



CV Carburetor Rebuild Tutorial

SUZUKI



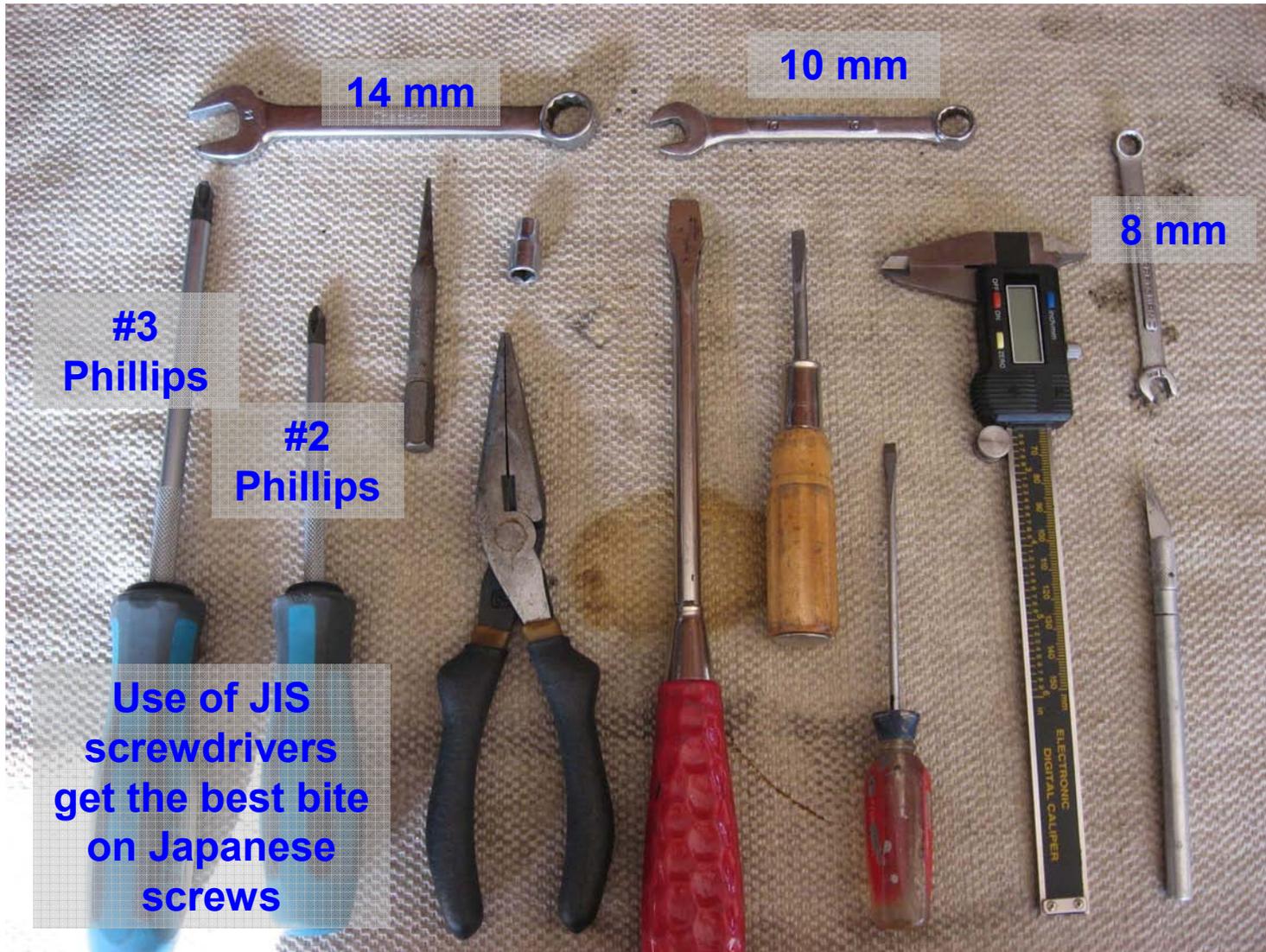
By Ed Ness

Mikuni BS (CV) Carburetor Rebuild Tutorial

- This tutorial is intended to assist folks rebuilding their GS Suzuki CV type carburetors.
- Starting in 1980 (in the US market anyway) all GS bikes adopted Mikuni BS (CV) carburetors.
- These carburetors came in three sizes (denotation reflects the inside throat diameter by the butterfly throttle valve):
 - BS32 (32mm) for GS550, 650, 750, 850
 - BS34 (34 mm) for GS1000 & 1100 – also 450 (although the 450 configuration is somewhat different)
 - BS36 (36 mm) for the GS1150

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Required Tools



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Screwdriver blades need to fit snug into slots otherwise screw can get stripped. **If these screws seem stuck, do NOT force them**, use penetrating lubricant, such as PB Blaster, and a heat gun on the carb body, then try again.



Screwdriver blade should be .0385" thick at tip for removing pilot screw



Screwdriver blade should be .0350" thick at tip for removing pilot jet

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Optional Tools



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For you guys that like a list...

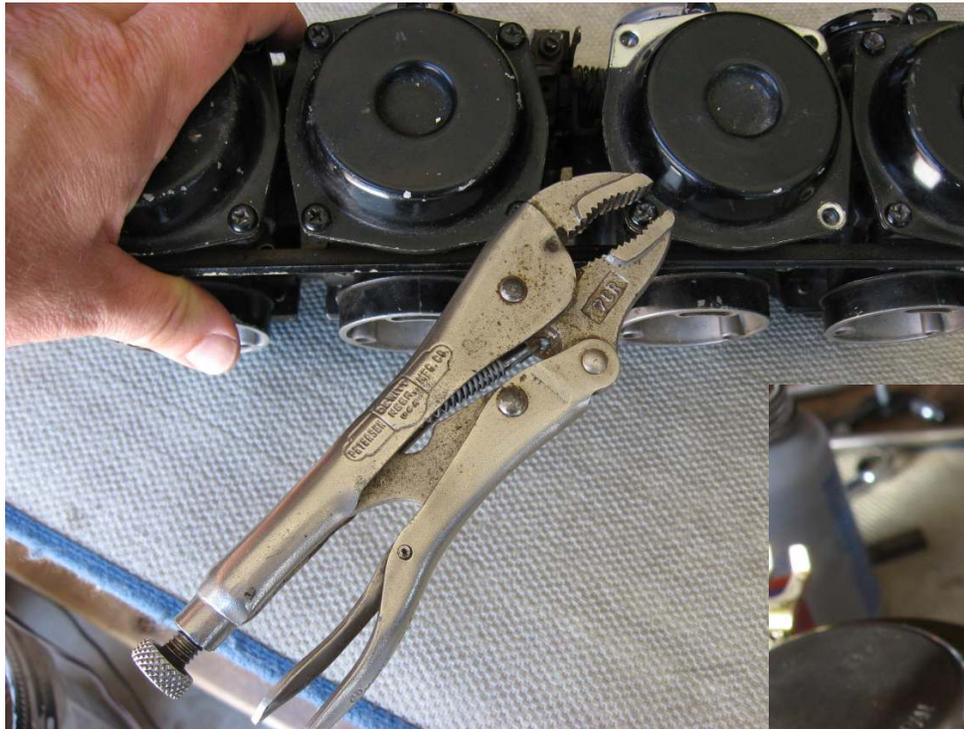
Required Tools

- #2 Phillips screwdriver (JIS type recommended) – various uses
- #3 Phillips screwdriver (JIS type recommended) – lower gang plate screws
- Needlenose pliers – R/R float needle seat and fuel jet
- Nail setting punch (small tip) – driving out float pin
- ¼” drive socket (approx. 5/32” or 6mm size) – support float post while removing pin
- Large blade screwdriver – R/R main jet
- Small blade screwdriver – R/R pilot screw (must fit tightly into slot)
- Small blade screwdriver – R/R pilot jet (must fit tightly into slot)
- Calipers (or accurate scale) – to set float height
- 14mm wrench – R/R choke plunger
- 10mm wrench – R/R floatbowl drain screw
- Xacto knife (or very small blade screwdriver) – to remove O-rings

Optional Tools

- Drill motor or dremmel tool – to drill out pilot screw cap or slot screw
- Dremmel cut off tool – to slot screws
- Vice grips – removing stubborn screws
- Drill bit – drill out pilot screw cap (5/64” or similar)
- Wood/sheet metal screw – extracting pilot screw cap
- Impact driver w/ #2 & #3 Phillips bits – removing stubborn screws
- Hammer – for smacking impact driver or tapping punch to remove float pin
- Toothbrush – scrubbing dirty parts
- Fuel measurement tool
- Long nose snap ring pliers – R/R carb needle C-clip (Motion Pro 08-0279 shown)

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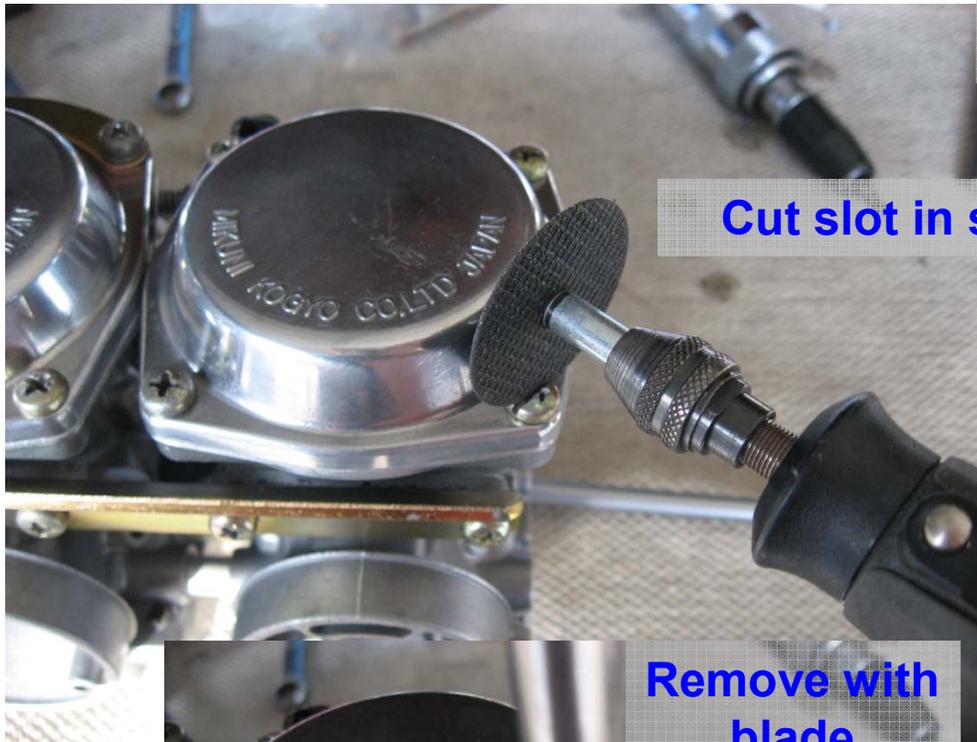


For those pesky screws that the previous owner stripped.



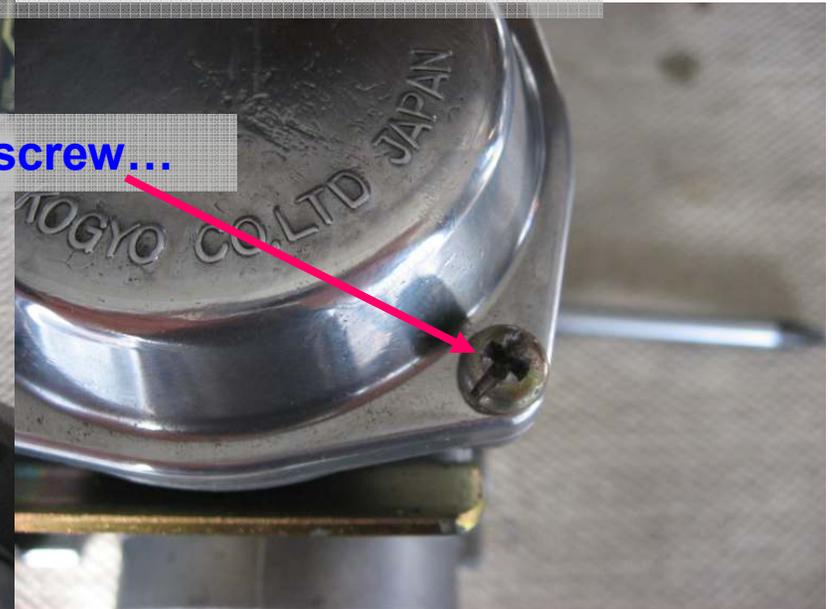
Impact Driver

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Cut slot in screw...

Last resort...



Remove with
blade
screwdriver

Component	Required # screws	Thread x Length
Float Bowl	16	M5 x 16mm
Diaphragm Cap	16	M5 x 14mm
Top Rail	8	M5 x 12mm
Bottom Rail	8	M6 x 12mm
Bowl Drain	4	6mm x .8 (pitch) x 7mm
Intake Pipe (Boots)	8	M6 x 16mm
Vacuum port screws	4	M5 x 10mm

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Materials



Last resort if carb dip can not be obtained is to boil parts in mild Pine-Sol or lemon juice mixture

For lubrication of O-rings (motor oil is OK too)

In places where carb dip is not legal, this Yamaha product can often be obtained
P/N ACC-CARBC-LE-NR

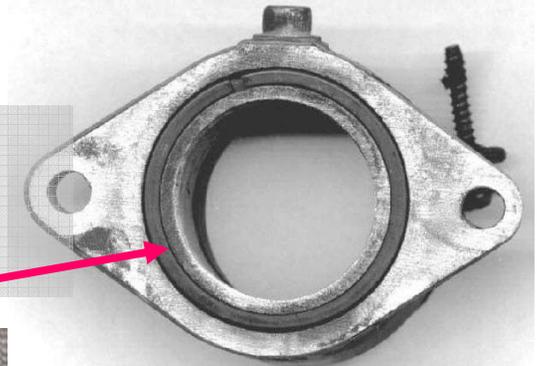


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The original Mikuni brass parts (jets, float valve, etc) are very high quality. Reuse these parts unless damaged. Aftermarket "carb kits" are typically of lesser quality and the included jets are often generic and not specific to each bike model.

Materials

Intake Pipe (boot) O-rings should be refreshed when rebuilding carbs!!!



Optional Viton O-rings (thick X ID)

Choke plunger: 1.5mm X 10mm

Drain bolt: 1.5mm X 5mm

Float Needle: 1.6mm X 7.1mm

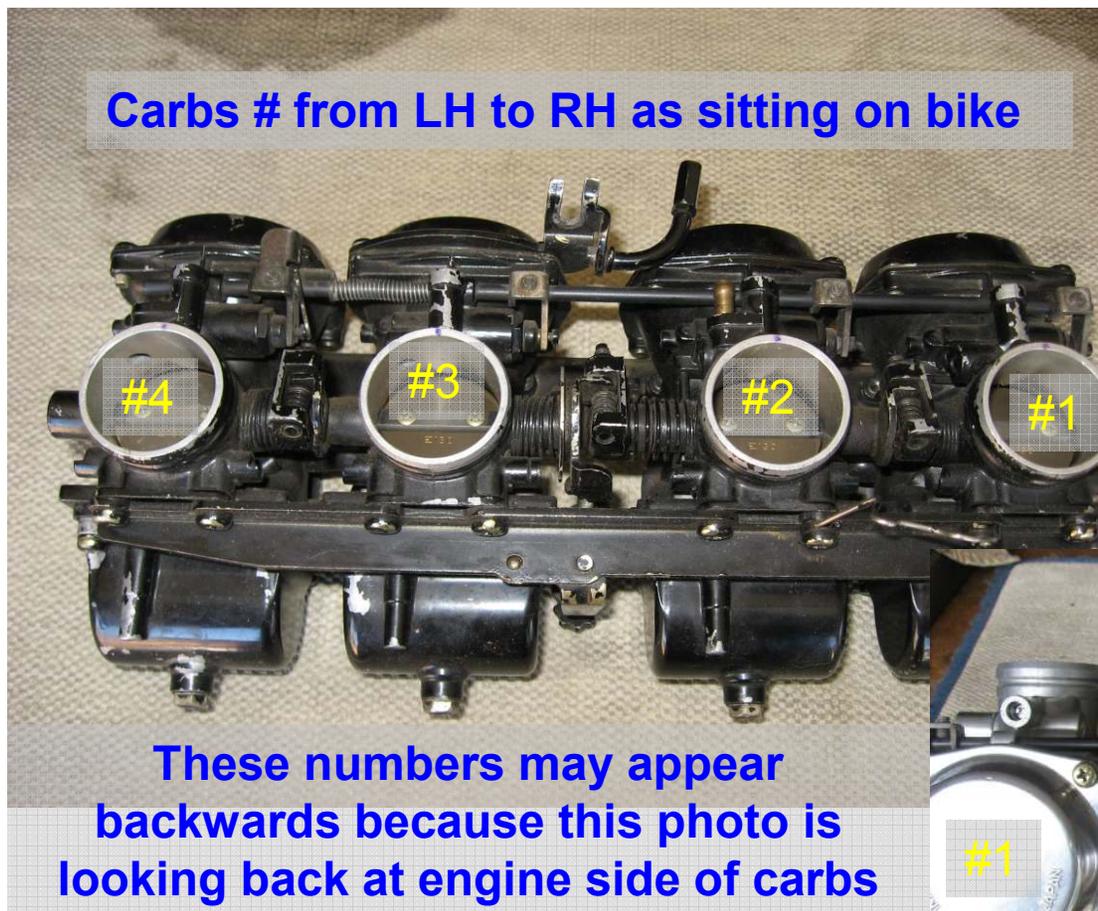
Fuel Tubes: -10 size (1.8mm X 6mm)

Pilot Screw: 1.13mm X 2.70 mm or
optional (1.0mm X 2.5mm)

