1 General Information

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Ignition System Safety Precautions

Warning

The ignition system produces extremely high voltages. Do not touch any part of the ignition system or any cables while the engine is running.

An electric shock caused by contact with the ignition system may lead to illness, injury or death.

Warning

Wearers of surgically implanted heart pacemaker devices should not be in close proximity to ignition circuits and or diagnostic equipment.

The ignition system and any diagnostic equipment may interrupt the normal operation of such devices causing illness or death.

Dangerous Substances

Warning

Many liquids and other substances used in motor vehicles are poisonous and should under no circumstances be consumed and should, as far as possible, be kept from contact with the skin. These substances among others include acid, anti-freeze, asbestos, brake fluid, fuel, lubricants, and various adhesives. Always pay close attention to the instructions printed on labels and obey the instructions contained within. These instructions are included for your safety and well-being.

NEVER DISREGARD THESE INSTRUCTIONS!

Fluoroelastomers

Warning

Fluoroelastomer material is used in the manufacture of various seals in Triumph motorcycles.

In fire conditions involving temperatures greater than 315°C this material will decompose and can then be potentially hazardous. Highly toxic and corrosive decomposition products, including hydrogen fluoride, carbonyl fluoride, fluorinated olefins and carbon monoxide can be generated and will be present in fumes from fires.

In the presence of any water or humidity hydrogen fluoride may dissolve to form extremely corrosive liquid hydrofluoric acid.

If such conditions exist, do not touch the material and avoid all skin contact. Skin contact with liquid or decomposition residues can cause painful and penetrating burns leading to permanent, irreversible skin and tissue damage.

Oils

Warning

The engine and bevel box oils may be hot to the touch. Contact with hot oil may cause the skin to be scalded or burned.

Warning

Prolonged or repeated contact with engine oil can lead to skin dryness, irritation and dermatitis. In addition used engine oil contains potentially harmful contaminants which can cause cancer. Wear suitable clothing and avoid skin contact.

Health Protection Precautions

- Avoid prolonged and repeated contact with oils, particularly used engine oils.
- Wear protective clothing, including impervious gloves where practicable.
- Do not put oily rags in pockets.
- Overalls must be cleaned regularly. Discard heavily soiled clothing and oil impregnated footwear.
- First aid treatment should be obtained immediately for open cuts and wounds. Always

be aware of who your nearest first-aider is and where the medical facilities are kept.

- Use barrier creams, applying before each work period to protect the skin from the effects of oil and grease and to aid removal of the same after completing work.
- Wash with soap and water to ensure all oil is removed (skin cleansers and nail brushes will help). Preparations containing lanolin replace the natural skin oils which have been removed.
- Do not use petrol, kerosene, diesel fuel, gas oil, thinners or solvents for cleaning skin.
- If skin disorders develop, obtain medical advice without delay.
- Where practicable, de-grease components prior to handling.

Warning

Any risk of eye injury must be avoided. Always wear eye protection when using a hammer, air line, cleaning agent or where there is ANY risk of flying debris or chemical splashing.

Environmental Protection Precautions

Caution

Do not pour oil on the ground, down sewers or drains, or into water courses. To prevent pollution of water-courses etc., dispose of used oil sensibly. If in doubt contact your local authority.

Burning of used engine oil in small space heaters or boilers can be recommended only for units of approved design. If in doubt, check with the appropriate local authority and/or manufacturer of the approved appliance.

Dispose of used oil and used filters through authorised waste disposal contractors, to licensed waste disposal sites, or to the waste oil reclamation trade. If in doubt, contact your local authority for advice on disposal facilities.

Brakes

Warning

Brake fluid is hygroscopic which means it will absorb moisture from the air. Any absorbed moisture will greatly reduce the boiling point of the brake fluid causing a reduction in braking efficiency.

Replace brake fluid in line with the routine maintenance schedule. A dangerous riding condition could result if this important maintenance item is neglected!

Do not spill brake fluid onto any area of the bodywork as this will damage any painted or plastic surface.

Always use new brake fluid from a sealed container and never use fluid from an unsealed container or from one that has been previously opened.

Do not mix different brands of fluid. Check for fluid leakage around brake fittings, seals and joints.

Check regularly for brake hose damage.

FAILURE TO OBSERVE ANY OF THE ABOVE WARNINGS MAY REDUCE BRAKING EFFICIENCY LEADING TO AN ACCIDENT.

Warning

If there has been an appreciable drop in the level of the fluid in either brake fluid reservoir, consult your authorised Triumph Dealer for advice before riding.

If the brake lever or pedal feels soft when it is applied, or if the lever/pedal travel becomes excessive, there may be air in the brake lines or the brake may be defective.

It is dangerous to operate the motorcycle under such conditions and remedial action must be taken by your authorised Triumph dealer before riding the motorcycle.

Failure to take remedial action may reduce braking efficiency leading to an accident.

Warning

Use only D.O.T. 4 specification brake fluid as listed in the general information section of this manual. The use of brake fluids other than those D.O.T. 4 fluids listed in the general information section may reduce the efficiency of the braking system leading to an accident.

Failure to change the brake fluid at the interval specified in the routine maintenance schedule may reduce braking efficiency resulting in an accident.

Warning

Never use mineral based grease in any part of the braking system or in any area where contact with the braking system is possible. Mineral based grease will damage the hydraulic seals in the calipers and master cylinders.

Damage caused by contact with mineral based grease may reduce braking efficiency resulting in an accident.

Safety Instructions

Jacking and lifting

Warning

Always ensure that any lifting apparatus has adequate load and safety capacity for the weight to be lifted. Ensure the motorcycle is well supported to prevent any possibility of the machine falling prior during lifting or jacking or while repairs and servicing are carried out.

Never rely on a single means of support when working with the motorcycle. Use additional safety supports and straps to prevent toppling.

Do not leave tools, lifting equipment, spilt oil, etc. in a place where they could become a hazard to health. Always work in a clean, tidy area and put all tools away when the work is finished.

Precautions against damage

Avoid spilling brake fluid or battery acid on any part of the bodywork. Wash spillages off with water immediately.

Disconnect the battery earth lead before starting work, see **ELECTRICAL PRECAUTIONS**.

Always use the recommended service tool where specified.

Protect exposed bearing and sealing surfaces, and screw threads from damage.

Coolant

Warning

Coolant mixture, which is blended with anti-freeze and corrosion inhibitors contains toxic chemicals which are harmful to the human body. Never swallow anti-freeze, corrosion inhibitors or any of the motorcycle coolant.

Warning

Do not remove the radiator cap when the engine is hot. When the engine is hot, the coolant inside the radiator is hot and also under pressure. Contact with the pressurised coolant will cause scalds and skin damage.

Caution

The coolant anti-freeze contains a corrosion inhibitor which helps prevent damage to the metal surfaces inside the cooling system. Without this inhibitor, the coolant would `attack' the metals and the resulting corrosion would cause blockages in the cooling system leading to engine overheating and damage. Always use the correct anti-freeze as specified in the Owner's Handbook. Never use a methanol based anti-freeze as this does not contain the required corrosion inhibition properties.

Caution

Distilled water must be used with the anti-freeze (see specification for anti-freeze) in the cooling system.

If hard water is used in the system, it causes scale accumulation in the water passages, and considerably reduces the efficiency of the cooling system. Reduced cooling system efficiency may lead to the engine overheating and engine damage.

Cleaning components

A high flash-point solvent is recommended to reduce fire hazard.

Always follow container directions regarding the use of any solvent.

Always use the recommended cleaning agent or equivalent.

Do not use degreasing equipment for components containing items which could be damaged by the use of this process. Whenever possible, clean components and the area surrounding them before removal. Always observe scrupulous cleanliness when cleaning dismantled components.

Lubrication

The majority of engine wear occurs while the engine is warming up and before all the rubbing surfaces have an adequate lubrication film. During assembly, oil or grease (whichever is more suitable) should be applied to any rubbing surface, which has lost its lubrication film. Old grease and dirty oil should be cleaned off. This is because used lubricants will have lost some lubrication qualities and may contain abrasive foreign particles.

Use recommended lubricants. Some oils and greases in particular should be used only in certain applications and may be harmful if used in an application for which they are not intended. This manual makes reference to molybdenum disulphide grease in the assembly of certain engine and chassis parts. Always check manufacturer recommendations before using such special lubricants.

Joints and joint faces

Assemble joints dry unless otherwise specified in this Manual.

If gaskets and/or jointing compound is recommended for use; remove all traces of old jointing material prior to reassembly. Do not use a tool which will damage the joint faces and smooth out any scratches or burrs on the joint faces using an oil stone. Do not allow dirt or jointing material to enter any tapped holes.

Gaskets, O-rings

Do not re-use a gasket or O-ring once it has been in service. The mating surfaces around the gasket should be free of foreign matter and perfectly smooth to avoid oil or compression leaks.

Liquid gasket, non-permanent locking agent

Follow manufacturer's directions for cleaning and preparing surfaces where these compounds will be used. Apply sparingly as excessive amounts of sealer may block engine oil passages and cause serious damage.

Prior to reassembly, blow through any pipes, channels or crevices with compressed air.

⚠ Warning

To prevent injury, always use eye, face and ear protection when using compressed air. Always wear protective gloves if the compressed air is to be directed in proximity to the skin.

Screw Threads

Metric threads to ISO standard are used.

Damaged nuts, bolts and screws must always be discarded.

Castellated nuts must not be slackened back to accept a split-pin, except in those recommended cases when this forms part of an adjustment.

Do not allow oil or grease to enter blind threaded holes. The hydraulic action on screwing in the bolt or stud could split the housing.

Always tighten a nut or bolt to the recommended torque figure. Damaged or corroded threads can affect the torque reading.

Unless specified, threaded fixings must always be fitted dry (no lubrication).

⚠ Warning

Never lubricate a thread unless instructed to do so.

When a thread of a fixing is lubricated, the thread friction is reduced. When the fixing is tightened, reduced friction will cause overtightening and possible fixing failure.

A fixing which fails in service could cause component detachment leading to loss of control and an accident.

