Accessory Fitting Instructions

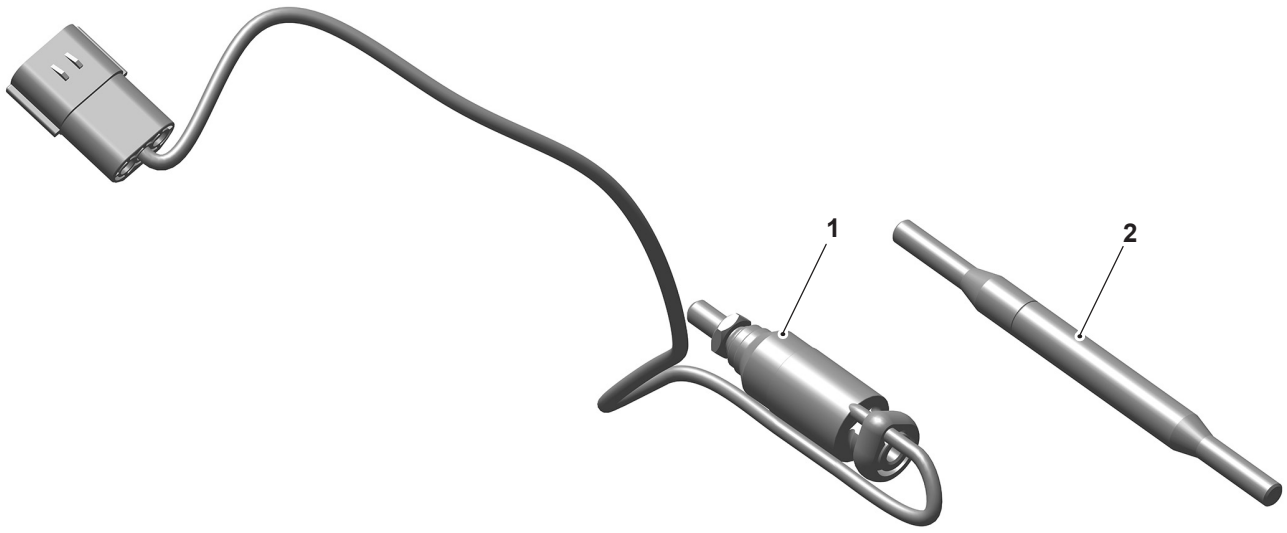
Thank you for choosing this Triumph genuine accessory kit. This accessory kit is the product of Triumph's use of proven engineering, exhaustive testing, and continuous striving for superior reliability, safety and performance.

Completely read all of these instructions before commencing the installation of the accessory kit in order to become thoroughly familiar with the kit's features and the installation process.

These instructions should be considered a permanent part of your accessory kit, and should remain with it even if your accessory equipped motorcycle is subsequently sold.

Triumph Shift Assist (TSA) Kit	
Kit Number	**Models**
A9770186, A9778101	Tiger 900, Tiger 900 GT to VIN BM5542, Tiger 900 GT (LRH), Tiger 900 Rally, Tiger 850 Sport

Parts supplied



1. TSA sensor	1 off	2. Gear selector rod	1 off

⚠ WARNING

Fit only genuine Triumph accessories to those models approved by Triumph as listed in the associated Triumph fitting instructions.

The accessory kits covered in this instruction are designed for use on specific models of Triumph motorcycle. The accessory kits and the models applicable are listed at the start of the instruction. They should never be fitted to any other Triumph model or to any other manufacturer's motorcycle.

Fitting an accessory kit to a Triumph model not listed, or to any other manufacturer's motorcycle, will affect the performance, stability and handling of the motorcycle.

Failure to follow the advice above may lead to loss of motorcycle control which could result in serious injury or death.

⚠ WARNING

Always have Triumph approved parts, accessories and conversions fitted by a competent person with the specialist knowledge and technical understanding of motorcycles, such as an authorised Triumph dealer.

The fitment of parts, accessories and conversions by a person without the specialist knowledge and technical understanding of motorcycles may affect the handling, stability or other aspects of the motorcycle's operation.

Failure to follow the advice above may lead to loss of motorcycle control which could result in serious injury or death.

⚠ WARNING

A torque wrench of known accurate calibration must be used when fitting this accessory kit.

Failure to tighten any of the fasteners to the correct torque specification may affect motorcycle performance, handling and stability.

Failure to follow the advice above may lead to loss of motorcycle control which could result in serious injury or death.

