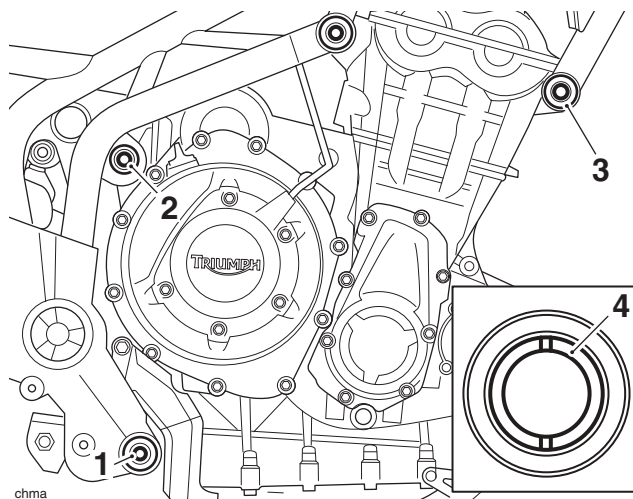
Note:

- Make sure that the engine is correctly aligned to the frame. Check that all mounting bolts can be inserted and removed freely before beginning the tightening sequence.
- It is not necessary to fit the nuts during the temporary fitment of the crankcase mounting bolts.

5. Temporarily fit the crankcase mounting bolts and washers through the left hand side of the frame and the engine. Allow enough clearance on the right hand side of the frame to enable the threaded adjusters to be adjusted.
6. Remove the right hand front cylinder head bolt and washer and temporarily refit to the left hand side of the mounting point. Allow enough clearance on the right hand side of the frame to enable the threaded adjuster to be adjusted.
7. Lubricate the threads of the **rear** cylinder head bolts with a smear of proprietary high temperature copper-based grease.
8. Fit the right hand rear cylinder head bolt ensuring that the spacer is fitted between the cylinder head and frame. Do not fully tighten at this stage.
9. Fit the left hand rear cylinder head bolt. Do not fully tighten at this stage.
10. Fit a new lock nut to the left hand front cylinder head bolt and tighten to **24 Nm**.
11. Tighten the left hand rear cylinder head bolt to **85 Nm**.

Note:

- **Make sure that the engine remains correctly aligned to the frame when tightening the crankcase and cylinder head adjusters.**
 - **After tightening each adjuster, if any movement of the engine is detected in relation to the frame, or if any of the mounting bolts cannot be removed and inserted freely, loosen all tightened adjusters and frame fixings and restart the tightening sequence from step 10.**
12. Using service tool T3880377, tighten the three adjusters in the following sequence.
 - Tighten the lower crankcase adjuster to **5 Nm**, then remove the lower crankcase bolt and washer and refit to the right hand side of the frame.
 - Tighten the upper crankcase adjuster to **5 Nm**, then remove the upper crankcase bolt and washer and refit to the right hand side of the frame.
 - Tighten the cylinder head front right hand adjuster to **3 Nm**, then remove the right hand front cylinder head bolt and washer and refit to the right hand side of its mounting.

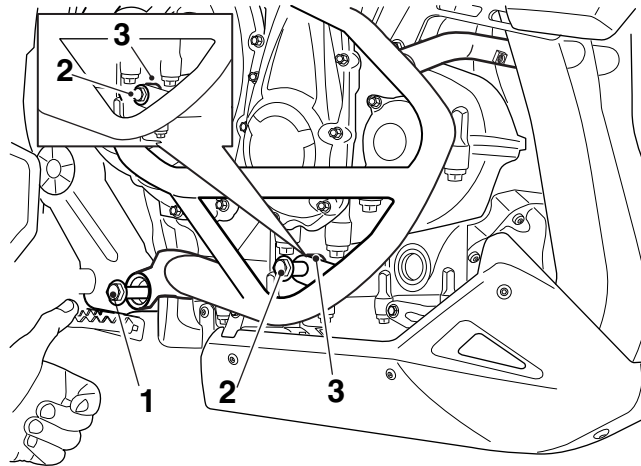


1. **Lower crankcase adjuster**
2. **Upper crankcase adjuster**
3. **Cylinder head right hand front adjuster**
4. **Adjuster**

