

MISCELLANEOUS TIPS: Some typing errors are a result of converting an email document into a plain text document

<<A4 ran like a top on Sunday...A few hours later it cranked more than usual to start, but ran normaly once started. Idled and sounded okay.> >

Avoid overcranking the engine with the raw water supply valve open, with no exhaust to blow the water out it can flood back into the engine from the muffler being overfilled and cause very expensive problems....I know it happened to me last year.

<<Boat sat for a day and now won't start! Cranks and cranks...makes sound like it WANTS to start, but doesn't catch. I've got a mechanic who's looking at it in a few days...could it be the coil...he seems to think it's electrical...?>>

Electrical is one of the first things you should check. You need 3 things for any gasoline engine to run, SPARK, FUEL & AIR. Most of the time the problems will be with SPARK or FUEL.

SPARK:

Are you getting a strong spark at the plugs (and plugs clean), if so then the electrical is probably OK. However, a coil going bad may start fine but quit when it gets warm.

A friend with an A4 found that his engine ran fine after a tune up, but quickly deteriorated until it quite running when the point gap seemed to go out of adjustment. It turned out that his distributor cam had acquired rust spots and the roughness was wearing down the part of the points that is in contact with the cam, resulting in the points closing after awhile. He polished up the cam and it was fine.

FUEL:

With automobile downdraft carberators you can look into the throat to see if you are getting fuel delivered. You can't do this with the updraft carberator on the A4. After turning it over for a while you could remove a plug and see if it smells like gas. DOES ANYONE ELSE HAVE ANY TIPS ON HOW TO CHECK THIS. You can loosen the gas line from the fuel pump to see if you are getting fuel that far. It should squirt out in pulses when your turn the engine over. Hold a bottle over the end of the line to cat ch the gas. But you could still have a clogged carberator jet or other carb. problems.

AIR:

Is the choke working? Check it visually. My A4 rarely needs the choke to start unless its real cold out or has been sitting along time. But the manual says that it needs to be closed to create enough suction on the jets to begin drawing fuel thru the carb.

If you put a hand over the end of the carb mouth when you turn the engine over you should be able to feel suction, the pistons drawing air thru the carb. If you don't feel that you could have a stuck valve. A sticky valve could cause what you described, if stuck open it can prevent the pistons from drawing air/fuel in thru the carberator.

Compression: hold a finger lightly over the spark plug holes to see if you

sense any compression.

DOES ANYONE ELSE HAVE ANY TROUBLE SHOOTING TIPS TO OFFER?  
CptinRn@aol.com

Updates to follow ---

To: RKMosier  
A4 Trouble Shooting & Carburetor Problems

I just had a new experience with my A4 carburetor this weekend that may be relevant to your problems.

Because of vacation (BVI), work load and extremely HOT weather (often over 100 degrees), I haven't gone to the coast (Texas Gulf) for about 12 -13 weeks to check on my boat. So the engine hasn't been run in that length of time.

My goal this weekend was just to deliver "Mystic" to the boat yard 6 miles away for a bottom job, in preparation for cooler Fall cruising.

The engine would not start, not even a sputter. The carburetor was brand new 1 year ago, so it was the last thing I suspected and I started trouble shooting the other systems.

Spark: Coil: Pulled the lead from the coil to the distributor, got a good spark off of the coil. Removed #1 spark plug, laid it on the block and turned the engine over, a good spark was visible, so the ignition system appeared to be working.

Compression (air): Put finger over #1 spark plug hole and turned engine over to verify both intake (suction) and exhaust (compression) strokes. A valve stuck open can short circuit either of these. Both seemed fine.

Short of checking every spark plug and every cylinder for all of the above, basic indications were that those systems were OK. That left the fuel supply.

FUEL: Fuel tank dip stick indicated tank was over 3/4 full, I try to keep it close to full to minimize water condensation. I changed the fuel filter in the spring so I didn't recheck it. Using the manual fuel pump lever I could feel the fuel pressure build up as I pumped. For the first several manual pumps you can feel the fuel being pumped. After 3 or so manual pumps the lever will feel dead, this is because you've pumped the pressure up as high as it will go, at which point the pump linkage takes up the pressure from any additional pumping. u

Fuel to Carburetor: I suspected a bad fuel pump as I have replaced about everything else that attaches to my 1975 engine. So, after placing several paper towels and a cup to catch any fuel spills, I loosened the nut which attaches the fuel line to the carburetor. It leaked gas so I knew fuel was getting as far as the carburetor. The pump was fine (but I think I'll order a replacement anyway; 1975 was a long time ago for a fuel pump).

Carburetor: This was the last thing I expected to have problems with. Everything else seemed OK, so by process of elimination, this had to be it. Reluctant to remove it, I first tried draining fuel bowl, to see how clean the gas was. My old Zenith 68 carb. had a separate fuel bowl drain plug, that

allowed you to remove water and junk that settled to the lowest part of the bowl. This "replacement" Zenith 68 carb doesn't have that drain plug, but the plug you remove to get at the main jet serves almost the same purpose. Which tells you something about where the main jet is located. Hint: it is at almost the lowest part of the fuel bowl, so any junk that gets into the fuel bowl will end up at the main jet.

The fuel that drained out looked clean, so I replaced the plug. Where it is located I couldn't see into the plug opening, but in hind sight I probably could have inserted a screw driver and removed the main plug without removing the entire carburetor.

Hoping that this solved the problem I pumped up the fuel pump and tried to start the engine. The engine would start and run at lower speeds (up to 1/3 throttle) as long as the choke was closed. Above that it died. Open the choke and it died.

I read and reread the "Owner's Manual" description of how the carburetor works. This convinced me I still had carburetor problems. The Carb has an "Idle System" and a "High Speed System" It seemed clear that the "Idle System" worked as long as the engine was choked, and the "High Speed System" didn't work at all. Both are fed by fuel from the main jet.

Back on my knees, I removed the carburetor, careful to avoid damage to the intake manifold gasket, and examined the carburetor. It looked ok, so I removed the main jet plug, and sure enough, without removing it I could see it was clogged. I took it out and found a needle to clean it with. The Main jet (brass) was almost completely covered with a pale green slightly crusty substance (corrosion?). The hole in the jet was almost completely full of the stuff and some pretty good flakes had to be scrapped off of the surface. I cleaned it as best I could and replaced it, put everything back together. Since I didn't have a replacement carburetor gasket I decided to see if it would start before I took the carburetor apart any further. Guess what? The engine started and ran fine.

So in less than one year of use, the main jet on a brand new carburetor had become clogged with ? corrosion or what? I have an older spare carburetor I'm going to rebuild and install in lieu of this "new" one. Then I will rebuild it and see what else I can find.

Lessons learned. In the past I've experience intermittent sputtering at high speeds, sometimes "pumping" the throttle or partially choking the engine cleared it up. This is probably because something was partially clogging the main jet, and changing engine RPM's or the additional suction from the choke helped clear the main jet.

Ron

Subject: Re: Carburetor adjustment  
Date: 25 Sep 1997 18:32:05 EDT  
From: Qshicks  
Message-id: <19970925223201.SAA15509@ladder02.news.aol.com>

there is 2 adjustment on late model one is a air /ideal setting that is on the butterfly and you should not have touched it the other is the ideal /slow speed needle valve and

the setting  
for that is 1 1/2 turns from closed and then lean from their most moters run  
well with the  
valve set at 1 1/4 turns open the high speed jet is fixed the moter should idel  
out of gear at  
700 to 800 rpm with the chock off and the moter warm

Carberator float dimensions: I had two different dimensions for the float  
level adjustment. The one that seems to have come with my Atomic Four owners  
manual made no sense. However, the numbers I got in the instructions for the  
kit from Don Moyer 1.25 -1.31" (top of housing to top of float) made complete  
sense and I adjusted the floats to these specs and they were perfectly level.  
(Which is the goal when the upper carb housing is held with the floats facing  
upward).

zac@mars.harvard.edu

Re: A4 Spark Plugs (RJ12C)

I've been running RJ12C plugs in my A -4 a couple of years now and I also  
put in the electronic ignition with the high voltage coil. Plugs stay  
really clean even though the RWC engine is running more cooler than a gas  
engine likes at 165F.

Joe

PROP:

IndigoAT4 : Having just purchased a '76 Tartan 34 with Atomic 4, the very  
first  
thing I did was replace the prop. On many of the older boats, a 12 x 9 pitch  
prop  
seemed to be a favorite. They would get the boats up to top hull speed and they  
were  
velvety smooth because they were only turning about 1400 RPM. Unfortunately  
you had no reserve power for those days when you were trying to drive against a  
25 kt headwind plus you were essentially "lugging" the engine all of the time.  
The Atomic 4 is rated at 30 HP at 3500 RPM. The torque is fairly constant over  
the speed range therefore the maximum HP at any RPM is proportional to that RPM  
(ie at 1750 RPM, max HP is 15). If it takes say 12 HP to drive your boat at a  
cruise speed of 1300 RPM, the engine is working very hard with the cylinder  
pressure just about at maximum. What this all results in is heavy duty wear and  
tear on things like rings and bearings. The easy solution is to get some pitch  
off of  
the prop and let the engine turn up faster. In the case of my Tartan, I  
installed a  
12 x 5 and cruise RPM jumped from 1300 to 2000. (I think a 12 x 6 is probably  
the best choice) For the same hull speed, you are still putting about the same  
HP  
into the water (there may be a small efficiency issue but it is not a big deal)  
but now  
the engine is producing it at half again the RPM. You have lower cylinder  
pressures,  
better oil flow, better cooling flow, higher alternator output and plenty of  
reserve  
power (Wide open throttle approaches 3000 for the really rough going.) The only

downside is the increased speed will give you more vibration especially if you have an alignment problem or a bent shaft. Putting the engine on rubber mounts should help that. A good prop shop can repitch a prop 1" either way assuming it has not already been repitched. You may want to try reducing the pitch 1" just to see the effect.