⚠ WARNING

Make sure the motorcycle is stabilised and adequately supported.

Do not support the motorcycle on any ancillary component, the exhaust system or any other non structural parts of the motorcycle frame.

A correctly supported motorcycle will help prevent it from falling.

An unstable motorcycle may fall resulting in motorcycle damage, serious injury or death.

NOTICE

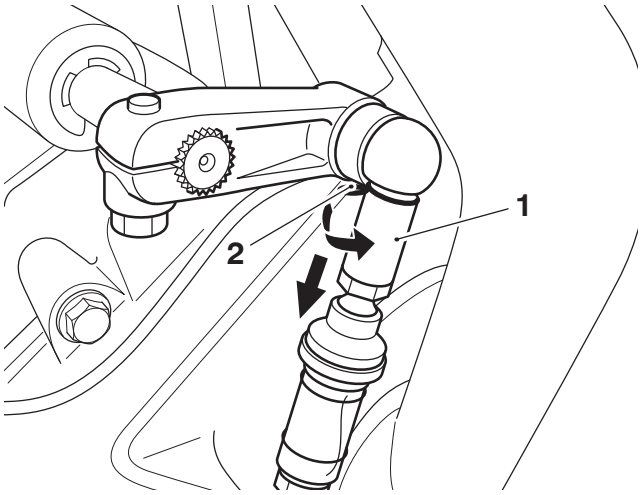
Triumph offers a broad range of approved genuine accessories for your motorcycle.

We cannot therefore cover all possible equipment variations in these instructions. For removal and installation of Triumph Genuine Accessories, always refer to the instructions supplied with the respective accessory kit.

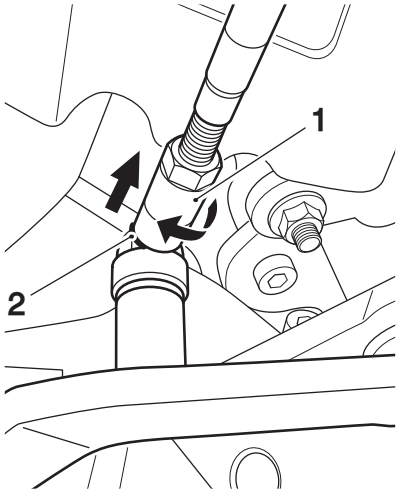
To obtain additional copies of any Triumph accessory instructions, visit www.triumphinstructions.com or contact your authorised Triumph dealer.

1. Remove the rider and passenger seats as described in the Service Manual.
2. Disconnect the battery as described in the Service Manual.
3. Remove the fuel tank and airbox assembly as described in the Service Manual.

4. Remove the wire clips retaining the original gear selector rod front and rear ball joints, as shown. Retain the wire clips for reuse.



1. **Ball joint**
2. **Wire clip**

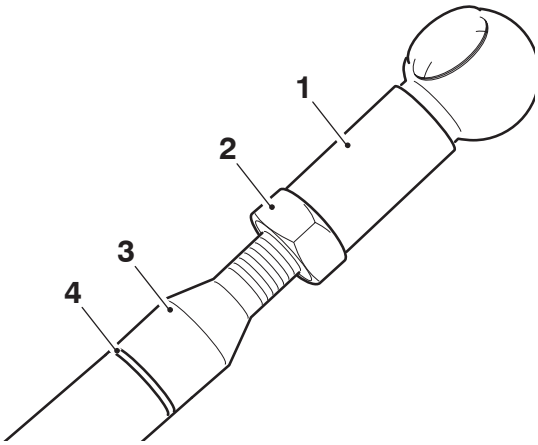


1. **Ball joint**
2. **Wire clip**

5. Remove the original gear selector rod from the motorcycle.

NOTICE

The ball joint and lock nut on the transmission linkage have a left hand thread. This is identified by a machined ring on the gear selector rod.



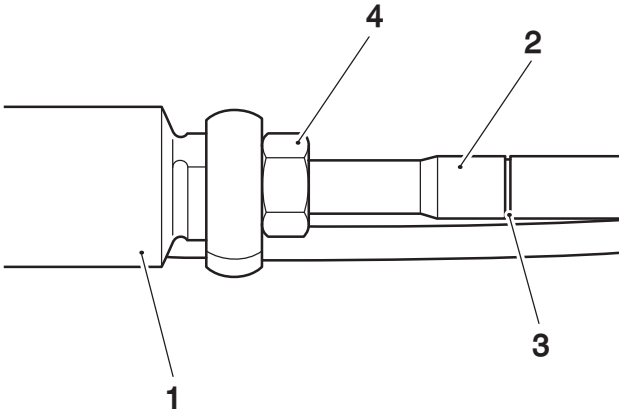
1. **Upper ball joint**
2. **Lock nut**
3. **Gear selector rod**
4. **Machined ring, left hand thread identification**

⚠ CAUTION

It may be difficult to remove the ball joints from the original gear selector rod. Do not use excessive force. If necessary, apply a releasing oil to the ball joints to aid removal.

