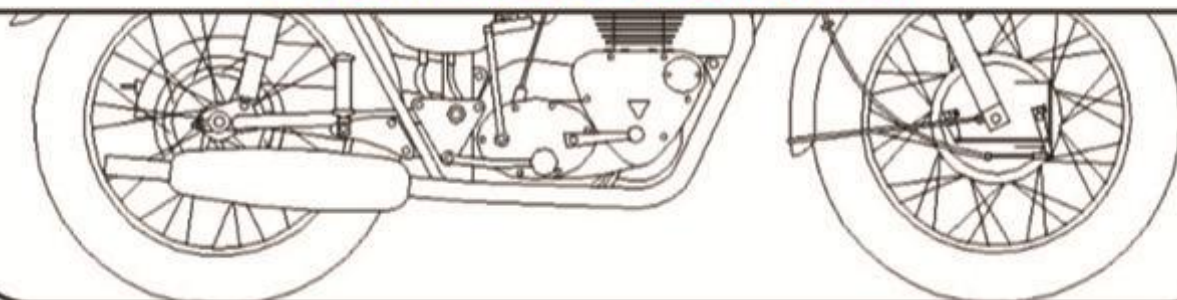




Patent pending



Pneumatic Starters



Installation And User's Guide

1971 to 1979 Oil-In-Frame (OIF) Triumphs

REV 10/22/2019

www.kickmagicstarter.com

Thank you for your purchase !

We appreciate your order for a KickMagic system and hope it extends your riding years well in to the future.

These systems have been designed and manufactured to industrial standards by The Classic Bike Experience in Vermont, USA. The goal of this manual is to ensure your system is straightforward to install and use with a minimal amount of maintenance.

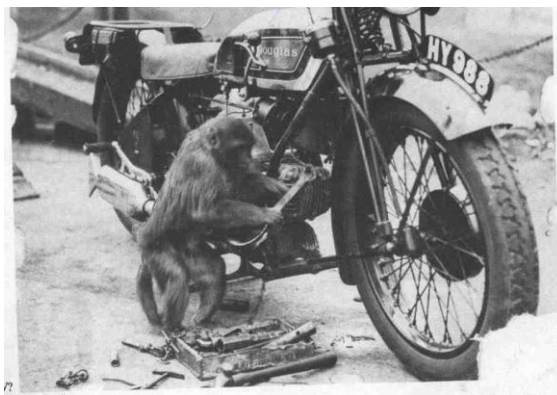
Your order has been “fulfilled” by our ISO 9000 Industrial Contract Manufacturer, Pearse-Bertram in CT. All KickMagic components have been sourced from high quality US suppliers and preassembled, kitted and shipped by Pearse.

Contact us anytime for questions or tech support. Find out more on the development history and performance of the system on the KickMagic website.

Jack , Nick & the KickMagic Team



Contents



- **Before we begin**

- What's in your kit 4
- What you'll need 7
- Mechanic's notes 8

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KickMagic kit

Preassemblies



Actuator Assembly



Dash Assembly



Combination Shaft Assembly



Solenoid Assembly



Proximity Sensor Assy



Starter Control Unit



Main Harness

KickMagic kit

Loose, bagged and tagged



Bag A



Bag B



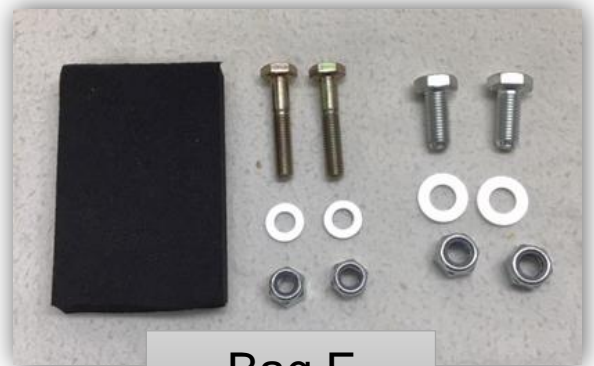
Bag C



Bag D



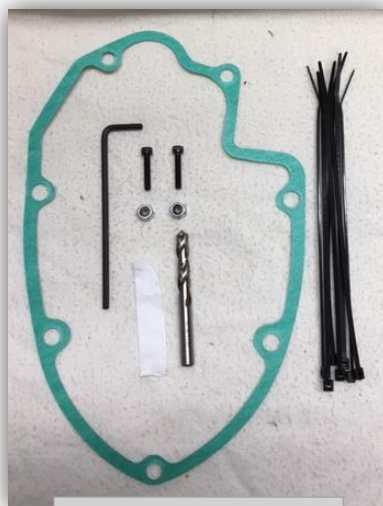
Bag E



Bag F



Bag G



Bag H



SCU Mount

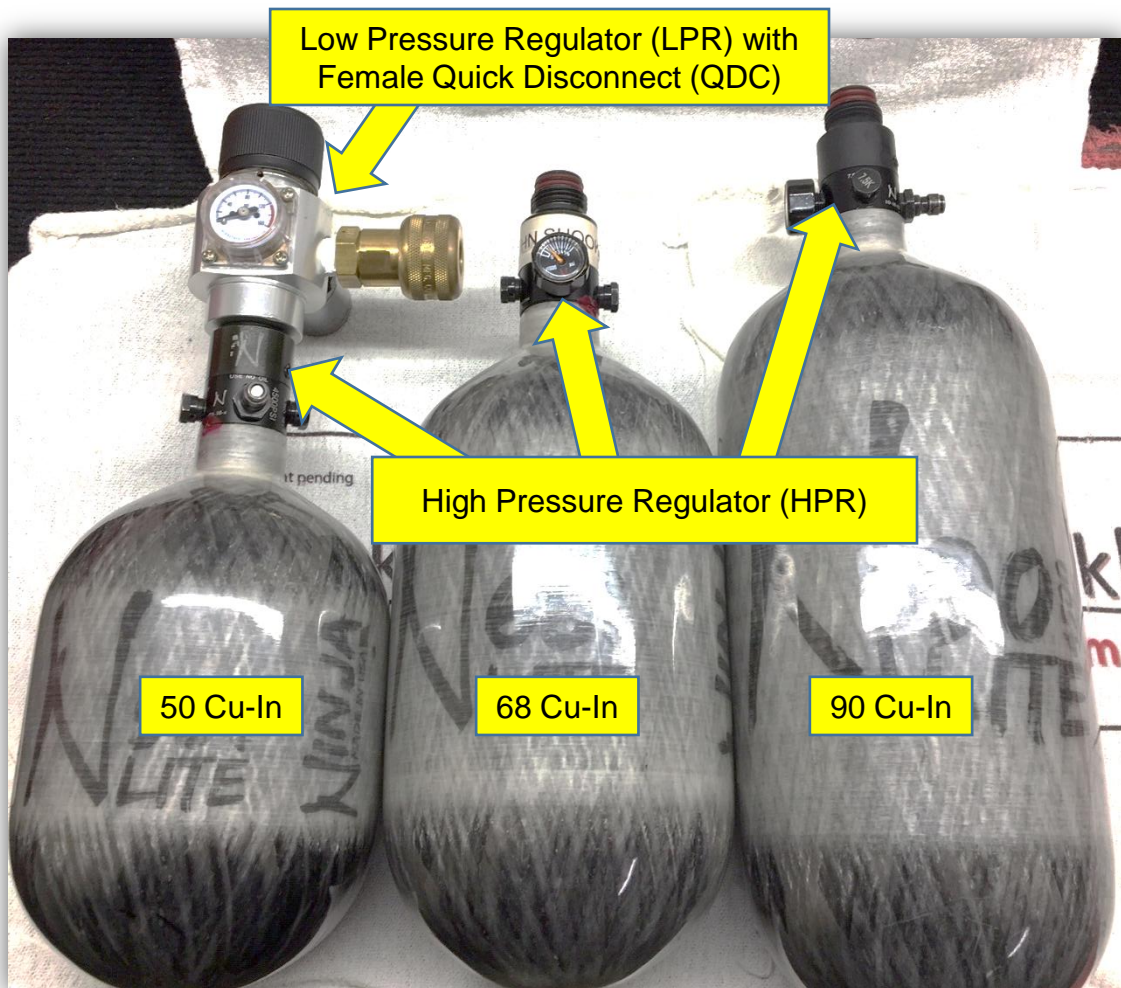
KickMagic kit

Onboard air components

KickMagic air tanks and high pressure regulators (HPR) come preassembled to our factory specs and should NOT be disassembled or modified in any way. The low pressure regulator (LPR) screws on to the HPR and connects to the inlet air line. The LPR can be adjusted from zero to 120 psi. The 50 cu-in tank is designed to fit into the KickMagic custom satchel. 68 and 90 cu-in tanks require a customer provided saddlebag.



KickMagic 50 cu-in satchel



Low Pressure Regulator (LPR) with Female Quick Disconnect (QDC)

High Pressure Regulator (HPR)

50 Cu-In

68 Cu-In

90 Cu-In

What you'll need

The kit is designed to require very few special tools if everything comes apart and goes together well on your bike. Obviously, if you have gagged, broken or incorrect parts/fasteners, you may need additional tools. We have identified those later in the manual for common problem areas.

➤ Common tools

- SAE sockets and wrenches for
 - #6, 1/4, 5/16 fasteners
 - 1/4 allen socket head
- Phillips screwdriver
- Wire/connector crimping tools
- Wire strippers

➤ Whitworth tools

- None

➤ Metric tools

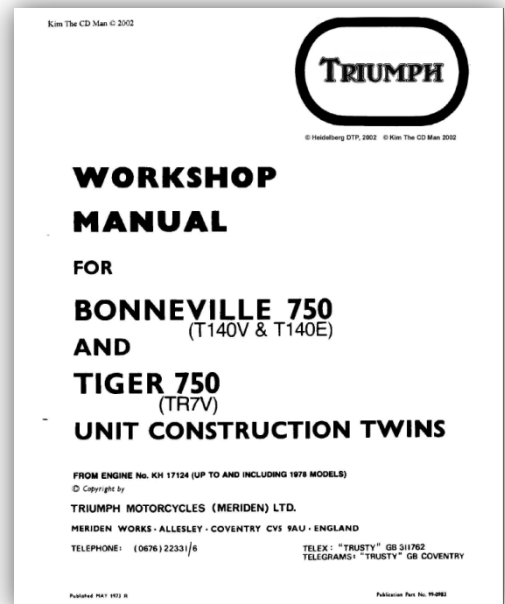
- None

➤ Supplies

- Electrical tape
- Grease

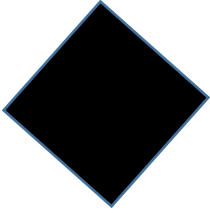
➤ Triumph WS Manual

- For your model year



Mechanic's notes

The following are used in the manual to highlight steps to take special care as noted. You skiers will recognize the symbols!