Locking Devices

Always release locking tabs and fit new locking washers, do not re-use locking tabs.

Fitting a split pin

Always fit new split-pins of the correct size for the hole in the bolt or stud. Do not slacken back castle nuts when fitting split pin, except in those recommended cases when this forms part of an adjustment.

Always fit new roll pins of an interference fit in the hole.

Circlips, retaining rings

Replace any circlips and retaining rings that are removed. Removal weakens and deforms circlips causing looseness in the circlip groove. When installing circlips and retaining rings, take care to compress or expand them only enough to install them.

Always use the correct replacement circlip as recommended in the Triumph parts catalogue.

Self locking nuts

Self-locking nuts can be re-used, providing resistance can be felt when the locking portion passes over the thread of the bolt or stud.

DO NOT re-use self-locking nuts in critical locations, e.g. suspension components. Always use the correct replacement self-locking nut.

Encapsulated bolt

An encapsulated bolt can be identified by a coloured section of thread which is treated with a locking agent.

Unless a specified repair procedure states otherwise, encapsulated bolts cannot be reused and MUST be replaced if disturbed or removed.

Warning

Failure to replace an encapsulated bolt could lead to a dangerous riding condition. Always replace encapsulated bolts.

Oil and grease seals

Replace any oil or grease seals that are removed. Removal will cause damage to an oil seal which, if re-used, would cause an oil leak.

Ensure the surface on which the new seal is to run is free of burrs or scratches. Renew the component if the original sealing surface cannot be completely restored.

Protect the seal from any surface which could cause damage over which it has to pass when being fitted. Use a protective sleeve or tape to cover the relevant surface and avoid touching the sealing lip.

Lubricate the sealing lips with a recommended lubricant. This will help to prevent damage in initial use. On dual lipped seals, smear the area between the lips with appropriate grease.

When pressing in a seal which has manufacturer's marks, press in with the marks facing out.

Seals must be pressed into place using a suitable driver. Use of improper tools will damage the seal.

Press

A part installed using a press or driver, such as a wheel bearing, should first be coated with oil or grease on its outer or inner circumference so that it will locate smoothly.

Ball bearing

When installing a ball bearing, the bearing race which is an interference fit should be pushed by a suitable driver. This prevents severe stress or damage to the load carrying components. Press a ball bearing until it touches the shoulder in the bore or on the shaft.

Press or drift seals to the depth of its housing, with the sealing lip facing the lubricant to be retained if the housing is shouldered, or flush with the face of the housing where no shoulder is provided.

Fuel Handling Precautions

General

The following information provides basic precautions which must be observed if petrol (gasoline) is to be handled safely. It also outlines other areas of risk which must not be ignored. This information is issued for basic guidance only and, if in doubt, appropriate enquiries should be made of your local Fire Officer.

Petrol - Gasoline

When petrol (gasoline) evaporates it produces 150 times its own volume in vapour which when diluted with air becomes a readily ignitable mixture. The vapour is heavier than air and will always fall to the lowest level. It can readily be distributed throughout any indoor environment by air currents, consequently, even a small spillage of petrol (gasoline) is potentially very dangerous.

Warning

Petrol (gasoline) is highly flammable and can be explosive under certain conditions. When opening the fuel tank cap always observe all the following items;

Turn the motorcycle ignition switch OFF.

Do not smoke.

Always have a fire extinguisher containing FOAM, CO2, HALON or POWDER close at hand when handling or draining fuel or fuel systems. Fire extinguishers must also be present in areas where fuel is stored.

Always disconnect the vehicle battery, negative (black) lead first, before carrying out dismantling or draining work on a fuel system.

Whenever petrol (gasoline) is being handled, drained, stored or when fuel systems are being dismantled, make sure the area is well ventilated. All potential forms of ignition must be extinguished or removed (this includes any appliance with a pilot light). Any lead-lamps must be flame-proof and kept clear of any fuel spillage.

Warning notices must be posted at a safe distance from the site of the work to warn others that petrol is being openly handled. The notice must instruct the reader of the precautions which must be taken.

Failure to observe any of the above warnings may lead to a fire hazard which could result in personal injury.

Warning

No one should be permitted to repair components associated with petrol/gasoline without first having specialist training on the fire hazards which may be created by incorrect installation and repair of items associated with petrol/gasoline.

Repairs carried out by untrained personnel could bring about a safety hazard leading to a risk of personal injury.

Warning

Draining or extraction of petrol/gasoline from a vehicle fuel tank must be carried out in a well ventilated area.

The receptacle used to contain the petrol/ gasoline must be more than adequate for the full amount of fuel to be extracted or drained. The receptacle should be clearly marked with its contents, and placed in a safe storage area which meets the requirements of local authority regulations.

When petrol/gasoline has been extracted or drained from a fuel tank, the precautions governing naked lights and ignition sources should be maintained.

Failure to observe any of the above warnings could bring about a safety hazard leading to a risk of personal injury.

Fuel tank removal

Fuel tanks should have a `PETROL (GASOLINE) VAPOUR' warning label attached to them as soon as they are removed from the vehicle. In all cases, they must be stored in a secured, marked area.

Chassis repairs

Warning

If the motorcycle is involved in an accident or collision it must be taken to an authorised Triumph dealer for repair or inspection. Any accident can cause damage to the motorcycle, which if not correctly repaired, may cause a second accident which may result in injury or death.

The frame must not be modified as any modification to the frame such as welding or drilling may weaken the frame resulting in an accident.

Electrical Precautions

The following guidelines are intended to ensure the safety of the operator whilst preventing damage to the electrical and electronic components fitted to the motorcycle. Where necessary, specific precautions are detailed in the relevant sections of this manual which should be referred to prior to commencing repair operations.

Equipment - Prior to commencing any test procedure on the motorcycle ensure that the relevant test equipment is working correctly and any harness or connectors are in good condition, in particular mains leads and plugs.

Warning

The ignition system produces extremely high voltages. Do not touch any part of the ignition system or any cables while the engine is running.

An electric shock caused by contact with the ignition system may lead to illness, injury or death.

Warning

Wearers of surgically implanted heart pacemaker devices should not be in close proximity to ignition circuits and or diagnostic equipment.

The ignition system and any diagnostic equipment may interrupt the normal operation of such devices causing illness or death.

Warning

The battery contains harmful materials. Always keep children away from the battery whether or not it is fitted in the motorcycle.

Do not jump start the battery, touch the battery cables together or reverse the polarity of the cables as any of these actions may cause a spark which would ignite battery gasses causing a risk of personal injury.

High Voltage Circuits - Whenever disconnecting live H.T. circuits always use insulated pliers. Exercise caution when measuring the voltage on the coil terminals while the engine is running, high voltage spikes can occur on these terminals.

Connectors and Harness - The engine of a motorcycle is a particularly hostile environment for electrical components and connectors. Always ensure these items are dry and oil free before disconnecting and connecting test equipment. Never force connectors apart either by using tools or by pulling on the wiring itself. Always ensure locking mechanisms are disengaged before removal and note the orientation to enable correct reconnection. Ensure that any protective covers and substances are replaced if disturbed.

Having confirmed a component to be faulty, switch off the ignition and disconnect the battery negative (black) lead first. Remove the component and support the disconnected harness. When replacing the component keep oily hands away from electrical connection areas and push connectors home until any locking mechanism becomes fully engaged.

Battery disconnecting

Before disconnecting the battery, switch off all electrical equipment.

Warning

To prevent the risk of a battery exploding and to prevent damage to electrical components ALWAYS disconnect the battery negative (black) lead first. When reconnecting the battery, always connect the positive (red) lead first, then the negative (black) lead. Always disconnect the battery when working on any part of the electrical system.

Failure to observe the above warnings may lead to electrical damage and a fire hazard which could cause personal injury.

Always ensure that battery leads are routed correctly and are not close to any potential chafing points.

Disciplines

Switch off the ignition prior to making any connection or disconnection in the system. An electrical surge can be caused by disconnecting `live' connections which can damage electronic components.

Ensure hands and work surfaces are clean and free of grease, swarf, etc. as grease collects dirt which can cause tracking or high-resistance contacts.

Prior to commencing any test, and periodically during any test, touch a good earth to discharge body static. This is because some electronic components are vulnerable to static electricity.

Electrical wires

All the electrical wires are either single-colour or two-colour and, with only a few exceptions, must be connected to wires of the same colour. On any of the two-colour wires there is a greater amount of one colour and a lesser amount of a second colour. A two-colour wire is identified by first the primary colour and then the secondary colour. For example, a yellow wire with thin red stripes is referred to as a `yellow/red' wire; it would be a `red/yellow' wire if the colours were reversed to make red the main colour.

Inspection

Disassembled parts should be visually inspected and replaced with new ones if there are any signs of the following:

Abrasions, cracks, hardening, warping, bending, dents, scratches, colour changes, deterioration, seizure or damage of any nature.

Replacement Parts

⚠ Warning

Only Triumph genuine parts should be used to service, repair or convert Triumph motorcycles. To ensure that Triumph genuine parts are used, always order parts, accessories and conversions from an authorised Triumph dealer. The fitting of non-approved parts, accessories or conversions may adversely affect the handling, stability or other aspects of the motorcycle operation which may result in an accident causing serious injury or death.

⚠ Warning

Always have Triumph genuine parts, accessories and conversions fitted by an authorised Triumph dealer. The fitment of parts, accessories and conversions by a dealer who is not an authorised Triumph dealer may affect the handling, stability or other aspects of the motorcycle operation which may result in an accident causing serious injury or death.

⚠ Warning

Always have Triumph approved parts, accessories and conversions fitted by a trained technician. To ensure that a trained technician is used, have an authorised Triumph dealer fit the parts. The fitment of parts, accessories and conversions by personnel other than a trained technician at an authorised Triumph dealer may affect the handling, stability or other aspects of the motorcycle operation which may result in an accident causing serious injury or death.

Service data

The service data listed in this manual gives dimensions and specifications for brand new, original parts. Where it is permissible to allow a part to exceed these figures, then the service limit is given.

