Cub Cadet 1872 Kohler Command Swap

By: Matt Gonitzke

1/18/2026 – Revision C [Clarified where new holes are drilled in mounting plate]

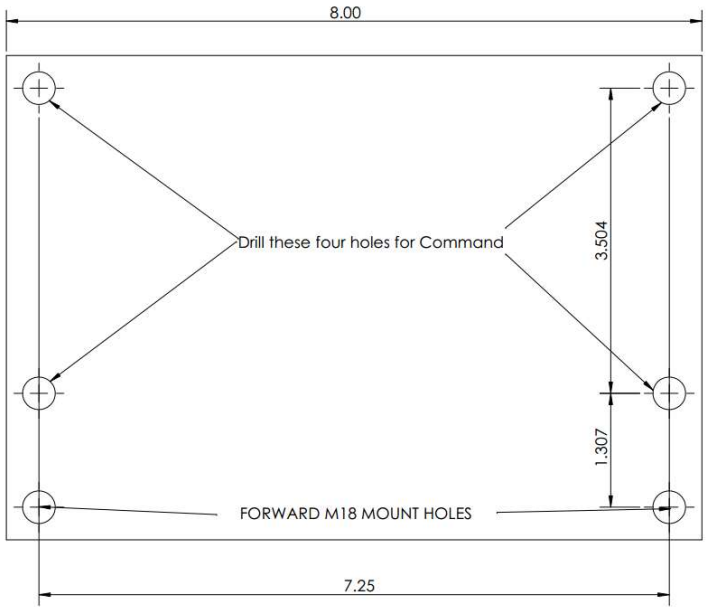
The following is to document the details of my installation of a Kohler Command V-twin into an 1872, replacing the horizontally-opposed Kohler Magnum that it came with. Some of the others that have gone down this path before me had issues with cooling and interference between the air cleaner housing and the firewall, which I have tried to address, as it routinely gets above 90 degrees in the summer where I live, and I need to be able to mow with the tractor in the heat. This engine transplant required various issues and interfaces to be addressed:

-Fore/aft location in the tractor
-PTO Clutch
-Engine Cooling
-Wiring
-Air cleaner housing/firewall interference
-Muffler
-Driveshaft