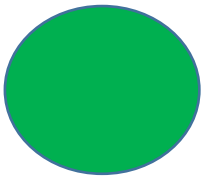
Challenging

- Difficult or challenging step
- Possible damage or danger
- Likely some cussin' involved



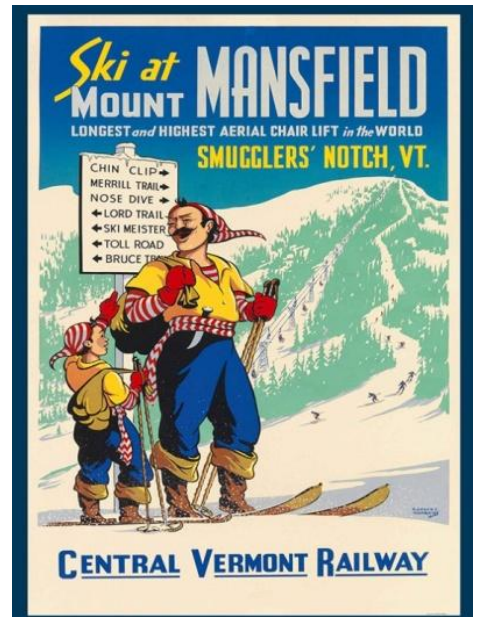
Take your time

- Nothing special or difficult about this...but pay attention



Easy peasy

- Piece of cake



A – Prep the bike

A1

Remove the gas tank, side covers and airbox assemblies per the Triumph Manual.

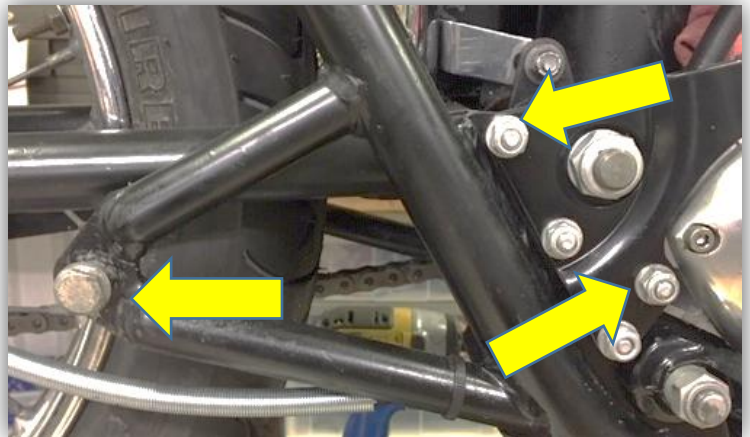
Discard the inlet air horns (PN 83-5448/9) if so fitted.



A2

Remove right side engine plate bolts and pillion footrest as shown. On 75-79 remove brake pedal and switch as well.

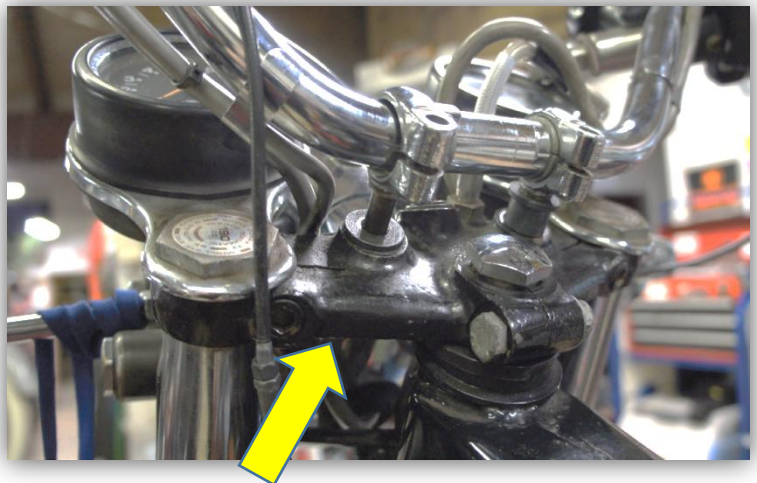
Remove the kick starter.



A3

Remove handlebar fasteners as shown and lift the bars up slightly.

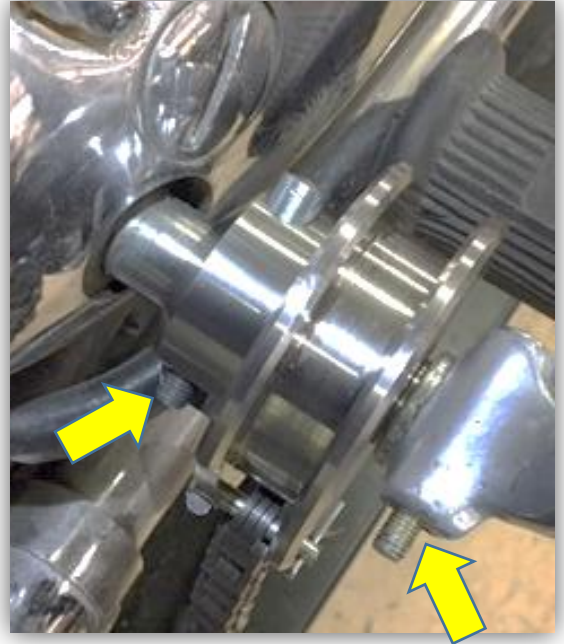
You can keep one p-clamp bolt in place to keep the bars from rolling downward.



A – Prep your bike (cont)

A4
A

Verify the kick start shaft is serviceable and the combination shaft will slip on /off easily and lock in place with the tapered bolts included in Bag B. Similarly, ensure the kick start lever slips on and off the combination shaft. It is **VERY LIKELY** one or both won't fit easily. You are therefore going to need to invest some time in making sure this is the case, otherwise you are in for a lot of misery ☹



A4
B

If the shaft needs to be dressed out, plumber's sandpaper works well for minor interferences. A file is the next weapon of choice, followed by a Dremel. Take your time and keep working it until you get that nice slip fit and the tapered bolt slides in and out **EASILY**. If it doesn't and you force it in, you will end up ruining it trying to get it out.



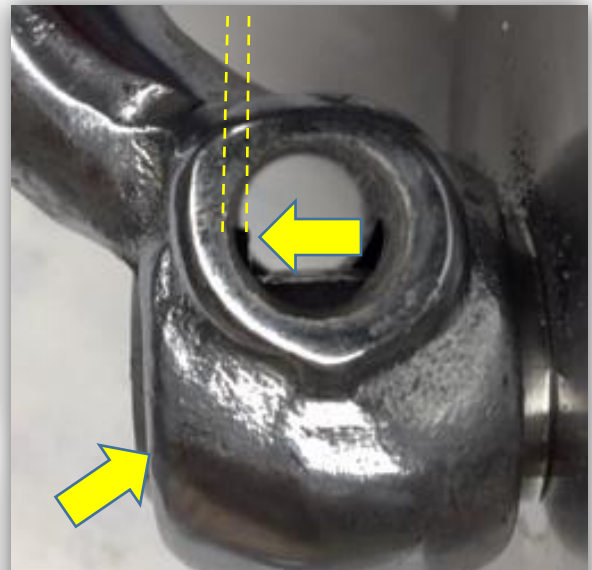
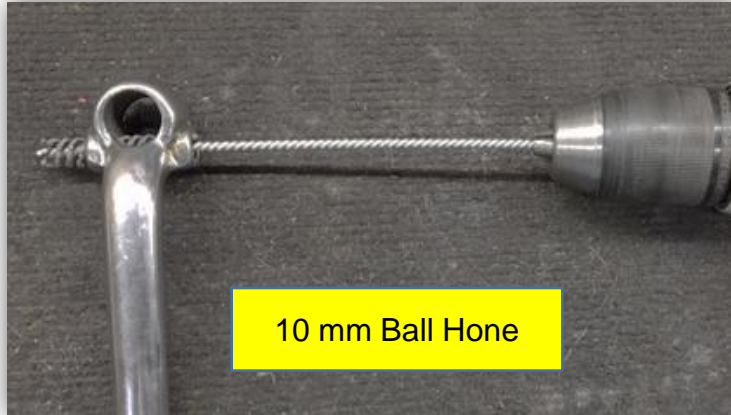
A – Prep your bike (cont)

A4
C

If the kick start lever needs to be dressed to slide on the combination shaft, a hone is the best option. A Dremel with a suitable diameter sanding drum is another. A rat tail file is a bit crude, but OK. The tapered bolt hole is often gagged as well, so you may need to dress that out too. But be very careful not to enlarge it as clearances and tolerances are key to a solid fit.

On later model and/or aftermarket kick start levers, there can be a bit of lip on the end that won't allow the combination shaft extension to protrude far enough. You can safely remove that material to get the full slip fit necessary to line up the slots in the shaft with the hole.

Finally, the pins themselves may be off slightly. Light sanding to help with a slip fit is ok. A bit of grease helps too.



There is a small lip on the outboard side of this kick start lever that needs to be removed to line up the slot in the combination shaft and the hole on the lever.

A – Prep your bike (cont)

A4
D

Ensure that the kick start return spring provides enough force to bring the kick start lever back to the neutral position. If the spring is weak, damaged or misassembled, it may not. If so, you will need to either replace the spring or adjust its “clocking” to give more return force. The kick start shaft has six splines to engage the mating sector gear. You can move the grounding side of the spring another notch to increase return force. Refer to your Triumph workshop manual to disassemble the outer cover and access the spring.

Your KickMagic kit includes a new gearbox outer cover gasket in case you need to remove the cover to work on the kick start shaft or spring.



Kick start lever should return firmly to the neutral position.



If you reclock your spring, make note of where it was when you disassembled it and index one spline counter clockwise looking from this view.

A – Prep your bike (75-79 only)

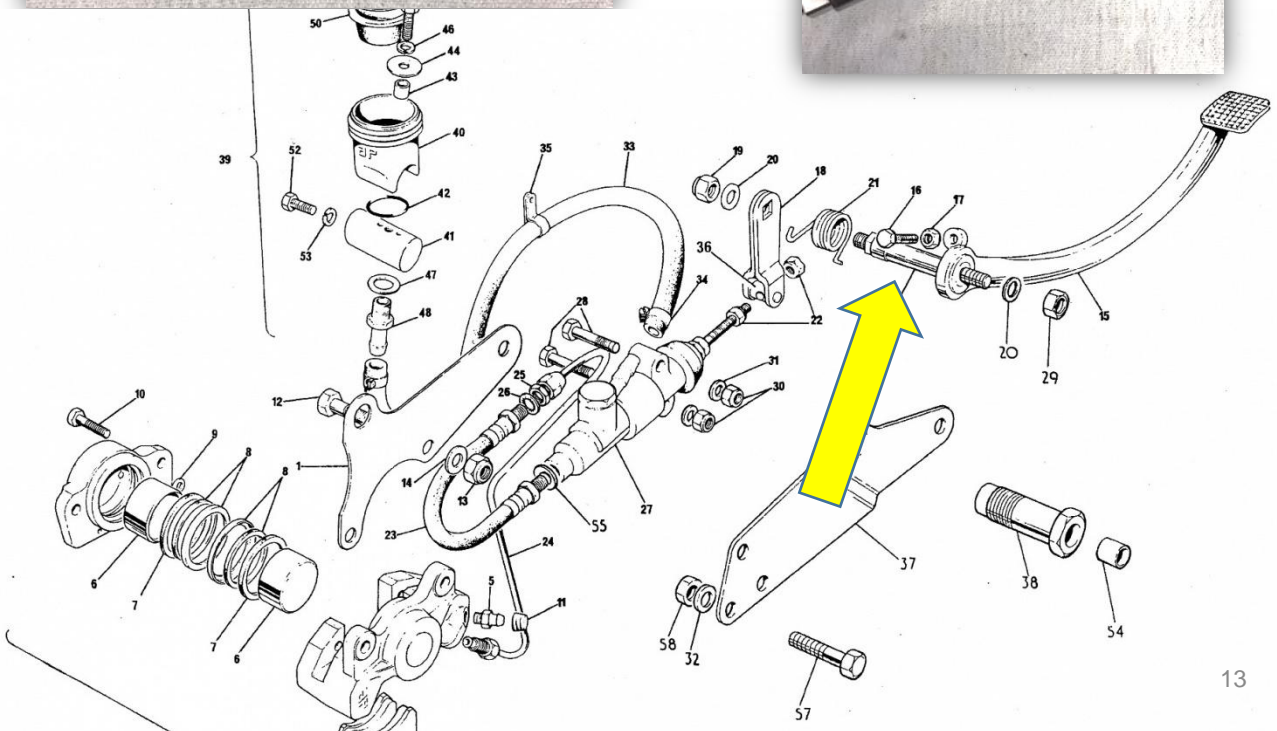
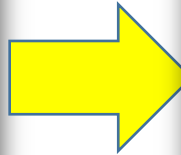
A5

Remove and replace the hydraulic rear brake shaft (item 56 illustrated below) and install the shaft provided with your kit. The replacement shaft is slightly longer but will install the same way.

