

TUTORO

TUTORO Auto

Patented GB2496094

Workshop Manual



Life support for chains

Contents

<u>Topic</u>	Page
How the TUTORO Works	4
Key Points	5
<u>Getting Started</u>	
Installation Location	14
Installation Methods	15
Hose Routing	19
Single Feed Nozzle	20
Nozzle install - Shark Fin	22
Nozzle install - Toe Guard	23
Oil Delivery Hose	26
Cap	27
Hose Clamp Set & Stone Shield	28
10 Step Install Guide	29
Setting the Oil Flow Rate	31
Oil Fling	33

What Oil to Use	.....	35
Trouble Shooting	.....	37
Parts Diagram	.....	44
Warranty	.....	45
Safety First	.....	47
TUTORO Ltd	.....	48

This Workshop manual covers the following kits:



TUTORO Patrol Kit

Suitable for motorcycles **with** a Toe Guard Fin fitted as standard such as the Honda Africa Twin 2016-



TUTORO Trek Kit

Suitable for motorcycles **without** a Toe Guard Fin fitted as it includes the TUTORO Shark Fin Nozzle Anchor, has 500ml of Oil plus other useful accessories.



TUTORO Adventure Kit

Suitable for **all** motorcycles - Great for long overland trips and touring. Contains Both High Temp and Original oil, spares for the Auto Unit and more!

How the TUTORO Auto works

In the past automatic chain oilers relied on being connected to your motorcycle's electrical power or to the vacuum/ induction side of the engine... this can be a challenge on today's sophisticated ECU run engines.

No such worries with the TUTORO Auto however.

The TUTORO ingeniously harnesses the energy absorbed and damped by the motorcycle's suspension to activate a valve mechanism.

This internal mechanism detects the suspension's directional changes and activates a high flow precision valve which allows oil to exit from the reservoir into a secondary vibration damped chamber.

These activations can occur from just a few times a minute to hundreds a times a minute, depending on the terrain being crossed.

However, irrespective of the number of activations, the TUTORO outputs the same slow steady rate of oil flow regardless of the roughness of the terrain!

How? its another clever bit of design - you see, downstream of the secondary vibration damped chamber is a **flow control valve** which throttles down oil delivery to the rate set by the flow control valve's position.

So, when the motorcycle is moving, a controlled, specific volume of oil is being dispensed to the chain but as soon as you stop the oil ceases to flow.

What does all this add up to? -

Put simply it means - Precise, Automatic, Autonomous chain lubrication with no worries about interference with your motorcycle's sophisticated engine's management systems.

7 KEY POINTS

Please read and take note

Before you go any further with your installation
STOP and consider these points

- Avoid install locations that get **HOT**
- Always use **TUTORO Oil**
- Never Twist the clear reservoir
- Always use the magnet supplied to prime the oiler
- Never install the oiler near any moving parts
- Keep solvents and cleaners away from the Oiler
- Always install the oiler upright and at least **300mm** above the nozzle.

Make sure you mount the oiler rigidly

(see page 14)

Avoiding these pitfalls will ensure that you expect long and trouble free service from your TUTORO Auto oiler.

Please read on for further information.

KEY POINT 1.

Avoid installing the Auto on or near a high heat source such as near an **exhaust pipe header**. High Heat will thin the oil and make flow control difficult. Prolonged exposure can distort and/or damage the Auto unit.

KTM V Twin Owners - PLEASE NOTE ! Do not install the Auto on the **left hand side**, the rear cylinder exhaust header **will overheat the Auto** and thin the oil, making flow rate very difficult to control. Over time **Heat Stress** will also damage the Oiler unit and lead to premature failure. **KTM V Twin owners should ALWAYS install the Auto on the RIGHT hand side of the motorcycle.**

On **KTM V twins** the silencer on the **right hand** side is much cooler than the exhaust header pipe from the rear cylinder on the **left hand** side. Long term tests in excess of 100,000 kilometres have proved the right hand side to be a safe location - see website for install examples.



KEY POINT 2.

Only use TUTORO Chain Oil.

There maybe other oils which are compatible with the TUTORO but there are so many oil's out there that the only one we can be sure is safe to use is our own.



Important! - Some oils and fluids could cause damage to the device and/or the "O" rings in your chain!

KEY POINT 3.

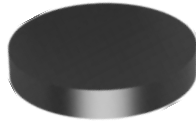
Never twist/rotate the reservoir in its socket with the black valve body.

The clear acrylic reservoir is held in the black valve body with an O ring seal - if you twist the two against each other you will damage the seal and the unit will leak from the joint



KEY POINT 4.

Always use the magnet supplied with the kit to prime the Auto oiler.



Simply place the small magnet provided on top of the cap and it will lift the primary valve to allow for the system to prime with oil.

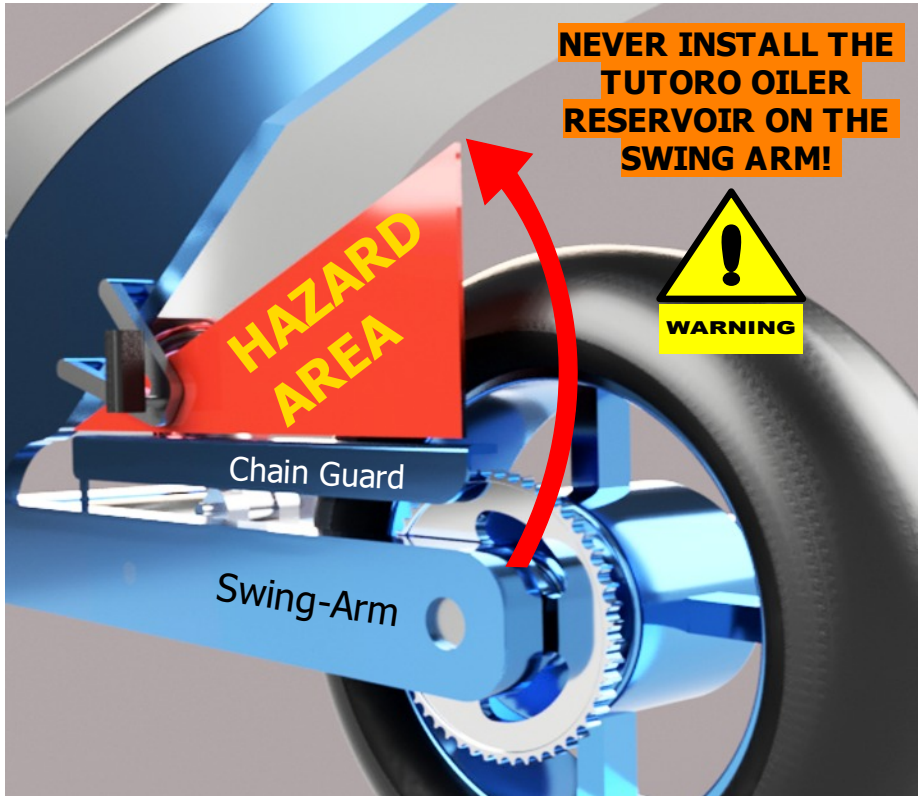
The flow control valve needs to be open 4 turns anticlockwise to maximise flow for this procedure.



DO NOT touch the mechanism inside the oiler, it is very precise and carefully set up, it could be damaged by being forced in any direction.

KEY POINT 5.

Installation position - its vitally important to keep your TUTORO out of the **HAZARD AREA** as indicated in the illustration below.



Even Sport motorcycles have suspension travel of 100-130mm(4-5").

Installing **anything** within this zone of movement is likely to result in it being impacted by the swing-arm or chain guard which moves with it. Adventure motorcycles have **much** longer suspension travel - check your machines specifications.



Remember the suspension will compress even further than normal when taking a pillion passenger, the bike is loaded with luggage or when riding over speed humps!

When choosing an installation location make sure you install either ABOVE or OUTSIDE of the Hazard Area using the bracket set provided.

NEVER install it on the swing arm or chain guard.

KEY POINT 6.

Keep it clean but don't use solvents!

Do not use Solvents, De-Greasers or Foam Wash on your TUTORO

Many of these products contain harsh chemicals which will attack the plastics that the Auto is constructed from resulting in cracking of the clear acrylic and/or dimensional changes to the cap.

A "wash-bag" is provided in the kit to keep cleaning products and solvents away from the TUTORO when cleaning the rest of the bike.

Just use warm, soapy water to clean the TUTORO.

IMPORTANT!

You MUST keep dirt, grit and debris out of the reservoir!

Wipe away any dirt from around the cap and reservoir BEFORE removing the cap!

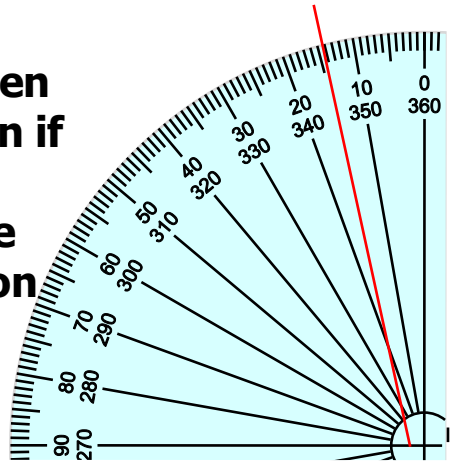
Dirt in the oil reservoir is the No.1 cause of leaks!