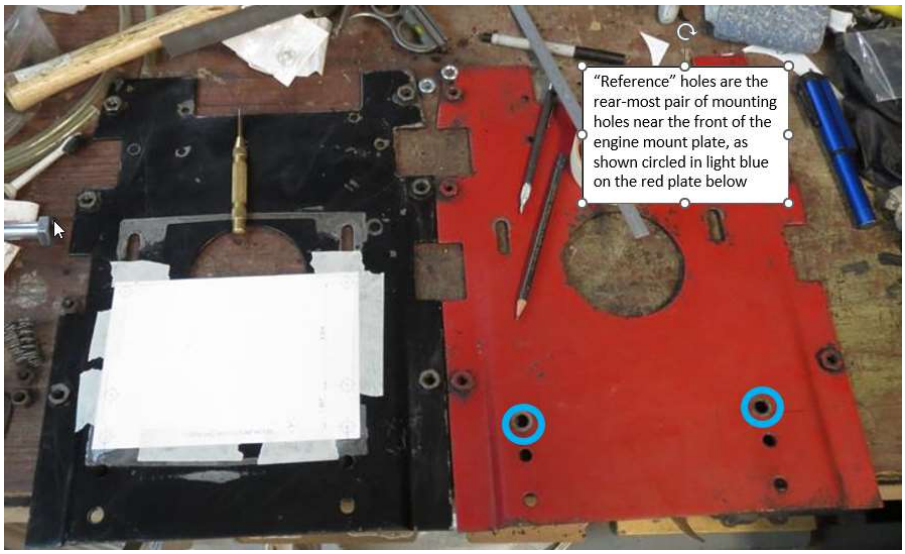
Location of Engine in Tractor

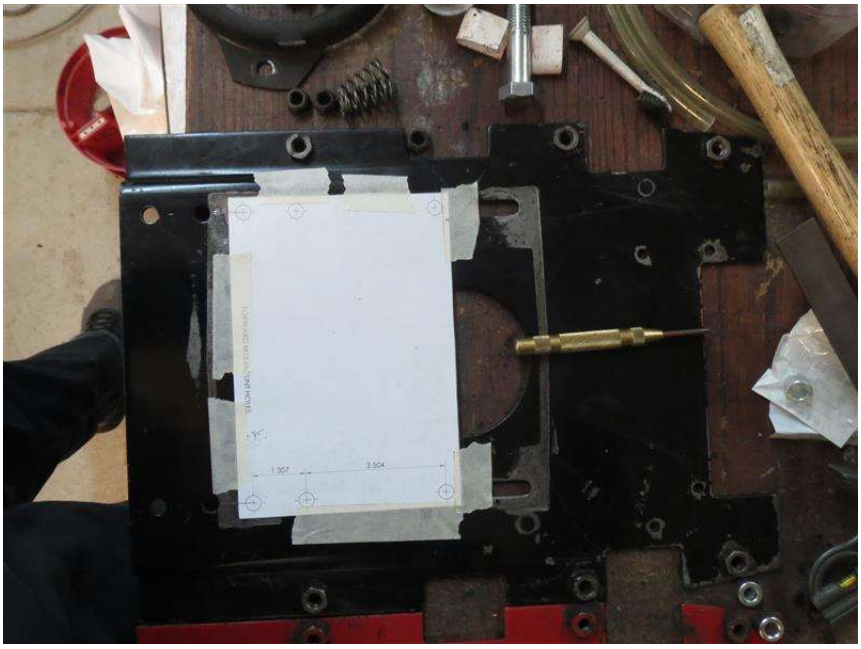
There are two ways to do this depending on the intended use of the tractor; one is to have the engine far enough forward the air cleaner housing doesn't interfere with the firewall (more on that later), or to place the engine such that the PTO clutch ends up in the same relative position as with the original engine installation. Moving the engine forward so the air cleaner housing clears the firewall may result in issues getting some belt-driven implements to work, and knowing I'd primarily be using this tractor to mow, I elected to position the engine such that the PTO clutch pulley is in the original location relative to the frame. There is probably a compromise in between these two locations, but I was not interested in the potential trial-and-error process necessary to find the right compromise.

Anyway, the service manuals for both the Magnum and Command have some nice line drawings with dimensions of the mounting bolt pattern. The crank centerline height is the same, so the original Magnum or KT spacers can be used. The original spacers were missing on mine, so I bought some heavy-wall bushings from the hardware store that were 0.5" long, which is slightly longer than the OEM spacers, but not enough to make a difference. I made this template (not to scale below) to locate the holes on the original mounting plate based off of the locations of two existing holes.



The ‘forward M18 mount holes’ referenced in the drawing are circled in light blue in the image below:





I taped the template in place on the plate, used a center punch to transfer the hole centers, and drilled the holes. The hole pattern ended up perfect. All of the bolts lined up. This template is attached at the end of the document. If printed at 100% scale, it can be used to mark the hole locations. Before using, verify the dimensions on the printed template with a ruler to ensure that your printer did not try to “help” you and scale the image.

PTO Clutch

Not a whole lot to say about this other than the KT-17/M18 4.5” clutch will bolt up to a Cub Cadet-spec Command engine. The 6” PTO clutch from the 2000 series will also work if it is desired to use later attachments designed for the 6” clutch.

While on this subject, I replaced the bearing in the PTO clutch. It is a readily-available 6206-2RS ball bearing. To replace it, the stake marks need to be ground off, and then the bearing can be pressed out, new one pressed in, and re-staked. I obtained the replacement bearing on eBay.

Engine Cooling

I spent a lot of time researching this issue, as a lot of people who have made this conversion have found their engine overheats. There are likely a few factors contributing to this:

- Lean carb for emissions restrictions- These modern V-twin engines all seem to run lean; the CH18 and 20 in particular. Consequently, they run hot. I intend to eventually modify a spare carb to have an adjustable main jet, which will help a bit with this.
- Lack of cooling fin area on the heads- This engine does not have a ton of cooling fins on the head, so it is really relying on the oil and intake air charge to cool it. The air intake will be discussed in more detail in a later section.
- Firewall not sealed well enough on 82 series tractors- If you start comparing the 82 series to the later Cyclops tractors with the Command engine, you'll notice a much better-sealed firewall on the tractors that came from the factory with the Command engine.

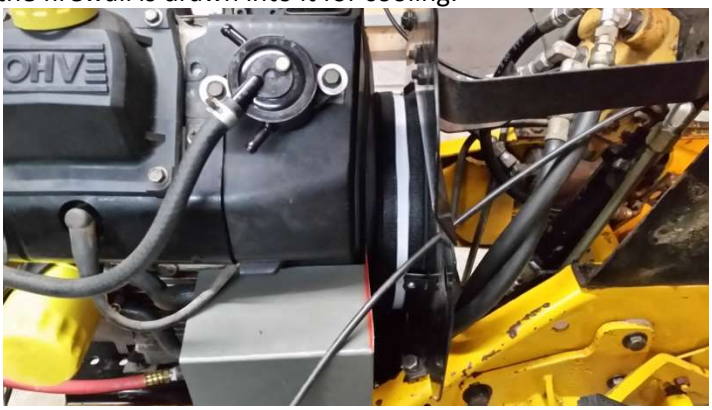
Someday I intend to modify the carb to be adjustable to take care of the first bullet point. The second is mostly addressed in a later section, but oil cooling will be addressed here. In my opinion, an oil cooler is absolutely mandatory for one of these transplants. The higher HP Commands had them, and they are readily available used on ebay (search for "Kohler Command Oil Cooler"). All you need is the adapter block, hoses, cooler, and a new O-ring for the adapter block (24-153-21-S). A hole needs to be cut in the side of the flywheel shroud to allow air to pass through the oil cooler. I also added an additional piece of sheetmetal to direct the air toward the front of the tractor, where it needs to go (cardboard mockup shown below):