Subj: Re:Cruising design Prop  
Date: 96-10-20 12:51:15 EDT  
From: SFC GRIFF

The problem is that with the greater reverse thrust, there's also greater prop walk, so the stern just kicks sideways faster. Unless you've got a huge rudder, and then you'd need a non-feedback wheel to control it, the boat's gonna be difficult to steer in reverse. That's why some have gone to twin screws, with the attendant problems.  
SFC GRIFF  
AOL Sailing Forum Consultant

wshearrison@bigfoot.com

You should be able to run your engine at full recommended rpm's as stated by manufacturer. If engine can't get up there, you need less pitch or diameter, start with 1" less of either for about 200 rpms until you can meet the number. Opposite applies if your engine runs faster than recommended speed. Increase pitch or diameter. The you will usually run (cruise) at 80% or whatever they recommend.

Subject: Re: A4: Prop by Cruising Design  
From: Tom Dove <tom\_dove@bluecrab.org>  
Date: Sat, 19 Oct 1996 15:05:44 +0000  
Message-ID: <3268EE48.3F@bluecrab.org>

I called Cruising Design about this prop, and they said it is 12x7, which my Atomic Four will not turn to a reasonable speed on my Ranger 33 (it has plenty of work with a 12x6 and prefers a 12x5).

On a boat with less efficient water flow over the prop than mine, it might be correct, but there's no such thing as a correct prop for a specific engine, without including a lot of variables about the boat, including displacement, keel configuration and cruising speed. I've seen Atomic Fours correctly propped with everything from a 10x8 to a 13x7.

-- Tom

Qshicks: moter will develop 30 hp at 3500 rpm and 20 hp at 2500rpm try crusing

at

2800 rpm moter will like it and boat should reach hull speed with reserve for wind/ tide for a prop. call -800-369-4335 which is michigan propeler for a free prop recomendation thay will want all of boats spec's plus moter spec's. Watch tip clearance to hull not less than 2 inches a grate prop book is propeller hand book by Dave Gerr

SAILSE32: I have a 1973 Ericson 32 and run a 12X6 prop with good results. I get about

6 Kts at 1800 RPM. If I had to select another prop I would go with a 12X5 to allow the engine to deve lop more RPM and therefore have more reserve power.

From: deevans@mindspring.com (David E. Evans) ••For what it is wort h, I have a 77 Pearson 28 with the A -4. Here is my•approach to a tune -up. My engine is very reliable and does a good job. ••A tune-up on these engines is very basic. The engine has a very low•compression ratio and run s at very low RPM's. It will probably never have to•see anything over 1800 RPM's with the direct drive and st andard 12X7 prop. •This is hardly above idle on mos t modern cars. The engine really does not•require a precise tune like a modern car engine with 6000+ RPM capability. •You have to remember this is a crude unsophisticate d engine with a design•that dates back before WW11. Reliability is the game not spe ed. ••Adjust valves: ••Prob ably not as critical as it would seem. I have 150 hrs.. on a complete•rebuild and have not had to touch mine. I do not know the interval for•adjustment. However, I use a formula that compares to a car with a flat•head engine; old jeep, 50's ford V -8 ect. Adjust every 15,000 miles; (15,000•miles/45MPH equals 333 hours). So I adjust the valves every 300 -350 hours. •I add a lead substitute to my gas. These engines were designed before •unleaded fuel and need something s imular to lead to cushion the valves. Lead•subsdtitute is available at any good auto parts store, About a \$1.50 a bottle. ••Ignition: ••I set the points to +/- .025. I have tried sett ings from .018 to .030 and•can not tell any differance. A little o f the lubricant that comes with the•new po ints is applied to the distributor shaft. I do not use it

all at  
one time  
and add a little each time I check the points. •• Timing is very basic. The low  
RPM's and  
low  
compression ratio allow for a big tolerance in the adjustments. Pull out the #1  
plug  
(closest to the front). Turn the engine until you find the compression stroke.  
There is a notch in the front end of the crank shaft that should be pointing  
straight up.  
With the ignition "on" rotate the distributor CCW until the points open  
and  
produce  
a spark. I am very careful not to get between the spark and ground unless I'm  
tired and  
need a lift. The distributor is rotated another +/- 1/8 " CCW to be certain that  
the points  
open before TDC. I run the engine under load and verify there is no pinning.  
If there is  
a  
ping or knock I either adjust the distributor by turning it CW or go to a  
higher octane fuel  
, depending on what the marina has to offer. That is it! •I recheck the point  
gap and  
timing  
every 50 hours to be safe and change the points every season. ••

Subject: Re: A4 Stuck Valves, May 25, 1998 11:23 AM From: Qshicks  
Try this before you pull the head [1] do a compression test with a gauge with  
the cylinders dry note the readings then add a tea spoon of oil to each  
cylinder and re test if no change you can assume that the valves are stuck in  
the open position if they are you can push them shut with a skinny screw  
driver that has had the tip [about 1 inch] bent over at a 45 degree angle by  
reaching through the spark plug hole and placing it  
on the top of the valve and taping the valve down gently one at a time and  
then testing the compression again when you have them up again I would suggest  
that you change the oil and give the motor the marvyl misty oil treatment and  
then change the oil again this should get you running again if not it is time to  
do a valve job but since you stated that the motor is a reassembled over haul and  
ran well till you added the lead replacer it would seem  
that that the motor does not need a valve job hope this helps qshick

You raise an interesting point about the number of cylinders that a boat engine  
should have. There is sort of a rule of thumb among boat designers that a  
displacement boat should have about one horsepower per 500 lbs. of displacement  
to move at hull speed. This accounts for losses in the drive line and propeller  
inefficiencies. My 16,000 motorsailer would thus require about 32 hp. A 30 hp A4  
would suffice for a 15,000 lb  
hull.

Automobile engineers tell me that a modern gasoline engine can be expected can  
be expected to deliver a maximum output of between 50 to 100 hp per liter of  
cylinder capacity; and also, that the optimum size for each cylinder is about  
500cc. The more cylinders, the smoother the power flow and the less the  
vibration. For continuous use and high reliability, they prefer to cut the

expected maximum output in half. Thus each cylinder in a continuously rated, conservatively designed boat engine should put out from 10 to 20 hp.

Using this logic, it seems reasonable to specify two to four cylinder engines for most sailboats. I guess manufacturers prefer lighter, simpler designs and assume that we will tolerate engine roughness in boats that we would reject in autos. I, for one would like to see a small, light, inline 6 cylinder engine in the 50 hp range to replace my aging Perkins 4 -107. After all Ferarri and Jaguar had 12 cylinder engines and Cadillac a 16 cyl. engine.

I guess we will have to wait until fuel cells come along for the ultimate vibration free power. - Larry Z

Atomic 4 Engine Alignment QUESTION FROM CPTNRN: <<On my 1975 Pearson 28, with an Atomic 4 engine, I replaced the cutlas bearing last month and now have a bad knock at higher engine rpm's. The cutlas bearing was worn unevenly, indicating prop shaft alignment problems, the shaft looked straight eyeballing down its length. I assume the engine has shifted over its 20 years in place and needs to be realigned with the shaft. I've read about how to do this but all the manuals assume the engine will have adjustable engine mounts. This atomic 4 is just bolted to a sloping fiberglass housing that supports the engine on both sides. Does anyone have any tips on how to align this? >>

RESPONSE From: Wally Kowal <wkowal@lanser.net>: This is one of the next jobs on my "to do" list {Why do these things never get shorter? ;)} I have the same engine and installation and was told to use washers under the mounts to raise the engine. Because of settling over the years, it's unlikely that you would have to lower the engine, but if you did you would have to shave off some of the supporting struts. This would entail raising the engine and going at the strut with a file. Don't forget that the engine has to be aligned in three dimensions so that it sits perfectly in line with the axis of the prop shaft as well as up/down and left/right. Most likely you will only have to raise one end of the engine to get your alignment, but I have been warned that it can get terribly finicky. I don't relish spending a few hours under my cockpit sole bent over double (I'm \*way\* to big to fit but manage it anyways).

You have to support the prop shaft end after removing the nipple from the engine. Press the nipple against the engine (transmission, actually) and move a piece of paper around the interface of the nipple and engine. If the paper moves freely at the bottom but not the top, raise the back of the engine. If the paper



binds at starbord, rotate the back of the engine to starbord. Most experts recommend using a feeler guage rather than a piece of paper, with the gap being no more than .001 inch for each inch in diameter of the coupling. i.e a .003 inch gap on a 3 inch coupling is fine.

If you have it aligned and you still get knocking, it's likely that the engine is not aligned along the axis of the prop shaft. You would then have to move the entire engine, up, down, left or right. Frankly, other than trial and error (and maybe a good eye), I have no idea how to measure if the engine and prop shaft are aligned around the same axis. Perhaps someone else has an idea for this. As you're down there sweating away, just remember that you aren't alone.

Subject: Re:A4 Transmission Adjustment  
Date: Sat,22 Feb 97 10:28:20 EST  
From: ArchTx  
Message-id: <board -a-folder-0004cb35 -msg-0032f376 -at-33ba4f3a@aol.com>

I recieved the following helpful post from rec.boats.cruising:

Your clutch works as follo ws:

The clutch lever, operating through linkage presses against the clutch cover which, pressing against the clutch plate, causes the output shaft to rotate.

To allow adjusting the clutch part of the linkage mechanism is adjustable. If this adjustment is too loose the clutch slips because the clutch cover doesn't press hard enough on the clutch plate. If the linkage is too tight the clutch will be extremely difficult to engage as the linkage will bind.

The usual "rule of thumb" is to tighten the li nkage enough that the clutch just "snaps" into engagement, then check to see if the clutch slips.

