

In the 26 July edition of Boaters' Update the following questions were asked regarding cruising speed and cruising past moored boats:

1. Given that an engine on tickover will result in different speeds for different boats can you think of a concise term that conveys the need to slow your boat in advance of passing moored boats so that it doesn't cause undue movement to those properly moored up? This comes with the caveat that this should only be done if safe to do so i.e. in strong winds more power will be needed to maintain steerage.
2. Are there three, or maybe four, golden rules that you'd like every new boater to learn before they go on their first cruise (with regards to cruising speed)?
3. Should hire boats, or even all boats, be fitted with a speedometer that's clearly labelled with two speeds – one for cruising an empty stretch of waterway and one for cruising on a stretch with moored boats?
4. What is an acceptable way of indicating to the boat in front that you'd like to overtake (given that they may not have noticed you yet)?

The suggestion that all boats should have a "speedometer" is excellent and could save fuel as well as tempers! I use a Garmin eTrex (see right) to measure speed as well as cruising distance. It shows that depth of water is the most important factor. On my boat at 1000 rpm, the speed over the ground has varied from 1.3 mph on the shallow Daw End Canal of the BCN to 4mph on parts of the T&M in Stoke where the water is deep because of subsidence - and perhaps 4.5mph on river navigations. Increasing the throttle can reduce speed rather than increase it. I also found that you lose less speed by coasting through narrow bridge holes as on the Caldon. The eTrex can also give grid references to help the emergency services find the boat in an emergency (they don't usually recognise bridge numbers!).



I thought it was 2mph past moored boats - although the throttle needs to be cut at least a boat length in advance of the moored boat. And as on the road, we can choose to go whatever speed suits the journey, provided it is within the limit. Want to pass a boat - sound the horn!

The amount of movement your boat causes in the water is a combination of the following factors:

The draught - a deep draughted boat may move more water;
the speed you're travelling at and the width and depth of the water you're on.

You need to observe the effect you are having as you pass along. Is there a wave racing along with you slapping unfortunate waterfowl out of its nests?

Are moored boats bobbing like toy ducks and slapping against the sides?

Is the cheery greeting you give moored boaters being met with a frosty glare?

YES? SLOW DOWN!

To be thoughtful and respectful, reduce your speed to tickover while you're still at least one boat's length away from the first moored boat. If by the time you actually pass alongside, you are gliding gently past and being smiled at by the owner you can assume that their goldfish is still safely on the sideboard and you've "nailed" being a considerate boater. Now don't muck it up by immediately applying full revs! Wait until you are a minimum of half a boat length past the last moored boat then gently increase your speed to a pace that isn't causing any damage.

That's what works for me and so far, I've never had a fist waved at me nor watched a line of boats react badly to my passing by.

Most boaters understand that water depth matters. What you need are conclusions most people agree on that the Trust could act on.

So what could you extract from the comments? I think it boils down to three areas:

A. Maximum speed.

1. That 4mph only applies on canals and some non-tidal rivers.
2. Most boaters have no idea what speed over the ground they are doing. You cannot relate it to engine rpm, as water depth and channel width affect it.
3. Someone suggested using a GPS, but I have tried a few and none work well at less than 5mph. They are mostly designed for cars.
4. All who mentioned it agree that a speed that creates a breaking wash on either bank is too fast.

So most would agree with the Trust amending the maximum limit to "4mph and no breaking wash". I'm sure someone in the Trust could come up with a nice little sign for "no breaking wash". The best you have at the moment is this in the boaters-handbook "Don't let your boat create a breaking wave or a lowering of the water along the bank just ahead of the boat." Hardly a "rule".

B. Normal Cruising speed

1. Everyone has a different opinion. Nearly everyone can justify that opinion.
2. You can't compromise the "slow is the spirit of the waterways" with people who need to be back by a certain date who have been delayed by something unplanned, like a broken paddle, or engine failure.
3. Given that all the Trust can do legally is apply a maximum (see above), everything else depends on courtesy.
4. Most agree that it is not discourteous to want to pass a boat moving more slowly, but that it IS discourteous to impede a faster boat once you have had fair warning of its desire to pass.