Cycleorings.com kit



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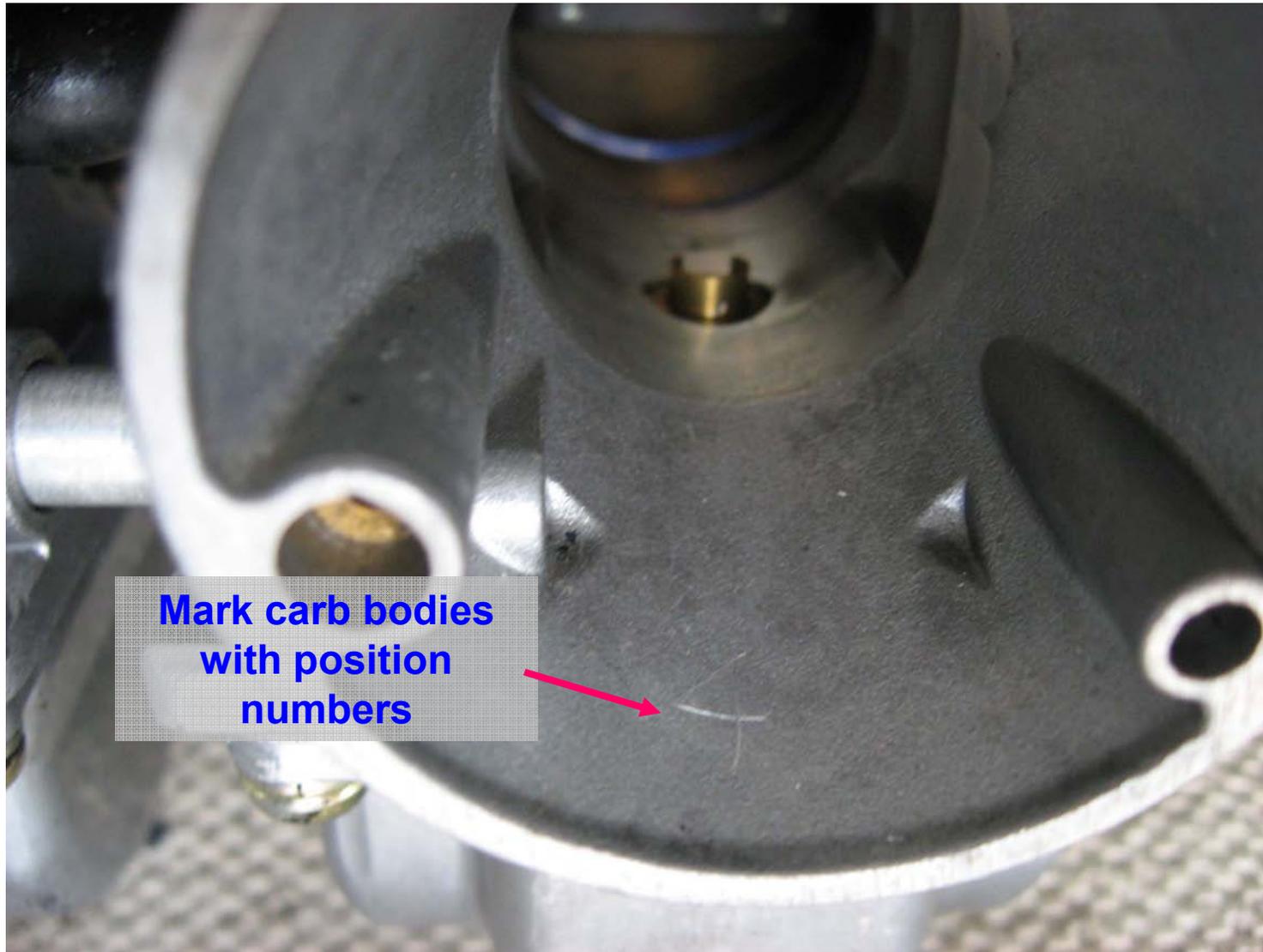


BS36's from Suzuki GS1150

Note: before beginning work you may want to decrease the carbs to avoid mess and contamination of your carb dip when you get to that point.

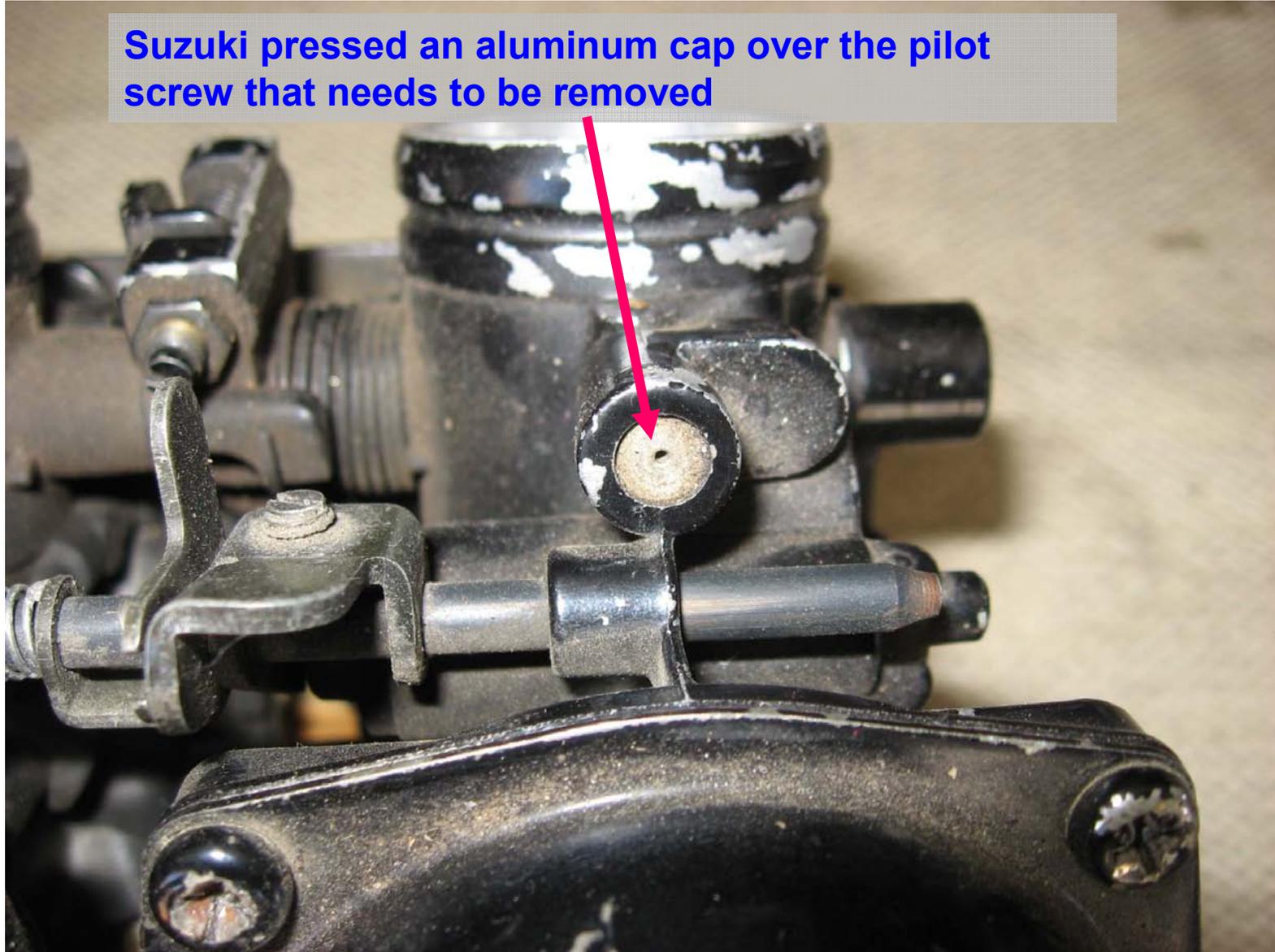


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Suzuki pressed an aluminum cap over the pilot screw that needs to be removed



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Drill bit has tape applied so drill doesn't go too deep (5.5 mm deep max.) and hit pilot screw under cap



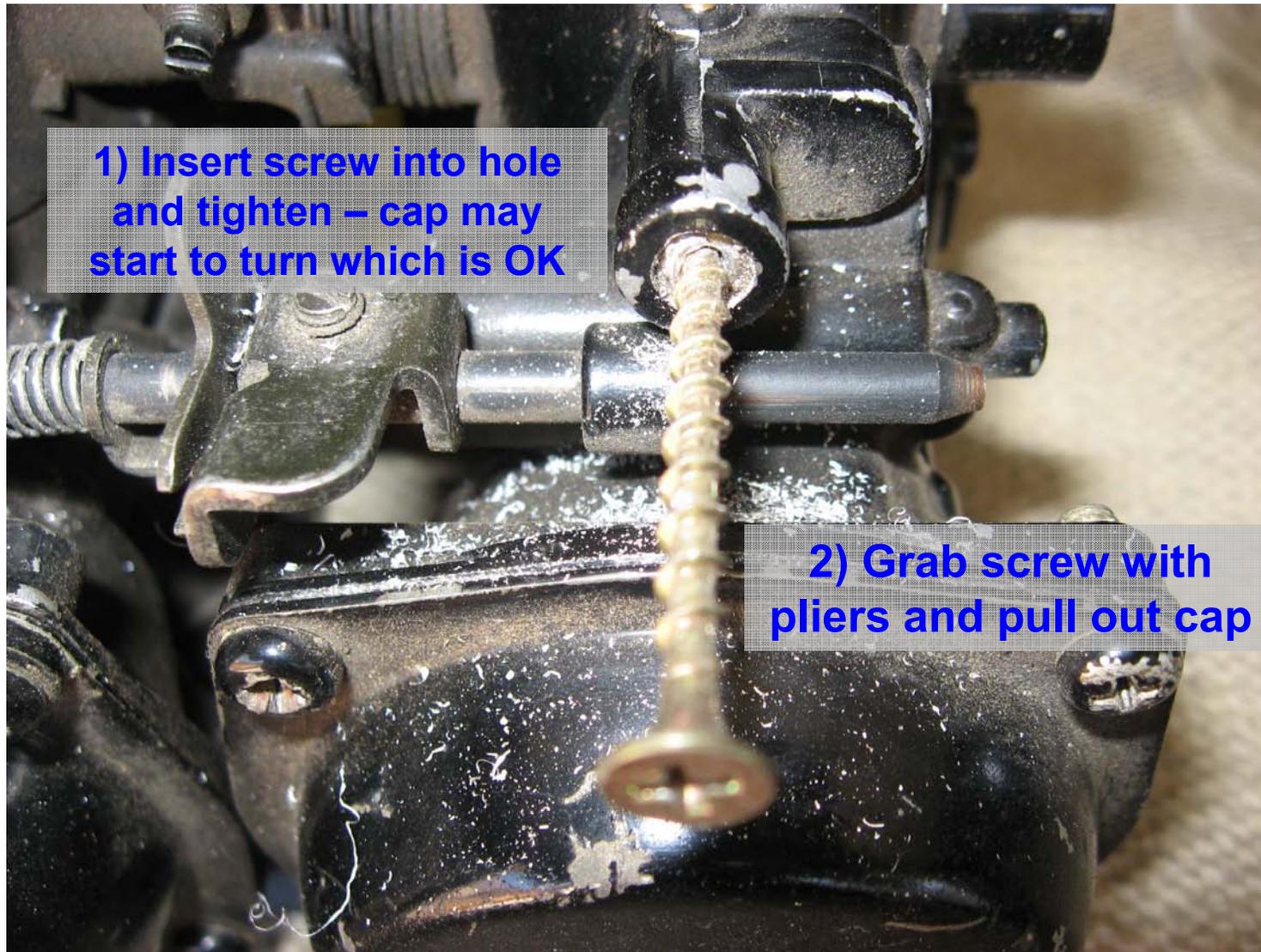
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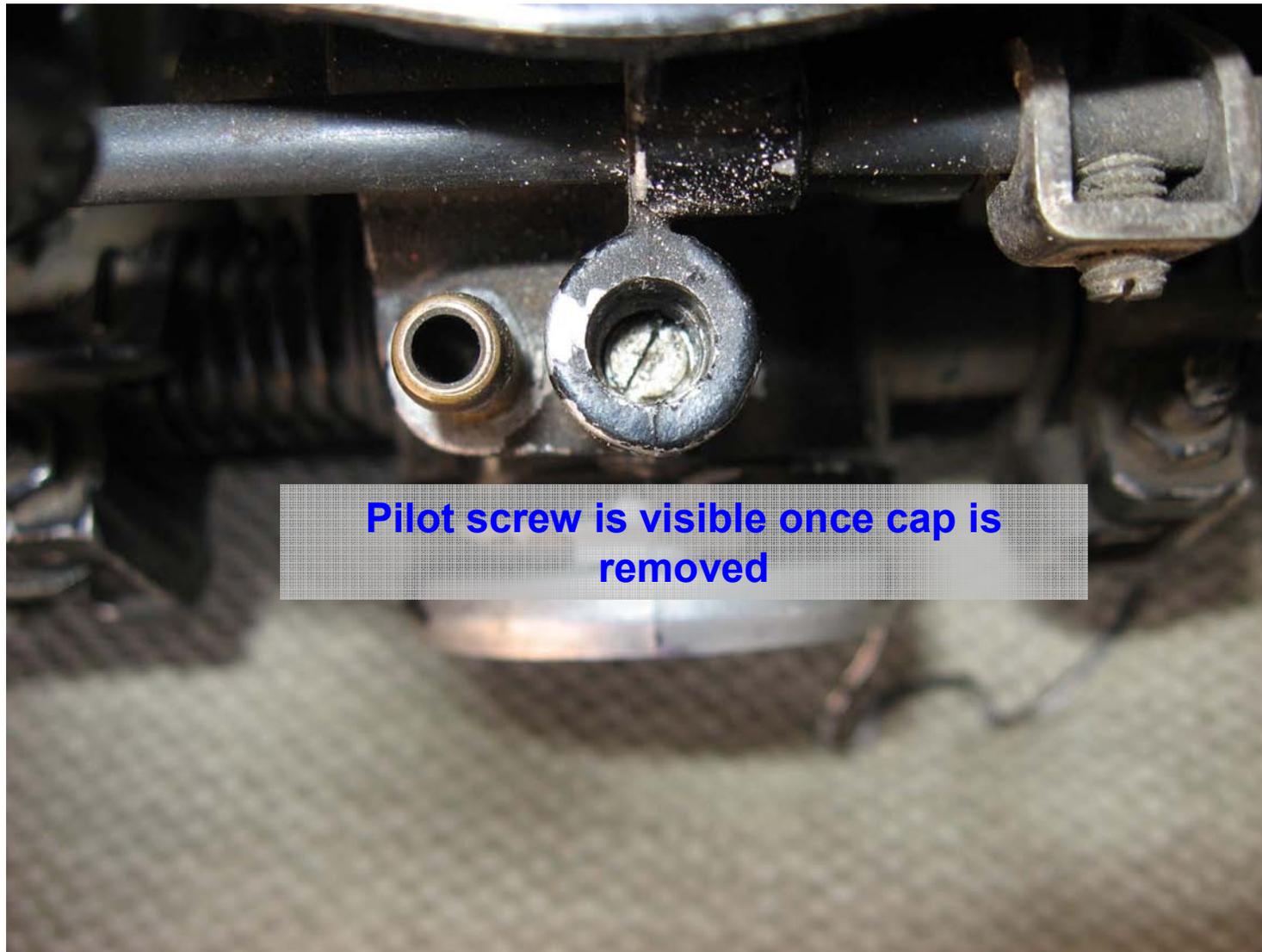
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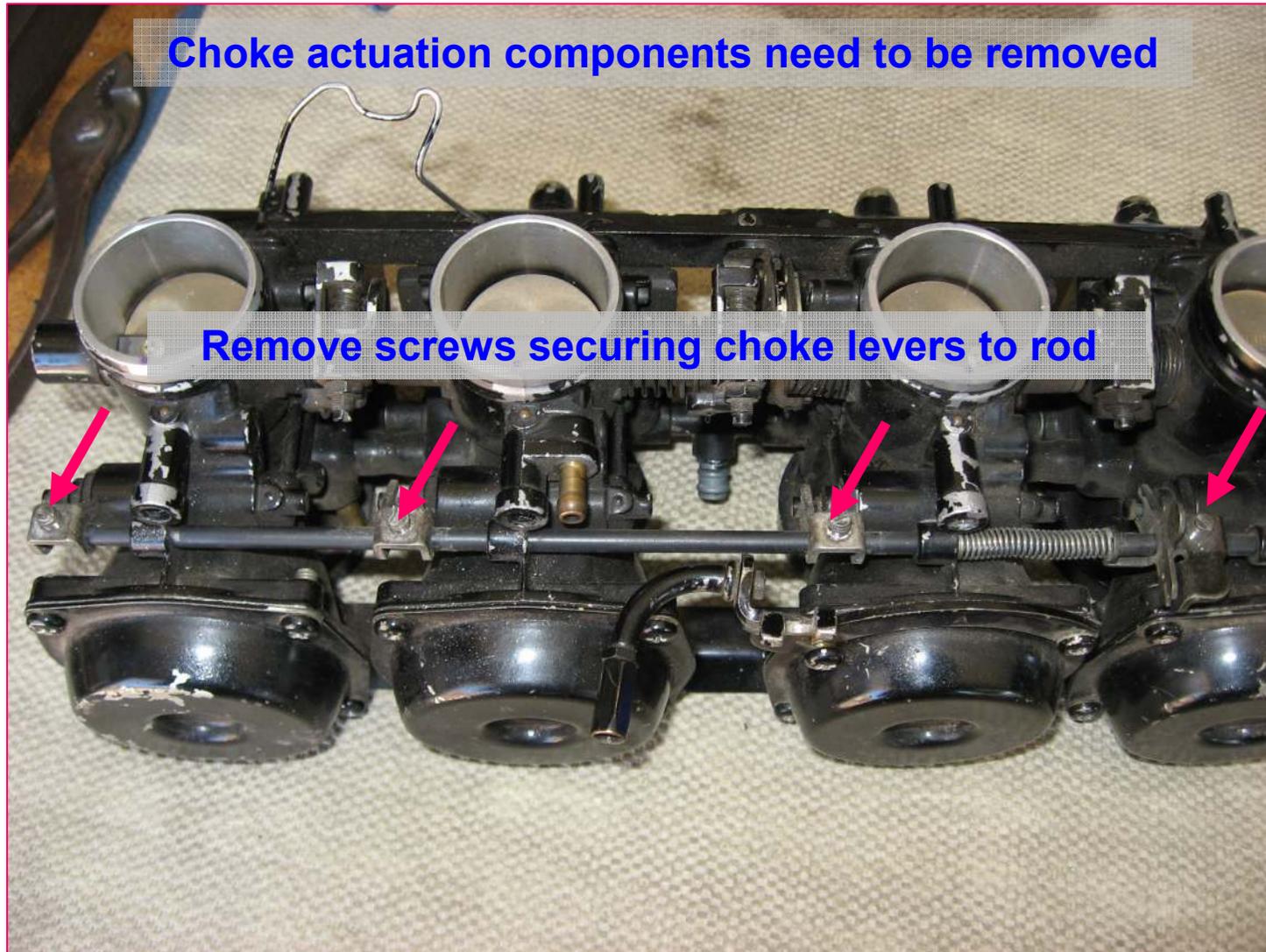