This is not rocket science. Adjust the clutch until it is engages with a slight bit of force then try it for a bit. If nothing seems to get too hot then i t's OK. If you find the clutch getting hot then try tightening things up a bit.

BTW I usually end up scrapping the prop off every month or so unless I'm using the motor frequently. It's not a major project, I usually run a rope under the boat to have something to hang onto and wear a facemask. Take a deep breath and pull yourself down and scrape a bit then pop up to breath. Takes two or three dives and the prop is clean. It is also a good time to check the zincs to see how they are holding up. In fact I scrape the whole boat myself. Takes me about 1/2 day to scrape the bottom and wash the

topsides depending on how much oil has been in the water.

--

Bruce P. Barden  
bardenb@ibm.net  
Bangkok, Thailand

Subject: Re:Atomic 4 Clutch  
Date: Mon,25 Mar 96 20:45:08 EST  
From: T27boat  
Message-id: <board -a-folder -0004cb35 -msg-007239ad -at-33ba4f3a@aol.com>

Hi,  
Sounds like it's past time for clutch band tightening. The forward band adjustment is located just beneath the rectangular cover on the transmission housing. Carefully remove the 4 bolts that fasten the plate and gently remove the cover. In the middle of the picture looking down you will find a hexagonal 3/4" nut which is horizontal and points to the port side and is held in place by two steel "fingers", one on either side of the nut. Step one is to tighten the nut by one or two "flats", replace the cover and try it out. You need to guard against over tightening which will result in excessive band wear and the inability to get into the neutral position. Step two is to do it again if slipping persists. It is still better to do this just a little at a time as it is far easier to find that you haven't adjusted it tight enough than it is to learn that you have tightened it too much. Take care not to break the steel retaining "fingers" as they are all that hold the nut in place.

Good luck,  
T27Boat

Subject: Re:adjusting reverse on clut  
Date: Wed, 1 May 96 21:20:21 EDT  
From: T27boat  
Message-id: <board -a-folder -0004cb35 -msg-00300789 -at-33ba4f3a@aol.com>

The reverse clutch is adjusted by tightening the horizontal hex nut, (11/16?) which is found just below the transmission cover and points toward the starboard side of the gear case. There is an idd little spring clamp whose job it is to hold the nut in place once you have adjusted it. The instructions suggest that it is not necessary to loosen this spring clamp but warns against breaking it. I recommend loosening it a bit prior to the adjustment and carefully retightening it afterwards. The drill is, assuming that the reverse gear is slipping, to remove the cover plate, tighten

the  
adjusting nut by ONE OR TWO FLATS ONLY. Then replace the cover and try it out.  
Repeat as necessary remembering that a little too loose is a whole lot  
better/safer than a  
little bit tight. Don't forget to assure that the spring clamp is reasonably  
tight and the you  
replace the access panel. This is a trial and error process but is recommended  
by the  
original and replacement owners manuals.

You'll remember that the forward clutch is adjusted similarly. It is located at  
the center of  
the gearcase and looks like a 2 -1/2" diameter circular nut without flats but  
with a close  
series of slots located axially on the OD of this "nut". Rotate the package  
until you see a  
7/16 or 1/2" hex head cap screw which locks the "nut" in place. Loosen the lock  
screw, and  
tighten the locking ring ONE OR TWO SLOTS ONLY. Tighten the locking screw and  
try it  
out. The same caution about over tightening applies.  
It's easy, if you can see and reach what you need to.

Bill

db@nwu.edu In a message dated 5/7/98 10:43:59 PM, you wrote re reverse  
adjustment:

> This involved undoing the  
>locking screw and rotating the crenellated ring on which it impinged. We  
>found that this could adjust the 'position' of forward and reverse but  
>could not reduce the size of our too large neutral zone.

Nope, that's not how you do it, that ring only adjusts forward. The clutch isn't  
engaged at all in reverse. Don Moyer (717/564 -5748) has an excellent feature  
article on the clutch and reversing gear with detailed instructions for  
adjusting it in his Feb. 98 newsletter.

The adjusting collar (crenellated ring) adjusts only forward. It determines how  
much friction is put on the clutch plates. The Reverse adjustment is simple.  
There is a 3/4" adjusting nut above, forward and to the left of the adjusting  
collar (crenellated ring). It is easy to recognize, it has a hole in each face  
of the nut, it adjusts the tightness of a "reverse gear brake band" that goes  
around the gear casing, at the same time it determines how much Neutral zone you  
have between the forward "detent" and when the reverse mode is reached. Captain  
Ron

Qshicks: Engine Replacement: universal mini 3 will replace your old a 4 it is  
app 1 inch  
taller and 1 inch longer and fits the same 11/1/2 centers that the a/4 did note  
you will  
need new control cables and a new exhaust system and maybe a new fuel tank  
depending  
what the current one is made of also a new fuel strainer and a sea strainer I am  
a dealer and  
replace a fair # each year I would figure 1500.00 above the price of engine are

you going to do  
the worke your self or have adealer do it you can e mail me at @aol about  
fuel #2 diesal  
has 33% more BTU than gas for the same wei ght of fuel. hence more range Onthe  
question of weight 3gm is lighter.

Subj: Re:Which tach to buy?  
Date: Sat,28 Jun 97 13:45:14 EDT  
From: LRZeitlin  
Message-ID: <board-a-folder-0004cb35-msg-0068a3df-at-33ba4f3a@aol.com>

First, let me confess that I r eally don't know much about the A4. Qshicks is the  
expert. But:  
The A4 was designed when there were only mechanical and relay tachs available.  
Mechanical tachs use a drive from the camshaft and are driven at half engine  
RPM. They  
usually are fitted with a square socket which accepts the 1/8" square tang on  
the end of the  
tach cable. The tach head is a mechanical speedometer which is calibrated in  
RPM. There  
are a number of makers of mechanical tach heads and they are available in auto  
parts  
stores. Stewart Warner makes a variety of heads, cables, and accessories to  
fit just about  
any mechanical tach. Of course it would be simpler to get an electronic tach  
since running  
wiring to the control panel is a lot easier than running a tach cable.

Subject: Re: tachometer problem  
Date: 08 Aug 1997 00:52:58 EDT  
From: MCPapa58  
Message-id: <19970808045201.AAA09831@ladder01.news.aol.com>

It gyrated wildly in over a 5 -10,000 rpm range as I accelerated. At idle it ran  
at 500 rpm, but  
as I gave it gas the needle would start vibrating wildly as it accelerated. I  
bypassed the +  
and - wires and wired it directly to the btty. I ran a new wire to the tach  
from the coil.  
Didn't make any difference. I ended up going down to Shuck's with the old one  
and they  
gave me a new one that looked the same more or less. I put that in and the  
needle settled right down like it should. My mechanic (who I guess maybe isn't  
that good)  
didn't know what would have been wrong with my old coil that the engine would  
run  
fine yet it would effect my tach. Any ideas?

Subject: Re: tachometer problem  
Date: 07 Aug 1997 19:00:56 EDT  
From: CptnRn  
Message-id: <19970807230001.TAA13383@ladder01.news.aol.com>

<>

I'm dieing to hear how the prop performs. Do you get any noticable increase in thrust in reverse (as claimed by the manufacturer)? Does it help in backing from a dead stop? What is your opinion?

CptnRn

Subject: Re: tachometer problem  
Date: 08 Aug 1997 00:57:50 EDT  
From: MCPapa58  
Message-id: <19970808045700.AAA17452@ladder02. news.aol.com>

Not having a working tach until now I can't say how good the prop is. I ended up putting a new coil in and the tach works fine now. I don't know why my engine would work fine but it would effect my tach.

When I put some hours on the engine and can more readily monitor my fuel usage I'll put another post on the subject. After just running it one afternoon it seemed that I was able to make hull speed with a lower throttle, but as I said it's too early to tell. As for reverse, I've only had to reverse twice since it came back in the water, so I don't really have an opinion yet. I'm hoping I can cut down my fuel usage from 1 gal/hr to 1/2-3/4, it would increase my 12 gal tank' range.

Subject: Re: tachometer problem  
Date: 08 Aug 19 97 09:19:10 EDT  
From: JAXAshby  
Message-id: <19970808131900.JAA26201@ladder01.news.aol.com>

If you are burning a gal per hour of fuel with your A4, suggest you pull back a bit on the throttle. Two reasons, 1.) while you'll cut down your speed by maybe 1/4 to 1/2 to 3/4 kt, you'll extend your range by maybe 30%, 40%, or more, and 2.) while the A4 is a solid engine, it will run a LOT longer putting out 12 -15 hp rather than 25 hp.

An engine will usually get its best effeciency at max torque rpm rather than max hp rpm. Also, [personal remembrance, which may be wrong] I think hull drag increases as the cube of speed [I know this is true of airplanes]. That means a boat making six knots requires 8X more horsepower to drive it than the same boat making three knots.

Note: a decent rule of thumb is [for a well tuned, good condition engine] an air cooled two-cycle gas engine will put out about 12 hp per gal of fuel burned per hour; water-cooled

two cycle or air -cooled four cycle [gas] = 16 hp/ gal/hour; water -cooled four cycle [gas] = 20 hp/gal/hr; and water -cooled diesel = 24 hp/gal/hour.

Subject: Re: tachometer problem  
Date: 09 Aug 1997 23:45:30 EDT  
From: LRZeitlin  
Message-id: <19970810034501.XAA11899@ladder02.news.aol.com>

JAXAshby,  
Your engines must be more efficient than mine. I was taught that a normal 4 cycle gasoline engine burns about .5 lb fuel per hp per hour. Since gasoline weighs approximately 6 lbs/gal, this means that the engine should put out about 12 hp/gal/hr. As a rule of thumb, most 2 cycle outboarders calculate that they get 10 hp per hr per gallon; a specific fuel consumption of .6 lbs/gallon/hr. Most diesels burn about .35 lbs fuel per hp per hour under ideal conditions. Diesel fuel weighs about 7 lbs per gal so the diesel would put out about 20 hp per gal per hr. I kept a careful log of fuel consumption on a Perkins 4 -107 on a 1200 mile ICW trip. We averaged 6 kt and burned .82 gal/hr. My boat takes about 13 hp to reach 6 kt, so our specific fuel consumption was about .43 lbs/hp/hr.