There are three or four different Kohler oil filters that will fit this engine, all different lengths. I recommend the longest one that will fit and not interfere with the muffler shroud and/or side panel, as more oil capacity is always a good thing. The oil cooler also adds some oil capacity. Between these two mods, this engine holds about 2 quarts of oil.

Something else that is shown in the picture above is the red Drainzit hose that I used to replace the OEM quick drain. I would also recommend this mod, as the OEM quick drain is messy and is far too easy to unlatch unintentionally.

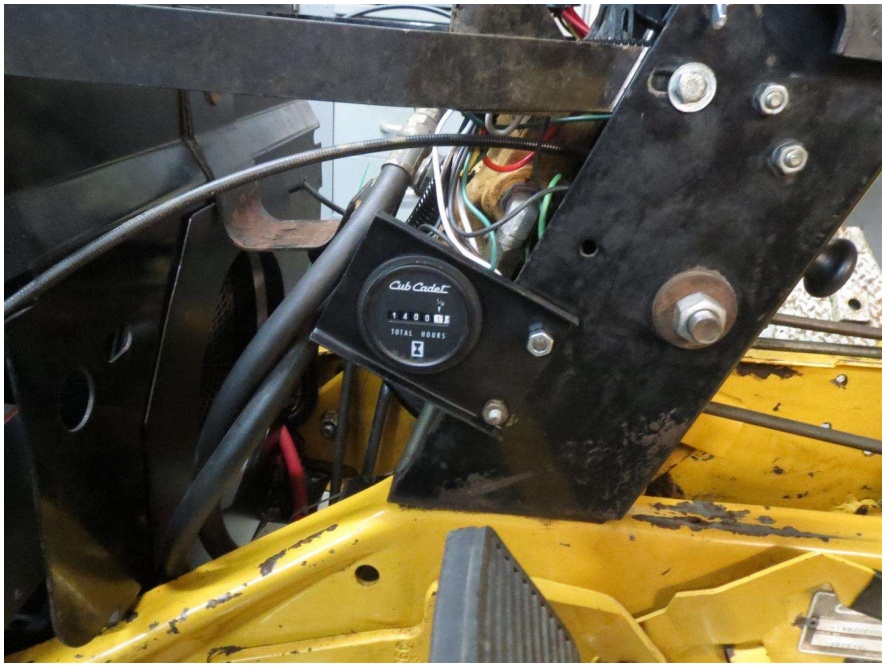
To better seal the firewall, I made an additional piece that blocks off the gap below the OEM firewall and shrinks the hole down to the size of the flywheel shroud opening.

I then made a spacer with a circular ring of sheetmetal with a bulb seal on either side to wedge between the engine and this firewall extension to ensure that only air from behind the firewall is drawn into it for cooling.