Models with Engine Protection Bars

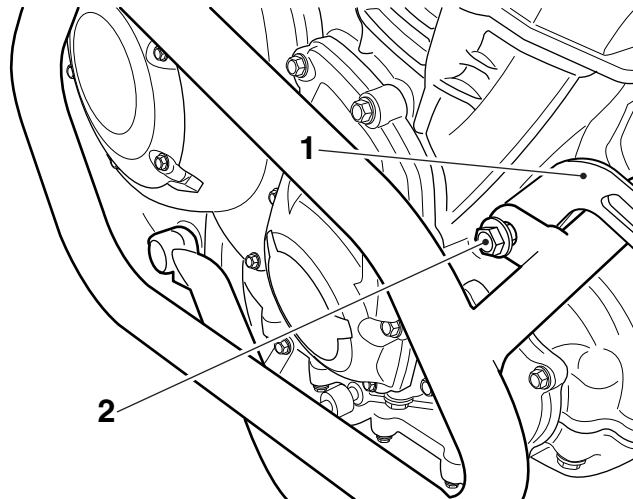
13. Remove the lower crankcase mounting bolt.
14. Align the right hand engine bar and link bar assembly to the engine (if fitted).
15. While holding down the rear brake pedal, refit the lower crankcase mounting bolt through the rear mounting of the engine bar, frame and lower crankcase. Fit a new lock nut but do not fully tighten at this stage.

16. Position the 13 mm spacer between the centre mounting and the engine as noted for removal. Fit the M8 x 33 mm bolt, do not fully tighten at this stage.



- 1. Lower crankcase mounting bolt
- 2. Bolt, M8 x 33 mm
- 3. Spacer, 13 mm

17. Ensure that the radiator mounting bracket is located between the upper mounting for the engine bar and the engine as noted for removal. Fit a M8 x 25 mm bolt, do not fully tighten at this stage.



- 1. Radiator mounting bracket
- 2. Bolt, M8 x 25 mm

All Models

18. Fit new lock nuts to the crankcase mounting bolts and the right hand front cylinder head bolt.
19. Tighten the remaining frame bolts in the following sequence:
- Hold the upper crankcase mounting bolt to prevent rotation and tighten the lock nut to **100 Nm**.
 - Hold the lower crankcase mounting bolt to prevent rotation and tighten the lock nut to **100 Nm**.
 - Tighten the right hand rear cylinder head bolt to **85 Nm**.
 - Tighten the left hand front cylinder head bolt to **115 Nm**.
 - Tighten the right hand front cylinder head bolt to **100 Nm**.

Models with Engine Protection Bars

20. Tighten the centre engine bar mounting bolt to **18 Nm**.
21. Tighten the upper engine bar mounting bolt to **18 Nm**.
22. Fit the left hand engine bar as described in the Service Manual.