You are right about the power increasing as the cube of the speed, at least below hull speed of a displacement boat. It takes approx. 2.6 hp to move my boat at 3.5kt. Doubling the speed to 7 kt. (hull speed) takes about 21 hp. - Larry

Subject: Re: tachometer problem  
Date: 10 Aug 1997 08:54:44 EDT  
From: JAXAshby  
Message-id: <19970810125401.IAA23585@ladder01.news.aol.com>

Larry,

I defer to your knowledge about specific fuel consumption figures. My figures came from a variety of third party sources over the years, i.e. enthusiasts magazines, spec sheets for various engines, eye -ball experience, etc. Sources that certainly may not be rigorous.

Much was written about engine/fuel efficiency during the first oil crisis in 1973. Some of what was written may have been unduly optimistic. Certainly, what was written concerned engines designed for max hp rather than lowest pollution, running under the very best of conditions, and running at max torque rpm. (Let me make mention,

though.

The fuel supply in an airplane is definitely limited and the distances flown can be long.

Fuel

consumption is closely monitored. 16 hp/gal/hr is about what we consistently got from air-cooled, four-cycle airplane engines at cruise [75 %] power [assuming the engines were capable of manufacturer's full rate hp, which they may not have been)]

I still think [I may be wrong] that 1gal/hr through an A4 is pushing it. Maybe because

on my 33 foot long 11'6" wide (supposedly) 12,000 pound boat I burn about 2/3 gal/hr

(maybe a little less) to make about 5 kts (when the hull is clean).

Subject: Re: tachometer problem/fuel consumption

Date: 10 Aug 1997 12:38:28 EDT

From: LRZeitlin

Message-id: <19970810163800.MAA04733@ladder01.news.aol.com>

Specific fuel consumption is a pretty fuzzy topic among engineers, primarily because there are so many different ways of measuring horsepower. Typically American manufacturers using the SAE guidelines rate engines, stripped of all power consuming accessories and without a muffler, on a test stand, working into a dynamometer, at full throttle, at various speeds including maximum torque RPM. This gives the highest possible HP readings and the lowest specific fuel consumption. With modern variable valve timing, high compression, lean burn, stratified charge, etc. I've seen specific fuel consumption figures as low as .4 lbs/hp/hr. This is in the diesel range.

European manufacturers using the DIN or CUNA specs, rate engines as normally accessoried and get higher specific fuel consumptions. Perkins says that the specific fuel consumption of my 4-107 diesel is about .34 lbs/hp/hr at 70% power. The Perkins is a rather conventionally designed engine, so that's about par for the course. I've seen adds for larger industrial diesels that get the fuel consumption down to as low as .32 lbs/hp/hr at most efficient operating speeds.

Air cooled aircraft engines are not particularly high tech as far as specific fuel consumption goes. For obvious reasons aircraft engines are optimized for reliability and high power output per pound, rather than for minimum fuel consumption. Air cooling does not permit the precise temperature control required, and the construction is rarely massive

enough to permit really high compression. The 16hp/gal/hr figure may be about right for an engine on a test stand but probably is optimistic for a fully accessorized engine in an airplane. You can't fool the laws of thermodynamics. - Larry

Subject: Re: tachometer problem  
Date: 10 Aug 1997 14:34:44 EDT  
From: Qshicks  
Message-id: <19970810183400.OAA11942@ladder01.news.aol.com>

menney a 4 owners report 3/4 gall fuel useage based on total hours run and total fuel bought so the 3/4 seams a bout average for most youusers qshick

Subject: Re: tachometer problem  
Date: 11 Aug 1997 09:25:17 EDT  
From: Bristol32  
Message-id: <19970811132501.JAA19199@ladder02.news.aol.com>

Mine burns about 3/4 gal per hour pushing a 13,000 lb boat in average conditions. Fact rather than theory.

Subject: Re: tachometer problem  
Date: 11 Aug 1997 11:28:54 EDT  
From: RHmpL33  
Message-id: <19970811152801.LAA17593@ladder01.news.aol.com>

I have a Pearson 30 with A4 with martec 12/6 prop.  
I used to burn 1 gal per hour in flat water (with a clean hull) at 85 % of 'apparent' hull speed as indicated by a chart/plot that I made... rpm vs. Kts. The curve 'knuckled' at 6.4 kt @ 1600 rpm. This is my efficiency curve for maximum range.

I installed an adjustable mainjet and now I get 3/4 gph at 85% (1360 rpm) ----  
You can calculate theory until the cows come home. My numbers are derived from the 'state of condition' for \*\*\*exactly\*\*\* this boat; and, I find it very practical ... because now I know precisely .....when to clean the hull, when to readjust the engine , clean the carb, etc.  
And in flat water, I know that I have 26+ hours before the next fill -up. KISS.  
:-)

Rich



Subject: Re: tachometer problem  
Date: 11 Aug 1997 20:18:58 EDT  
From: Qshicks  
Message-id: <19970812001800.UAA29712@ladder02.news.aol.com>

question witch carb cast iron or pot metel ??whate year the moter qshick

RE: Atomic 4 Oil Change

The following comments are compiled from numerous previous emails,  
with my own comments thrown in:

Dave wrote:

<<Does anyone have any recommendatio ns on how best to change oil on atomic 4 engine in a 1975 P30? It appears to have a drain into the bilge but not enough room to drain into anything there.>>

There is an oil drain plug on the lower forward Stbd. side, which is also very difficult to get to on my P-28. The engine access on the P -30 seems to be a degree of difficulty worse all the way around. It is questionable on the P -28 if there is even room to remove that drain plug, but even if it could be removed there is no room for any kind of container to catch the oil. And if the motor is put in at an extreme angle of tilt the drain plug may not even be the low point of the pan (more about this later). I do like the idea of attaching a fitting and tube to this plug to pump the oil out, I thi nk you could remove more heavy sediments from the plug at the bottom of the pan than you can when you pump the oil up thru a tube.

<<The dip stick is in about the worst place I can imagine putting one. Is there any way to improve this arrangement.>>

On "Mystic", engine access to the dip stick, distributor, water pump, etc. all require the removal of a perforated masonite panel, which is too troublesome for frequent checking of the oil. So I cut a 6" opening in the panel where I could pull the dipstick to check it more often. On the P -30 the engine may be mounted further forward so that you are into the side of the plywood cabinet below the sink, so this may not work.

<<I don't even know how much oil the engine should take.>>

The Owner's manual says t hat it takes 4 -5 quarts, however see the informatir tips - <http://members.aol.com/CptinRn>).

I posted this message some months back (March ?, 98):

"ATOMIC FOUR MAINTENANCE ALERT:

I only recently learned that the amount of oil that an Atomic Four engine can hold varies with the angle of tilt that it is installed with. Most Pearson hull sections that I have seen indicate that the engines are installed at around 14 - 15 degrees, which is the maximum recommended by Universal. My Owner's Manual says the engine s hould hold 4 -5 quarts of oil, this always puzzled me because I can typically only remove/add 2.75 quarts. I had thought that the angle of tilt kept me from pumping the other 2.25 quarts out of the engine. NOT TRUE! At the extreme angle of tilt, the tota l amount of oil that your crankcase will hold is only 2.75 quarts (See the oil levels table at the Alberg 30 A4 site - <http://ourworld.compuserve.com/homepages/Alberg30/atomic4.htm>). With this small quantity of oil available to lubricate your engine, it i s extremely important to check and change the oil often, OR if you can afford it, install the Indigo oil

filter kit."

In Don Moyer's A4 April 98 newsletter he responded to this:

"It takes approximately 4.5 Qts of oil to reach the full mark in a "dry" engine, just after an overhaul with the engine setting level.....After turning the engine over to fill all the internal passages within the oil system another Qt is required to return the level to the full mark (5.5 Qts).....If the engine is tilted so as to approximate the highest angle that one would expect in service (?\*), the engine holds approximately one quart less (4.5 Qts).....With the Engine tilted as above it is only possible to pump out slightly over 3.5 Qts (?\*\*). With a bit more or less tilt, it may be possible to remove more or less during an actual oil change"

?\* He doesn't define what this angle is, the Owners manual says Maximum operationg angle ---approximately 12 -15 degrees maximum.

?\*\* Since I can pump out only 2.75 quarts this tells me that my engine is mounted at a higher angle of tilt than what he was using. If you use a protractor on the Pearson diagrams most of the engines are at or more than 15 degrees of tilt. I have not measured the actual installation on my boat yet.

Don M. recommends using the dipstick full mark regardless of the angle of tilt, rather than trying to add more oil to make up for it. He emphasises the importance of changing your oil every 50 hours or once a season, whichever comes first (use 30 weight). My point is that if you have an installation similar to mine, where you can only pump out 2.75 Qts, that leaves 1.75 Qts. of dirty oil in the crankcase, so it may be a very good idea to change your oil more often or install the Indigo filter kit. Another option would be to change your oil, run the engine for a few minutes to dilute the dirty oil, then change it again so that you effectively remove more of the dirty oil.

<<Has anyone had success with the add -on electronic ignitions, oil filters, crankcase vents, or fresh water cooling systems for it.>>

I have heard lots of positive reports from people who have used them and no negative reports, I'm saving my money up for the fresh water cooling kit.

