

1978 Cole Hydro
429 Ford Tuning and Maintenance
Procedures, Specifications and Adjustments

Engine Coolant(water) Hookup with Boat on Trailer

1. Remove boat from garage
2. Purge garden hose by connecting to faucet and letting run for 15-20 seconds. Clean any dirt from threads of hose. Shut off water
3. Bring hose over to boat and thread garden hose end of rubber hose adapter fixture
4. Connect the small-hose-end adapter to the water fitting that faces forward.
5. Turn on the garden faucet about 2-3 turns. Water should start coming out of the transom water exit aperture. When this occurs, reduce the water flow to a small stream that will arc downward with a 1-2" arc. Goal is to keep internal block pressure below 14psi and also to not overcool the motor.
6. You can now start the motor and be assured of adequate cooling. Please view gauges periodically to ensure all parameters are within spec. while in operation

Engine Coolant Temperature Adjustment (on lake)

NOTE: There is a coolant adjustment valve under the battery tray. Normally, this *should not require adjustment unless you are boating in very warm or cold water*. That valve is used as a restrictor to control the running temperature of the engine. Verify or set the valve as follows:

1. If adjustment is required, you will need leather gloves on board. The adjusting valve will be hot along with engine surfaces and especially the headers (obviously!). I also recommend having an able passenger with you in case of emergency.
2. With the boat on the lake, fire the engine with v-drive disengaged (neutral) to oil up motor. Check gauges for proper readings. Run for 15 sec. and shut down
3. Put v-drive in gear with boat pointed in desired direction (use small oar/paddle) start boat. Go slow away from shore until you exit idle zone. Increase speed to cruising but not racing speed. Monitor water coolant temperature on gauge.
4. Normal operation should be between 170-180 degrees. If temperature starts going over 180, shut down engine in a safe area with calm water. Put on the leather gloves, and work your way to the rear of the boat, either sliding down the side or hopping out and going through the water (keep the leather gloves DRY)
5. Once at the back of the boat near the battery, grab the water valve and open it slightly(!), maybe 1/8th of a turn to lower the temperature. Reverse the procedure if it is too cold. The valve is a ball valve not a gate valve, so the adjustments are slight to make a big difference.
6. After adjustment, go back to the wheel, fire and go monitoring the temperature until it reaches the desired range (170-180)

Oil Change Procedure

1. **Locate** suitable containers to catch and contain the oil as it is draining from the pan. This **amount** could be 8-10 quarts
2. I recommend using nitrile latex or equivalent gloves to prevent exposure to hazardous chemicals
3. Have a solvent such as kerosene or equivalent and paper towels and rags ready for cleanup during the process

4. Ensure you have 10-11 quarts of the recommended oil on hand along with the recommended oil filter, an oil filter wrench
5. Ensure the engine block is FULLY filled with water or attach a garden hose with the pressure set fairly low so that the outgoing water reaches a 1-2" arc. Start the engine and run for about a minute to warm the oil. Shut down and remove water source.
6. Prepare a hydraulic floor (recommended) or bottle jack to raise up the nose of the trailer so that the bow will be raised upward at the proper time. This will assist the oil in fully draining out of the pan to the rear
7. Remove oil dipstick and oil breather with PCV valve on left side of engine to relieve any potential suction that would impede draining. Be sure to reinstall after filling engine with new oil.
8. This boat has had an oil drain extension hose installed. Sadly the hose is a bit short of the length necessary to extend through the center water drain hole in the transom. Until a new, longer hose is fitted, you can work around this problem by making up a temporary extension for the current hose like so:
 1. Obtain a pipe thread nipple that matches the NPT diameter of the plug in the end of the oil drain hose. I believe this is 1/4" npt, but I have not verified it.
 2. Next obtain about 3-4 feet of rubber or vinyl hose that will tightly fit over this pipe nipple but is not too large in diameter, as it must fit through the transom drain hole.
 3. Hold the drain hose from the engine oil pan by the end and remove the plug (ENSURE that you hold the hose above the level of the engine's crankshaft or the oil will start coming out prematurely!)
 4. After removing the plug, install the nipple and the extension hose. Tighten and clamp fittings as necessary
 5. Position the drain pan under the transom drain hole
 6. Swiftly and carefully poke the added drain hose extension through the transom drain hole. The oil should start coming out of that hose and draining into the pan
 7. Adjust the attitude of the boat by jacking up the front of the trailer to the point that achieves the greatest flow of oil out of the pan. You may need to raise and lower the jack to find the "sweet" spot.
 8. When the oil stops draining, remove the nipple and the extension hose. Next, clean the drain hose pipe plug, wrap it with Teflon tape and reinstall the plug back into the drain hose
 9. Place another drain pan under the oil filter on the engine and remove the oil filter. Clean filter gasket surface
 10. Dispose of old oil and filter and clean up equipment EXCEPT leave the drain pan under the engine oil filter
9. Install new oil filter in this manner:
 1. Locate the new oil filter and remove it from the box without damaging the box.
 2. Blow out any debris from the new filter and gasket and set it back in its box with the threads upright
 3. Fill the new filter with the recommended motor oil. Smear a liberal amount of oil on the new filter's gasket.
 4. Remove filter from box on bench and screw onto the engine's fitting. Tighten only enough to seal, which is typically 1/2 to 1 turn after the gasket contacts the engine block when tightening by HAND.