C&RT already explain in your boating guides about behaving with courtesy, you need to add specifically that this includes allowing a faster boat to pass you. (but see below)

C. Passing moored boats

1. Less than half think this should be at minimum safe speed.
2. Those that disagree cite examples of mile after mile of linear moorings.

3. Others talk about depth and breadth of the channel.

4. Although only 15% mention that knowing how to moor a boat is important, most, I suspect, would agree.

5. A number mentioned that less and less boaters are slowing down enough passed moored boats.

I think the Trust can conclude from this that the increasing number of linear moorings are causing more and more boaters to question the "tickover passed moored boats" rule. One correspondent pointed out that the Trust policy is to no longer allow long moorings, but as more farmers realise they are sitting on a goldmine, this is only going to get worse.

Personally, I slow down for all moored boats except linear moorings of more than 10 craft. I think the Trust should issue warnings to all boats on long linear moorings that they should pay attention to good mooring practice as they can no longer depend on all boats slowing down.

So, Your Questions:

1. I suggest "minimum safe speed", but think everyone will continue to use "tickover" anyway. It is a waste of time debating what to call it when more and more people, including me, are ignoring it.

2. Golden rules:

a) Never cause a breaking wave along either bank.

b) Check regularly for boats behind you, if they are catching up wait for a safe space then move over to starboard and signal them to pass.

c) If you want to pass a boat in front of you, wait for a clear stretch, then move up to within a boats length. If they don't notice you, politely toot your horn.

d) If you are about to pass a boat being held on lines by the crew, always pass at absolute slow, and as wide as possible. This is a dangerous situation.

e) If you pass a moored boat, give it a wide berth if possible or pass very slowly, the closer the slower. So, if within 2 metres, Minimum safe speed.

f) Never empty or fill a lock without a boat in it, unless you have checked for a boat coming in the other direction.

3. No point. The best you have on a boat is a tacho not a speedo. If you mark a tacho the actual speed will vary depending on water depth and channel width.

4. Same as cars. If you are happy with the speed, stay back. If not, move up to within a boats length and if they haven't noticed within a couple of minutes toot the horn.

Finally, and thanks if you have read this far, I think your "golden rules" idea could become a nice little Trust handout, like a "highway code" for canals. One small A5 pamphlet people will read. Maybe 10 little rules with explanations. Of course getting agreement on the 10 rules.....best of luck....

Re overtaking: there are already accepted sound signals for overtaking:

- 2 long blasts 1 short I intend to overtake on your starboard side
- 2 long blasts 2 short. I intend to overtake on your port side
- Long short long short I agree to be overtaken

Re speedo: no need for fitting speedometer on own boats. Great idea to make compulsory to have speedo on hire boats. Many free suitable apps available eg Boatspeedo

Also need to consider enforcement and speed signs which read our speed with smiley / miserable face in sensitive areas. Could your staff be provided with speed guns?

Re mooring techniques to prevent excess movement: could more be circulated regarding this - would be very educational!

Messages for new boaters:

- What is the speed limit?
- How is it enforced?
- Why is there a speed limit (preservation of river / canal banks and wildlife)
- What is a breaking wash?
- What is the fine for speeding?
- How to moor your boat to prevent excess movement

A couple of things on the speeding past moored boats point

- The key point is that speed is not very relevant, it's about understanding and then taking account of the effect your boat has on the moored boat. This will be affected by the design of each boat, the shape and size of the cross section of the canal, and how well the moored boat is tied up and fendered.
- There are some important points for the moorer in all this.
- I was surprised that the summary did not note the difference between surface wash and the hydraulic effect as boats pass. A fast canoe can cause lots of the former (which is fine) and none of the latter, a deep draughted narrow boat vice versa (which is a problem)
- I don't buy the point that crosswinds mean you always need to speed up. You do need to steer more into the wind. And there may come a point where the channel is too narrow and you have to speed up.