It is best to attach the master cylinder lever first, then slide the shaft back outboard to engage brake lever and secure with the stock nut. Use washers to take up the extra space as shown. Make sure the brake level moves freely when the nut is tightened up.

9/16 ID Washers

TOIF-090001



A – Prep your bike (75-79 only)

Excerpt from Triumph Workshop Manual

SECTION E6

REMOVING AND SERVICING THE REAR BRAKE PEDAL SPINDLE

Detach the rear brake stoplight switch by removing the two cross-head screws.

Remove the inner spindle retaining nut and washer. Using a suitable drift break the taper fit of the trunnion lever on the spindle and then withdraw the spindle and pedal from the R.H. side.

Remove the brake pedal return spring and the distance piece.

NOTE: The recess in the distance piece faces the R.H. side.

Check the brake pedal spindle and the sleeve nut for damage, scoring or excessive play. If necessary replace the spindle and/or sleeve nut.

Liberal grease spindle prior to reassembly.

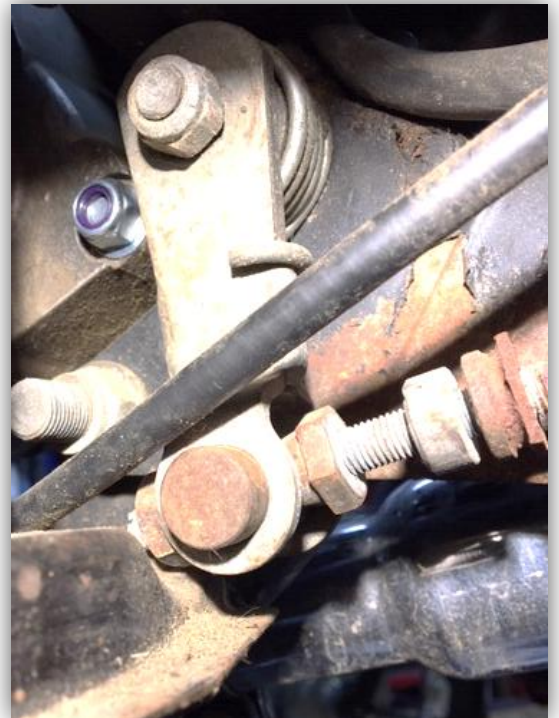
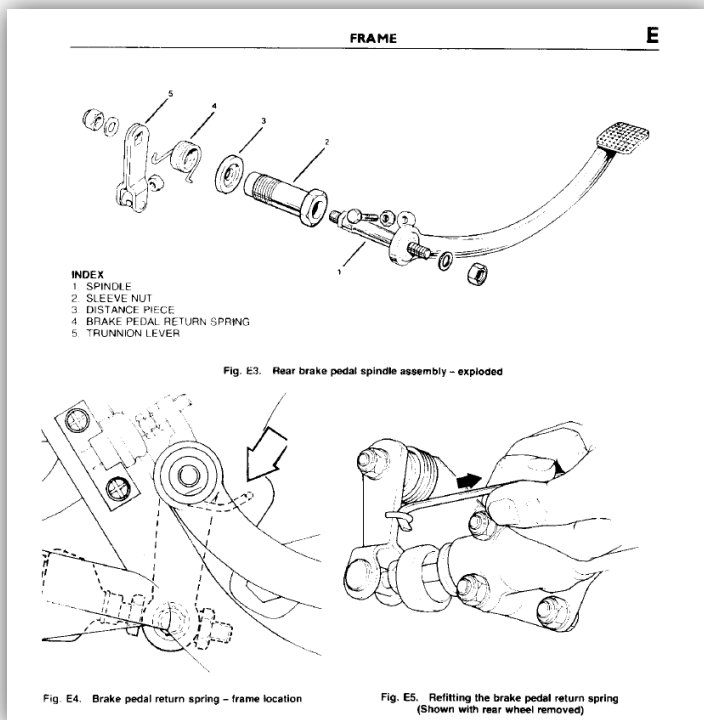
Replace the sleeve nut and tighten to torque shown in GD and insert pedal spindle complete with brake pedal

Replace the distance piece with the recess located in the protruding sleeve nut. Locate the brake pedal return spring on the frame see Fig. E4. -

Reconnect the lever to the spindle and refit the nut and washer finger tight ONLY.

Make up a simple hook with wire or string and connect the spring to the lever. See Fig. E5.

Tighten the nut and washer securely.



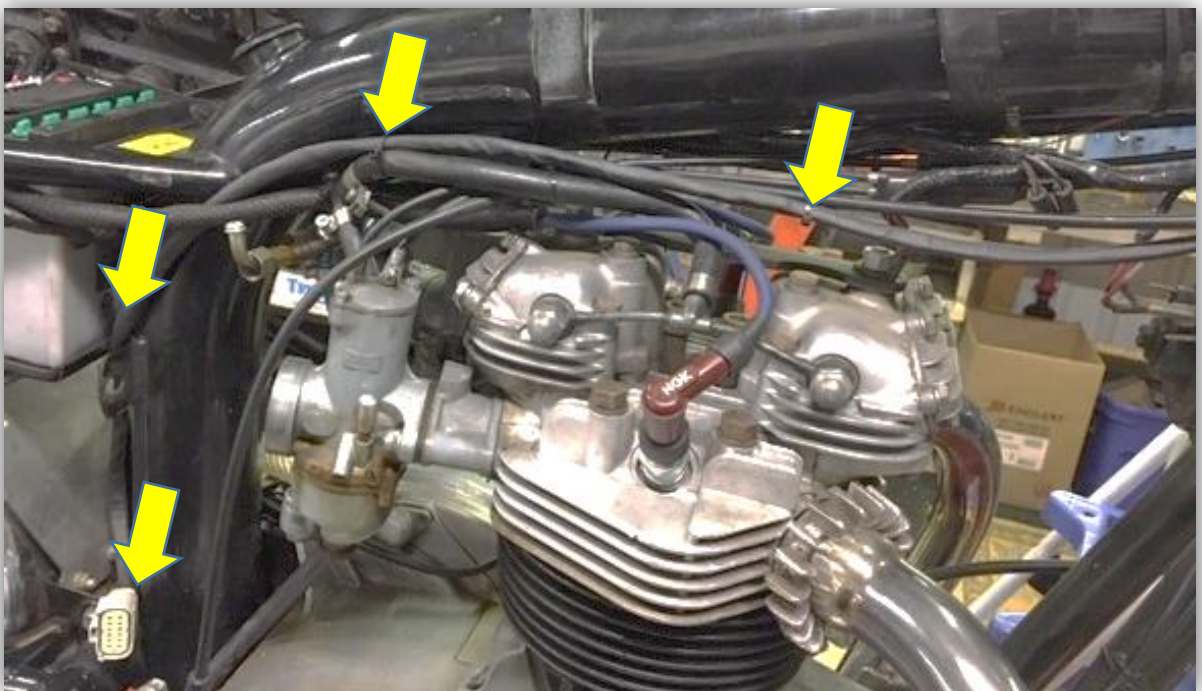
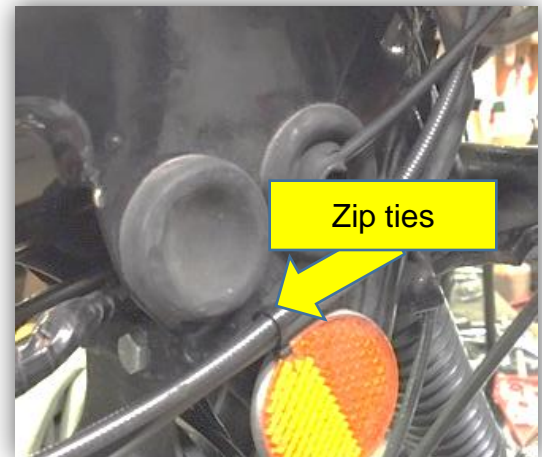
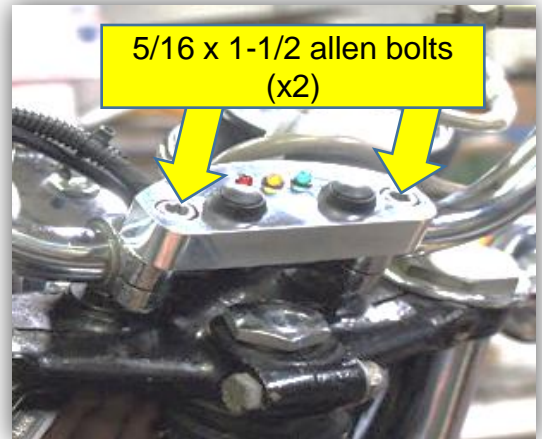
B – Install Dash Assembly

B1

Install the dash using two allen socket bolts in Bag D.

Route the connector under the bars going forward and then thread back on the right side of the frame to under the battery box where it will plug in to the Starter Control Unit.

Zip tie as necessary and make sure there is clearance for the tank as shown.



B – Install SCU

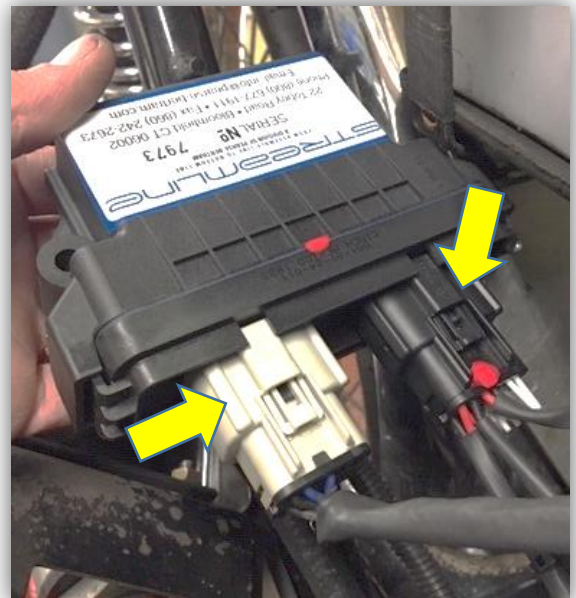
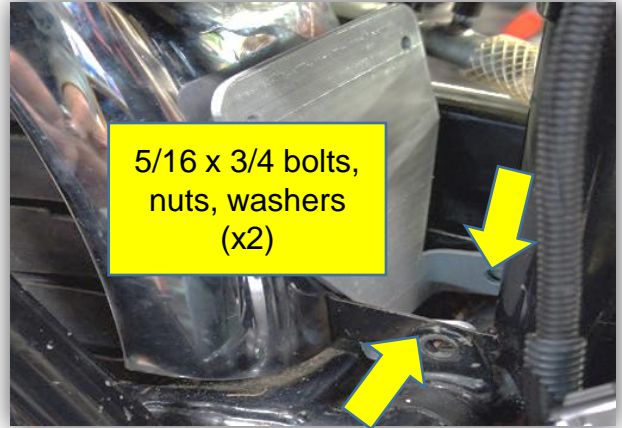
B2

Remove the two rear fender bracket bolts/nuts and install the Starter Control Unit mounting bracket. Install with 5/16 x 3/4" bolts, washers and nuts provided in Bag F and snug them up.

