Supporting Model Engineering since 1970

Federation of Model Engineering Societies

NEWSLETTER

June 2022

We start the Summer with a splash
Welcome new member Society
Goole Model Boat Club

Peter Shipley's model of a French Navy patrol boat on its first outing on the pond in May 2010

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Editorial

The summer is upon us and things seem to be buzzing. Two events featured here are the Federation Rally to be on 3 September thanks to the Sutton Coldfield Society and then on the 11th the 2 1/2" Association is celebrating 100 years since the construction of "Ayesha", a loco you may be familiar with and the hero, or can one say heroine, of the battle of the boilers. This is planned for Rugby, so we are in for some fun!

Elsewhere one reads the calendars of many societies holding rallies, doing visits to neighbouring clubs and getting the hobby back into motion. Well done to all I think is due.

We are doing a bit of catchup in this edition. Always important to learn from is Walker Midgley's insurance claims review held over from the AGM. This is Martin Levers now but he does remind me that Tony's words of wisdom will keep your society on safer ground if you follow his advice!

The maxim, "if it is not written down, it diid not happen", can be applied to many parts of our actions in keeping the Society safe. Enough pontificating!

Your poor old editor has been seeing the wrong side of hospitals lately and the newsletter has suffered a bit. We must try harder. Of course I did ask if anyone would like to help but my fate is sealed.

We try to keep the newsletter free from becoming commercialised, that is why we have resisted advertising. Model Engineer and EIM do a good job and we see no reason to compete. But one concern sent us, some years ago, a very short catalogue of items useful to the model engineer.

They are now allowing us to reprint some of their blog material, hopefully will be of use to some.

As we sit here writing this there is a gentle breeze, the sun is out and the rest of the summer is there for us to enjoy. "Normal' is not what we will see again but our hobby is resilient and has been for 120 years or so let's go!!

David Goyder, Newsletter Editor

Chairman's Chat

Many in our hobby stay with the branch of model engineering they are accustomed too, but why not try something different, you might be surprised how you enjoy a change, a new challenge. While I am on the subject of trying something new can I remind everyone that the FMES is always looking for help to run the FMES, so like me with my tug-boat why not utilise old skills and find new skills and help the running of our hobby.

So how is progress on the boat, well the wooden hull is ninety per-cent finished including a stainless propshaft, compartments for the electric motor, battery and R/C control gear, a rudder has been fabricated from copper and a start made on the superstructure. Maybe in a couple of years it will be floating in the pond in the middle of my railway.

I am certainly enjoying the challenge of something new and you could I am sure enjoy helping run our hobby, so think about it and if you feel like it offer your services to the FMES. Whatever you do, keep on enjoying our wonderful hobby of model engineering.

Bob Polley, Chairman

SAD NEWS

Whilst attending the Midlands Model Enginering Exhibition, we might want to remember Chris Deith. Avril wrote to us at the end of May:

"It is with deep sadness that I write to let you know that my Dad, Chris Deith passed away suddenly on 12th May at the age of 76 whilst enjoying a holiday in Italy with my mum Bridget.

"My Dad will be remembered by many in the model engineering and hobby world as the mastermind and entrepreneur who created TEE Publishing, Engineering In Miniature, Meridienne Exhibitions and the Warwickshire Event Centre.

"Sadly, we lost my brother Adrian in December 2021 also.

"My Dad achieved so many things during his lifetime and as you will know I worked alongside him for many years, will now continue his legacy in his honour with the support of family and the team."

Federation Annual Rally and Australia Trophy to be hosted by Sutton Coldfield 3rd September 2022

We are very pleased to announce that this year's rally will be held at Sutton Coldfield MES on Saturday, 3rd September 2022, between 9.00am and 5pm. SCMES has an attractive facility in the countryside at Little Hay near Lichfield with 5" and 7¼" ground level track; 2½", 3½" and 5" raised track and an extensive SM32 layout. The rally will also feature the annual AALS Trophy, awarded to the best 'all round' steam locomotive between 2½" and 7¼" that is a model of a real 'commonwealth' built locomotive. The judges will consider all aspects of the locomotive including running, and the winner will be awarded the trophy at 4pm on the Saturday. Although not part of the AALS competition, the SM 32 track will also be open for those wishing to experience it.

