

# Installation instructions for Kohler 9.5 hp engine (replacing AC-ME engine on BCS or Mainline machines)



**#1. USING 13MM WRENCH, REMOVE NUTS AND WASHERS SECURING ACME ENGINE TO TRANSMISSION. (On SEP/Mainline machines, these are BOLTS instead)**



**#2. LOOSEN THROTTLE CABLE CLAMP ON AC-ME ENGINE (MAY HAVE TO HOLD BOTTOM PART OF CABLE WITH A PLIERS)**



**#3. PULL CABLE & SHEATH UP & OUT**



**#4. REMOVE ENGINE FROM TRANSMISSION (MAY HAVE TO WIGGLE A BIT TO GET LOOSE) CONE CLUTCH ASSY. (PICTURED) COMES OFF WITH ENGINE (NOTE: SOME BCS TRACTORS HAVE A DISK CLUTCH...IN THIS CASE THE CLUTCH CARRIER COMES OFF WITH THE ENGINE. IF YOU HAVE TROUBLE GETTING THE CARRIER OFF THE ENGINE, CALL US FOR INSTRUCTIONS AT 502-484-3988.)**



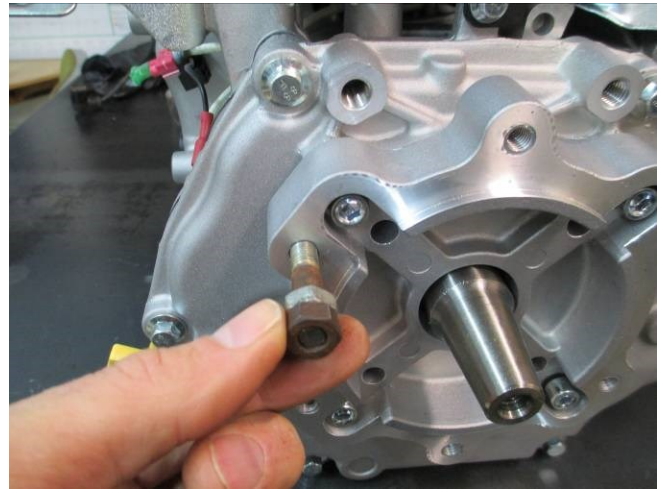
**#5. THREAD 2 OF THE NUTS BACK ONTO ONE OF THE MOUNTING STUDS (On SEP/Mainline machines, this does not apply because these are BOLTS. Skip to #10)**



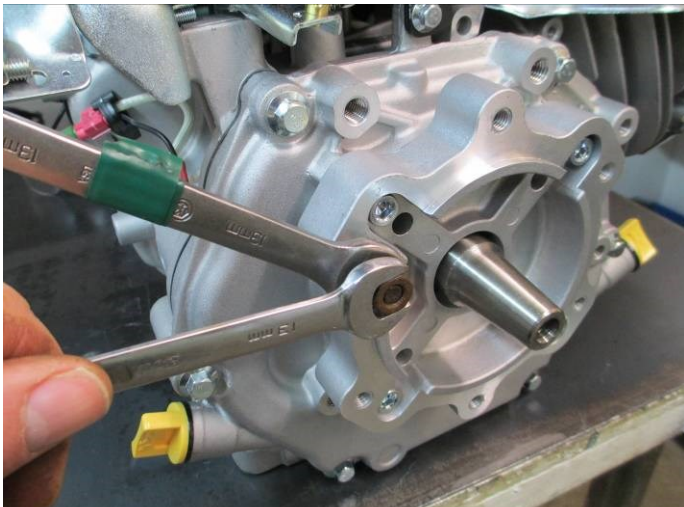
**#6. TIGHTEN THE 2 NUTS AGAINST ONE ANOTHER USING TWO WRENCHES**



**#7. USING THE “INNER” NUT, BACK THE STUD OUT OF THE ENGINE.**



**#8. WHILE THE NUTS ARE STILL ON IT, THREAD THE STUD INTO THE NEW KOHLER ENGINE, TIGHTEN USING “OUTER” NUT**



**#9. BREAK THE NUTS LOOSE FROM EACH OTHER USING THE TWO WRENCHES AGAIN. REPEAT THIS PROCESS TO SWITCH ALL THE STUDS.**



**#10. INSERT A 6MM ALLEN WRENCH INTO THE HOLE IN THE CLUTCH; FEEL AROUND FOR THE BOLT-HEAD. (NOTE: On SEP/Mainline units, remove center bearing assy. from clutch [just slides out] and use a 13mm socket to remove center bolt)**



**#11. USING A LARGE CHANNEL-LOCK PLIERS, STRAP-WRENCH, PIPE-WRENCH, ETC. HOLD THE OUTER HOUSING OF THE CLUTCH TO KEEP IT FROM TURNING WHILE LOOSENING THE BOLT INSIDE THE CLUTCH. NOTE: I HAVE A PIPE ON THE “SHORT” END OF THE ALLEN WRENCH FOR EXTRA LEVERAGE. BOLT IS STANDARD THREAD, NOT LH.**



