

PRO-OILER

Installation + Operating Manual

v3.311shrtGPSENG

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1 Safety Warnings

Oil Flow

The PRO-OILER delivers oil to your chain in precisely metered doses. It can be set to deliver from zero oil to more than 1 drop per second, and anything in between.

The PRO-OILER is a "total-loss" type lubrication system: Oil that comes onto the chain also comes off it. This is called "fling-off" - some of the oil will disappear into the air-flow, but some will also be deposited as droplets on the back of the bike, including the wheel-rim and tyre-wall.

Fling-off is normal and unavoidable. The objective is to keep it to the minimum - and this is where the PRO-OILER's concept and system excels.

The ideal is to set the PRO-OILER so that it delivers **just enough oil** to keep the chain lubricated, but no more.

- Once the chain is saturated with oil, any extra oil will just fling off immediately.
- Take the time to familiarize yourself with operating the *PRO-OILER*, and find the right settings for your bike.
- After installation you should check the chain and rear tyre for excessive oil delivery after short rides.



Excessive oil on the tyre can lead to loss of grip and cause an accident. Do not use settings that are richer than you need for the road conditions.

2 Installation

2.0 Tools

You can install the Pro-Oiler with basic tools,

- wire cutter and stripper
- small phillips/cross head and small blade screwdriver (for PO junction box screws and connections)
- spanner 7 and 8 mm (for nozzle bracket)
- allen head key 3 and 4 mm (for nozzle bracket)
- Hobby knife (cutting controller cable sleeve, if needed)
- Electric drill (drilling holes in the PO junction box + installing bracket to swingarm, if needed)
- Multi Meter (optional)

2.1 Installation overview - the components

The first thing to do is to think carefully about where you want to fit the components.

On some bikes there are many options, because there is plenty of space under the saddle and/or behind the side panels.

There are many examples in the Gallery at www.pro-oiler.net - not just for your own bike, but for other types too, and these can also give you some useful ideas.

2.1.1 Controller

The controller unit contains the microprocessor - it's the PRO-OILER's electronic brain. This is where you program the PRO-OILER, and adjust your settings for the road conditions.

[+] = more oil [-] = less oil (range: --. to 10. where --. = OFF)

Holding the [+] for a few secs will initiate the priming sequence (20 pump strokes). Holding down the [-] will toggle between standard mode (speed based delivery) and Timed mode (E-mode)



E-mode can be selected for off-road conditions, range: --. to EE. (where --. = OFF and EE. Is extreme rich delivery)

The display also shows decimal point on the right side. When there is no speed signal received, it will switch automatically to E-mode (timed mode) after a few minutes to ensure lubrication.

In general, it's best to place the controller where you can operate it with your left hand so you don't have to release the throttle. Feed the cable from the controller under the tank, connect to the JUNCTION BOX under the seat.

2.1.2 Junction box

The PRO-OILER uses a switched 12V power source for the controller, the GPS module and the pump. All the electrical connections come together in the junction box - power, earth, controller, pump and signal.

Preferred location for the junction box would be under the seat or behind a side panel.

You will need to drill holes in the box or order it with the holes already drilled.

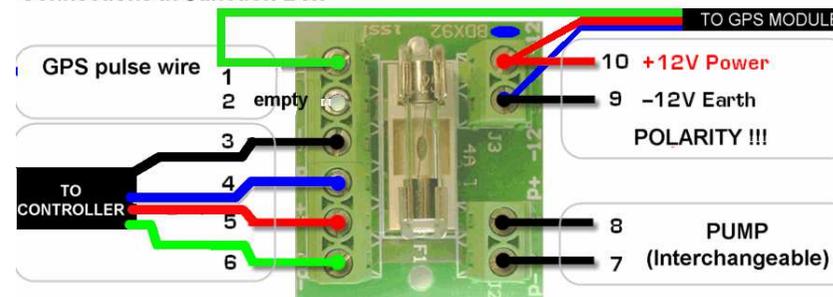
You can take the board out of the box to make connections easier and to prevent damage while drilling the holes. (it is fitted with a small piece of 3M duallock tape)

The PRO-OILER needs a **switched** +12V power supply, (for connection use the red wire for +12V and black wire for earth and the "Posi-Tap" connectors)

An easy and usually accessible location to make your +12V connection is the rear light on bikes where the lights are "always-on".

Otherwise, consult your bike's wiring diagramme to find a switched power supply, for example in the fuse-box area.

