

## **BUILDING A TRIUMPH TR5T**

It's becoming increasingly difficult to find a genuine TR5T frame etc for a reasonable price. So I am building one using a B50MX frame and a regular 500 Triumph engine. My inspiration is the Triumph factory machines used in the 1973 ISDT – **I'm not building a replica but a concept!** This article may help others with overcoming the practical problems of fitting the Triumph and BSA components together.

### **A BIT OF BACKGROUND:**

I have great memories of the TR5T.

I have owned several examples of the TR5T and used them on the road, off road riding enduros and motox (scrambling) as well as road racing.

In 1972, when I was still living in the UK, I bought one of four prototypes from Graham Carter who worked at BSA/Triumph and was involved in the TR5T project - don't know under what circumstances it left the factory but the sale and papers were all legal! Registration LAB128K. I used it on the road and for MCC long distance trials and then converted it for serious Enduros like the Welsh 2 day etc. Triumph developed three designs of prototype frame: the first was too light and broke after a few laps of Hawkestone Park Scrambles track, the second lasted longer before breaking and the third didn't break at all - the second design ended up in production and the third was the basis of my bike.

Incidentally, the origins of the TR5T go back even further when John Giles (who was a Triumph factory MotoX and Trials rider) built an unofficial TriBsa with the BSA singles frame and a 500Triumph engine - it was very successful but, at the time, frowned upon by the factory top brass!!

When I immigrated to Canada in 1979, I left my bikes behind, including an unfinished hybrid BSA/Triumoh TR5T project bike.

I still hankered after another TR5T. Luckily I found one at Ghost Motorcycles on Long Island (near New York City) and brought it back to Canada in pieces. Much restoration efforts later I had a nice clean example to use on the road.

The '80's saw another TR5T stripped down and used for motox with AHRMA in the US. Nice machine to ride, very competitive and resulted in an overall MotoX championship win.

Road racing soon followed with yet another stripped down TR5T – racing in Canada and the US. Sweet handling bike with good power to weight ratio, it achieved several tears of successful results in the US and Canada.

Since then, I continued riding off road and road racing but on other machines and all three of the TR5T's were sold to new owners.

What goes around comes around! 2020 and the Covid-19 pandemic found me with time on my hands! What better way to spend it than to build another TR5T! So started a long story involving many friends who helped with advice, parts and fabrication!

Interestingly, although the TR5T frame looks like the BSA frame from the early 70's, there are a few differences and fitting the Triumph engine into the BSA frame needs a bit of artful bodging (I know, that's the one I started building in the UK!)

## SPECS OF THE 1973 FACTORY ISDT BIKES

Stock frame with additional tubes as rock guards to the left hand and right hand front of the engine.