KEY POINT 7

Always install the TUTORO Auto in an upright position at least 300mm above the nozzle.

- The Auto needs to be upright so that the internal mechanism and the column of oil below the oiler can exert sufficient force on the primary valve to keep it closed when the motorcycle is static.
- The Auto needs to be mounted rigidly, any slack in the mounting will rob the oiler of the energy it needs to operate properly.

Always ensure that when the bike is parked (even if on the side stand) the unit does not lean more than 12° in any direction from vertical!



Choosing an installation location

There are 2 critical factors.

1. **Where is it going to be installed on the Motorcycle?.**
2. **How will it attach to that location?.**

1. Where - Must comply with all Key Points (Page's 5-13)

Avoid locations that could involve the TUTORO Auto coming into contact with moving parts - such as the swing-arm and chain guard.

Avoid a location that is **going to become hot** such as near an exhaust header pipe - a classic example is the rear cylinder exhaust on a "V" Twin such as KTM 1190 - leading to oil thinning (excessive oiling) and heat stress damage to the Tutoro oiler unit.

2. How

If your location has a nice **flat surface** then the Multi-fit bracket that comes with every TUTORO is extremely versatile and works brilliantly.

If you have a suitable **bolt or bolt hole** in a good safe location then the Pro-Fix bolt bracket is a great choice.

If the location you want to use has a **round section frame** then use a rubber lined "P" Clip (Motor factors sell hundreds of sizes so its easy find one to suit).

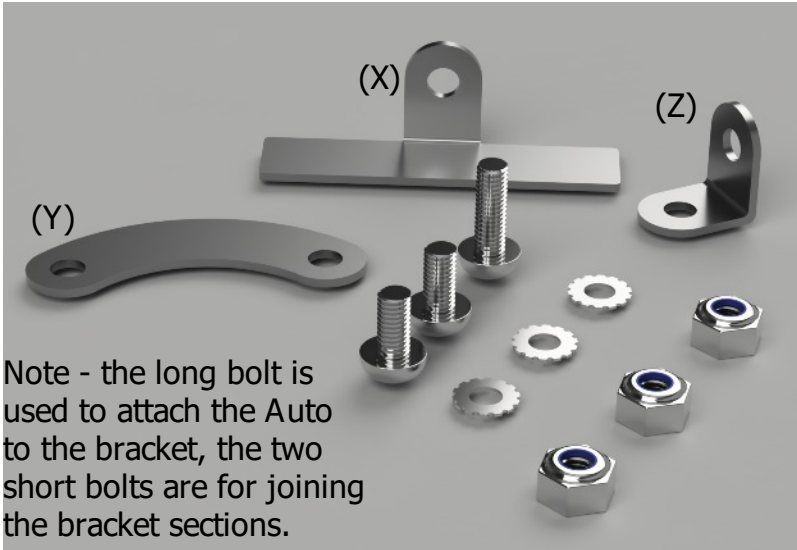
Also bear in mind that components from the multi-fit bracket set like the "Dogleg" and the "Right Angle" can be used with either the Pro-Fix bolt bracket or a "P" clip to ensure the TUTORO is mounted in an upright position. **Whichever method you use, make sure the Auto is mounted rigidly to a frame member - a slack mounting can prevent the Auto from working at all...please read on for further information.**

There are 3 Methods that you can use to attach the TUTORO to your motorcycle.

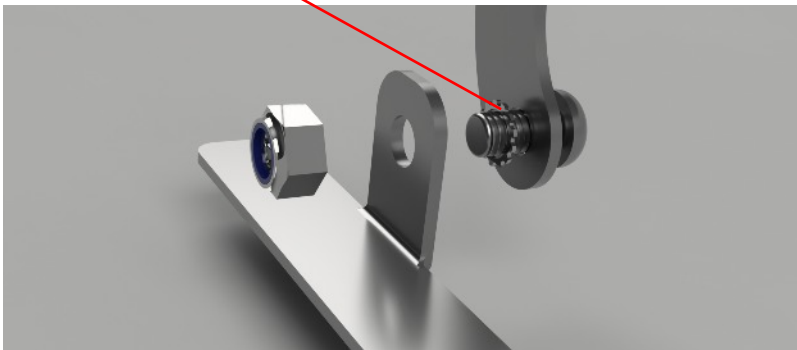
Method 1. Use the Multi Fit Bracket Set

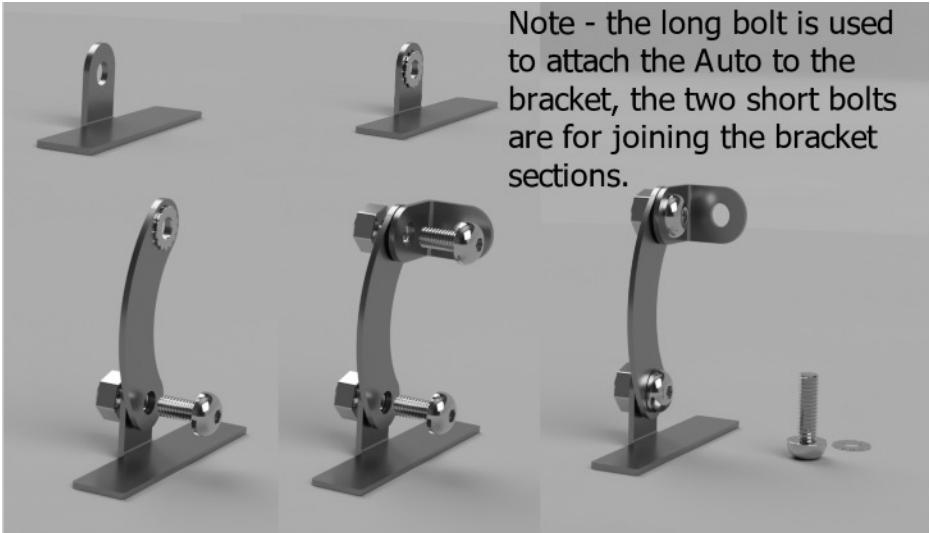
Included with all the TUTORO Auto kits. Attach the "Foot" section (x) onto a **FLAT** part of the motorcycle's frame and then using the "Dog-Leg" (y) or "Right Angle" (z) or **both** to facilitate positioning the reservoir into an upright position. Each kit comes with Stainless Steel Nuts bolts and "Star-Loc" washers. **

DO NOT use the Multi fit bracket to secure to a narrow round bar!



**Note that the star washers go between the metal parts and between the metal bracket and the Auto body



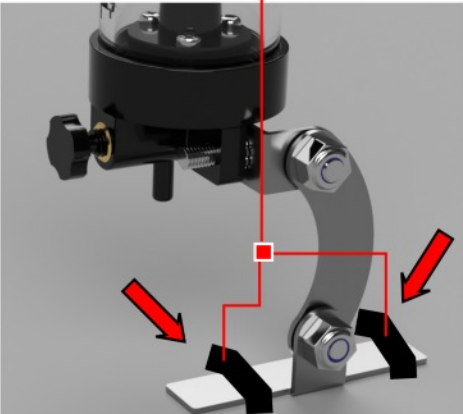


Note - the long bolt is used to attach the Auto to the bracket, the two short bolts are for joining the bracket sections.

The bracket pieces can be used in any order to achieve an secure and upright installation.

Remember, attaching the Right Angle bracket to Foot will allow you to change the orientation of the installation.

The **Foot Bracket** is secured to the motorcycle using the **largest** of the cable ties supplied. The foam strip protects the frame against scratches. See Below