The terms of the motorcycle warranty will be invalidated by the fitting of other than genuine Triumph parts.

All genuine Triumph parts have the full backing of the motorcycle warranty. Triumph dealers are obliged to supply only genuine Triumph recommended parts.

Specification

Triumph are constantly seeking to improve the specification, design and production of their motorcycles and alterations take place accordingly.

While every effort has been made to ensure the accuracy of this Manual, it should not be regarded as an infallible guide to current specifications of any particular motorcycle.

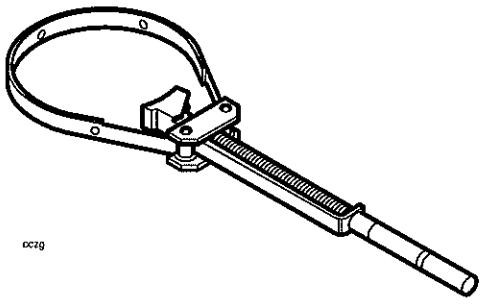
Authorised Triumph Dealers are not agents of Triumph and have no authority to bind the manufacturer by any expressed or implied undertaking or representation.

Service Tools and Garage Equipment

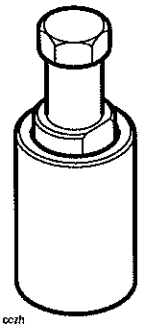
Special service tools have been developed to facilitate removal, dismantling and assembly of certain mechanical components in a practical manner without causing damage. Some operations in this Service Manual cannot be carried out without the aid of the relevant service tools. Where this is the case, the tools required will be described during the procedure.

Special Service Tools

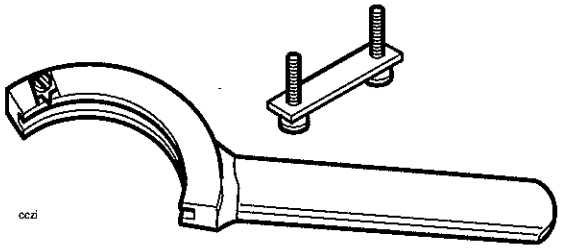
T3880375 – Alternator Rotor Holder



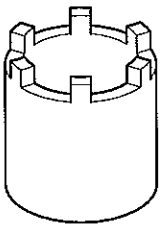
T3880365 – Puller, Alternator Rotor



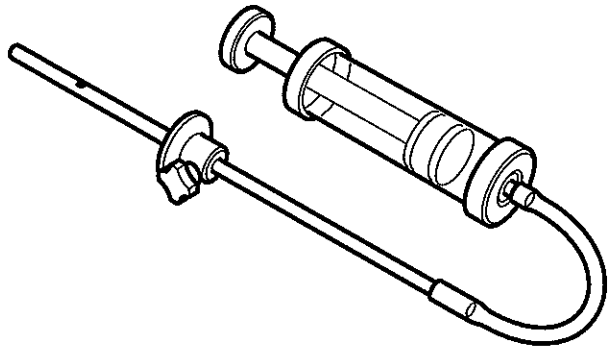
T3880016 – Holder, Balancer Gear



T3880023 - Headstock Bearing Wrench

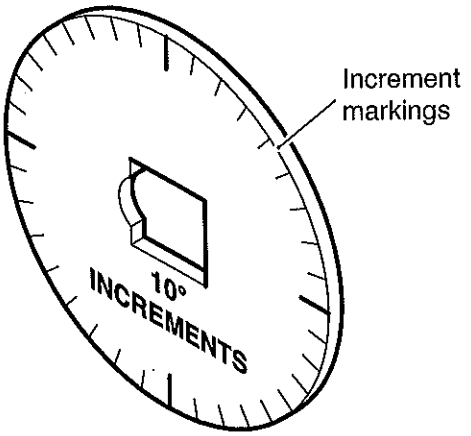


3880160-T0301 – Fork Filler / Evacuator



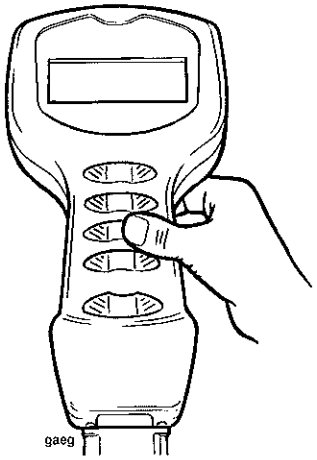
ccha

T3880105 – Angular Torque Gauge



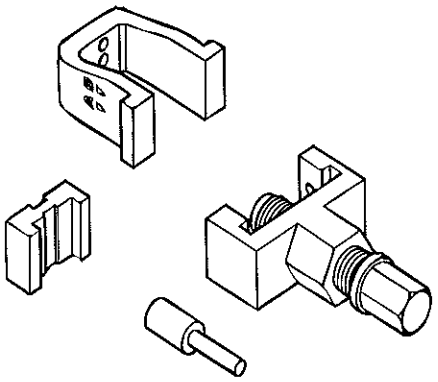
cbxt

T3880250 – Engine Management/ABS Diagnostics

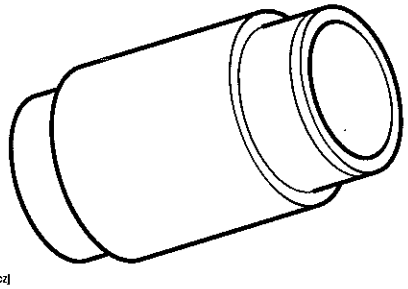


gaeg

A9930023 - Chain Link Took Kit



3880080-T0301 – Fork Seal / Bearing Drift



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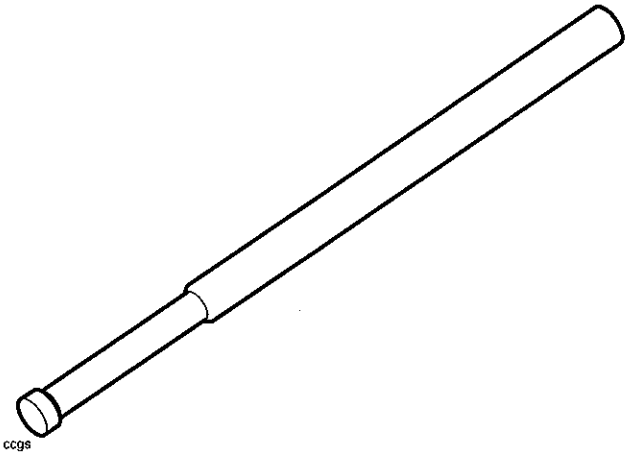
3880085-T0301 - Fork Damper / Holder



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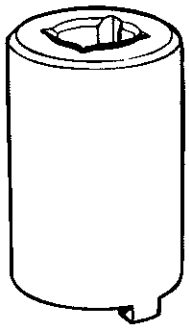
T3880290 – Wrench, Swinging Arm Clamp



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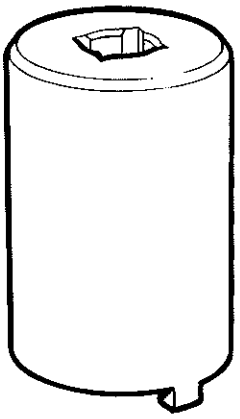
T3880295 – Wrench, Swinging Arm Lock Ring



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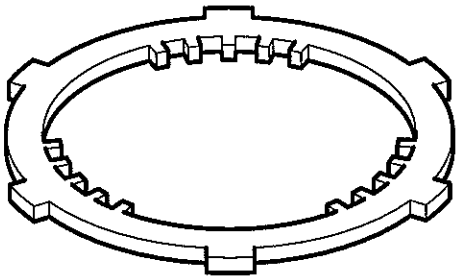
T3880305 – Clutch Anti-rotation Tool



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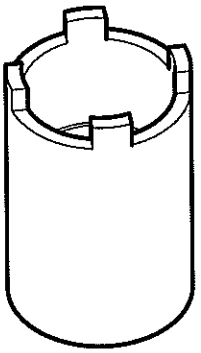
T3880088 – Wrench, Engine Mountings



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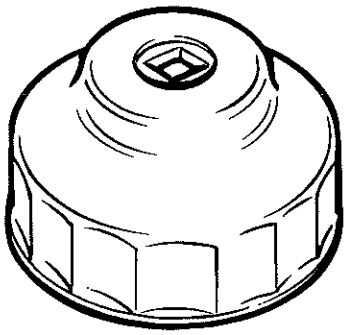
T3880312 – Oil Filter Wrench



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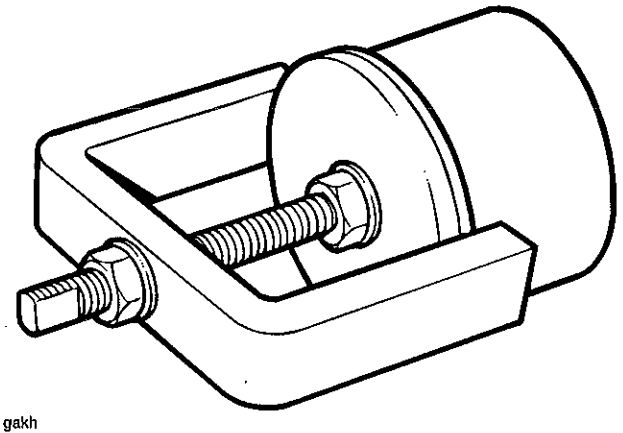
T3880315 – Extractor, Cylinder Liners