All Models

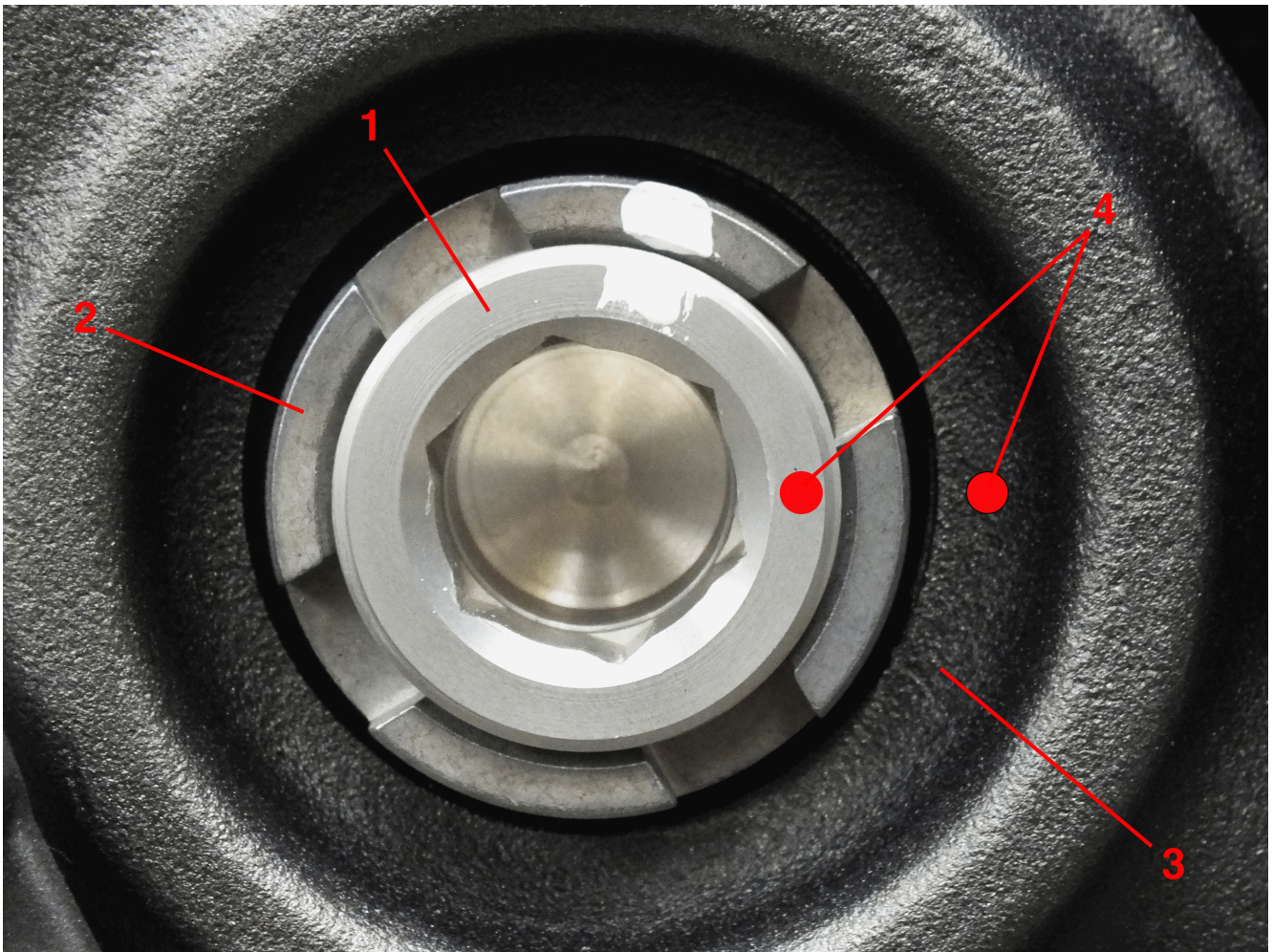
23. Tighten the swinging arm right hand pivot pin to **45 Nm**.

Caution

If the right hand pivot pin moves during the tightening of the locking ring, both the locking ring and pivot pin must be loosened and re-tightened as described in steps 23 to 27 of this procedure.

Failure to tighten the swinging arm pivot pin and locking ring correctly may lead to severe frame damage.

24. Lubricate the threads of the locking ring with a smear of proprietary high temperature copper-based grease.
25. Fit the locking ring to the swinging arm right hand pivot pin.
26. Using a non permanent marker, temporarily mark the pivot pin alignment in relation to the frame.



- 1. Swinging arm pivot pin
- 2. Locking ring
- 3. Frame
- 4. Temporary alignment marks

Note:

- If the pivot pin and frame markings do not align after final tightening of the locking ring, loosen and locking ring and right hand pivot pin and repeat steps 23 to 27 of this procedure.