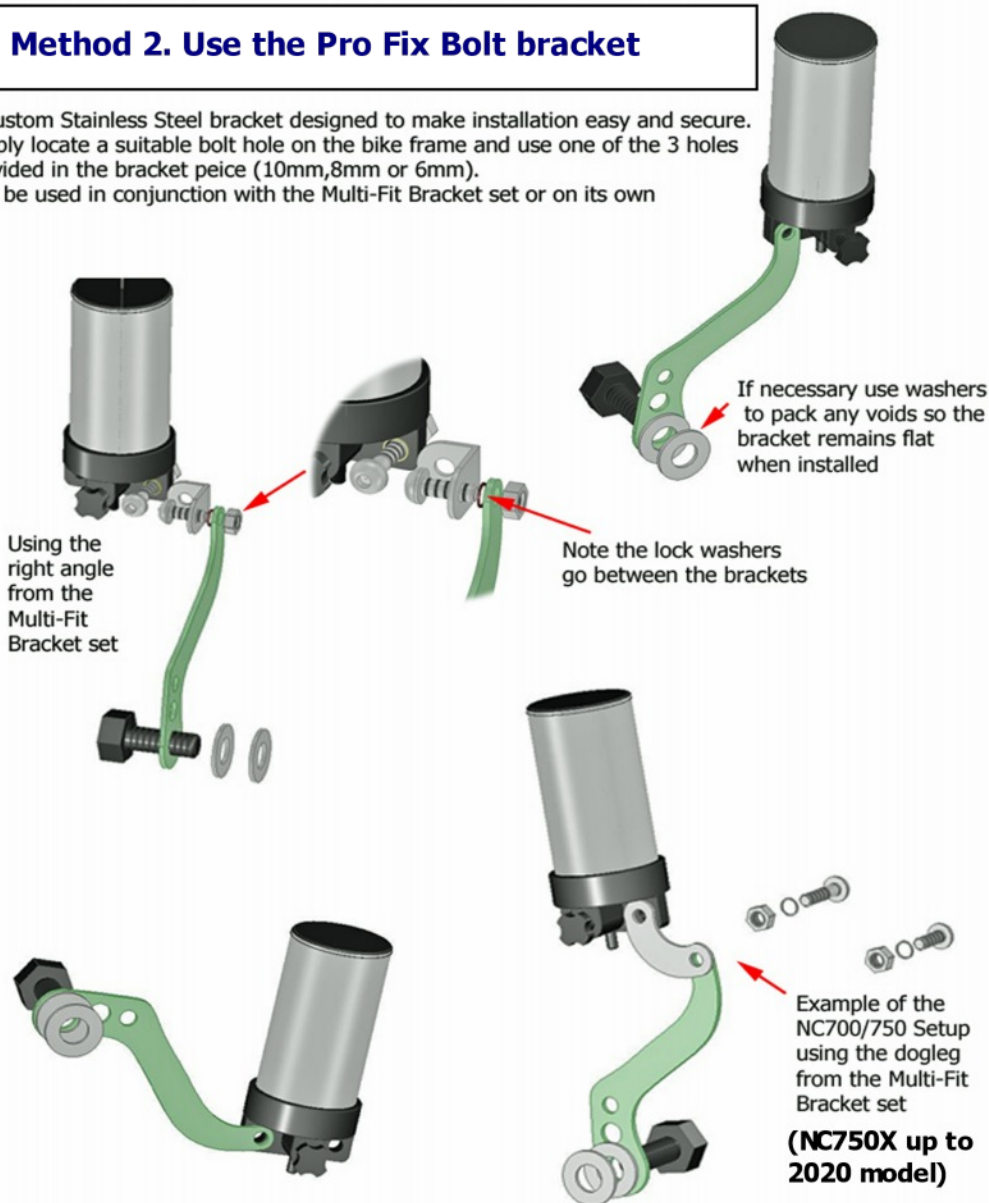


The brackets can also be **rotated** and assembled into a whole host of positions. This facilitates attaching the assembly not only to the **top surface** of a frame but also to the **side** or **underside**.

Note also that the right angle has one long side and one short side for even greater flexibility.

Method 2. Use the Pro Fix Bolt bracket

A Custom Stainless Steel bracket designed to make installation easy and secure. Simply locate a suitable bolt hole on the bike frame and use one of the 3 holes provided in the bracket piece (10mm, 8mm or 6mm). Can be used in conjunction with the Multi-Fit Bracket set or on its own



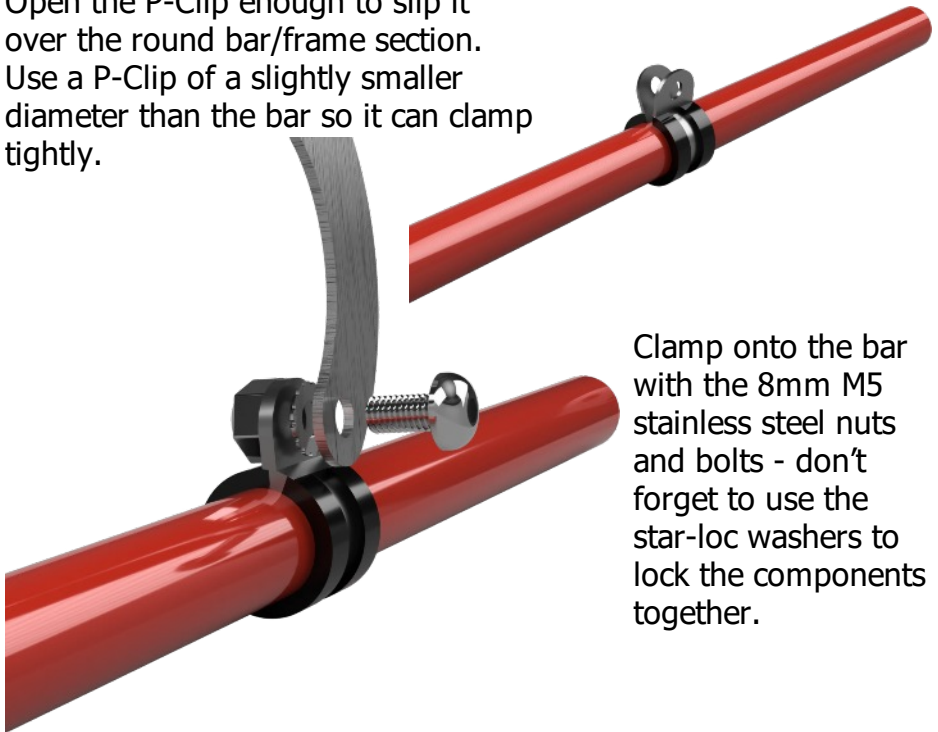
Method 3. Use a Rubber lined "P" Clip

Purchase a rubber lined "P" clip to anchor onto the motorcycle's frame.



The P Clip is the ideal method to attach the oiler to a round bar frame and provides a rigid secure install. Do not use the multi-fit bracket on small diameter bar frames (less than 30mm diameter) - it will not hold the Auto rigidly enough and may prevent the Auto from functioning properly

Open the P-Clip enough to slip it over the round bar/frame section. Use a P-Clip of a slightly smaller diameter than the bar so it can clamp tightly.



Clamp onto the bar with the 8mm M5 stainless steel nuts and bolts - don't forget to use the star-loc washers to lock the components together.

You can then use the Dog-Leg and/or the Right Angle bracket parts between the P Clip and the Auto Oiler to bring the Oiler into an upright position.

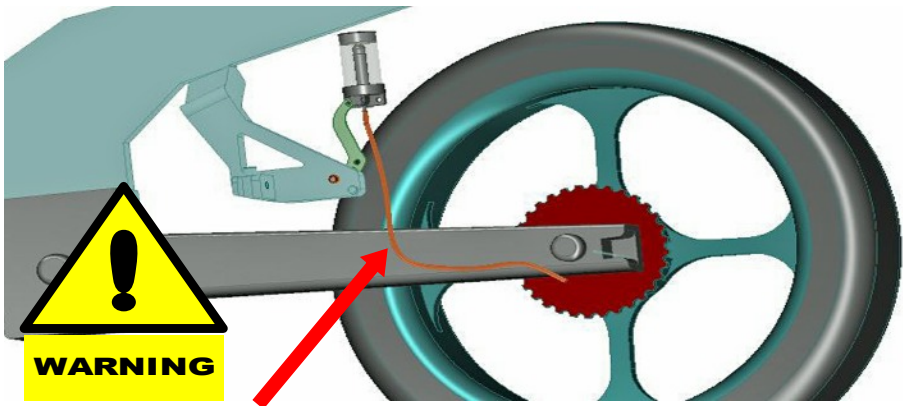
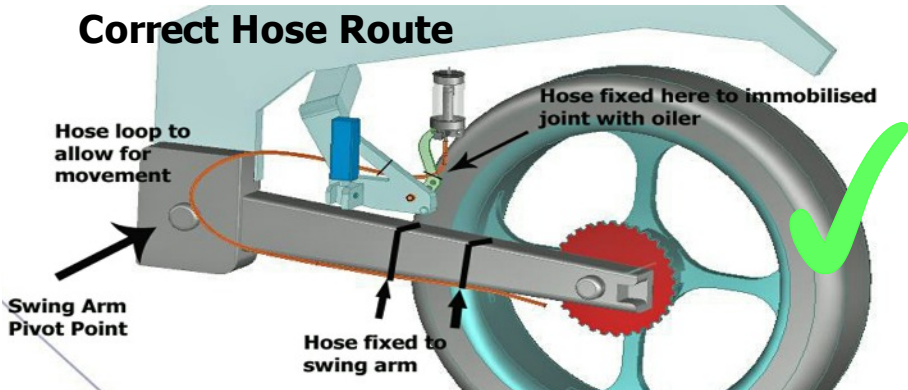
Hose Routing

The hose directly beneath the Oiler's spigot **MUST** be secured to a static part of the bike frame before it is routed to the swing arm.

If it is not then the constant movement of the swing arm will pull at the connection between the hose and spigot at the base of the Auto and compromise the seal, this will lead to air leaking into the hose and drips of oil at the nozzle as the hose empties itself.

TOP TIP! - Start the hose routing from the nozzle end and work back to the Auto oiler unit.