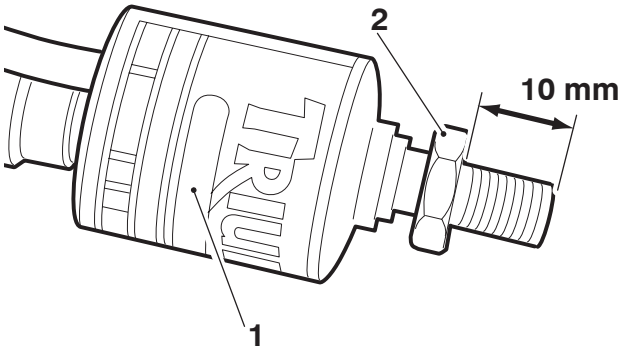
6. Remove the upper and lower ball joints and lock nuts from the original gear selector rod. Retain the lock nuts and ball joints for reuse. Retain the gear selector rod if the motorcycle is to be returned to its original condition.
7. Screw the lock nuts fully on to the new gear selector rod.

8. Fit the TSA sensor on to the gear selector rod, at the end of the rod which has the machined ring. Wind the TSA sensor fully on to the gear selector rod. Tighten the gear selector rod lock nut back against the TSA sensor to **6 Nm.**



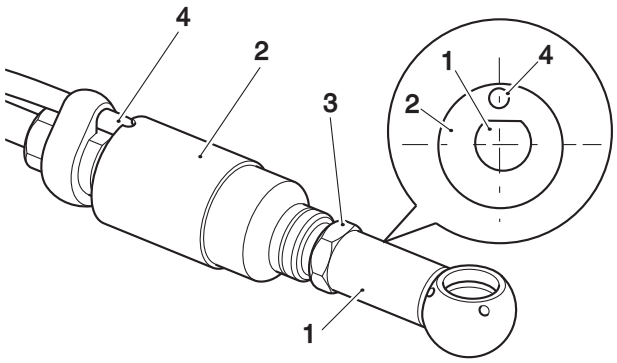
1. **TSA sensor**
2. **Gear selector rod**
3. **Machined ring, left hand thread identification**
4. **Lock nut**

9. Remove the plastic end cap from the TSA sensor.
10. Screw the lock nut on to the rear of the TSA sensor (right hand thread) leaving 10 mm of thread exposed.



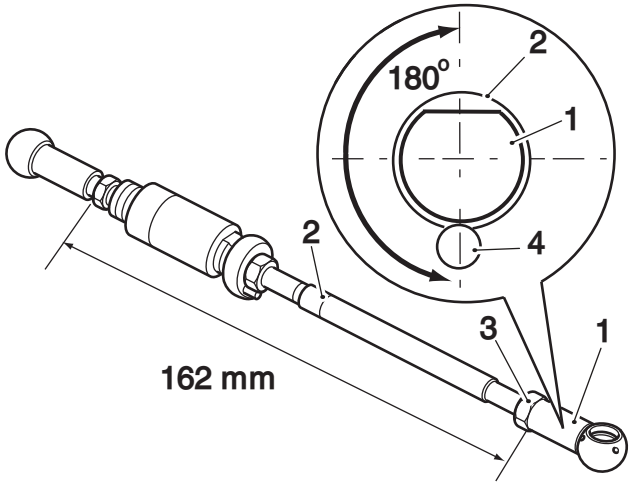
1. **TSA assembly**
2. **Lock nut**

11. Screw the upper ball joint (right hand thread) on to the rear of the TSA sensor until it contacts the lock nut. Unscrew the ball joint, only enough to achieve the correct orientation in relation to the TSA cable, as shown below. Finger tighten the lock nut at this stage.



