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TOMCAT DRAGON & DRAGONFLY MANUAL



INVENTIONS WITH A SOCIAL PURPOSE



Life changing
TRIKES

Dear Customer,

THANK YOU FOR SUPPORTING BRITISH INDUSTRY BY CHOOSING THE FANTASTIC TOMCAT DRAGON & DRAGONFLY TRIKE FROM TOMCAT SNI LTD, A "QUEEN'S AWARD FOR ENTERPRISE IN INNOVATION", WINNING COMPANY.

Standard cycle components apart, this product has been designed and manufactured at our Gloucester factory and what we do not manufacture ourselves is supplied or manufactured by other UK companies, so we thank you for supporting British industry by buying this very British product.

CUSTOMER SERVICE: We are proud to offer our customers the very best in product aftercare because we understand that things can change, and your vehicle may be your lifeline. Our customer service and spares department is open 6 days a week, between 10 am and 5 pm, Monday to Saturday, for technical advice, spare parts, service and general assistance throughout the life of your product.

Because your trike is entirely made in England by Tomcat, and because we have UK wide coverage for our products, if problems do occur you have the peace of mind of knowing that we can deal with your difficulty in the quickest way possible, be that advice over the telephone, an onsite visit, local authorised repair or return to our Gloucester factory.

We hope you have many years of enjoyment and usefulness from your Tomcat Dragon and Dragonfly trike.



Product Overview.

The Dragon, and its younger brother the Dragonfly, are single speed, low sitting, independently ridden trikes from the Tomcat "Affordable Quality" range. The Dragon is suitable for teenagers to adults, whilst the Dragonfly, offers all the same features for children aged 7 to 14 years.

Both were designed by Tomcat in cooperation with "Wheels for All", a national charity that mentors over fifty cycling activity centres throughout the UK. These in turn, provide invaluable social and health benefit to their wider community. The technology embodied within the Dragon and Dragonfly, is the culmination of Tomcat renowned and innovative engineering, in partnership with Wheels for All's expert understanding of what works for the independently minded, disabled community. Consequently, we believe it is the very best trike of its kind for quality, innovation and price.

Physio & Fun
TRIKES

Major Features.

Major features of the Dragon and Dragonfly range, include:

- Self-centralising steering for superb handling and stability, at all speeds
- Front AND rear wheel brakes for road legal, safe braking
- Smooth sliding seating that accommodates over 40cm of rider height variation
- Comfortable bucket type seating, set at the optimum height for independent and wheelchair transfers
- A fully enclosed, silent running chain that eliminates tripping hazards, ensures cleanliness, easy step-over, and total drive protection.
- Low maintenance, easily adjustable chain drive

Optional Extras

- Dual Drive™ axle (swaps between fixed and free-wheel drive in seconds).
- Folding Frame and Removable seat (for easier transport and storage)
- Puncture Proof Tyres
- Front and rear Lighting Set
- Road-Ready Safety Pack including Wheel Reflectors, pedal reflectors, Rear reflector and Flag
- Self-Levelling Pedals with straps
- "Recoil" safety belt

General Information for the Dragon.

Approx min Age	Approx Min/Max inside leg	Approx min/max height
12 years+	65cm / 92cm	135cm / 188cm
Overall Length *	195cm	
Overall Width	76cm	
Height Seat to Ground *	53cm	
Height handlebar to Ground *	105cm	
Seat Slide	20cm	
Brakes	Calliper Front / Disc Rear	
Front Wheel	20" with Schrader valve	
Rear Wheels	24" with Schrader valve	
Trike Weight *	27kg	
Max User Weight	120Kg	

General Information for the Dragonfly.

Approx Age Range	Approx Min/Max inside leg	Approx min/max height
7 -14years	56cm / 76cm	120cm / 160cm
Overall Length *	173cm	
Overall Width	76cm	
Height Seat to Ground *	46cm	
Height handlebar to Ground *	95cm	
Seat Slide 20cm		
Brakes	Calliper Front / Disc Rear	
Front Wheel	16" with Schrader valve	
Rear Wheels	20" with Schrader valve	
Trike Weight *	26kg	
Max User Weight	100Kg	

Brief Description of the Dragon and Dragonfly Main Features.