Correct Hose Route



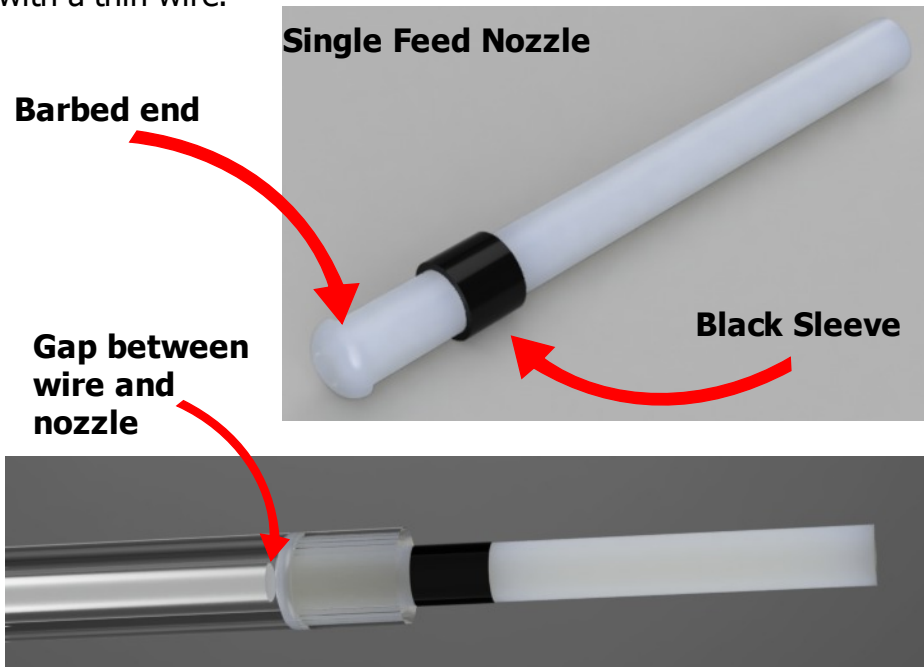
DO NOT install the hose like this!

The Single feed Nozzle

The Single feed nozzle is a simple, reliable way to dispense oil onto the chain.

The barbed end of the single feed nozzle must be inserted into the end of the hose with the alloy wire inside it. The barbed end of the nozzle is identified by being the closest end to the black sleeve on the nozzle - see illustration below.

The nozzle can become blocked if you have a dirty sprocket and reverse the bike - dirt is pushed up inside the nozzle tip. For this reason always clean the sprocket face before installing the nozzle. To clear a blocked nozzle either remove it from the hose and wash with warm soapy water or pick the dirt out of the nozzle with a thin wire.



Nozzle inserted into wired hose at the black sleeved end so the barb enters the hose. **Leave a gap between wire and nozzle so the wire doesn't block the flow of oil!**

The photo below illustrates the correct installation/alignment position for a single feed nozzle.



Note that the tip of the nozzle is resting on the inside lip or recess that surrounds the teeth of the sprocket.

Centrifugal force will push the oil onto chain as it meshes with the sprocket.

Despite only applying oil to one side of the sprocket, both sides of the chain are effectively lubricated as the oil entering from one side is displaced by the mesh of the teeth and rollers to both sides. Only the rollers and inner plates need to be oiled.

Long term extensive testing has revealed there is no benefit in fitting a Twin feed nozzle, the amount of oil applied is the same as a single nozzle and the single feed is far more rugged and reliable.

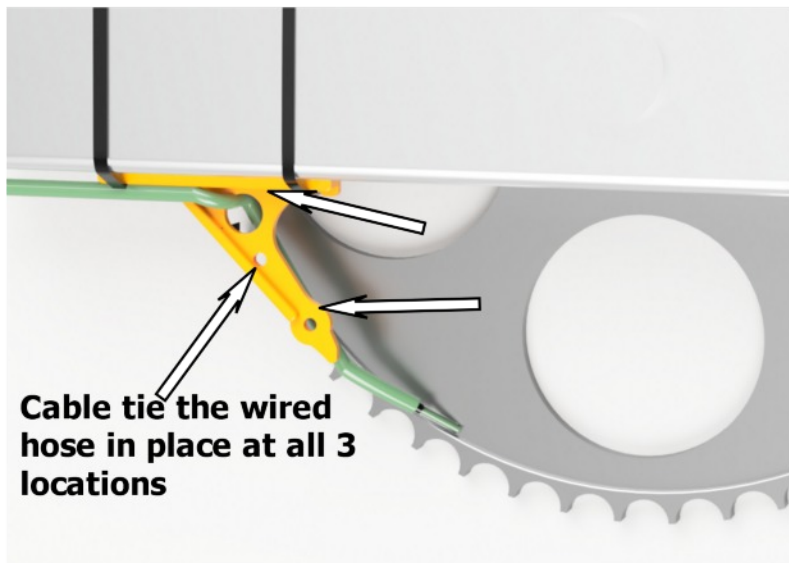
Correct nozzle positioning allows the oiler to deposit the oil where its most needed whilst minimising wasted oil.

Excessive fling can occur if the oil is allowed to drop onto the top run of the chain or onto the sprocket a long way from the chain/sprocket mesh. The oil applied misses the chain altogether as the oil drops are swept away by the air flow or are flung off the sprocket before it can mesh with the chain.

Nozzle Install using the TUTORO Shark Fin Nozzle Anchor

The Nozzle is installed into the hose as per page 20.

There is a video on installing the Shark Fin on the TUTORO website - please see "Shark Fin" in the Videos menu. www.tutorochainoilier.com/pages/videos



Before you cable tie anything in place, offer the Shark Fin up to the swing arm and see how close you can get it to the position illustrated above - the aim is to have the shortest possible route from the Fin to the sprocket - aim for 25mm/1" between the last cable tie and the nozzle. Once you are happy with the location, cable tie the Shark Fin to the swing arm (using 2 x 4.8mm cable ties) ensuring you align the Shark Fin on the inner edge of the swing arm for the closest possible fit to the sprocket. Loosely secure the hose to the Fin with the 3 x 2.5mm cable ties as illustrated above, now test fit but do not tighten yet as you may need to adjust the set up. The gap between the tip of the Fin and the sprocket is bridged by bending the hose (with the wire

inside) in towards the sprocket. If in doubt leave it a little long as the nozzle can be trimmed back if you have too much.

Once happy with the fit tighten all three 2.5mm cable ties to secure the hose to the Fin, the nozzle will move during this process but you can now make the final adjustments and align the nozzle by adjusting the bend in the hose so that the tip of the nozzle is lightly pressed against the side of the sprocket but inboard of the teeth.

Now route the hose back up to the Oiler following the instructions on page 19.

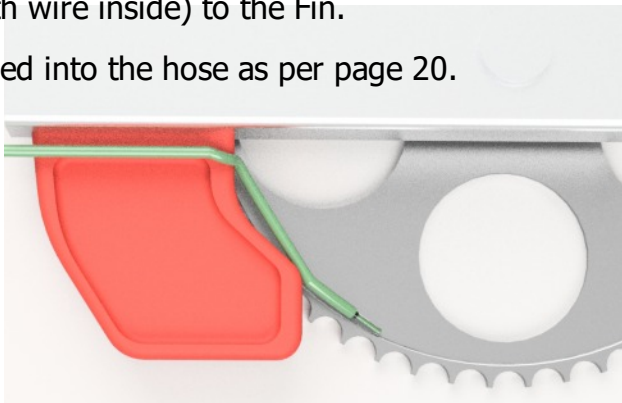
PLEASE NOTE :The TUTORO Shark Fin Nozzle Anchor is NOT a safety device. Its use is for securing the TUTORO Single feed Nozzle in position only. The Shark Fin is not intended as a replacement for a motorcycle manufacturers Toe Guard/Fin and should not be treated as such.

Nozzle install - Using a Factory Fitted Toe Guard/Fin

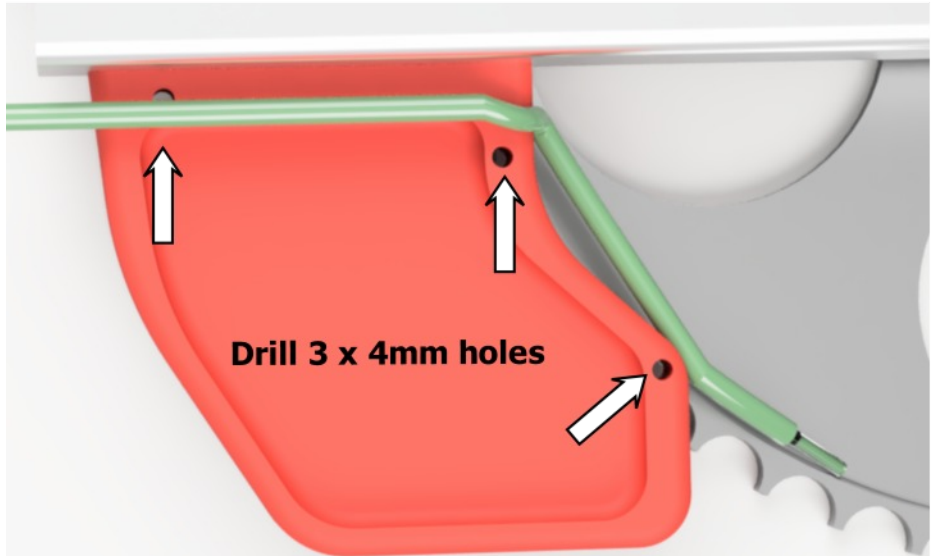
Before you cable tie anything in place, offer the hose up to the Fin fitted on your bike to gauge where to drill the 4mm holes to anchor the hose (with wire inside) to the Fin.

