



M1800Riders

By **SORCIER16**

l'embrayage hydraulique

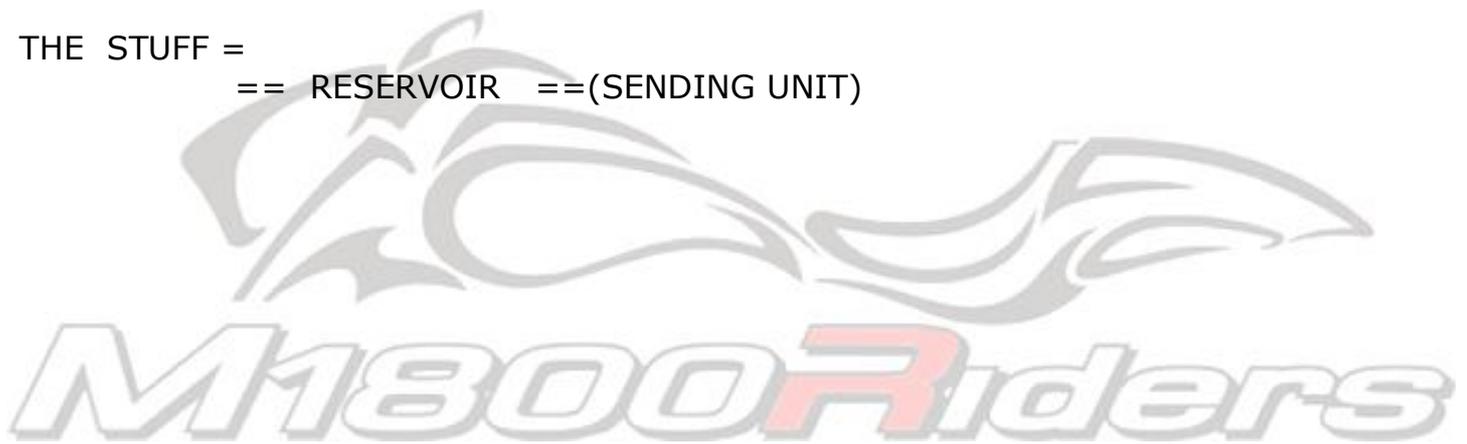


We’ve been talking about this for a while , we’ve looked for many solutions , we came To the conclusion that the best way to do this , was to do as they did on the American site M109Rider.com , So Freddo and I decided to attack this project , I took care of getting the Suzuki parts Needed , and Freddo ordered the other stuff from the United states , For this project we need these parts :

1 hydraulic cylinder (SENDING UNIT) = ref 59800-10f20-000 = 160 euros hors taxe
1 lever = ref 57500-10f10-000 =42.43 hors taxe
1 contactor = ref 57560-10f00-000 14.48 hors taxe
1 kit (receiver)ordered from the states price around 150 euros shipped
That’s all , but already the prices can discourage many.
So this project would first be performed on MY bike ...

First thing to do , stick the bike lift under the bike from the right side , Because most of the work is done on left side , you don’t want to have the lift in the way all the time , or even the kickstand .

THE STUFF =
== RESERVOIR ==(SENDING UNIT)





== LEVER ==
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==HERE is the CONTACTOR ==

Part for stock risers , or even 1 inch Risers ... 156.42euro

http://www.ebay.com/itm/140743513542?_trksid=p3984.m1423.l2649&item=140...

Here is part for bikes with 2 or 3 inch risers : 156.42euro

<http://www.ebay.com/itm/Suzuki-M109R-M1800R-Hydraulic-Clutch-Slave-Cylinder...>

THIS UNIT WILL BE REFERED TO AS THE " RECEIVER "



== THE RECEIVER ===

Hooked In « lower clutch lever »



== RECEIVER INSTALLED ===

Everybody should be able to put the bike up on the lift ...



REMOVE THE 3 ALLEN BOLT #4 TO REMOVE FRONT LEFT SIDE COVER .



AFTER THAT , TIME TO REMOVE STUFF AT THE TOP
REMOVE CLUTCH CABLE , LEVER , SWITCH HOUSING , ETC .



WHEN YOU ARE LEFT WITH NOTHING ON THE HANDLEBAR , YOU ARE ON YOUR WAY.



NOW IS THE TIME TO ATTACH THE BOTTOM PART OF THE NEW OIL LINE TO THE TOP OF THE OLD CLUTCH CABLE ,IN THIS PICTURE IT IS DONE WITH A LITTLE STEEL CABLE



TIME TO START

TIME TO START TO INSTALL STUFF BACK ON THE HANDLEBAR

THE SENDING UNIT , THE SWITCH HOUSING , LEVER , AND HANDLE



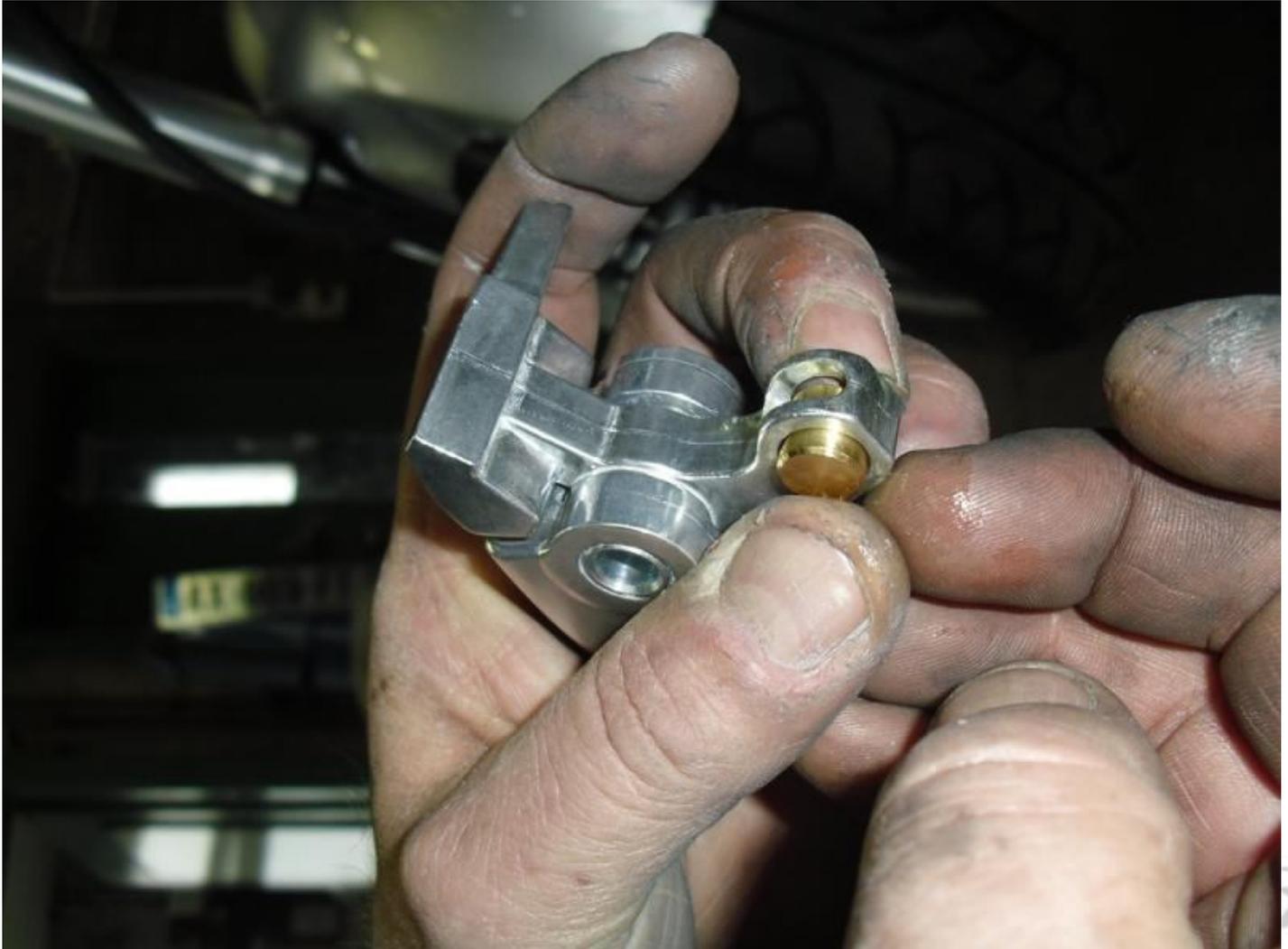


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DON'T FORGET THE LITTLE BRONZ PUSH PIN PICTURED HERE .