Connections in Junction Box



Do not connect the +12V directly to the battery! This will drain the battery within a couple of days.



- Incorrect electrical connections can cause irreparable damage to the PRO-OILER's controller.
- Electrical connections must only be made with the power supply turned **OFF!**



If you have a multi-meter, this is can be useful. But it's perfectly possible to do the full installation using only the PRO-OILER controller's built-in diagnostics tools, like the pulse counter.

2.1.3 Pump

The electromagnetic reciprocating pump ensures precise metering of the oil to your chain.

The pump should be placed within 40cm from the oil container, and no more than about 10cm above or 15cm below. Bear in mind the pump's power leads are short, so it's convenient to place the pump close to the junction box - although of course you can lengthen the leads.

You can place the pump vertically, horizontally, or anything in between - it makes no difference.

Once you are sure of a good position of the pump and container, you can cut a length of oil line to connect them. The remaining oil line should be enough to connect the pump to the nozzle.

2.1.4 Oil container

The Pro-Oiler is usually delivered with the standard 125 cc oil container. The system is so efficient, that even filled with 70 cc's of oil it will lubricate the chain for 1000's of miles. You can order larger containers at www.pro-oiler.nl/store

A breather tube is attached, this line should be above oil level. Do NOT connect the pump to the breather tube!

The container can be filled with more oil if it is fitted vertically. Look for a place where you can reach the cap easily for refilling. On many bikes there is plenty of space behind a side panel, but then you may need to remove the panel off to get access. The choice is yours.

Make sure the connections are not below the oil level, the rubber grommet can sweat some oil. Vibrations can cause it to tear, the oil may leak.

If you cannot fit the container vertically because of space restrictions, then ensure the connections are at the highest point - and think about the angle the bike leans when on its side-stand.

Any oil can be used, but recommended (and always available) is engine oil.

2.1.5 Speed Signal

The PRO-OILER needs incoming signals to know the distance you have travelled, and when to pulse the pump.

It can be programmed to receive the signal by three methods:

a. Using the optional GPS module

The GPS module (introduced in July 2013) picks up speed data from satellites, it can be used on any bike.

b. Using the bike's own electronic speedometer sensor

c. Using the separate reed switch and magnet

2.1.5a Using the GPS Module

The GPS module delivers a speed signal to the Pro-Oiler and will speed up installation considerably. It contains a large internal GPS antenna and therefore it can be installed under the seat (if seat base is not made of steel!) or behind fairing parts. The unit will pick up a GPS signal within a minute.

Use the supplied 3M duallock tape to fix it in place.

Route the cable to the junction box, connect power wires and pulse wire (green).

The blue en red wires should be connected at position #9 and #10 together with the power wires (black and red)

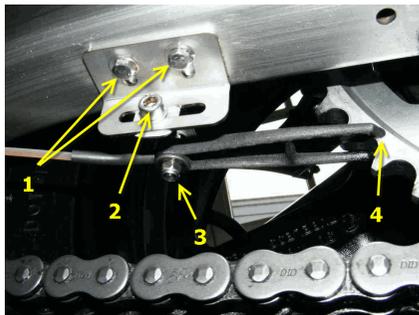
2.1.6 Nozzle system

Some bikes have model-specific nozzle systems because of the particular layout of their swingarms - single-sided swingarms (VFR, some Triumphs, Ducatis), trail-bikes with a chain-guide ahead of the rear sprocket, and other variations on a theme. In these cases refer to the model-specific mounting details.

Most bikes, however, have swingarms with a flat underside - the nozzle bracket can be fixed by using the two **stainless, self-drilling/self tapping bolts** and lock washers provided (#1) Just mark the desired position, punch the position with a centre-punch, clamp the bolt in an electric drill (or use a 7mm socket attachment on the drill) and drill the bolts in. Advice: tighten the last bit by hand with a spanner to prevent over tightening. Pop rivets and epoxy 2-component glue to fix the bracket to the swingarm can also be used.

Do NOT use superglue or similar, we recommend 2 component liquid metal epoxy glue. For maximum fixation, sand the swingarm and bracket surface, then degrease the area to be glued.

On steel swing arms it is advised to pre-drill the holes before using the self drilling bolts.



Fixing the nozzle system on typical double-sided swingarms using the supplied self drilling/self tapping bolts.

Tighten the M5 socket head screw (#2) so that the nozzle is horizontal or pointing slightly down.

