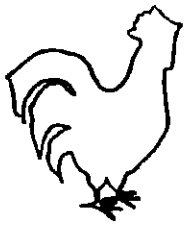

PUSH START

THE BANTAM RACERS MAGAZINE

Xmas 88

I'd like to start this bumper Christmas issue by wishing you all a very Merry Christmas, and if you're one of the ones reading this at the Annual Dinner and Prizegiving, you can take that as literally as you like.

Since the last mag. there have been exciting developments taking place at the AGM. Who says nothing exciting ever happens at an AGM? Well this time there has been a change to the Bantam Formula, an event significant by its very rarity. You will now all be able to spend those freezing winter evenings in the workshop delving into your crankcases and fitting reed valves for direct induction. You can put down that disc valve you've prized off the RG125 down the road though, they're still not allowed.

You will also note that inside there is a stunning new diversion from the previously miserly attitude adopted by the proprietors of this journal. We have a PRIZE CROSSWORD. The first correct (or most correct in case of difficulty) answer will be rewarded with a copy of "The Illustrated Encyclopaedia of Motorcycles". From this wonderful mine of totally useless information you will be able to derive such nuggets as '... after the war the DKW factory became nationalised and the name changed to Ifa, later to MZ.'

Which brings me to the other information from the AGM, which is that the Formula Lightweight Racing Club are going to bring in aclass for 125 MZ's so that anyone keen on development can work on these engines and leave the 250's as a tightly controlled class. They will, of course, be racing with us, as

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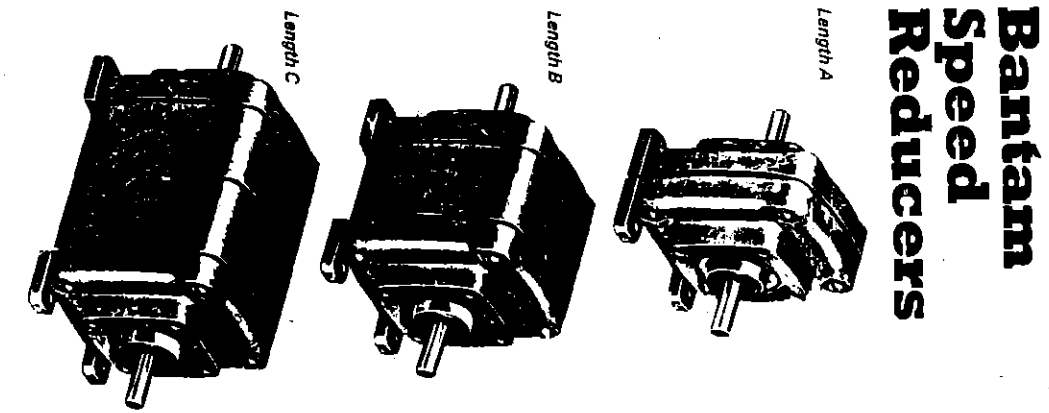


Bantam Speed Reducers

Series 10 & 11 Speed Reducers

How to Order

First determine the ratio you need. All ratios given below are whole number or even-fraction ratios and are theoretically exact. Then decide on the series you need, Series 10 or Series 11. If backlash is critical specify Series 11. The relative direction of shaft rotation between input and output is governed by the ratio and is designated by the suffix letter R or S; R is reverse; S is same. Some of these speed changers may be used as speed increasers: however, the maximum safe torque available at the high speed shaft will be the torque rating of the unit (130 oz. in. Series 10; 65 oz. in. Series 11) divided by 1½ times the ratio selected. Thus the maximum torque available at the high speed shaft when using a type 10A10R as an increaser will be

$$\frac{130 \text{ oz. in}}{1\frac{1}{2} \times 10} = 8 \text{ oz. in. approximately.}$$

This speed reducer will then require 130 oz. in. input torque at the low speed shaft.

Important

When ordering a Bantam speed changer to be used as a speed increaser be sure to let us know. We will then omit the oil seals and grease lubricate, thus improving efficiency.

The no-load input torque required to drive a Series 11 unit is about twice that of Series 10 units. Also because of the spring-wound anti-backlash gearing the Series 11 units will feel somewhat rough when rotated by hand. This is inherent and normal, and does not affect the speed or torque rating in any manner.

When ordering give complete type number:

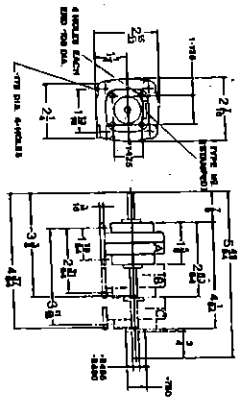
Example: Type 10B45S

10 – Series Number (10 or 11)

B – Double Gear Section

45 – Ratio to 1

S – Same Direction of Rotation



Length A – Single Gear Section – Wt. 14 oz.