Self-Centralising Steering – (SCS).

Self-centralising steering is a Tomcat patented innovation for smoothly returning your steering to “straight ahead” after a turn, (in much the same way as a car’s steering). Other low sitting trikes with high steering castor angle like the Dragon, often flop sideways because of this high castor angle, and this challenges the riders confidence in the safety and stability of the machine. However, with Tomcats self-centralising steering, the rider is always in control, no matter how fast the ride.

Front and Rear Brakes

Many similar trikes to the Tomcat Dragon that are designed mainly for track use, have either one or two front brakes only. However, the Dragon is equipped with a rear wheel disc brake as well as a front calliper brake (making its braking compliant with BS EN 14764:2005) and very much safer to use in challenging environments, adverse weather conditions, or for use on public roads.

Sliding Seat.

The Dragon and Dragonfly Sliding Seat mechanism is the main form of adjustment for all users. It has a slide range of 20cm, equating to a rider height variation of over 40cm for each model.

The seat is easily adjusted by releasing the lock lever situated beneath the left side of the seat. As well as simple, smooth and easy adjustment, sliding the seat, fully backwards when getting on and off can make this operation much easier and safer for riders with poor balance or co-ordination.

Comfortable Bucket Seat.

The Dragon and Dragonfly, each have seats appropriate to their users height and age, but both are comfortable bucket type seats to promote good posture, comfort and safety. For extra security, a recoil lap belt is optionally available.

Fully Enclosed Chain.

The Dragon and Dragonfly both have a fully enclosed chain. This eliminates the need for troublesome chain guards, and removes all tripping hazards associated with an external chain drive. Best of all, there is no oily chain to ruin your clothing or trap small fingers.

Chain Adjustment.

Chain adjustment is often a difficult and dirty job, but not with the Dragon or Dragonfly. Fully supported chain spans ensure the chain is quiet in use and supported against stretching, but should it ever need adjustment it is very simple and easy to do. Please see the maintenance section for full instructions.

Frame and frame stiffness.

The Dragon and Dragonfly have a unique steel frame design that exceptionally rigid despite its light material gauge. The sliding seat structure has similarly been designed to eliminate all "sway" from the vehicle when the trike powers around corners. Together with the SCS Self Centralising Steering, this makes for a totally predictable ride that is comfortable, exhilarating, and confidence building.

Self-Levelling Pedals with Straps. (Optional)

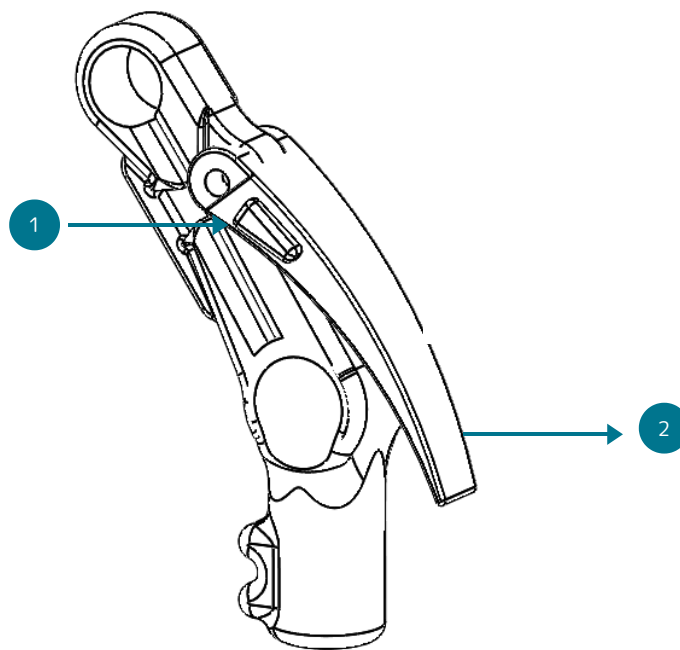
Where fitted, Self-Levelling Pedals give a good degree of additional support to the foot that can prevent the foot slipping off the pedal. These accessories do so by providing a broader, deeper, pedal platform that is additionally provided with an angled and length adjustable strap.