SCMES is also opening their facilities on Sunday 4th September to give more opportunity to enjoy the track and further details of this, the location, places to stay and other information can be found on the website: www.scmes.co.uk/rally.

It would be helpful to SCMES if you could advise them as requested on their website of your intentions to attend, stay over and so on for catering and planning reasons.

We hope to see you there, either driving a loco, or just visiting: it is a great opportunity to meet other model engineers in a convivial informal atmosphere! If you want to find out more, please contact SCMES at scmessec@gmail.com or info@fmes.org.uk.

News from the Young Engineers

Our progress this time has been mainly on preparing a survey on young engineering in our affiliated clubs. This was designed following the workshop at the AGM and developed onto a web form so it is easy to complete and return. We also used new e-mail management software and so this was a double effort! We are pleased to say that the survey was issued to club primary contacts at the beginning of June with the request for them to pass the survey on to the best person in the club to answer. A number of clubs have responded so far and we are hopeful that everyone will spare the time to complete this, even if supporting Young Engineers is not something actively pursued at their club. We will be publicising the conclusions when we have analysed the responses…if your club has not received the survey, please let us know on young.engineers@fmes.org.uk.

We are also pleased to announce the opening of the 2023 FMES and Polly Engineering Limited Prize competition. We have included more details this year to help potential entrants and these can be found on the website on the 'Young Engineers' page (https://fmes.org.uk/young-engineers-2/). This information has also been circulated to clubs.

We hope that by giving more notice of the competition, and some more support information, this will help people to decide to enter…we really would like to see many entries from across the spectrum of model engineering to show off the interest and enthusiasm of young engineers in the hobby!

Peter Kenington

Paul Naylor

Public Liability Insurance Update

The guidance on Public Liability Insurance for visitors under the Club & Society Insurance Scheme arranged by Walker Midgley Insurance Brokers has been further updated by Martin Levers.

Martin explains the change as follows...."the original one we provided back in March contained the phrase Wives, girlfriends, partners and friends are often "roped in to help"

and it was felt that this needed to be changed to some more appropriate language.

The statement now reads Partners, family members and friends and are often "roped in to help" and so is more appropriate."

The revised document has been uploaded to the insuance section of the website and is available for members to access.

The direct link is https://fmes.org.uk/wp-content/uploads/2022/05/PL-Insurance-for-visitors-V4-2022.pdf

And then there is Tony Wood's advice and remarks if something' happens,

Tony always used to say this and it is worth repeating -if you have an incident which might, and remember perhaps only might, result in a public liability claim please make sure that it is logged as soon as possible and that statements are taken straight away whilst people can remember accurately what happened, There was an old Chinese proverb which is weakest ink better than strongest memory, then get in touch with us and report it. Also don't forget RIDDOR (Reporting of Injuries Diseases and Dangerous Occurrences Regulations 1995)

If an incident happens and correspondence is received please do not try to handle the claim yourself. Just tell us of the incident or of the claim as soon as it practically possible and please send to us, without acknowledgement, any letters received. If someone telephones tell them it is with your insurers and give them our telephone number, let us handle it. Insurers do not want you writing or talking to any person involved, such involvement by you could prejudice settlement. Let the insurers handle the claims – that is what they are for.

As part of the public liability claim investigation process the insurers, and quite possibly the HSE, are likely to ask for a copy of your up to date risk assessments so please make sure that your risk assessments is updated at least every year or more frequently if any changes to your buildings, track or site etc have been made. This is especially important in this Covid era, to make sure that you are aware of the latest guidelines and advise from the Gov't and acting on it. They may also need a copy of any RIDDOR report made and also your repair and regular maintenance records (track, club locos, club rolling stock etc). Make sure they are completed and up to date. Don't forget it is not sufficient to just do the maintenance - you need to evidence that it was done, what exactly was done, who did it and when it was done. Golden Rule: If it's not written down it wasn't done.