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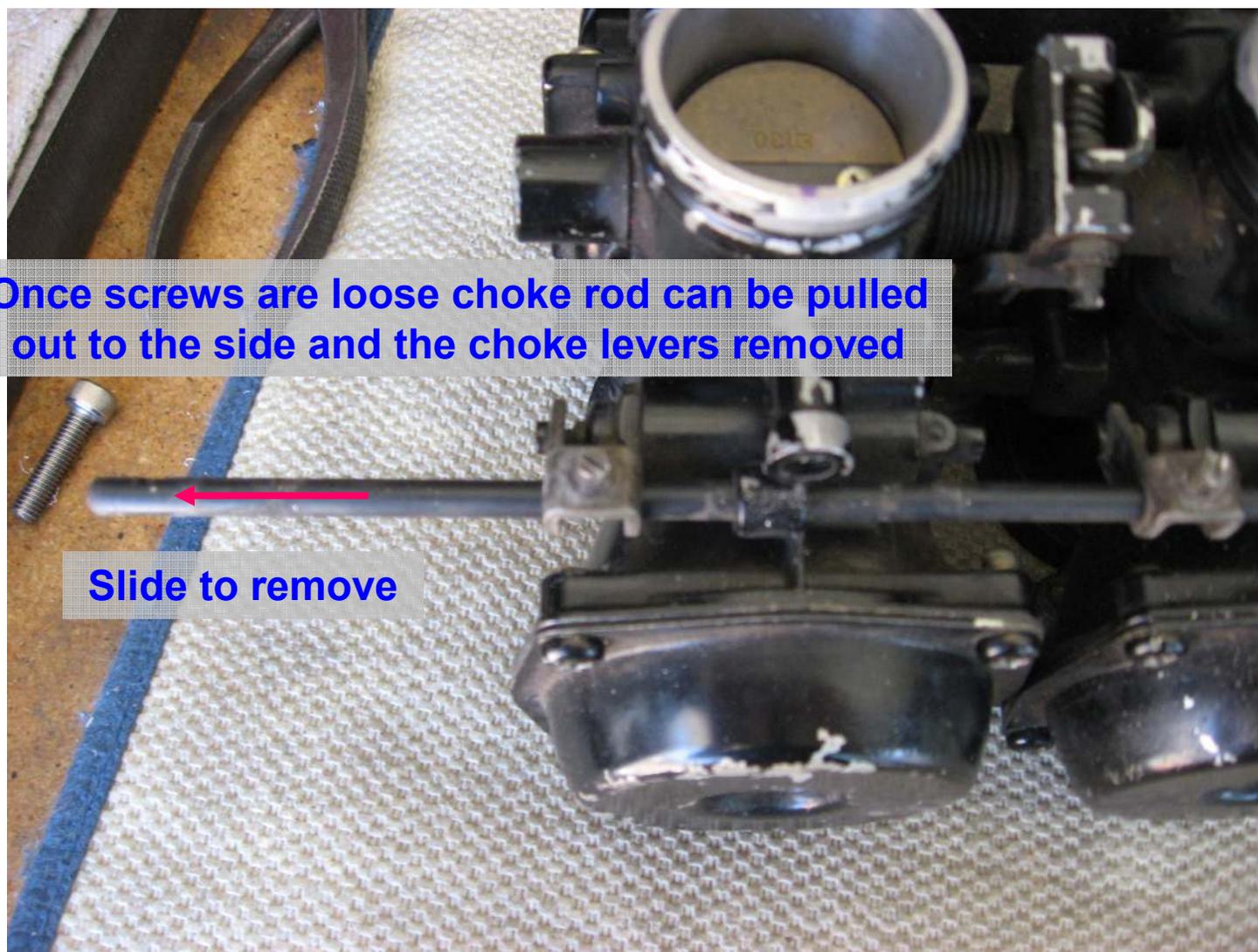


Pilot screw is visible once cap is removed

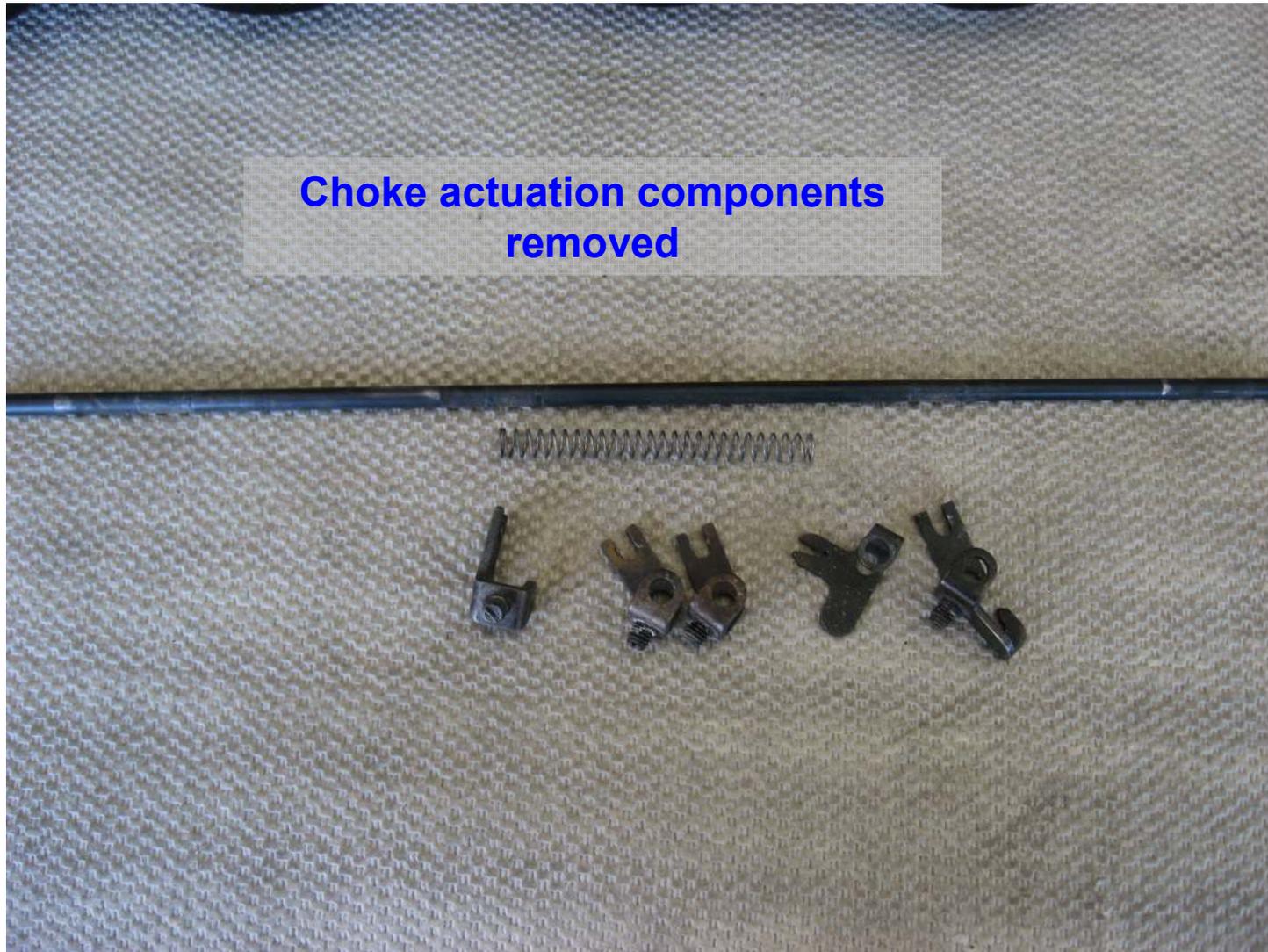
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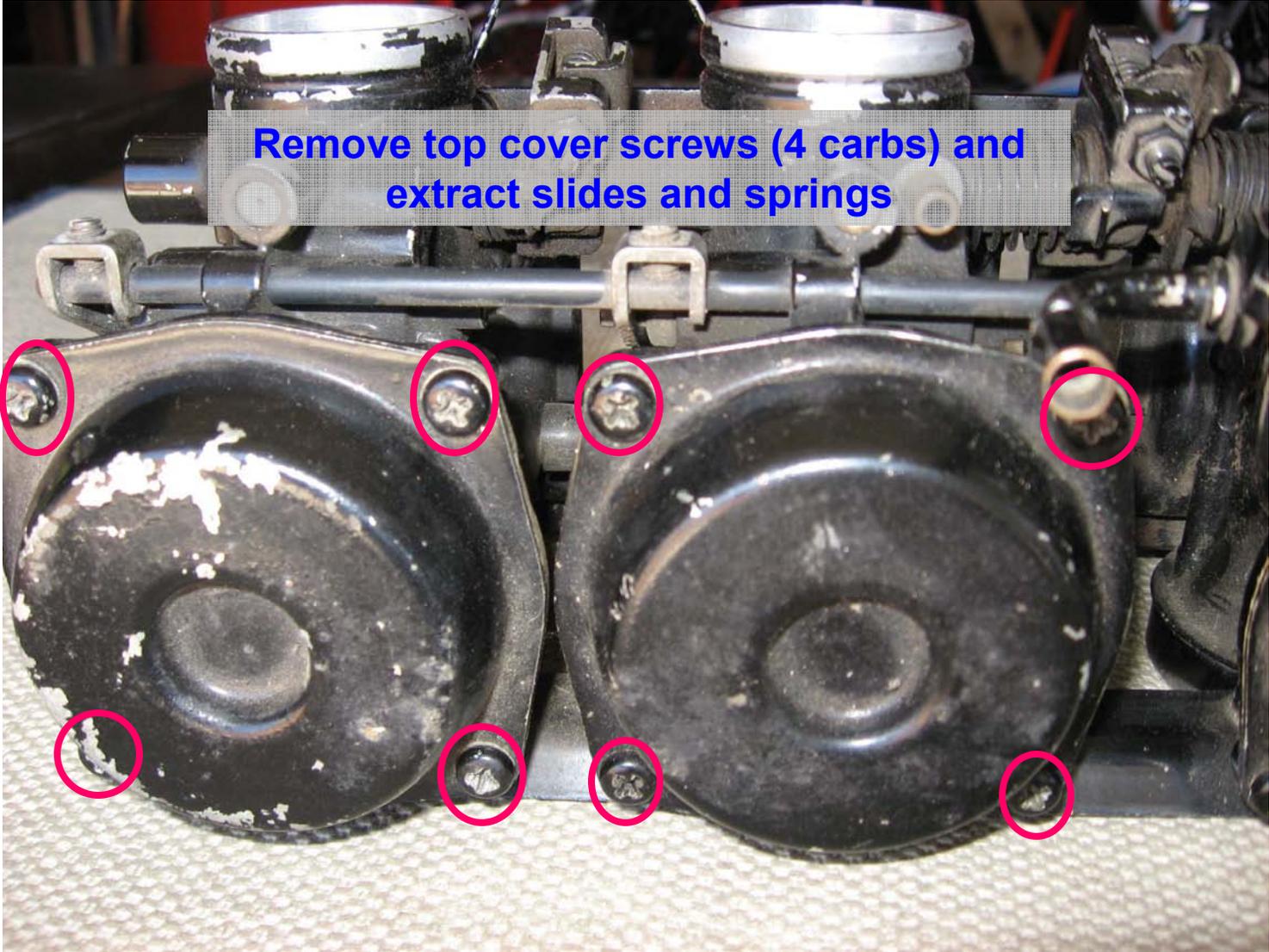
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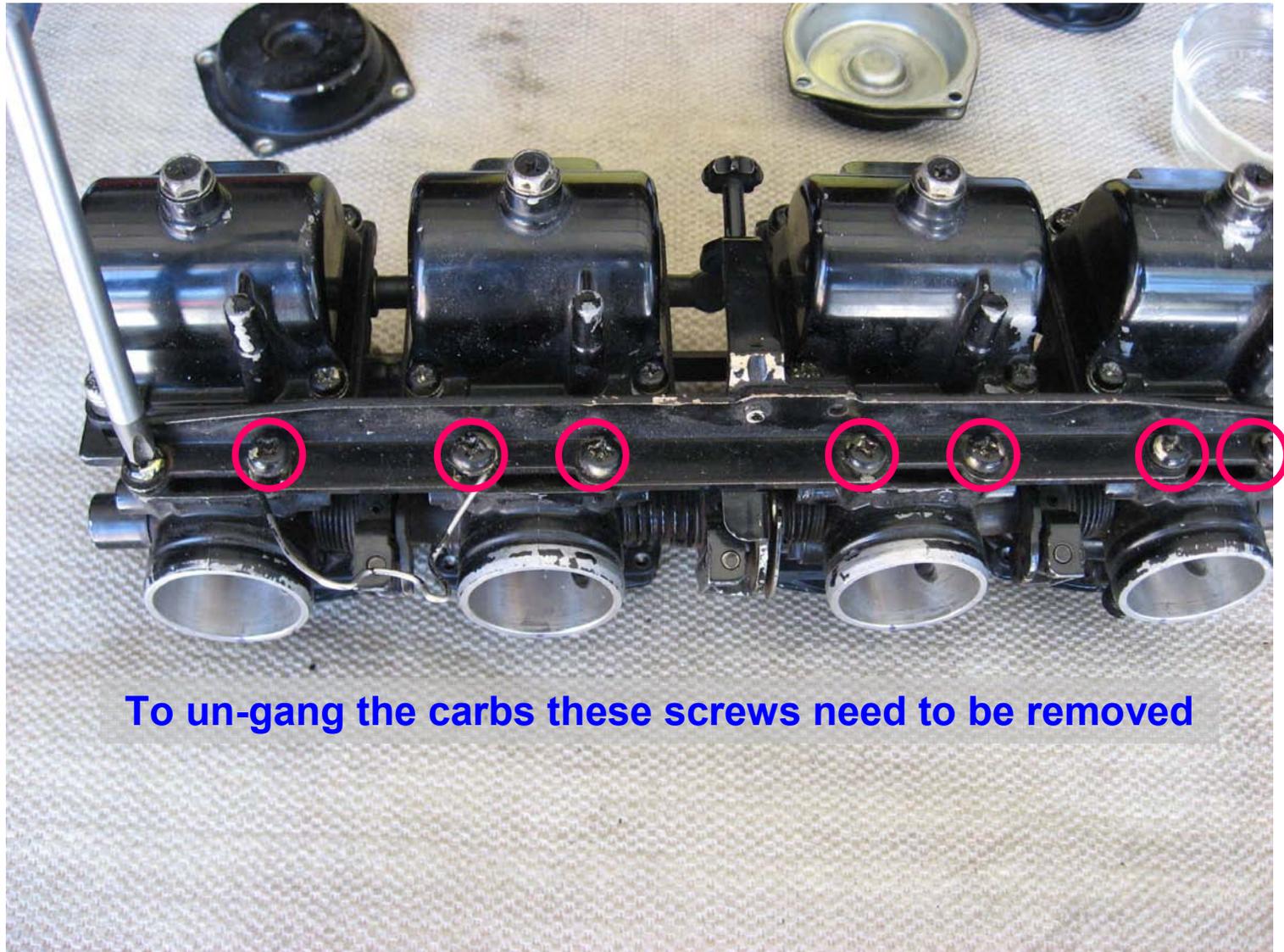


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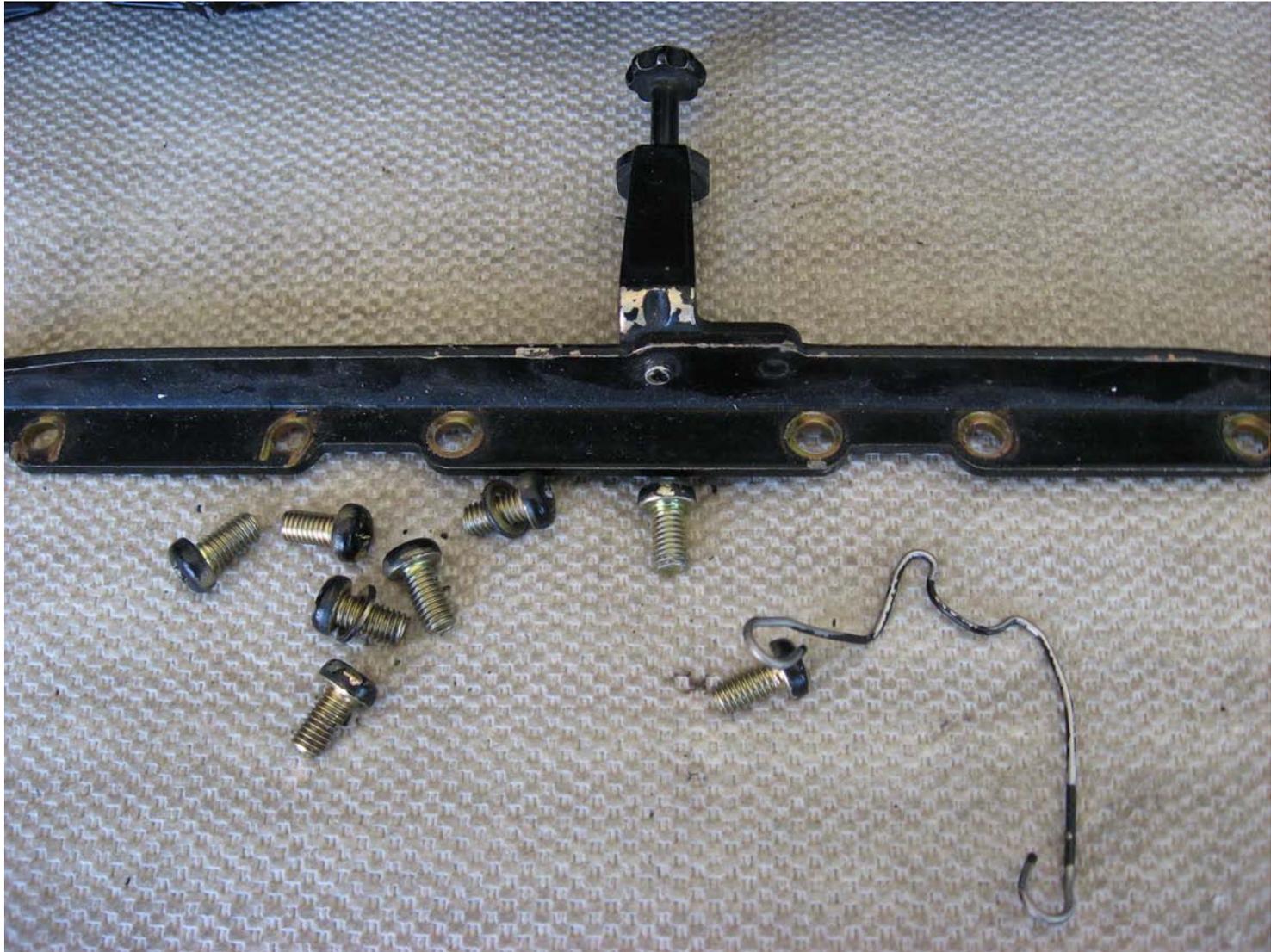