When correctly adjusted, the user puts their foot through the strap at an angle, then straightens the foot as normal. This causes the strap to grip the foot across the instep, thus preventing the foot from rising or slipping off the pedal.

Folding Frame (Optional)

To fold the frame, first lift the trike onto its support leg.

Fold the handlebars by operating the RELEASE LEVER INTERLOCK, then opening the Release Lever itself.



Remove the clamp Knob at the frame swivel joint (see chain adjustment drawing in maintenance section) and rotate the front frame through 180 degrees towards the "Off Side" of the trike. If the frame is hard to rotate, slacken the hexagon cap head fulcrum screw (6mm Allen Key) by no more than 1 turn.

Unfolding and preparing to ride is a reversal of the above process, however, the hexagon cap head fulcrum screw, must be tightened firmly (but not overtightened) before riding off.

Removable seat (Optional).

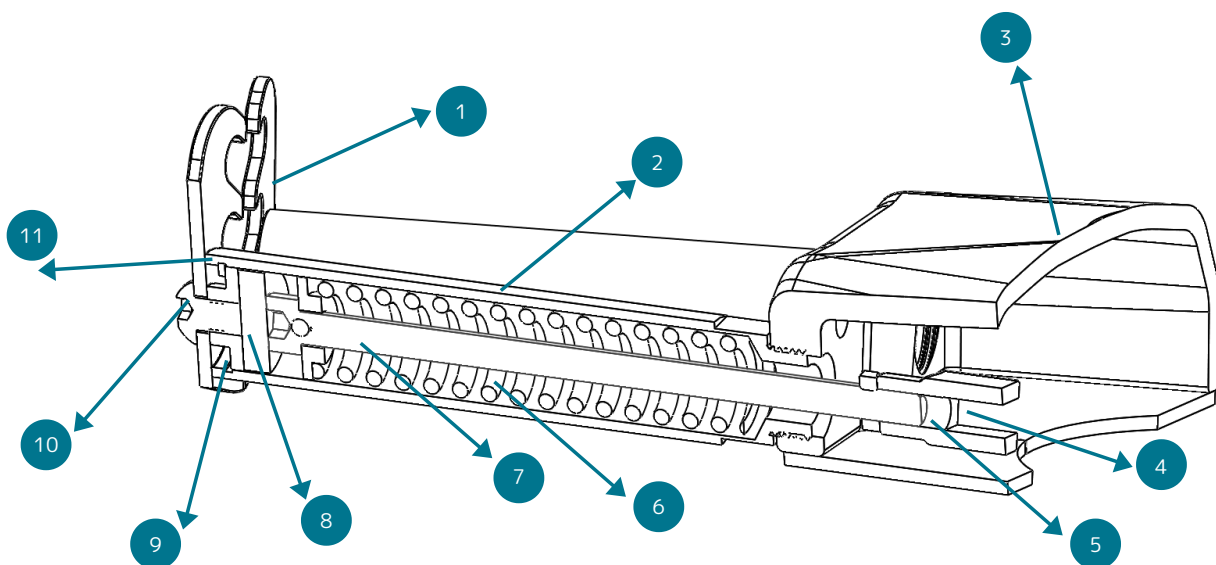
The seat can be removed for transport. To do this, move the seat fully forward on the above seat adjustment. Hold the seat release lever in the released position whilst simultaneously pulling out the spring-loaded plunger on the right underside of the seat. Hold lever and plunger open in this way, and slide the seat further forward until it can be lifted free of the vehicle.

Refitting the seat.