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WHEN THE NEW OIL LINE WAS ATTACHED TO THE OLD CLUTCH CABLE WITH THE STEEL CABLE (OR FISHING LINE) WE PULLED THE NEW LINE DOWN BY PULLING ON THE OLD CLUTCH CABLE , THIS WAY YOU DON’T HAVE TO TAKE ALL THE RADIATOR SHROUD OFF TO GET THE LINE DOWN .





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Translated from french to English by Kazimodo ,member of the M109Riders.com site .

INSTALL THE HOLLOW BOLT THRU THE BANJO FITTING , USING THE 2 WASHERS , BOTH , THE BOLT ,AND THE WASHERS ,ARE SUPPLIED IN THE “RECEIVER KIT” WITH THE OIL LINE .



SMALL DETAIL THAT WILL PLEASE THE “ ANAL ONES” , THE COVER ON THE SENDING UNIT IS EXACTLY THE SAME AS THE COVER ON THE MASTER CYLINDER RESERVOIR ON THE RIGHT SIDE HANDLEBAR , SO ... FOR ESTHETIC REASONS , YOU CAN ORDER A MASTER CYLINDER COVER FROM THE DEALER AND INSTALL ON HYDRAULIC CLUTCH RESERVOIR AND HAVE EXACT SAME LOOK ON BOTH SIDES ... dah !!!

FOR THE LOOK OF THE LEVER , FREDDO IS WORKING ON GETTING A LEVER FROM A C90 SUZUKI BECAUSE THEY LOOK A LOT LIKE THE 109’S LEVERS, THAT IS FOR THE C90 FROM AFTER 2006 .

NOW THAT THE INSTALL IS FINISHED AT THE TOP , TIME TO WORK ON THE BOTTOM WE NEED TO REMOVE THE GEAR SELECTOR LINKAGE , BUT SINCE WE MUST REINSTALL THE EXACT SAME WAY LATER, IT IS WISE TO MAKE A MARK WITH A PUNCH , SO WE CAN PUT THE TEETH IN THE SAME PLACE AS ORIGINALLY INSTALLED . SO A MARK ON INNER SHAFT WHERE THE LINKAGE CRACK LINES UP IS BEST .



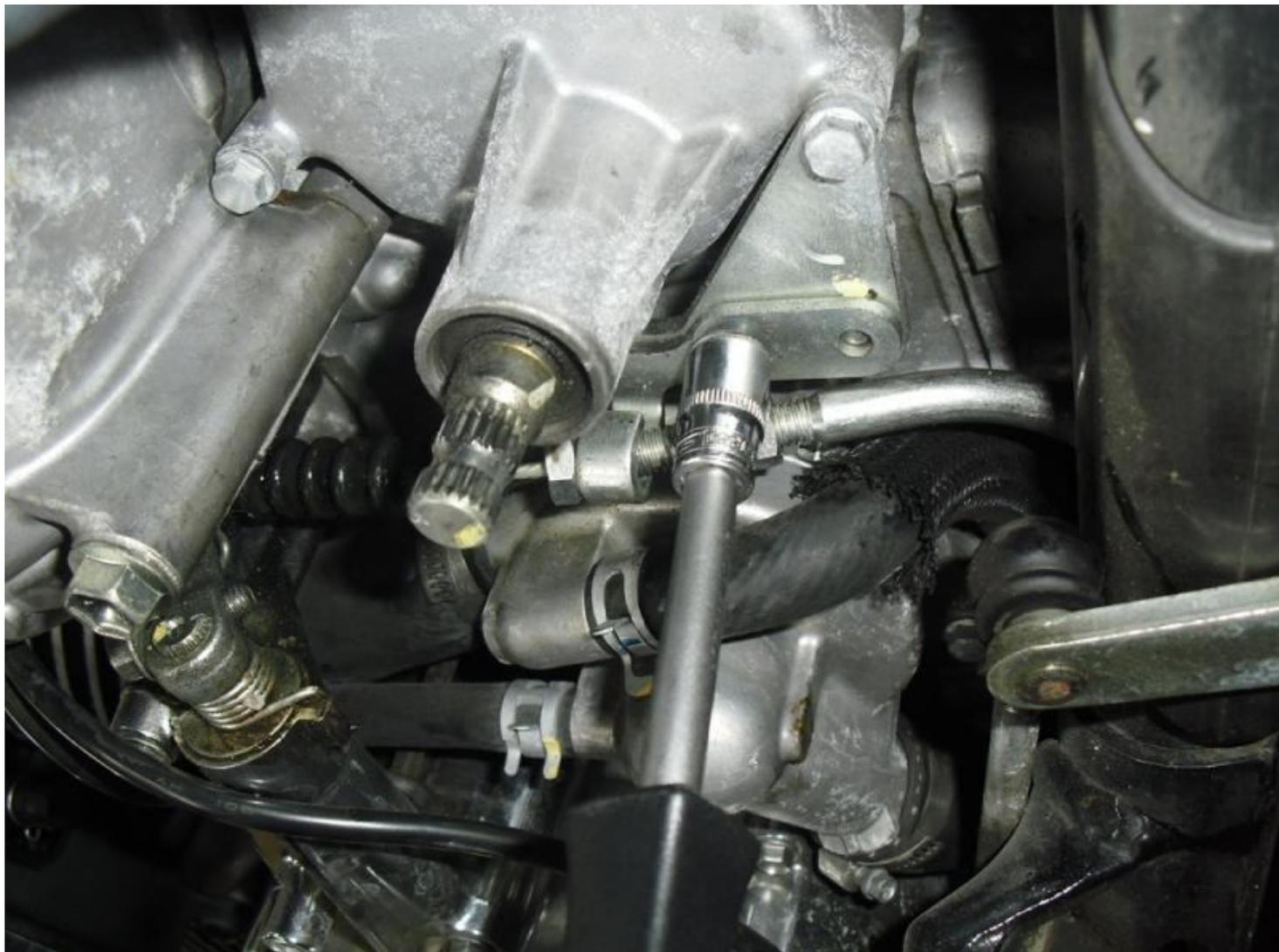
IT WILL LOOK LIKE THIS , EASY TO REASSEMBLE.