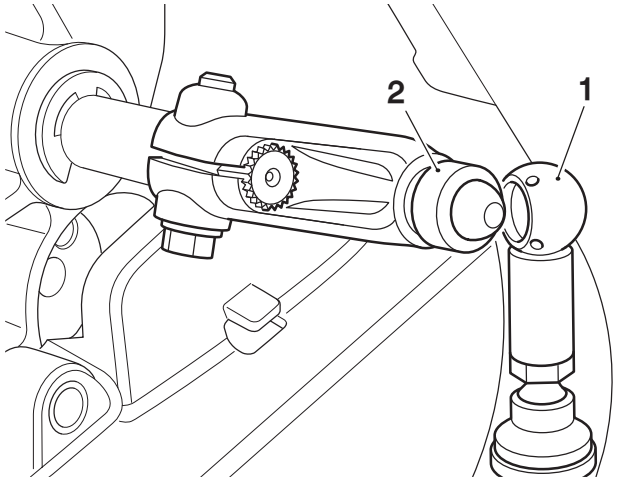
1. **Ball joint**
2. **TSA assembly**
3. **Lock nut**
4. **TSA cable**

12. Fit the lock nut and front ball joint (left hand thread) to the opposite end of the gear selector rod.
13. Screw the lock nut and ball joint on to the gear selector rod to achieve a dimension between the ball joint ends of 162 mm. Make sure that the ball joint is in the correct orientation to the TSA cable, as shown. Finger tighten the lock nut at this stage.



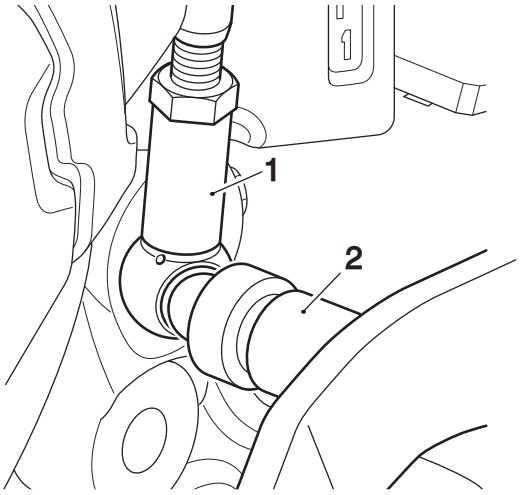
1. **Ball joint**
2. **Gear selector rod**
3. **Lock nut**
4. **TSA cable**

14. Attach the upper ball joint to the transmission linkage.



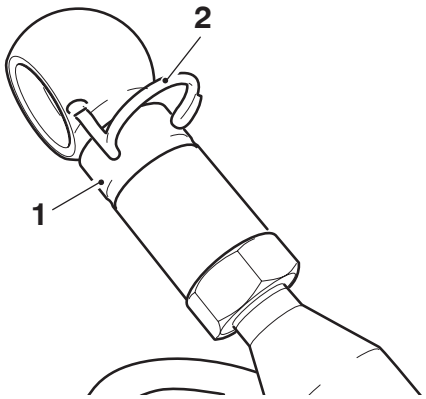
1. Ball joint
2. Transmission linkage

15. Attach the lower ball joint to the foot control.



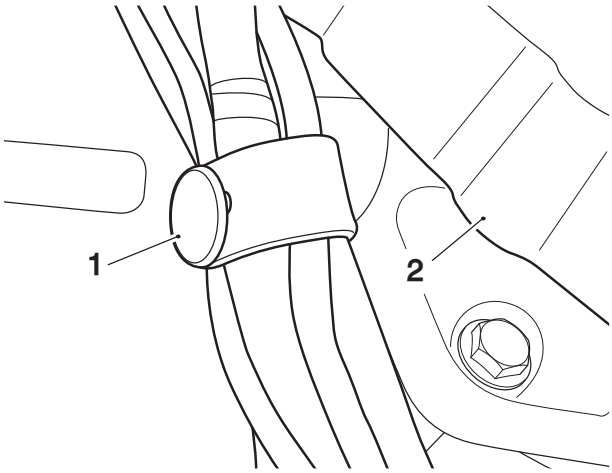
1. Ball joint
2. Foot control

16. Refit the wire clips to retain the ball joints. Make sure the wire clips locate correctly in the ball joints, before rotating the clips to lock in place.