27. Using service tool T3880062, tighten the locking ring to **110 Nm**.

-
28. Refit the cover to the swinging arm right hand pivot pin.
 29. Remove the support from beneath the engine.

Note:

- Continue from step 11 of the engine installation procedure as described in the Service Manual. Steps describing the loosening and retightening of the swinging arm's right hand pivot pin and locking ring, and the installation of the engine protection bars can be omitted as these processes have been completed as part of this instruction.

When ordering replacement parts, refer to the EPC.

Please mark your copy of the Service Manual with this information. For electronic service manuals, store this information in a readily accessible place and refer to it often. This information will be included in the next service manual update.

Item: 169.17

Description: Frame Bolt Tightening Sequence

Model Affected: Tiger Explorer XC (from VIN 740277), Tiger Explorer XCA, Tiger Explorer XCX, Tiger Explorer XR, Tiger Explorer XRA, Tiger Explorer XRT, Tiger Explorer VRX

The frame bolt tightening sequence and torque figures have been updated for the above models. When refitting an engine to the above models, follow the new frame bolt tightening sequence as described in the procedure below:

Warning

The following frame bolt tightening procedure **MUST** be followed precisely.

Failure to accurately follow the frame bolt tightening procedure may adversely affect motorcycle stability, leading to loss of motorcycle control and an accident.

Warning

Before starting work, ensure the motorcycle is stabilised and adequately supported. This will help prevent it from falling and causing injury to the operator or damage to the motorcycle.

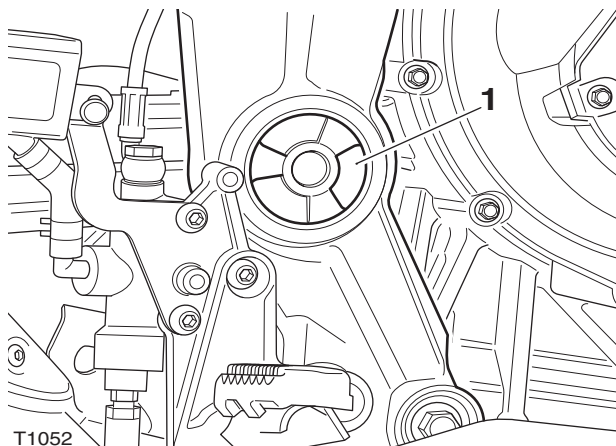
Note:

- The engine **MUST** be cold prior to starting the frame bolt tightening sequence.
- Complete steps 1 to 7 of the engine installation procedure as described in the Service Manual.
- Make sure that the engine is fully supported throughout the frame bolt tightening sequence.

1. Supporting the underside of the engine, raise the rear of the engine and align it to the frame.

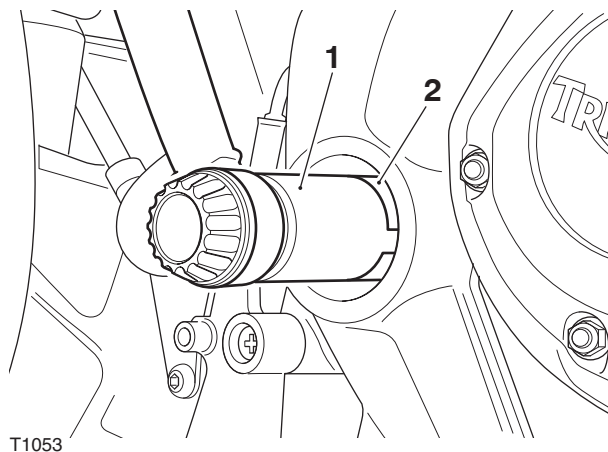
Note:

- The right hand swinging arm pivot pin must be loosened before the frame bolts can be tightened.
2. Carefully remove the cover from the right hand swinging arm pivot pin.