Now hold the nozzle assembly under the swingarm so that the nozzle tips are correctly positioned (#4), and the bracket is lined up with the swingarm.

Using a marker pen and center punch to mark the positions for the bolts, then drill/tap the self-drilling/self tapping bolts in.

The nozzle's self-centering spindle (#3) can be adjusted so that it swivels smoothly with slight resistance. If one nozzle outlet wears faster, tighten the spindle nut and adjust the nozzle outlets with equal clearance on both sides of the sprocket. (0 to 0,5 mm clearance on each side)



Important: Before fitting the nozzle system, it is recommended to clean the sprocket. The caked-on chain-grease can get scooped into the nozzle outlets when you turn the wheel backwards - and this can **block** one or both outlets.

3 Using the Pro-Oiler

3.1 Starting

When all components are installed correctly, the Pro-Oiler will start when you turn the ignition key.

It will show PRO-OILER in the display, then information on type and version (like 3. 03) , some programm settings and will end showing table and setting, like **3**.

3.2 Prime the oil lines

Unlike with a gravity feed system, the oil lines in a PRO-OILER system will **not** fill themselves (unless you ride for 400+ km!) - they need to be pumped full of oil.

The PRO-OILER's prime function delivers a series of 20 short pulses.

To run prime: press and hold the [+] until the display starts to count to 20, once the prime sequence starts, you can release the button.

The pump will start pulsing and drawing oil from the container. You can watch the oil's progress down the line, and after 20-30 prime cycles, oil will come out of the nozzle openings.

Keep priming until there are no air bubbles longer than about 10mm in the line.

- The pump needs **at least** 11.5V, and in practice 12.0V to function - but the controller only needs 5.5V
- If your battery charge is even a bit low, it is perfectly possible that the controller works, but the pump does not pulse. Start the engine and try again - with the engine running you will have around 13.5V.



3.3 First Check

The Pro-Oiler needs input on distance covered. The GPS unit will deliver this input.

After about 300 metres the decimal dot on the right side of the display should go out. (as a sign that a speed signal is picked up by the GPS unit) When the bike stops, it will take some seconds before the dot appears again, the unit has to process the data.

If after starting the bike there is no **dot** with the bike running on idle, contact Pro-Oiler, there might be Electromagnetic Interference: **Put the Pro-Oiler in E mode manually until this problem is solved. (danger of over rich situation)**

3.4 Differences to spray on lubricants

After using spray on lubricants for your chain, you probably noticed the rollers of the chain turning black.

Spray on chain lube is sticky, it sticks on the rollers and gets contaminated with dust, that's why it appears black.

The Pro-Oiler supplies the chain with a fresh coat of oil, the rollers should have a shiny appearance.

Start with the pre-programmed table for your bike.

3.5 Ideal setting

Here are some basic pointers:

Visual clues:

- The chain is wet and there are heavy streaks of fling-off on the tyre = too rich
- The chain looks clean, but is not glistening, the o-rings are satin = in the ballpark
- The chain looks dry and dusty, the o-rings are matt black/grey = too lean



If you suspect the chain is too dry, do not hesitate: **Turn up the delivery. Running too dry damages the chain.**



At first, until you get used to judging the lubrication, it is **safest to run a bit rich**.

Later, as you get a feel for it, you can **lean off progressively** until you hit the "sweet spot"



On your first ride with the PRO-OILER, it really is best not to just jump on the bike and ride 250km non-stop. It's wise to stop and check that you are not severely over- or under-oiling.



The PRO-OILER is so precise that you will be able to detect differences in delivery down to 2-3% (that's one setting)

Important:

When you are close to your ideal setting, small differences in delivery will not be immediately visible - it may take a few hundred kms before you can be sure you have the right setting.

The main reason you would want to lean off the oil delivery is to limit fling-off.

But there **is** a point where the chain has too little lubrication.

Running close to the limit has obvious risks:

- You will find that when you have the leanest viable setting, even one setting leaner will dry out the chain. In other words, the dividing line between **lean but sufficient lubrication** and **a dry chain is narrow**.
- If you ride in road conditions that change frequently, you should maybe stay on the rich side. Of course, running on the rich side may be fine for your own personal taste - in which case it is not a "mistake"!

It could be that you will find that one setting is too rich and the next leaner setting is too lean, please contact Pro-Oiler for instructions on how to program smaller steps between settings. (program different table)