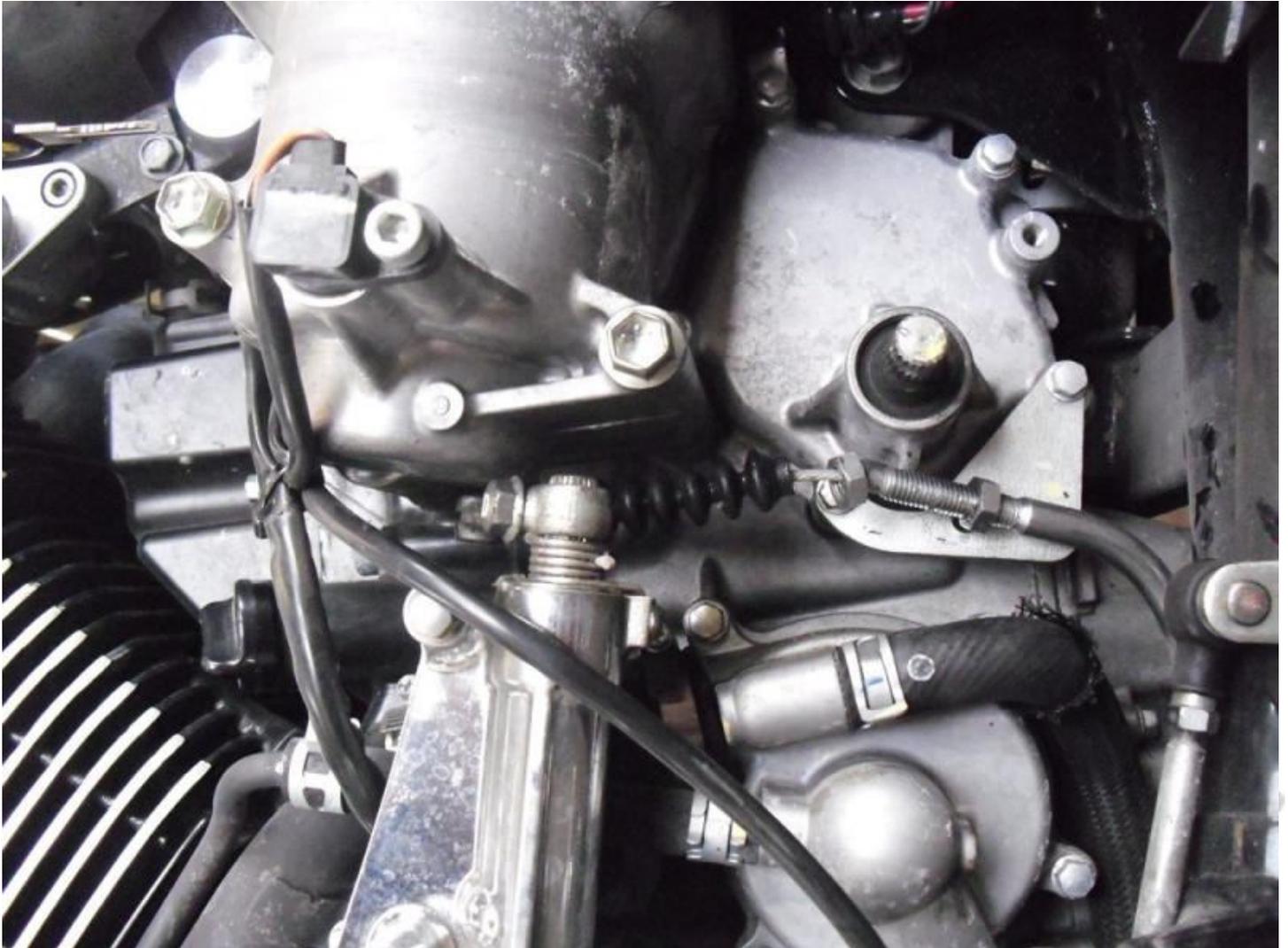
REMOVE THE LINKAGE FROM THE MARKED SHAFT ,
THEN WORK ON REMOVING OLD CLUTCH CABLE
UNSCREW THE ADJUSTER FROM THE ADJUSTING SIDE
FROM THE BRACKET THE CABLE GOES THRU , I WILL CALL THIS THE “STOPPER-BRACKET”



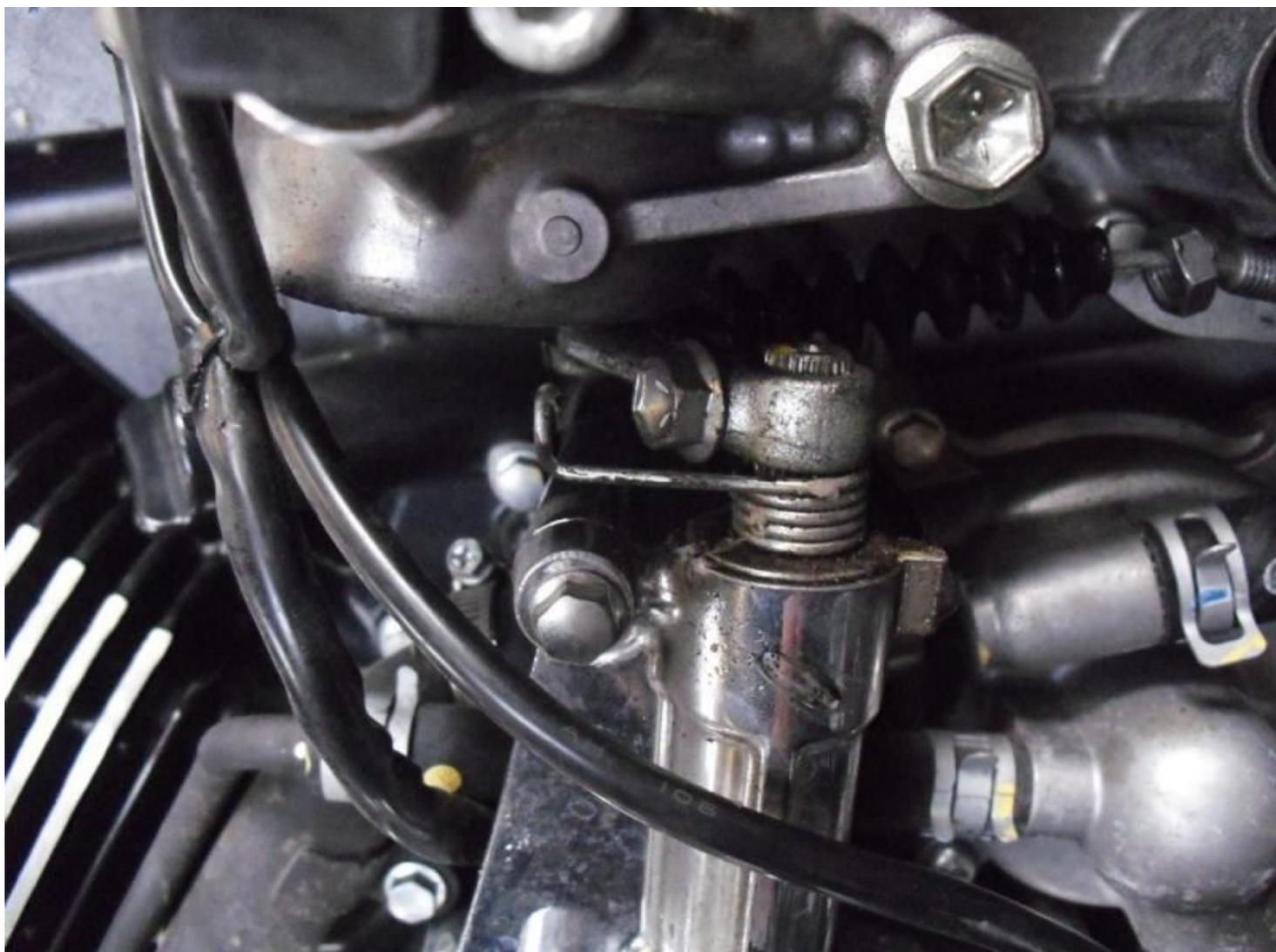
THEN REMOVE THE “STOPPER BRACKET ” HELD BY A 8MM BOLT.