Several people recommended the vacume can oil changer. I bought one, a Topside SumPump, several years ago and was dissatisfied with it, because I couldn't remove more than 2.75 Qts of oil from my A4 engine. Now that I understand why, I realize that perhaps the pump wasn't the problem. It was much easier to use than a hand pump. But I still don't like having to crawl down into the lazarette to change the oil, so I did this:

LET THE OIL PUMP REMOVE IT: I once saw an advertisement for an expensive valve device that attaches to the oil pressure gauge connection that allows you to drain oil off while the engine is running. It had an automatic pressure sensor that closed it when the pressure dropped, so you don't damage the engine. This part of the engine is easy for me to get at, so I figured I could do the same thing. I added a brass tee fitting to the oil pressure gauge pipe (on the A4 it is to port forward of the carburetor) so I could add a valve & short plastic hose to it. After the engine has warmed up, and is running at an idle, I open this valve a little bit and let the engine oil pump discharge the oil into a plastic container. All I have to do is sit there and watch the oil pressure gauge and the discharge, I have found that the pressure never drops until the discharge starts to pump small air bubbles with

the oil and then it drops slowly. At this point you still have a quart or more of oil in the crankcase, depending on angle of tilt. I then close the valve, add a quart of oil, let it run awhile to dilute the old oil and then continue pumping. If its been awhile you might want to do this several times to flush out as much of the old oil as possible. When it starts bubbling again, close the valve and top up the engine with new oil.

Some people think this is a risky method, but I believe as long as the oil pressure is kept up, there is no risk. You definitely don't go walking the docks BS'ing while the oil is pumping out. But you can sit there comfortably and drink a beer, watching the engine do the work. I've been told that this method is used on many commercial ships with much larger engines. Use this idea at your own risk.

Fred Dammann wrote: <<John: Have been wondering if the port side pipe plug you mention could be used for a dip stick hole as well as a drain hose hole.... I have a terrible time trying to check oil level - can get the dip stick out but can't find the hole when putting it in. >>

Fred, It should be relatively easy to do this. You will have to calibrate your new dipstick so that it matches the old one for fill levels.

<<i think the atomic 4 i have is great...except i really cant understand why they designed this engine without an oil drain in the bottom. I have a V drive on my boat, so the engine sits backwards. this would make it real easy to get to a plug in the rear of the engine.....if there was one.>>

There is one on the bottom port side (on your boat) of the oil pan.

You can pump out of the oil dipstick or drill, tap and install a pump out line thru the transmission access cover plate.

<< The only thing you need to be VERRRYYY careful about is the old dipstick location was calibrated for the proper levels and installation (i hope!! - I don't even want to think about the answer to this question, but is the full mark on an A4 on a P30, in the same place as a P10M and a P35?, i think the engines are mounted at different angles - or does it not matter?).>>

Don Moyer says this was taken into consideration, in fact the older models of A4's had a dipstick which had different markings for different angles of mounting, but Universal decided that wasn't necessary and discontinued it on the newer models.

<< For those of you who have Atomic 4's and who may also subscribe to Don Moyer's "Atomic 4caster" newsletter, Don sent a brief letter accompanying the latest newsletter to say that April 1999 will be the last publication of this newsletter. I suspect that Don will still be around at Moyer Marine to aid and assist those of us who maintain our A4's, but it is a sad passing to see his newsletter disappear. I'm just passing this along for general info. If you need more information, pls contact Don directly at 717 -564-5748, fax 717-564-5760. Send mail to:

Moyer Marine Inc.  
3000 Derry Street

Harrisburg, PA 17111>>

Only the newsletter is retiring. Don Moyer is remaining in business and concentrating on repairing engines. He has compiled a collection of newsletters that will be published as a "Service and Overhaul Manual" and will be available for purchase.

Fair Winds, Ron  
CptinRn@aol.com  
S/V "Mystic" 75 P -28 #008  
<http://members.aol.com/CptinRn> < --Atomic Four owners manual & parts list.

Subject: Re: tachometer problem  
Date: 13 Aug 1997 17:47:27 EDT  
From: LRZeitlin  
Message-id: <19970813214701.RAA27984@ladder02.news.aol.com>

Your results are right in line with theory. Your engine is developing about 10 hp at 1360 rpm, based on the specific fuel consumption. That should drive your Pearson 30 at about 6kt. and is a very efficient and comfortable speed to motor around. If you try to reach hull speed, a bit over 7 kt., you will double your fuel consumption. - Larry

jcrewser@calwest.net wrote:  
<<The Atomic 4 on my 1978 Catalina 27 seems to lack both an oil filter and an oil drain plug. The engine nameplate says model 5101. Can you help? >>

I'm not a mechanic, just a poor Atomic 4 owner, trying to keep it alive as long as possible.  
But I think I can help.

The A4 wasn't made with an oil filter, so its very important that you change the oil often, every 40-50 hours of use. An after market oil filter kit is available from Indigo (see attached zip file for the parts list).

Use 4-5 quarts of SAE30W heavy duty. The amount will vary depending on how steep a tilt your engine was installed with. Do not use any of the newer multi viscosity oils 10W - 30W etc.

Don Moyers recommends MARVEL MYSTERY OIL about 10 oz (correction 4 -8oz) to 10 gallons of fuel and about one quart in the crankcase to replace one quart of regular lubricating oil, to keep compression rings from sticking. It also helps lubricate the valve stems.

The attached A4 owners manual shows on page 5 an oil drain plug on the bottom, starboard side, forward corner of the engine. If this is not accessible (mine

isn't) or your motor is installed an an extreme tilt, it may not drain all of the old oil from this location.

Page 16 of the manual recommends using a hand sump pump for the oil removal (with a small tube down the dip stick hole). I've never been satisfied with these hand pumps or the "Topside Pump" which sucks it into a metal tank, perhaps because the dip stick side of the engine is still hard for me to get to.

I once saw an advertisement for a valve device that attaches to the oil pressure gauge connection (port forward of the carberator) that allows you to drain oil off while the engine is running, it had an automatic pressure sensor that closed it when the pressure dropped, so you don't damage the engine. This part of the engine is easy for me to get at, so I figured I could do the same thing. I installed a brass tee fitting to this connection so I could add a valve & short plastic hose to it. After the engine has warmed up, and is running at an idle, I open this valve a little bit and let the engine oil pump discharge the oil into a plastic container. I sit there and watch the oil pressure guage and the discharge, I have found that the pressure never drops until the discharges starts to pump air bubbles with the oil and then it drops slowly. At this point you still have a quart or more of oil in the crankcase, depending on angle of tilt. At this point I close the valve, add a quart of oil, let it run awhile and then continue pumping. If its been awhile you might want to do this several times to flush out as much of the old oil as possible. When it starts bubbling again, close the valve and top up the engine with new oil.

Some people think this is a risky method, but I believe as long as the oil pressure is kept up, there is no risk. You definitely don't go walking the docks BS'ing while the oil is pumping out. But you can sit there comfortably and drink a beer, watching the engine do the work. Use this idea at your own risk.

Fair Winds, CptnRn

SPARE PARTS RECOMMENDED:

Impeller  
spark plugs  
points  
condensor  
distributor cap  
rotor

spark plug wires  
spare coil  
fuel filter  
spare filter element

Subject: Spare parts in Bahamas  
Date: 28 Aug 1997 21:41:20 EDT  
From: Yeocomico  
Message-id: <19970829014101.VAA19885@ladder01.news.aol.co m>

Another question. What would you take with you on a 5 month cruise in Bahamas in the way of spare parts? Here is my list, any other item come to mind?

Spare alternator, spare water pump and gaskets, several impellers (3), spare fuel pump (electric to replace the manual one), fuel filter cartridges (3)(spin on kind), fuel line, set of spark plugs, water hoses, alternator belts(2?) rotor cap, (I have almost new points, plug wires, cap and condenser and coil from pre electric ignition) plenty of marine grade wire and crimps,etc, packing flax. Spare propeller? misc hose clamps. exhaust hose?

Tools - hand crank, sparkplug wrench, gap gauge, general wrenches, screwdrivers etc, teflon tape, flax puller,

Is the funnel/filetr woth it for prefil tering gas as you fill the tank?

Always more questions.

Subject: Re: Spare parts in Bahamas  
Date: 29 Aug 1997 19:17:36 EDT  
From: Qshicks  
Message-id: <19970829231701.TAA06632@ladder02.news.aol.com>

moter oil timeing lite water pump greas rat her than carry exhaust hose i would chang it befor trip if thair is anney question of it condition also a set of carb gaskets and a nedal and seat size 25

Deragon@aol.com Painting Atomic -4

The greatest stuff ever for treating crusty flaky metal is a blue liquid that is the consistency of water that cold galvanizes metal overnight - since discovering it while I owned a 1914 built boat with lots of crusty stuff and need to seal iron to stop "bleeders" from wrecking my hard earned paint jobs and varnish, I use it on everything. It's called "Ospho", NOT a marine product and very reasonable. Comes in a 32 oz plastic bottle.

All that is required is to get the loose stuff off, then wait overnight after soaking a rag and wiping the metal - I found it wor ked great on the old Graymarine 4 -banger in my boat, takes prime and paint better, and the engine paint sticks and doesn't rust through. The metal turns gray from brown crust

color, like it was galvanized. Found at any good hardware store.

#### COOLING

Don Moyer suggested DEPCO pump Co in Clearwater FL at 1 -800-445-1656. They have a great free catalog, knowledgeable people to talk to and will ship on a credit card. I paid \$118.00 for a brand new unit, their model 202M -7 which is an Oberdorfer unit. They also carry two competing lines. Rebuild kits cost about \$20 for the impeller, two seals and the gasket which is not quite half what I paid for the individual pieces at my friendly local boatyard. over haul pump including replacing the shaft or if to bad ly worn replace with anew obendorfer m 202pump.