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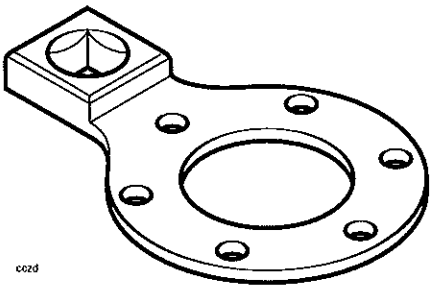
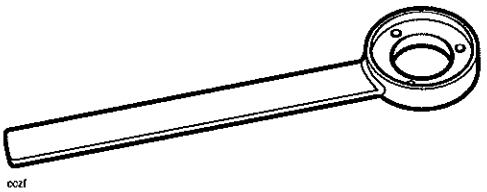
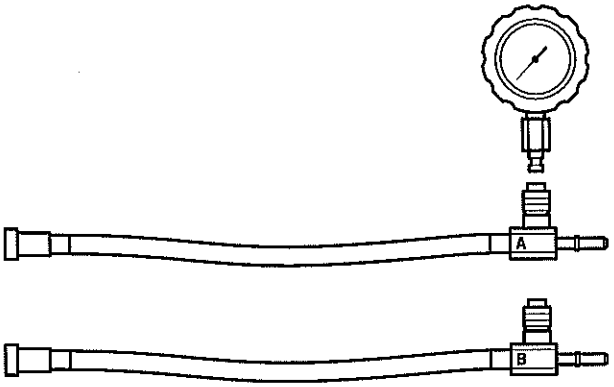
T3880371 – Holder, Oil Pump Drive Gear



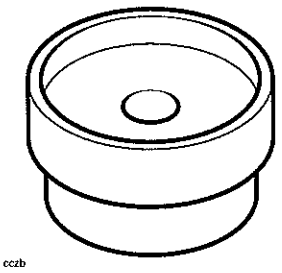
T3880017 – Holder, Sprag Clutch



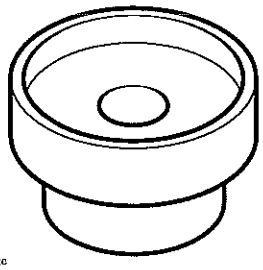
T3880001 – Fuel Pressure Gauge



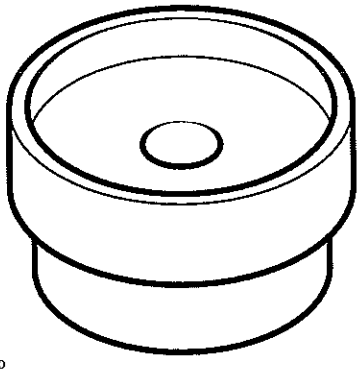
T3880065 – T0301 – Bearing Installer



T3880070 – T0301 – Bearing Installer



T3880075 – T0301 – Bearing Installer



Full Specification		Sprint ST
Engine		
Engine Configuration		3 Cylinder 12 valve DOHC
Arrangement		Transverse in-line
Displacement		1050 cc
Bore x Stroke		79 x 71.4 mm
Compression Ratio		12.0:1
Cylinder Numbering		Left to Right (no.3 adjacent to cam chain)
Cylinder Sequence		Number 1 at left
Firing Order		1-2-3
Maximum Power		125 PS (123bhp) at 9,250 rpm
Maximum Torque		104 Nm (77ft.lbf)at 5,000 rpm
Cylinder Head Valves		
Valve Head Diameter	In	33.5 mm
	Ex	27.0 mm
Valve Lift	In	8.75 mm
	Ex	7.45 mm
Inlet valve Stem Diameter		4.975-4.990 mm
Service Limit		4.965 mm
Exhaust Valve Stem Diameter		4.955-4.990 mm
Service Limit		4.945 mm
Inlet Valve Guide Bore Diameter		5.000-5.015 mm
Service Limit		5.043 mm
Exhaust Valve Guide Bore Diameter		5.000-5.035 mm
Service Limit		5.063 mm
Valve Stem to Guide Clearance	In	0.010-0.040 mm
	Ex	0.030-0.060 mm
Inlet Valve Seat Width (in head)		0.9-1.1 mm
Service Limit		1.5 mm
Exhaust Valve Seat Width (in head)		1.1-1.3 mm
Service Limit		1.7 mm
Valve Seat Width (valve)		1.5-1.9 mm
Valve Seat Angle		45°
Inlet / Exhaust Valve Spring 'Load at Length'		470 N +/-30 at 26.3 mm (inner)
Valve Clearance	In	0.10-0.20 mm
	Ex	0.20-0.30 mm
Valve Bucket Diameter		28.476-28.490 mm
Service Limit		28.549 mm
Valve Bucket Bore Diameter		28.515-28.535 mm
Service Limit		28.549 mm

Full Specification		Sprint ST
Camshafts		
Cam Timing Inlet		Open 11.25° BTDC (@ 1.0 mm lift)
		Close 41.25° ABDC (@1.0 mm lift)
	Duration	232.50°
Cam Timing Exhaust		Open 34° BBDC (@ 1.0 mm lift)
		Close 4° ATDC (@1.0 mm lift)
	Duration	218°
Camshaft Journal Diameter		22.930-22.960 mm
		22.953-22.956 mm (outrigger)
Camshaft Journal Clearance	Std.	0.040-0.091 mm
Service Limit		0.13 mm
	Outrigger	0.044-0.068 mm
Service Limit		0.13 mm
Camshaft Journal Bore Diameter		23.000-23.021 mm
Camshaft End Float		0.03-0.12 mm
Service Limit		0.20 mm
Camshaft Run-out		0.05 mm max.
Clutch / Primary Drive		
Primary Drive	Type	Gear
Reduction Ratio		1.750 (60/105)
Clutch	Type	Wet multi-phase
No. of Friction Plates		10
Plate Flatness		Within 0.2 mm
Friction Plate Thickness (inner and outer)		3.80 mm
Service Limit		3.60 mm
Friction Plate Thickness (all others)		3.30 mm
Service Limit		3.10 mm
Clutch Actuation Method		Cable
Cable Free Play (at lever)		2.0-3.0 mm
Balancer		
End Float		0.06-0.41 mm
Pistons		
Cylinder Bore Diameter		79.040-79.060 mm
Service Limit		79.110 mm
Piston Diameter (at 90° to gudgeon pin)		78.970-78.980 mm
Service Limit		78.930 mm
Piston Ring to Groove Clearances		
Top		0.02-0.06 mm

Full Specification	Sprint ST
Service Limit	0.075
Second	0.02-0.06 mm
Service Limit	0.075
Piston Ring End Gaps	
Top	0.28-0.49 mm
Service Limit	0.61
Second	0.43-0.64 mm
Service Limit	0.76
Oil	0.33-0.89 mm
Service Limit	1.03 mm
Gudgeon Pin Bore Diameter in Piston	16.993-17.001 mm
Service Limit	17.029 mm
Gudgeon Pin Diameter	16.984-16.989 mm
Service Limit	16.974 mm
Connecting Rods	
Connecting Rod Small End Diameter	17.005- 17.018mm
Service Limit	17.028 mm
Connecting Rod Big End Side Clearance	0.15-0.30 mm
Service Limit	0.50 mm
Crankshaft	
Crankshaft Big End Journal Diameter	34.984-35.000 mm
Service Limit	34.960 mm
Crankshaft Big End Bearing Clearance	0.036 mm-0.066
Service Limit	0.10 mm
Crankshaft Main Bearing Journal Diameter	37.960-37.967 mm
Service Limit	37.936 mm
Crankshaft End Float	0.05-0.20 mm
Service Limit	0.40 mm
Crankshaft Run-out	0.02 mm or less
Service Limit	0.05 mm
Transmission	
Type	6 Speed, Constant Mesh
Gear Ratios 1st	2.733 (15/41)
2nd	1.947 (19/37)
3rd	1.545 (22/34)
4th	1.292 (24/31)
5th	1.154 (26/30)
6th	1 074 (27/29)

Full Specification	Sprint ST
Gear Selector Fork Thickness	5.8-5.9 mm
Service Limit	5.7 mm
Gear Selector Groove Width	6.0-6.1 mm
Service Limit	6.25 mm
Gear Selector Fork to Groove Clearance	0.55 mm max.

Final Drive

Final Drive	Chain
Final Drive Ratio	2.333 (19/42)
Chain Type	DID X-ring
Number of Links	106
20 Link Length	321 mm
Drive Chain Play	35-40 mm
Chain Lubrication	Mobil chain spray

Lubrication

Type	Pressure Lubrication, Wet Sump
Oil Capacity (dry fill)	3.50 litres
Oil Capacity (wet fill including filter)	3.20 litres
Oil Capacity (wet fill excluding filter)	3.00 litres
Oil pressure (in main gallery)	40.0 lb/in² min. @ 80°C oil temperature @ 5000 RPM
Oil Pump Rotor Tip Clearance	0.15 mm
Service Limit	0.20 mm
Oil Pump Body Clearance	0.15-0.22 mm
Service Limit	0.35 mm
Oil Pump Rotor End Float	0.02-0.07 mm
Service Limit	0.10 mm

Ignition System

Type	Digital Inductive
Electronic Rev Limiter	10,900 (r/min)
Pick-up Coil Resistance	0.56 KΩ +/-10% @ 20°C
Ignition Coil Type	Plug-top
Spark Plug Type	NGK CR9EK
Spark Plug Gap	0.7 mm

Fuel System

Fuel Type	Unleaded, 95 RON (U.S. 89 CLC/AKI
Fuel Tank Capacity	21 litres
Low Level Warning Lamp	4 litres remaining

Full Specification	Sprint ST
Fuel Pump Type	Submerged
Fuel Pressure (nominal)	3.0 bar
Purge Control System	Electronic, via fuel system ECU

Fuel Injection System

Type	Electronic, sequential
Idle Speed	1200 RPM
Injector Type	Twin jet, solenoid operated plate valve
Throttle	Cable / twist grip / electronic throttle potentiometer
Control Sensors	Barometric pressure, manifold absolute pressure, throttle position, coolant temperature, crankshaft position sensor, lambda sensor, induction air temperature

Emissions Controls*

Catalysts	2, in silencer 1, in downpipe
Oxygen sensor	Heated, in down pipe
Secondary Air Injection	Solenoid controlled, reed valve type
Evaporative control	Activated carbon canister (California only)

* Catalysts and Oxygen sensors fitted in all markets except Australia, New Zealand and South Africa