Spanish BETOR from forks and triple clamps

QD Rickman front hub and wheel from a 125cc Rickman/Zundap

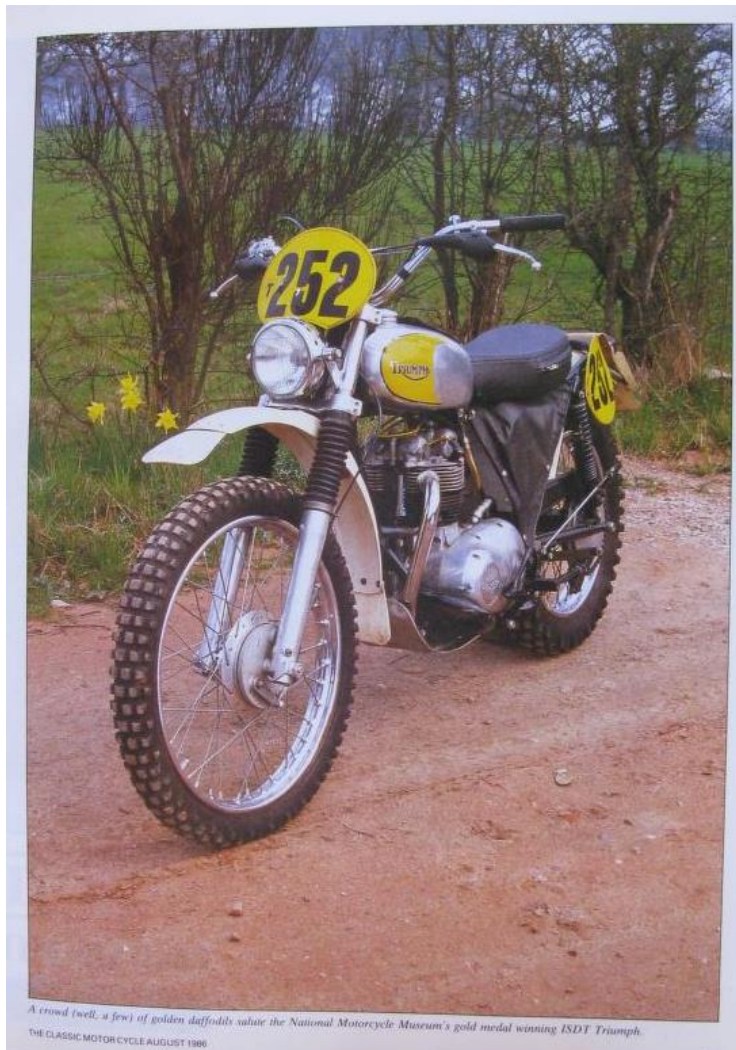
BSA QD rear wheel

Side covers replaced by QD leather/leatherette panels secured with press studs and Velcro.