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- 1) My observation of inexperienced or inconsiderate boaters is no appreciation that it is the bow wake which causes most of the problems for moored craft. You correctly suggest slowing in advance and this should take the length of your boat into account. Far too many boaters "knock off a bit" as they pass to appear thoughtful but their actions are thoughtless. This is particularly true for boats stopped temporarily and held by one person on a centre rope which can almost be wrenched from your hand. Estimation of excessive wake is objective if the wash is breaking against the bank but possibly too subjective to set an acceptable speed for passing moored craft. Since it is the prime culprit and principal variable, however, to answer your question I propose the observation of an almost collapsed wake as it hits the moored

craft. This takes account of many factors, boat design, canal and river width etc. whilst allowing boater discretion.

- 2) Golden rules:
 - a. Watch your wake to protect the bank and safety/comfort of moored boats.
 - b. Slow down before hazards where you cannot see the canal beyond, there may be a boat coming.
 - c. Protect your engine by warming the oil at a slower speed for 10 minutes or so.
 - 3) Speedometers wouldn't hurt on hire boats but it will be a sad day if it becomes universal. Speed isn't everything, better boatmanship is the answer.
 - 4) There is a sequence of horn blasts which covers this, many other manoeuvres and gets you noticed at the same time. The codes could be laminated and placed next to the speedo. Is this acceptable? I'm not so sure but it may be preferable a compulsory RYA course for all boaters.
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1. The minimum speed necessary to maintain safe steerage.
 2. a. correct procedure for overtaking and being overtaken.
 - b. how to moor correctly with consideration to other users, particularly at busy visitor mooring. i.e. not in the middle of a space for 2 or more boats.
 - c. look for oncoming boats before turning round a lock.
 3. Speedometers do not take account of depth of water and canal profile.
 4. Get close to the boat in front and send someone up to the bow to ask to overtake, do not use your horn.
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1. Concise term/paragraph.

"To pass moored boats safely you need to slow down at least 50 metres before the moored boats. The speed which you pass should not cause unnecessary movement of the moored boats. Do not pass close to moored boats. if it is windy you may need to travel slightly faster to maintain safe control of your boat".

2. Golden rules for boaters.

1. Be courteous and respectful to all users of the canal as you would expect to be treated.
2. Make sure your boat is safe, serviceable and securely stowed before cruising.
3. If you don't know or aren't sure of any aspect of boating and cruising then ask. Boaters generally are very helpful people.

3. Marking tachometer/speedometer.

Definitely do this. It would help everyone. My throttle has a setting for passing moored boats. A mark for normal cruising and a mark for passing moored boats would benefit all. Probably the answer to all speed problems.

4. Letting people know you want to pass.

There is already a horn signal for letting people know you are there. This is one continuous blast of 10 seconds. There are other horn signals. One that is not used is 5 short blasts of the horn. This could be used for "I want to overtake".

1. Concise term: "Slow right down to tickover before passing moored boats to avoid excessive movement in these craft "

2. Golden Rules.

- Never allow you wash to break into a wave.
- Slow right down to tickover before passing moored boats to avoid excessive movement in these craft.
- Keep a watch behind and indicate to any approaching boat behind you to overtake when and where it is safe.

3. Speedometers. No thanks, this sounds well outside the canal ethos.

4. Overtaking: One long blast on the horn is a general alert signal and should be an accepted way of alerting a craft ahead that you wish to overtake.

I accept your challenge to write a condensed "rules of boating" for newcomers!

1. If your boat makes a breaking wash, slow down.

2. Keep about 3 boat lengths back from the boat in front, unless they are going so slow you want to overtake, in which case move closer. Wait for them to slow down and wave you past, on a clear straight section of the canal.