5. Clean up any drips in the area and remove the drain pan under the filter
10. Using jack under front nose of trailer, adjust the attitude of the boat so the engine is roughly level or the hull is approximately in the running trim. This is required in order to get a correct oil level reading on the dipstick
11. I can't recall *EXACTLY* how many quarts fill the entire system, so go slow using this procedure: Clean dipstick and install up to 7 quarts of engine oil through the PCV breather hole in the left valve cover. Reinstall then check the dipstick. If it is not on the "full" or the "1-quart low" indicator yet, add another quart. Continue in this manner until you are one quart low on the stick. Next, *carefully add more oil* until the level is just below the "full" line on the dipstick. Keep track of how many quarts were put in the pan and the filter, then update this documentation with the proper values.
12. Reinstall the PCV breather, dipstick any any thing else that was disturbed during this procedure.
13. Fire engine (if it has water) and check the oil pressure. It should be above 20 psi.

Lubrication Specification

Engine Oil	Mobile 1, 15w-50 (or equivalent weight and grade oil with >1200ppm ZDDP content to protect flat-tappet cam and lifters)
Engine Oil Filter	Motorcraft FL-299 (truck and marine) filter
Distributor Oil Port	20-30w oil (three times a year)
V-drive	85w-90 gear oil (if draining, refill with synthetic)
Propeller & Steering packings	Marine grease
Trailer Wheel Bearing Buddies	Marine grease
12v Battery	Distilled water

Adjustable and Replaceable Components

Note: Adjustment recommendations for optimal performance at 4300' elevation were determined through extended usage. They are considered to be as accurate as possible without the assistance of dyno tuning. The settings for 0-1000' are hypothetical and have been set or recommended as a starting point.

Function or Part	Setting @ =< 700' Elevation	Setting @ ~4300' Elevation
Spark Plugs	Motorcraft BF-32 or if glazing use a colder BF-22 or Accel 375 (Nippon Denso #MA20P-U)	Motorcraft BF-32
Spark Plug Gap	0.044	0.044
Initial Timing	10 deg	16 deg
Centrifugal Advance (in crank degrees)	26 deg	26 deg
Idle Speed (on water, in gear), set with carb synchronizer	As slow as possible without dying (~1000 rpm)	As slow as possible without dying (~1000 rpm)

Adjustable and Replaceable Components (cont'd)

Idle Mixture (set with carb synchronizer & vac gauge)	Use standard procedure for a car with an auto trans, in gear. Boat should also be in gear and on water for adjustment.	Use standard procedure for a car with an auto trans, in gear. Boat should also be in gear and on water for adjustment.
Coolant exit valve (Water Temp Gauge)	170-180 deg	170-180 deg
Lash on Intake Valves (cold)	0.020"	0.020"
Lash on Exhaust Valves (cold)	0.028"	0.028"
Voltmeter Reading, Engine Running	13.9-14.2 volts DC	13.9-14.2 volts DC
Oil Pressure Reading, Engine Running	20 lbs or greater	20 lbs or greater

Carburetor setup (2x Holley R-4778, carb-1 is setup identically to carb-2)

Function or Part	Setting @ =< 700' Elevation	Setting @ ~4300' Elevation
Primary Needle & Seat Assy.	#6-502 (.120")	#6-502 (.120")
Primary Jet	72	71
Primary Power Valve	6.5hg	4.5hg
Primary Accel. Pump	50cc	50cc
Primary Accel. Pump Cam & Hole #	290-Green, h-1	330-Pink, h-3
Primary Accel. Pump Shooter #	31	28
Secondary Needle & Seat Assy.	#6-502 (.120")	#6-502 (.120")
Secondary Jet	89	84
Secondary Accel. Pump	50cc	50cc
Secondary Accel. Pump Cam & Hole #	466-Orange, h-1	466-Orange, h-2
Secondary Accel. Pump Shooter #	35	31