Top cap, slide and spring removed

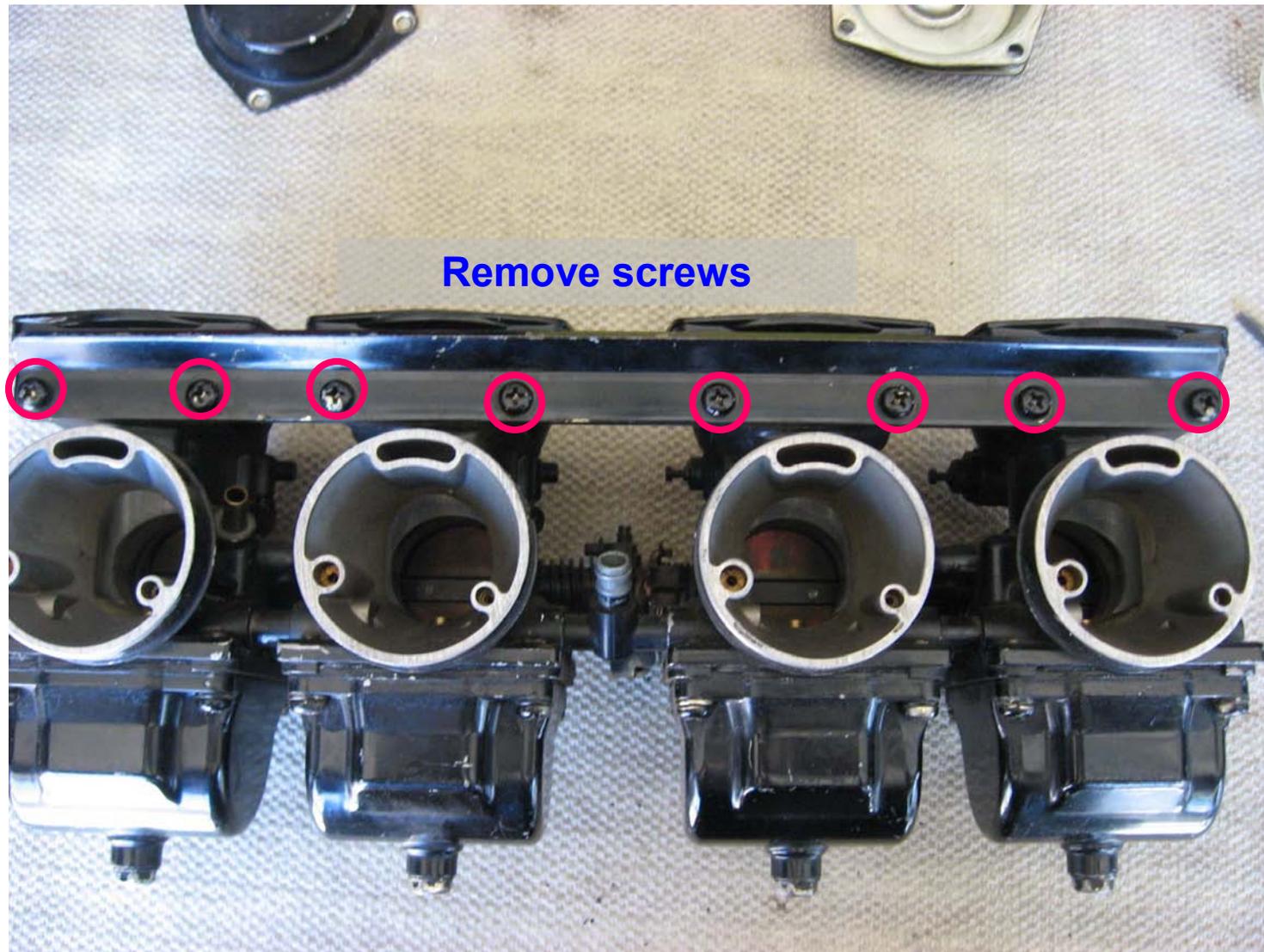
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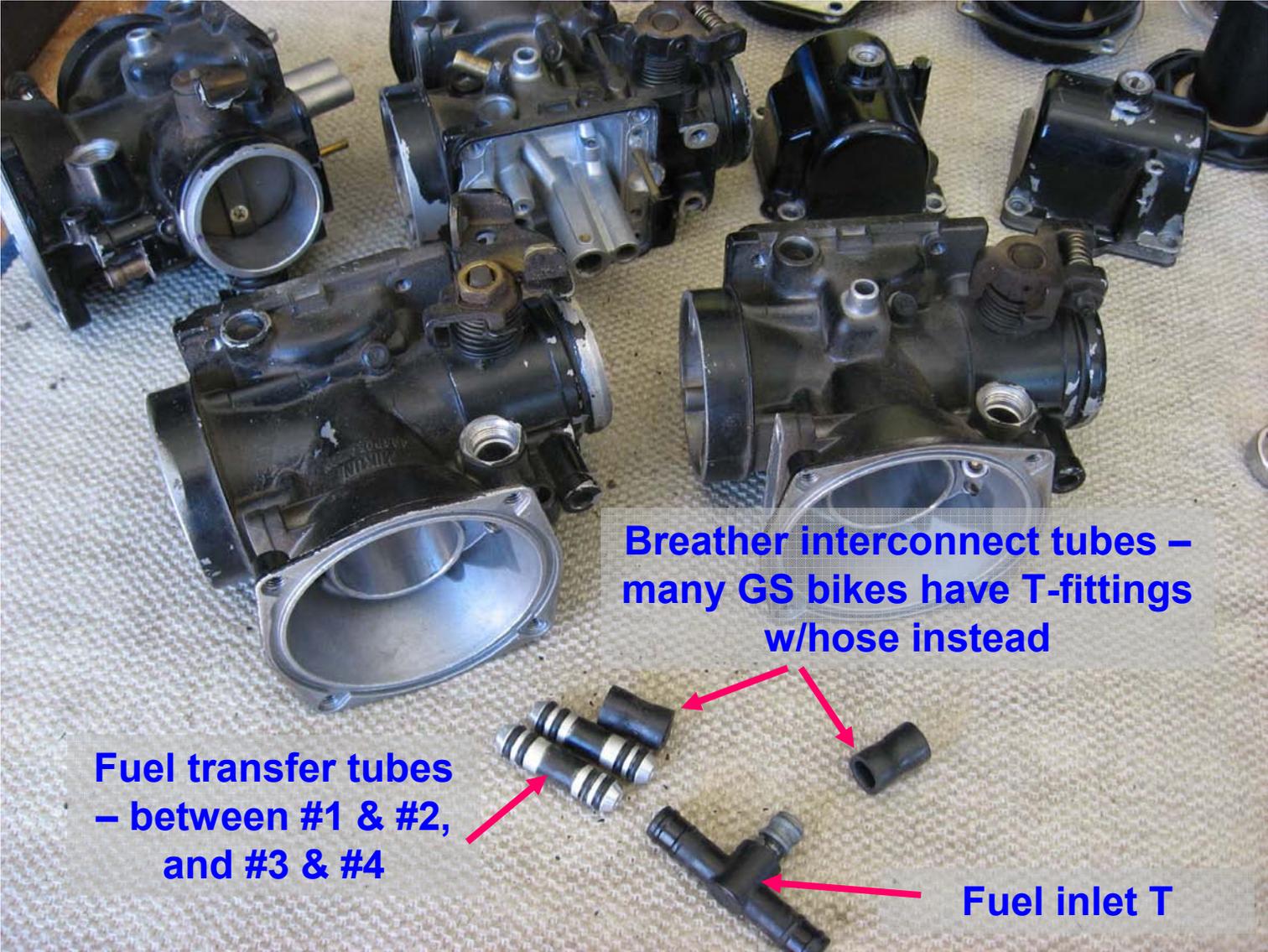


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Carbs can now be un-ganged

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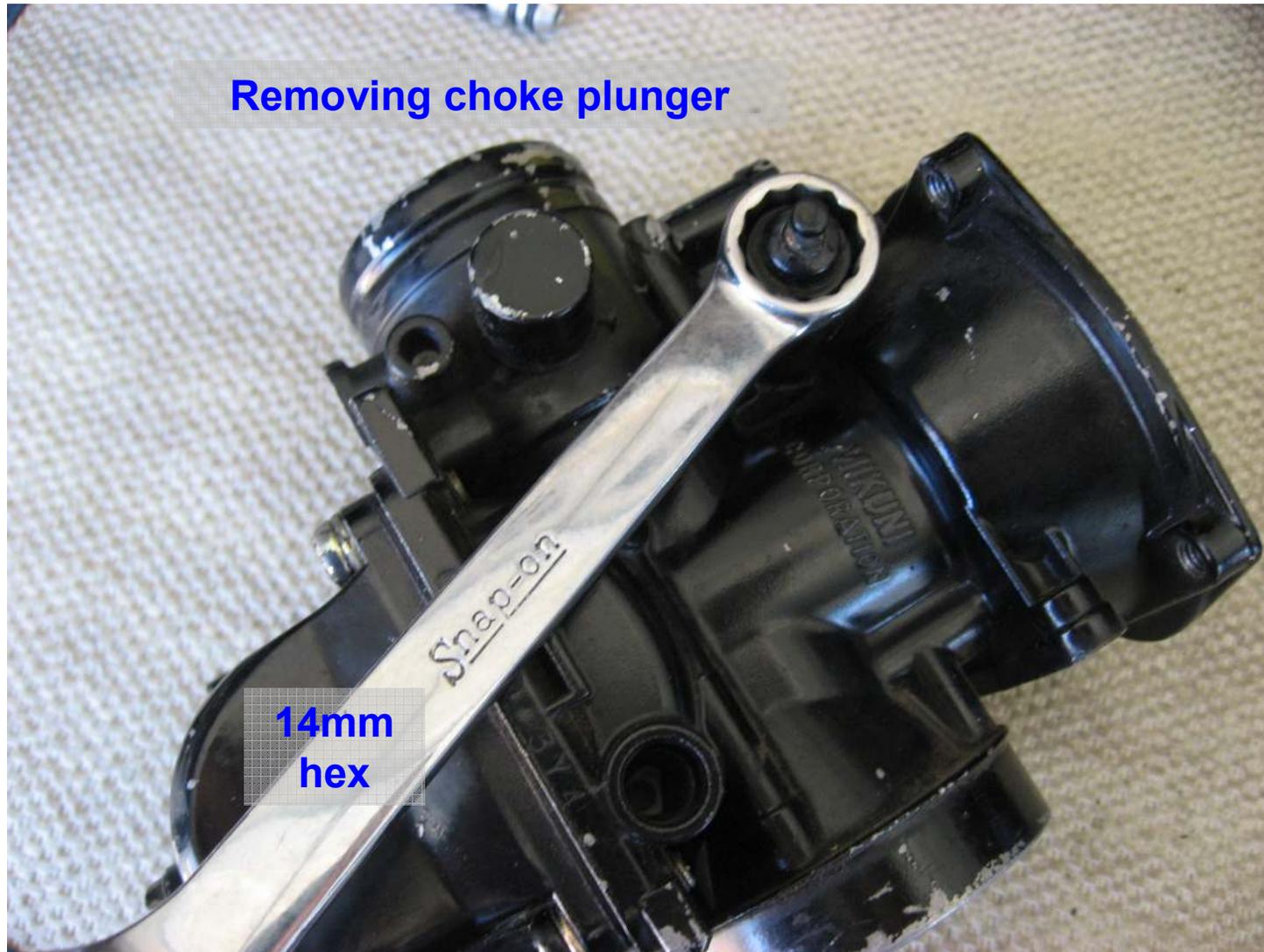


O-ring and washer often hang up inside the carb body and must be extracted from down in pilot screw tunnel

Bend piece of wire like this and go fishing



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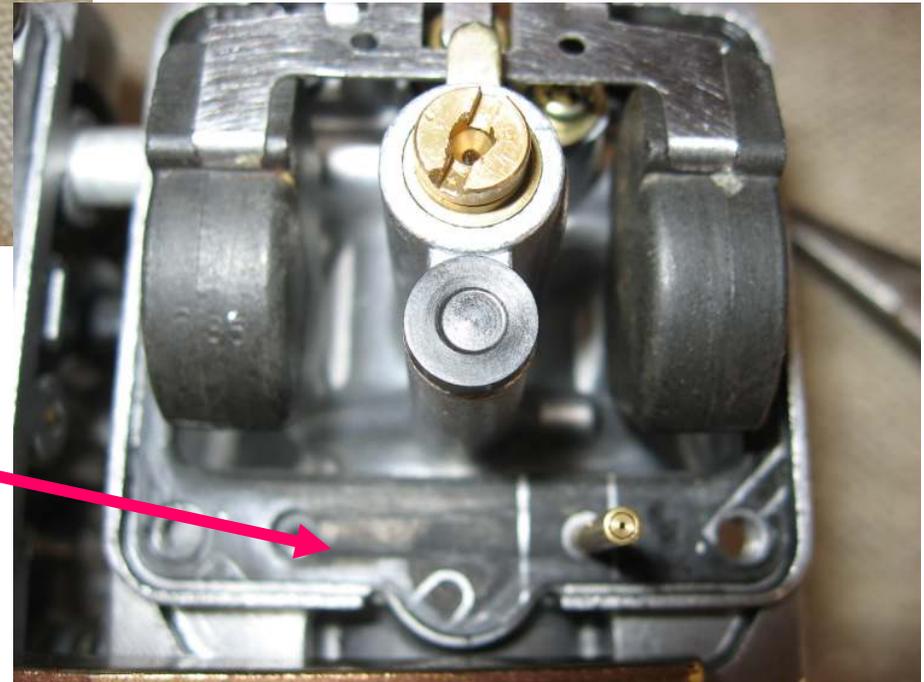


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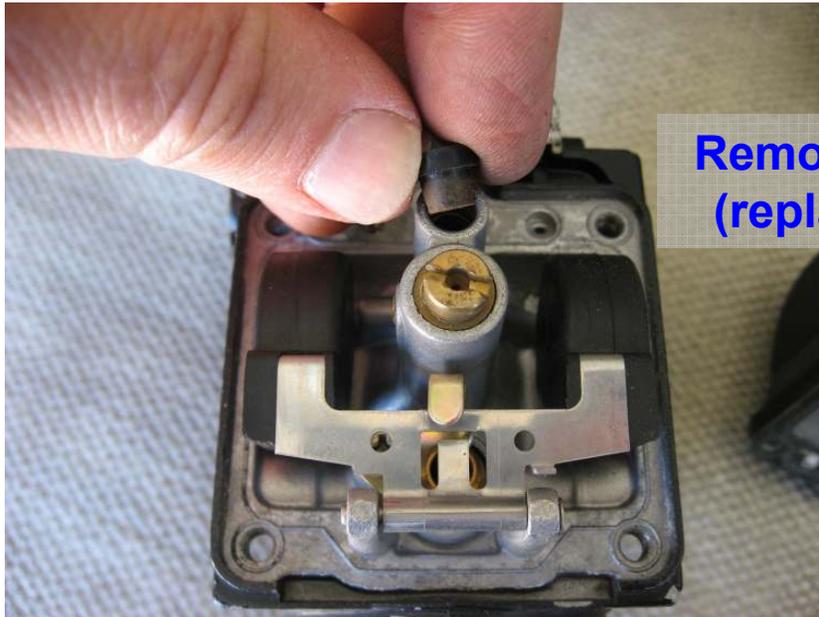


Remove screws and
then float bowl

Remove gasket
carefully and
try to salvage



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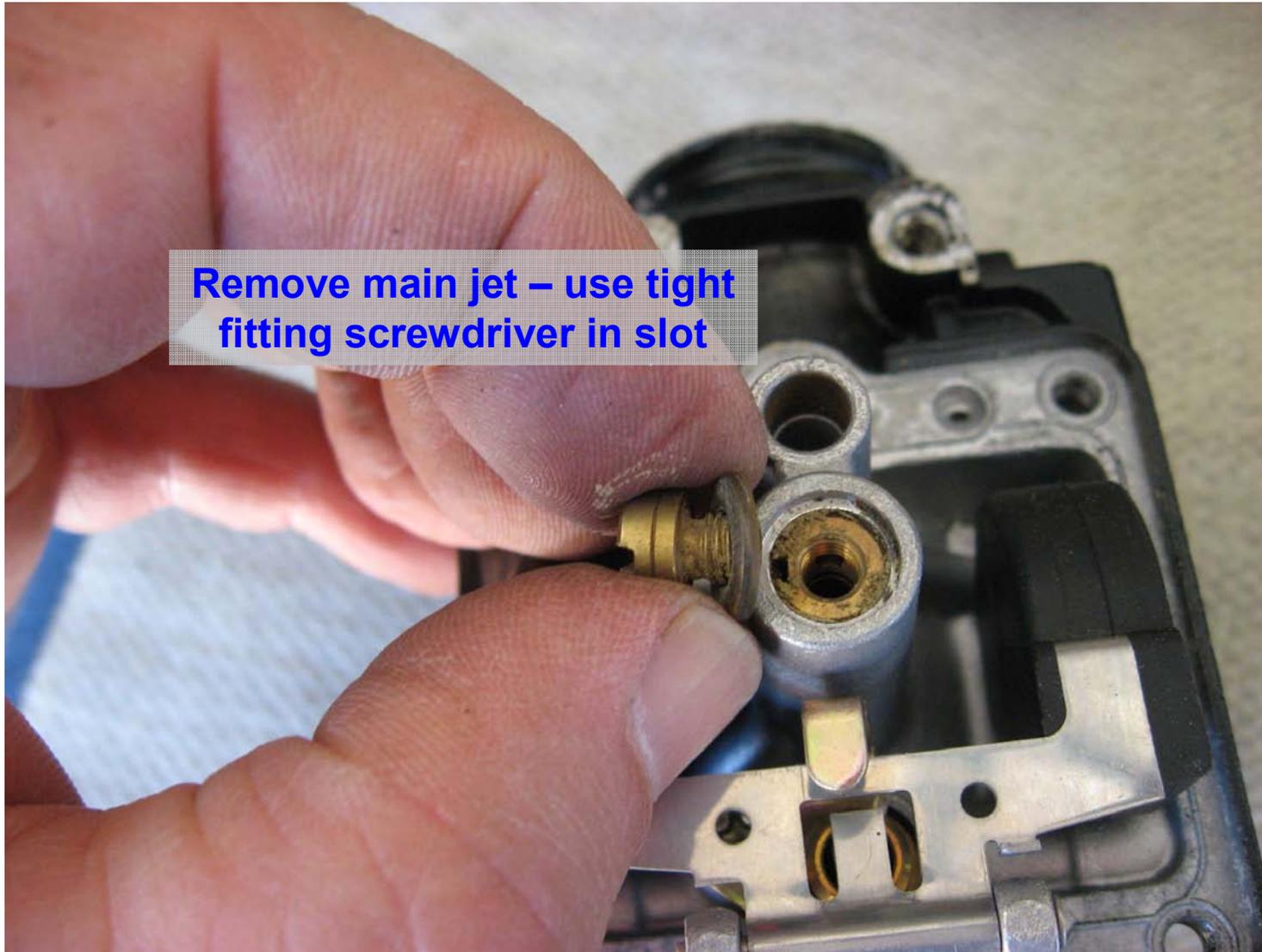


Remove pilot jet plug
(replace if petrified)

The pilot jet is located down in the recess tunnel under the plug. A tight fitting screwdriver is required to remove these jets. **Caution: do not strip slot in head.** If screw is tight, do not force. Use penetrating oil and heat, and take your time until the jet loosens.