A 1R	A3/2R	A8/3R	A5S	A 8R	A11S	A16R	A21R	A27R	A36R
A5/4R	A 2R	A 3S	A6R	A 9S	A12R	A18R	A22R	A30R	A44R
A4/3S	A5/2S	A 4S	A7R	A10R	A15R	A20R	A25R	A33R	

Length B – Double Gear Section – Wt. 26 oz.

B14 S	B 60R	B 99S	B144R	B200S	B275R	B378S	B500S	B693S	B 924S
B24 R	B 63R	B100S	B147S	B210S	B288S	B396R	B528S	B704S	B 968S
B28R	B 64S	B105S	B150S	B216S	B297R	B400S	B525S	B720S	B 972S
B32 R	B 66R	B108R	B154S	B220R	B300S	B405S	B540S	B726S	B 990S
B35R	B 70S	B110R	B160S	B225S	B306S	B420S	B550S	B729S	B1080S
B40R	B 72R	B112S	B162R	B231R	B315S	B432S	B561S	B750S	B1089S
B42S	B 76R	B120S	B165R	B240S	B320S	B440S	B567S	B756S	B1100S
B45S	B 77R	B121S	B168S	B242R	B324S	B441S	B576S	B792S	B1188S
B48S	B 80R	B125R	B175S	B243R	B330R	B450S	B594S	B810S	B1296S
B49S	B 81S	B126S	B176R	B250S	B336S	B462S	B600S	B825S	B1320S
B50R	B 84S	B128S	B180R	B252S	B352S	B480S	B625S	B880S	B1457S
B54R	B 88R	B132R	B189R	B256S	B360S	B484R	B630S	B891S	B1584S
B55S	B 90R	B135R	B192S	B264S	B363R	B486S	B648S	B900S	B1935S

indeed will all 125's next season. So Colin may be able to sell some more tuning manuals after all, we'd better stock up again we've only got 183 left.

Looking forward to 1989, I really would be interested to hear what anyone has to say about the club, our articles or anything else for that matter. Someone did say to me at the last Lydden meeting that they enjoyed the magazine. That sort of thing is useful too, so I know that some of you actually read it. The award for most long suffering reader must surely go to John Marks he not only read Colin's last technical article, he even understood it and requested a specially prepared graph for his inlet system. So look out the rest of you, he must be <u>really</u> serious.

Enough for now. Do have a go at the crossword. All the answers are related to Bantam Racing in some way or another, so guess it if you can't work it out. The artwork is courtesy of the CAD system on my office micro so if I can get another uninterrupted lunch hour I'll do the solution for the next issue.

Until then, have fun, and remember that a little of what you fancy isn't half as good as a lot.

Elaine

<u>Technical Article</u>

Now that the racing season is over, you will all have endless hours to pass away in the workshop. It's time I set you a tuning project.

What we are going to look at is gas flow through the transfer ports and into the cylinder and describe a DIY method of determining the quality of the flow.

First of all lets look at some of the major processes that should occur during this event and see why they are important, and note some of the undesirable effects.

As the piston descends, closing the inlet port or shutting off the reed pack, the mixture of air and fuel is compressed so that as the transfer ports open the mixture is 'transferred' through the ports into the cylinder.

A rough rule of thumb for transfer port cross sectional area is that when all of them are added together, they should be as large, or larger than the cross sectional area of the carburettor. A point to note here is that unless the transfers are large enough to take an increase in carb size, there is no point in putting on a larger one as the transfers will be restricting the flow.

The speed of the gas as it discharges from the port has quite a lot of influence on what happens in the cylinder. But before we go any further I am going to make an assumption which is almost true and produces small errors, and more to the point makes it easier for me to write about it. The assumption is that the rate of increase of gas velocity through the transfer ports increases directly with engine speed.

Now, <u>t</u>he small amount of room we have around the barrel for the transfer ports means that the gas velocity is going to be quite high. This creates two problems, firstly, if this jet of high speed gas is not reduced in velocity as it enters the barrel it will head off down the exhaust well before any return pulse from the pipe can push it back. Secondly, because the exhaust gas still in the cylinder is moving relatively slowly, the higher speed jet of incoming gas will tend to mix with it. This means that either fresh charge will be lost with some of the exhaust gas or that some of the exhaust will be mixed with the fresh charge, neither of which is useful.

So, what do we wish to see? Ideally the streams of fresh charge should head low down over the piston crown and meet at

the rear of the cylinder wall. If the flows are symmetrical and even the velocities will be reduced to a more useful level. This combined column of gas travels up and across the cylinder head, and looping down, pushes the last of the exhaust gases out of the cylinder. A small amount of the fresh gas will enter the exhaust port, to be pushed back in again by the plugging pulse.