3. Look out behind you every few minutes to see if anyone wants to overtake you. If there is a boat behind, warn any boat passing you, if they won't be able to see it because of a bridge or a bend.

4. Slow down to, or near, tickover/idle speed about a boat length before passing moored boats.

You can and should moor your boat more securely by using a spring, a third mooring rope angled forwards from a rear cleat. This stops the boat being swept forwards or backwards by a passing boat, which is what causes an uncomfortable mooring.

The problem with steerers not looking round is a tricky one. I can't believe it when someone steering a slow narrowboat is totally unaware (or chooses to ignore!) another boat just a few yards behind, but it happens. You could use your horn to alert them you're there, but that just seems wrong when we're all trying to relax. I either match them at tickover or moor up for a cup of tea and let them get on with it.

Finally, it's a definite No to speedos on narrowboats - they're all different, as are all the waterways. Any speed is ok, as long as you're not making a breaking wash, and are ready to let faster boaters go past if necessary.

Not only different engines/boats but also different waterways!

I always look at the angle and size of the wash. Wash should come from the bow at between 30 and 40 degrees towards the bank, if its more than an inch high, too fast for passing moored boats. It may need to be less!

If the wash starts to bend, or overtake the boat shallow water, too much speed slow down. Also helps to detect sandbanks!

All boats should have a rev counter this can be used to gauge speed, but varies from waterway to waterway. I use a gps log, so most of the time I know how fast I am going - doesn't work in tunnels and cuttings!

Problem is usually attracting attention. Rely on those in front to judge when best to overtake, doesn't always work!

Some years ago (when I first got the gps) I tested the speed achievable on various waterways in both directions (shown upstream and downstream). This was based on finding the point at which increased engine revs made no difference or actually resulted in going slower (stern dip).

Some views on your questions re appropriate speed:

Q1 Tick-over? Aim to pass boats at a speed consistent with Safe & Considerate navigation. (This is a bit weak and needs explanation to back it up.)

Q2 Golden Rules? Appropriate speed is affected by size & shape of boat; width & depth of waterway; size and proximity to moored vessels; weather & tidal conditions. Answer to Q1 always applies.

Q3 Speedometers? Definitely not needed for private craft; could be fitted to hire boats but speed is affected by so many factors it is of limited value.

Q4 Overtaking? The agreed rule according to the International Collision Regs is to sound the horn; two long blasts to indicate intention to overtake followed by one or two short blasts to indicate the proposed side. No need to advise anything else (all boats have horns) just advise people accordingly ie a sound signal has a defined meaning and is not an indication of anger! In my experience to alert a skipper of an approaching boat behind shouldn't be necessary but can be useful if otherwise distracted.

I generally tell new steerers to visualise they are driving on a slippery road - allow plenty of time to slow down and look well ahead for obstacles such as oncoming boats.

Traditional boats, like heavy lorries can't stop in a hurry - towed boats have no way of stopping!

On passing signals - the Thames signal for passing on the port side is four hoots (= 'please let me past / I want to pass') which should be easy to remember and means that if people go onto a river with commercial boats they already know the signal. The Highway code 'please pass' arm-sweep signal could be used to invite people past.

Having been boating for 25 years an astonishing number of (apparently long-term) moored boats are badly tied with slack ropes. Our home mooring is canal-side but barely moves as boats pass since we have our mooring lines at 45deg with springs fore and aft.

1) Slowest safe speed (sss)

2)

- a) slowest safe speed
- b) when visibility is restricted at bends and bridges speed should be slow enough to allow you to stop in the space you can see.
- c) always slow at narrow bridges incase of submerged debris.
- d) if you are catching up with fit and healthy walkers you are going to fast so slow.

3). Assuming that the cruising setting would be 4mph I would not support speedometers. My objection is that the settings would almost certainly be seen as mandatory and encourage cruising at 4mph at all times.

It may be difficult, but we do need to trust people.