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Pilot/main jets have number identifiers engraved on them. Comparing these numbers to those in the factory Suzuki service manual is recommended if the service history of the bike is unknown.

A small, cylindrical brass jet with a threaded top and a tapered bottom, lying on a white textured surface.

Pilot jet

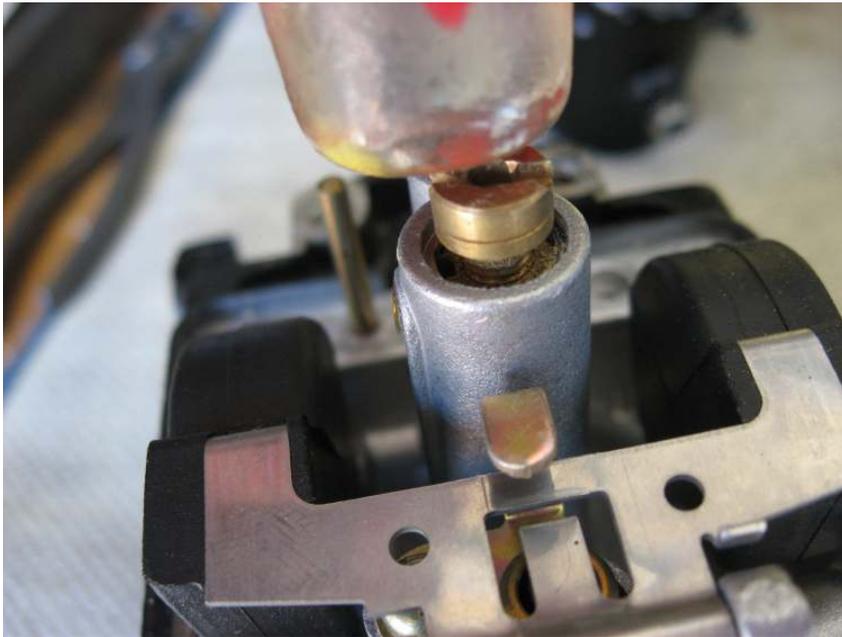
A small, black, cylindrical plastic or metal plug with a wider top flange, lying on a white textured surface.

Pilot jet plug

A larger brass jet with a wide, flat top and a threaded base, lying on a white textured surface next to its corresponding brass jet cap.

Main jet

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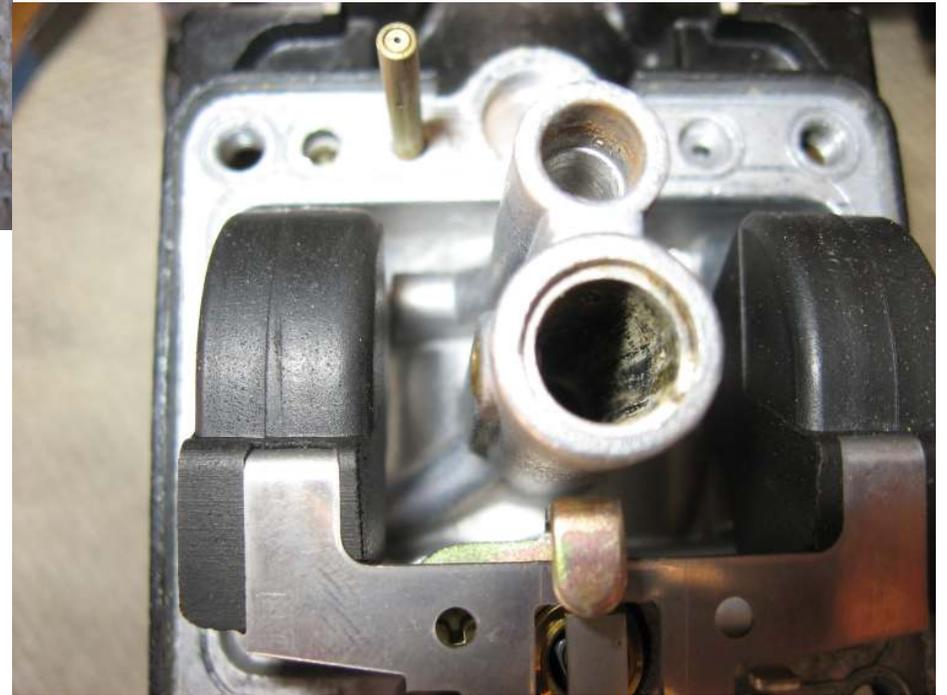
Insert main jet back into needle jet w/o washer and then push down using handle of screwdriver. Jet comes out from inside the carb throat.



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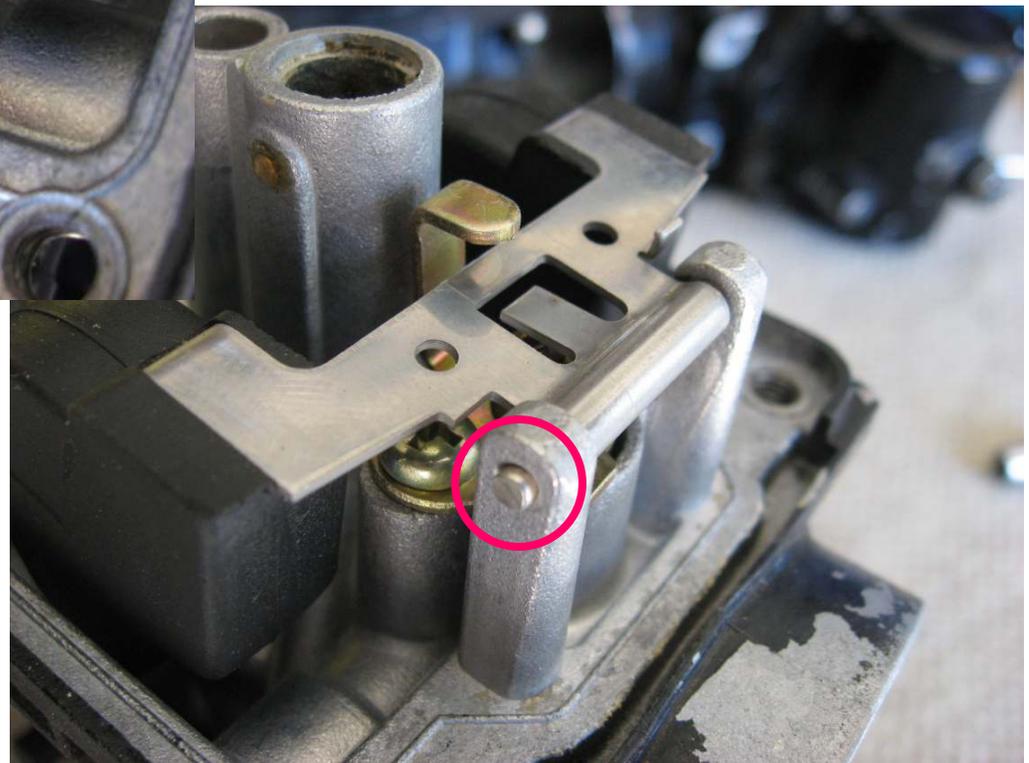
Needle jet removed



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Float pin has a nail-head detail on one end and round on the other



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5/32" socket or similar (1/4" drive)

Before removing the float pin we need to support the float post with a small socket positioned under nail head on pin.

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Gently tap the drift to remove the pin. **CAUTION: Do NOT use a lot of force or the float post will snap off.**



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Float removed

Float needle
removed



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Inspect the float needle and seat carefully. The spring on the needle must be smooth and the tip free of wear (if you feel a ridge on the tapered portion of the needle it needs to be replaced).

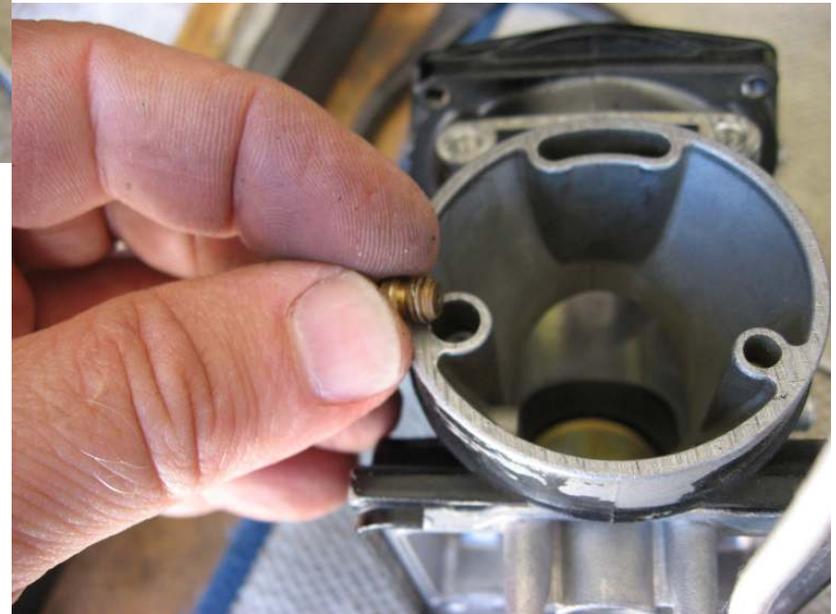
Use caution when removing float seat to assure brass seat is not crushed



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Remove pilot air jet



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At this point the carbs are fully disassembled and need to be cleaned. Load up your dip bucket and soak those parts! Do not soak the floats, carb diaphragms or any other plastic parts.

If your carb dip is fresh and the carbs are not overly dirty, a couple of hours dip time should suffice. For dirty carbs, and/or tired dip, it may take as long as 24 hours. I recommend the shortest necessary dip time to reduce expose of the throttle shaft seals from attack by the dip.

After dipping, rinse well in water. Hot water if you can get it, and consider scrubbing the parts with an old toothbrush and soap as well.

Sometimes the carbs develop a white residue after drying so consider spraying the carbs with WD-40, particularly if you don't have compressed air. Dry using compressed air if possible or just wait a while.

Last step is to use carb spray and shoot it though all the various passages to make sure they are open. Pay attention to the choke pickup tube, passage in the float bowl, and pilot jets. There are very small passages in these parts that need to be verified as clean.

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The factory black paint on these GS1150 carbs won't survive the dip process. I knew this would happen so the paint was stripped before dipping using paint stripper and mineral spirits.

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Spray in here...

Spray should come out here



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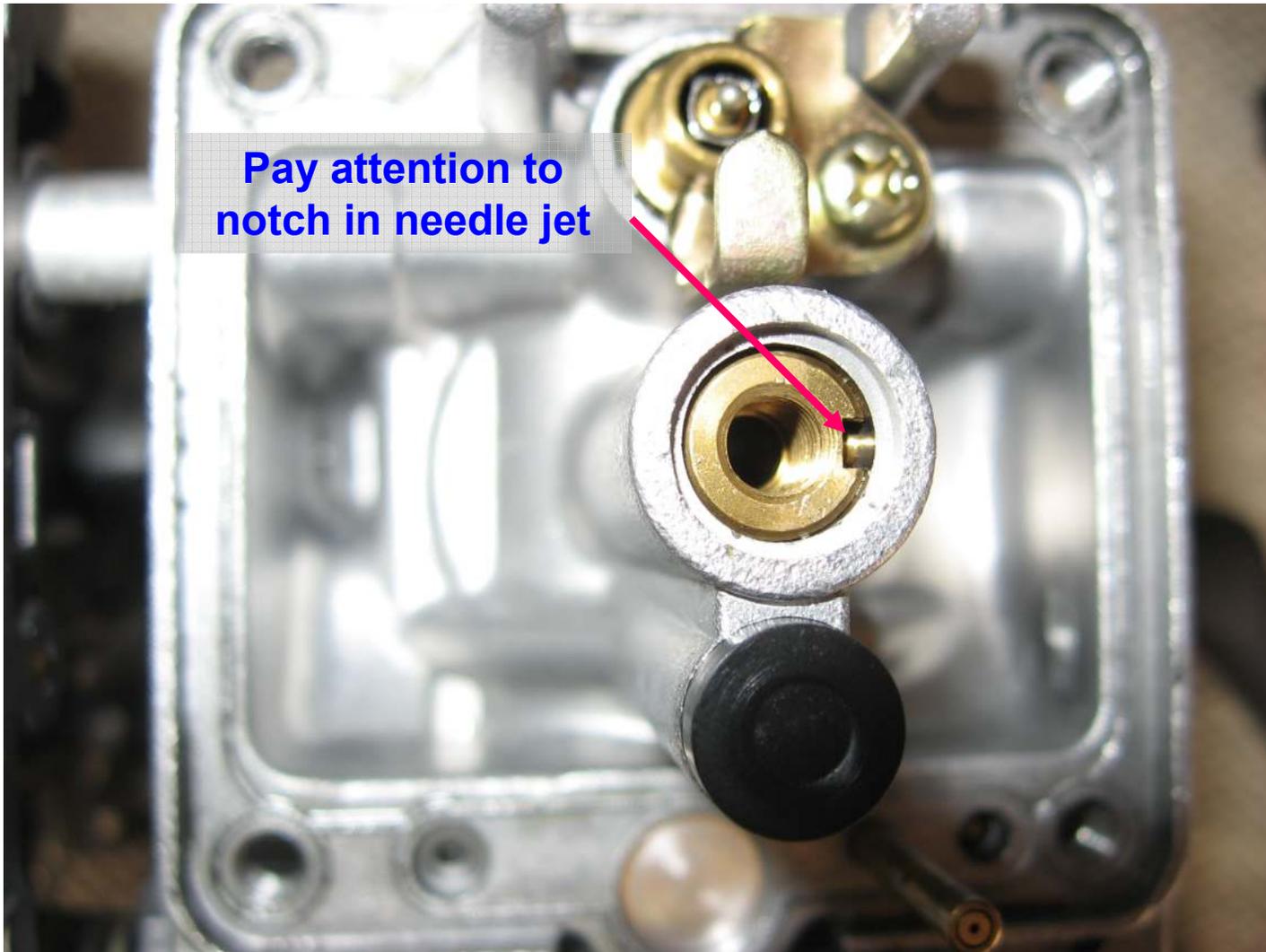


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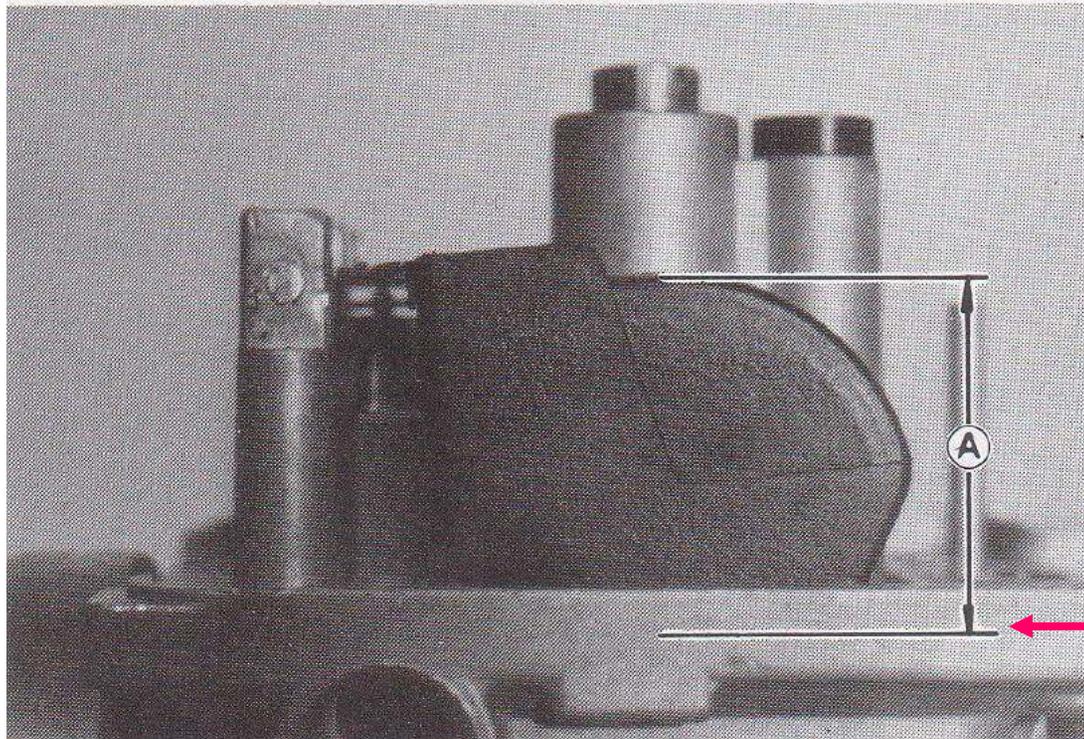
Carb reassembly is same as disassembly. The rest of this tutorial is to highlight key assembly details.



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Float height for BS32 & BS34 carbs is 22.4 mm. The BS36's shown in this tutorial are to be set to 21.4 mm.