Any uneveness in this process will cause two main problems which I have already spoken of, which are called 'mixing' and 'short-circuiting'.

How do we determine how well we have made our transfer ports? Probably the most informative way is to 'gas flow' the barrel and map out the effective quality of the process.

First of all it is outside the scope of the home engine developer to measure the gas flow direction and velocities in a running engine. (In fact, even with some very exotic and expensive equipment in a research laboratory its not easy). So we simplify matters along the following lines:

1 You will need a fan to provide a steady flow of air. A high pressure is not needed, but plenty of flow. Something like a vacuum cleaner unit converted to blow air.

2 An old piston with a hole cut in the skirt to match the inlet port at BDC. Grease or tape wrapped round the ring land will stop air leaking past the sides.

3 Aboard which bolts on top of the cylinder (use the existing studs) with a hole cut through to line up with the bore and just a little larger in diameter.

4 A pantagraph or similar mechanism attached to the board to allow a small bore tube (say 1mm i.d.) to be traversed over the area of the cylinder bore to repeatable positions.

5 A U-tube manometer, one end of which is connected to the traversing tube probe.

To test the barrel it is installed onto the engine which has been fitted with the modified piston, locked at say, BDC. The fan is connected with flexible hose to the inlet stub and the board with the traversing mechanism is bolted onto the barrel in place of the cylinder head...See layout sketch.

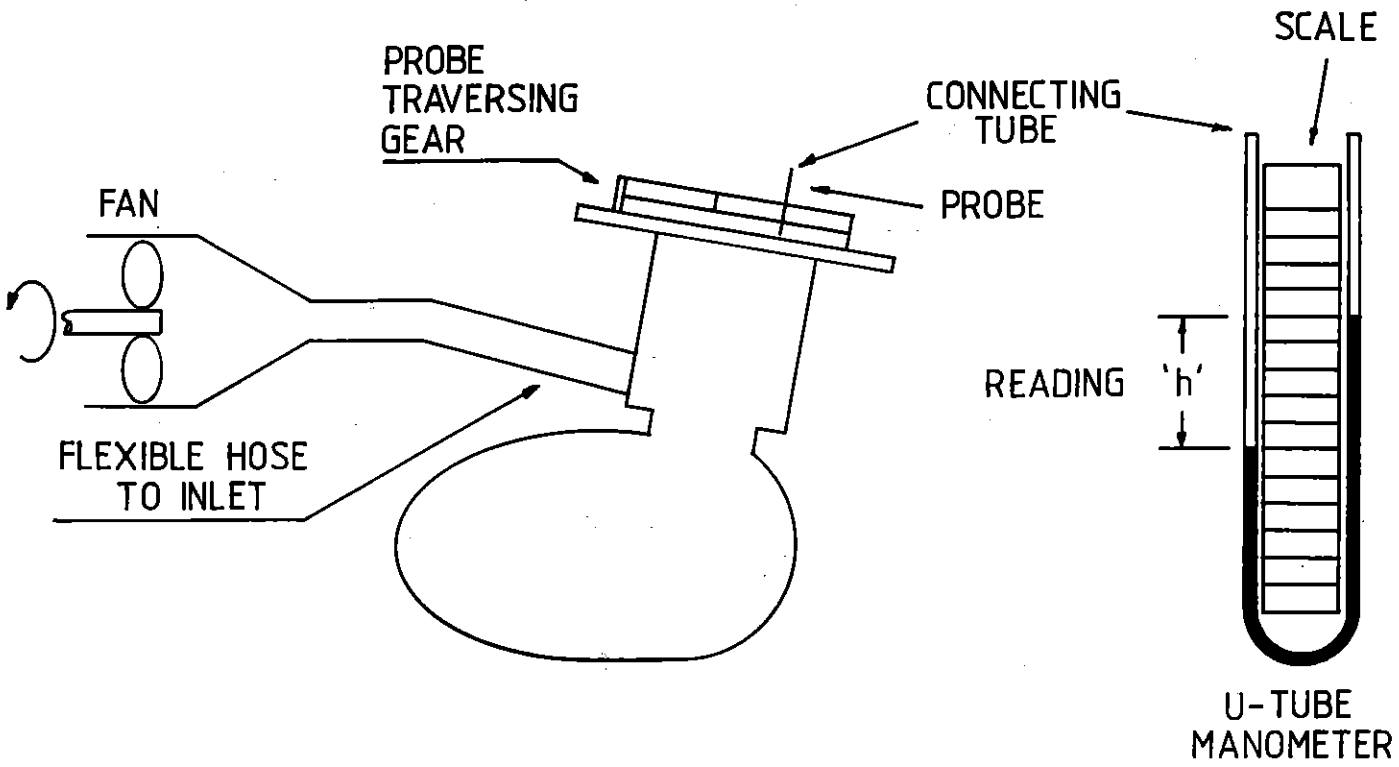
With the fan turned on air flows into the crankcase via the hole in the piston skirt and up through the transfer ports into the cylinder. This gives us a crude representation, frozen in time of our running engine at bottom dead centre, (and of course at any other opening of the transfer ports if we set the piston at the appropriate point). Although we don't know what size fan to run to represent a given engine speed in terms of gas flow and so on, the pattern that we can measure with our tube will not alter very much even with large changes of air flow or pressure.