You may apply padding in Bag F to the back side of the bracket to protect paint if desired.

Connect the Main Harness and Dash Assy cable connectors to the SCU as shown.

Then mount the SCU to the mounting bracket using 1/4 x 1-3/8" bolts, washers and nuts provided in Bag F and snug them up.



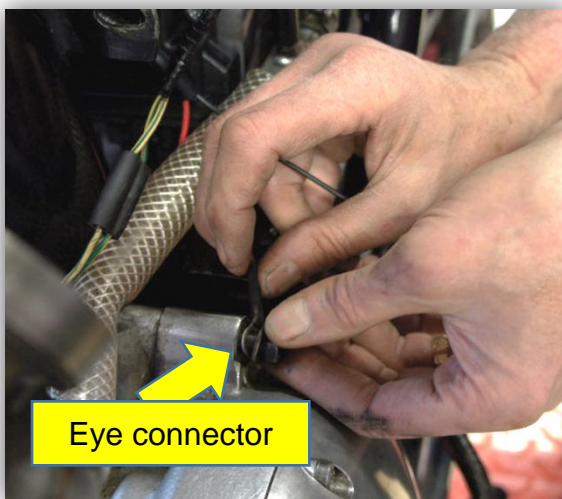
B – Connect Power

The red and black “pigtail” wires on the main harness are for power. **RED** is always to **POS** (whether ground or not) and **BLACK** is to **NEG**. Note that 1979 and onward bikes are NEG ground and earlier machines are POS ground. But, wiring can get changed around by different owners, so just be sure **RED** is to **POS** and **BLACK** is to **NEG**.

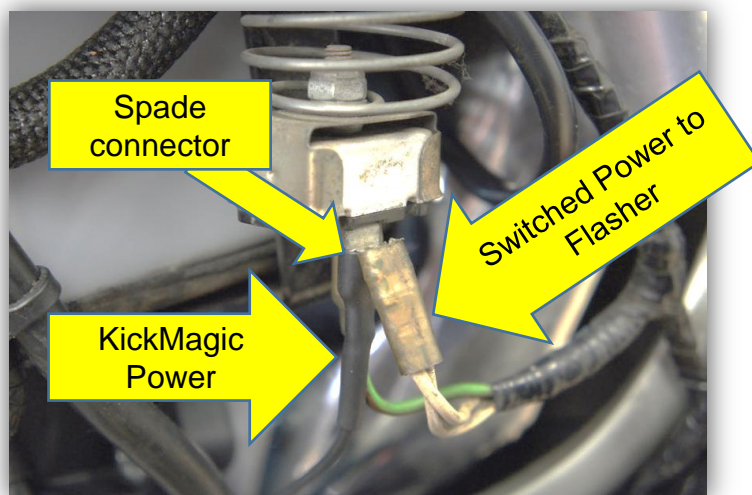
B3

The system wires into “switched on” power downstream of the ignition switch. We recommend the hot side of the flasher unit (white wire) using the piggyback spade connector as shown. **DO NOT** connect directly to the battery ahead of the ignition switch or the KickMagic SCU will be on all the time and drain your battery. Ground can go to a convenient location on the motor as shown or directly to the battery utilizing the eye connector.

The connectors are provided in Bag E. Some electrical tape or heat shrink tubing for insulation and strain relief is recommended.



Convenient Ground on a rear engine mount



Piggybacked Switched Power at Flasher Unit

For a **NEG** ground system (1979) the **RED** KickMagic wire would connect to the “switched on” white wire at the flasher. The **BLACK** wire would go to a convenient ground location.



B – In process electrical test

B4
A

Set Up: Time for an in-process electrical system check. Connect the solenoid assembly and proximity sensor assembly to the main harness

B4
B

SCU Test: With the ignition in the ON position, the dash LEDs will flash in sequence, then go out, indicating there is power to the unit and it has initialized.

B4
C

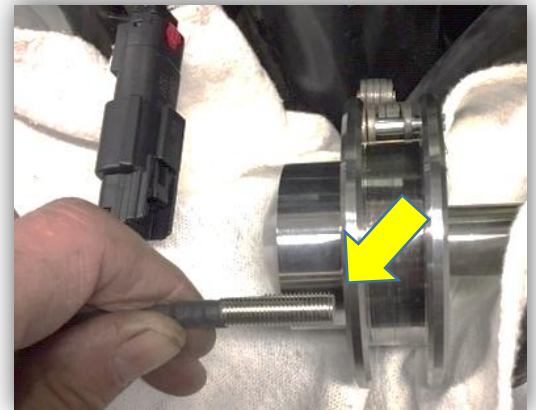
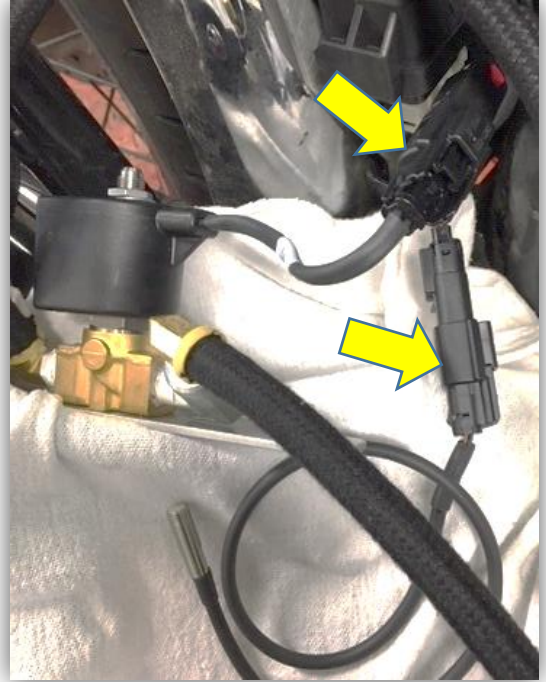
Master Arm Test: With the ignition ON, pushing the LEFT button on the dash will illuminate the **RED** LED, which will time out after 30 seconds or turn off if the button is pushed again.

B4
D

Prox Sensor Test: Place the prox sensor face near a ferrous (not aluminum) surface with ignition ON and Master Arm ON. The **YELLOW** light will turn ON with the sensor near a ferrous target. Note: an LED on the sensor will also illuminate.

B4
E

Solenoid Test: Set up as in B4-D above and push the RIGHT button. You will hear the solenoid pick up for 5 seconds and then de-energize. **GREEN** LED will illuminate during actuation.



B – Install Solenoid Assembly

B5

The photo at right illustrates the installation of the solenoid assembly.

Note that the 1/4" bolts thread in from the solenoid side into the nut-plates on the rear air box cover.

1/4x1 bolts, nuts and washers (x2)



B6

Raise the right coil up using the extra coil grommet. This provides clearance for the solenoid vent to run under the coil.

Route pneumatic inlet hose #1 behind the battery tray and up the left side of the rear fender.

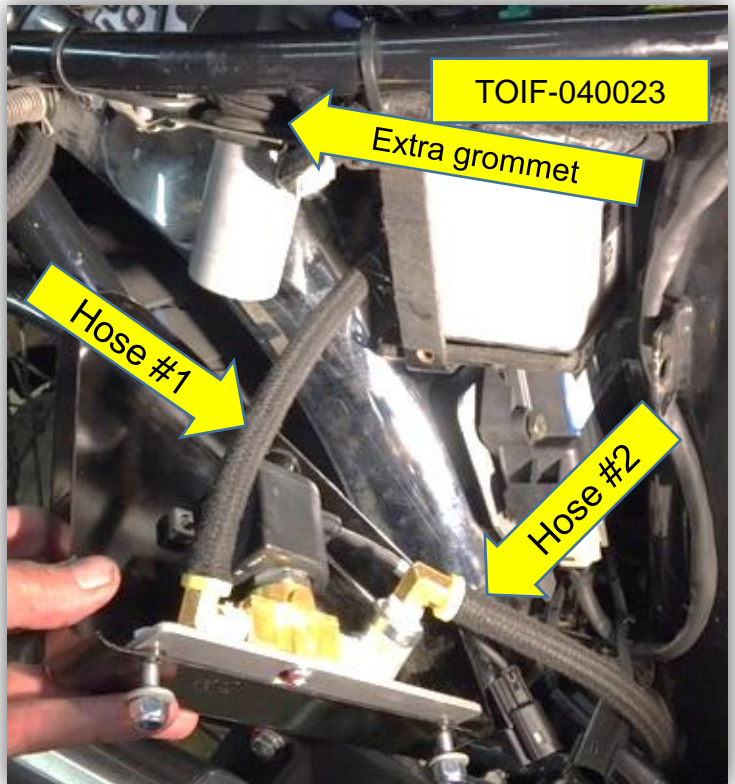
Route outlet hose #2 down in front of the swing arm.

TOIF-040023

Extra grommet

Hose #1

Hose #2



B – Install Solenoid Assembly

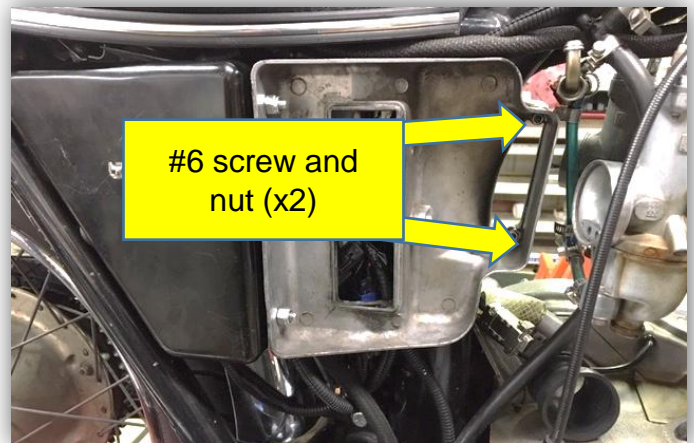
B6 Cont.

Attached hose clamp to rear fender with 1/4 x 3/4 " bolt, washer and lock nut in Bag C as shown.