Float height (A)	22.4 ± 1.0 mm (0.88 ± 0.04 in)
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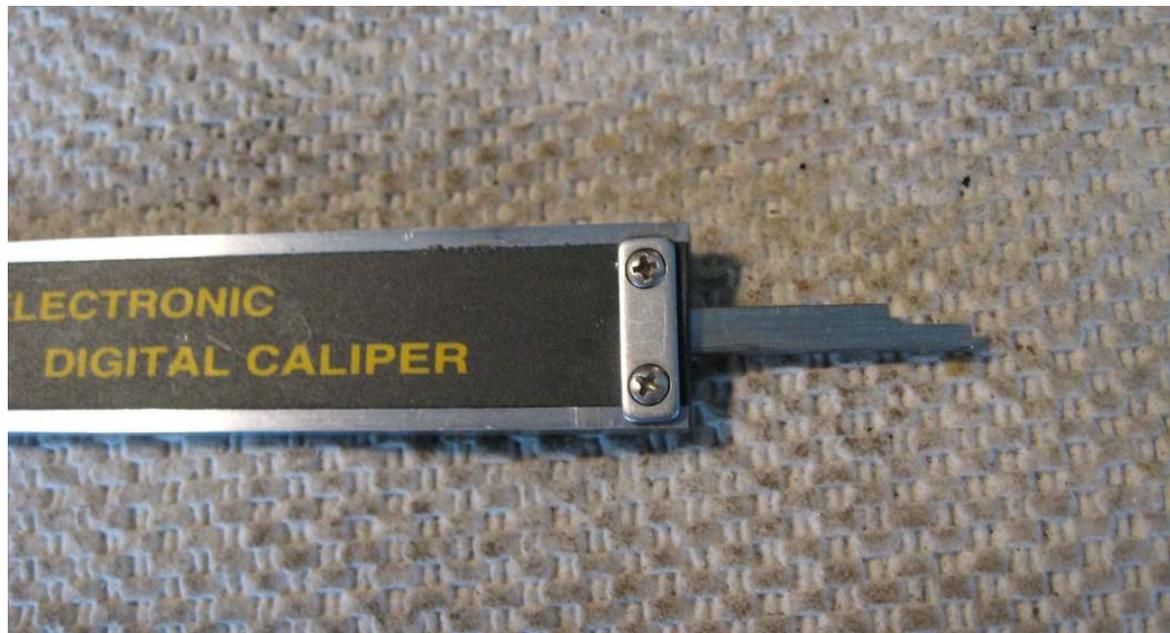


This line represents the top of the carbs gasket surface (no gasket installed)

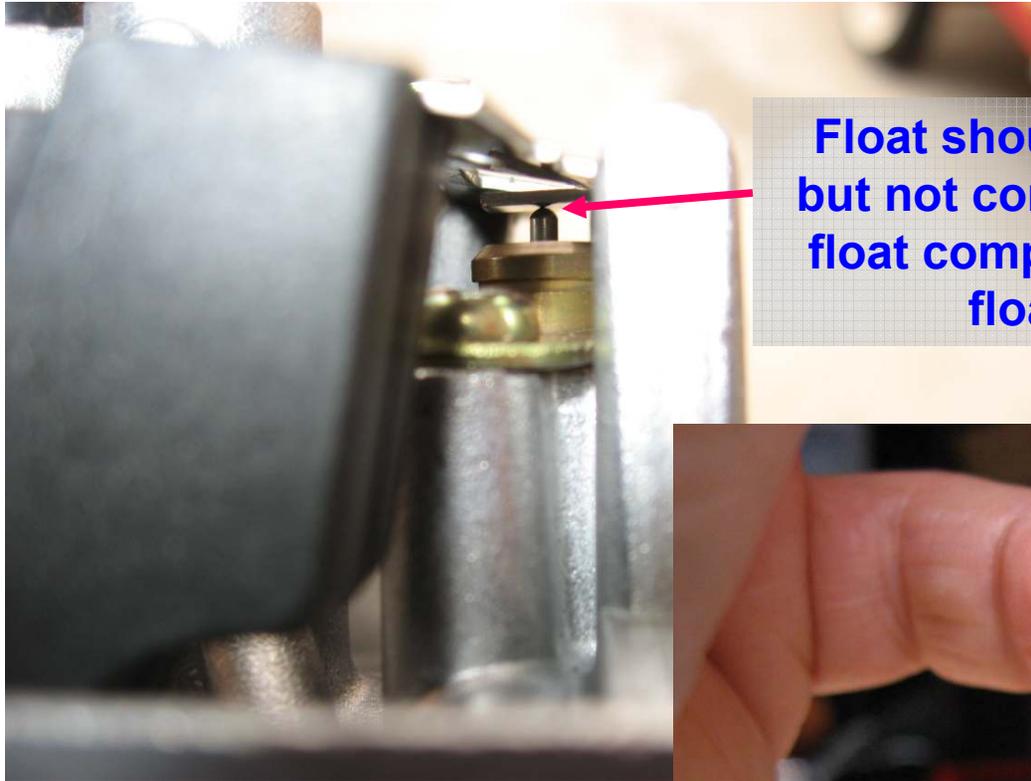
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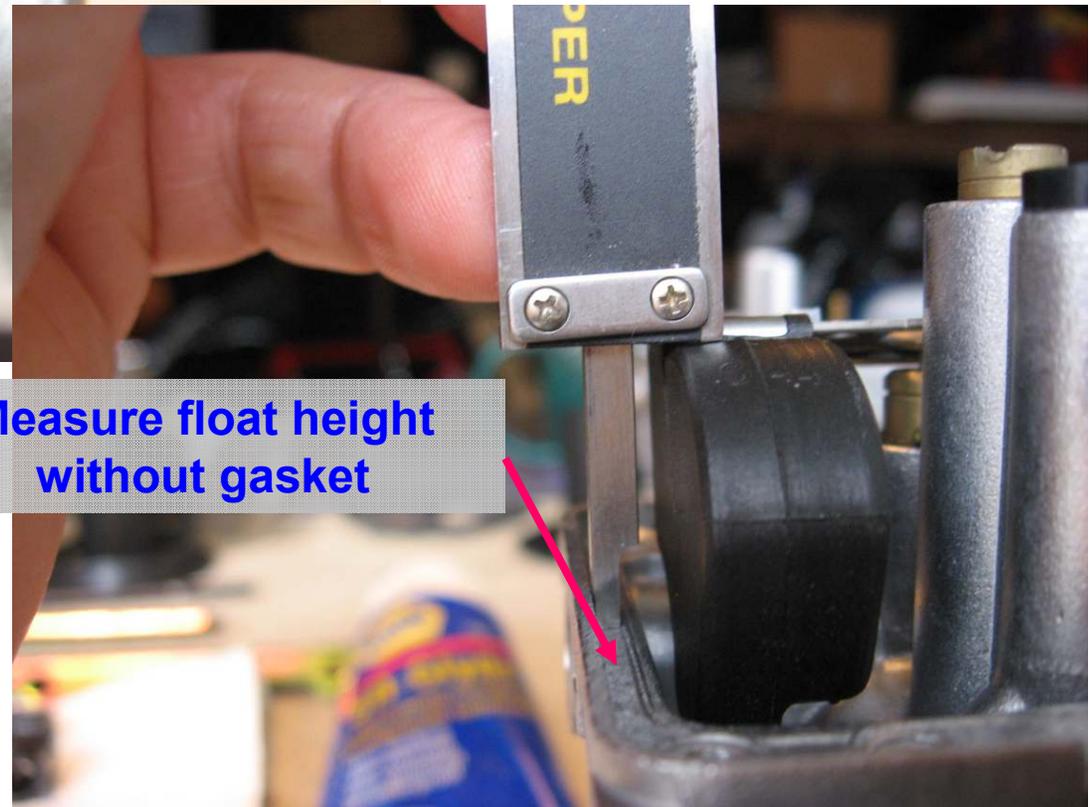
Setting float height with calipers



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Float should just touch float needle, but not compress spring. If weight of float compress spring either hold up float or replace needle



Measure float height without gasket

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Forming the diaphragm in this way makes it easier to keep the lip in the groove on top of the carbs while installing top cap.



Hold up slide with finger then install cap

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Measuring fuel level using home made tool –
drill hole though old float bowl drain plug and
epoxy tube on top



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Feed fuel in until the float stops the flow. An elevated reservoir is recommended (works better than bottle as shown)



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Set carb angle same as on the bike. 1150 carbs sit pretty much level.



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This step is not necessary unless your carbs run lean in the midrange.



Remove needle from slide using special C-clip pliers



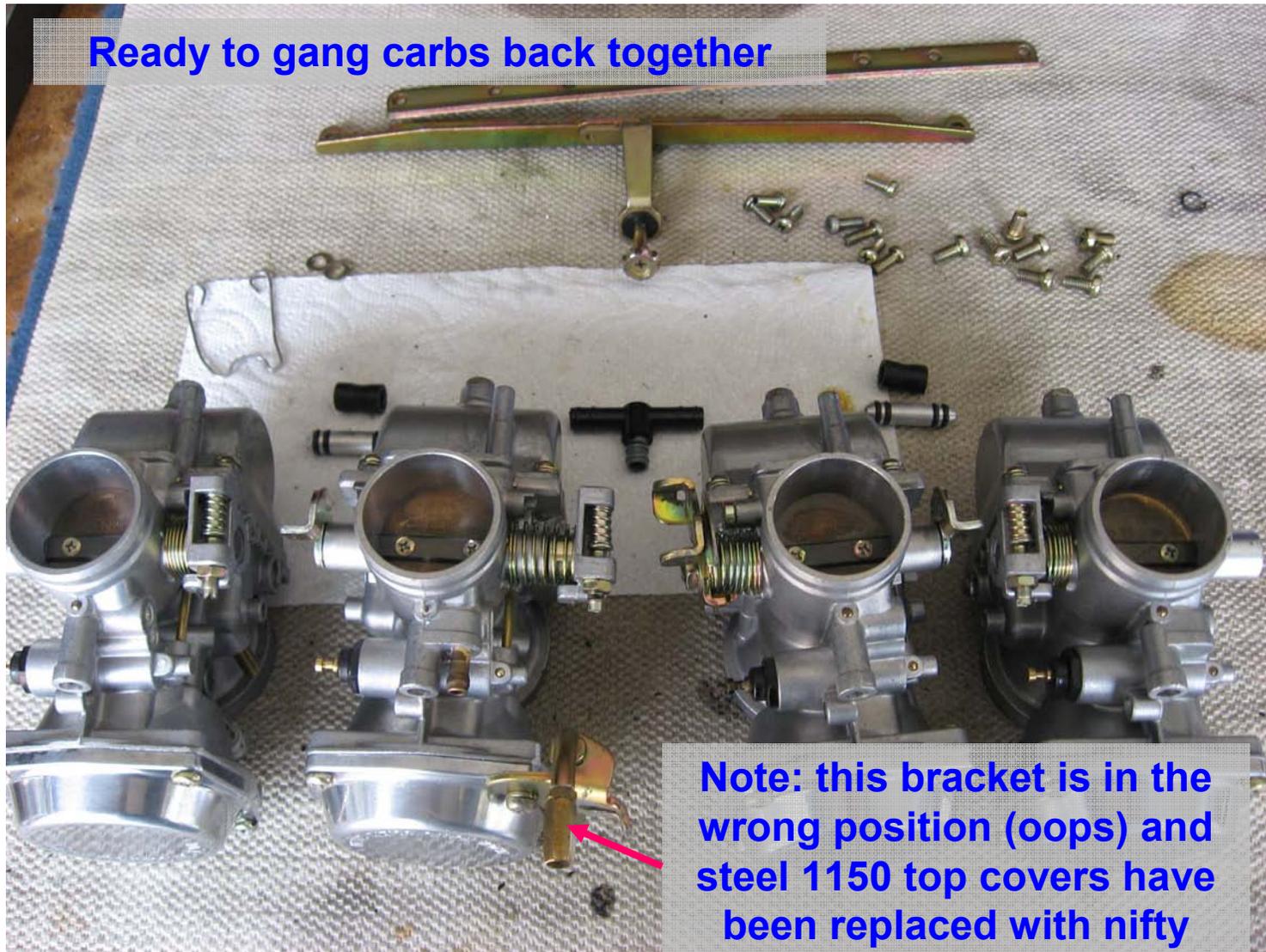
Note: plastic spacer (see next slide)

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Reducing the thickness of the plastic spacer on top of the needle clip results in a richer mixture. Old plastic spacer can be sanded down or replaced with a washer stack thinner than original spacer.

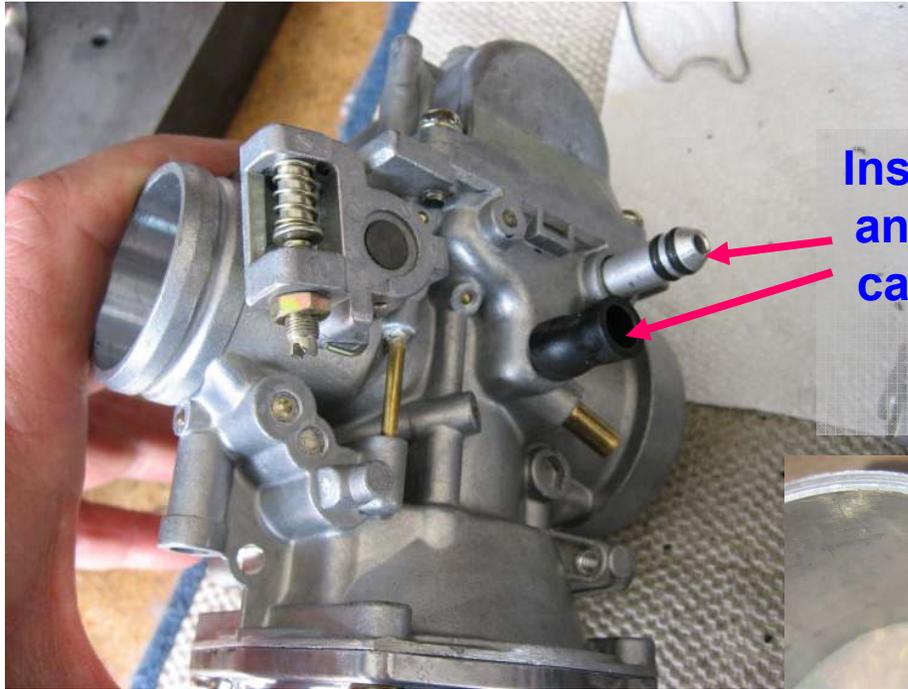
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Ready to gang carbs back together

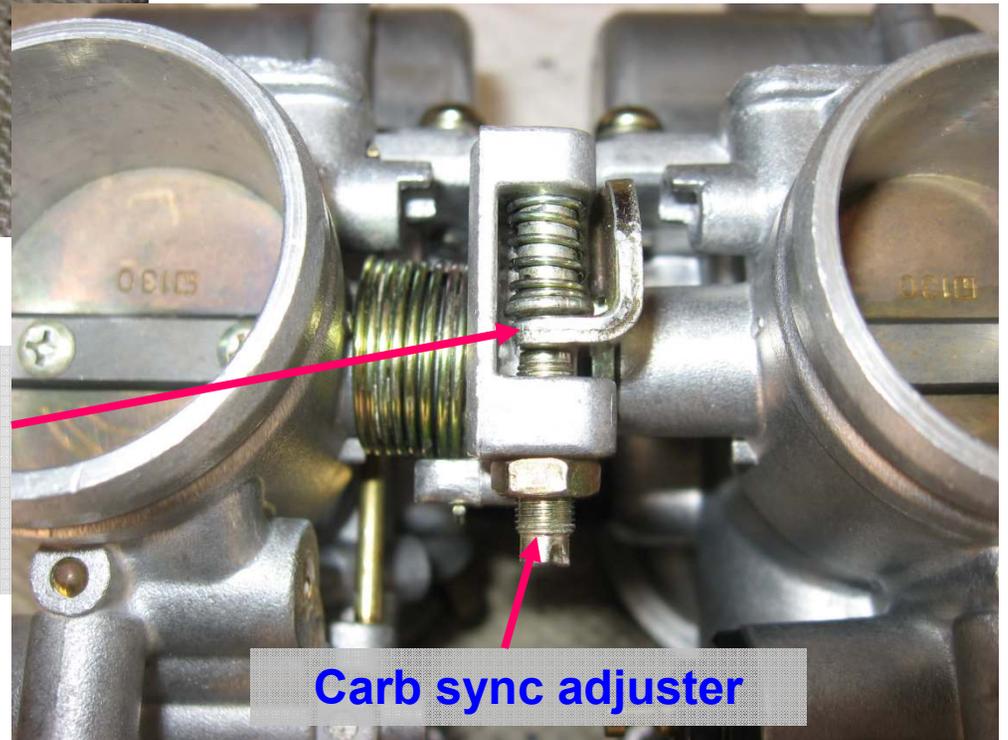
Note: this bracket is in the wrong position (oops) and steel 1150 top covers have been replaced with nifty aluminum ones.