The Nozzle is installed into the hose as per page 20.

First, do a trial fit...

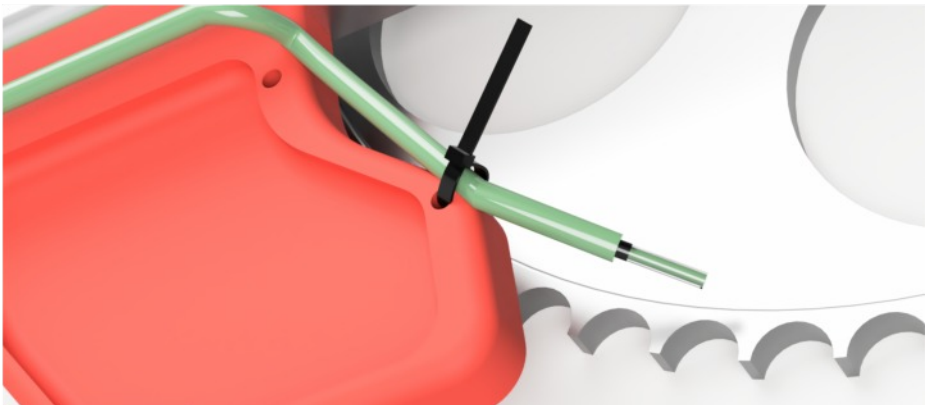


The aim is to have the shortest possible route from the Fin to the sprocket, optimally about 25mm/1" of wired hose sticking out beyond the last anchor point with the nozzle sticking out beyond that.

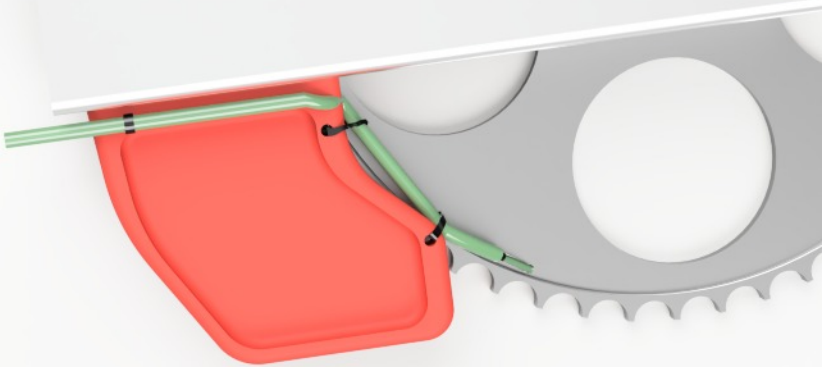


The hose can be routed either behind or in front of the Fin

Pass a cable ties though each hole, loop around the wired hose and pull so that its firmly held against the Fin - the wire inside will prevent the hose from crushing.

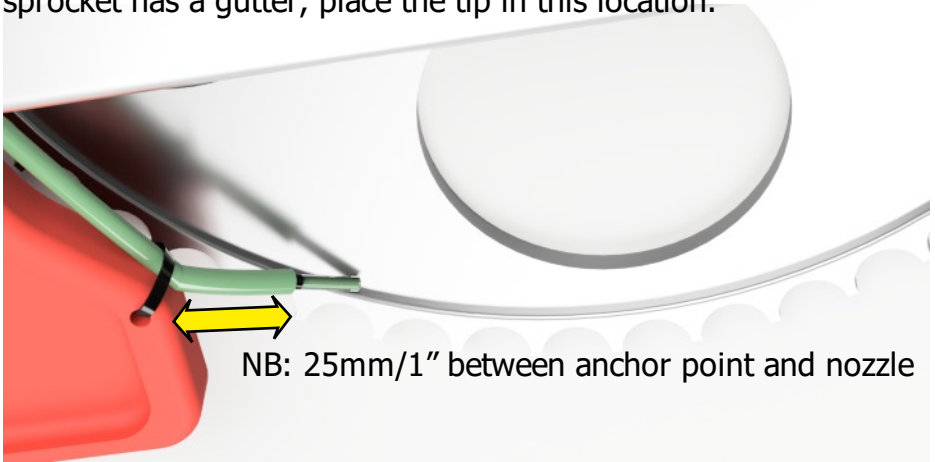


Secure all 3 cable ties and trim excess



Once all cable ties are in place the nozzle will need to be aligned.

You can then bend the wired hose in so that the tip of the nozzle is resting on the sprocket just inboard of the teeth, if the sprocket has a gutter, place the tip in this location.



That's it, you have successfully installed the nozzle!

Now route the hose back to the Oiler reservoir (see page 19) and continue to follow the instructions in the 10 Step Guide (see page 29)

This Nozzle position is the only location supported by TUTORO, please do not install elsewhere.

1.5m Oil Delivery Hose



Please follow the 10 step installation guide on page 29 bearing in mind the following points.

- Ensure the hose is firmly connected to the oiler spigot as illustrated above to prevent air leaks - if air gets in at this junction, oil will leak out of the nozzle.
- Always ensure the hose is secured to a non moving part of the frame before being routed to the swing arm - **See page 19**
- Ensure the single feed nozzle is inserted barbed end first, it will not seal correctly if inserted the wrong way - **See page 20**
- Don't over tighten cable ties to ensure the hose is not crushed therefore restricting oil flow.
- The short section of alloy wire at the end of the hose is used for securing the final part of the hose by the nozzle and to allow adjustment of the nozzle position. See pages 20-25.
- For best results keep the final section of unsupported hose (the part the nozzle goes into) to a minimum - around 25mm (1") is ideal.

Do not use an old hose on a new installation - the hose may have become hard over time and may not seal correctly leading to air bubbles or gaps in the hose and an intermittent oil supply to the chain.

The Auto Cap

The Cap is a straightforward component but if the breather hole gets blocked with dirt or oil then no air can get into the oiler unit.

Simply put, **no air in, means no oil out!** - the oiler will stop working.

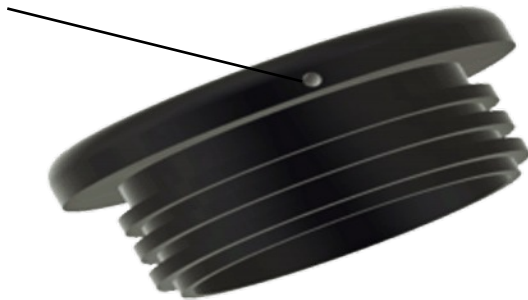
To rectify this, remove the cap from the oiler and wash it out in clean soapy water - **don't use harsh chemicals or solvents** as these chemically attack the plastic and cause the cap to swell or shrink, meaning it won't fit properly and may crack the acrylic tube if it's forced in.

Synthetic/semi-synthetic oils can also effect the cap making it swell, increasing its diameter. If this increased diameter cap is forced into the acrylic reservoir tube it will result in a **"J" shaped crack**.

If you look carefully you will see there is a small 1.5mm diameter hole in the rim of the cap - this must be clear for the unit to function properly, use a paper clip to poke out any dirt when you are washing the cap out.

Dry thoroughly, lightly oil the ribbed section of the cap with TUTORO Oil and replace on the oiler, making sure that there isn't any water or soap blocking the breather hole.

Breather hole



TOP TIP! - Position the cap in the reservoir with the breather hole facing away from the water and debris thrown up by the rear tyre.

Hose Clamp Set

Includes 4 x Hose clamps and 2 x alcohol wipes.

For a really neat hose installation.

Never rely on an adhesive clamp on its own to hold a nozzle in place. Please use in conjunction with cable ties.

Use the alcohol wipes provided to ensure a really good clean dry surface.



Stone Shield

An aluminium cover for the acrylic tube part of the TUTORO Auto reservoir, designed to help protect the oil reservoir from stones and chips thrown up from the road. This accessory is NOT a heat shield and will not function well as one because it does not cover the black valve body nor does it have any insulation properties.

Caution! because the Stone Shield is a close fit to the acrylic reservoir tube it can trap liquids - if you use a powerful detergent or solvent when washing the bike and some gets onto the TUTORO the stone shield can trap these chemicals against the clear acrylic tube. These chemicals attack acrylic and will result in a cracked or otherwise damaged reservoir tube.



10 Step installation guide

1. Select the location that you are going to site the TUTORO Auto oiler. Make sure the location complies with ALL 7 KEY POINTS on page's 5-13.
2. Select an attachment method (see pages 14-18) and install the oiler unit.
3. Insert the Single Feed nozzle barbed end first into the end of the 1.5m hose that has the alloy wire inside it (see page 20 and 26)
4. Either carry out the nozzle installation on your bikes Toe Guard Fin as per page 23 Or install with the TUTORO Shark Fin as per Page 22
5. Route the oil delivery hose back to the oiler unit and attach to the oiler using the route described on page 19 . Details of hose clamps are on page 28.
6. Remove the cap on the Auto oiler unit and fill with oil to the Max oil level as indicated on the clear reservoir (**below the steel disc**). Replace the cap and rotate the flow control valve 4 turns **counterclockwise** to open it to the priming position. Now replace the cap.
7. Place the magnet provided on top of the cap (this opens the primary valve) and observe the oil flowing through the oil delivery hose until it has reached the nozzle. Once oil starts dripping out of the nozzle remove the magnet.
8. Return the flow control valve to the off position by rotating it 4 turns **clockwise** (it comes to a positive stop and the orange dots line up).