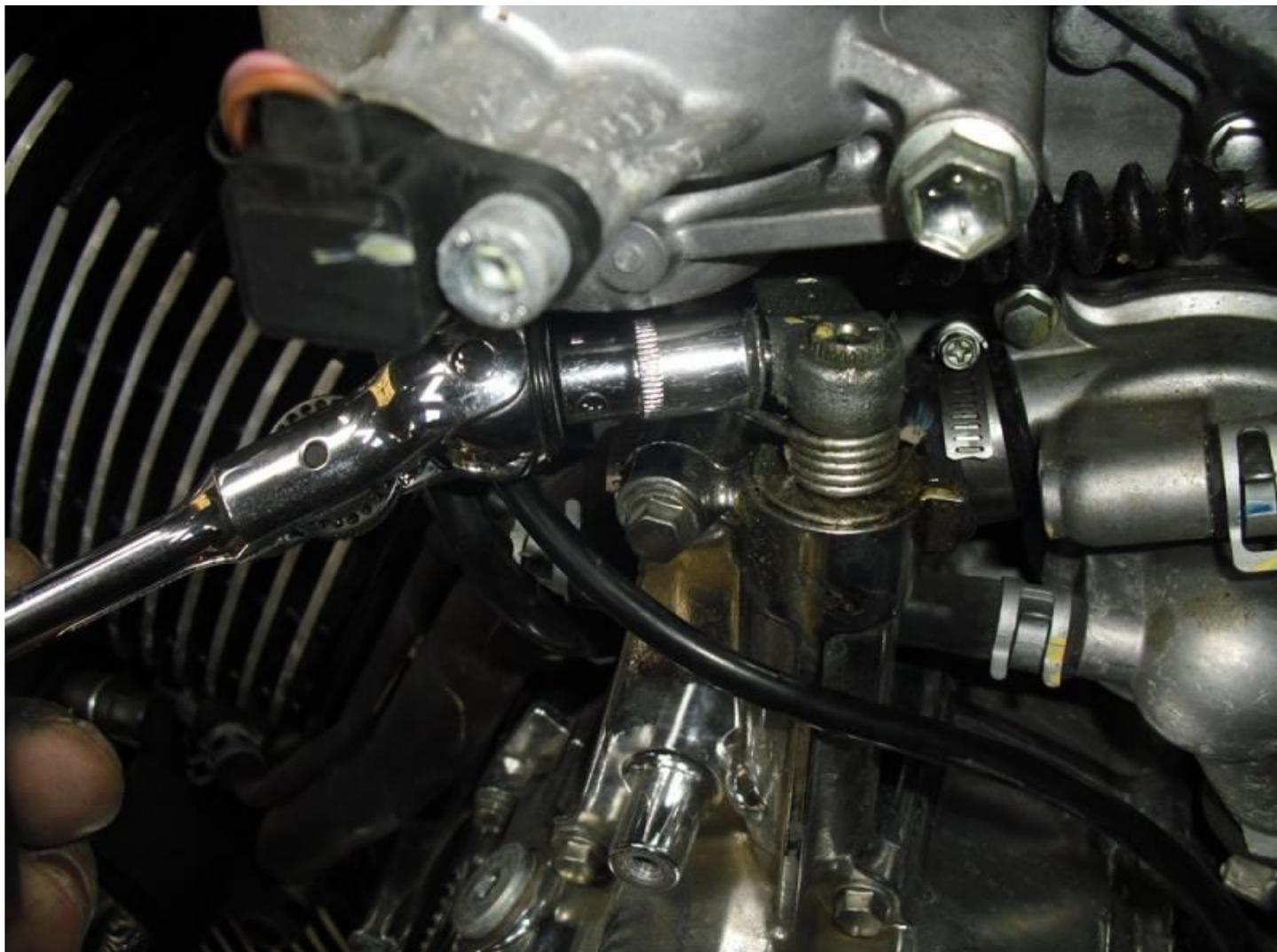
THIS IS WHAT IT WILL LOOK LIKE AFTER THE “STOPPER BRACKET” IS REMOVED
THIS IS A LOT OF STEP BY STEP , BUT IT SHOULD HELP THE ONES WHO ARE NOT
FAMILIAR WITH TAKING THE CLUTCH CABLE APART .



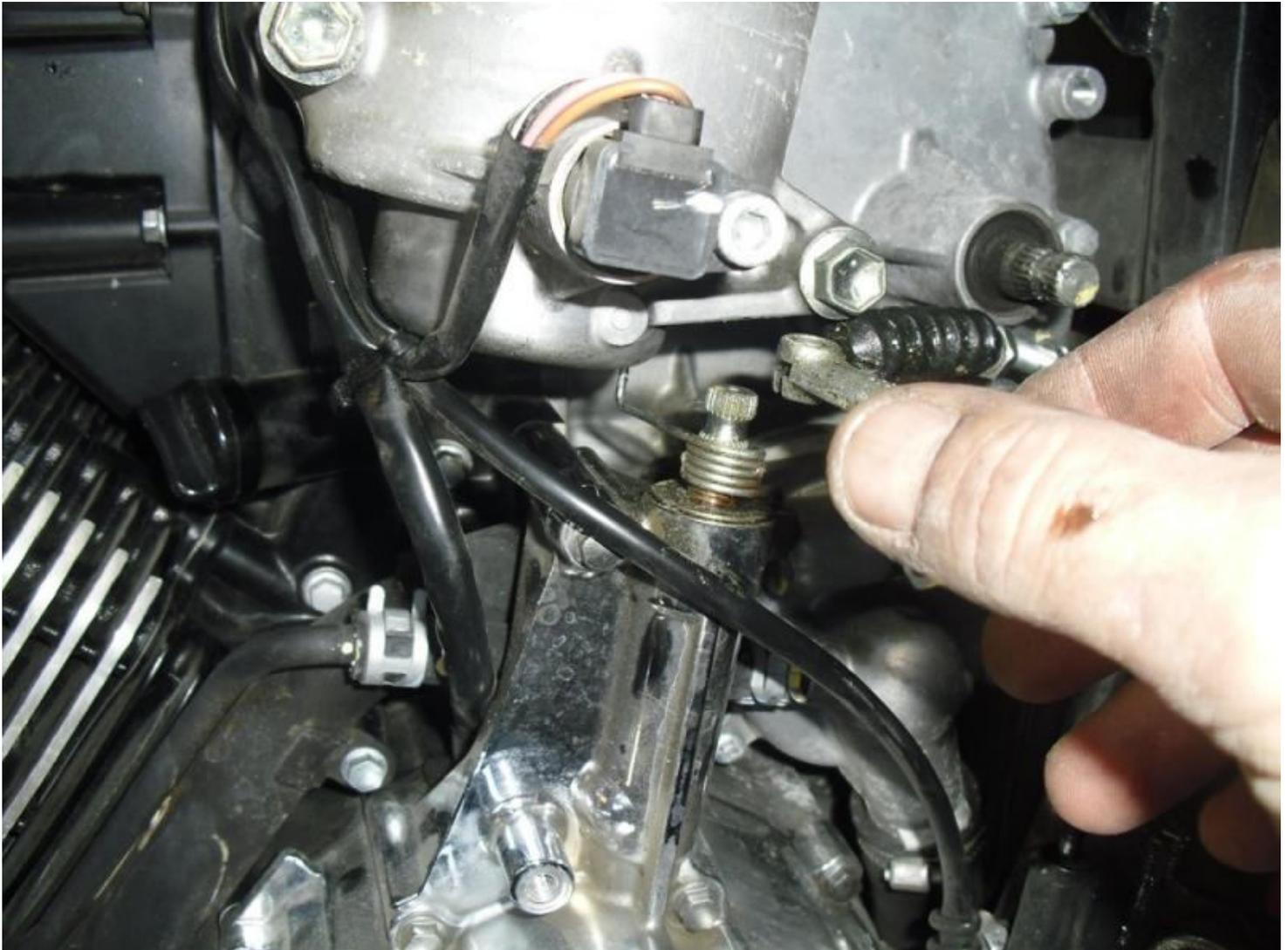
REMOVE THE RECOIL SPRING FROM LOWER CLUTCH LEVER
USING A SCREWDRIVER TO “GET IT OFF THE LITTLE ARM ”
IS DONE EASILY , THE SPRING IS NOT VERY HARD TO REMOVE .