#### COOLING

Atomic 4 Overheating  
From: CptnRn  
To: DAVIDS@gov.nb.ca  
attached TEXT A4P10.GIF (85305 bytes)

•<< On the weekend my engine overheated, and I believe that my thermostat has seized shut. I have just put a new impeller in the water pump, but no coolant water is making it through the engine. >>

Attached is one page of the manual which has a very small discussion of the cooling system and a diagram of water flow. Even with the thermostat closed you should be getting significant cooling water coming thru the engine and out the muffler. Cooling water to the block enters at the first hose connection after the pump below the alternator. It exits the block at the thermostat, which controls the t emperature by open/closing that exit. A study flow of cooling water runs from the pump thru the hose connection at the thermostat to the hose to the exhaust manifold, and out he manifold to the muffler. Water should always be running out this line. Pull the coolant hose off of the top rear of the exhaust manifold and see if you have any water coming out there. The thermostat only regulates the water going thru the head, there should always be water going thru the exhaust manifold, if there is n ot then it or something downstream is blocked.

- It could be just a hose is blocked, perhaps by a piece of broken impeller, or you could have rust scaling and salt accumulated in the cooling system. the acid flush described below will clear that out. Below, I'm sending you a log of A4 overheating discussions from the AOL:

Sail:

Atomic 4 message board. It includes instructions on an acid flush out for the cooling system. Qshicks (below) can't spell worth a hoot but he provides excellent expert advice, he is a mechanic at a large boat yard. Good luck, CptinRn

COOLING

Qshicks: Jul 4, 1998

re your request as to how the cooling flow on the a -4 post 1969 works this is how it works the salt water pump takes a suction on the sea strainer and delivers the water under presher to the [T] fitting in the side of the block it all so delivers water to the fitting on the side of the thermostat housing ware if the moter is cold [less than 142 degres the water flowes over the top of the tstat and out the fitting at the top of the houseing and to the exhaust manafold and over board when the motor warms up the t stat will start to open the port in the cilinder head and allow water from the block and head to flow to the exhaust manafold and over board a t the same as the t stat opens it closes the buy pass port off causing the water from the pump to flow into the block and the head if you look at the t stat housing in side the top of the stat seals off the port from the buy pass line note thair mus t be a good flat seating serfice in side the housing or the system wont work correctily it is the closeing of the buy pass line that forces the water through the moter note i will not sell a new t stat un less the coustomer brings in the housing for me to see at least half the time the houseing is at falt and not the stat since you have the motor apart have the machine shop bake out the block to remove thr rust and scail that you cant reach to remove .have them do it wile thay do the valve job hope this helps qshicks

COOLING

Subj: Re: Atomic 4 overheating Date: 96 -04-27 11:27:07 From: LRZeitlin  
I cleaned

ten years of scale out of an overheating sea water cooled Volvo MB10 by circulating an oxalic acid solution through the water passages using an external impeller pump. I

removed the thermostat and pumped the solution in the seawater intake, bypassing the

engine raw water pump. The solution came out of the block at the connection to the

exhaust pipe into a 5 gallon collecti on tank, then was recirculated by the external Water

Puppy pump. After 2 hours, I flushed the system with fresh water, neutralized any residual

acid with baking powder solution, then a final fresh water flush. I don't know how this

would work on an Atomic 4, but the Volvo hasn't raised a fever since its enema.

COOLING

Subj: freshwater A -4?•Date: 96 -05-19 13:57:48 From: MCPapa58 •• I've been told

that at one time you could buy a freshwater cooling kit for the A -4. My mechanic says he

can build one from scratch for about \$600. Does anyone know anything about this?

Would it be worth converting my raw water cooled A -4 when it comes time to



rebuild?

Does anyone know where any of these "kits" can be had?

COOLING Subj: Re: freshwater A -4?•Date: 96-05-19 17:44:01 From: LRZeitlin

••It can be done

but why bother? Clean the A4 out every other year using the process described in my post

of 96-04-27. The engine will last another 20 years. If you choose to convert to fresh water

cooling you will have to add a heat exchanger and an additional circulating pump.

Basically, the approach is to convert the raw water system to a closed cycle fresh water

system diverting the flow through a heat exchanger. Then you will need an additional

pump to circulate raw water through the exchanger and to provide water for exhaust

cooling. If you use keel cooling, you can omit the heat exchanger but you will still need to

cool the exhaust. If you use a dry exhaust system, the process is simpler.

COOLING Subj: Re: freshwater A -4?•Date: - 96-05-19 21:12:19 From: T27boat

••I suspect you'll

find this a worthwhile venture if you plan to keep the boat for any length of time. I've just

done this with mine as I had then engine out for the Winter . I couldn't believe the

accumulated crud inside the jacket. Mine is sailed in salt water and is a '74 model. I found

little evidence of serious corrosion and am now much more confident in the state of the

engine. •I bought a fresh water cooling kit from Don Moyer at Moyer Marine, (717)564-

5748. Don has been selling these "SENDURE" kits complete for \$450 although he has had

to raise his price by about \$50 since the past holidays in response to a cost increase to him.

The kit is well thought out and installs easily, but I would recommend waiting until the

engine is out so you can go right thorough it in terms of cleaning it out and fixing the little

things you'll find need attention. I hand lapped the valves, replaced the transmission

output shaft seal which was leaking a bit and generally cleaned all threaded holes and

replaced corroded bolts. Not brain surgery but it was kind of fun. Certainly periodic

cleaning out of the chambers will keep the system clean and more effective over time, but,

and this is a big but, salt water WILL eat cast iron over time. Periodic cleaning can't stop

nature where FWC can. You can buy everything for an A4 except a new block and once

your block thins out too much to hold it's studs, bolts and cylinder walls in place you're all

done. Good Luck, Bill Subj: Re: freshwater A -4?•Date: 96-05-30 01:27:44

From: Capt Olaf

••I guess the real choice between periodic cleaning and freshwater cooling depends on how long you want to keep the engine. Raw sea water is harder on the block than fresh water, however many of the local fishermen around my area have been running Universal Twins, A4s, and small Volvos for three to four decades with raw water cooling. They flush the blocks periodically with freshwater and always flush before winter lay-up. The simplicity of raw water cooling has much to recommend it. I figure that by the time a motor has given me 30 years service, it has paid for itself and I can afford to retire it.

COOLING Subj: Re: freshwater A -4?•Date: 96-06-19 16:59:57 From: GLelievre  
•• It is absolutely true that you cannot reverse the effects of nature. Everyone knows that saltwater makes excessive rust on cast iron. Spend the money on fresh -water cooling. I've seen many an engine go because of the salt. My A -4 is 31 years old (Soverel 28') and fresh water cooled. A little Mystery oil in the fuel, and she'll run indefinitely. On another note, I also heard that CDI has a plastic prop for Direct drive A -4's that increases thrust in reverse. Anyone try it?  
•"Apocalypso" Soverel 28'•••

COOLING Subj: Re: Atomic 4 overheating Date: 96 -06-25 10:02:22 From: Whk4676  
••My raw water cooled A4 is also doing the same thing --it's gradually climbed to 200 degrees over the last year. I'm getting pretty nervous. The water flow seems restricted: less and less water is coming out the exhaust pipe. We removed the thermostat and nothing improved. Impeller is OK. There was a considerable amount of black, greasy gunk in the thermostat housing area, however, which wasn't there the last time I checked the 'stat a few years ago. The engine itself is circa 1967. Any ideas? Reply if convenient to tresyk@halcyon.com, as this is my Dad's account. Thanks in advance.

COOLING •••Subj: Re: Atomic 4 overheating Date: 96 -07-02 18:10:28 From: JLantz2910  
••I had an overheat problem and it turned out to be the thermostat housing cover that allowed the water to bypass the block. New cover solved the problem and it now runs about 155. •JLantz 2910••

COOLING Subj: Thermostat Date: 97 -01-04 17:55:39 From: DJandon Has anyone replaced the thermostat and if so with what model # and from who? •BOAT/US has one listed for \$91.00. I think "Don Moyer?" from Harrisburg has one for around \$30.00. Is there a cheaper

alternative ? I mostly sail in the upper Chesapeake Bay area. Salt water wouldn't be a problem. But I don't care to run the engine without it. Thanks for any info..  
Dan

Subj: Re: Thermostat Date: 97 -01-04 22:09:54 From: Q shicks - do not run engine with out thermostat cooling system is a by pass system on all post 1969 motors and you run risk of damage from overheating and the temp gauge will hardly show any heat but block will over heat I have bin a universal dealer for 30 years and have seen several damaged blocks i don't know of any source for tstat except universal try your dealer if he cant help i stock them you can clean them and restore proper operation by soaking in acid (muratic )get at hardware store or lumber yard soaking time app 10 minutes

COOLING Subj: Re: Thermostat/  
Qshicks Date: 97 -01-05 13:58:24 ED From: DJandon thanks Qshicks, Will try the acid test. The thermostat I have now looks good except that it won't even open at 200\*. Please give me more d details on how I can get one from you in case the acid doesn't work on mine.