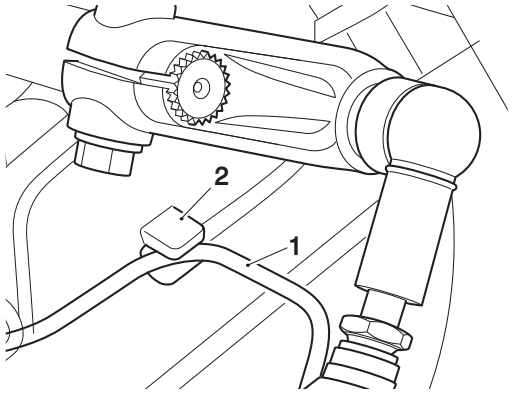
1. Ball joint
2. Wire clip

17. Tighten both lock nuts on the TSA assembly to **6 Nm.**
18. Remove the rubber cable tie by the alternator cover. Retain cable tie for reuse.



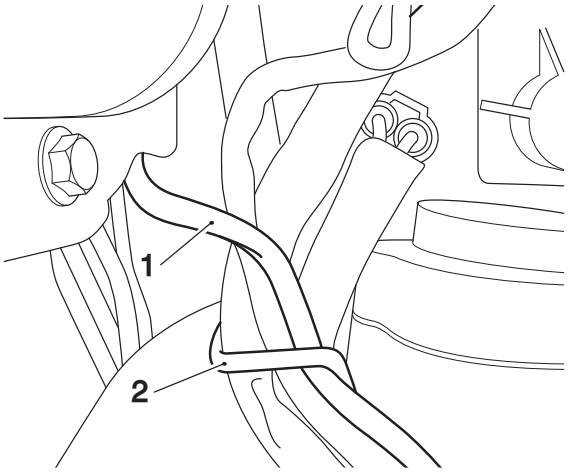
1. Ball joint
2. Wire clip

19. Route the TSA cable through the cable retaining feature on the sprocket cover.



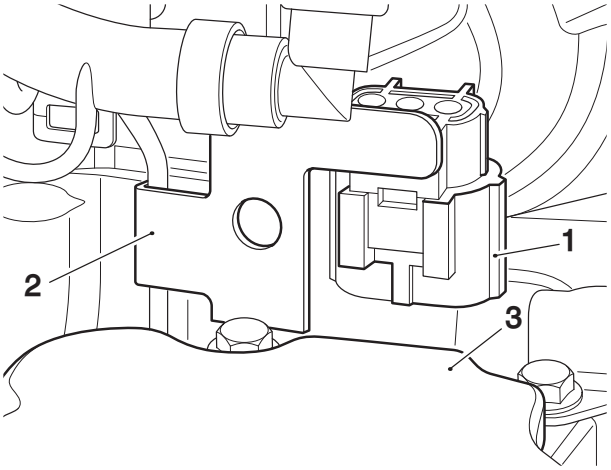
1. TSA cable
2. Sprocket cover cable retaining feature

20. Route the TSA cable through the wire guide by the alternator cover.



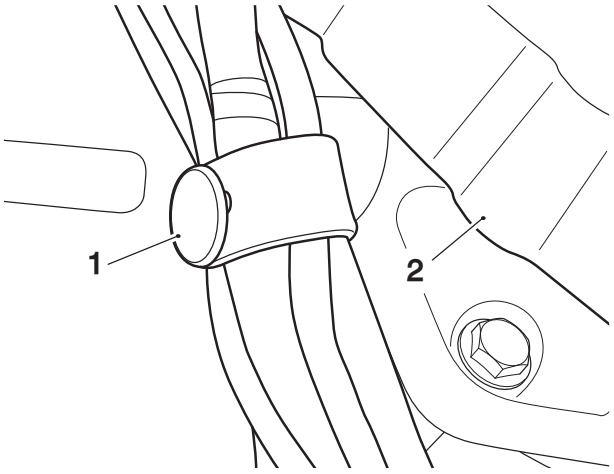
1. TSA cable
2. Wire guide

21. With the airbox assembly removed, unclip the connector from the bracket mounted to the breather cover as shown.



1. TSA connector, main harness
2. Bracket
3. Breather cover

22. Remove the blanking plug from the connector and plug in the TSA connector. Retain blanking plug if the motorcycle is to be returned to its original condition.
23. Refit connector to the bracket mounted to the breather cover.
24. Any excess cable is to be tucked into the space between the main frame and the crankcase.
25. Refit the rubber cable tie by the alternator cover.



1. Rubber cable tie
2. Alternator cover

26. Refit the fuel tank and airbox assembly as described in the Service Manual.
27. Re-connect the battery as described in the Service Manual.
28. Refit the rider and passenger seats as described in the Service Manual.
29. Enable the TSA using the Triumph Diagnostic Tool, as described in the Service Manual.