REMOVE THE BOLT THAT HOLDS THE LOWER CLUTCH LEVER
ON VERTICAL SHAFT .



HERE YOU TAKE OFF THE LOWER CLUTCH LEVER , IT IS SQUEEZED ON THE SHAFT , BUT USING A WOODEN SHIM AND GENTLY TAPPING WITH SMALL HAMMER SHOULD GET IT TO COME OFF , AT FIRST YOU MIGHT THINK THAT THERE IS NO ROOM FOR THIS PIECE TO COME OFF , BUT THERE IS ENOUGH ROOM TO REMOVE IT , JUST ENOUGH.



ONE IMPORTANT THING TO REMEMBER ABOUT THIS LOWER CLUTCH LEVER , IS THAT WHEN YOU REASSEMBLE THIS PART , THERE IS A YELLOW MARK **FROM ORIGINAL ASSEMBLY** , IN THIS MARK THERE IS A PUNCH MARK ON BOTH PARTS ==I KNOW THE PICTURE IS NOT CLEAR , SORRY , BUT THERE IS SOME YELLOW IN THERE , TO SHOW YOU WHAT TO EXPECT ,JUST REMEMBER TO REALIGN THOSE 2 PUNCH MARKS WHEN YOU PUT EVERYTHING BACK TOGETHER .



REMOVE THE “SUPPORT PLATE”



=== THAT IS WHAT THE “SUPPORT PLATE ” LOOKS LIKE



NOW COMES THE FUN PART , REASSEMBLY , TAKE THE “LOWER CLUTCH LEVER ”
AND IF YOU DID NOT NOTICE WHEN TAKING IT “OFF” , THE HOLE IN THE LEVER WHERE
YOU SLIDE THE NEW “REVEIVER” PART IN ,SHOULD BE AT THE TOP “UP”.
SO WITH THE CRACK FACING “UP” PUT THE END OF THE NEEDLE SHAFT THAT COMES
OUT OF THE “RECEIVER UNIT” IN THE LOWER CLUTCH LEVER .



NOW YOU WILL ASK YOURSELF ; “WHY IS THIS THING SO TIGHT IN THERE , IT SHOULD MOVE FREELY OR AT LEAST IT SHOULD MOVE , SO AFTER MEASURING THE END PART OF THE NEEDLE SHAFT , AND THE INSIDE OF THE HOLE ON LOWER CLUTCH LEVER , 8 MM



A 8MM DRILLBIT GOES INTO THE HOLE , BUT IT IS TIGHT ,
SO ...

WE MUST ADJUST THE OPENING IN THE LOWER CLUTCH LEVER , USING A FILE ,
OR EVEN PRYING IT OPEN JUST A LITTLE USING A SCREWDRIVER , IT IS WHAT
THE MEMBERS OF THE AMERICAN BOARD HAVE BEEN DOING ,
IT NEEDS VERY LITTLE MODIFICATION , **BUT IT IS IMPERATIVE THAT THIS
ASSEMBLY MOVES FREELY OR ELSE THE NEEDLE SHAFT WILL BEND
WHEN OPERATING THE CLUTCH AND EVENTUALLY BREAK .**

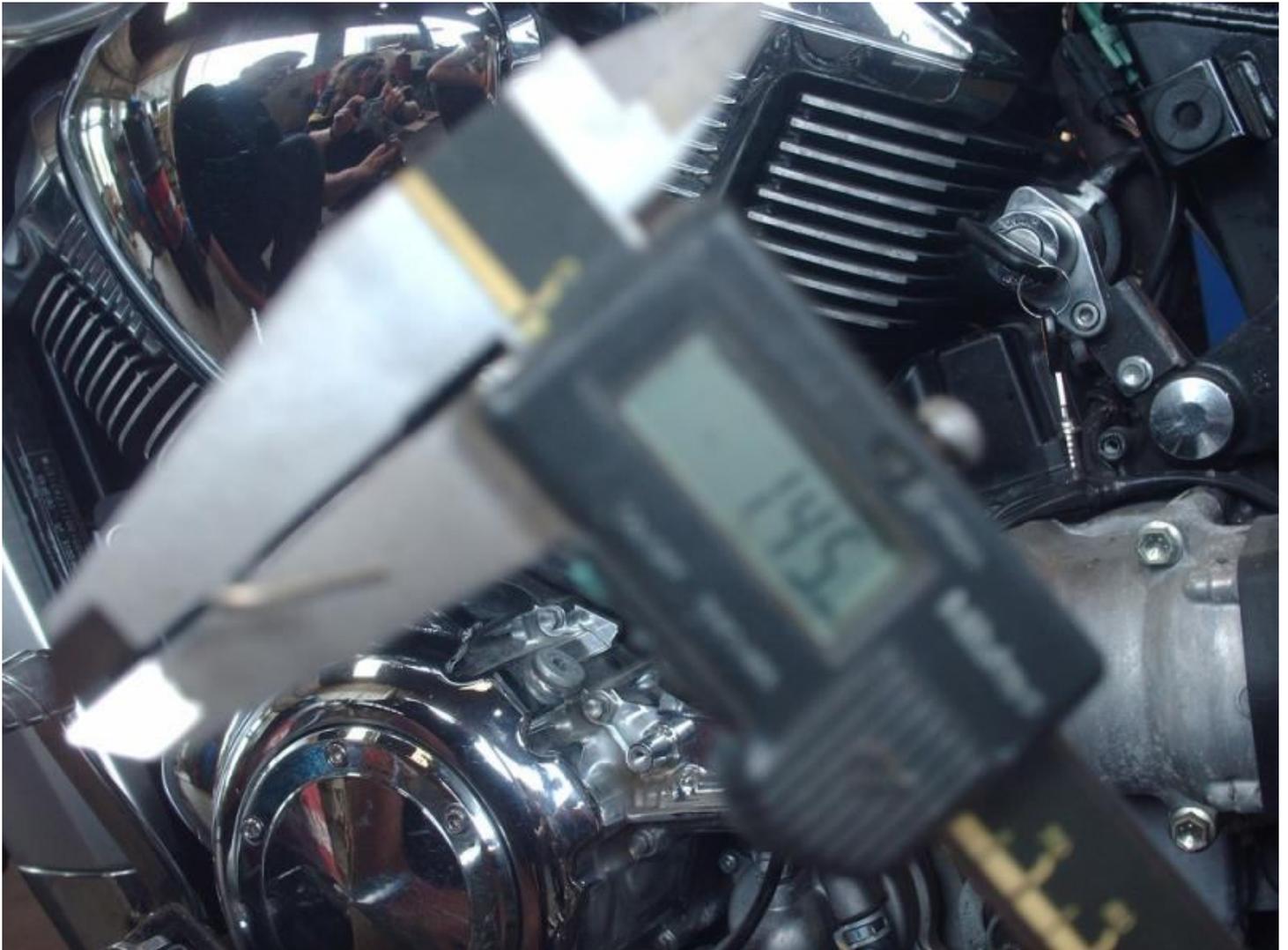
****IMPORTANT TO APPLY GREASE ON THIS SPOT WHEN PUTTING BACK TOGETHER****



FILE , FILE , UNTIL THERE IS NO MORE CRAP BLOCKING FREE MOVEMENT .