White flexible Preston Petty front and rear mudguards/fenders

Stock side stand but no centre stand fitted

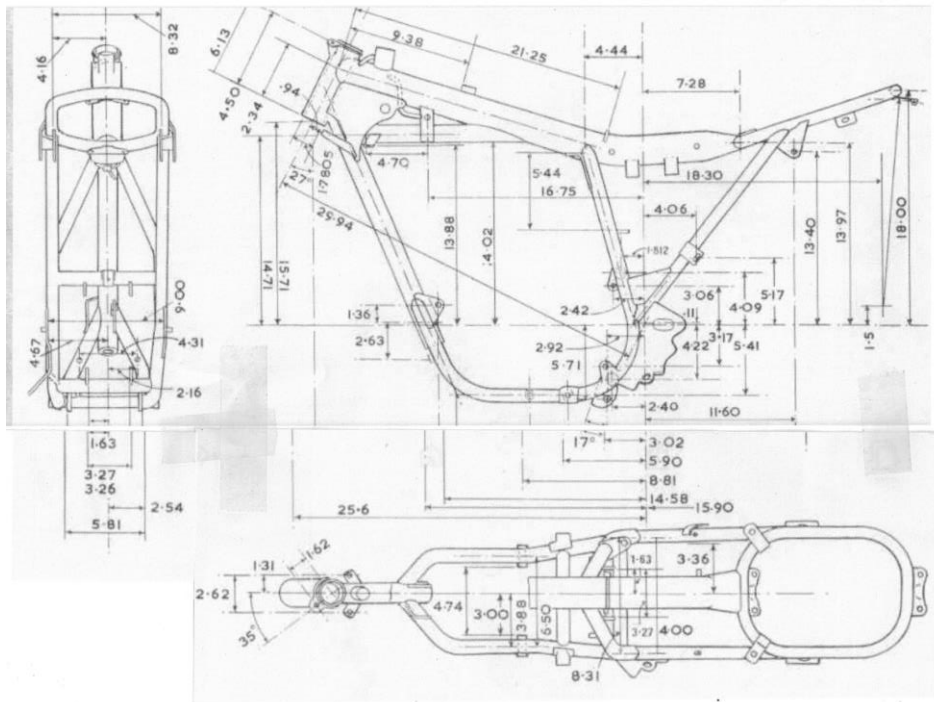
Several other mods just for the ISDT



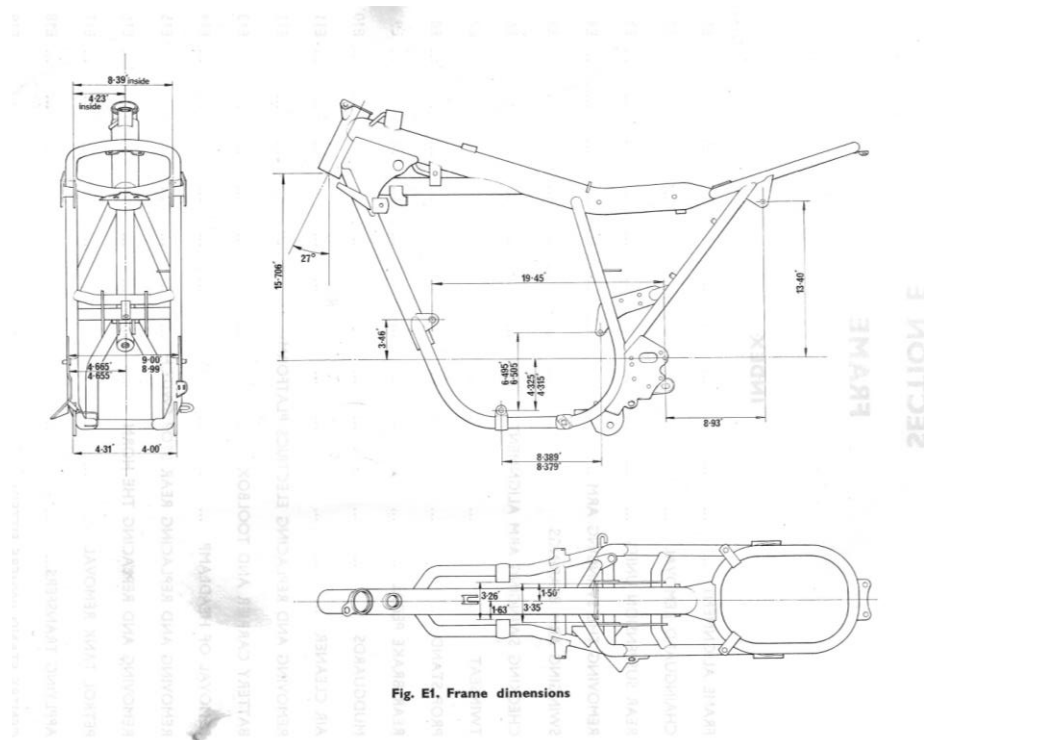
# MY BUILD

## THE FRAME

The oil in frame BSA B25/B50 and Triumph TR5T frames are not the same:



BSA B50



TRIUMPH TR5T

I have seen some builds which place the engine too high in the frame but if you want to replicate as much as possible the original TR5T engine placement, these are the modifications you will need to make:

1. Cut off the frame front down tube by 3 inches, and left and right lower frame rails. Then cut off the threaded boss for the oil filter and weld to the bottom of the cut-off front down tube. Then fabricate new left and right frame rails and weld them to the new length front down tube.



2. Cut a slot in the frame to the left hand rear of the engine to accommodate access to the primary chain tensioner, and add a strengthening gusset on the other side of the frame tube.



3. Not used by the factory but quite nice to have is a centre stand. Triumph T140 OIF 1973-75 Part# 83-4615 fits, although it's necessary to remove a small amount of metal from the frame to allow the stand to sit at the proper angle when in the down position.



4. I added an additional tube above and to the rear of the swing arm – maybe not absolutely necessary but I remember my factory prototype having something like this and it may help with mounting electrics etc.

## 5. Make up engine plates



### **FRONT FORKS**

The QD Rickman hub fits right in to the Betor forks without modification and lines up with the brake anchor boss on the fork. You will need the right sized spindle.

The BSA stock triple clamps have a smaller diameter steering head stem than the Betor. There may be many approaches and one is to unscrew the BSA stem from the bottom triple clamp and make a bushing for the Betor bottom triple clamp – drill this and tap a thread for the BSA spindle. Care – this must be accurate and in line.

Now the stock tapered bearings can be used. It may be necessary to use two seating rings on the lower bearing to achieve a good clearance for the lower triple clamp to frame headstock. One (standard) should be OK for the top bearing, but you will need to experiment to find the right combination of washers and dust cap under the top triple clamp.

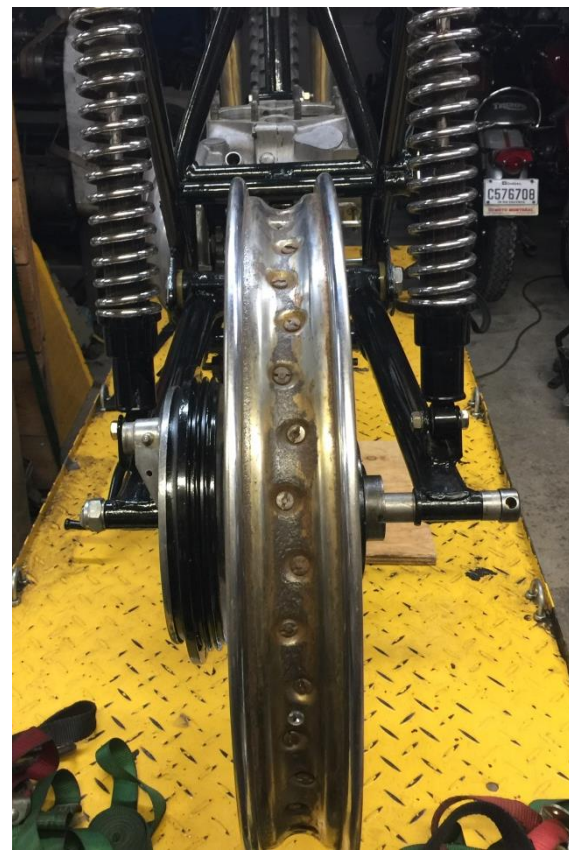


The fork stop on the BSA frame will need to be removed and "stop bars" added to the forks