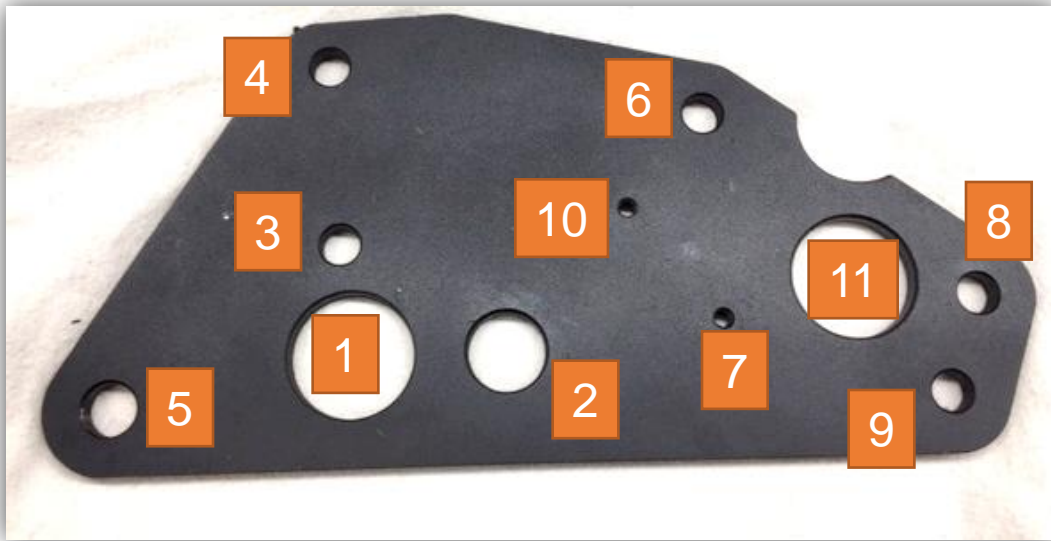


B7

Reinstall the right and left hand air box and side covers for both sides. New, #6 allen head screws, nuts and wrench are provided in Bag H if you need to replace the small fasteners connecting the front air box halves.



B – Install Actuator Assembly

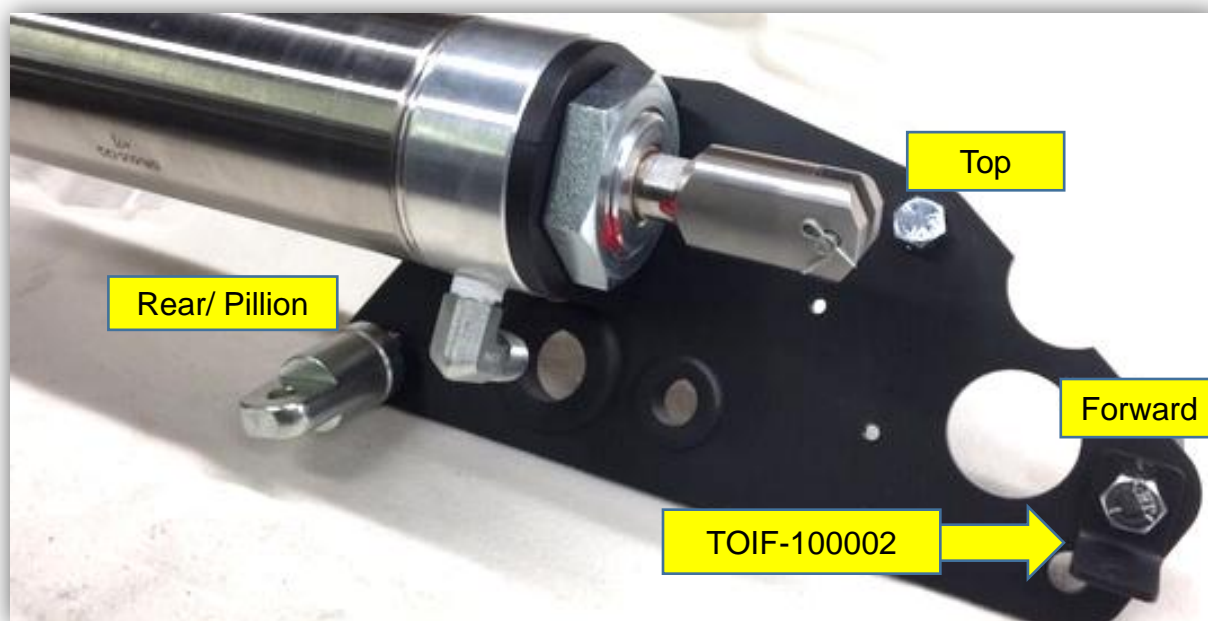


The main mounting plate has been designed for right (1971-74) and left (1975-79) shift machines. The table below is a summary of which holes are used for each. All of the bolt through holes are slightly oversized for ease of assemble and alignment.

Hole	Size (in)	71-74	75-79	Notes
1	1-1/4	X	X	Air line through hole
2	3/4	X	X	Proximity Sensor cable through hole
3	3/8	X	X	Actuator mounting hole
4	3/8	X	X	Actuator mounting hole
5	3/4	X	X	Pillion mount hole
6	3/8	X	X	Top mounting hole
7	10-32	X	X	Prox sensor cable clamp attachment
8	3/8	X		Forward mounting hole
9	3/8			Not used for these models
10	10-32		X	Rear brake switch mounting hole
11	1-1/4		X	Rear brake shaft through hole

B – Install Actuator Assembly

1971 to 1974 Right Hand Shift installation



There are three attachment points for the actuator assembly: The rear (pillion), top and forward. The fasteners, spacers and proximity sensor bracket associated with each is shown below.

Location	Bolt	Nut	Washer	Spacer Thickness	Prox Bracket
Rear	3/8 x 1-3/4	TOIF-010010*	3/8	5/16	NA
Top	5/16 x 1-1/2	5/16	5/16	1/2	NA
Forward	5/16 x 2-3/4	5/16	5/16	5/16	TOIF-010002

* Triumph pillion lug

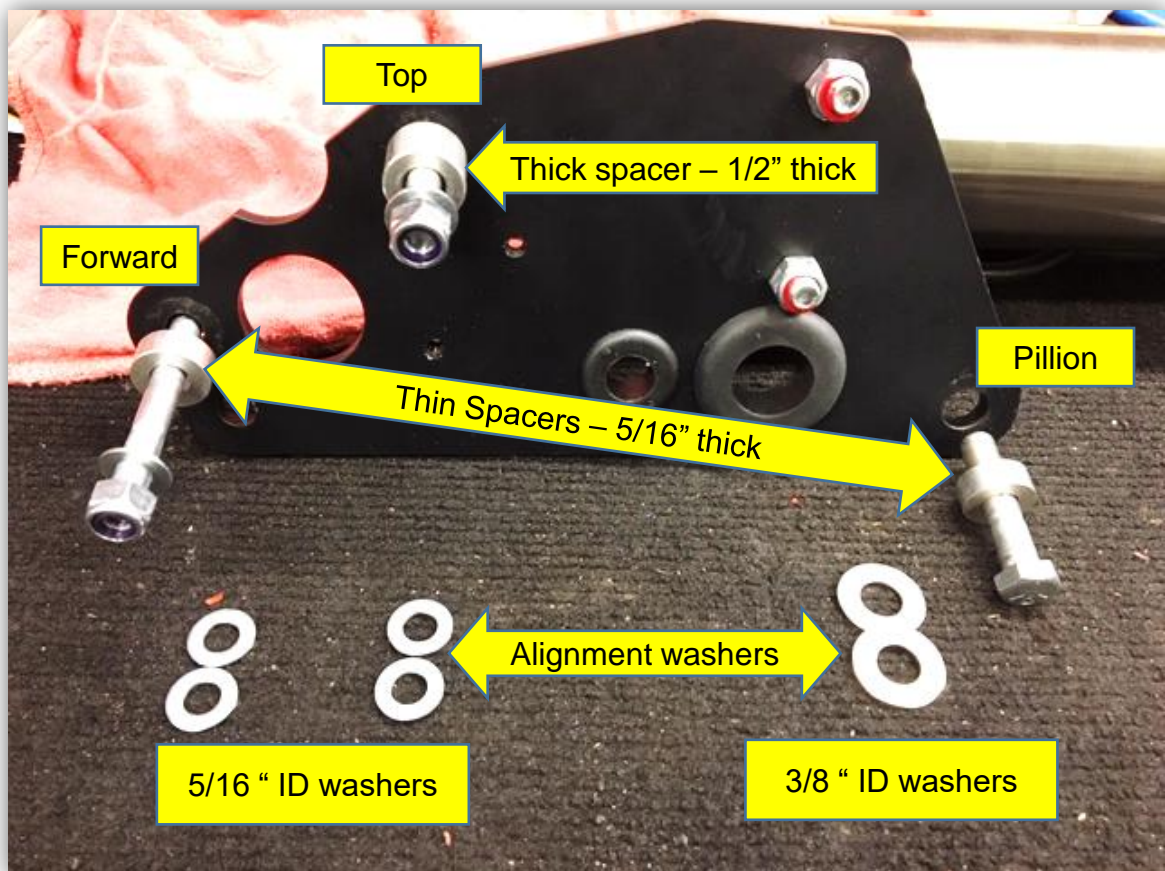
B – Install Actuator Assembly

1971 to 1974 Right Hand Shift installation

The photo below shows the configuration of the fasteners and spacers found in Bag A to mount the actuator assembly.

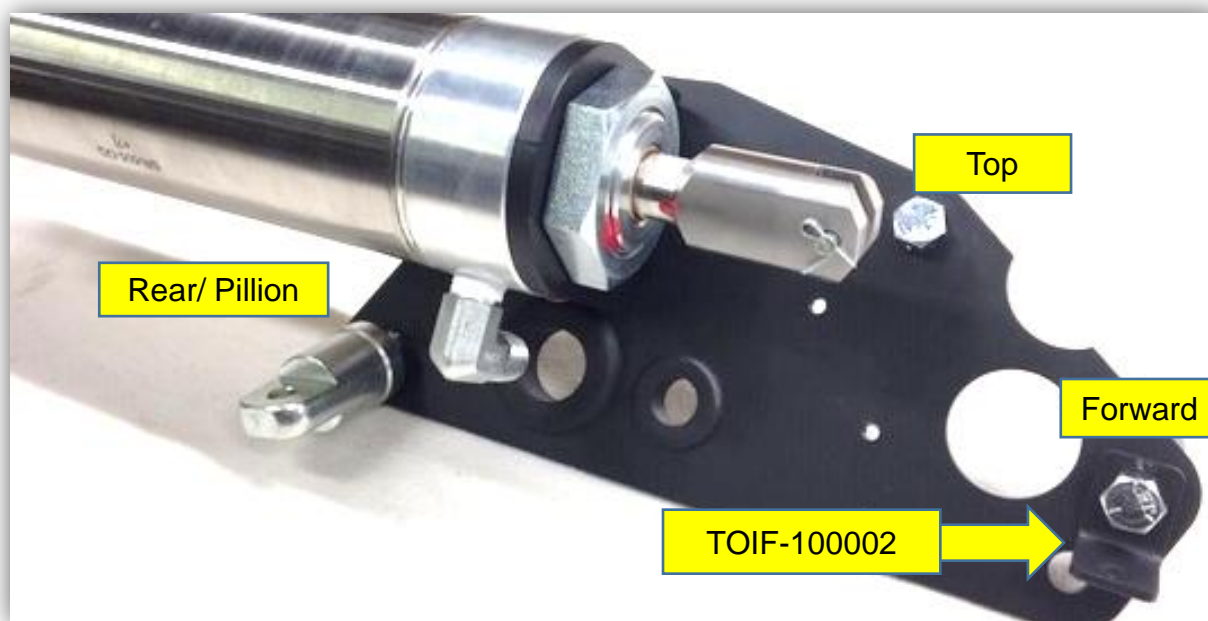
Alignment washers are also included should they be necessary in the next steps. Normally just one washer is required in the rear (pillion) mount, but variations in machines may dictate use of more or less in all three locations.

Take a few minutes to familiarize yourself with where all these parts go before attempting to mount on the bike.