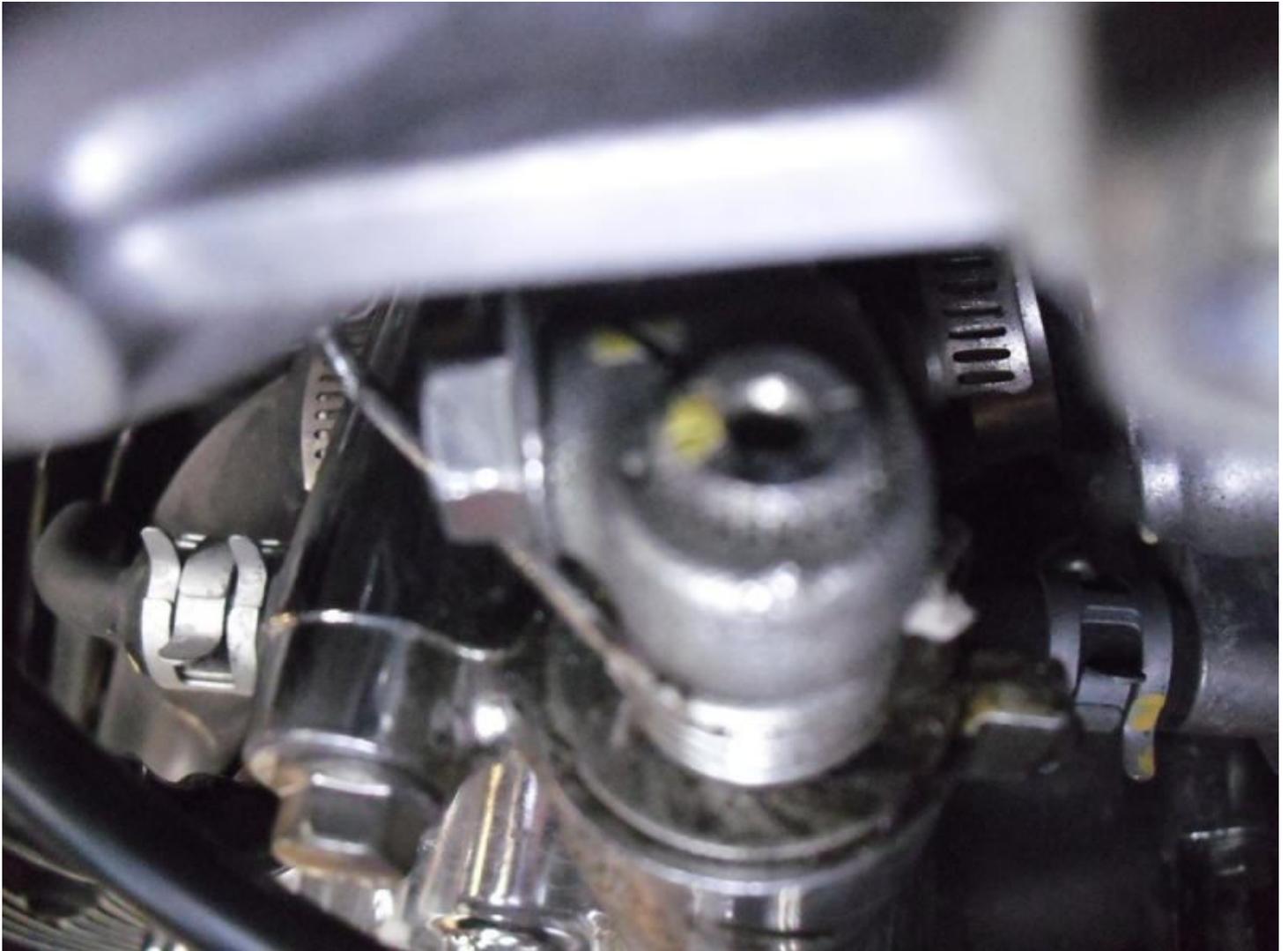


ONCE YOU HAVE ACHIEVED THE DESIRED FIT BETWEEN THE 2 PARTS AND THERE IS NO MORE JAMMING OR TIGHTNESS YOU PUT THE END OF THE NEEDLE SHAFT IN THE LEVER AND TIGHTEN WITH THE ALLEN TOOL 1.5MM , MIGHT WANT TO MAKE SURE YOU HAVE THAT SIZE ALLEN IN YOUR TOOLS , BEFORE ATTACKING THIS PROJECT .





REINSTALL THE “LOWER CLUTCH LEVER” AND “RECEIVER ” ASSEMBLY MAKING SURE THE PUNCHED MARKS FROM ORIGINAL ASSEMBLY LINE UP ,JUST TRUST THE MARKS ON BOTH THE LEVER AND THE SHAFT.



REINSTALL “ RECEIVER” SUPPORT PLATE



SCREW ON THE HYDRAULIC OIL LINE



REINSTALL SHIFT LINKAGE USING THE MARK THAT WAS MADE ON DISSAEMBLY.



FILL THE RESERVOIR WITH DOT4 BRAKE FLUID , **I SAID DOT 4 ONLY**



GLOOP ,GLOOP ,GLOOP ,



NOW FOR THE MAGIC OF “SORCIER 16”

TO PRIME THE SYSTEM , MEANING FILLING IT UP WITH DOT4 FLUID

WE PUMP , **GIVING THE LEVER SMALL PRESSURES , WITHOUT GOING ALL THE WAY**

WE SEE AIR BUBBLES COMING BACK UP INTO THE RESERVOIR , SINCE THE RESERVOIR

IS THE HIGHEST POINT IN THIS WHOLE SYTEM , THE AIR GOES UP EASILY , NEVER HAD TO OPEN THE BLEEDER AT THE BOTTOM , PRIMED ON ITS OWN IN ABOUT 2 MINUTES .



THE FOLLOWING IS TO TIE THE OIL LINE TO THE FRAME USING A TIE-WRAP , COLSON TYPE COLLAR , YOU MUST SECURE THE ASSEMBLY BECAUSE THE BRACKET THAT ALLOWS THE “RECEIVER” TO MOVE FREELY DOWN THERE ALSO CAN ALLOW IT TO TURN ON ITSELF AND EVENTUALLY HAVE THE FITTINGS FROM THE HYDRAULIC CLUTCH SYSTEM START TO RUB ON THE COOLNG SYSTEM HOSES AND OTHER COMPONENTS AND DIG A HOLE ...

AT THIS POINT IT SHOULD BE TIME TO REINSTALL WHATEVER WAS REMOVED IN REVERSE ORDER FROM DISASSEMBLY .