4) if you are not breaking the speed limit then a sound of the horn and a friendly wave are usually enough. (I only have objections to people passing me when I am already cruising between 3.5 and 4 mph and they clearly wish to break the speed limit. If I am having a slow day I am the first to offer them the pass.)

This has irked us at my moorings in XXXX above XXXX lock, as the wide beam boat owners do not seem to realise the amount of water displaced by their boats, particularly when passing moored boats. I have had boats on the canal since 1972 and in those days there were notices everywhere saying DEAD SLOW PAST MOORED BOATS and even hire boats were compliant. Now it seems to be a free for all, in fact last weekend we had to suffer a speedboat!

Proper tying-up does not work for long because boats going too fast past moored boats stretch the ropes and one would be constantly adjusting them.

Overtaking. Tooting on the horn once, but not frantically and not too close behind, usually works.

Clearly this is a very subjective issue that will potentially never be resolved.

I believe that momentum of the boat is very significant matter and often you can hear that someone reduces engine speed as they arrive at the moored boat and speed up whilst still passing.

However, my favorite is whilst on the Caldon Canal, not noted as a "motorway" of the canals where a senior man shrieked at me to slow down. When I said that I'd been on tickover for several hundred meters he said I must be going too fast because I made his ropes move.

You can please some of the people some of the time!

In answer to your question on, golden rules, boat speed and overtaking, I offer the following:

Overtaking - This is simple. The COLREGs, which all canal boats must use, has a simple sound signal to indicate your desire / intention to overtake to starboard (long long short) or port (long long short short). Of course, this will need people to use that noisy thing at the front which may upset some seasoned continuous moorers!

Golden rules –

1. Never allow your wash to break or overtake you; this is a very quick and easy indication that you are going too fast for the available water (under and around) and it will reduce your control, impair steering and generally be bad for the canal and banks.
2. When you moor up, always use the firmest option - i.e. bollards or rings, Armco and then pins as a last resort. Always have a head and stern breast and a fore and aft spring; this will keep you close to the bank and the springs, which should be tight, will stop you moving up and down the canal as a boat passes.
3. If you can see a boat moored starting to move, you are going too fast; even if it is poorly moored, slow down think of the bank.
4. When you first get going, practice stopping from cruising speed; you will be surprised how long it can take, what happens and how quickly you can lose control. Remember it for the real thing, it may save some tears.

Logs - A good question. Personal, I double up my GPS as a log but I only use it as a guide. The problem with a log is that speed limits will be set and then the fore and against groups will demand that they can be met or that they are reduced. As I believe that you have already ascertained the right speed is different for almost every 100yds of a canal or river, I think that boaters need to be informed in the most graphic and simple way possible what is acceptable and unacceptable; in tandem the “no where to go and all day to complain” crowd need to be reined in and forced to moor properly. It would significantly help if the Trust provide more good mooring sites and actively discourage the use of pins; they are simply destroying the banks, double pinning is particularly good at this, and adding to the ever increasing repair and maintenance bill - Kennet & Avon is particularly bad for this.

COLREGs specify the sound signal for overtaking other vessels along with other legally binding aspect. COLREG applies to most if not all C&RT waters?

I've had to replace 1 rope as it broke and re-site mooring pins with 3ft scaffold poles (also I have a spring line set up) due to speeding boats on the River Stort.

After over 9 years continuous cruising around the system I follow the following 'rules':-

When cruising when there are no other boats around, either moving or moored, I cruise at up to 4 mph, less if my boat is creating undue wash. I slow for blind corners and bridge holes and when passing boats coming towards me, especially if the canal is narrow.

When passing moored boats I slow somewhat when three or four boat lengths (my boat is 57') from the moored boat(s) and then to tick-over (see below) when about one boat length away. In very windy conditions it may be safer to go a little faster in order to keep my line. I DO NOT speed up again until the stern of my boat is well past the moored boat(s).

I do occasionally come up behind a very slow boat that I want to pass, if the skipper of the boat hasn't seen me I find a short 'toot-toot' and an appropriate hand gesture always conveys the message.