1. Cover

3. Using service tool T3880062, remove the locking ring from the right hand swinging arm pivot pin.



1. T3880062 - Lock Ring Wrench 38 mm

2. Locking ring

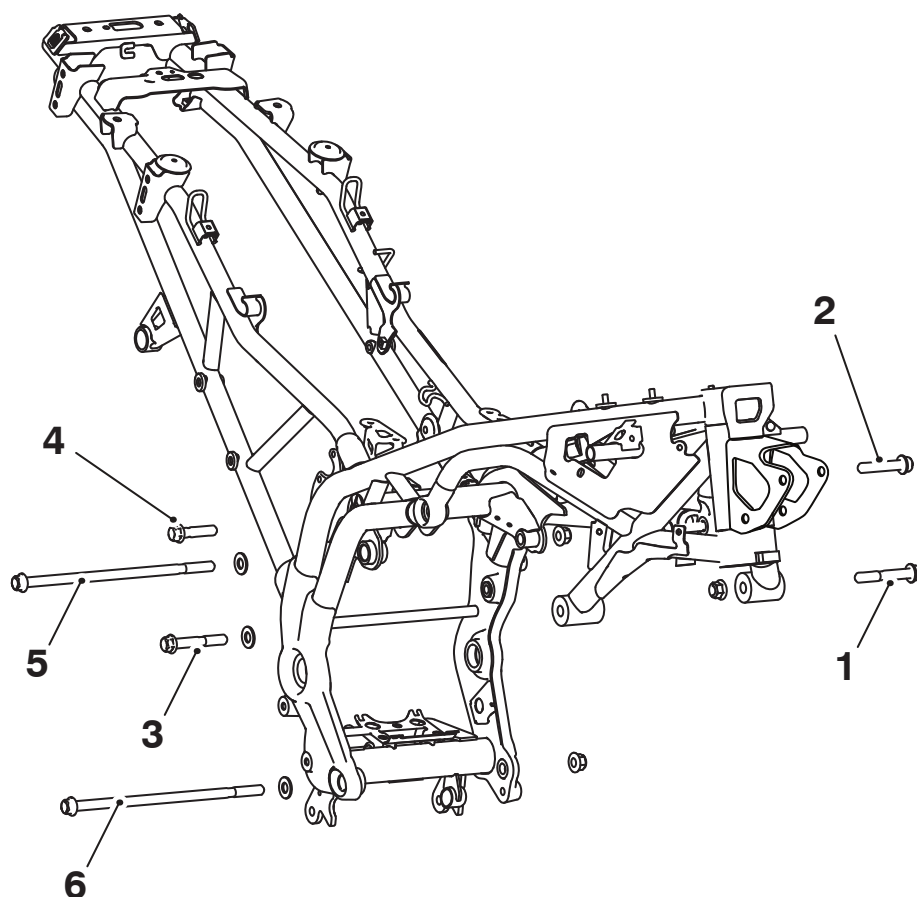
4. Loosen the right hand swinging arm pivot pin but do not fully remove.



Caution

Unless the following engine mounting bolt tightening sequence is precisely followed, severe frame damage can occur.

Frame Bolts Exploded View



1. Left hand front cylinder head bolt
2. Left hand rear cylinder head bolt
3. Right hand front cylinder head bolt
4. Right hand rear cylinder head bolt
5. Upper crankcase bolt
6. Lower crankcase bolt

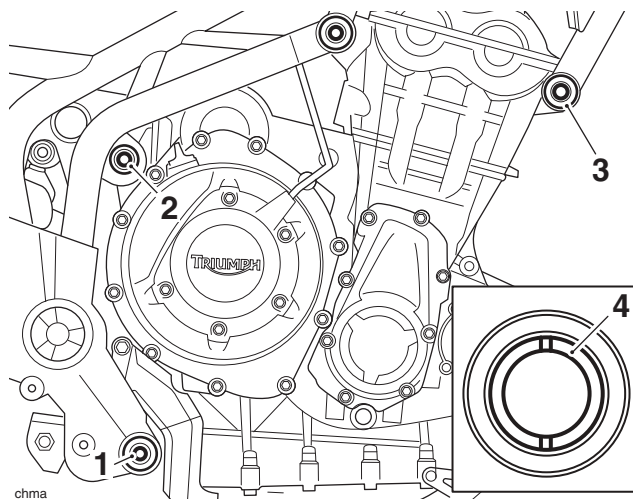
Note:

- Make sure that the engine is correctly aligned to the frame. Check that all mounting bolts can be inserted and removed freely before beginning the tightening sequence.
- It is not necessary to fit the nuts during the temporary fitment of the crankcase mounting bolts.

5. Temporarily fit the crankcase mounting bolts and washers through the left hand side of the frame and the engine. Allow enough clearance on the right hand side of the frame to enable the threaded adjusters to be adjusted.
6. Remove the right hand front cylinder head bolt and washer and temporarily refit to the left hand side of the mounting point. Allow enough clearance on the right hand side of the frame to enable the threaded adjuster to be adjusted.
7. Lubricate the threads of the **rear** cylinder head bolts with a smear of proprietary high temperature copper-based grease.
8. Fit the right hand rear cylinder head bolt ensuring that the spacer is fitted between the cylinder head and frame. Do not fully tighten at this stage.
9. Fit the left hand rear cylinder head bolt. Do not fully tighten at this stage.
10. Fit a new lock nut to the left hand front cylinder head bolt and tighten to **24 Nm**.
11. Tighten the left hand rear cylinder head bolt to **85 Nm**.

Note:

- **Make sure that the engine remains correctly aligned to the frame when tightening the crankcase and cylinder head adjusters.**
 - **After tightening each adjuster, if any movement of the engine is detected in relation to the frame, or if any of the mounting bolts cannot be removed and inserted freely, loosen all tightened adjusters and frame fixings and restart the tightening sequence from step 10.**
12. Using service tool T3880377, tighten the three adjusters in the following sequence.
 - Tighten the lower crankcase adjuster to **5 Nm**, then remove the lower crankcase bolt and washer and refit to the right hand side of the frame.
 - Tighten the upper crankcase adjuster to **5 Nm**, then remove the upper crankcase bolt and washer and refit to the right hand side of the frame.
 - Tighten the cylinder head front right hand adjuster to **3 Nm**, then remove the right hand front cylinder head bolt and washer and refit to the right hand side of its mounting.

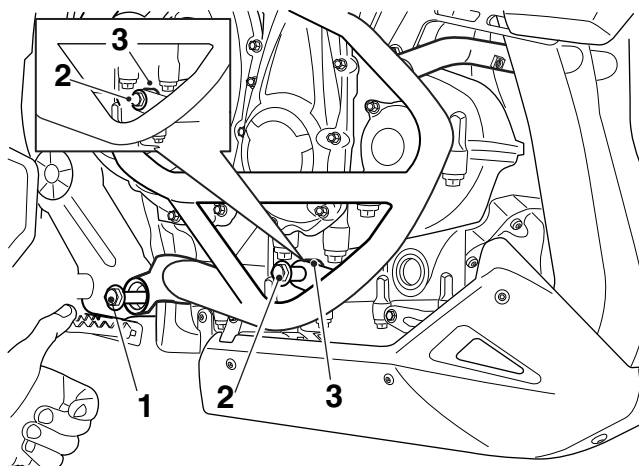


1. **Lower crankcase adjuster**
2. **Upper crankcase adjuster**
3. **Cylinder head right hand front adjuster**
4. **Adjuster**