COOLING Subj: re thermostat Date: 97 -01-07 18:40:58 ED From: MITCHELLRI  
•If you choose to run the AT 4 without the thermostat, plug the hole in the inside of the thermostat housing so that cooling water will circulate throughout the engine block. The engine will run cooler, and could result in sludge buildup on the valves, depending on how warm the water is where you sail. In salt water cooled engines, cooler is better, as the cooler temps retard the nasty effects of salt. If you convert to fresh water cooling with an exchanger, you can run the engine at 180, and it will like it and last longer. Your best bet is to get a heat exchanger for cooling your AT -4. •I have heard the at AT thermostats can go for as much as \$80. ••

Subj: Re:Thermostat Date: 97 -01-08 12:15:26 ED From: T27boat Hi, I think I heard that Universal now has available a 180 F thermostat which would be useful in FW C or fresh water boats only. I believe that most of the thermostats currently available from Boat US etc, are of the 140 F variety, which are good for salt water cooled engines. If I read Don Moyer's most recent parts price list correctly he offers a used thermostat for \$30. Don can be reached at 717/564 -5748. He sails in the Annapolis area so would probably be

familiar  
with the water you sail in. Good luck, Bill ••

Re:Thermos tat Date: 97 -01-10 06:00:11 ED From: DJandon Thanks  
Qshicks, I tried the  
acid and it did the job. Now can I do the same for the engine? Thanks to all for  
your replies  
on thermostat. Dan...••

Subj: Fresh Water Flushing Date: 97 -01-10 18:01:27 ED From: VICKLC  
Can anyone  
provide information on a way to flu sh the raw water cooling system. Is there  
a home  
made rig for this purpose? (Please describe.)Are there anodes in the  
block?•Where are  
they located in the block?••

Re:Thermostat•Date: 97 -01-10 22:00:29 EDT•From: Qshicks •cleaning  
block yes  
you can but requires grate care and some replumbing if you are serious i will  
guide you  
through the steps••

Re:Fresh Water Flushing•Date: 97 -01-10 22:06:09 EDT•From: Qshick s  
•to flush salt  
water cooled a/4 remove h ose from sea cock place in bucket fill bucket with  
fresh wa ter  
and run moter . note no zink on salt water cooled a/4 happy tinkering••

Re:Fresh Water Flushing•Da te: 97 -01-11 15:44:59 EDT•From: BrianRJohn  
••I have  
a Prestone Antifreeze flush a ddaptor on my inlet h ose. It is a "T" that  
connects the two  
ends of a cut inlet hose with barbed fittings and hose clamps. The oth er side  
takes a regular  
garden hose connection. When there is not a garden hose connection, a solid cap  
screw s  
on and just lets everything work as normal. To flush, close the thru hull,  
connect a hose  
and run the engin e with fresh water from the hose. I use this system to get a  
biodegradable  
antifreeze into the block for wint er (I connect a stub piece of garden hose and  
put the  
hose into a gallen jug of the stuff and it gets sucked into the warm engine,,,,  
you must  
warm up the engine first so the thermastat is open so it gets into the blo ck.  
)•They can't  
cost more than a few dollars at an autoparts store and can be real handy...••

Re:Fresh Water Flushing•Date: 97 -01-12 13:11:59 EDT•From: Qshicks  
•never fead  
water to moter under presher y ou risk serious damage if engin stalles or dosent  
start or  
back fires allwayes feed from a bucket /open at t he top NEVER/NEVER NEVER  
BAD  
BAD BAD IDEA presher feed may damage water pump••

Re:Fresh Water Flushing•Date: 97 -01-13 12:32:51 EDT•From: LRZeitlin  
•This is a great idea. I use the Prestone T fittings on all lines that have to be prepared for winter, like the toilet input, fresh water system, etc. A stub hose led into a 5 gal. bucket of antifreeze solution works fine. To flush the engine, I lead the stub hose into the bucket, start the engine, then add a trickle of water from a garden hose as needed to keep the bucket almost full. I run it until the engine warms up, stop the engine, add antifreeze to the bucket, and let it run until nearly empty. •••

re:fresh water flushing•Date: 97 -01-26 22:35:54 EDT•From: MCPapa58 •  
Last time I hauled out I just put a tee above my raw water inlet with a 1/2" ball valve. When I come in I just hook the end of a hose to it and turn on the fresh water while the engine is running. It only takes a minute to flush out the salt water. • My raw water strainer opens at the top so sometimes I'll just dump a gallon of freshwater in after I close the raw water intake. ••

Re:re:fresh water flushing•Date: 97 -01-26 23:14:53 EDT•From: Qshicks  
••never feed water to engine from a pressurized source feed from top of sea strainer or from a open bucket serious risk of flooding motor damaging pump water in oil bent rods or broken crank are all possible with pressurized feed very bad idea••

engine running hot•Date: 97 -03-20 13:12:19 EDT•From: GGDFGF •after looking at previous post. I was thinking of getting a five gallon bucket fill it with acid and flushing the internal cooling to remove the salt deposits that are clogging. has anyone done this?  
?••

Re:engine running hot•Date: 97 -03-20 15:15:55 EDT•From: Qshicks •yyes do it all the time but be very careful acid will react with mineral and foam and boil and fume up the inside of boat we use a covered bucket with hose barbs installed [bilge pump overboard fitting work well and are acid proof suggest you buy cheap oil change pump the kind that fits in a drill motor and throw it away when done since the seals fail after the acid treatment note 1 gallon is plenty ••

Re:engine running hot•Date: 97 -03-20 21:48:50 EDT•From: LRZeitlin •Use an oxalic acid solution. You can buy oxalic acid at any paint store. Don't use muriatic

acid  
(hydrochloric) or battery acid (sulphuric)..••

Re:engine running hot•Date: 97 -0 3-21 09:53:54 EDT•From: Qshicks •why  
not  
you use hydrochloric/muratic witch is watered down hydrochloric after 40 years  
of  
cleaning heat exchanger and blocks with acid witch is a verry nasty job is  
thair some  
thing i am missing job should be done with grate care and all safety meshers in  
place we  
do app 40 jobs a year smalest heater core to heat exchanger witch service  
2000 ci moters  
in tug boats and hold 15gall of acid and if you ever had the tankless hot water  
in your  
ferance cleaned i will bet it was with an acid wash and flush ••

Re:engine running hot•Date: 97 -03-21 13:03:20 EDT•From: LRZeitlin  
•Qshicks - you  
are a professional with 40 years of experience using the industrial strength  
stuff. Also, time  
savings mean money for you. Oxalic acid works just fine on scale and rust even  
though it  
takes a little longer. It is easy to get in paint stores and causes far less  
damage to skin and  
clothing when droplets of it are splashed around. Have mercy on the occasional  
user. -  
Larry••

Re:engine running hot•Date: 97 -03-21 19:02:12 EDT•From : Qshicks  
•point well  
taken labor cost is a large part of cleaning plus desposing of waste material  
we add a  
chemical to neutralize acid and just flush we yous to use baking soda but now  
with EPA  
require approved material cost 33% of acid so it is get in and get out or job  
gets to expensive  
and customer is unhappy most of our customer have bin with us along time so  
they  
must be happy ••

Re:Fresh Water Cooling •Date : 97 -04-27 20:54:30 EDT•From: Scubacon1  
••Just  
finished with the installation of a fresh water cooling system, I installed a  
new stainless  
steel water jacket (Moyer Marine) and the Heat Exchanger from Moyer Marine, the  
new  
water pump and•hookup parts came from Indigo Electronics...Between the guidance  
of  
Don Moyer and Tom Stevens (Indigo) the system is in and running I have never  
seen the  
engine run so nicely..I had looked in every nook and cranny and asked a lot of  
advise  
from Qschicks and Moyer and Stevens•before taking the task in hand ..I needed  
to redrill,  
tap and use larger bolts on the side plate..due to•age and corrosion of that a  
rea from

nearly 22 years of salt water intrusion into the engine. I was a bit leary of doing the job...I have to thank all those of you who responded to my Questions in the past. This gave me the courage to thrust forward and did a big favor to my faithful Atomic 4 engine...•BTW you gotta get your hands on the coffee mug Don and Brenda Moyer sells it has a drawing of the Atomic 4 on one side and all the tune up specs on the other...My hat's off to both Tom Stevens (Indigo) and The Moyers for their help and guidance....sorry for being so winded...•Bob Studen S/V Silent Passage 1975 Pearson 10M sailing out of Oyster Bay LI Sound N.Y. ••

Re: Fresh Water Cooling kits •Date: 97 -04-28 20:49:22 EDT•From: Qshicks  
••kits  
run between 600.00 and 1000.00 depending on style i.e. ware it installed on engine or off engine driven electric and how complete the kit all kits have a pump and a heat exchanger but some kits that is all you get you will have to provide all mounts and hose and fittings and sea strainer and there is a big difference in quality of parts it comes down to pay me now or later I have a custom one with an electric driven sea water pump on a 4 in a launch just no room for engine driven. heat exchanger in bow lots of hose but system is 6 years old pump is inspected every season but no trouble If there is a will there is a way also need deep pocket over 8 man hours in installation plus parts boat is 16 long and only 4 ft wide and 30 hp 1800 rpm gives just a hair under 8 knots lots of fun owner lets me borrow it now and then...••

Re: Water-lift muffler•Date: 97 -04-28 20:54:01 EDT•From: TALISMANIA  
••Thanks  
for advice from QShicks and BrianRJohn. I expect I'll find that muffler itself is fine but just need to clear all obstructions and perhaps replace some hose connections. Of course, you have to be a contortionist to get access! Are either of you on/near the Chesapeake? If so, I thought you might know name of good Atomic 4 mechanic. Don Moyer's newsletter has been a great source of advice over the years, but it's nice to have a reliable engine shop close by...••

Water Pump Impeller•Date: 97-06-11 08:27:37 EDT•From: CptnRn ••I just found that West Marine has a replacement impeller that fits the A4 Oberdorfer water pump for \$15.00. I ordered one and it looks like a perfect match...••Its advertised as

more resilient,  
self lubricating, more resistant to sand and debris abrasion and guaranteed to  
withstand  
running dry for 15 minutes. Not that I recommend doing that, but if its more  
resistent to  
breaking into pieces it can save you a lot of trouble looking for the missing  
parts that got  
sucked up into the engine..•It is a long life Niprene impeller replacement made  
by  
Globe, #815, for \$15.00, West Marine, Page728, #241044. ••Oberdorfer Water pump  
impeller  
er: The impeller is 2" diameter, 7/8" wide, w/ a 1/2" dia. single flat  
drive..•ArchTx••