B – Install Actuator Assembly

1975 – 1979 Left Hand Shift installation



There are three attachment points for the actuator assembly: The rear (pillion), top and forward. The fasteners, spacers and proximity sensor bracket associated with each is shown below.

Location	Bolt	Nut	Washer	Spacer Thickness	Prox Bracket
Rear	3/8 x 1-3/4	TOIF-010010*	3/8	1/2	NA
Top	5/16 x 1-3/4	5/16	5/16	1/2	NA
Forward	5/16 x 2-3/4	5/16	5/16	1/2	TOIF-010002

* Triumph pillion lug

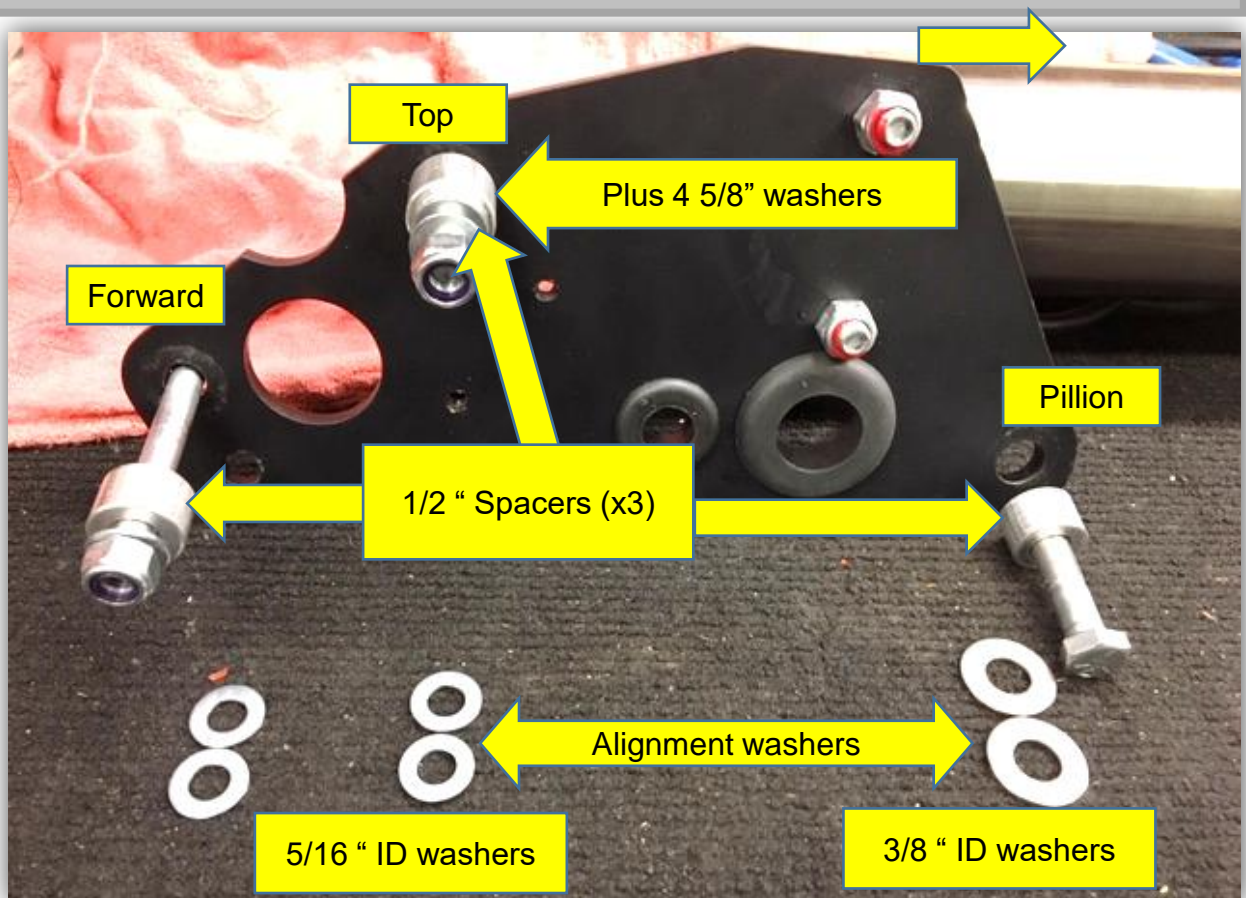
B – Install Actuator Assembly

1975 to 1979 Left Hand Shift installation

The photo below shows the configuration of the fasteners and spacers found in Bag A to mount the actuator assembly. Set aside the two 5/16" thick spacers. They will not be used for the 1975 to 1979 installation. In Bag G, find two additional 1/2" thick spacers and four extra washers. They will be installed as shown.

Alignment washers are also included should they be necessary in the next steps. Normally just one washer is required in the rear (pillion) mount, but variations in machines may dictate use of more or less in all three locations.

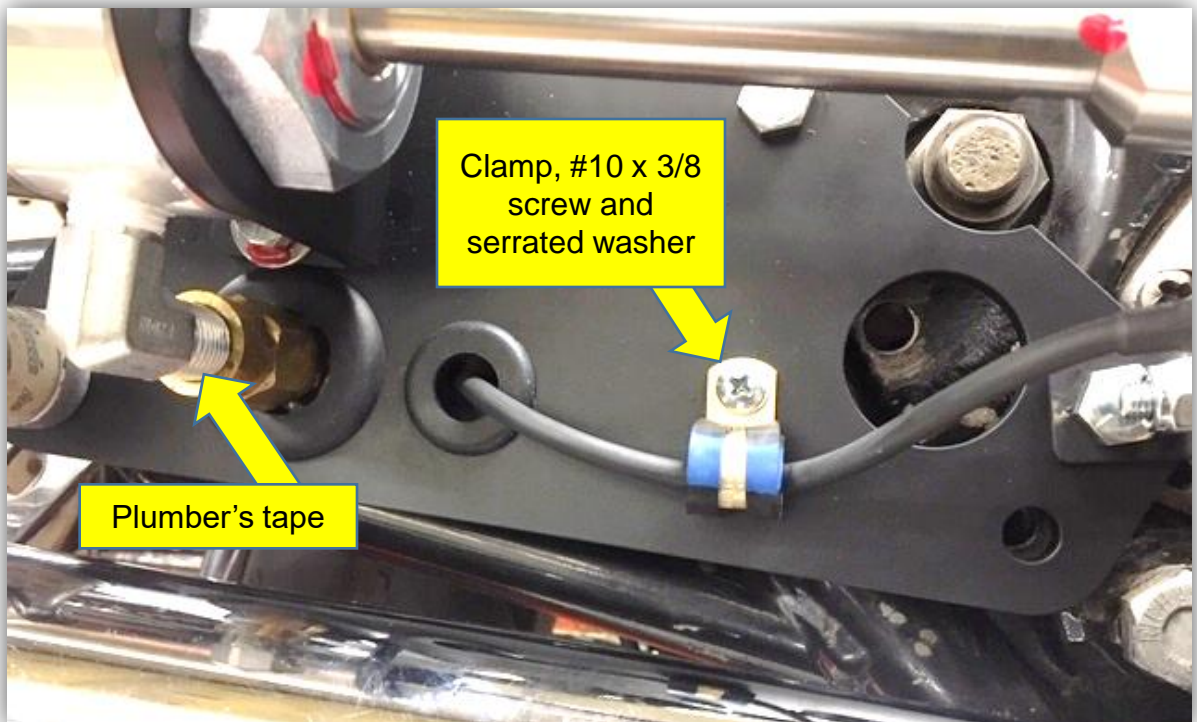
Take a few minutes to familiarize yourself with where all these parts go before attempting to mount on the bike.



B – Install Actuator Assembly

B8
A

Carefully line up all the bolts and spacers and slip the assembly into position. Install washers and lock nuts. The pillion peg should be clocked 90 degrees aft so it will fold under the actuator. Snug up, but do not tighten fasteners at this time.



B8
B

The #2 pneumatic line will pass through the large grommet and connect to the elbow out of the actuator. You may find it easier to do this before mounting the assembly to the bike. Use the supplied plumber's tape and snug up tight. This is a pipe thread, so don't go nuts on the torque.

Similarly, thread the proximity sensor through the smaller grommet and attach the clamp. You can let it dangle for the moment.

B – Install Combination Shaft

B9
A

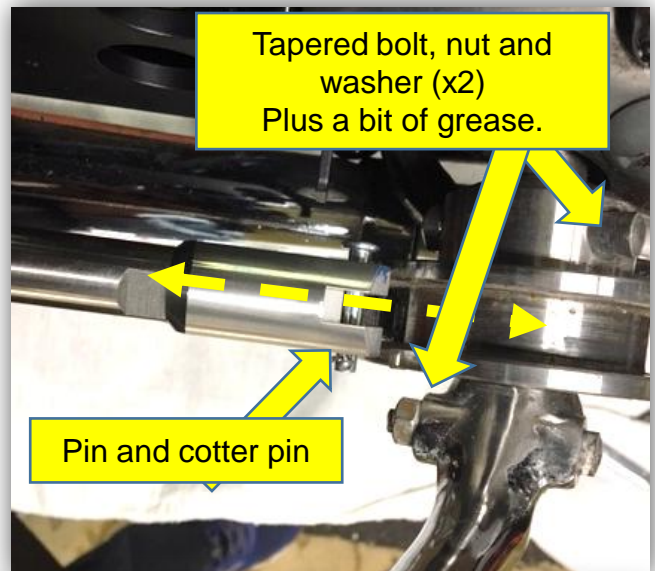
Install Combination Shaft onto the kick start shaft and secure with tapered bolt and nut in Bag B. It is a good idea to put some grease on the bolt for ease of installation and removal.

B9
B

Ensure the actuator shaft/clevis and leaf chain/combination shaft channel are in line. If not, you can adjust the mounting plate location by using the extra washers in Bag A.

B9
C

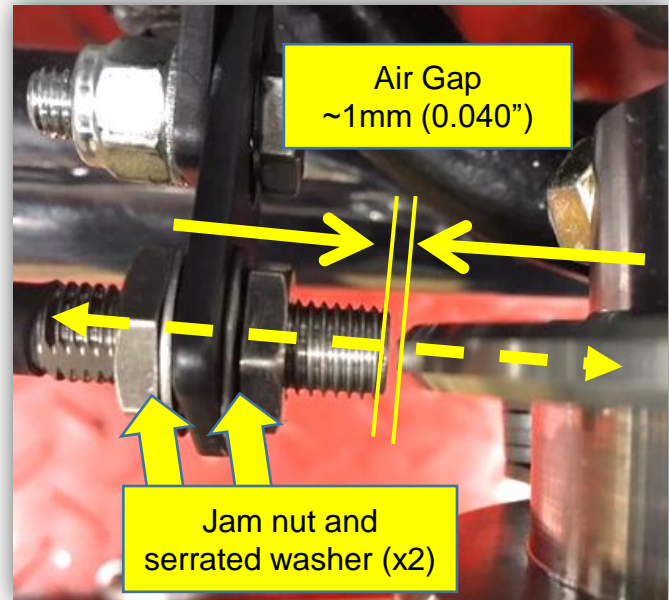
Attach kick start lever on Combination Shaft with second tapered bolt and nut. Attach leaf chain to actuator clevis with pin and secure with cotter pin. The hardware for this step is in Bag B.