## REAR WHEEL

The BSA QD rear wheel needs a fair amount of work. There is probably several ways to do this including reaming out the axle bosses on the swing arm to take the BSA diameter spindle. In any event the left hand "captive" spindle is too short and it will be necessary to make a longer new one. What we did was to keep the swing arm bosses standard and sleeve the center bearing spacer to take the standard B50 spindle. In this way all the stock bearings are used. You will need to make the two spacers on the right hand end of the spindle. If the boss on the outside centre of the brake plate is machined flat, the chain lines up perfectly provided that the engine is mounted to align with the centre line of the frame and front down tube.



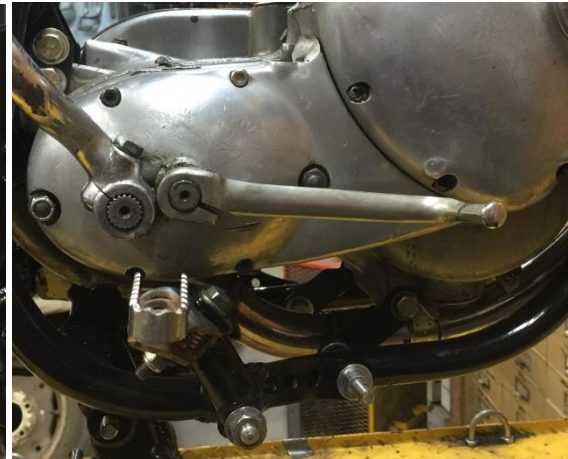


PROGRESS TO DATE (23 September 2021)



## FOOTRESTS

As we are using the B50MX frame as a base, we already have the BSA footrests. However these will need to be modified to move the rests rearwards – in the same position as the regular TR5T. If this is not done then the gear lever operation becomes a problem – the alternative being to lengthen the stock gear lever. We decided to move the footrests instead and add a bracing strip. See before and after photos.



To alter the footrest position we modified the B50MX footrest hanger casting:



## EXHAUST SYSTEM

The ISDT exhaust system proved quite a challenge. The stock two into one system was used with the addition of female adapters to fit over the standard stub head (the push in exhaust heads are hard to come by and we used what was at hand). The ISDT bikes had a silencer/muffler exiting on the right above and behind the swing arm pivot. We had to make the serpentine pipe from scratch and fitted a small alloy silencer which was on the shelf – not the same as the original ISDT machine but as said before the original was an inspiration and we are not trying to build an exact replica.







Thanks to Lucien Caggiano for his master craftsmanship work on the footrests and exhaust system.

### **AIR and OIL FILTERS**

Because of the design of the oil tank (in the frame tubes), any foreign (e.g. metal or alloy) particles or contaminates in the oil is time consuming to clean properly. Therefore improved oil filtration is quite important. On the return from the oil pump, the readily available Norton Commando type filter is used. From the filter the oil return turn is then routed in the standard way back to the tank. On the feed side, there are two pipes routed to the oil pump. A standard one from the gauze filter at the bottom of the front down tube and a new one connected to the drain bolt under the frame tube under the seat and fitted with an inline gauze filter ([www.coleparmer.ca](http://www.coleparmer.ca) – RK-29595-07).

The air filter used is an item from Amazon - Universal Motorcycle Air Intake Filter Engine Air Filter Red (60MM). Connected to the carb using straight radiator hose and through a rubber gasket in the alloy panel fabricated to be the front side of the air/oil filter box on the right side under the seat.

### **QD Canvas Side Covers**

The photo also shows the handmade canvas side covers secured by Velcro to the aluminum air box. These are similar to those fitted by the factory for the 1973 ISDT.