Wiring

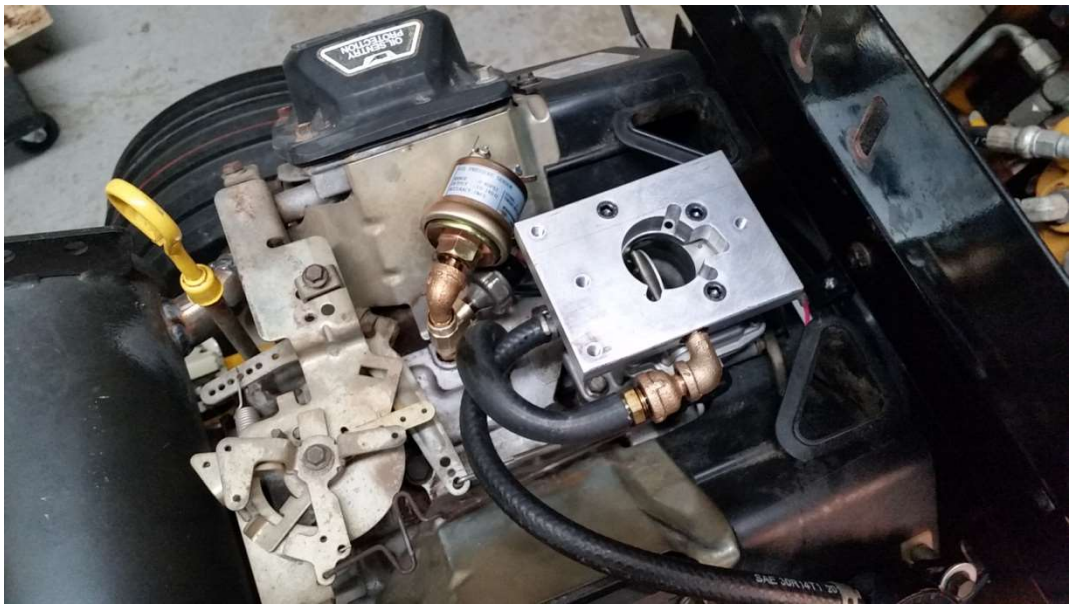
I started over on the wiring on this tractor, as it was just too far gone to try to use the original harness. The 2000 series harness does not fit well into a super, either. I wired it more or less the same as stock, with a couple exceptions. I deleted all the safety switches, replaced the ammeter with a voltmeter (more useful information), moved the hourmeter below the dash, and added an oil pressure gauge. Since these engine installations seem to be prone to overheating, an oil pressure gauge is a good idea, as this will give some advance warning. A drop in oil pressure should precede the power loss associated with overheating. I also replaced the ground and positive cables with 4 ga cables. This seems to have greatly improved the operation of the starter. The original cables are 8 ga, which I feel is barely adequate, particularly in cold weather. The original plastic connectors used on Cub Cadets are Delphi 56 Series. Ebay is full of various packages of connectors, terminals, etc. A special crimper is required.



Air Cleaner Housing/Firewall Interference

This is a problem for two different reasons, as the air cleaner won't clear the firewall if the engine is installed so the PTO clutch is in the correct position, and the engine won't cool properly if the housing is cut to clear the firewall. I went with the nuclear option for my installation; I ditched the original air cleaner assembly and replaced it with an adapter, 90-degree elbow (Kohler 2402921-S), Honda V-twin remote filter, and a "snorkel" to draw in air from in between the headlights. A couple of silicone intake hose pieces from Amazon completed the installation. The triangular holes in the flywheel shroud from which the OEM air filter gets its air are plugged.

Kohler makes an adapter plate to connect the Command carburetor to this 90-degree elbow, but it was nearly $100, so I made my own on the mill. I also plumbed the crankcase breather into it.



This does seem to somewhat heat the air up due to proximity to the muffler by about 40-50 degrees over ambient temperature, but so far, the engine does not overheat. Yes, I know this because I temporarily installed thermocouples before and after the air filter and noted the difference in temperature during operation. If I have problems, I have another idea involving getting air from the flywheel shroud that is far more complicated.

Muffler

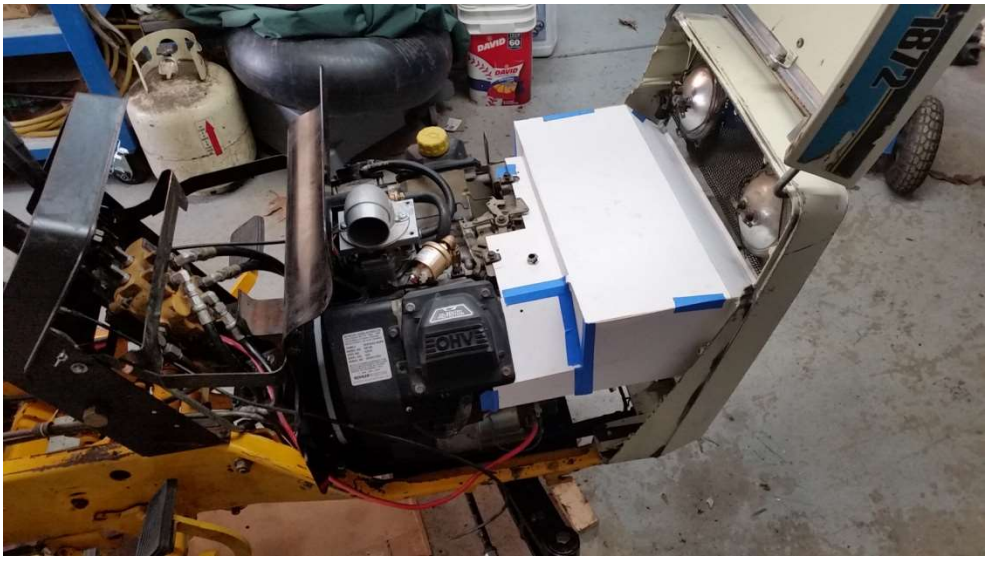
The easiest way to deal with this is to get an 1863, 1864, 2084, or 2284 muffler and heat shield. These can be a bit expensive and not readily available. The muffler is nearly $300 new from Cub Cadet, so I went a different path to control cost on this project. I bought this new muffler from Surplus Center and a 180 degree 1.5” pipe mandrel bend.