'Tick-over' is a meaningful term, it might be defined as the minimum revolutions at which the engine will turn whilst 'in gear'. Any internal combustion engine has a minimum speed at which it will operate without stalling or struggling. A large old engine may well have a much slower tick-over speed than a small modern engine, but the propeller on the boat will be matched to the engine revs so almost all boats will move at a similar satisfactorily slow speed at 'tick-over'.

I asked this question last time and saw no replies, "Why wouldn't you slow right down for boats that are moored?" What sort of hurry are you in that you would even consider not being courteous enough to slow down when passing moored boats? Even if the boat is securely moored it can be uncomfortable when a boat speeds past.

20 years ago when I had my own boat for the first time there was a courtesy for other users. It was a low proportion of responses that do think boaters should go slower and shows that people are no longer considerate of their fellow canal users.

Regarding the cruising speeds that is an individual's preference, the bottom line is the wash created on the banks, you are responsible to maintain them which highlights the thinking boaters.

The 15 % regarding the moorers responsibility to moor correctly, they obviously don't understand the basics of physics, however well the boat is moored IT WILL move!!!!!!

Tick over is understood by most informed people they are just being awkward and pedantic, have they never heard of their car being on tick over?

Golden Rules

- 1 Most People are on the canals for recreation and pleasure, so do it accordingly
- 2 High revving does not achieve anything, other than using more fuel and making a lot of undue noise, not to mention the more difficult it is to get off if they have run aground.
- 3 Tick over is the only speed to go past moored boats, have you ever been in the shower or with a Disabled person when the boat rocks? Think about it, that's when accidents happen. Let's have some consideration for our fellow Boaters.
- 4 It must be emphasized by the hire companies as well as yourselves on the licence renewals.

Forget the speedo just be aware.

Why not use the horn signals that are recognised by the Port of London and other Authorities.

What is an acceptable way of indicating to the boat in front that you'd like to overtake (given that they may not have noticed you yet)?

As the canals are 'navigable waters connected to the high seas' then narrow boats should follow the International Regulations for Preventing Collisions at Sea (The Rules). (Which is why we drive on the right.)

Rule 9 (e) and Rule 34 (c), (e) state that, to indicate that you wish to overtake, sound two prolonged blasts followed by one short blast to overtake on the starboard side or sound two prolonged blasts followed by two short blast to overtake on the port side. The vessel to be overtaken should indicate her agreement by sounding one prolonged blast, one short blast, one prolonged blast and one short blast. This sounds a bit complicated but is the unambiguous way to indicate your intentions.

I have been a live-aboard boater for 10 years, mostly on the Kennett and Avon, travelling between Reading and Bristol, with summer forays onto the Thames and Oxford canal .

I am also a retired Master Shipwright and have in addition studied Hydrodynamics and hull design.

I wish to say I have huge respect for the work of the Trust, and I actually believe my annual licence is a bargain, (although please don't increase it too much next year!) but having read your recent post titled "Ticking off at tick over" I am sorry to say the points raised are, well, missing the point.

I will address these individually, and then set out what I feel are the real problems caused by excessive speed.

1. Tick over speed varies with each boat/engine combination.

This is of course true, but the definition of tick over is the SLOWEST for any given engine to run efficiently without stalling. Whatever speed the boat is travelling at, if the engine is at true tick over then no more can be expected of the helmsman. They are doing the best they can and no one can ask more than that.

If however tick over on any particular vessel equates to excessive speed, there is a good argument to say that the boat/engine combination is unsuitable for inland waterways use.

2. Tick over is not fast enough.

Not fast enough for what? Commuting/ The emergency Services? Most excessive speed, (but certainly NOT all), can be observed by hire boats and especially day-boats.

I believe the reasons for their undue haste mostly falls into the following categories.

A. They are over-optimistic in their estimation of how far they can comfortably manage in the day/ week/ fortnight that they have the boat.