So with the fan running, the pressure head of the upward travelling air flow will cause the pressure inside the small diameter tube to increase. As the other end is connected to a simple U-tube manometer, this pressure increase can be measured directly with a rule. By moving the tube in a grid like manner over the cylinder and noting the manometer reading for each position a contour map of the barrel flow pattern is built up,

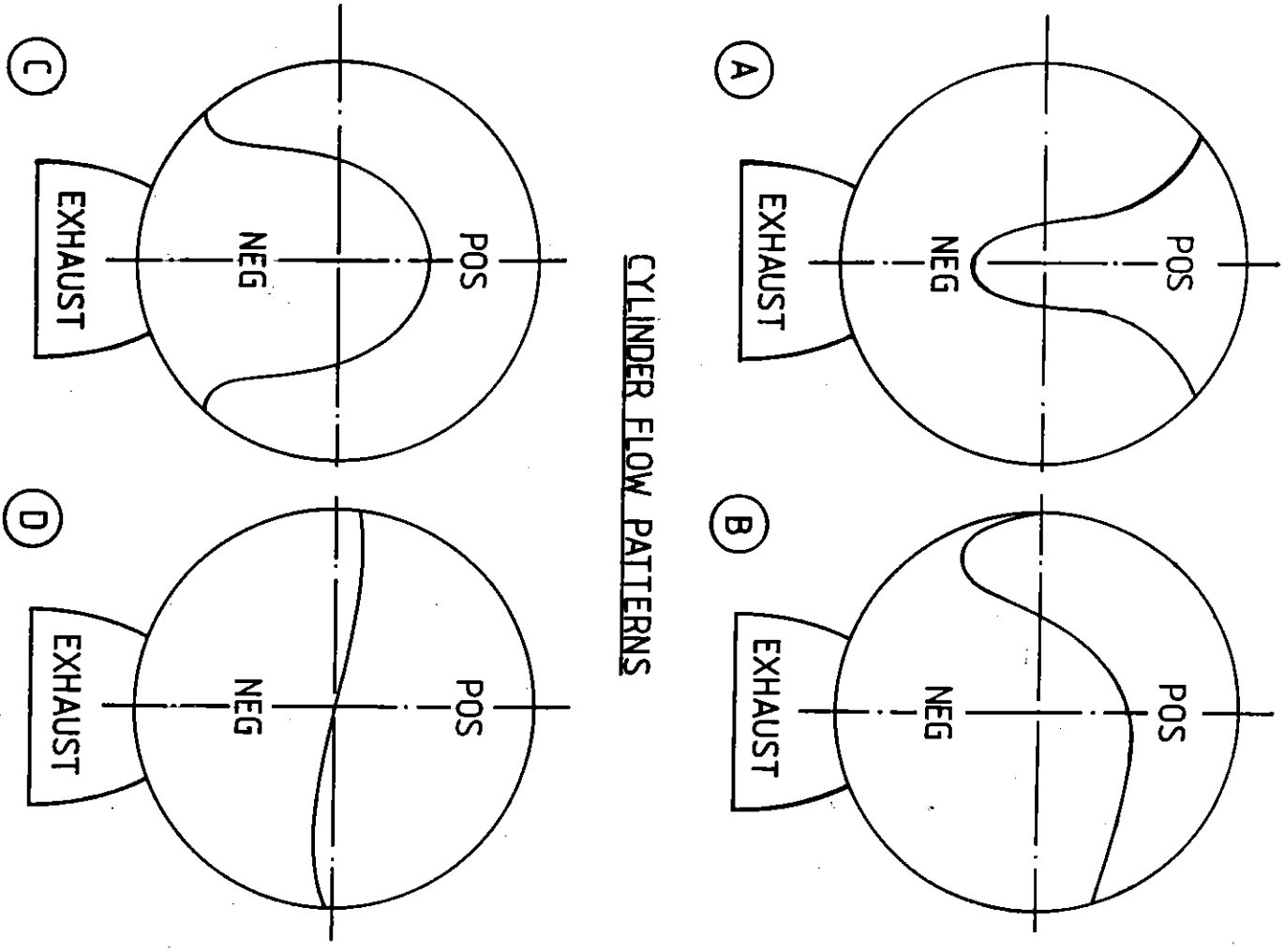
Four sample flow pattern diagrams are shown. These are taken across the top surface of the cylinder and drawn looking down. The single line between positive flow readings and negative readings represents zero flow conditions.