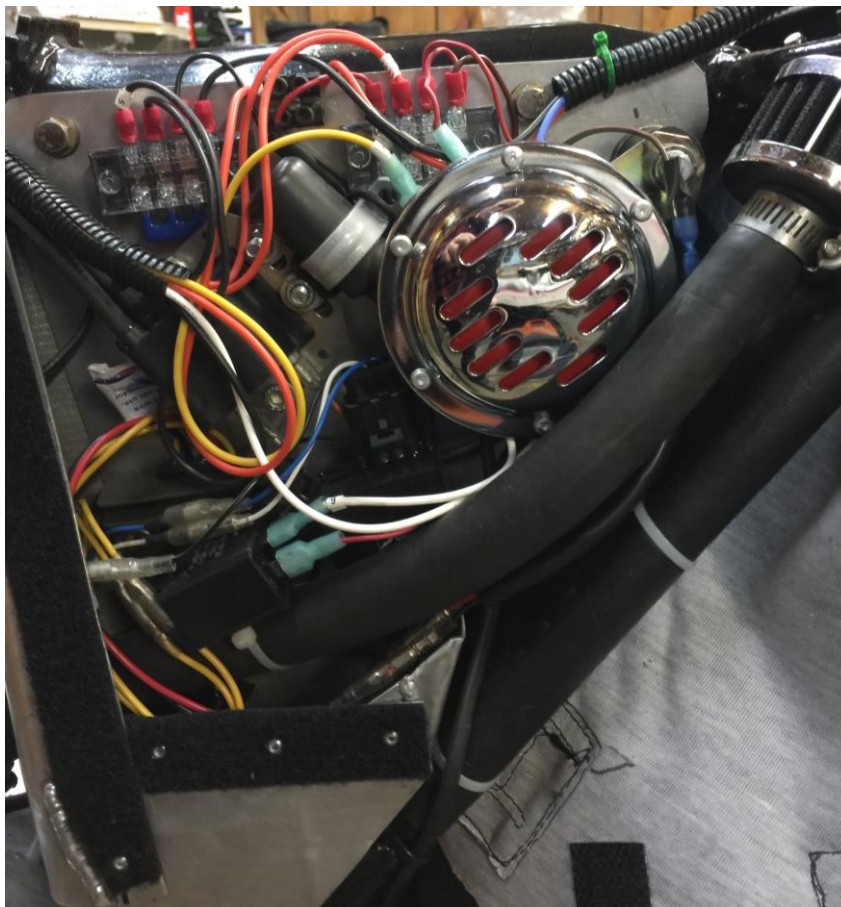


## ELECTRICS

The other side of the air box contains most of the electrical components, also covered by a QD canvas side panel.

Electrical components used:

- Electronic ignition from Electrex World Limited. This runs from the crankshaft and replaces the stock alternator stator and rotor and CB. Timing is done from the crankshaft. The kit includes:
  - New rotor and stator
  - CDI black box
  - Ignition coil
  - Rectifier
  - Capacitor (to run lights etc. without battery)
- Standard 12 volt horn
- Two bus bars (+ and - for ease of wiring)
- Flasher unit (for future use)
- Multi switch unit on LH handlebar
- GPS speedo
- Front and rear lights from a vintage Montessa Cota trials bike (LED bulbs)
- Stock Lucas stop light switch on back brake pedal
- Handmade wiring harness for 12 volt system not using the frame as a ground/earth.



## **OTHER COMPONENTS**

MUDGUARDS - sourced from standard sized alloy units originally purchased from Sammy Miller in 1990 for a vintage trials bike but not used.

TANK – lucky to find an original yellow tank through the Canadian Vintage Motorcycle Group. One small ding but makes it more authentic looking!

SEAT – not sure where this came from but with three handmade brackets fits perfectly.

TYRES – stock Trials tyres 21x2.75 and 18x4.00

## **ENGINE**

This unit was built up using some items originally fitted to my 500cc 1960's vintage trials bike. As it ran beautifully and delivered nice soft power, it should do the trick.

- Late model 1970 crankcase with breather from primary case
- Early model 1966 barrels and squish head with smaller valves
- 7:1 pistons
- Camshafts 1970 T100 and followers
- Wide ratio gearbox 4 3 2 1
  - Mainshaft 23 24 20 15
  - Layshaft 14 20 24 29
- Stock primary sprockets/clutch 26/58
- Gearbox sprocket 18
- Rear wheel sprocket 47
- Amal 626 carburettor

## **ENORMOUS THANKS TO ALL THOSE WHO MADE THIS PROJECT POSSIBLE**

**STEVE TUCKER** – parts, more parts, advice and more

**ZACK TUCKER** – frame modifications and more

**LUCIEN CAGGIANO** – fabrication, welding and the difficult bits (exhaust, footrests and more)

**PATRICE GLAUDE** – fabrication and machining “pas excellence” (qd wheel, headstock and more)

**JOHN GURR** – Crankshaft build, parts, advice and more.

**ARIANE** (my wife) – patience, financing and more!

Support from the Montreal Section of the Canadian Vintage Motorcycle Group and from the many suppliers involved – Moto Montréal, Walridge Motors, British Cycle Supply, and more!

## **THANK YOU FOR MAKING A SMALL DREAM BECOME A BIG REALITY**



**THE FINISHED PRODUCT (June 2022)**