Coolant System

Coolant Mixture	50/50 Distilled water / anti-freeze
Anti-Freeze Type	Mobil anti-freeze
Freezing point	-35°C
Cooling System Capacity	2.3 litres
Radiator Cap Opening Pressure	1.1 bar
Thermostat Opening Temperature	88°C (nominal)
Cooling Fan Switch On Temperature	103°C
Temperature Gauge Sensor Resistance	2.9 – 3.3 KΩ @ 15°C

Suspension

Front Fork Travel	120 mm
Recommended Fork Oil Grade	Showa SS8
Oil Level (fork fully compressed)	120 mm
Oil Volume (dry fill)	469 cc
Fork Pull Through	Flush with top of yoke upper face
Rear Wheel Travel	140 mmRear Suspension Bearing GreaseMobil grease HP 222

Brakes

Front Type	Two hydraulically actuated four piston callipers acting on twin discs

Full Specification		Sprint ST
Caliper Piston Diameter		33.96 mm / 30.23 mm
Disc Diameter		320 mm
Disc Thickness		4 mm (3.5 mm minimum)
Disc Run-out Max.		0.3 mm (0.1 mm standard)
Master Cylinder Diameter		14 mmRecommended FluidMobil universal brake and clutch fluid DOT4
Rear Type		Hydraulically actuated 2 piston calliper, single disc
Caliper Piston Diameter		27 mm
Disc Diameter		220 mm
Disc Thickness		6.0 mm
Service Limit		5.0 mm
Master Cylinder Diameter		14 mm
Recommended Fluid		Mobil universal brake and clutch fluid DOT4

Wheels and Tyres

Front Wheel Size		MT 3.5 x 17
Front Tyre Size		120/70 ZR 17
Front Tyre Pressure		2.5 Bar
Front Tyre:	Option 1	Bridgestone BT020 NN
	Option 2	Metzeller Roadtec Z6 Radial
Front Wheel Rim Axial Run-out		0.5 mm
Front Wheel Rim Radial Run-out		0.5 mm
Rear Wheel Size		MT 5.5 x 17
Rear Tyre Size		180/55 ZR 17
Rear Tyre Pressure		2.9 Bar
Rear Tyre:	Option 1	Bridgestone BT020 NN
	Option 2	Metzeller Roadtec Z6 B Radial
Rear Wheel Rim Axial Run-out		0.5 mm
Rear Wheel Rim Radial Run-out		0.5 mm

Frame

Frame Type	Twin-spar aluminium
Overall Length	2114mm (83.3in)

Full Specification	Sprint ST
Overall Width	745mm (30.7in)
Overall Height	1228mm (49.2 in)
Wheelbase	1457mm (56.2in)Full SpecificationSprint ST
Seat Height	805mm (56.2in)Full SpecificationSprint ST
Castor	24 ^{o}
Trail	90 mm
Dry Weight	210 kg
Maximum Payload	215kg (rider, passenger, luggage and accessories)

Electrical Equipment

Battery Type		YUASA YTX12-BS
Battery Rating		12V – 10 Amp. Hour
Alternator Rating		35A
Fuses	#1	Starter solenoid, dip / main beam headlights
	#2	Ignition switch, tail lights, number plate light, side lights, fuel pump
	#3	Indicators, brake light, horn
	#4	Blank
	#5	Blank
	#6	Accessory socket, heated grips
	#7	Cooling fan
	#8	Engine management system
	#9	Alarm, diagnostic connector, instruments

Torque Wrench Settings

Cylinder Head Area

Application	Torque (Nm)	Notes
Cam cover to cylinder head	10	
Secondary air injection valve covers to cam cover	9	
Cam chain tensioner to crankcase	9	
Cam chain tensioner to centre bolt	23	
Camshaft bearing caps and camshaft bearing ladder to head	See section 5	Lubricate threads
Camshaft sprocket to camshaft	15	Use new fixings
Cam chain tensioner blade to crankcase	18	Use new fixings
Cam chain top pad to head	10	Use new fixings
Cylinder head to crankcase (M6 screws)	10	
Cylinder head to crankcase bolts	See section 3	
Sound suppression bolt in head	10	
Oil feed pipe	25	
Spark plug to cylinder head	18	

Clutch

Application	Torque (Nm)	Notes
Clutch cover to crankcase	9	
Clutch centre nut	105	
Clutch pressure plate to centre	10	
Clutch lever to handlebar	15	

Balancer, Crankshaft and Crankcase

Application	Torque (Nm)	Notes
Crankcase lower to upper (M8 fixings)	See section 6	
Crankcase upper to lower (M6 fixings)	See section 6	
Connecting rod big end nut	See section 6	
Balancer retaining bolt	60	Apply Three-bond 1305 to the threads
Big end bearings	See section 6	
Sprag clutch to crankshaft	54	
Starter drive cover to crankcase	10	

Engine Covers

Application	Torque (Nm)	Notes
Clutch cover to crankcase	9	
Clutch cover sound suppression plate to cover	9	
Sprocket cover to crankcase	9	
Water outlet cover	9	
Alternator cover to crankcase	9	
Crank cover to crankcase	9	
Starter cover to crank cover	9	
Plug, crank cover	18	

Transmission

Application	Torque (Nm)	Notes
Output sprocket to output shaft	132	Use new tab washers
Detent wheel to selector drum	12	Use a new fixing
Detent arm bolt	12	Use a new fixing
Selector drum bearing retaining screw	12	Use a new fixing
Selector shaft retainer	12	Use a new fixing
Spring abutment bolt	23	
Neutral switch	10	
Gear pedal pinch bolt	9	
Gear pedal pivot bolt	22	

Lubrication System

Application	Torque (Nm)	Notes
Sump to crankcase	12	
Sump drain plug to sump	25	Use a new washer
Oil pressure relief valve to crankcase	15	Apply Three-bond 1305 to the threads
Low oil pressure warning light switch to crankcase	13	Use new washers
Oil filter to adapter	10	
Oil cooler pipe union bolts	10	
Oil cooler to mountings	9	
Oil pump to crankcase	13.7	
Oil pump drive sprocket to pump shaft	15	
Oil feed pipe union to head	25	
Transmission oil feed pipes to crankcase	8	
Oil cooler to radiator	9	

Final Drive

Application	Torque (Nm)	Notes
Rear sprocket to cush drive	33	
Chain guard bolts	4.5	
Chain rubbing strip to swinging arm	4.5	
Cush drive housing to shaft	146	Use a new fixing

Cooling System

Application	Torque (Nm)	Notes
Water pump to crankcase	10	
Radiator to frame	9	
Water elbow to head	12	
Thermostat housing to head	12	
Fan shroud to radiator	2.5	
Expansion tank to frame	4	

Fuel System, Exhaust System and Airbox

Application	Torque (Nm)	Notes
Fuel tank to frame (rear fixing)	9	
Fuel cap to fuel tank	3	
Fuel pump mounting plate to fuel tank	9	
Throttle body transition piece to cylinder head	12	
Fuel rail to bracket	6	
Throttle potentiometer to throttle body	3.5	
Exhaust downpipe to cylinder head	19	See section 10
Airbox to bracket	5	
Airbox upper to lower section	4	
Exhaust downpipe to frame	15	
Silencer mounting bracket to frame	27	
Exhaust clamp to downpipe	22	
Fuel sensor to fuel tank	5	
Fuel tank brackets to frame (front)	15	
Fuel tank brackets to frame (rear)	6	

Rear Suspension

Application	Torque (Nm)	Notes
Swinging arm spindle bolt	60	
Chain rubbing strip bolts	4.5	
Rear hub / eccentric adjuster clamp bolt	55	
Chain guard bolts	4.5	
Rear suspension unit upper mounting bolt	48	
Rear suspension unit lower mounting bolt /drop to drag link pivot	48	
Drag link pivot at frame	48	
Drop links to swinging arm	48	
Swinging arm end-float adjuster	15	
Swinging arm lateral adjuster lock nut	30	

Front Suspension

Application	Torque (Nm)	Notes
Upper yoke pinch bolt	20	
Lower yoke pinch bolt	20	
Fork top cap to inner tube	25	
Upper yoke centre nut	90	
Damping cylinder bolt	24	
Handlebar to top yoke	26	
Handlebar clamp bolt	26	

Wheels

Application	Torque (Nm)	Notes
Front wheel spindle / axle bolt	61	
Front wheel spindle pinch bolts	20	
Rear wheel to stub axle	146	

Front Brakes

Application	Torque (Nm)	Notes
Front brake caliper to fork	40	
Front brake pad retaining pin	19	
Front brake calliper bleed screw	6	
Front brake hose to caliper	25	
Front brake master cylinder to handlebar	15	
Front brake master cylinder reservoir to mounting	9	
Front brake hose to master cylinder	25	
Front brake disc to wheel	22	Use new fixings

Rear Brakes

Application	Torque (Nm)	Notes
Rear brake caliper to carrier	40	
Rear brake pad retaining pin	19	
Rear brake caliper bleed screw	6	
Rear brake hose to caliper	25	
Rear brake master cylinder to frame	20	Use new fixings
Rear brake master cylinder reservoir to battery box	3	
Rear brake hose to master cylinder (brake light switch)	15	
Rear brake disc to axle shaft	22	Use new fixings
Rear brake pedal pivot bolt	22	

ABS System

Application	Torque (Nm)	Notes
Front wheel speed sensor to fork leg	9	
Rear wheel speed sensor to caliper carrier	9	
Front pulser ring to front wheel hub	5	
Rear pulser ring to rear brake disc	5	
ABS modulator to mounting bracket	9	
ABS modulator mounting bracket to frame	20	Use new fixings
Brake line unions to ABS modulator	17	

Footrests, Control Plates and Engine Mountings

Application	Torque (Nm)	Notes
Upper crankcase to frame	See section 9	
Lower crankcase to frame	See section 9	
Cylinder head to frame	See section 9	
Control plate to frame, left hand	27	Use new fixings
Control plate and master cylinder to frame, right hand	27	Use new fixings
Rear footrest hanger to frame	27	
Side stand mounting bracket	40	
Side stand pivot	20	