Muffler link:

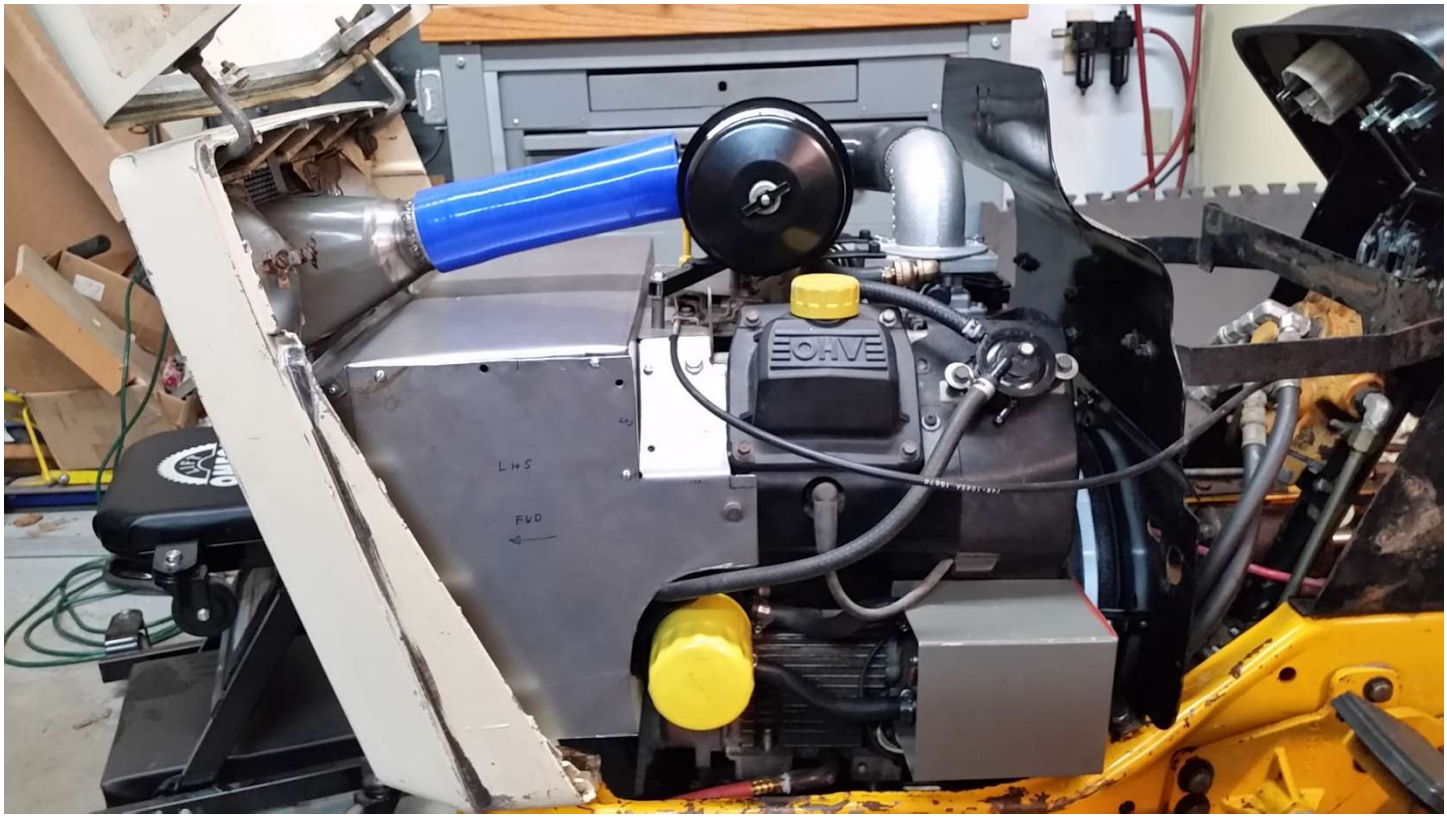
https://www.surpluscenter.com/Engines/Engine-Accessories/Mufflers/Muffler-For-2-Cylinder-Vertical-Engine-28-1878.axd

Between the muffler, mandrel bend, and some pieces of the 2000 series exhaust, I made the muffler fit. I cut the mounting bracket off the M18 muffler since it was rusted out and used it to support the muffler on the Command. I used two hose clamps to attach the muffler to the support instead of trying to weld it. I was afraid it would warp too far out of position.