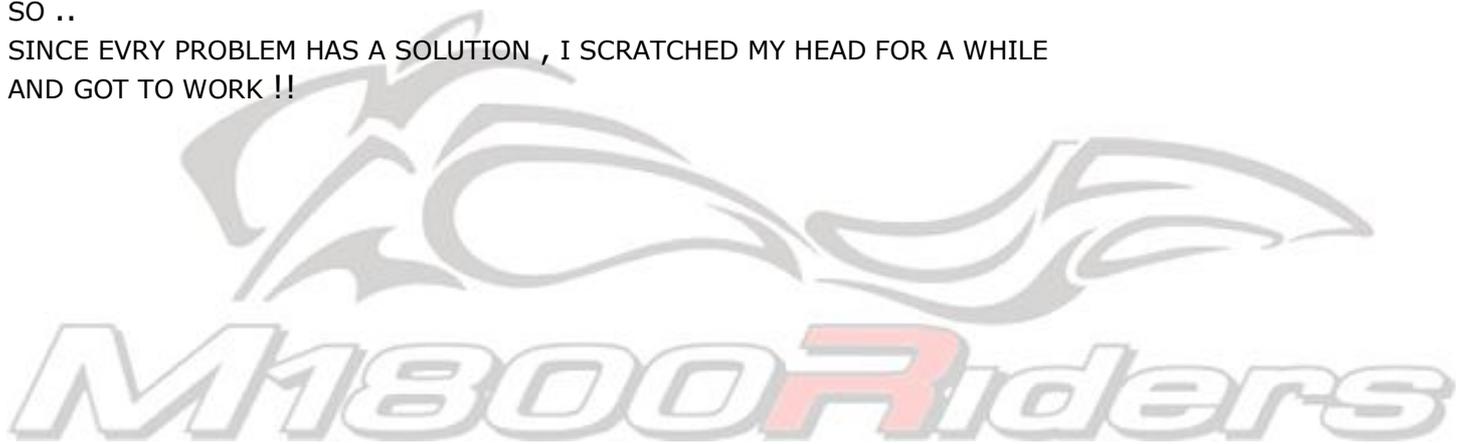
I HAVE ADJUSTED THE “RECEIVER” CYLINDER ON THE ELBOW AS LOW AS POSSIBLE WITH THE SHAFT THAT COMES OUT OF THE “RECEIVER” **BACK IN COMPLETELY** , WITHOUT DOING THIS , THE ACTUAL CLUTCH LEVER ON THE HANDLEBARS WOULD NOT COME IN ALL THE WAY , AND COULD NOT TOUCH THE GRIP ON THE HANDLEBAR , IT WOULD STOP ABOUT AN INCH FROM THE GRIP BECAUSE THE SHAFT IN THE “RECEIVER” WOULD HIT THE INSIDE OF THE “RECEIVER” IN ITS COURSE .



FIRST IMPRESSION !!!

**NOW HERE DON,T GENERALIZE , BUT MY JOB IS TO FIND THE WEAK POINTS
SO I WAS VERY CRITICAL , SOME MAY LIKE IT JUST LIKE THAT, BUT I WANT PERFECTION .**

ITS NOT EASY TO BE A PERFECTIONIST , HERE GOES , I WAS DECEIVED BY THE FORCE THAT WAS NEEDED TO ACTUALLY OPERATE THIS NEW HYDRAULIC CLUTCH IT WAS AS HARD IF NOT HARDER THAN OPERATING THE ORIGINAL CLUTCH !! AFTER LOOKING AT THE WHOLE ASSEMBLY I FELT THE FITTING ON “REVEIVER UNIT” WAS MOUNTED IN A WAY THAT IT WAS RUBBING ON THE COOLING SYSTEM , I DID NOT LIKE THAT , SO .. SINCE EVRY PROBLEM HAS A SOLUTION , I SCRATCHED MY HEAD FOR A WHILE AND GOT TO WORK !!



AS PREVIOUSLY STATED ,

-- I DID NOT LIKE THE STIFFNESS OF THE CLUTCH LEVER

-- I DID NOT LIKE THE FACT THAT THE FITTING ON THE END OF THE OIL LINE

GOING INTO THE “RECEIVER UNIT” WAS RUBBING ON THE COOLING SYSTEM PARTS

AND MAY WELL PUNCH A HOLE IN IT IN THE FUTURE .

SO I FIRST WORKED ON THE LOWER PART WHERE THE RUBBING WAS HAPPENING .

IT WAS PRETTY EASY , INSTEAD OF INSTALLING THE OIL LINE ,THE WAY THEY ASK IN THE

INSTALL INFO , I TURNED THE FITTING SO THAT THE METAL TUBE LOOKS LIKE SOMEONE’S ARM

AROUND THA WAIST OF SOMEONE ELSE , THIS BRINGS IT IN A NEW LOCATION AND IS MUCH

BETTER , BE CAREFULL NOT TO LOOSE THE 2 NYLON WASHERS , AND DON’T APPLY FORCE

ON THIS LIKE A PIG , IT IS THE GENTLE SQUEEZE OF THESE 2 WASHERS THAT MAKES FOR

A GOOD SEAL ,

THE PICTURE BELOW SHOWS THE NEW LOOK .



WE CAN NOW USE THE ORIGINAL LITTLE STRAPS TO HOLD THE LINE BECAUSE THE FLEXIBLE LINE DOES NOT HAVE THE SAME ROUTING , FOR A CLEANER INSTALL .



THEN CAME THE HARDNESS OF THE LEVER AT THE PERCH ,
BECAUSE I WAS HOPING FOR A SOFTER LEVER , WHEN INSTALLING THIS
HYDRAULIC CLUTCH .SO I FIGURED THAT THE PROBLEM LIED IN A BAD DESIGN
OF THE “RECIVER UNIT” , “DEMULTIPLICATION RATIO DESIGN FLAW ”.
BUT TO AUGMENT THE RATIO MEANS PRETTY MUCH FINDING ANOTHER RECEIVER,
SEING HOW HARD IT WAS TO FIND THIS ONE ,IT IS OUT OF THE QUESTION
TO START LOOKING FOR ANOTHER ONE . [SO IT IS TIME TO TCHEAT](#) , FIRST ON
THE HANDLEBAR LEVER DESIGN , TO CHANGE THE RATIO .
WE CAME TO THE CONCLUSION THAT there was a way to gain 15% +/- by
changing the rotation point in The lever at the perch itself .

- so now we remove the clutch lever at the perch .



LOOK OUT .THE END OF THE PIN COMES OUT BY THE TOP
TOP BEING THE SIDE WHERE THE ADJUSTMENT KNOB IS ...





THE PART THAT WILL BE MODDED .



THE SQUARE PART COMPLETELY AT THE FAR RIGHT BOTTOM NEEDS TO COME OFF.
COMING OUT



REMOVED ...



REASSEMBLE THE HANDLEBAR CLUTCH LEVER , INTENTIONALLY LEAVING THE SQUARE PART
OUT OF THE EQUATION , THE RESULT IS GOOD , THERE IS A NOTICEABLE GAIN IN SOFTNESS ,



AFTER GAINING AT THE PERCH , I WAS NOT FINISHED , AS STATED ,I AM A PERFECTIONIST AND I WANT THE MAXIMUM THAT THIS DESIGN CAN GIVE ME .

The following may not be for everyone , but if you have the possibility to have A small piece welded you may want to do this mod.

To gain some more softness there is the mechanic demultiplication , in other words , working on the “lever length ” application of strength .

So now , time to work on length of the “lower clutch lever” , making it longer Will maximize the force applied to the “receiver unit” ,

Originally the center to center length is 44 mm , after studying this particular unit and measuring the maximim possible angle for this install , it was calculated that an additional 20mm was very reasonable , adding more would squeeze the assembly at the rotation point



CRAZY , WHO’S CRAZY , NOT CRAZY ,JUST CUT THE LEVER IN THE MIDDLE .