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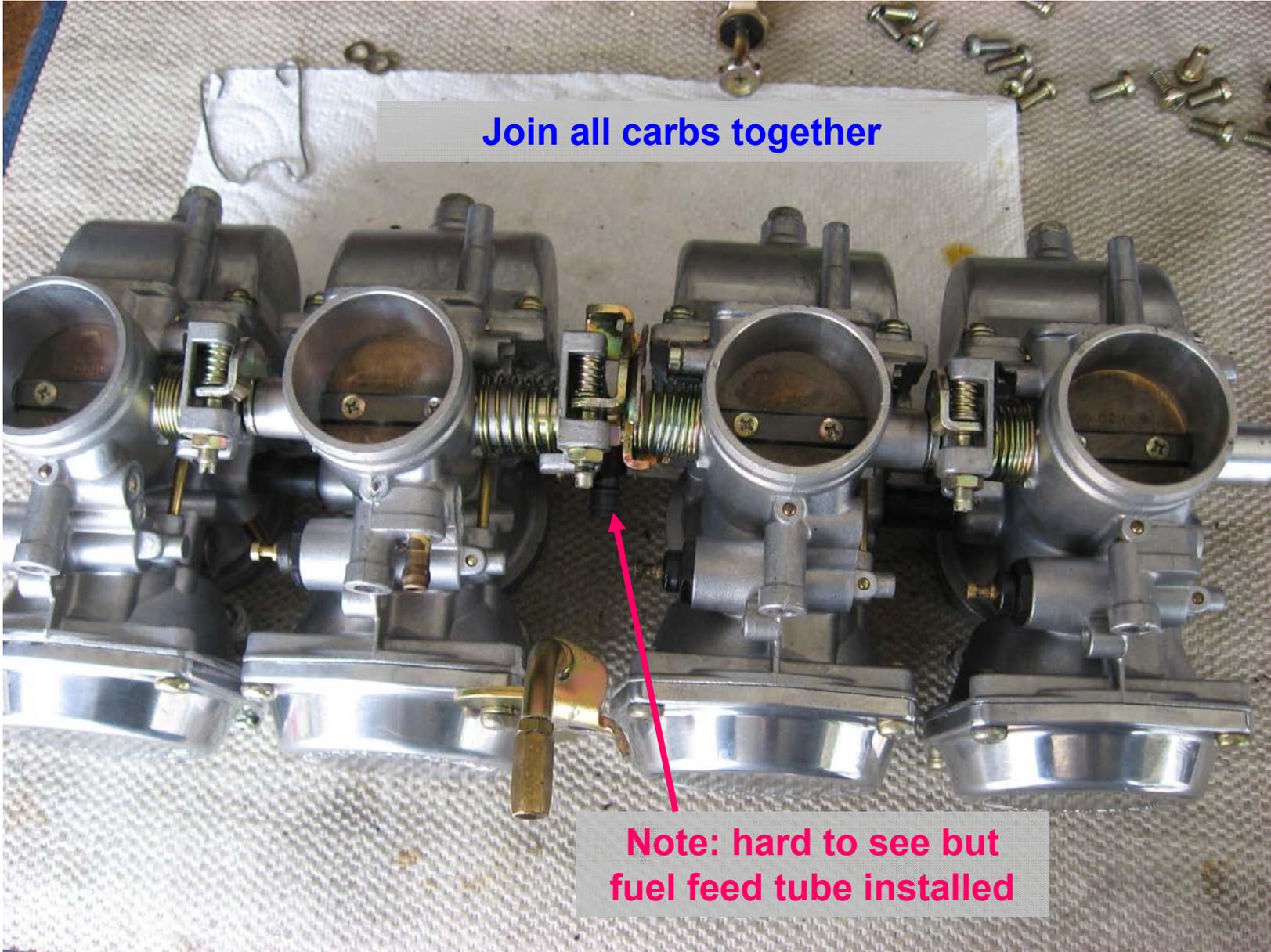
Install fuel transfer tubes and vent tube into outer carb bodies (1 & 4), and fuel inlet T-fitting between 2 & 3

Join carbs together paying attention to how throttle sync components fit together



Carb sync adjuster

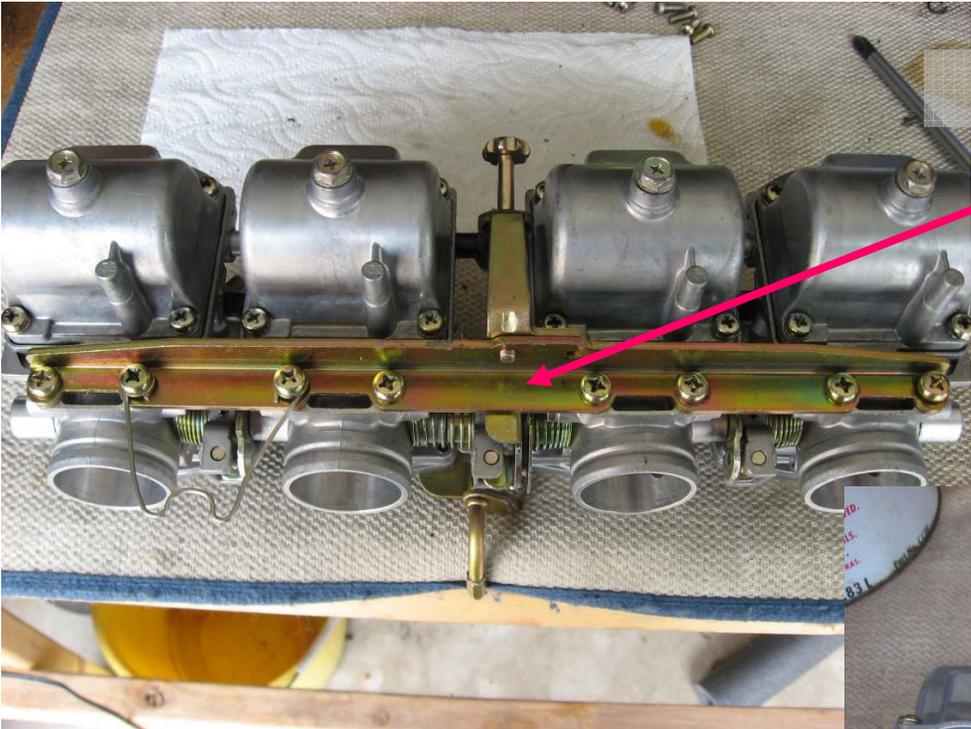
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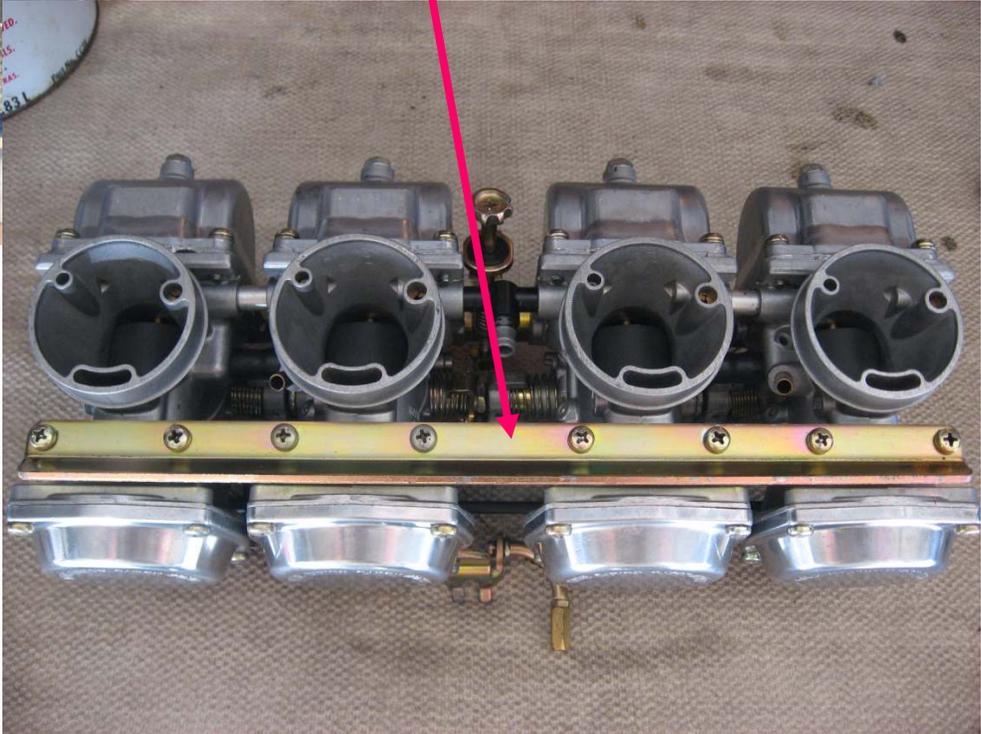
Join all carbs together

Note: hard to see but fuel feed tube installed

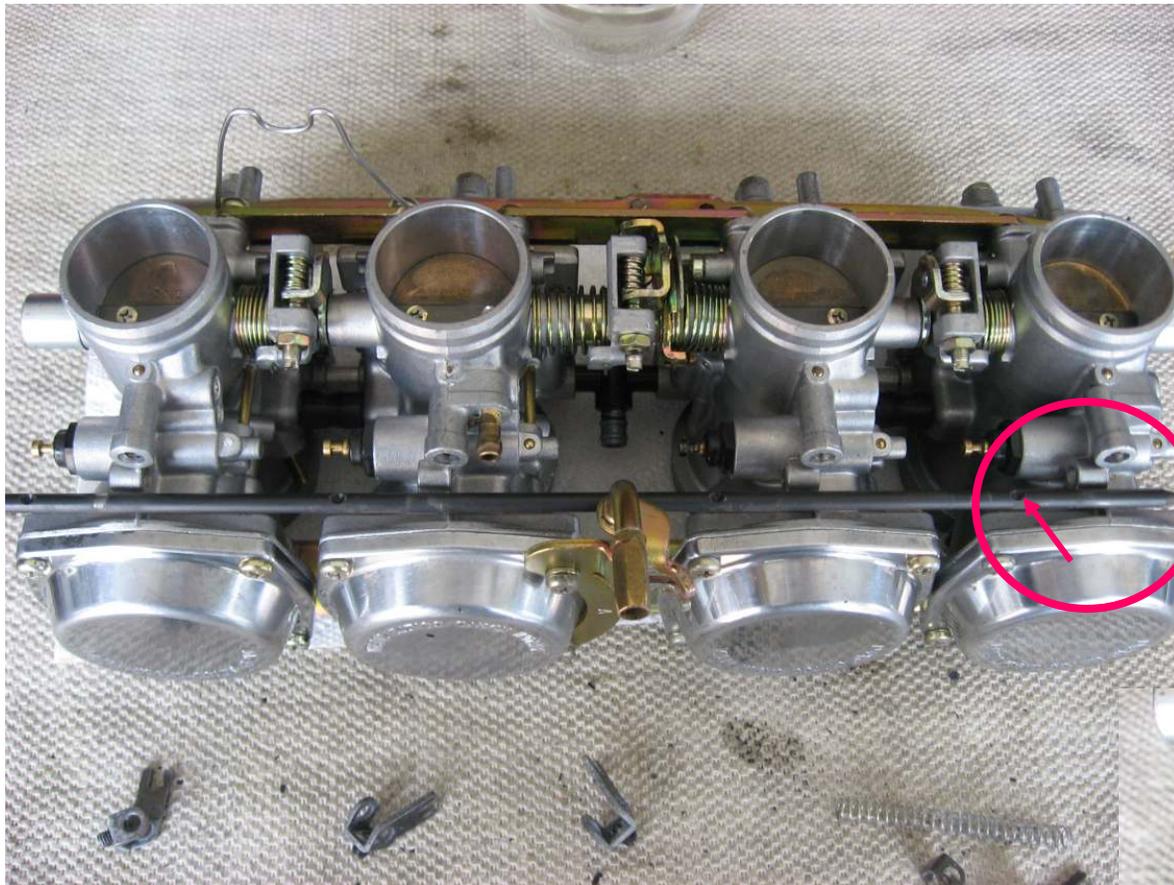
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Install gang plates & screws

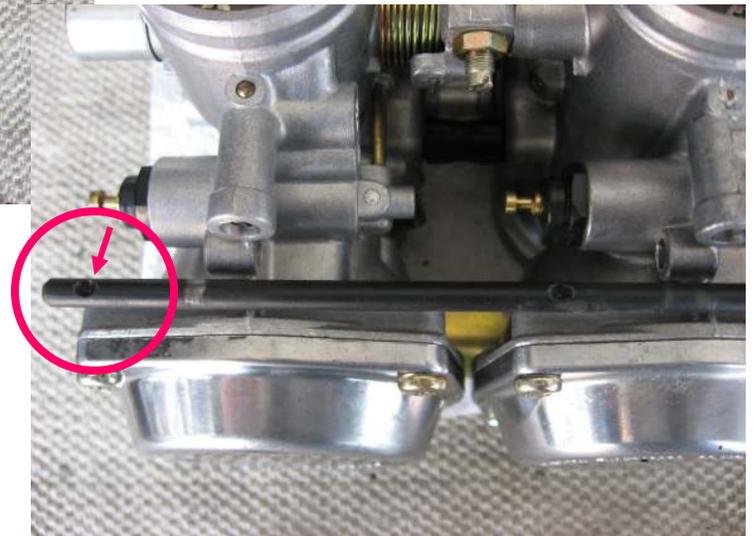


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Note orientation of rod

Before installing choke rod take note of proper orientation of depressions locking the actuator forks.



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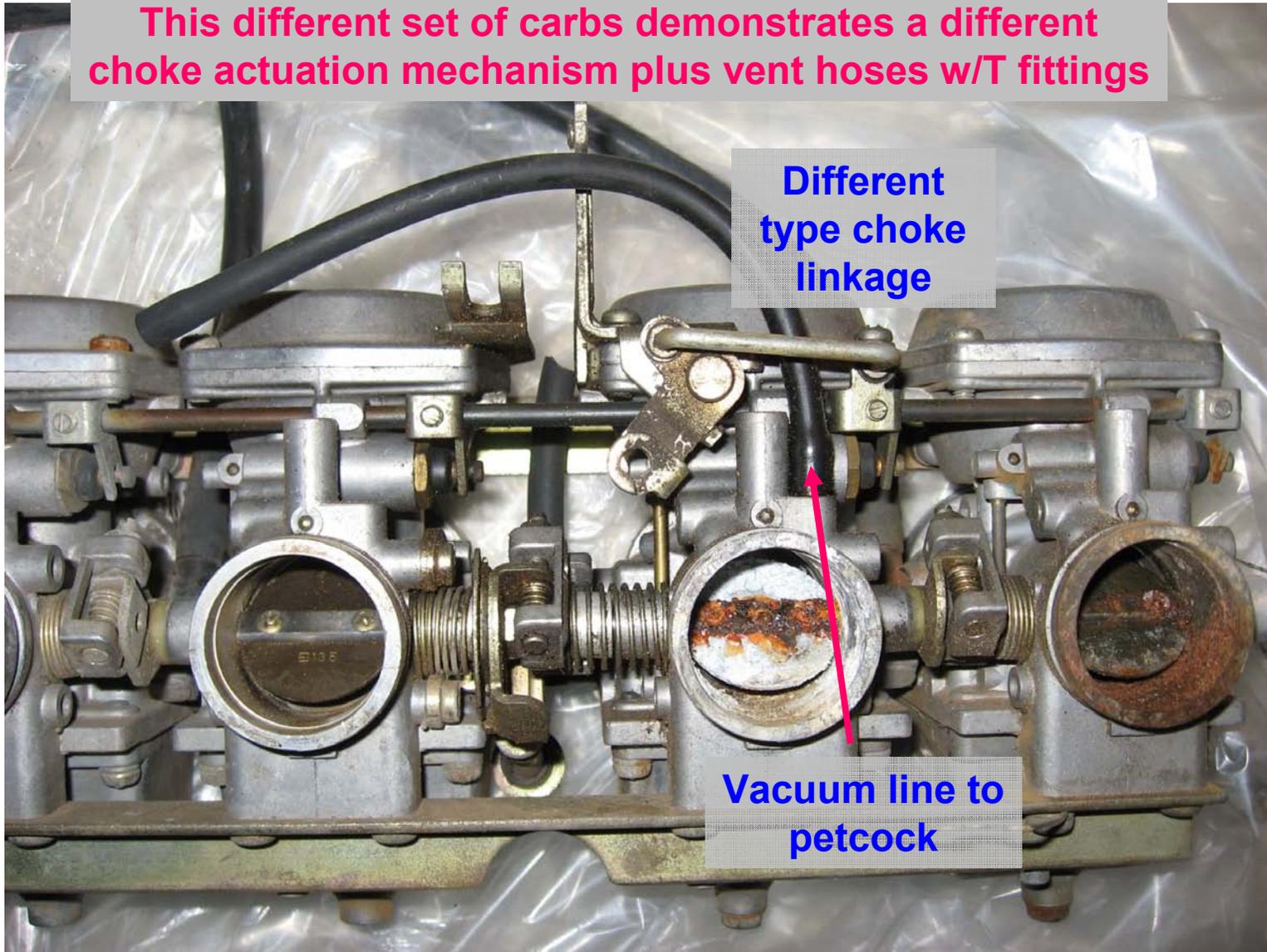
Photo showing orientation of
choke spring and cable
attachment components

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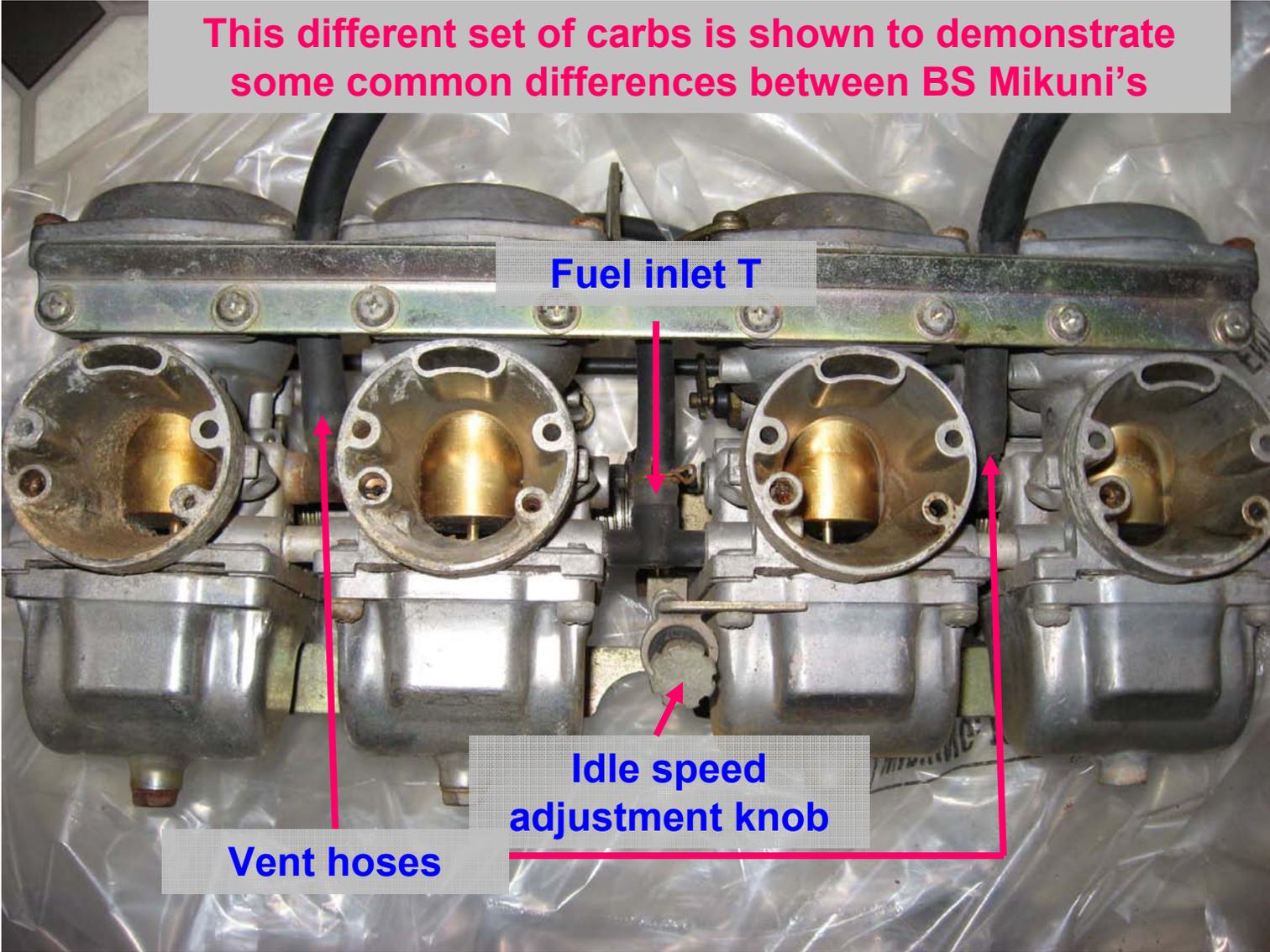
This different set of carbs demonstrates a different choke actuation mechanism plus vent hoses w/T fittings