To refit the seat, lower and locate the rear seat rollers onto the slide plate (frame) and push backwards gently until the left release lever locks the seat against any further movement. The seat should now be fully fitted. Operate the lever to allow normal movement and slide the seat fully rearward. Operate the lever once more and slide it fully forward as far as it can go without operating the right plunger. It should not be possible to remove the seat without following the removal procedure once again.

Maintenance and Service

Self-Centralising Steering Adjustment.



Self-centralising Steering (SCS) is generally maintenance free, however, some adjustments are possible. The SCS leaves the factory at the optimum setting for an average adult male rider on Dragon versions and an average 14year old on Dragonfly Versions. Very slightly built persons or those with low arm strength or grip may find the SCS return force to be greater than they need or are able to comfortably manage. In these exceptional cases, the self-centralising force can be reduced. It will be necessary to fit softer springs to the SCS to reduce the self-centralising effect.

To fit new springs (which are available from Tomcat), proceed as follows.

Checking or replacing springs.

1. Remove the spring cylinder lockplate screws and the lockplate itself.
2. Remove the circlips retaining the lockplate nut.
3. Now use the lockplate screw to draw out the lockplate nut to expose the rubber buffer ring.
4. Use a screwdriver etc, to remove the buffer ring.
5. Measure the distance between the head of the cap screw that is now visible, and the end of the spring cylinder. Make a note of the measurements.
6. Remove the Cap screws carefully as parts may fly.
7. Withdraw the compression washer and spring.
8. Remove the cover plates from the underside of the SCS body.
9. Grease all working parts with a medium, waterproof, bike grease.
10. Refit the new springs complete with compression washer and screw.
11. Adjust both screws until the heads are the same distance as before with the forks free to move.
12. Check that the threaded end on the screw is level with, or withing +/- 2mm of the bottom of the slot in the clevis.

Aligning the steering. (after spring replacement or at any other time)

You can align the steering by adjusting the individual spring compressions. Follow the procedure to 4(above). Ideally, the steering will be dead ahead with the ends of both screws flush with the bottom of the clevis slots, but if the trike steers to left or right, adjust as follows.

- Check that the steering head bearings are well adjusted and move smoothly and freely.
- Replace if rough or worn. It is advisable to block up the front of the trike so the front wheel is slightly clear of the ground when adjusting the steering alignment.
- If the trike steers left when no rider is sat on it, slacken the left spring (counter-clockwise), by half a turn of the left screw.
- If that is not enough, tighten the right screw (clockwise) by half a turn.
- If that is still not enough, slacken the left screw by a further half turn and so on until the steering is central.
- Re-aligning steering that steers to the right is a mirror of the left procedure.
- The screw end MUST be within $\pm 2\text{mm}$ of the bottom of the clevis slot when adjustment is complete. If there is still a problem, set both screw ends flush with the bottom of the clevis slot and start again as above.
- Replace cover plates, buffers, lockplate nuts, circlips, lockplate and screws in the reverse order to disassembly.

Brake Maintenance and Adjustment.