Re:Water pump impellers•Date: 97 -06-17 08:37:05 EDT•From: Yeocomico  
••I think  
West Marine now carries them, they are blue I think, check in Cataolg, or post  
a note in  
the folder here. Supposedly will run 15 minutes dry. ••S ubj: Re:Water pump  
impellers•Date: 97 -06-17 18:59:17 EDT•From: Qshicks ••to my knowalage  
thair has  
bin [2] jabsco [1] sherwood [1]obendorfer pump instaled on the a/4 over the  
years and thay  
all youse diffe rant impellers with one do you want an impeller fore••

Re:Water pump impellers•Date: 97 -06-17 20:57:57 EDT•From: T27boat  
••Depco  
Pump Co. in Clearwater Fl has been easy to do business with. They are at 1 -800-  
445-1656  
and will ship with a credit card. Don Moyer also stocks water pump parts at 717 -  
564-5748.  
Hanson Marine in Marblehead MA at 800 -343-0480(Westerbeke/Universal Distributor  
)  
also has all the new parts available..•Bill••

Re:Water pump impellers•Date: 97 -06-18 08:41:38 EDT•From: Bristol32  
••Another  
question, a friend has a Tartan 27 1963 -64 vintage A-4 in it. He recently took  
the water  
pump apart to see if the impeller was still there, and found brass gears. Did  
they install a  
gear pump on these things? I can't imagine why. He took it apart because his  
water flow  
out of the exhaust was small, and had some steam too. Although he can keep his  
hand on  
the head after 30 minutes of motoring, so we don't think it is overheating.  
Any reason to  
be concerned?•••••

Re:Water pump impellers•Date: 97-06-18 11:55:34 EDT•From: Bristol32  
••The A-4  
on my Bristol has a Oberdorfer made in Syracuse if I can read upside down. ••

Re:Water pump impellers•Date: 97 -06-18 18:36:24 EDT•From: Qshicks  
••gear  
pumps was standerd on verry early a/4 and as it still workes he can still youse  
it the lack of



flow could be pump ware or just the block plugi ng up and in need of a clean out or the exhaust pipeing plugging up to test pump remove hose and start moterD and watch pump out put a bout 3/4 gall a minute at idel speed...end

Cleaning Block?  
Subject: Cleaning Block?  
Date: Wed, Sep 10, 1997 12:58 AM  
From: JDJahnke  
Message-id: <19970910005800.UAA02777@ladder01.news.aol.com>

I fear that I may have the same problem as the owner of the MD -7A. I have an MD-2 that uses raw water for cooling, and now frequently overheats. I suspect its getting scaled up inside. I there any way to clean the water passages in the block with out taking the engine out and acid bathing the whole thing?

Subject: Re: Cleaning Block?  
Date: Wed, Sep 10, 1997 2:41 PM  
From: LRZeitlin  
Message-id: <19970910144100.KAA10841@ladder01.news.aol.com>

There is a simple way to clean all raw water cooled engine blocks. It involves circulating an oxalic acid solution throug h the block until the scale is dissolved, then neutralizing with baking soda.

1. Close the raw water intake valve.
2. Remove the water pump impeller and put back the cover.
3. Disconnect the water intake hose from the intake valve.
4. Remove the thermostat . Replace the cover.
5. Disconnect the water hose which injects water into the exhaust.
6. Fill a five gallon bucket with warm water and dissolve two pounds of powdered oxalic acid (obtainable from paint stores) in it.
7. Using a Water Puppy pump or equiv alent, circulate the oxalic acid solution through the water intake hose, through the block, out the exhaust outlet hose, and back into the bucket.

Do this for at least two hours or until no more crud comes out of the block.

8. Empty the bucket and discar d used solution safely.
9. Refill the bucket with two lbs. baking soda dissolved in 5 gallons of water. Circulate for at least 15 minutes.

10. Reconnect engine hoses, install thermostat and water impeller. Your block has been cleaned.

Good luck, Larry

Subject: Re: Cleaning Block?  
Date: Thu, Sep 11, 1997 3:31 AM  
From: RHolman240  
Message-id: <19970911033100.XAA04452@ladder01.news.aol.com>

Is there any chance of damage to gaskets or seals from the oxalic acid? It

sounds like a great  
idea.

Subject: Re: Cleaning Block?  
Date: Fri, Sep 12, 1997 7:05 PM  
From: LRZeitlin  
Message-id: <19970912190501.PAA07743@ladder02.news.aol.com>

Oxalic acid is pretty mild stuff compared to the hydrochloric acid that professional rebuilders use. I've never had any problem with the gaskets but the only ones at risk are the impeller and thermostat gaskets, both cheap to replace. In fact, any time you open the water pump or thermostat housing it is a good practice to replace the gaskets anyway. The head gasket is made of much stronger stuff and two hours in oxalic acid will not damage it appreciably. Don't forget to neutralize the acid before finishing the job. - Larry

Subject: Re:Re: Cleaning Block?  
Date: Mon, Sep 15, 1997 2:23 PM  
From: Yeocomico  
Message-id: <19970915142301.KAA12504@ladder01.news.aol.com>

Any tips on recirculating the water short of buying a pump for \$150. Would one of those cheap pumps that hook up to a drill do the job?

Subject: Re:Re: Cleaning Block?  
Date: Tue, Sep 16, 1997 1:27 AM  
From: Qshicks  
Message-id: <19970916012701.VAA02511@ladder02.news.aol.com>

yes qshick

Subject: Re:Re: Cleaning Block?  
Date: Sat, Oct 11, 1997 3:19 PM  
From: Qshicks  
Message-id: <19971011151900.LAA13614@ladder02.news.aol.com>

yes the perfect tool note you dont have to run the pump all the time once every

10 minuts  
will work just as well to clean and nutrialize the acid desolive a pound of  
baking soda in a  
bucket of water and run that through the moter then flush with fresh water dont  
forget to  
retork the t stat housing bolts thay are head bolts [35foot lbs ]

Subject: Re: Cleaning Block?  
Date: Fri, Sep 12, 1997 1:42 AM  
From: Batt24  
Message-id: <19970912014201.VAA12387@ladder01.news.aol.com>

hi there i have an md2 raw water cooled also. i roger th e acid flush. a friend i  
new went to  
a pool supply store and picked a mild acid up and did his engine.  
im personally trying to recover from a cylinder with low compression. what is ur  
opinnion of the engineve. is it worth salvaging? currently under power with my  
outbd.  
good luck. !!!!!!!

<http://www.cbbr.com/recboat.html>  
rec.boats.digest

#### Discussions of the venerable Atomic 4

Subject: Atomic 4

Took my newly bought 1966 Coulmbia 29 out for the first time yesterday. There is  
no  
thermostat on the  
original Atomic 4 engine. A lever opens and closes the water cooling bypass  
system. I  
found myself watching  
the temperature guage...hot...then cold...jump down to open the valve...jump  
back down  
to close it...up and  
down. A real pain in the ass. I f elt like Mr. Arenaught on the African Queen.  
I'm sure  
there is an optimum  
setting for this bypass valve but I wonder if I couldn't just have something put  
on the  
engine to regulate the  
cooling automatically...like a themostat.

I bet if you look at an atomic 4 service manual you will find that there  
originally was a

thermostat on your engine. it is typical for atomic 4 owners to install a bypass valve to control overheating as an older engine begins to run warm. the bypass allows water to run through the exhaust system to keep it cool, while simultaneously forcing water through the block.

check the gooseneck on the engine, if it has a plug sealing off an outlet hole, you originally had a thermostat.

<<Took my newly bought 1966 Columbia 29 out for the first time yesterday. There is no thermostat on the original Atomic 4 engine.>>

Yes there was, read on.

lever opens and closes the water cooling bypass system. I found myself watching the temperature guage...hot...then cold...jump down to open the valve...jump back down to close it...up and down. A real pain in the ass. I felt like Mr. Arenaught on the African Queen.

Move the valve small amounts, you were overcontrolling, see below.

I'm sure there is an optimum setting for this bypass valve but I wonder if I couldn't just have something put on the engine to regulate the cooling automatically...like a thermostat.

Yup, if you want to spend for it, but it's not really necessary. At the top front of the block, there should be a domed housing, that's where the thermostat should go (the hose from the bypass valve should go into it). I don't have a thermostat in my engine because the housing has a bypass passage that is corroded in mine, and a new one is about \$65 and about \$30 for the thermostat. It's expensive because the thermostat 'steers' the water by taking it from the bypass (which should always be all the way open if a thermostat is installed), or from the block. It does this because the water needs to flow through the manifold and out through the wet exhaust all of the time to prevent burning the manifold, or exhaust system. There are

other ways to accomplish  
this, but that's the way the Universal designed it for the A 4.

In any case the extra 'stuff' in the thermostat and housing are what makes it  
expensive and  
why most folks  
leave them out.

I just leave the valve open all the way and the engine runs at about 90 - 120  
degrees all of  
the time. You do not  
want a raw salt water cooled engine to run much above 120 because some salts  
will start  
precipitating out of  
the water at about 135 (really, they do. Calcium and magnesium salts, I  
believe). These salts  
can clog cooling  
passages in the engine. Filling the engine with plain white vinegar and leaving  
it there for  
24 hrs will remove  
most of these deposits.

If you want to adjust the valve for a particular operating temp, run the boat at  
cruise speed  
for about 15 min to  
stabilize the temp with the valve open. Start closing it about 10 degrees of  
rotation about  
every 5 min until you  
get to the desired operating temp, then open it back about 5 - 10 degrees. Then  
leave it  
alone, the temp will go  
up 10 - 20 degrees when you pour it on to get under a bridge in a foul current,  
and it will  
cool off by the same  
when you are motoring downwind, etc.

Unless you install a freshwater cooling system with a heat exchanger, run the  
engine cold.  
Put about a pint of  
Marvel Mystery oil in the crankcase at every 25 hr oil change (important since  
there is no  
oil filter on an A4) to  
keep the rings from gumming up due to the low operating temp. MM oil is amazing  
stuff,  
it's been around  
forever and it will keep the insides of your engine free of crud.

end