Example A shows a symmetric flow but with the transfers forcing a tongue towards the centre of the cylinder. This will cause a large amount of exhaust gas residue to be trapped along with the fresh charge. This type of pattern can, if bad enough, cause spark plug fouling (Brian White and Tom Miller please note).

GAS FLOW RIG LAYOUT [NOT TO SCALE]



CYLINDER FLOW PATTERNS



Example B shows an asymmetric flow pattern which although better than A will still incur some exhaust gas residues and may suffer short-cicuiting on the left hand side. This is often produced by the port on, in this case, the right hand side, being angled higher than its opposite number, or opening before it.

Pattern C is symmetric, like A so the ports are angled evenly but are facing across the piston crown excessively, forcing the flow to horseshoe. Problems here include short-cicuiting, exhaust gas residues, and if bad enough poor starting due to lack of fresh charge around the spark plug and/or uneven cyclic cdombustion.

D is the sort of flow pattern we would wish to see. The positive flow travelling up the back half of the cylinder, so with the cylinder head in place the flow should loop across and down. The spark plug will have a good air/fuel mixture for clean combustion. There is minimal mixing between the old and the new gasses and minimum short-circuit losses.

There are many thigs you can do with this set up, no doubt you will think of some.

Have fun,

Colin

JS's Bit

A Passage To India

Probably the only benefit of travelling on business is that you visit foreign lands at somebody elses expense. Otherwise its a pretty overrated occupation. Many countries are surprisingly uniform in their 'Westernisation' (or perhaps 'Americanisation' would be more accurate) but early this year I visited a place that is certainly different - India. To describe the country, its people and society would fill a book, so I'll simply say that the Indian Sub-continent seems to comprise a time capsule including the middle ages (tens of millions of people living in abject poverty, with a basic existence which hasn't changed for hundreds of years) the 1940's (most motor vehicles and the quality of the roads seem to date from this time) and the 1980's (jet aircraft, facsimile machines etc). How such contrasts can exist side by side is a mystery to me.

The trip was of great interest from a personal point of view because I visited one of India's major manufacturers of motorcycles. The streets of Delhi, where I spent most of my time, are thronged with two wheelers. Small motorcycles and scooters are the only form of personal transport that most people can afford and its not unusual to see an entire family (5/6 people) squeezed onto a 175cc machine. Motorcycles are also used to carry milk churns,fruit and vegetables and virtually any other commodity you can think of. Most are two-strokes (other than the 100cc Honda and the 350cc Enfield) and in addition the ubiquitous taxi is a three-wheeler based upon a Vespa type scooter. Consequently, the average traffic jam is accompanied by an immense cloud of choking blue oil smoke.

The company I visited is part of the Escorts group and their motorcycle range has the trade name of Rajdoot. Since all sales

are within India, you are unlikely to have heard the name, but in India it is synonymous with a 175cc three speed motorcycle that the company has produced for over twenty years. The design was bought from WSK of Poland, who copied it from DKW, as did BSA to produce the Bantam. As a consequence, the motor bears more than a passing similarity to a D7 Bantam. Whilst over the 50 years since the DKW was designed there have been many changes made, it looked to me as if the Rajdoot gearbox would slot straight into a Bantam.

Escorts produce around 100,000 of these annually and it was heartening to see all those motorcycles coming steadily off the production line. A licensing agreement exists with Yamaha to produce a 100cc four speed machine and a 350cc twin. This last machine is the old air-cooled RD350 complete with drum brakes and a mind blowing 26 bhp at 6000 rev/min. Since fuel is relatively very expensive, the thirsty twin is not popular, only about 5000 per year being made. Total Escorts motorcycle production is about 150,000 a year. This is easily outsold by Bajaj who make the Vespa scooter, of which 250,000 or so are sold every year. Total annual two-wheeler production in India is around half a million units. If this sounds a lot (and it is) remember that India has around 900 million people. Nobody can be sure of the number because by the time they've completed a census the population has increased by another 10 or 20 million.