B – Install Proximity Sensor

B10

The proximity sensor mount is a two piece bracket arrangement. The straight bracket (TOIF-010017) is mounted through its slotted hole to the “L” bracket with a 1/4 x 3/4 “ bolt/nut/washer in Bag A. The sensor mounts as shown with its adjustment nuts. An extra serrated washer is included. Install so there is a serrated washer on each side of the proximity sensor as shown. Loosely install all of these components.



B11

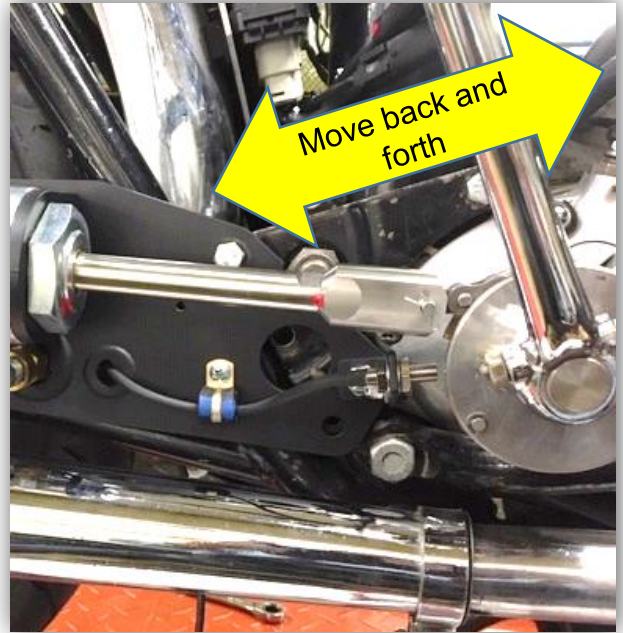
Take care to align the switch and set the air gap. The switch turns on by sensing a ferrous target, which in this case is the combination shaft inner side of its pulley feature. The slot in the combination shaft is where the switch is located in the resting position. When the lever is moved in to the start (i.e. Top Dead Center on compression) position, the sensor then senses the combination shaft, which provides the safety interlock feature.

The brackets and jam nuts allow a full 3 degrees of freedom. As shown above, the gap is approximately 1mm (0.040"). Too far away and the switch will not pick up the target. Too close and the switch may be hit and damaged. The switch should line up with the centerline of the target as shown. When you've got it just right, snug everything up. DO NOT over tighten the prox sensor as you will damage it (\$\$\$\$\$\$).

B – Finish up

B12

Run the same test as in Step B4-D, but this time use the kick start lever to position the proximity sensor in the ready position. If the yellow light does not come on, reset the air gap and retest. Note: an LED on the sensor will also illuminate



B13

Tighten home all fasteners associated with the mounting plate installation.

B14

You will find a 1/4 " drill in Bag H. This is to add a second detent to the kick start lever 90 degrees from the factory detent.

The reason for this is to hold the kick start pedal in place on the return stroke and keep it from hanging up on the actuator. This hang up is an intermittent annoyance, so you may add the extra detent if you like (but not necessary).

If you decide to add it, just be careful not to drill too deeply. The factory detent is approximately 1/8" deep, so a piece of tape on the drill bit at that depth will keep you out of trouble.



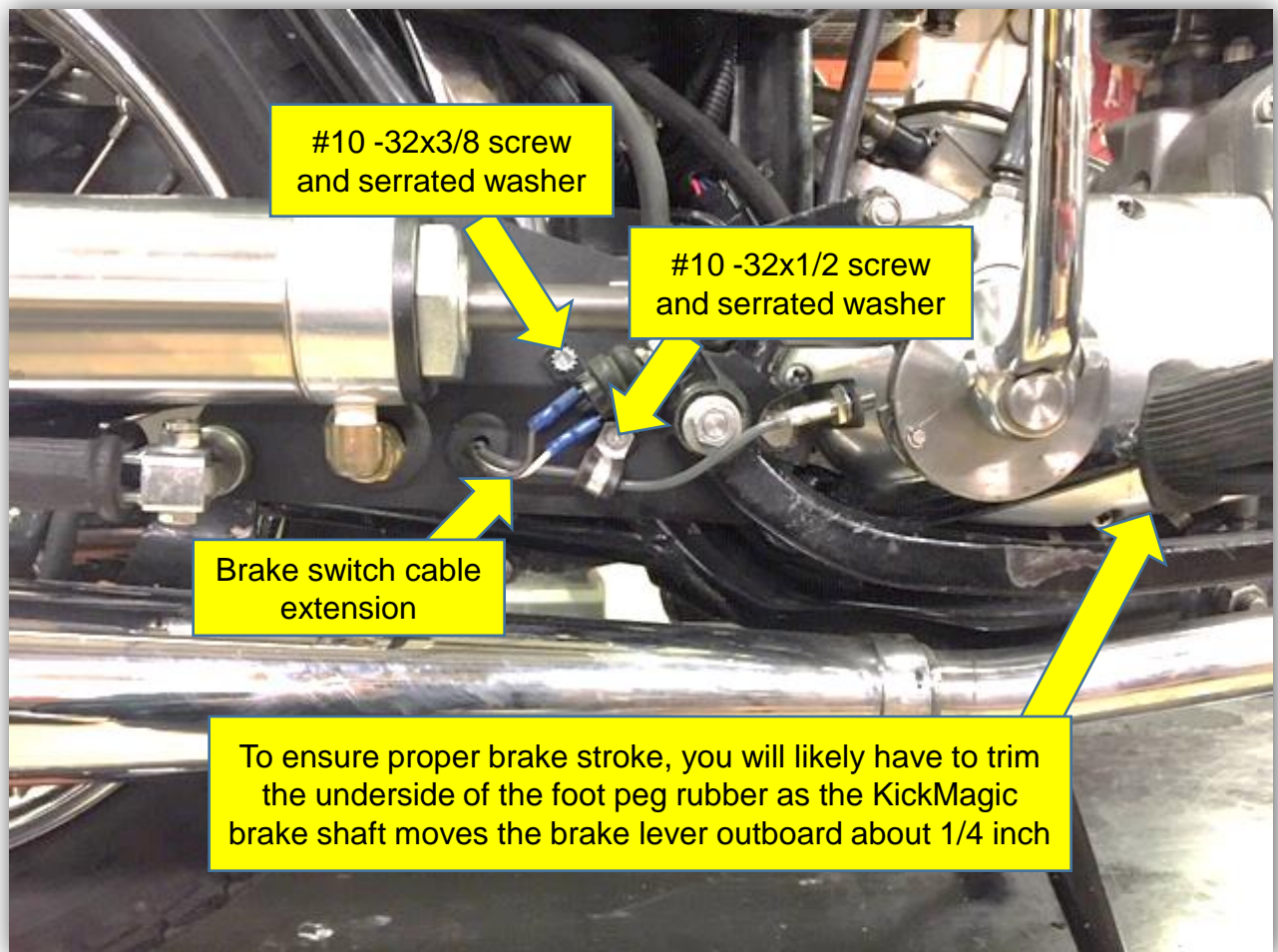
B – Install 75-79 Brake & Switch

B15

On 75-79 machines, install the brake lever on the supplied KickMagic extended brake shaft and snug up the nut and washer. You may have to trim the footrest rubber to allow full return.

B16

In Bag G we have supplied an extension kit for your brake switch cable and fasteners to mount the brake switch on the actuator mounting plate. This extension allows the brake cable to be routed through the same hole as the proximity sensor. An additional 10-32 screw and washer are also included. Use the longer screw to mount the clamp on top of the switch.



C – Connect air tank

C1

If you are using a KickMagic custom leather satchel, attach it now using the three leather straps. The 50 cu in air tank will fit in this satchel. Larger tanks will not, so you will need to use your own saddlebag or other storage location for the 68 & 90 cu in tanks.



C2

Attach the low pressure regulator (LPR) assembly to the air tank. Make sure it is on tight and fully engaged. Be sure the LPR is in the closed/off position and connect the inlet air supply hose to the quick disconnect fitting on the LPR. Leave the LPR regulator in the off position until ready for use.



C3

Adjust the LPR to 50 psi and run the system test again per step B12. With the air supply attached you should observe the actuator engaging. 50 psi is a good test pressure for system check out. Final pressure adjustment for your bike will be in section D.



C – Connect shop air

C4

Disconnect the inlet air line from the low pressure regulator (LPR).

C5

Set your shop air supply to approximately 50 psi.

Final pressure adjustment for your bike will be in the Section D.

C6

Connect the shop air line to the KickMagic inlet hose as shown.

C7

Run the system test again per step B12. With the air supply attached you should observe the actuator engaging. 50 psi is a good test pressure for system check out. Final pressure adjustment for your bike will be in section D.



D – Controls Overview



Master Arm is controlled by the black button on the left of the dash. Push it once to arm the system. Push it again to dearm. Or, leave it alone and it will time out after 30 seconds. Master Arm light is **RED**.

The **Ready** light is **YELLOW** and will illuminate only when:

- A) Master Arm is energized
- B) The kick start lever is moved to the ready position

Start is controlled by the black button on the right of the dash. Push to start the system, whereby the **GREEN** light will illuminate. Start will only occur if:

- A) Master Arm is energized
- B) Kick start lever is in the ready position

Air will then be supplied for five (5) seconds. The system then turns off and vents, allowing the kick start lever to return to the ready position

D - Air supply calibration

This step is meant to calibrate your regulated air supply (either shop or air tank). The idea is to have just enough air pressure to assist the start, but not so much that it self actuates by moving past the first high compression spot by itself.

Higher pressures make the kick that much easier. Lower pressures conserve air. The “Stored Starts” estimates noted later in the manual presuppose 85 psi as a baseline. Most 650/750 motors will work well up to 100 psi and make kicking that much easier. Any more pressure than that has diminishing returns and just wastes air.

While the KickMagic system components are designed for 150psi, we recommend you do not exceed a MAX PRESSURE of 120 psi.

D1

Choose either Shop Air or an on board Air Tank. Set your shop air regulator or on-board low pressure tank regulator to 80-90 psi. Place the bike on its center stand and be sure it is in neutral. Disconnect the spark plug leads. Position the kick start lever at a high compression spot, just as if you were going to kick start the bike normally.



Shop air regulator

D2

Activate the system as you did in the installation section, Step B12. Observe how far the kick start lever moves. If it wants to push past the first high compression spot, you can reduce the pressure to 70 to 80 psi. If it still moves past, then you have a pretty low compression engine dude!

Once finished, reconnect the spark plug leads.



KickMagic regulator

D – Using KickMagic

The key to using KickMagic is to remember it is a kick-assist and not a fully automatic starter. Rather than “kick”, think “**push**” when using it. **The idea is a solid, smooth push.** It is really like power steering on a car. It may take a few tries to get the hang of it.

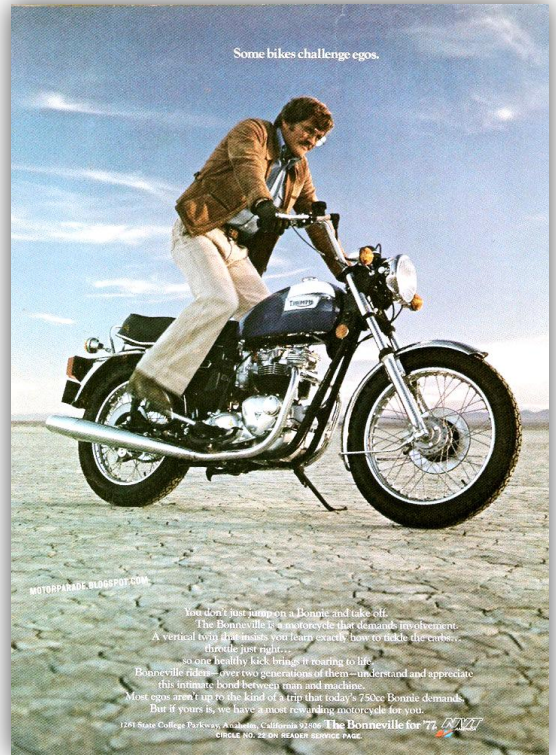
D3

Prep your bike as you always do to get it started. Clear the clutch, tickle the carbs, maybe give it some choke. Remember, a poorly starting bike is still a poorly starting bike with KickMagic. Take the time to make sure your machine is tuned and running well.