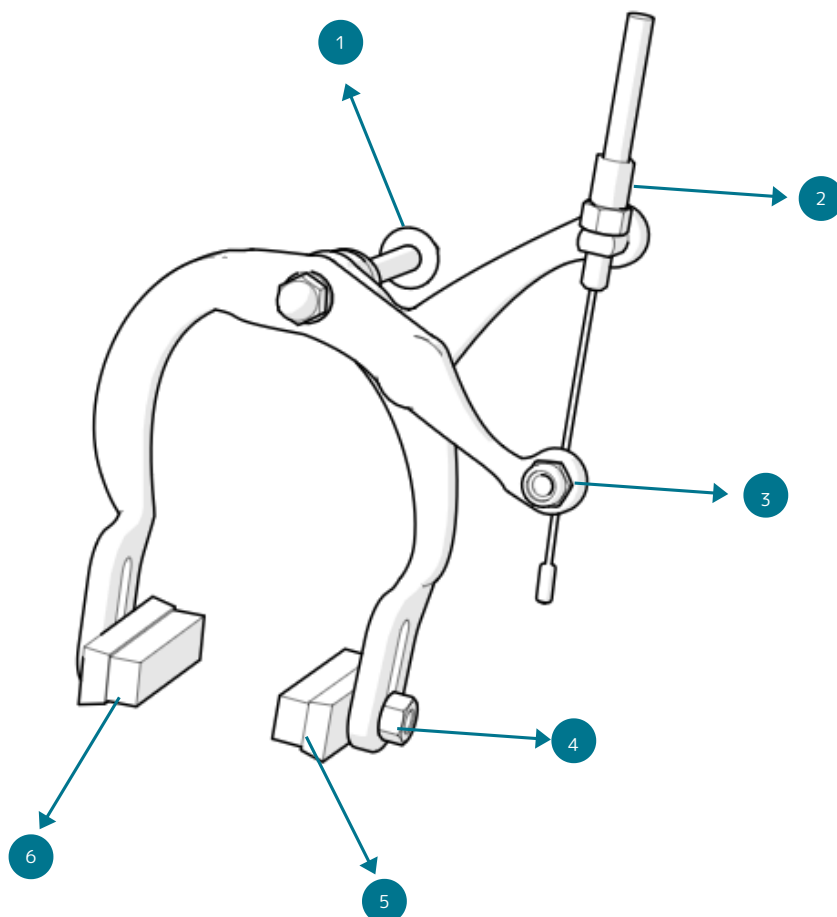
Brake Maintenance and Adjustment.

Front Calliper (where fitted).

Periodically check the thickness of the brake pad and replace when the pad is less than 3mm. Ensure the pads make full surface contact with the wheel rim and does not rub the tyre. Adjust the pad position if necessary.

For efficient braking, set the calliper up so that there is an even gap of 1.5 - 2mm between each pad and the wheel rim in the following manner.

- Push the right-hand pad (6) fully against the rim and adjust the left pad (5) with the screw adjuster (2) to achieve 3-4mm of clearance between pad and rim.
- Release the right pad (6) and operate the brake several times. If either pad is touching the wheel, slacken the securing nut (1) centralise the calliper assembly, then retighten the nut.



Rear Disc Brake

Promax Rear Brake Adjustment (when Fitted).

The Promax Disc brake calliper is of the fixed and moving anvil type. Each supports a brake pad which is arranged either side of the disc. When the brake wire is pulled by the brake lever, the moving anvil and thus the pads are forced against the rotating disc causing the vehicle to slow or stop.

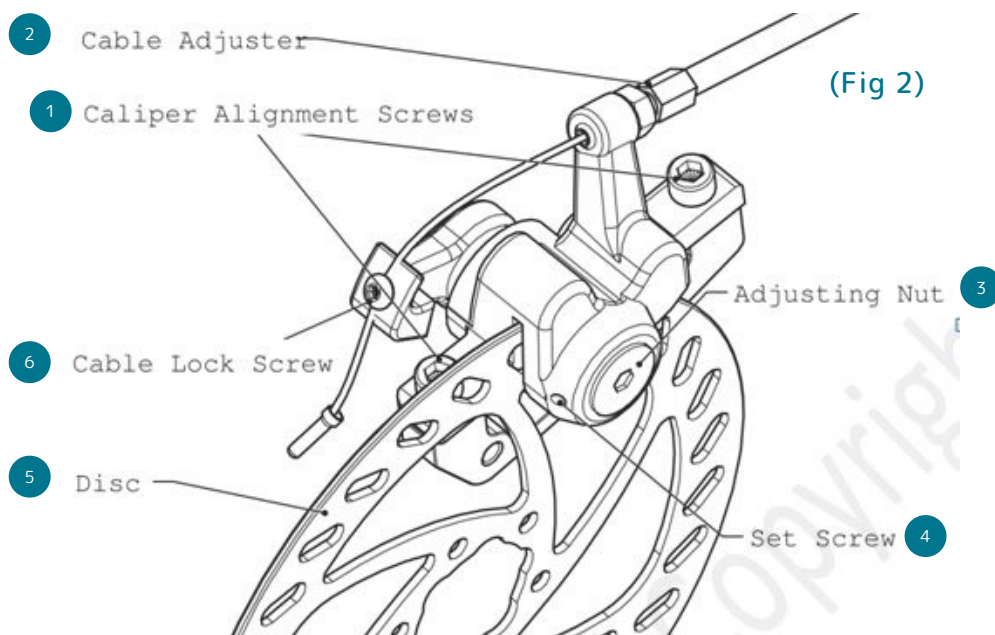
To set up the calliper, it is first necessary to set the moving anvil (and its brake pad) in close contact with the disc so that the slightest movement causes the pad to press against the disc. The calliper is then locked in position, the fixed anvil adjusted, and finally, the brake cable adjusted to suit the calliper setup.