I then made a muffler shroud with some 20ga steel sheet. BBQ grill high-temp paint was used on the modified muffler and the heat shields.



Thin posterboard makes great templates for sheetmetal work.



The choke cable routing is visible in the photo above; I used the choke cable from the 2000 series donor tractor.

I used the 1872's original throttle cable, routed like so in the photo above.

Fuel Pump

There are a few options here. Some engines came with a mechanical fuel pump on the LH side valve cover, and some came with a vacuum-operated fuel pump. The mechanical fuel pump interferes with the side panel, so I recommend buying a plain valve cover and either switching to the vacuum style pump or a Facet electric pump. The electric pump needs to have 1-2 psi delivery pressure to avoid overcoming the needle and seat on the carb. A link to the lowest-cost supplier for that pump is in the “parts sources” section at the end of this document. So far, I’m perfectly content with the vacuum-operated pump. It is theoretically possible to run the engine hard enough to lose vacuum and therefore fuel flow, but I have not experienced this with this tractor, even with mowing thick 8-10” grass with the 60” Haban deck.

Driveshaft

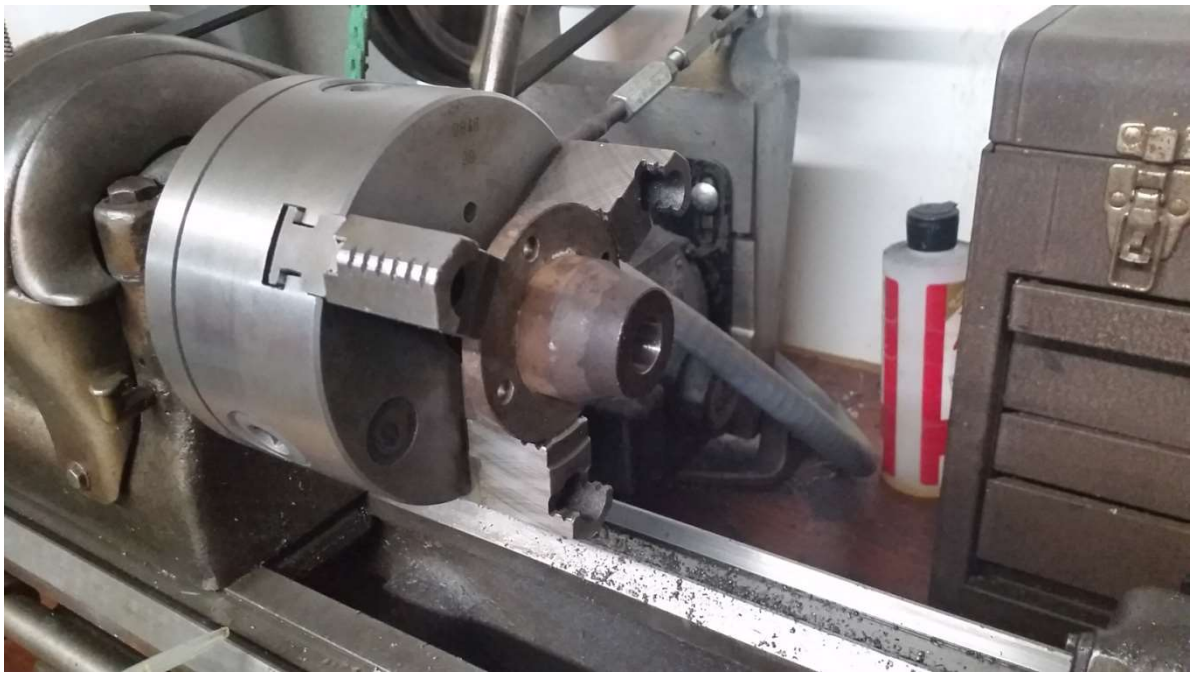
This is the last thing that has to be figured out, and there are several ways to go about connecting the engine to the transmission. The Command is more compact, so the driveshaft needs to be ~1.5" longer. A custom adapter will be required for a gear drive. For a hydro, the options include but aren't necessarily limited to:

- OEM-style driveshaft made longer. This is probably the easiest route if a drill press is the only tool available. For a super, a lathe will also be needed to turn the ends down from ¾" to 5/8".
- CV joint driveshaft from a Cyclops. This can be a drop-in solution if you change the hydro pump to the Cyclops version and use a driveshaft from a similar Cyclops machine with a Command engine.
- Front half of 2000 series driveshaft and rear half of OEM driveshaft. This will only work on a GT, as the SGT driveshafts are ¾". The 5/8" driveshaft slides inside of the hollow tube that is a 2000 series driveshaft. I personally don't like this solution, as you still have the flex coupler at the back end and it's associated wear issues. If going this route, use two spirol or tapered hardened pins to couple the two shafts together. Welding will warp the driveshaft and cause it to vibrate.
- Shortened 2000 series driveshaft. In my opinion, this is the best way to go if you have the tools and abilities to modify it to work. This is also easy if you are using a Cyclops hydro unit (simply use a CV joint transmission coupler). For a hydro unit with a round input shaft, machine the 2000 series input shaft coupler to work as I will detail below, or buy one from here: https://www.everythingcubcadet.com/forum/trading-post/for-sale/998-parts-by-jeff-sleeve-hitch-adapters-pto-buttons-driveline-and-custom-parts I have not bought anything from this guy and am not affiliated with him in any way, but his stuff appears to be high quality.

Of these options, I decided to go with a shortened full 2000 series driveshaft. In my opinion, this is the best driveshaft design Cub Cadet used. It is simple, can handle at least 25-27 hp and the wear item (drive barrel kits) are cheap compared to flex couplings or any of the CV joint parts.

Note: This 1872 ended up with a Frankenstein hydro unit that does not have the splined input shaft, hence the modifications to the coupler below.

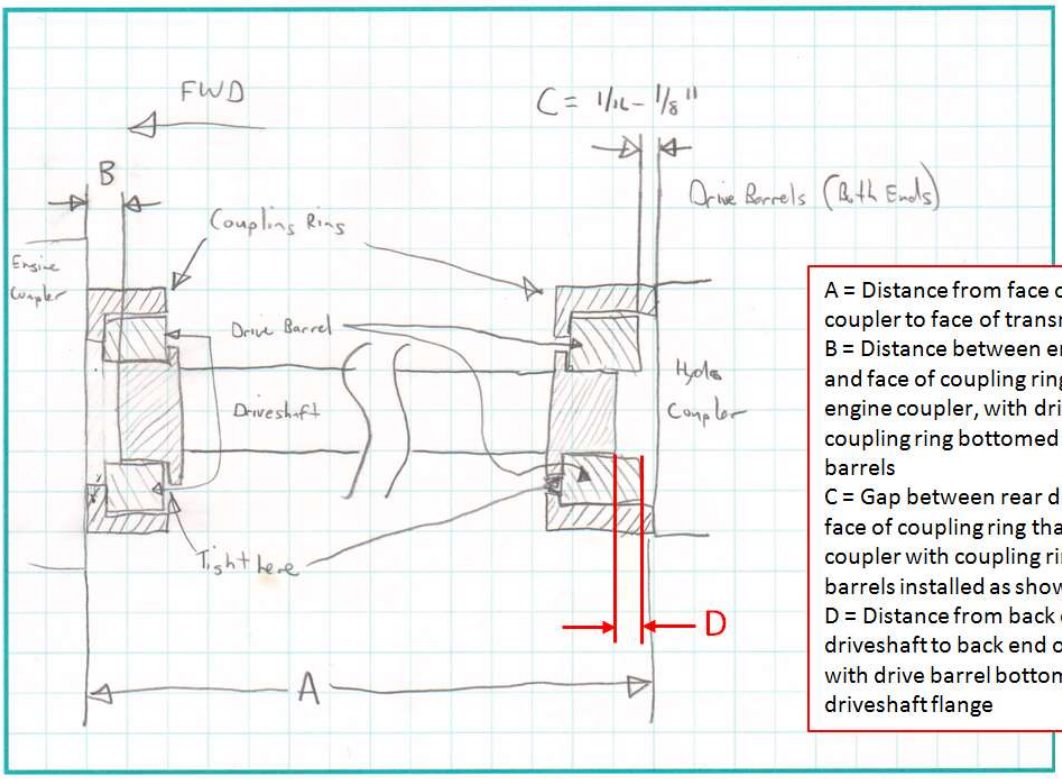
The first thing I did was modify the coupling on the transmission input shaft. This is needed to determine the overall length of the driveshaft. The 2000 series coupling is meant to install on a tapered shaft and is hardened. In order to machine it, I threw it in the coals of a large bonfire and retrieved it the next morning. This took enough of the heat treatment out that I was able to machine it. First, I bored out the taper to a straight 0.625" bore.



I then machined two flat spots on it so I could have a flat surface to clamp it to my mill table for drilling the spirol pin hole. I drilled the spirol pin hole such that the coupler had about 1/16” gap between the back of it and the input shaft seal on the charge pump housing to maximize the length of the shaft that was engaged with the coupler.