Continued overleaf

9. Open the flow control Valve $\frac{1}{2}$ a turn counterclockwise to set the initial flow rate..
(see *Summer and Winter settings below)
10. Go for a short test ride. After 20 minutes stop and inspect the chain. Make small adjustments in $\frac{1}{8}$ th to $\frac{1}{4}$ of turn increments until the rollers have a sheen of oil on them and look cleaner.

Remember - Counter clockwise to increase flow,
Clockwise to decrease flow.

*Summer/Winter settings

Your flow control valve will need different settings depending on the ambient temperature due to the oil's increased viscosity at lower temperatures.

Examples

Ambient Temperatures

- 20°C (68°F) your initial flow rate setting should be $\frac{1}{2}$ a turn open.
- 10°C (50°F) your initial flow setting setting should be 1 $\frac{1}{2}$ turns open.

Take your time getting the flow control setting dialled in for your bike. Please carefully read **Setting the flow rate** on page 31.

As a rule of thumb **start off with low settings and work up from there.** Its easier to add oil than to take it off again!

Setting the flow rate

Best practice, as already alluded to in the 10 step installation guide, is to start with a low flow rate and gradually build up in small increments of $1/8^{\text{th}}$ to $1/4$ of a turn counterclockwise checking the results frequently, until the correct setting is achieved. Your flow control valve will need different settings depending on the ambient temperature due to the oil's increased viscosity at lower temperatures.

Please Note! - the flow rate will increase rapidly from around TWO turns open as the cone of the needle valve starts to emerge from the valve seat.

In practice this means the flow rate at 2.5 turns open is around TWICE what it is at 2 turns open!

As a rule of thumb - Up to TWO turns open for summer and TWO to FOUR turns open for winter.

Due to this design our Original oil can be used at sub zero temperatures right up to and including 30°C

WARNING if you set an excessive flow rate from the start you could easily soak the chain with oil and experience a lot of "oil fling" over the rear of the bike and because there is so much oil already on the chain turning the flow rate down on the oiler again will initially seem to have little effect.

If you have flooded the chain you need to turn the oiler off, clean up the bike and the chain so that its back to a dry condition then restart the flow setting setting procedure as detailed at the start of this page.

HOT WEATHER will change the flow rate - if you set your flow rate up in the cooler months and are now experiencing high summer temperatures you will need to reduce the flow rate setting. With our original oil and temperatures over 25°C you

Continued overleaf

may need to reduce the flow rate down to as little as 1/8th or less of a turn open. If you routinely experience these temperatures consider using "Plus25" our high temp oil. Original oil is designed to be used up to a max of 30°C.

Cold weather - Oil viscosity will increase and the oil will flow more slowly. In order to overcome the low flow rate it is quite normal to have to turn the flow rate **up to 4 turns open**. This reduces restriction and therefore compensates for the slower reaction time of cold thick oil.

How wet should the chain be?

If it has a sheen of oil on the rollers then the flow rate is about right. A few tiny streaks of oil on the sidewalls of the tyre is nothing to worry about.

If the chain is looking a bit dry then open the flow control valve a further 1/8th to ¼ turn counterclockwise to increase the flow rate. Repeat if necessary.

If the chain is wet with oil and you are getting streaks of oil on the road face of the rear tyre, clean the tyre then **reduce the flow rate** by turning the flow control valve **clockwise** half a turn. If the fling is really excessive then carry out a clean up and reset as detailed on page 31.

TOP TIP! - in WET WEATHER turn the flow rate up! Your chain needs more oil to counteract the effect of the water washing lubricant off.

Please note excessive fling is also commonly caused by a misaligned or incorrectly installed nozzle see pages 22 to 25.

Some fling's a good thing...

Oil fling is a sign of an effectively lubricated chain, it's important to remember the point of applying oil is to reduce the wear and tear of the chain and sprocket set – **applying extremely small amounts of oil so that there is little or no fling will not do a great job of lubricating the chain or extending its life.**

How much "fling" is acceptable?

Its important to remember any oil applied will inevitably end up coming off again.

The individual bikes design will determine where this ends up but on the chain guard, front sprocket housing and the wheel hub/rim/spokes is the usual spot with a few streaks on the tyre sidewall.

In short...

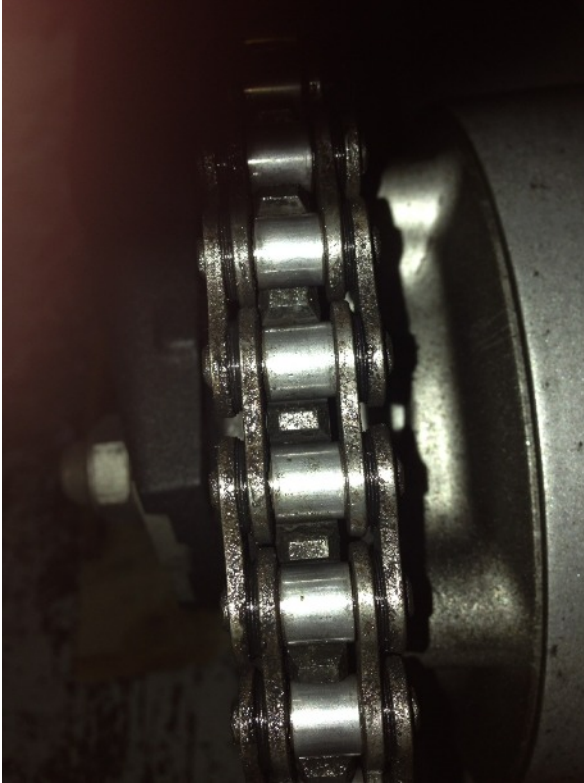
- Oil on the wheel rims and hub is to be expected and is perfectly fine
- A few tiny streaks on the sidewall of the tyre is fine and will not have any adverse effect on the tyres ability to grip the road
- Oil creeping onto the road facing "grip" of the tyre is not good, for obvious reasons it should be avoided.

When considering **how to avoid the excess oil on the tyre** consider not just turning the oiler down but also that the Nozzle may be displaced, out of alignment or simply installed in the wrong place - see pages 22 to 25.

This fling effect is not just depositing oil on your back wheel hub it is also doing a very important job of removing the dirt, dust, grit and grime from your chain and sprockets – this is an important a job as providing lubrication. Left in place these particles will build up like a grinding paste and accelerate wear.

Continued overleaf

A clean chain means you may have to clean the rear wheel a little more frequently - this is not a difficult task as chain oil wipes off easily unlike sticky "glue like" spray-on chain lube. The massive upside is your drive train will repay this labour in a greatly extended service life.



But what about drips?

After a long ride, an excess of oil can build up on the chain, sprockets and front sprocket housing. When you stop inevitably gravity will have its way - this residue will make its way to the lowest point and drip off onto the floor under the bike when the bike is left stationary overnight. This sort of "leak" is characterised by the drips being dirty oil - it looks black almost tar like.

From your chain's point of view this is fine, its getting well lubricated so you can...

Either place a bit of old carpet or cardboard under the bike and be happy in the knowledge that all is well with your final drive lubrication.

Or you can clean the front sprocket housing out to get rid of all the old gunk that has built up there and turn the flow control valve down a little to cut down on the excess oil being applied.

Which Oil should I use?



For ambient riding conditions 0°C to 30°C
(32°F to 86°F)

Use TUTORO Original Chain oil

For ambient riding conditions 30°C to 40°C
(86°F to 104°F)

Use TUTORO Plus25 Chain Oil

Our Original and Plus25 Oil's can be mixed to blend a hybrid intermediate oil if necessary.

If you wish to blend the Original and Plus25 oils together we recommend that you do this in a separate container before filling the reservoir.

Please note the use of any other oils or fluids in the TUTORO Auto is entirely at the owners own risk

Continued overleaf

Why we only recommend using TUTORO Chain oil...

Our chain oil is made to order and has wear modifiers and anti-corrosion additives . We know what's in it, that its safe to use in the TUTORO Auto and environmentally sound. We simply can't say that for anyone else's products.

We would like to be able to say that you can use anything in your TUTORO but oil chemistry is an extremely complex field, in particular in relation to its compatibility with the injection moulded components and brass parts in our products. By using something other than our oil you may also be inadvertently releasing toxic substances into the environment. We can only recommend our own oil as we know exactly what it contains.

Engine oils are designed to do a different job, generally they are too light and do not contain the correct additives to prolong the life of your chain- they may also contain additives which could damage your Auto and/or be environmentally toxic.

Chain Saw Oil, we don't recommend it as it is just too sticky and "glue-like" to flow properly. Some Chainsaw oils are vegetable oil based as well as being hygroscopic which leads to corrosion of the Auto's brass and steel parts- some of these oils also attack the Auto's internal nitrile seals not to mention the O or X rings in your chain!

Gearbox oil EP80/90* - WARNING Don't use EP Gearbox Oils! these can make the Auto oilers cap swell, this can cause the Acrylic* reservoir to crack when the cap is forced into the top of the reservoir! If you have been using this don't try to force the cap to fit but order a new cap, drain the oiler and switch to using a TUTORO oil. The additives in EP oil will also corrode brass.