So should we look forward to some enterprising person importing Indian motorcycles into the UK? No. I rode several versions of the 175 Rajdoot including a 45 minute drive through the centre of Delhi and my considered opinion is that the machine is awful. The motor was totally gutless, the gear ratios were far too widely spaced (needs a four speed gearbox), the brakes are pathetic and the suspension non-existent. This is partly explained by fuel prices (around £2 a gallon, but since a well-trained professional engineer may only earn £1000 a year its like us paying £20+ for a gallon). Consequently all engines are tuned for economy above all else. Also, the need to cater for 3-4 adults or 2 adults, 3-4 children on the bike requires that the suspension is firm. However, since the average Indian road resembles a long succession of sleeping policemen, riding solo is akin to being on a pogo stick. The traffic moves incredibly slowly, 20-25 miles/hour being typical, which means that high power is not required. I was surprised that the brakes were so pathetic though, since everyone drives within three feet of the vehicle in front. If you leave a bigger gap, someone moves into it. There are apparently no rules of the road, so its everyone for himself.

One morning we were going to work down adual carriageway when everybody suddenly swerved to the side to avoid a car coming the other way. When I expressed surprise I was told that 'His side of the road is moving slowly and he's obviously in a hurry so he just uses our side of the road instead'.

I wonder if he'd try that on the M25?

Winning

An excellent article appeared in the last "Push Start", from the pen of PJ (alias Pete Tibbitts) concerning machine development. His considered and logical approach to evaluating modifications is a lesson to us all.

However, if I may voice one small criticism, it is concerning the attitude that the object of going racing is <u>to win</u>. This is just not British.

Knowing how our eccentric race admires the 'gallant loser' it should be our aim to put on a 'jolly good show' - and lose. The other problem is that once you are a winner, everyone expects you to do it again, and again. PJ doesn't seem to have too much difficulty achieving this, but for us mere mortals it can be

something of a problem. Consequently I have evolved a system which effectively ensures that I never have to suffer the ignominy of finishing first.

An essential part of this philosophy is a complete lack of machine development, thus allowing other competitors to maintain a useful speed advantage. This tactic has been undermined by the reduction in Bantam grids, and a regrettable lack of reliability among certain of the competition. As a consequence I have been forced to evolve a secret weapon. It is known as the slow start. The idea is simple. On the grid you evaluate your chances of a dreaded victory. If this seems likely then my unique tuning ensures that the machine will not start. Clever eh? Only once has this feature failed to 'deliver the goods', namely at the July Lydden meeting, last race.

Disaster, not only was PJ not competing, but my machine started at once (I am still investigating the cause of this failure). I had, to some extent anticipated such an unfortunate occurrence and made sure the petrol was 'off'. Halfway round Chessons I thought I'd better turn it on in case of being rammed from behind. Despite this, nobody overtook me (the cads), but fortunately Mick Potter 'saved the day' for me on his MZ, thereby preventing the disgrace of taking the chequered flag.

So when applauding the winner, remember the efforts that many of us make to ensure that we achieve that pinnacle of racing excellence - the mid-field position.

Being There

For the first time in years I didn't attend the AGM. I can't think how the meeting was spun out over four hours without me. The loss of 'Lofty' ("point of order Mr. Chairman") Elliott from the AGM was a grave blow and I have tried in my humble way, to make up for his verbose abilities. I am now looking for a deputy in case I am prevented from attending future meetings. Applicants should submit an essay of at least 10,000 words on "Proposing that we move to a vote on the amendment to the proposal".

Merry Christmas to one and all,

JS

Not Poncing About On A Bantam.

This article is in response to the Editor's suggestion in the last 'Push Start'. It is intended to give those further down the field an impression of what it is like to take my Bantam round Snetterton at an average speed approaching 80 mph.

First of all a short (well it started out short) description of my machine for those not familiar with it (well, you never know who might be reading this). The frame is a D7 loop with a low, home made rear sub-frame. Wheel rims are alloy, the front hub being of Honda CB200 origin, as is the cable operated disc brake, and the rear a ventilated D7 type. Swinging arm is D7, and the seat, tank and fairing are all fibreglass items dating from the late sixties. Engine wise, things are a little more contemporary. Barrel is D14, crankcases D7 sand-cast. The barrel has a thick liner with three transfer ports, two main and one rear, communicating directly with the inlet tract. Air cooling is employed for barrel and cylinder head, the latter being the once ubiquitous George Todd 100B, suitably re-stud centred and re-shaped internally. Piston and con-rod are Yamaha YZ125 components, the flywheels and mainshafts being integral (courtesy of Tom Miller). Ignition is the standard Motoplat set-up, and transmission is by an endless Renold chain to a Dave Brown 5 plate clutch unit. Gearbox is standard 3-speed BSA close ratio. Carburettor is a 34mm Mikuni with power jet non- operational. Reed valve pack is YZ125 (model G we think) using Boyeson two

stage reeds, all housed in a detachable, aluminium, machined-from-solid, block. Expansion chamber is, of course, home made and is made to theories and designs which were prevalent in 1984, the first full year I raced the machine. As for instrumentation, I use a tachometer and temperature gauge, which displays spark plug seat washer temperature in degrees centigrade. The tachometer is a Motoplat unit, which has my own scale fitted as the original is not easy to interpret due to poorly designed markings.