With the engine and coupler installed, I used a piece of conduit and ¾” rod as a telescoping gauge to measure between the engine and transmission to determine the length of the driveshaft.

Below is a sketch of the components of the driveshaft.



A = Distance from face of engine coupler to face of transmission coupler
B = Distance between end of driveshaft and face of coupling ring that touches engine coupler, with driveshaft and coupling ring bottomed out into drive barrels
C = Gap between rear drive barrels and face of coupling ring that touches hydro coupler with coupling ring and drive barrels installed as shown
D = Distance from back end of driveshaft to back end of drive barrel with drive barrel bottomed against driveshaft flange

The overall length of the driveshaft is then A – (B + C + D). Dimension “C” is an allowance for the frame to bend and twist and the engine and transmission to grow in length slightly at operating temperature.
I cut the welded end off of one end of the driveshaft just forward of the weld, machined the weld off with the mill, and then used a hydraulic press to push out the little piece of the driveshaft still in the driveshaft end fitting. I then pressed it over the end of the driveshaft and welded it back on.

I was a bit concerned about the driveshaft warping from my less-than-perfect weld job. Thankfully, it did not- Only about 0.008” of runout. There is no noticeable vibration with the engine running. I’d say anything more than about 0.015-0.020” of runout would be noticeable and annoying.

If using the whole driveshaft or any portion of it, replace the blue drive barrels (759-3764, one kit for each end of the driveshaft) if the rings will not stay on the ends of the driveshaft with all of barrels installed. New barrels fit tightly.

And…that completes the installation!

Parts Sources

I have no affiliation with any of the source to follow, these are simply places where I bought things or found things that would work.

Rearend couplings – This seller has couplings needed to use either the CV joint driveshaft or 2000 series driveshaft on any Cub Cadet garden tractor prior to the 3000 series. Had I known about these, I probably would have bought one instead of machining the 2000 series input shaft coupler.
https://www.onlycubcadets.net/forum/showthread.php?t=20875

Muffler – here's the link for the muffler I modified. This is not a stock item at Surplus Center, so these will eventually disappear.
https://www.surpluscenter.com/Engines/Engine-Accessories/Mufflers/Muffler-For-2-Cylinder-Vertical-Engine-28-1878.axd

Amazon.com has many, many useful things for this project. Here are links to several items I used on this project:
4ga ground cable: https://www.amazon.com/gp/product/B072K14SDF/

4ga positive cable (correct length for a super; may be too long for a regular garden tractor):
https://www.amazon.com/gp/product/B075FYWX5D/

Battery terminal covers (Covers from the OEM harness won't fit over 4ga battery cables):
https://www.amazon.com/gp/product/B011CO8806/

Silicone intake hoses for custom air cleaner installation:

https://www.amazon.com/gp/product/B00GX2NABA/
https://www.amazon.com/gp/product/B00TGPKVWC/

759-3764 Drive Barrel Kit, OEM. Turned out Amazon had the best price of all the online retailers when I went looking for these.
https://www.amazon.com/gp/product/B00GGMNIBE/

Bulb seal for the spacer between the engine and firewall. It would have been nice to buy about 10' of this, but that was not possible. NOTE: This item from Amazon has significantly increased in price since I bought it. It might not hurt to shop around. I'd suggest McMaster-Carr as a good starting point.
https://www.amazon.com/gp/product/B00NL40XQI/

Drainzit oil drain hose, 3/8" NPT – Use this with the OEM 90-degree elbow for the original quick drain. As I mentioned above, the OEM quick drain is messy and is way too easy to unlatch. This hose is available from Northern Tool:
https://www.northerntool.com/shop/tools/product_200606445_200606445

Honda Air Filter – This is the air filter I used.
http://www.smallenginewarehouse.com/Honda-Filter-Sn-2.html

Oil Pressure Gauge and Sender – I purchased these on eBay, and they worked well with each other.
https://www.ebay.com/itm/VDO-gauge-Oil-pressure-80-psi-genuine-Cockpit-350-066-2-52mm-spin-loc-harness-/272279256416?hash=item3f651bbd60
https://www.ebay.com/itm/New-Oil-Pressure-Transducer-Sender-0-80-Psi-Input-10-180Ohms-Output-Sensor-/132334926697?hash=item1ecfc6bb69

Vacuum Fuel Pump
https://www.ebay.com/itm/NEW-Fuel-Pump-2439316S-49040-7001-for-Kohler-17-29HP-Kawasaki-4-Stroke-Engine-/272629251815?hash=item3f79f83ee7

Facet Electronic Fuel Pump – These are nice but spendy. Cheapest source as of this writing here:
http://www.kirkengines.com/index.php#FacetElectronicFuelPump