I FOUND A PIECE OF METAL 7MM THICK , 20 MM LONG , WELDED IN THE MIDDLE WITH A “TIG” WELDER , VERY USEFUL FOR SMALL WELDING JOBS .

BY THE WAY , THIS IS A PICTURE OF THE AUTOR OF THIS “HOW TO ” , SO IF YOU RECOGNIZE HIM IN THE STREET , MAKE SURE YOU SAY HI !!!!



YOU CAN PICK IT UP RIGHT AWAY BUT I SUGGEST YOU WAIT FOR A WHILE ...



“How I Did It” By **SORCIER16** l’embrayage hydraulique

M109R M1800R/R2

Translated from french to English by Kazimodo ,member of the M109Riders.com site .

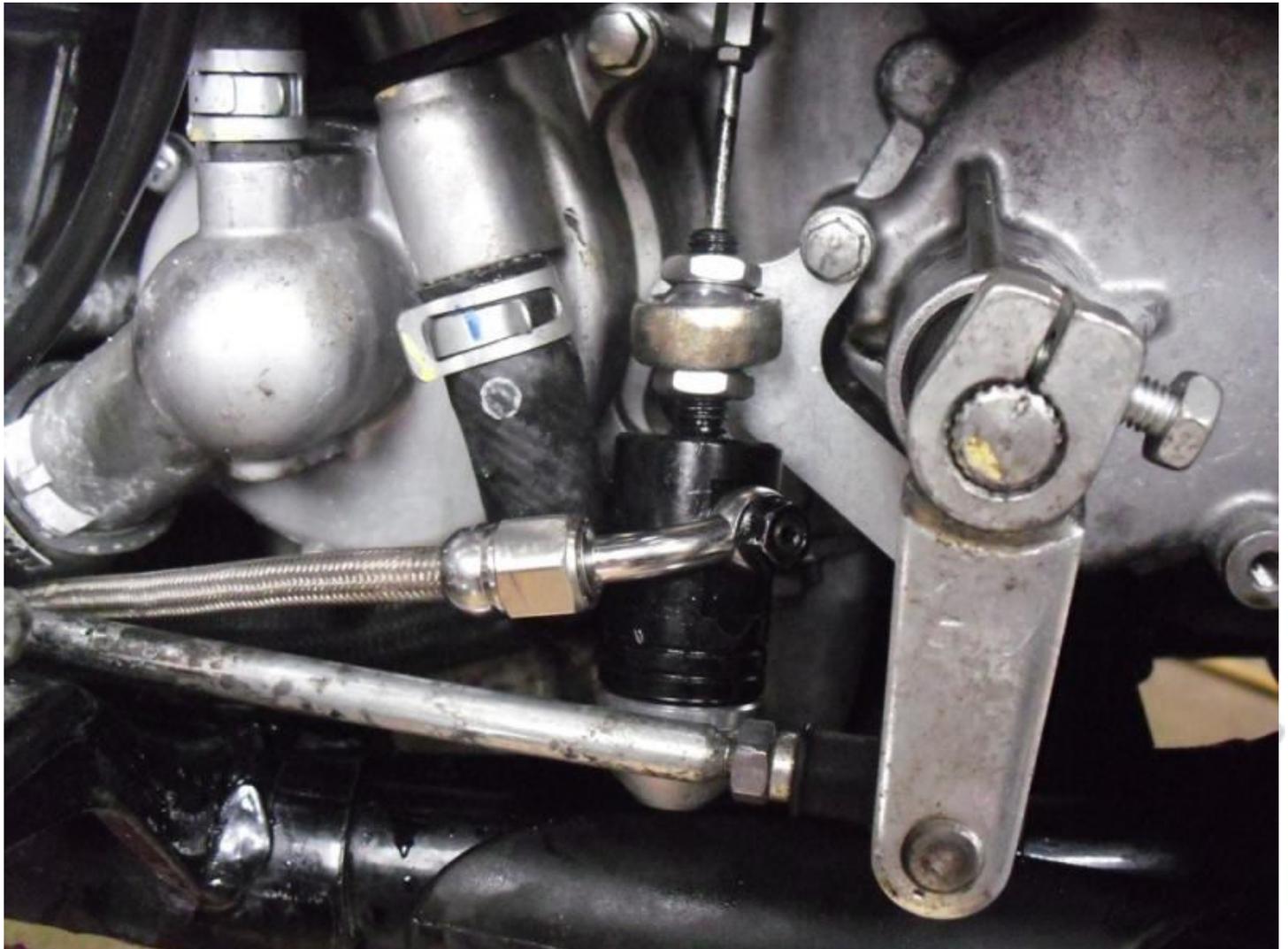
A LITTLE GRINDER HERE AND THERE FOR ESTHETIC REASONS , AND WEIGHT .
OF COURSE IT WOULD BE BETTER TO PAINT THIS PIECE .



HERE IS THE EXPECTED GAIN IN LENGHT .



REASSEMBLE EVERYTHING , AND OF COURSE , AS EXPECTED, IT DOES NOT FIT PERFECTLY RIGHT AWAY , NOW THE OIL LINE TOUCHES THE GEAR SHIFT LINKAGE ,BECAUSE THE NEW LONGER “LOWER CLUTCH LEVER ” GAVE THE “RECEIVER UNIT ” A NEW ANGLE . BUT ALL THIS WAS EXPECTED WHEN FIRST DOING THIS .



TO FIX THIS , YOU DO THE SAME AS WHEN YOU ADJUSTED YOUR SHIFT PEDAL OR REAR BRAKE PEDAL
THE METAL OF THE SHIFT LEVER IS THICK BUT FLEXIBLE , IT BENDS EASILY AND DOES NOT CHANGE
THE ADJUSTMENT OF THE GEAR CHANGE SYSTEM . JUST DON'T GO TOO FAR , YOU HAVE TO BE ABLE
TO FIT THE SIDE COVER OVER ALL THIS , WITHOUT TOUCHING ,IN THE END .



LEVER TEST , HA !!!!! , THIS IS WHAT I WAS LOOKING FOR WHEN I STARTED THIS PROJECT ,



VOILA !! IT'S DONE , THAT WASN'T SO HARD
I COULD IF YOU WANTED GIVE MORE DETAILS FOR THE WIRING
UNDER THE HANDLE , THE WAY TO TAKE OUT THE CONNECTORS WITHOUT
BREAKING ANYTHING . . .

OR LOOK AT RAINEY'S TUTORIAL , IT INCLUDES THE
WIRING STUFF . IT IS HERE ; <http://www.m109riders.com/forums/showthread.php?t=155257>

AFTER YOU REMOVED LEVER STOPPER , YOU CAN SAVE PULLING FORCE BY 10-15% LESS.
BECAUSE THE C90(VZ1500) HANDLE BAR ANGLE IS DIFFERENT FROM OUR M1800R
SO THE LEVER-GRIP DISTANCE IS WIDER.
AFTER YOU REMOVE STOPPER, IT WILL MOVE CLOSER AND YOU CAN PULL IT EASIER AND SMOOTHER.

HOW TO REMOV LEVER STOPPER

[HTTP://YOUTU.BE/HMCGQ3FQQI8](http://youtu.be/HMCGQ3FQQI8)

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TRANSLATED FROM FRENCH TO ENGLISH BY KAZIMODO ,
MEMBER OF THE M109RIDERS.COM SITE .