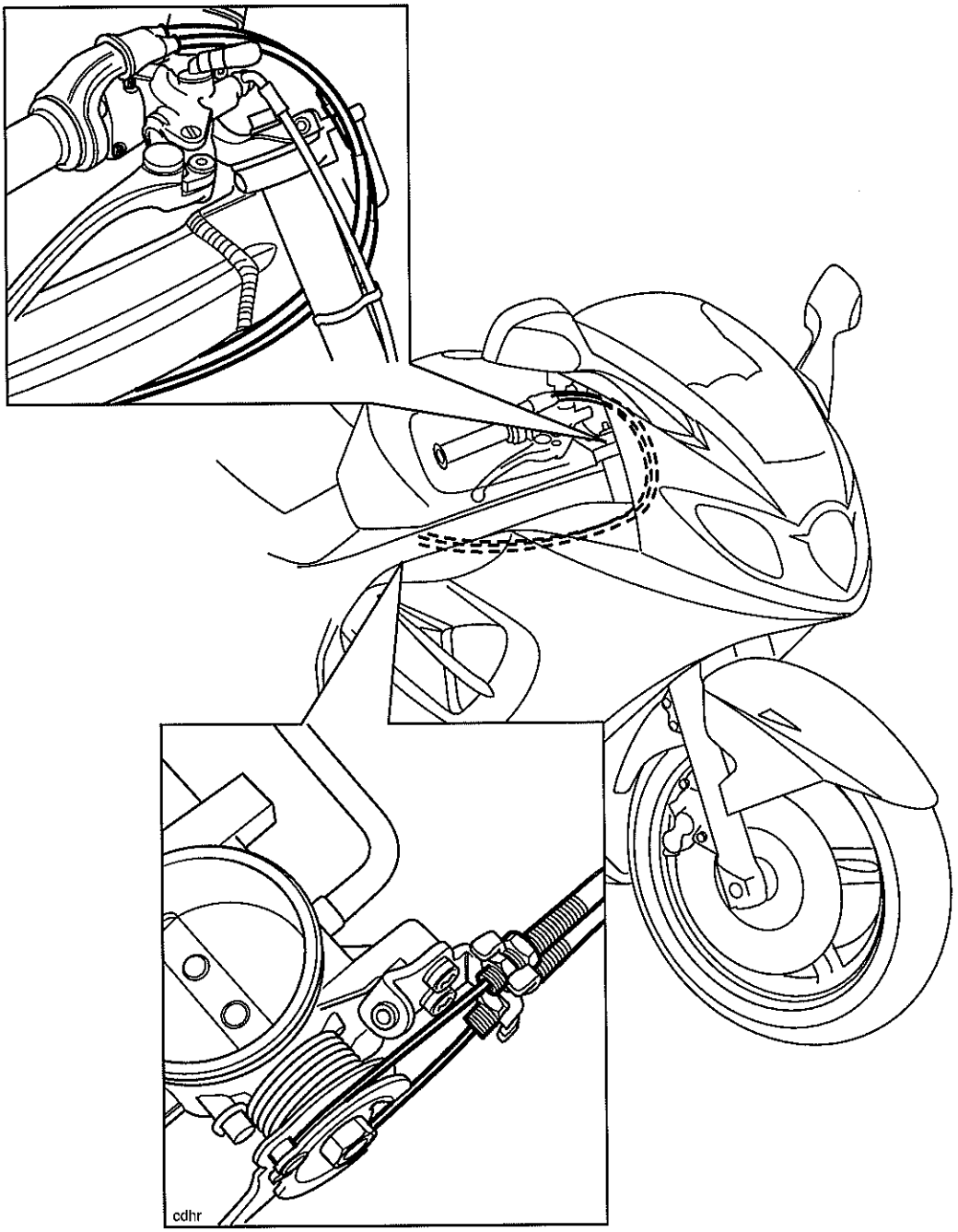
Electrical

Application	Torque (Nm)	Notes
Alternator rotor to crankshaft	105	
Alternator stator to cover	12	
Alternator regulator to frame	7	
Starter motor to crankcase	10	
Alternator cover to crankcase	9	

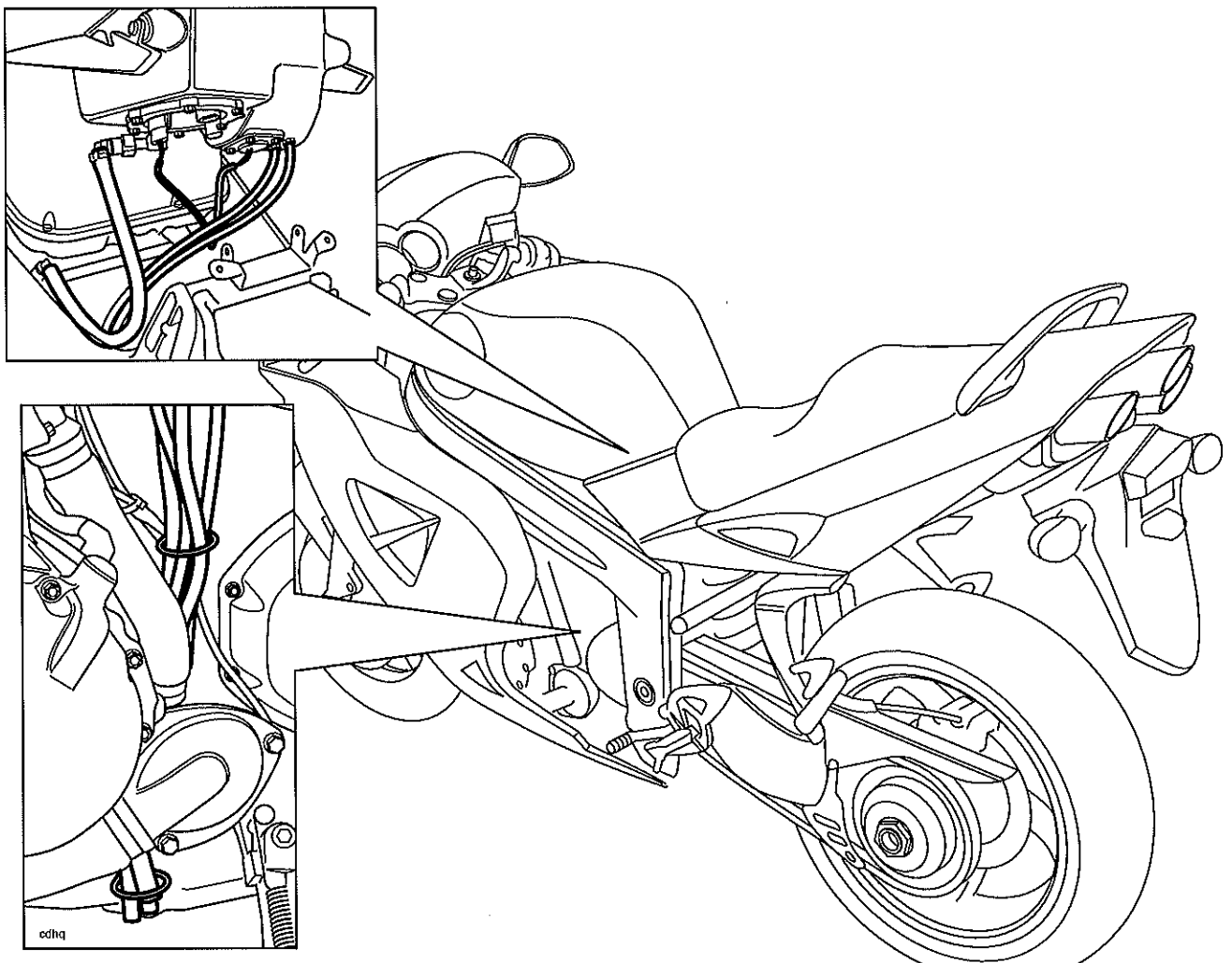
Bodywork

Application	Torque (Nm)	Notes
Front mudguard to fork – front section	3	
Front mudguard to fork – rear section	7	
Rear side panels to brackets	3	
Cockpit to brackets / side panels	5	
Infill panels to frame	3	
Infill panels to cockpit	3	
Mirrors to cockpit	9	
Windscreen to cockpit subframe	1.5	
Cockpit subframe to frame	28	
Rear mudguard/heat shield bracket to frame	18	
Rear mudguard end section to bracket	9	