*Acrylic - also sometimes called... PMMA, Plexiglas, Perspex, Acrylite, Acrylic Plastic, Altuglas, R-Cast, Polycast, Lucite Plazcyl

NEVER, EVER USE AUTOMATIC TRANSMISSION FLUID in your oiler!, some variants have all sorts of nasty toxins in and can destroy plastics, some even corrode brass!

Any damage caused to your Auto through failure to follow this advice will not be covered by your warranty.

TUTORO Auto Troubleshooting guide

Got a problem? don't worry we are here to help but before getting in touch please run through the troubleshooting guide below. 99% of the time you will find the issue and its solution will be here.

SYMPTOM - Oiler is not delivering enough oil

- The Auto is not mounted rigidly to the frame. The Auto Oiler must be rigidly mounted using one of the three methods discussed on pages 14-18. **If the mounting is slack, or has become slack over time, the Auto cannot operate properly and may not deliver oil** - Tighten bolts, replace cable ties or consider a more appropriate mounting method.
- The Cap's breather hole is blocked - Clean (see page 27)
- The nozzle tip is blocked - Clean (see page 20)
- Incorrect Flow Control Valve setting (see pages 31-32)
- The nozzle tip is not resting against the rear sprocket. (see page 21) Quick Tip! - if your rear tyre has been recently changed make sure the nozzle has been realigned correctly!
- Incorrect oil for the ambient temperature (see page 35)
- The delivery hose is crushed flat by a cable tie - Replace Hose (see page 26)
- The reservoir has been overfilled - Drain to Max Oil level (see page 29 #6)
- The hose is incorrectly routed - Re-route/Replace (see page 19)
- The internal positioning wire in the hose has become lodged in the end of the nozzle. - Insure there is a gap between both parts (see page 26)
- An old hose has been used and is not sealing correctly - leads to air gaps and bubbles in the hose and intermittent oil delivery - Replace Hose (see page 26)
- Auto unit has run "dry" - no oil in tank and air gaps in hose - Re-prime unit (see page 29 #6 onwards)

Continued overleaf

How to find out where a blockage is..

- Open the flow control valve 4 turns and place the priming magnet on top of the cap
- Count the drips per minute from the nozzle
- Remove the hose from the spigot at the bottom of the oiler
- Count the drips from the spigot

If the drips from the spigot are faster than the drips from the nozzle then the problem lies in the hose or nozzle.

Problem not resolved? Please see page 41

SYMPTOM - Oiler is delivering too much oil

- Incorrect Flow Control Valve setting - Adjust to suit ambient temperature **(P.31-33)**
- The nozzle tip is not resting against (touching) the rear sprocket - Adjust nozzle alignment **(P.21)**
- Incorrect oil for the ambient temperature **(P.35)**
- The Oiler Unit is being overheated by the exhaust pipe/engine. The excess heat thins the oil and makes it hard to regulate the oil flow - Re-site the oiler in a cool location **(P.6 Key Point 1)**

Problem not resolved? Please see page 41

SYMPTOM - Oil patch under bike when left stationary

- The Oiler unit is not mounted in an upright position **(P.13)**
- The Oiler is installed less than 300mm above the nozzle **(P.13)**
- There is an air leak in the hose - Replace hose **(P.26)**
- There is an air leak at the hose junction with the oiler spigot - Either trim 6mm from the end of the hose and re-fit onto spigot or fit new hose **(P.26)**
- Air leak at the junction of the nozzle and the hose - Nozzle has been inserted the wrong way round **(P.20)**
- There is excess oil dripping off the chain - wipe off excess oil from the chain and then adjust flow rate **(P.27-30)**
- If leaving your bike unused for extended periods please turn the flow control valve to OFF as barometric (weather) changes can lead to some drips from the nozzle.

Continued overleaf

- Dirt or debris has entered the reservoir and has compromised the primary seal (**clean out- see P.41**)

SYMPTOM - A crack in the clear Reservoir tube or leaking around the base of the clear tube.

Please note that when the Oiler's are assembled we use oil to lubricate the O ring seal before snapping the clear acrylic tube into the black valve body, a little of this oil maybe be visible in the gap between these components, this is quite normal and does not indicate a leak.

To ascertain if there is a leak, wipe off any excess oil and leave the oiler unit overnight. If, in the morning you see a fresh oil pool has formed around the rim of the black valve body then it is leaking.

- The oiler unit has been hit by the swing arm/chain guard when suspension is under FULL compression cracking the clear acrylic reservoir in its O ring groove (see pages 10 & 11) - Replace Tube, Cap & O ring or Return to TUTORO (see page 42)
- The clear Acrylic reservoir has been rotated around in its socket and the O ring seal has been damaged (see page 8) - Replace O ring or return to TUTORO (see page 42)
- Oil has been spilled when filling the oiler and has formed a small pool around the junction of the clear acrylic and the black valve body - Wipe the area clean.
- Oil has collected here as a result of the oiler being installed near the chain and chain fling is hitting the oiler - Wipe clean.
- The oiler has been over filled and excess oil is being forced out of the breather hole in the cap, subsequently running down the side of the oiler and pooling around the base - Drain to Max Oil level and clean cap (see page 27)
- The cap has been swollen due to chemical attack from cleaning products or synthetic/semi-synthetic oils and has been forced into the clear reservoir tube causing a "J" shaped crack. (see page 27) - Replace Tube, Cap and O ring or return to TUTORO (see page 42). Use protective wash bag when cleaning the bike in the future.

Continued overleaf

- The reservoir has been subject to extreme heat from engine/exhaust header pipe (see page 6) - Replace Tube, Cap and O ring or return to TUTORO (see page 42)

Problem not resolved? Please see pages 41 & 42

SYMPTOM - Cracks appeared around the flow control valve housing in the black valve body part.

- Heat stress - oiler is too close to a high heat source. Long term thermal expansion and contraction (see page 6)
- Repeated impacts - oiler is being crushed between the swing-arm/chain guard and a frame member on the bike (see pages (10 & 11))

This kind of damage is not repairable, please contact TUTORO to purchase a new reservoir unit and ensure that it is installed in a safe location as per this manual.

SYMPTOM - The flow control valve has turned itself up!

Magic or Vibration?

Its not vibration because the flow control valve is held captive by an O ring and has too little mass in and of itself to overcome the mild friction this O ring asserts against it.

Not magic either - In each and every case its turned out to be the action of the riders leg/boot rubbing against the flow control valve as they change gear.

The cure is simple - Re-site or re-position the oiler (using the multi-fit bracket set) so that the flow control valve isn't coming into contact with the riders boot/leg.

Continued overleaf

If you need to clean out your TUTORO Oiler unit because of a build up of debris/mud/water inside the reservoir then please follow these steps.

- Remove the TUTORO from the motorcycle.
- Remove the filler cap
- Completely unscrew and remove the flow control valve
- Invert the TUTORO and allow to drain for a couple of hours
- Add a small amount of fresh clean TUTORO Original oil and swirl around the unit to pick up anything left inside.
- Invert the TUTORO and allow to drain again.
- **Do not use solvents or cleaning products to wash out the unit**
- Replace Flow control valve and cap, re-attach to motorcycle.
- Prime TUTORO Oiler unit (see page 29 #6)

Customer modifications

If your installation involves the use of your own custom components such as hose, brackets or nozzles please do not request that we troubleshoot issues arising from their use.

Consumable items

Whilst all our products are built with durable, quality materials, the time may come when you may need to replace the consumable components such as Nozzles etc.

The nozzle is by its very nature, a consumable item, however if fitted correctly and securely very little wear will occur.

Please note we cannot be held responsible for normal wear and tear or accidental damage to the nozzle, hose etc.

Need extra help?

If you have an issue which you are unable to resolve from all the information we have provided in the troubleshooting guide then it is highly unlikely that we would be able to fault find via email correspondence.

If your **unit is still in warranty** (less than 1 year from date of purchase) then please contact us directly for advice.

If your unit is **out of warranty** we offer a return to base repair service, please see the following pages for details.

Returning your TUTORO Auto for Service/Repair

Please note that we can only accept units back for service repair where nothing other than TUTORO Chain Oil has been used inside of the reservoir. We cannot handle units that have been contaminated with other oils or fluids because of their potentially toxic nature.

The cost for a service repair is currently £25 plus return postage. We will advise you on cost after assessing the damage but before starting the repair. If for any reason we are not able to repair the unit there will be no charge,

Before returning your reservoir unit to us, please carefully check that the black valve body part is not cracked or damaged in any way as this part of the reservoir unit is not repairable.

We aim to service/repair units within 2-3 working days.

1. Remove the reservoir from your bracket system, remove the cap and drain as much oil out of the reservoir as possible. Replace the cap, wrap the reservoir in several layers of paper towel and then seal in a plastic bag. The bracket, hose and nozzle can be left on your bike.
2. Place the unit in a padded envelope along with a note describing the problem. Please also include your name, email address and telephone number.
3. We suggest that you either get a proof of posting slip from your Post Office or use a tracked or signed service instead.

Once we receive the unit back from you, we will assess the damage and confirm costs back to you via email before commencing any repairs.