Now for the more interesting bit, riding it. We commence by warming up the motor until the plug temperature gauge starts to read (approx. 50 C). I use the run from the warming up area to the grid for clearing out the engine, ie lots of revs and throttle, which also warms the clutch up nicely.

For a push start, one quarter throttle is selected and, following the drop of the flag, the machine is paddled into life. It usually fires up on the first revolution of the crankshaft, after which the clutch is pulle din and and full throttle is applied. Slipping the clutch in first gear seems to take ages at Snetterton, but once second gear is engaged, progress becomes more rapid and if a stiff head wind is present, is held until passage through Riches is complete. Otherwise, top gear is engaged at about the 100 yard marker and on exitting Riches we are up to race speed.

Approaching Sears, assuming a clear track, the outside line is selected and two gears taken out in heavy straight line braking. At the last possible minute the machine is banked into the turn with front brake stillon, braking being maintained until just before the apex. Transition from braking to full acceleration occurs at this point, as smoothly as is possible in first gear, and with luck adhesion is unbroken as the machine is allowed to follow the line of greatest radius, and exit the corner on the left hand side of the track. Rider at this point is tucked away behind the screen, and has been since turning on the power at the apex.

If all that wasn't enough, there now follows the adrenalin inducing charge up the main straight. I say adrenalin inducing, because I have noticed at Snetterton the rising engine note, combined with the visually received impression of rising speed, induces one to go even faster presumably by raising the level of adrenalin in the blood stream. Does anyone else enjoy this effect I wonder?

Second gear is engaged once the machines rate of acceleration starts to slow, this point being detected by ear and feel. Actual revs are about 12,000 in first. Top gear is engaged when about 11,500 rpm is reached in second gear, this occurring well before I am half way down the main straight. 11,500 rpm in top is soon reached but it seems to take as long again to get to 12,000, sometimes only 11,750 rpm is reached. (Gearing is 15 X 56 I never change it, you only get your hands dirty). 98 mph

So here we are hurtling towards the left at the end of the straight. I sit up, and I mean sit up , abruptly at I think the 100 yard marker and equally abruptly apply the brakes. The reason for sitting up is to apply air braking and to be able to sight the corner from an elevated position.

The left hander is taken as fast as is possible, and in any case in top gear. I usually experience some instability from the machine during this manoeuvre, which I think is due to being in a neutral condition, ie no power on and no braking. More braking is achieved when the machine is upright during the transition from left to right, during which the machine is placed over to the left hand side of the track, and second then first gears are engaged. The machine is practically flicked through the right hander, care being taken not to lose the back end under acceleration during the exit. From there it is a hard down sprint to the

Bombhcle
^ or Esses Two.

I vary my entry line and peel off point for Esses Two as conditions vary from meeting to meeting. I have had the front wheel slide on peeling off, so am comparatively cautious at this point. Esses Two needs to be treated with a fair amount of aggression, with the machine hopping and wriggling over the bumps that are situated on the exit. Needless to say, I am again flat on the bank here, which helps to minimise the unwanted oscillations.

With the grass run off area about 3 feet to my left, I line up for Coram (a big time waster if you don't "cut it" on this one). I am in top gear by now, having changed up just after exitting Esses Two. Coram seems to be one of those corners where it is best to stick to the inside line almost all the way round. I think I take it at about 9.500 rpm in top, I certainly have never looked at the tachometer while here. On entry, the bump can be unsettling, but frankly we are not going fast enough for this to be a concern. On exit, great care must be taken to maintain orientation, since it is all too easy to drift out and run wide, where grip is less, and the grass comes out and meets you.

During the negotiation of Coram, I keep my helmet behind the screen but suspect there is a bit of knee and elbow outside the streamlining. Full throttle is applied about ¾ way round and this brings Russells nicely into view which I always find a challenge.

It is absolutely vitalto take Russells on wide open throttle. Anything less and you have lost 5 mph or more on your speed all the way up the pit straight, and that is a lot of time.