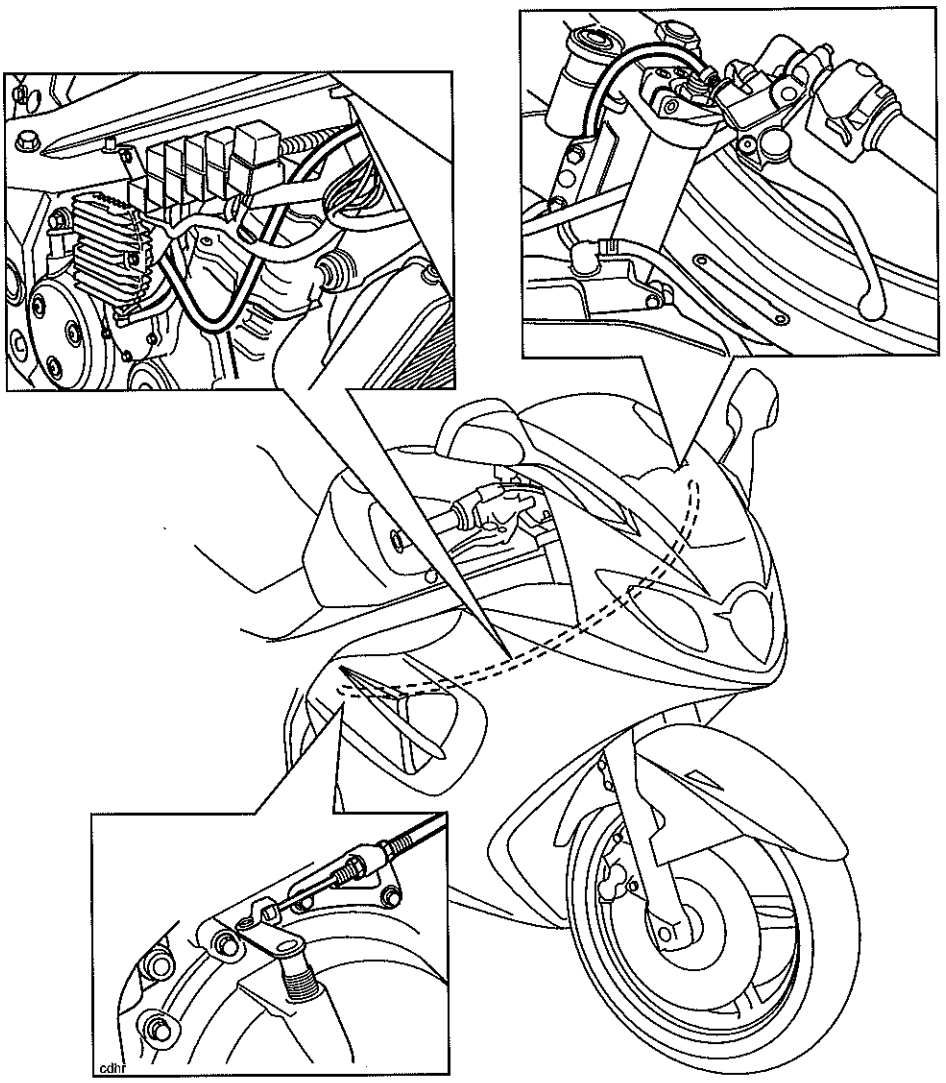
Throttle Cable Routing



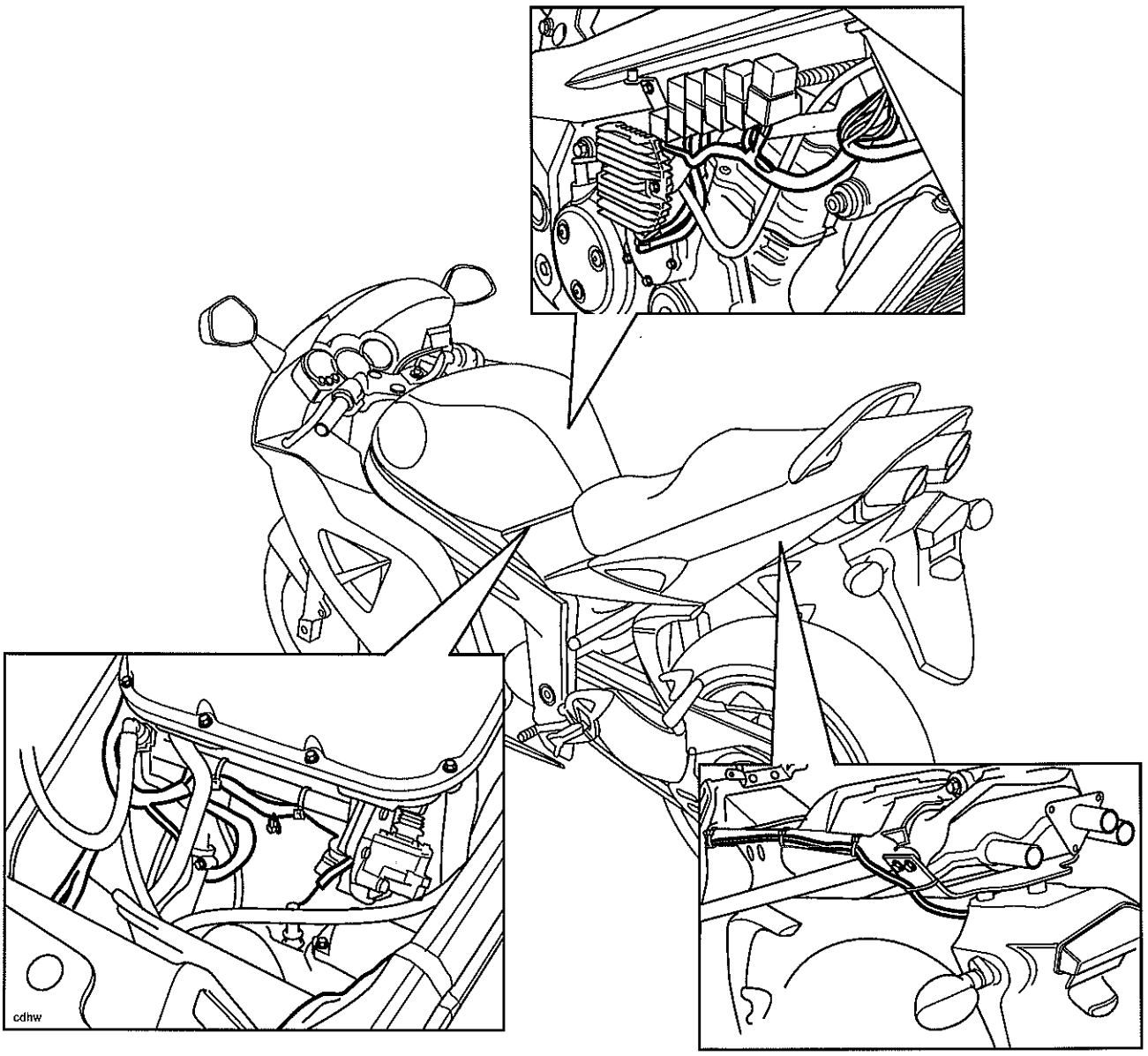
Fuel Tank Breather Hose Routing



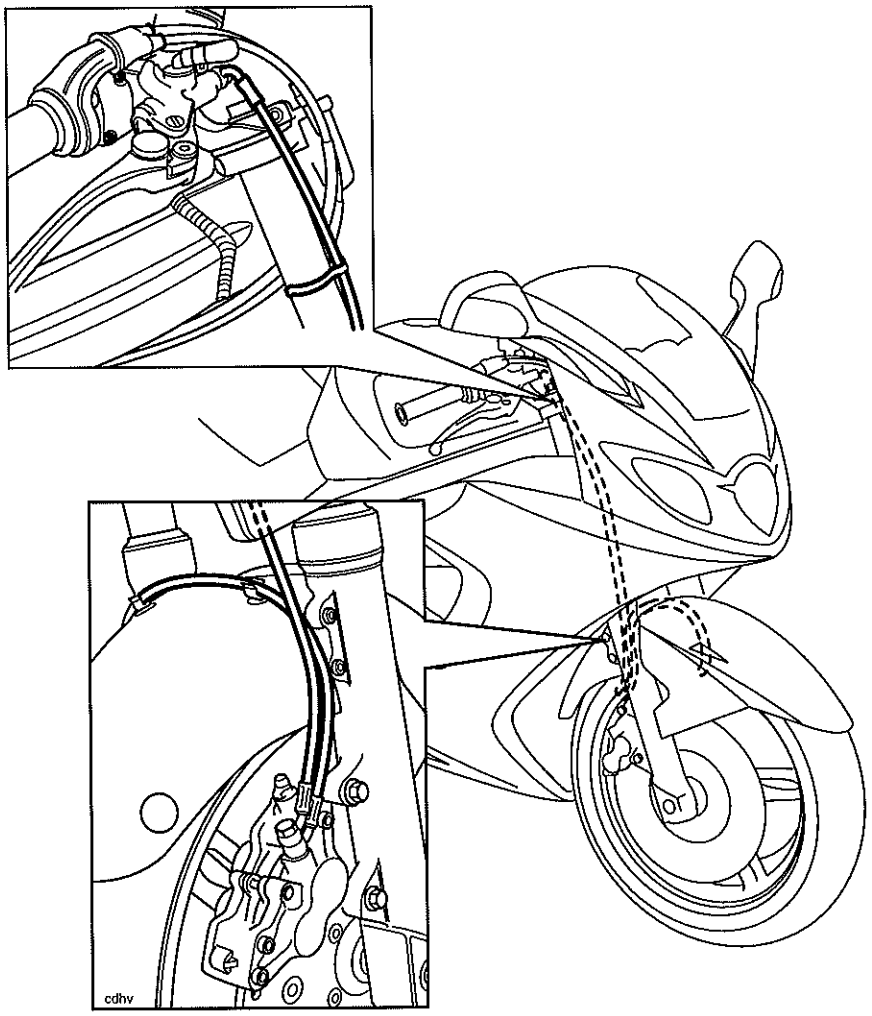
Clutch Cable Routing



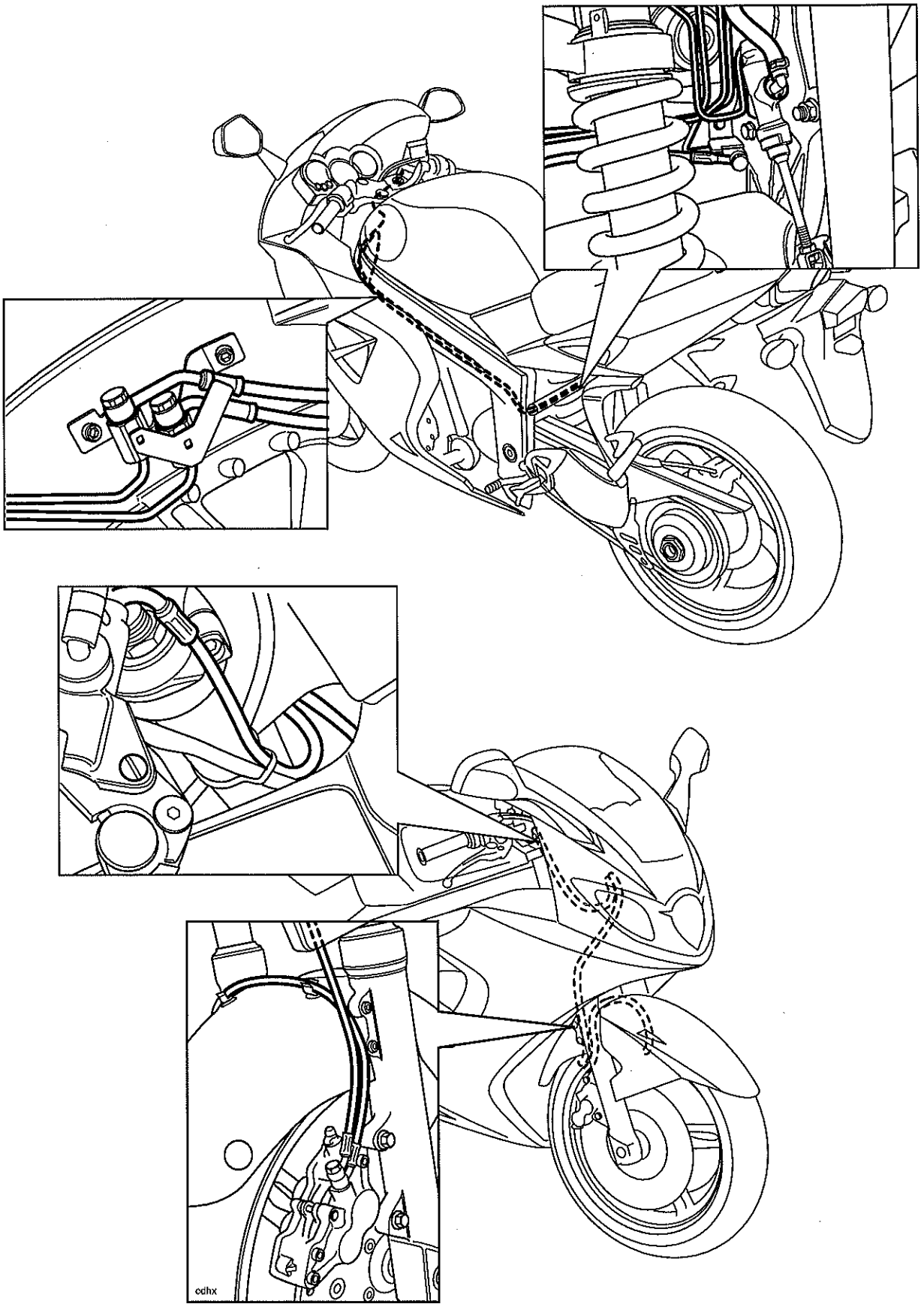
Main wiring Harness Routing



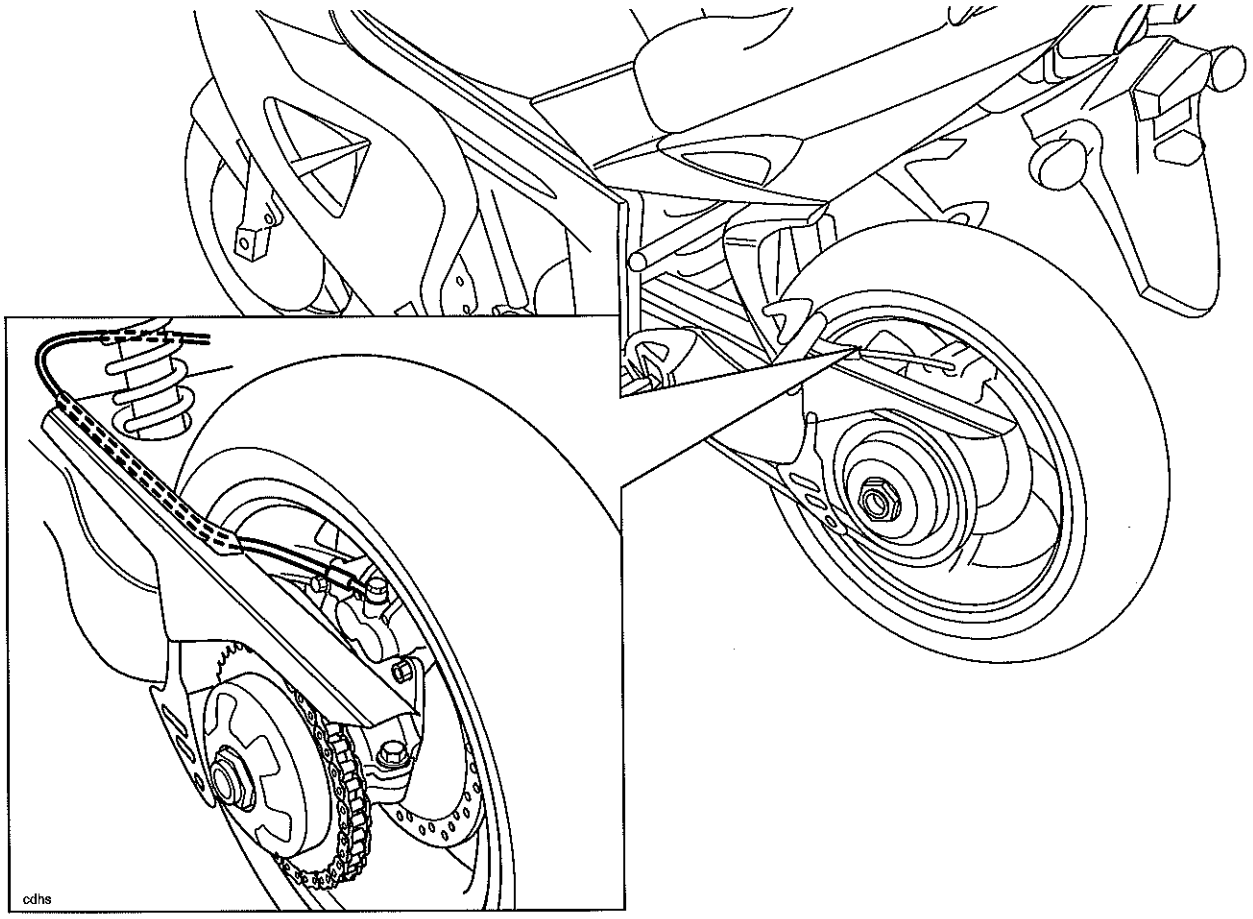