30. Start the engine and allow it to idle for several seconds to allow adoption of the shift force sensor.
31. Ride the motorcycle for 10 seconds in each gear to enable the gear position sensor to adapt. The adaption status can be checked using the Triumph Diagnostic Tool.

Adjusting the Gear Pedal Angle

⚠ CAUTION

When adjusting the gear pedal angle do not remove the TSA ball joints from either the transmission linkage or foot control. If the ball joints are removed from either the transmission linkage or foot control when adjusting the gear pedal angle the adjustment setting of the TSA assembly could be compromised which may result in a TSA malfunction.

NOTICE

If it is necessary to adjust the gear pedal angle at any point after fitting the TSA, follow the steps below.

32. Remove the rider and passenger seats as described in the Service Manual.
33. Disconnect the battery as described in the Service Manual.
34. Remove the fuel tank and airbox assembly as described in the Service Manual.
35. Unplug the TSA connector from the main harness connector and release the cable.
36. Loosen both ball joint lock nuts on the TSA assembly.
37. Turn the TSA assembly to achieve the desired pedal angle. Note, the TSA assembly must be turned in complete revolutions to make sure the TSA cable is positioned at the top.
38. Continue from step 18.

TSA Operation

⚠ CAUTION

TSA is optimised for on-road use only.

It must not be used during off-road or track riding.

⚠ CAUTION

In the event of a TSA system fault when riding, the TSA system will be disabled.

Use the clutch to change gears in the normal way otherwise damage to the engine or gear box may occur.

Contact a Triumph dealer as soon as possible to have the fault checked and rectified.

⚠ CAUTION

Changing gears must be completed with a quick and forceful pedal movement, making sure that the pedal moves through its full range of travel.

Always take care when changing gears. After a gear change, the pedal must be fully released before another gear change can be made.

Incorrect gear changes can cause damage to the engine and transmission.

TSA adjusts the engine torque to allow gears to engage, without closure of the throttle twist grip or operation of the clutch.

TSA is not an automatic system for changing gears. Gears must be selected and changed in the normal way using the gear pedal as described in the Changing Gears section in the Owner's Handbook.

TSA works for both up shifts and down shifts of gear. The clutch must be used for stopping and pulling away. The clutch must be used when selecting any gear from neutral, and also when selecting neutral from any other gear.

TSA will not operate if:

- An up shift is attempted by mistake when in 6th gear.
- A down shift is attempted by mistake when in 1st gear.
- An up shift is attempted at very low engine speeds.
- A down shift is attempted at very high engine speeds.
- An up shift is attempted during overrun.
- The vehicle speed limiter is active.
- Cruise control is active.
- Traction control is operating.
- If the previous gear has not fully engaged.
- The throttle is changed during a shift.

If TSA does not operate, the clutch can be used to change gears in the normal way.

For more information on enabling and disabling the Triumph Shift Assist functionality, see the Triumph Shift Assist section in the Instrument chapter of the Owner's Handbook.

⚠ WARNING

After fitting the accessory kit the motorcycle will exhibit new handling characteristics.

Operate the motorcycle in a safe area free from traffic to gain familiarity with any new characteristics.

Operation of the motorcycle when not familiar with any new handling characteristics may lead to loss of motorcycle control which could result in serious injury or death.

⚠ WARNING

If, after fitting this accessory kit, you have any doubt about the performance of any aspect of the motorcycle, contact a competent person with the specialist knowledge and technical understanding of motorcycles, such as an authorised Triumph dealer.

Riding a motorcycle when there is any doubt as to any aspect of the performance of the motorcycle may lead to loss of motorcycle control which could result in serious injury or death.

⚠ WARNING

Never ride an accessory-equipped motorcycle at speeds above 80 mph (130 km/h).

Remember that the 80 mph (130 km/h) limit will be reduced by the fitting of non-approved accessories, incorrect loading, worn tyres, overall motorcycle condition and poor road or weather conditions.

The presence of accessories will cause changes in the stability and handling of the motorcycle. Failure to allow for changes in motorcycle stability may lead to loss of motorcycle control which could result in serious injury or death.

⚠ WARNING

High-speed operation should only be attempted by riders who have been instructed in the techniques necessary for high-speed riding and are familiar with the motorcycle's characteristics in all conditions.

Only operate this Triumph motorcycle at high speed in closed-course, on-road competition or on closed-course racetracks.

High-speed operation in any other circumstances is dangerous and may lead to loss of motorcycle control which could result in serious injury or death.

NOTICE

The motorcycle must not be operated above the legal road speed limit except in closed-course conditions.