Models with Engine Protection Bars

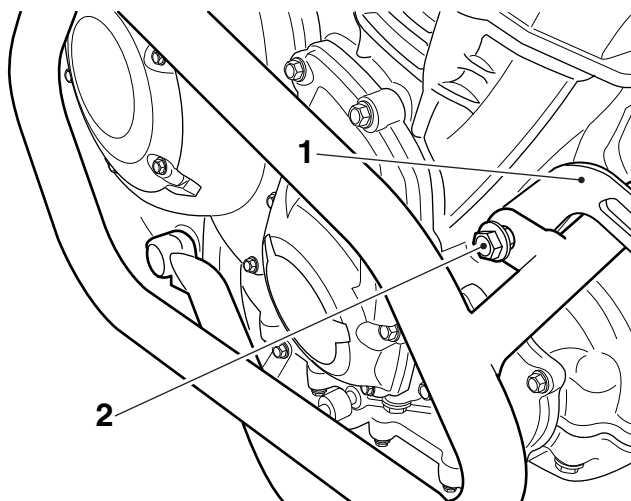
13. Remove the lower crankcase mounting bolt.
14. Align the right hand engine bar and link bar assembly to the engine (if fitted).
15. While holding down the rear brake pedal, refit the lower crankcase mounting bolt through the rear mounting of the engine bar, frame and lower crankcase. Fit a new lock nut but do not fully tighten at this stage.

16. Position the 13 mm spacer between the centre mounting and the engine as noted for removal. Fit the M8 x 33 mm bolt, do not fully tighten at this stage.



- 1. Lower crankcase mounting bolt
- 2. Bolt, M8 x 33 mm
- 3. Spacer, 13 mm

17. Ensure that the radiator mounting bracket is located between the upper mounting for the engine bar and the engine as noted for removal. Fit a M8 x 25 mm bolt, do not fully tighten at this stage.



- 1. Radiator mounting bracket
- 2. Bolt, M8 x 25 mm

All Models

18. Fit new lock nuts to the crankcase mounting bolts and the right hand front cylinder head bolt.
19. Tighten the remaining frame bolts in the following sequence:
- Hold the upper crankcase mounting bolt to prevent rotation and tighten the lock nut to **100 Nm**.
 - Hold the lower crankcase mounting bolt to prevent rotation and tighten the lock nut to **100 Nm**.
 - Tighten the right hand rear cylinder head bolt to **85 Nm**.
 - Tighten the left hand front cylinder head bolt to **115 Nm**.
 - Tighten the right hand front cylinder head bolt to **100 Nm**.

Models with Engine Protection Bars

20. Tighten the centre engine bar mounting bolt to **18 Nm**.
21. Tighten the upper engine bar mounting bolt to **18 Nm**.
22. Fit the left hand engine bar as described in the Service Manual.