Proceed as follows.

- Slacken the calliper alignment screws (1) on the Promax drawing) until the body of the calliper slides freely (approx. 1/2 turn)
- Slacken the fixed anvil setscrew (4) by two turns.
- Tighten the Adjusting nut (3) until the fixed anvil tightens firmly but not tightly against the disc.
- Tighten the calliper alignment screws. (1)
- Slacken the fixed anvil (3) by two full turns and inspect. There should be no gap between the moving pad and the disc. Check with a 0.05mm feeler if in doubt.
- Spin the disc to ensure the moving pad is not bearing too heavily on the disc. a slight rubbing sound or very slight friction is normal providing it is not slowing the disc.
- Tighten the fixed anvil with the adjuster nut (3) so that the pad is as close as possible to the disc without slowing the disc. A slight rubbing sound or very slight friction is normal providing it is not slowing the disc.
- Tighten the setscrew (4) very lightly to lock the adjuster nut in place.
- Check the axle still spins freely
- Screw the Cable Adjuster and its locknut (2) fully home.
- Pull the cable to remove all free movement in the mechanism and clamp it to the arm.
- Operate the brake lever and observe any movement that occurs before the arm moves. If it is excessive, adjust with the adjuster and locknut or re-clamp the wire. Full braking contact should be achieved before the brake lever reaches the handlebar grip. Adjust if necessary.
- The brake is now ready for use.

Repeat this process when braking efficiency deteriorates, the pads become worn, or when the disc visibly buckles when the brake is applied.

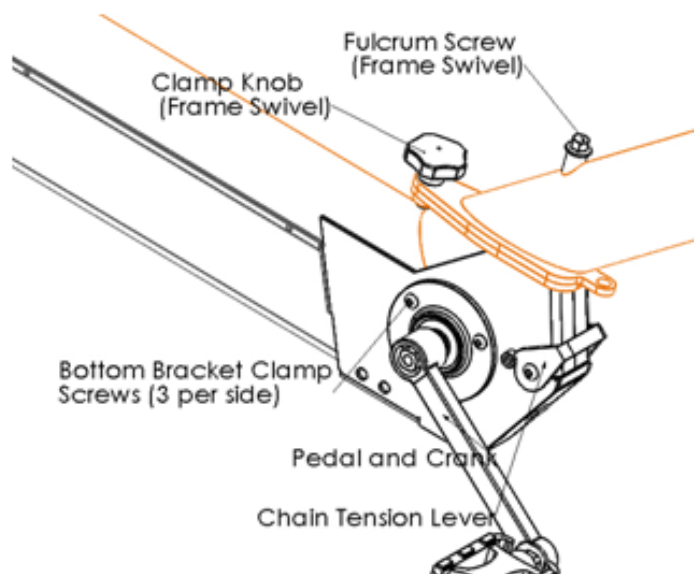
When it becomes necessary to replace the pads, follow the Promax instructions below. It will be necessary to remove the calliper and follow the above procedure during reassembly and setup. If in doubt, consult a competent cycle technician.