Different type choke linkage

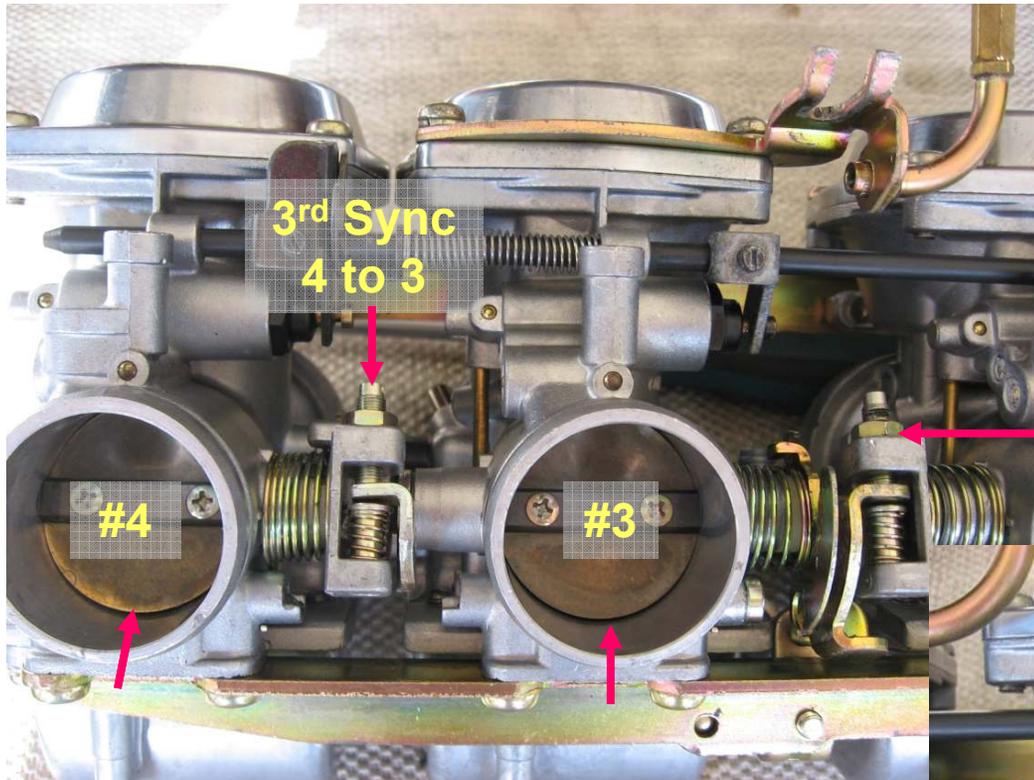
Vacuum line to petcock



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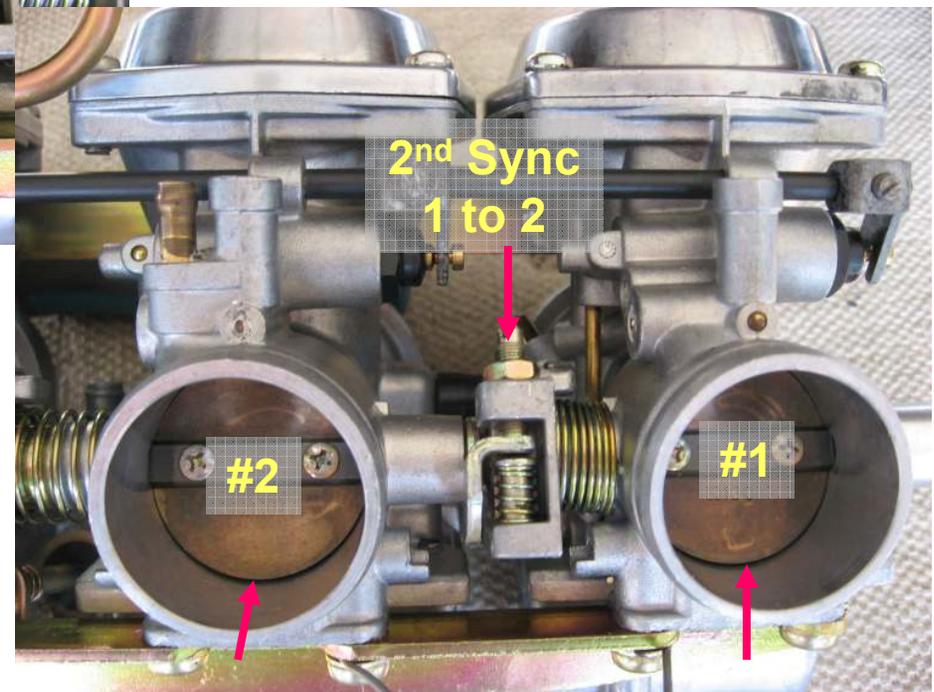
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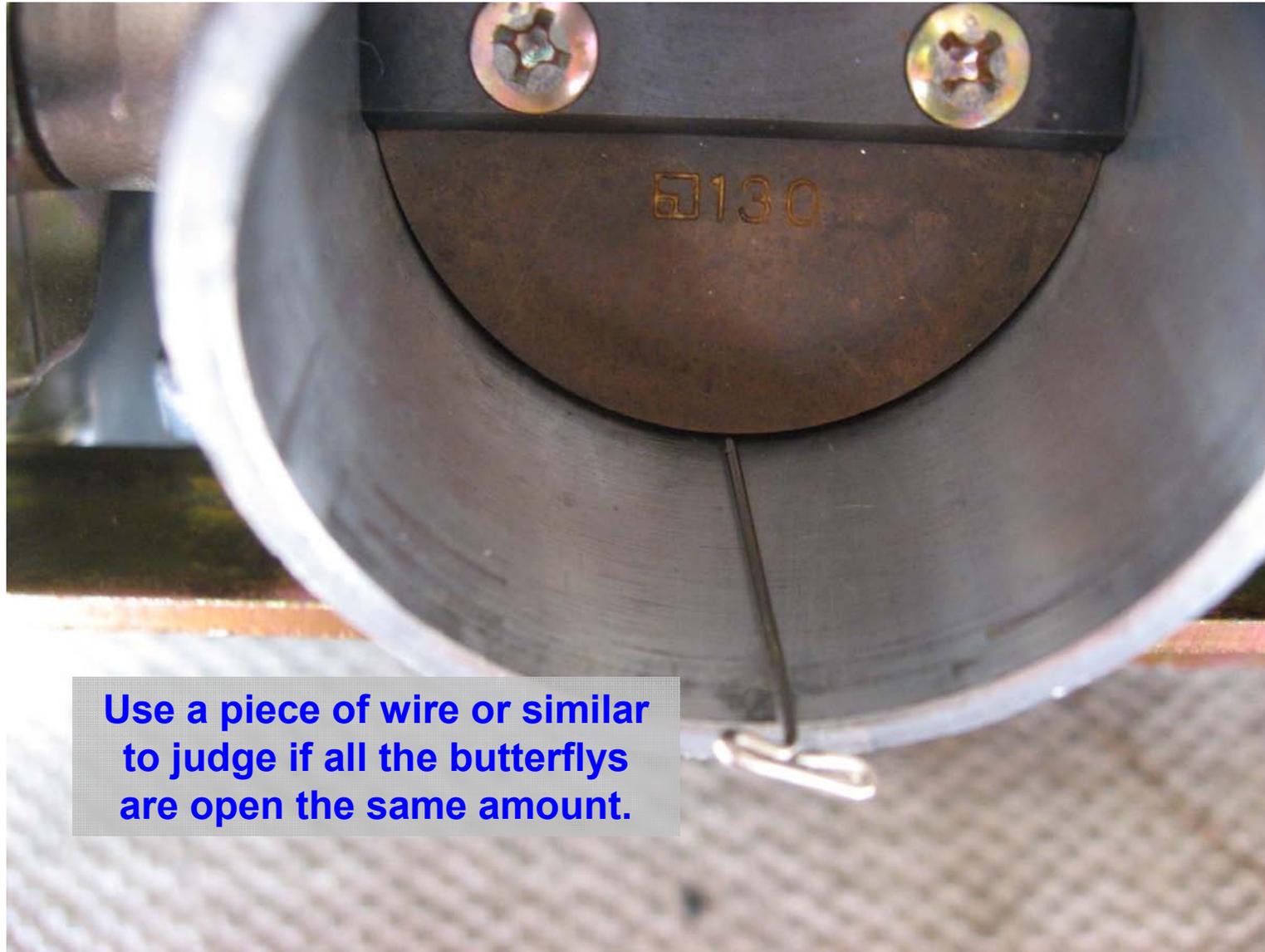
Bench sync is good to perform, but vacuum sync is more important after engine is running

First sync 2 - 3 together adjusting here

Perform bench sync: all butterfly valves should be open the same amount. Using a piece of wire or similar under the butterfly will help judge sync.

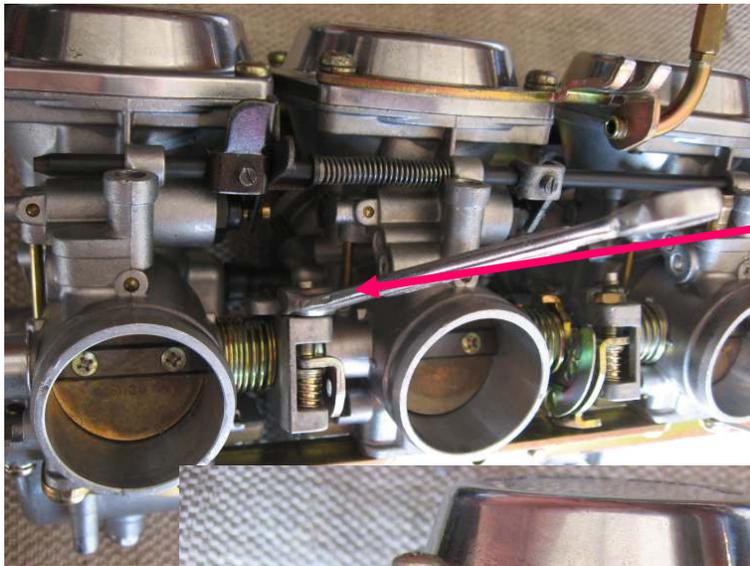


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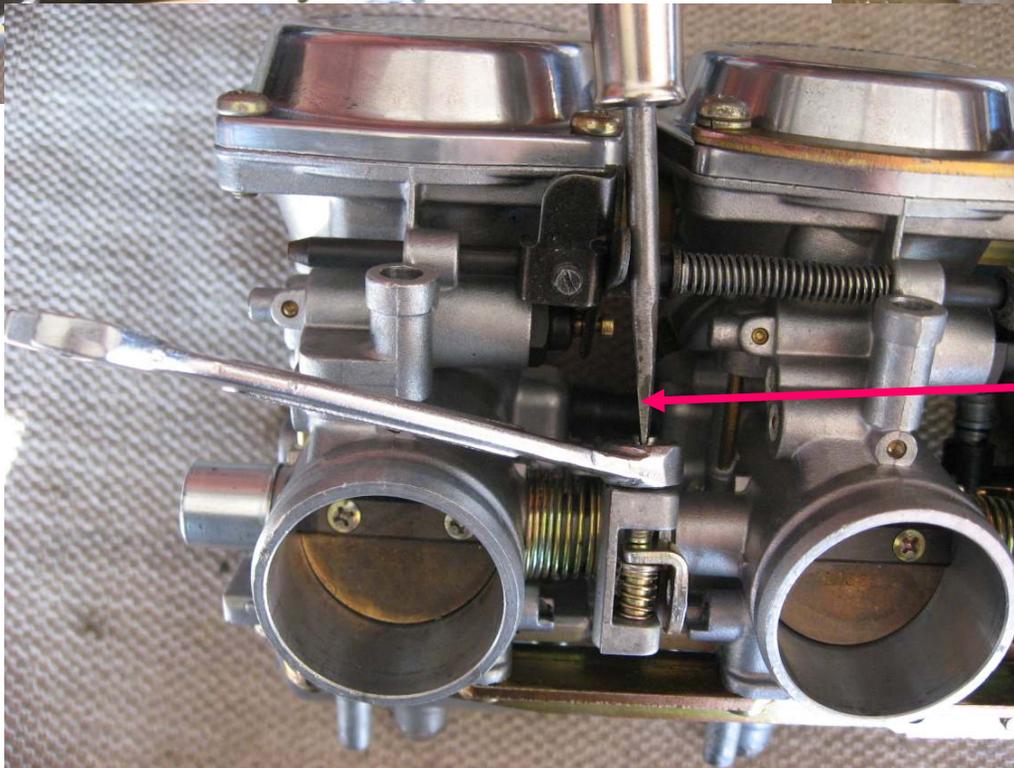
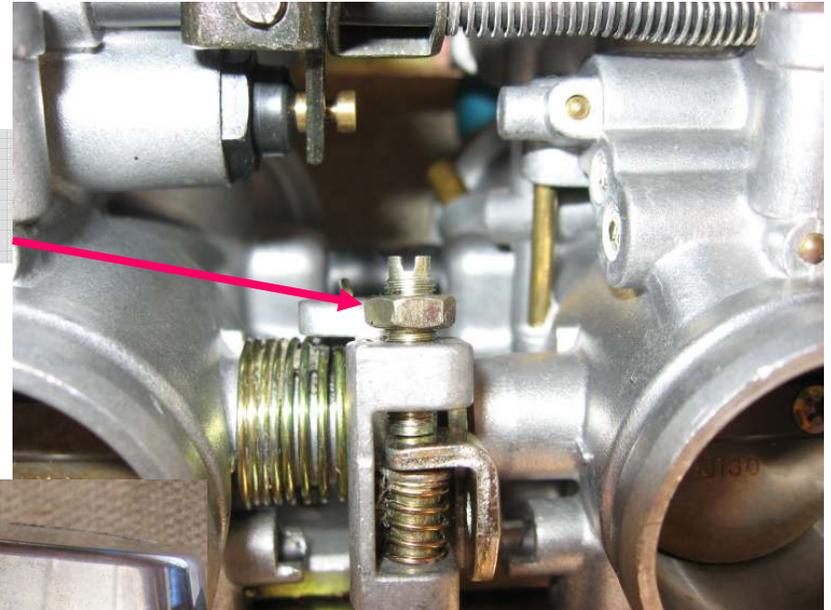


Use a piece of wire or similar to judge if all the butterflies are open the same amount.

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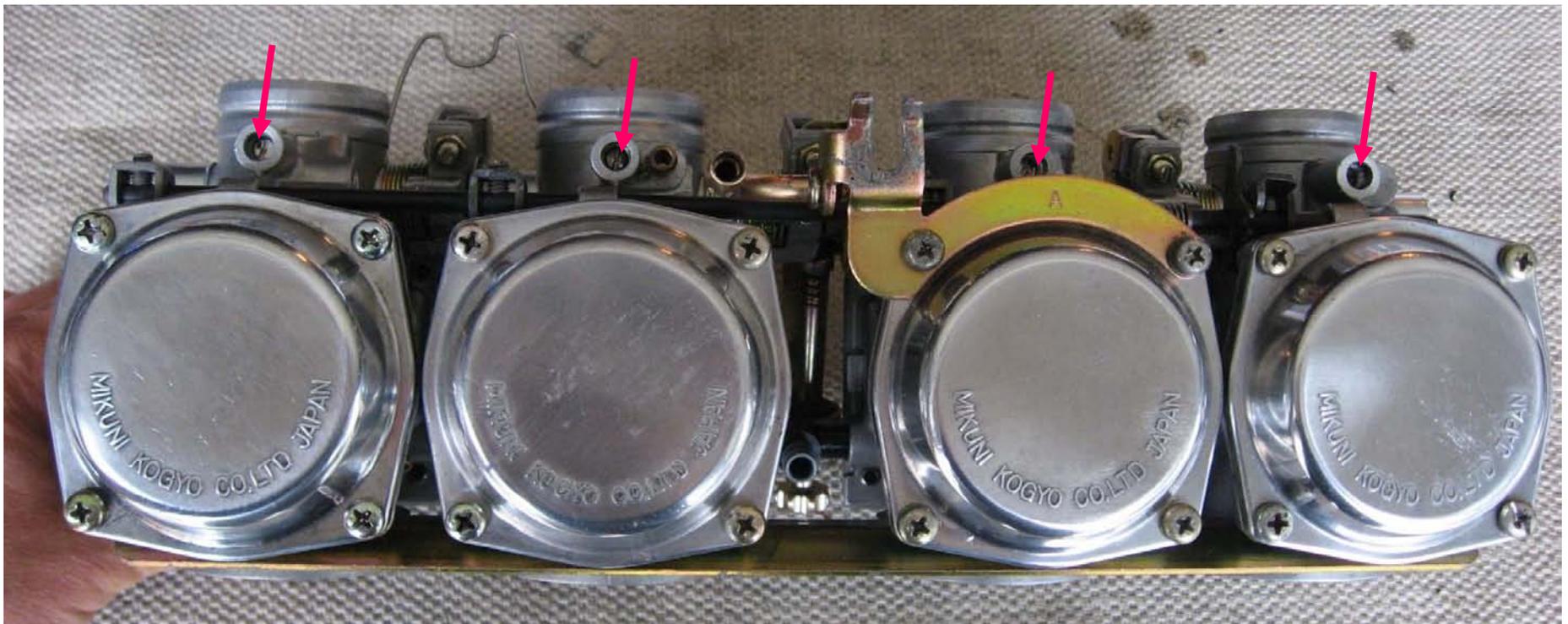
Loosen
locknut



Adjust sync with
screwdriver and then
hold screw while
tightening back
down locknut

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Adjust pilot screws by carefully screwing them in all the way until bottomed, then open them back up, keeping track of how far you turn them. 1 turn = 360 degrees. Set to 2 ½ turns open at first and fine tune from there (as detailed on the following slide)



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Congratulations on a job well done!!!

A few random notes...

- The bike will run very poorly, or not at all, without the airbox installed. The airbox also needs to be properly sealed, so consider replacing any deteriorated foam seals as needed.
- If pod air filters are installed the carbs will have to be rejetted to match the low restriction airflow. A header may also trigger the need to rejet, but not to the extent pods will. Dynojet kits are a popular choice.
- Fine tune the carbs (engine fully warmed up and idling) by adjust the pilot screws in roughly equal amounts until the highest idle speed is achieved. If the engine speed doesn't respond to this tweak, leave them at 2.5 turns.
- If the engine stumbles just off idle, try opening the pilot screws another ½ turn and try again. The maximum number of open turns is four, otherwise you should get larger pilot jets.
- If the engine surges or feels like it's running out of gas when cruising at steady speed, such as on the freeway, opening the pilot screw more and/or shimming the needles may help
- Vacuum sync is critical. An erratic idle is often the result of poor sync
- If the idle speed increases significantly when the engine gets hot, or hangs and doesn't drop down quickly from higher rpm, there is likely a vacuum leak in the system or the pilot screws are set too lean.