Front Brake Hose Routing - Models without ABS Brakes



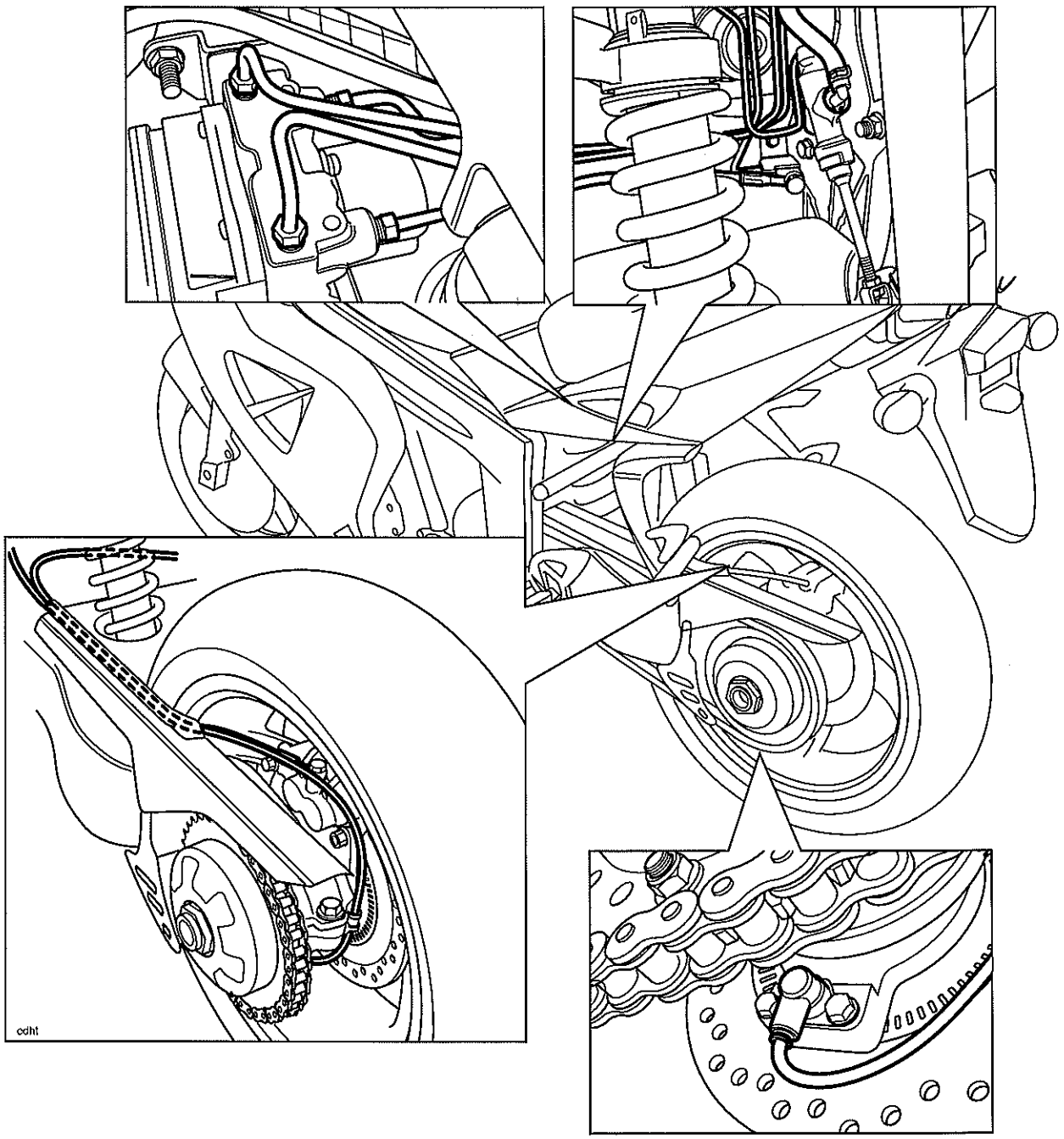
Front Brake Hose Routing - Models with ABS Brakes



Rear Brake Hose Routing - Models without ABS Brakes



Rear Brake Hose Routing - Models with ABS Brakes



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