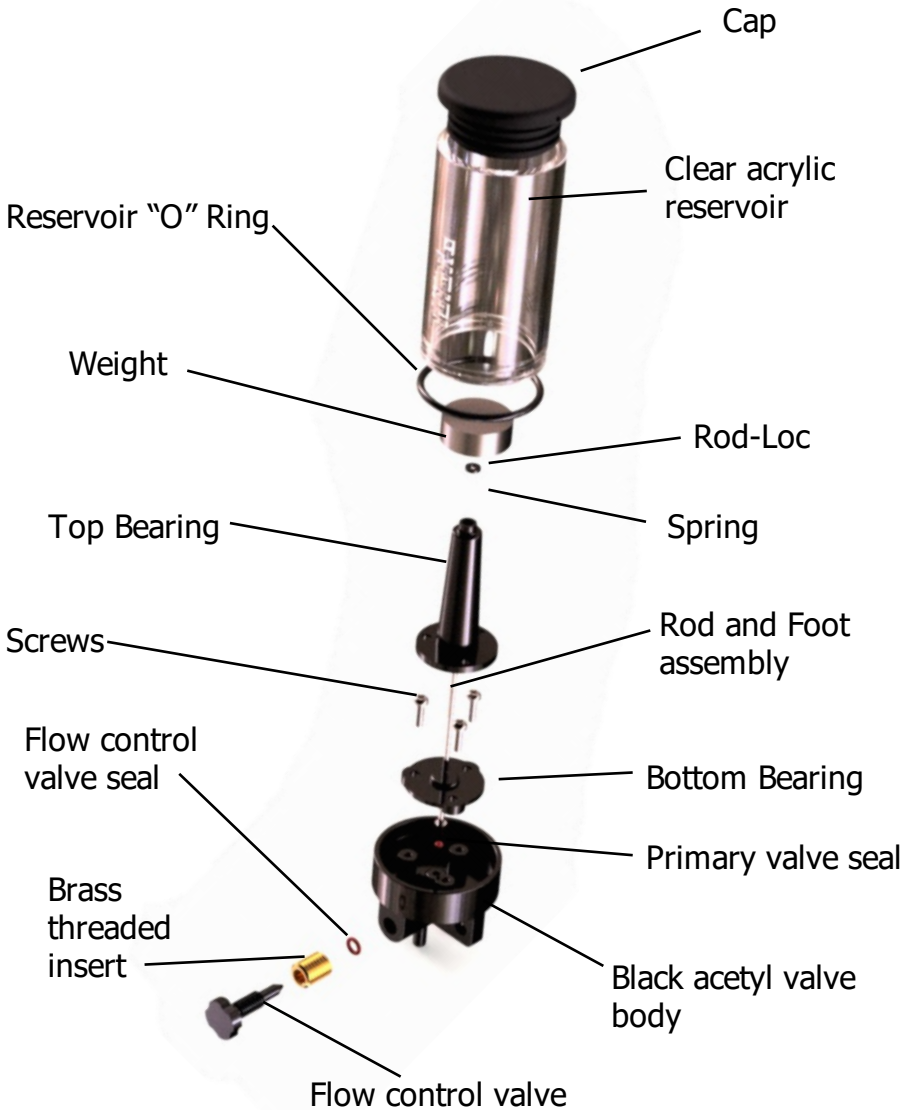
Should we suspect that the reservoir has been contaminated with fluids other than TUTORO Chain Oil, the unit will be returned to you un-repaired.

When the work has been completed, we will email you a Pro Forma Invoice which will contain a secure payment link. You will be able to pay either via a PayPal account if you have one or a credit or debit card instead.

On receipt of your payment your unit will be returned to you the following working day. We will then send you a final email which will contain your parcel tracking number and a downloadable VAT invoice.

**TUTORO Ltd
Unit 55 Lydney Harbour Estate,
Harbour Road,
Lydney,
Gloucestershire,
GL15 4EJ
United Kingdom**

Parts diagram



For the purposes of finding a suitable location assume the size of the Tutoro Auto is 100mm tall and 45mm in diameter but please allow around 30mm above the unit to allow the cap to be removed.

“RETURN TO BASE” WARRANTY

WARRANTOR

This Limited Warranty is granted by, and this Limitation of Liability is stipulated for, the benefit of TUTORO Ltd, Unit 55, Lydney Harbour Estate, Harbour Road, Lydney, Gloucestershire, United Kingdom, GL15 4EJ.

WHAT THIS WARRANTY COVERS

1) TUTORO Ltd warrants to the original purchaser of the product that it will be free from defects in workmanship and materials under normal use (“Defects”) for a period of one (1) year from the date that the product was first purchased by you (“Warranty Period”). During the Warranty Period the product will be repaired or replaced at TUTORO Ltd's choice (“Limited Warranty”) without charge to you for either parts or labour. This Limited Warranty covers the replacement of the product only.

WHAT THIS WARRANTY DOES NOT COVER

2) The Limited Warranty does not apply to normal wear and tear, does not apply when the product is opened or repaired by someone not authorized by TUTORO Ltd and does not cover repair or replacement of any other hardware or part thereof damaged by: misuse, moisture, liquids (including the use of oils other than TUTORO chain oil) proximity or exposure to heat and accident, abuse, **noncompliance with the instructions supplied with the product**, neglect or misapplication. The Limited Warranty does not cover physical damage to the surface of the product. The Limited Warranty does not cover the return shipping and handling costs incurred in connection with any claim.

HOW TO MAKE A WARRANTY CLAIM

3) In order to make a claim of a Defect contact TUTORO Ltd during the Warranty Period at: their headquarters in Gloucestershire by email or via our Contact Us page at www.tutorochainoil.com
Please wait for instructions before returning your oiler to us.

YOUR LEGAL RIGHTS

4) This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state and jurisdiction to jurisdiction.
5) If any part of this Limited Warranty is held to be invalid or unenforceable, the remainder of the Limited Warranty shall nonetheless remain in full force and effect.

Continued overleaf

6) This Limited Warranty is the only express warranty made to you and is provided in lieu of any other express warranties or similar obligations (if any) created by any advertising, documentation, packaging, or other communications.

7) The warranties contained herein are exclusive and in lieu of all other warranties, express, implied, or statutory, including any liability arising under any warranty of merchantability or fitness for a particular purpose, statutory or otherwise.

8) This Limited Warranty cannot be transferred to any other person.

LIMITATION OF LIABILITY

9) Neither TUTORO Ltd nor its suppliers shall be liable to you or to any third party for any indirect, incidental, consequential, special or exemplary damages (including in each case, but not limited to, damages for the inability to use the equipment or access data, loss of data, loss of business, loss of profits, business interruption or the like) arising out of the use of or inability to use the product or through failure to follow the instructions and safety advice given in the instructions supplied with the product even if TUTORO Ltd has been advised of the possibility of such damages.

10) Notwithstanding any damages that you might incur for any reason whatsoever (including, without limitation, all damages referenced herein and all direct or general damages in contract or anything else), the entire liability of TUTORO Ltd and any of its suppliers shall be limited to the amount actually paid by you for the product.

11) Notwithstanding the above, neither party's liability for death or personal injury resulting from its own negligence shall be limited.

12) Some states and/or jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

13) This warranty shall be interpreted in accordance with English law and any question arising from this warranty shall be subject to the jurisdiction of the English courts.

Refund Policy - 30 Days

Products must be returned in an unused condition and in the original packaging. Please see our website for full terms and conditions.

Safety First!

- **Ensure that you TUTORO reservoir, hose and nozzle are installed in accordance with this manual.**
- **Always carry out a visual check of your motorcycle and the TUTORO Auto immediately prior to any journey. Ensure the Auto is firmly mounted and has not been tampered with.**
- **If you notice any fling on the road surface of your rear tyre investigate and remedy immediately.**
- **Do not put any Solvents or automatic transmission fluids into or onto the TUTORO Auto.**
- **Always use clean new TUTORO Chain Oil.**
- **Always check the cap is correctly replaced after filling the unit with oil.**
- **Never fill the Auto beyond the Max Oil indicator.**
- **Regularly check the cap breather hole is not blocked or obstructed.**

About us..

Do one thing and do it well...

We are TUTORO Ltd and we make TUTORO Chain Oilers. We are the inventors, Patent holders, sole manufacturers and distributors.

Our small dedicated team exists to do one job - make TUTORO motorcycle chain oilers... nothing else.

We're not trying to match the volume output of larger firms, selling mass produced, imported products.

In fact because each and every single TUTORO is carefully engineered and hand built from scratch in our small factory in Gloucestershire, we can only make 50 TUTORO Auto's a week, so when they are gone, they're gone.

At the end of the day, we are here to make the best motorcycle chain oilers and not the most motorcycle chain oilers.

TUTORO Ltd Unit 55 Lydney Harbour Estate, Harbour Road, Lydney, Gloucestershire, GL15 4EJ UK
Tel +44 (0)1594 841097
UK Company Number: 8322839
VAT No:174038512

TUTORO UK Trade Mark No: UK00003004844
TUTORO EU Trade Mark No: 012534781

This publication is provided by TUTORO Ltd
All rights reserved
Nick Ibbitson Nov 2019

Precision Engineered and Hand Built In England