D4

By now you know the KickMagic sequence: Ignition ON, Master Arm ON, kick start in the READY position. Push the Start button, but don't rush. Wait a split second for the system to pressurize and then give a nice firm, smooth push to the kick starter.

You'll notice the motor will be turning faster than normal, which helps with the starting. We recommend starting with the bike on its center stand until you are comfortable with the sequence and technique.



D5

You may repeat the starting sequence as many times as you like as long as you have air. Notably, once you are out of air, you can still kick start as you would normally.

D – Filling air tanks

KickMagic on board, stored air systems are manufactured in the US by Ninja Corporation to KickMagic specifications. The carbon fiber, DOT tanks are rated at 4500 psi and come in 50, 68 and 90 cu in sizes.

Each tank comes with a KickMagic specified, high-pressure regulator permanently attached. There are several options for filling these tanks. Please note that the tanks are compatible with high pressure air or nitrogen, but not rated for use with CO2.

- **Commercial Fill Stations:** These range from paintball ranges & suppliers to scuba shops to industrial air suppliers. Depending upon the facility, charge pressures will normally be 3000 or 4500 psi and will yield the “stored start attempts” shown in the chart in the Product Support section for the three tank sizes. Refills are nominally \$5 to \$10. There are over 10 million paint ball players in the US along with 3 million active scuba divers (these are true stats!), so once you find those guys in your area, they’ll direct you to where the fill stations are. For the occasional user, this option, combined with owning a few extra tanks to swap out, is the easiest and most cost effective solution.
- **Home High Pressure System:** There are systems now on the market for home use (300 Bar/4500 psi). They retail on eBay for about \$250 plus shipping from China and have good reviews. Again, a good solution for a group or dealer to share the investment. We do not have direct experience with these devices, but the paintballers seem to love them.
- **Ninja Aftermarket Filling Systems:** Please see the Ninja website for more high pressure air (HPA) filling options that may be applicable for you.



D - Routine maintenance

In general, the KickMagic system is designed to automotive/industrial standards and does not require much in the way of routine maintenance

Below are a few tips to keep in mind for both regular use and long term storage. Ninja air tanks will need recertification as a high pressure storage device every 5 years.

➤ Regular use

- Turning off the low pressure regulator when not in use will ensure no loss of air due to downstream system leakage. There shouldn't be much in the way of leakage, but even a small amount over time can drain the air tank prematurely.
- Keep leaf chain lubricated. Doesn't need much. Mostly to prevent corrosion.

➤ Long term storage

- Be sure to clear the pneumatics with dry air. Shop air typically contains moisture.
- Disconnecting the hoses from the low pressure regulator on the inlet and actuator on the outlet will allow any accumulated moisture to evaporate easily.

➤ Ninja Air Tank Recertification

- The air tanks used on KickMagic are DOT certified and need to have that recertification done every 5 years. Please check the Ninja manual included with your tank for more information.

Frequently asked questions

- **Is using compressed air safe?** There are over 10 million paintball players in the US alone that use this technology. The bottles are Department of Transportation (DOT) certified for automotive use and are used frequently in non paintball applications as a result. The actuator pressures used by KM are regulated down to the range of shop air. All KM pneumatic equipment is rated for these pressures.
- **Are there any permanent changes to my bike?** No, all bolt on and bolt off. Initial installation can be accomplished in under 6 hours with common tools. Removal should take about half that time.
- **Where do I get my bottles refilled?** There are thousands of paintball stores and fields that refill bottles, along with scuba shops, air gas stores or set up your own at home. Refills are under \$10 and spare bottles are very affordable.
- **Can I use CO2?** The KM system will operate with CO2, but the HPA (high pressure air) Ninja bottles are not compatible. Please note that there are idiosyncrasies with using CO2 (e.g. bottle orientation) that have not been fully tested as of Fall 2018. Check back to our website for updates on CO2 usage.
- **What about high or low compression engines?** KM on board bottles have an adjustable regulator you set once based upon your engine's compression and kick force needed. For shop air, adjustment is made at the compressor. A higher compression engine will require higher pressures and use slightly more air.
- **How much electrical power does it use?** Total system is less than 1.5 amps at 12Vdc and can run on POS or NEG ground systems..
- **Can I kick start my bike without using KickMagic?** Yes, the leaf chain just folds in place.
- **How about other makes and models?** KM's intellectual property is in the systems engineering associated with the pneumatic system, controls and mechanical interface with the kick start shaft. KM will be developing point solutions for other bikes on a regular basis based upon market demand.

Troubleshooting

If your system fails to operate correctly, please check the following. We are here to help, so contact us anytime.

➤ **Make sure these are all checked**

- All connectors are fully engaged and power available
 - Dash to SCU
 - Main cable to SCU
 - Main cable to Solenoid assembly
 - Main cable to Proximity sensor
 - Power and ground – be sure there is power with the ignition ON
- Battery is fully charged and capable of 10+ volts under starting loads
 - KickMagic electrical components will not function reliably under 10 Vdc
- Proximity sensor is properly mounted with correct clearance
 - This is a key fitment adjustment. If incorrect, the sensor will not activate and the system will be locked out as a safety feature.
- Air supply is adequate
 - Shop air or on board tank has sufficient pressure
 - Onboard low pressure regulator set to 85 +/- psi

➤ **Review Known Triumph Issues (next page) and make sure corrective action is taken if necessary**

➤ **You are always welcome (and encouraged) to call for tech support at any time**

- See Tech Support Contact info.

Triumph Known Issues

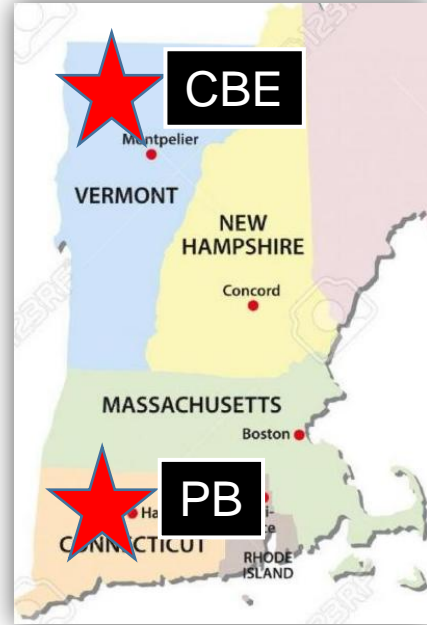
The following issues may require extra time and care to remedy for your system to install easily and/or work correctly. If new issues and solutions arise, we'll post them on the KickMagic Tech Tips page.

- **Kickstart shaft and quadrant gear differences** There are two different kickstart shaft part numbers and two different quadrant gear part numbers from 1963-1979. Your kit model is designed to take this into account. However, parts get mixed and matched with rebuilds and your machine may have an earlier or later set of parts that will affect the actuator alignment and/or the resting position of the kickstart lever. If so, please refer to our Tech Tips page on the KickMagic website for more information and solutions.
- **Not enough spring return** If the kick start return spring is weak or misassembled, there may not be enough spring return force with the system installed. More info in section A6.
- **Footrest (right side)** Many bikes have gone down and the noble footrest has taken the bulk of the impact to protect the mother ship. However, this also means it affects the clearances to the combination shaft when installed. If there is not enough clearance for the combo shaft, either rebend or replace the footrest.
- **Electrical EMI** If you notice the dash lights blinking while the bike is running, the system is picking up electromagnetic interference (EMI) from the ignition. This is normally found with points bikes and standard plug caps and wires. It can be corrected by installing 5K resistor spark plug caps.
- **Aftermarket part installation** Many machines have had upgrades installed to electronics and other system components. If any of these are installed under the battery box, in the right side aft side cover or dash area, they will need to be moved.
- **Anything else?** If you find other installation issues, please let us know and we will fold those into our user's manual and on-line Tech Tips as well.

Tech support

Your kit has been designed by The Classic Bike Experience in VT and is built by Pearse-Bertram in CT.

Both are in the Eastern Time Zone in the USA. Please make sure you have your serial number handy.



➤ For Technical Support - Contact CBE

- Any and all technical questions
- Installation issues
- Using the system
- Troubleshooting
- Contact
 - The Classic Bike Experience
 - Phone: 802-878-5383
 - Email: jack@classicbikeexperience.com

➤ For Shipping/Fulfillment Support – Contact PB

- Shipping related issues including missing or damaged parts
- Contact:
 - Pearse Bertram
 - Phone: 860-242-7774

Special thanks to Jerry and Lenny who worked many hours on manual verification and offered plenty of great suggestions for improving these procedures and saving you headaches !



KickMagic warranty

STANDARD ONE YEAR MANUFACTURER WARRANTY

The manufacturer warrants this product to be free from defects in workmanship and materials, under normal use and conditions, for a period of one (1) year for the original invoice date. Shipping and handling fees will be paid/reimbursed by the manufacturer if a defect is confirmed.

The manufacturer agrees, at its option during the warranty period, to repair any defect in material or workmanship or to furnish a repaired or refurbished product of equal value in exchange without charge. Such repair or replacement is subject to verification of the defect or malfunction.

NINJA PRODUCT WARRANTIES

Warranty for Ninja brand air tanks and regulators are also one (1) year and will be honored by Ninja based upon the terms of the warranty agreements supplied with their products.

WARRANTY REGISTRATION

Your KickMagic system will be automatically registered to the name and contact information provided when you purchased your system. The Starter Control Unit is serialized. Should you need to make an inquiry and/or claim, please refer to the serial number of your system.

TRANSFERS

Your warranty is transferable for the warranty period.

WARRANTY LIMITATIONS

This warranty does not include

- Any condition resulting from incorrect or inadequate maintenance or care
- Damage resulting from misuse, abuse, negligence, accidents or shipping damage
- Dissatisfaction due to buyer's remorse
- Normal wear and tear

CLAIM PROCEDURES

- Claims for defective merchandise must be made within ONE year from the ship date.
Claims for missing parts must be made within 60 calendar days
- Claims will be processed by Classic Bike Experience on behalf of KickMagic
Please call 802-878-5383

KickMagic by the numbers

Weight	System		15	lbs
	50 Cu In tank & regulator		2	lbs
	Satchel		2	lbs
System Pressures	Air tank max storage pressure		4500	psi
	Operating pressure			
		Nominal	85	psi
		Max	150	psi
Power Consumption	Operating voltage		10 to 15	Vdc
	Current draw			
		System On	<1	amp
		Starter Solenoid Energized	<2	amp

Nominal Stored Starts

Tank Size (in ³)	Pressure (PSI)	Stored Starts
50	3000	60
50	4500	90
68	3000	80
68	4500	120
90	3000	110
90	4500	160

NB: Stored starts assume 85 psi inlet pressure.