All Models

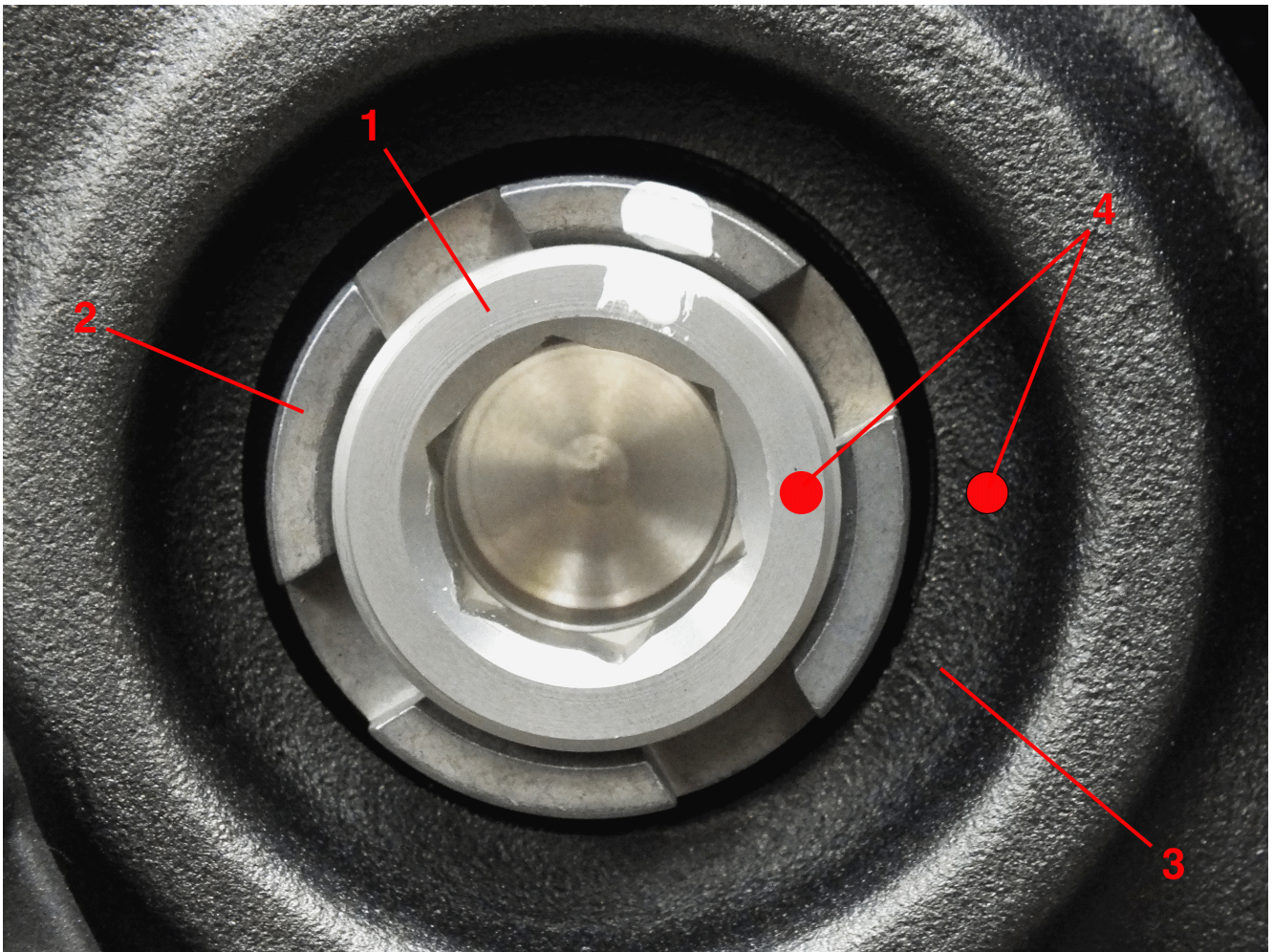
23. Tighten the swinging arm right hand pivot pin to **45 Nm**.

Caution

If the right hand pivot pin moves during the tightening of the locking ring, both the locking ring and pivot pin must be loosened and re-tightened as described in steps 23 to 27 of this procedure.

Failure to tighten the swinging arm pivot pin and locking ring correctly may lead to severe frame damage.

24. Lubricate the threads of the locking ring with a smear of proprietary high temperature copper-based grease.
25. Fit the locking ring to the swinging arm right hand pivot pin.
26. Using a non permanent marker, temporarily mark the pivot pin alignment in relation to the frame.



- 1. Swinging arm pivot pin
- 2. Locking ring
- 3. Frame
- 4. Temporary alignment marks

Note:

- If the pivot pin and frame markings do not align after final tightening of the locking ring, loosen and locking ring and right hand pivot pin and repeat steps 23 to 27 of this procedure.

27. Using service tool T3880062, tighten the locking ring to **110 Nm**.

-
28. Refit the cover to the swinging arm right hand pivot pin.
 29. Remove the support from beneath the engine.

Note:

- Continue from step 22 of the engine installation procedure as described in the Service Manual. Steps describing the tightening of the swinging arm's right hand pivot pin and the installation of the engine bars can be omitted as these processes have been completed as part of this instruction.

When ordering replacement parts, refer to the EPC.

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