While 15 miles a day may seem nothing much to an inexperienced boater, when taking locks and travelling past moored boats into the equation, 15 miles a day every day without resorting to excessive speed is impossible and therefore unrealistic. If speed and/or distance covered is a prerequisite of your holiday, I respectfully suggest a vacation on the Inland Waterways are not a suitable choice.

B. Rudder Authority.

Please bare with me, because this requires a bit of science to understand. "Rudder Authority" means the ability of the rudder when deflected from the central inline position to influence the direction of the vessel.

Now for the science. With gases or liquids moving over a wing, spoiler or in our case rudder there is something known as the V Squared Rule. This states that if the Velocity (V) of the water over the rudder is doubled, then the effectiveness, i.e. Rudder Authority is QUADRUPLED. In plain English the means that if the prop-wash over the rudder at 2mph with the rudder at 30 degrees results in a 20kg side-thrust, then given the same rudder deflection at a speed of 4 mph, the side-thrust will be 80kg. That is why it is easier to steer a boat at high engine rpm, and the reason I hear time and again that "the rudder does' not work if I go any slower". It does. and it will.... it just takes a little more concentration and care.

C. Alcohol.

Sadly a too large proportion of speeding boaters are, please pardon the expression, pissed.

Imagine this very common scenario. You hire a vehicle to someone with absolutely zilch experience in said locomotion, whose only training is to watch a short video and (if they are lucky), have a 10 minute chat to someone about how to fill the water tank/ change the gas/empty the loo. I have worked for hire boat companies. Change over day is manic and this is what happens. You then let them loose with the ability, and all too often the urgent and primary intention to get completely hammered and remain that way for the duration of their holiday, Scary eh? Oh, and by the way, said vehicle is 60 feet long, weighs 15 tons, skids all the time and has no brakes.

If it was a lorry everyone involved would be arrested even if they were sober. Add excessive alcohol to the mix and... well you can imagine the outcome I am sure.

3. Do not travel so fast that you cause a breaking wash.

While this is good advice it is also totally missing the point and is hugely misleading because damage to the canal banks and the often-violent disturbance to moored boats and the bank integrity will occur at speeds far below that required to cause a breaking wash.

When a boat travels along a narrow waterway such as a canal, water has to be displaced to allow its progress. Due to the narrowness of the canal this displacement has no other option than to be linear, in other words ALONG the route of the waterway. In addition, when going at even a moderate speed the action of the propeller will "pump" water from ahead of the hull to astern of the hull. If you have been on a boat and watched the water, leaves, ducks etc. as you progress you can see all these travelling backwards when viewed in relation to fixed item. This is most easily seen when going through the pinch point under bridges. The narrower the waterway/the greater the speed, the more this effect is evident. You may also notice that the water level ahead of your boat drops significantly, as water is transferred by the action of the propeller from in front to behind you .

Now imagine you are on moored boat. The first indication that a boat is approaching with excessive speed is that your vessel moves TOWARDS the approaching boat until restrained by your mooring ropes and pins. This can happen long before they are near you. As they pass, your boat reverses it's direction due to the displaced water and water level re-establishing its previous equilibrium. Your mooring ropes and pins will attempt to arrest your boats movement, but 15 tons of boat will all too quickly loosen and pull out the pins, imparting severe damage to the bank.

On busy stretches with soft banks, in holiday time I have had to refix my pins up to 12 times in one day due to this happening. Each time the bank is literally crow-barred apart by the pins working backwards and forwards.

Imagine what a few dozen moored boats weighing 15 tons undergoing this kind of force and resultant damage the crow-bar-like pin will impart on the banks integrity when this happens every 30 minutes, 7 days a week.

I am in no doubt that this LINEAR MOVEMENT cause by passing boats, moving at speeds far less than would be necessary to create a wash is the major contributing component to bank and towpath destruction.