Chain Maintenance

Chain Tension.

The chain is factory adjusted to run smoothly and quietly in service. Because of the Dragons robust construction and excellent chain support through its nylon guides, chain adjustment should rarely be necessary if the chain is well maintained and lubricated regularly, but if adjustment is needed, proceed as follows.



- Check the entire length of the chain for wear and damage. Note that a noisy transmission is a sure indicator of wear, sprocket damage, seized links and other potential faults so do not ignore unusual noises.
- If good, slacken the 6 bottom bracket bearing clamp screws, (3 per side) by two full turns each.
- Push the black lever at the front of the chain casing down to tension the chain. Do not over tension.
- Retighten the clamp screws on both sides and check for tight spots. Readjust any tight spots until the chain moves smoothly and quietly.

Chain Replacement.

To replace the chain, proceed as follows.

- Following the procedure above, fully slacken the old chain by releasing the bearing clamp screws and fully lifting the black lever. Then draw the bottom bracket full backwards and nip one screw on each side to hold the bottom bracket in its fully slack position.
- Lift the rear left side wheel free of the ground with a suitable support beneath the trikes bearing housing. Check that the chain transmission moves freely.
- Rotate the chain whilst looking out for the removable link (if fitted).
- Move the link so that it is in the general region of the rear sprocket (accessible to tools).

- At the points where the chain enters and leaves the chain support tubes (rear of the frame), tie string around the chain and lash it back to any point on the frame to prevent the chain moving after the next operation.
- Split the chain with a chain splitter at the link or in the general region of the rear sprocket.
- Using the link you have split from the old chain, connect the new chain to the old chain on the lower run of chain. Prevent the link from separating with one wrap (only) of masking tape.
- Remove the string securing the lower run of chain and with a friend pulling gently on the upper run of chain, slowly turn the cranks clockwise (from the left side) so that the new chain is drawn through the lower support tube. Keep rotating gently, until the new chain emerges from the top support tube.
- Lock off the chain with string as before.
- Connect the new chain with a new link, over the rear sprocket.
- Retention the chain as per the above instructions.

Warranty

Thank you for purchasing this Tomcat SNI Ltd product.

This limited warranty applies to the physical goods, and only the physical goods, purchased from Tomcat SNI Ltd or through one of its authorised dealers.

1. What does this limited warranty cover?

- This Limited Warranty covers any defects in materials or workmanship under normal use during the warranty period.
- During the warranty period, Tomcat SNI Ltd will repair and replace, at no charge, products, or parts of products that prove defective because of improper material or workmanship under normal use and maintenance.

2. What we will do to correct the problems?

- Tomcat will either repair or replace the Product at no charge, using new or refurbished replacement parts.
- At our discretion, we may decide to refund the price of the product, which must be returned in full in its original packaging or in packaging authorised by us.

How long does the coverage last?

- The warranty period for physical goods purchased from Tomcat SNI Ltd or from Tomcat SNI Ltd through its authorised dealer, is two years from the date of purchase and five years for the product frame, excluding any attachments.
- A replacement Physical Good or part assumes the remaining warranty of the original Physical Good or part from the date of purchase.

3. What does this warranty not cover?

- This Limited warranty does not cover any problems that are caused by:
- Conditions, malfunctions or damage not resulting from defects in materials or workmanship, for example:
- Damage of a Product or part resulting from negligence or misuse.
- Damage of a product resulting from unauthorised modification of the product.
- Damage caused by natural disaster.
- The cost of returning the Goods under this warranty
- Theft or loss of the product.

4. What do you have to do?

- To obtain warranty service, you must first contact us, (or in the case of purchase through one of our authorised dealers, your dealer) to determine the problem and the most appropriate solution for you.
- If the return of the product is agreed, it must be returned in its original packaging.
- You will need an RMA (Return Merchants Authorisation) from Tomcat SNI Ltd or your dealer.
- All documents and accessories shipped with the product must be returned if required by Tomcat SNI Ltd or its dealer.