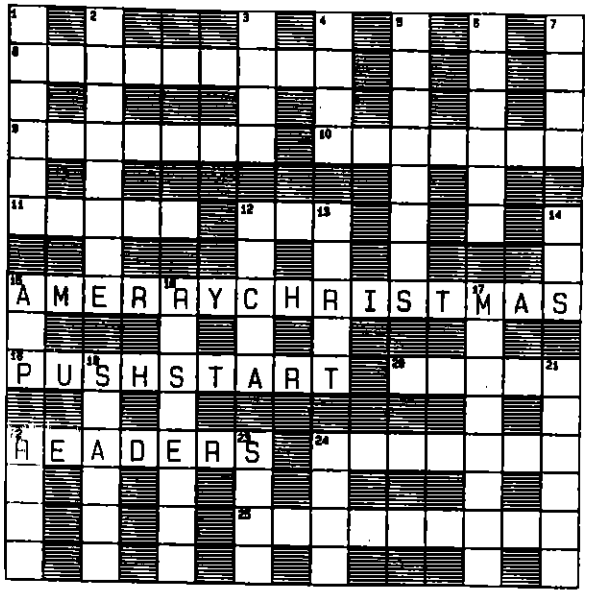
My favoured approach is to move across to the right hand side of the track and peel off to the left at the appropriate point. Sometimes I do have to lift my head above the screen, just to ensure I am in the right place. It is necessary for me to grip the bars very tightly during this bend, and I am usually a little concerned as to whether, if a seizure of the engine should occur, I could physically pull in the clutch at this point. Having peeled off left, it is all too obvious when to bank to the right, this being achieved by a tweak of the bars to the left.

Having got this right we are now projected up the pit straight at about 11,000 rpm in top. With diligent arrangement of our body to reduce aerodynamic drag to a minimum, with the result that by the time we near Riches, the magic 12,000 rpm is not far away, this being an uphill straight. Riches can be taken very fast, if you know what to do and are prepared to do it. I sit up at the 100 marker and fight the bike over the bumps to get it lined up for the apex. I couldn't tell you where I apex I'm too busy looking ahead. If it all goes OK, I exit at 9,800 to 10,000 rpm in top, preparing myself for the next corner, which you all know is Sears.

Regarding the 80 mph lap. I do not have details of lap records to hand, so I am not sure if the current holder, Mark Carkeek, has officially achieved 80 mph. I have quite a few times unofficially, the last time being on the last lap of the 1986 50-miler when I was catching Michael Powell. I think it was in the region of 1m 25.6, and yes, I did nearly fall off doing it. The target of an 80 mph Snetterton lap on a Bantam has fascinated us for some time. Dave Hunter achieved it in September 1972, on a long stroke, steel rimmed Bantam known as Iron Wheels, and on which he had won the previous year's championship. However piston meltdown occurred after 3 laps. At least we have improved reliability.

Well, that's all for now. I wonder what task I will be set for the next issue of 'Push Start'?

Pat Tibbitts



ACROSS

8 A base crew (anag), that's us (2,4,3)
9 Permission to race ? (7)
10 Sounds like teacher, has an electric cable to clutch (7)
11 Lever the winnings (5)
12 They could set the bloodhounds on you (1,1,1)
20 We're not scarecrows but its still a lifesaver (5)
24 Matthew, Mark and Luke don't help us as much (2,5)
25 Leave derv (anag), its no good for this part (4,5)

DOWN

1 Just a third of our usual length (3,3)
2 Despite this, we're none of us perfect (8)
3 A mixed up block of 20 across (4)
4 I've got to hand it to the paddock marshall (4)
5 We'd feel right ones falling at this bend (8)
6 Telegrams to throttle, clutch and brake (6)
7 High point of the race, when you're half way round the bend(4)
12 Heavy drinkers breaking down have two choices (3,2)
13 Second to none (5)
14 US petrol, is foul stuff (3)
15 Current problems may be due to lack of this (3)
16 Sounds like dried leaves at Snetterton (8)
17 When we're short, even Matt Dillon would help (8)
19 Provisions from Colin, not needed yet (6)
21 DOn't be a drip, replace it (6)
22 Short form of entry (4)
23 A 50 miler bottom is this (4)
24 Not a brick built out-house ? (4)

Riders' Health

PJ's comments on adrenalin in his article set me thinking about pulse rates and the effect that race meetings and ones state of health have on them.

Nelson Piquet was once monitored during a race meeting for his pulse, and predictably it rose gradually as the race approached and peaked just at the start. He maintained a rate of about 140 beats per minute during the race, with short bursts of 170 when Nigel Mansell threw a wobbler in front of him. This, as the Doctors thought was perfectly normal until they noticed one point, during his pre-race walkabout in the pits, when his pulse momentarily hit 210. What on earth could have caused that they questioned. Neson remembered the incident and sheepishly admitted that it had been due to a bikini-clad young woman walking past.

Understandably I don't suffer from this particular affliction,(though there seem to be plenty of young men climbing into and out of their clothes at our meetings) but I have taken to measuring my pulse whilst sitting in the warming up area. I do find this particular point in a race meeting quite nerve-wracking, when I just want to get on with a race, but perhaps I should be worried about the state of my health as my pulse rate at this point is 140 beats per minute.

To reassure myself, I think I will carry out an in-depth survey of pulse rates (don't tell Colin will you) next season. Guinea pigs should apply in person at the first Snetterton meeting.