I am passionate about protecting and preserving our unique inland waterways and I would be delighted to meet with the relevant Trust engineers to discuss this problem, show them it in action and take them to locations where the banks and towpaths have been destroyed by it.

Excessive speed not only upsets moored boaters, it is also costing the Trust a fortune in the repair of damage and subsequent erosion of the canal side and towpaths.

Addressing your 4 questions:

1. The point at which the throttle should be closed is the deceleration point, which allows the momentum of the boat to be reduced from 'cruising speed' to 'tickover speed' and the water being pushed ahead to dissipate. The dynamics of fluids in a trunk was a subject that I first encountered - and last addressed - at around the same time as Neil Armstrong walked on the moon; however, I do remember that water in an open trunk (such as a canal) is pushed ahead of a boat by the hull and the bow wave, and the leading edge of that volume of water can be as much as 200 metres ahead of the bow. The boat should be at 'tickover speed' before reaching the moored boat. If you can read a 'please pass at tickover' before reducing speed, it's too late!

In a crosswind, the boat should be allowed to weathercock – this is a natural phenomenon where a boat will align itself into wind, bow first, unless acted upon by another force. Additional power is required when weathercocking continues to result in a drift towards the moored boat.

2. The golden rules:

First: Always cruise at a speed that does not create a breaking wash and monitor your wash continuously. A change of depth at the canal bank can change a non-breaking wash into a breaking wash in an instant – if that happens throttle back!

Second: Always pass moored boats at tickover – you can't go any slower than that unless you coast, which results in little or no steering. You can always identify tickover by the click made by the morse control.

Third: Always reduce speed when passing a boat in the opposite direction. After passing a boat in the opposite direction, the bow of your boat will always attempt to swing towards the centre of the canal (fluid dynamics again!)

Fourth: Maintain a regular lookout behind for the faster boat. Do this at the end of each straight stretch and you can gauge the progress of the other boat. Don't impede just let them pass on the straight, by indicating your willingness to be overtaken, moving over to the right and most importantly closing the throttle. Keeping power on will prolong the passing manoeuvre and could create a dangerous situation.

A breaking wash creates problems for the future as it scours out the bank and shallows, drawing them into the canal and subsequently reducing the depth

3. Speedometers are not much use at speeds as low as those on a canal. I have several years of empirical data gathered across the canal network by using GPS data to track progress - and it's clear that a simple rule like that proposed is not feasible. Width and depth of the water are key factors affecting speed.

I know that my boat has a 'tickover speed' that varies between 1.7mph and 2.2mph, and it's the depth of water that governs this – the closer the boat baseplate is to the bottom of the canal, the greater the effect of Bernoulli's theorem, and I have a very large propeller that pulls a large quantity of water under the boat. I know that I can cruise many parts of the Grand Union and Trent & Mersey Canals at 4mph and I can cruise certain sections of the North Oxford at 3.5mph, but I can barely manage 2.6mph on some parts of the South Oxford summit and have to remain at tickover on certain parts of the Ashby Canal. Furthermore, a very reliable source of speed information is required to provide accurate speed. My GPS data indicates speed fluctuations occur, sometimes quite wildly, simply because of the coarse nature of GPS data available – while military grade GPS data enable a cruise missile to hit the keyhole of a standard door, the civil grade will enable the missile to hit the door of an aircraft hangar.

Passing moored boats is simpler – throttle closed, listen for the click. But don't try to overtake another boat in this situation.

4. The problem here is that we don't have a comprehensive set of sound signals for use on inland waterways; travel on the Thames Tideway and you'll hear all kinds of different sound signals. The generally accepted sound signal from a boat about to pass a slower boat, is two short blasts to indicate an intention to alter course to the left – my starboard side to your port side. Unfortunately, there aren't many boaters that seem to understand sound signals!!! If in doubt, send a crew member to the bow and get them to request their helmsman to allow you to pass. Of course, there are always those people that feel that their speed is the only way to travel and are not going to let you pass.
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