**#12. NOW THAT THE BOLT IS LOOSE, THE CLUTCH MUST BE BROKEN FREE FROM THE TAPER-LOCK ON THE CRANKSHAFT. THIS CAN BE DONE BY WEDGING TWO LARGE COLD-CHISELS (METAL-CUTTING CHISELS) BETWEEN THE CLUTCH HOUSING AND THE ENGINE CRANK-CASE — ONE ON EITHER SIDE OF THE CRANKSHAFT— AND HITTING ONE...**



#13. ...AND THEN THE OTHER, EVENLY, UNTIL THE CLUTCH POPS OFF THE TAPER. (THE BOLT INSIDE THE CLUTCH IS "TRAPPED" INSIDE, IT WILL NOT COME OUT)



#13A. ANOTHER OPTION, IF YOU HAVE ACCESS TO ONE, IS A LARGE BALL-JOINT SEPERATOR FOR AUTOMOTIVE USE. THIS IS LIKE A BIG TAPERED FORK, AND CAN BE DRIVEN IN JUST LIKE THE CHISELS (BUT BEING ONE PIECE, IT IS EASIER TO USE)



#14. REMOVE CLUTCH FROM ACME CRANKSHAFT. (NOTE: MAKE SURE "THROWOUT" BEARING ON END OF CLUTCH ROTATES FREELY, WITHOUT ANY "GRAVELLY" FEELING. IF THIS BEARING NEEDS TO BE REPLACED, THIS IS THE TIME TO DO IT!!)



#15. NOTE: THE ACME ENGINE MOST LIKELY HAD A "KEY" IN THE CRANKSHAFT, AND THE CLUTCH WILL HAVE A CORRESPONDING KEY GROOVE IN IT...



#16. ...BUT THE KOHLER ENGINE DOES NOT HAVE A KEY. DO NOT WORRY! ACME FOUND THAT THE KEY WAS UNNECESSARY AND THEY ACTUALLY DELETED THE KEY FROM THEIR LATER PRODUCTION ENGINES. PROPERLY TIGHTENED, THE TAPER HOLDS BETTER THAN THE KEY ANYWAY.



#17. INSTALL THE CLUTCH ON THE KOHLER ENGINE SHAFT; THREAD BOLT INTO SHAFT WITH ALLEN WRENCH (or 13mm socket, if SEP machine)



**#18. TIGHTEN USING SAME METHOD AS LOOSENING (CHANNEL-LOCKS, STRAP-WRENCH, ETC.) MAKE SURE THE ALLEN WRENCH IS FULLY INSERTED INTO BOLT, SO YOU DON'T ROUND OUT THE HEAD!**



**#19. RE-INSTALL ENGINE ON TRACTOR TRANSMISSION. MAY HAVE TO WIGGLE AROUND A BIT TO GET SHAFTS LINED UP PROPERLY.**



**#20. RE-INSTALL NUTS AND WASHERS ONTO STUDS. NOTE: YOU SHOULD NOT HAVE TO "DRAW" ENGINE UP TO TRANSMISSION WITH NUTS, EXCEPT FOR MAYABE A FEW MILLIMETERS...ENGINE SHOULD SLIDE ON ALL THE WAY TO TRANS. HOUSING WITH LITTLE RESISTANCE.**



**#21. IF THROTTLE CABLE IS STILL SERVICABLE, AND YOU HAD A 6HP ACME ENGINE, YOU CAN RE-USE IT "AS IS". IF YOU HAD AN 8 OR 10HP ACME, THE CABLE IS TOO LONG, BUT YOU CAN SHORTEN IT TO MAKE IT WORK. TO DO THIS, TAKE A WIRE CUTTERS AND CUT OFF THE CABLE JUST PAST THE END OF THE SHEATH...**



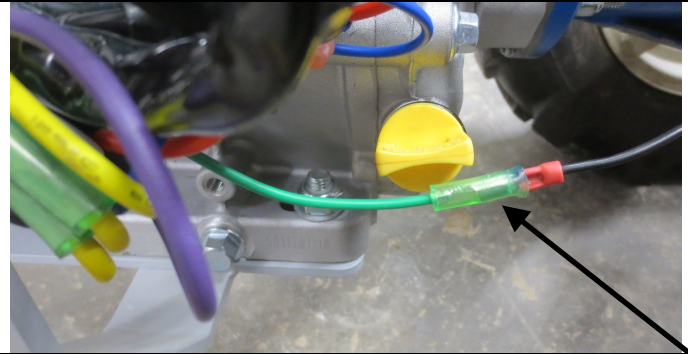
**#22. ...THEN, AFTER PULLING THE CABLE BACK UP THE SHEATH AT LEAST A FOOT (FROM THE TOP END AT THE HANDLEBARS, SO YOU DON'T CUT IT), CUT THE SHEATH DOWN BY ABOUT 10 INCHES. THE FACT THAT THE LITTLE METAL "END CAP" IS GONE FROM THE SHEATH MAKES NO DIFFERENCE.**



**#23. RUN THE THROTTLE CABLE BACK DOWN THROUGH THE SHEATH, AND THREAD IT THROUGH THE LITTLE BRASS SWIVEL IN THE KOHLER ENGINE THROTTLE LEVER, AND THEN UNDER THE CLAMP ON THE LEFT. PUT THE CABLE CLAMP (SUPPLIED WITH ENGINE) ON THE END OF THE CABLE, AND WITH THE THROTTLE LEVER ON THE HANDLES AT "IDLE", PULL THE SLACK OUT OF THE CABLE WITH A PLIERS AND TIGHTEN THE CABLE CLAMP. (YOU CAN CUT OFF EXCESS CABLE, IF TOO LONG)**



**THE POSITIVE BATTERY CABLE HOOKS TO THE “BARE” LUG ON THE STARTER MOTOR SOLENOID...MAKE SURE IT DOES NOT CONTACT ANY OTHER METAL!!**

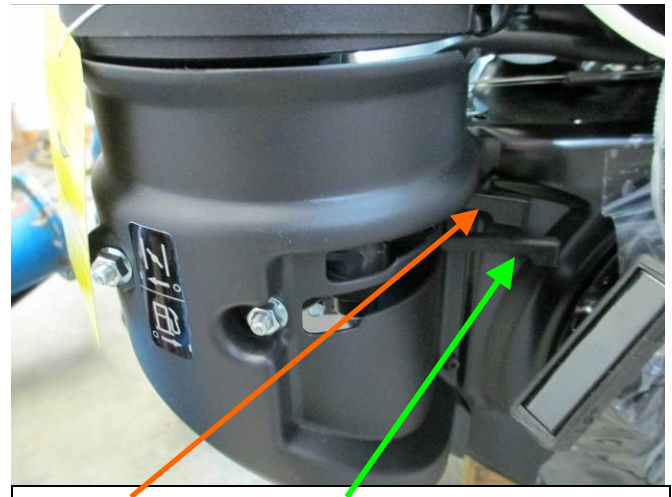


**#25. THIS IS THE WIRING ON THE ELECTRIC START VERSION. IF YOU HAVE A KILL SWITCH ON THE HANDLEBARS, YOU WILL CONNECT IT TO THE GREEN WIRE THAT IS HANGING OUT OF THIS MESS OF WIRING. THE OTHER WIRING HARNESS HOOKS TO THE VOLTAGE REGULATOR (SUPPLIED LOOSE WITH ENGINE)...YOU CAN DRILL HOLES AND MOUNT THE REGULATOR TO THE SIDE OF THE BATTERY BOX. (FASTENERS NOT SUPPLIED W. ENGINE)**

**#24. WE SUPPLY THE KOHLER ENGINE WITH AN EXTRA WIRE CONNECTOR FEMALE PLUG (MAY VARY IN COLOR). IF YOUR MACHINE HAS A KILL SWITCH MOUNTED ON THE HANDLEBARS OR A SAFETY SWITCH SYSTEM, YOU CAN HOOK IT UP HERE.**



**#26. FILL KOHLER ENGINE WITH APPROVED MOTOR OIL BEFORE STARTING!! ENGINE SHOULD BE FILLED TO THE TOP OF THE FILLER HOLE, WITH ENGINE LEVEL. (NOTE: WITH TILLER ATTACHED TO TRACTOR, UNIT DOES NOT SIT LEVEL!! TILLER HAS TO BE PROPPED UP A FEW INCHES, SO ENGINE IS PARALLEL WITH THE GROUND.) ENGINE HOLDS ABOUT 1 QUART. WE USE 15W40 OIL.**



**#27. CHOKE AND FUEL SHUTOFF CONTROLS ON KOHLER ENGINE. WE RECOMMEND THAT ON ALL ENGINES, YOU SHOULD TURN THE FUEL SHUTOFF TO THE “OFF” POSITION WHENEVER THE ENGINE IS NOT IN OPERATION, TO MINIMIZE THE CHANCES OF FLOODING OF THE CARBURETOR AND ENGINE DUE TO POOR QUALITY FUEL COMPROMISING THE FLOAT OR INLET VALVE (COMMON PROBLEMS THESE DAYS).**

**ENJOY YOUR NEW ENGINE!! THE INITIAL BREAK-IN OIL SHOULD BE CHANGED AFTER ABOUT 8 HOURS OF RUNNING. CHANGE OIL EVERY 30 TO 40 HOURS AFTER THAT. COMPLETE OPERATING AND MAINTENANCE INSTRUCTIONS CAN BE FOUND IN THE KOHLER OWNERS MANUAL WHICH CAME WITH THE ENGINE.**

**IF YOU HAVE ADDITIONAL INSTALLATION QUESTIONS, PLEASE CALL US AT EARTH TOOLS INC.: 502-484-3988.**