Ayesha Rally 11th September at Rugby, Centenary of Ayesha's construction With thanks to Des Adeley for his personal recollections.

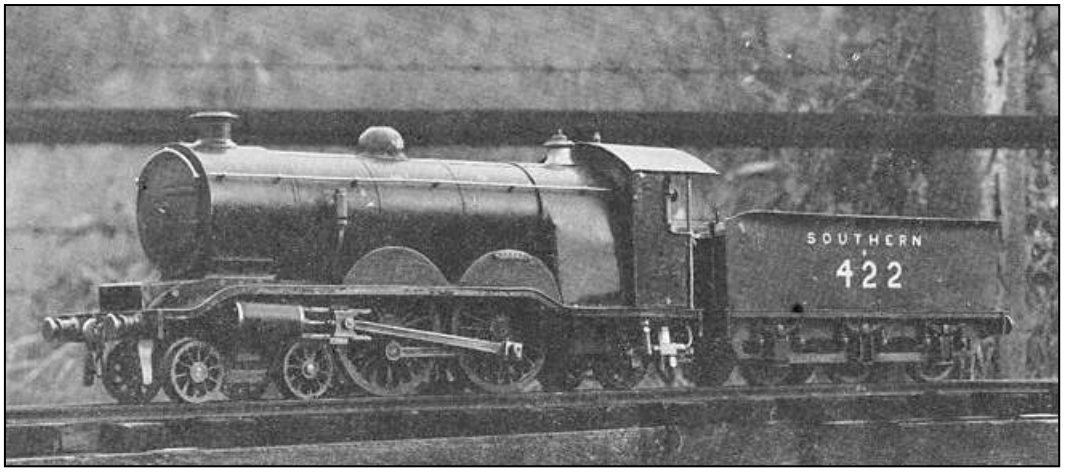


Image taken from LBSC's "The Live Steam Book" September 1929
The caption to the photo is "Ayesha" in her 28th. year - still lively as ever.

Some years ago my friend Tony Weale borrowed the original Ayesha made by LBSC to show on our stand at the Model Engineer exhibition alongside the Greenly designed and Bassett Lowke built challenger. This would have been about 2004.

One of our members Geoff Gillett knew Mavis Harriet well, and brought her and a friend to the exhibition, held that year at Sandown Park, as our guests. The friend knew nothing about Model Engineering but did a brilliant job chatting up some of our Stewards. While at the show Mavis asked if "we boys" would be good enough to look after the locomotive as she was just moving house. We needed no encouragement. Tony Weale being our contact with Mavis agreed to look after Ayesha at his home in Reigate.

While at the show Peter Shaw, Peter Gardner, Tony and myself discussed the possibility of resurrecting the design. At that time the English Mechanics plans were still available from Reeves but were not supported with any castings.

Getting Ayesha on a rug on Tony's kitchen table, we quickly realised that there were major differences between the English Mechanics drawings and what we were looking at. We drafted a questionnaire for our members which gave us almost as many leads as replies. The gist of this was that the members of the 2 1/2 inch Gauge Association wanted either a GNR or an LBSC Atlantic as close as possible to what LBSC had built. We discounted the request for balanced slide valves suggested by one of our members, as a step too far.

At that time we traced the original design to a Henry Green set of drawings sold by Bonds o'Euston Road. This design was available as both and Atlantic and Pacific. On to this design LBSC grafted a coal fired boiler but not before completing the chassis, which was displayed on the Bond's stand at the 1922 exhibition. Having opted for a coal fired boiler, an axle driven feed pump was necessary. Having used the Greenly double stop collar sleeve on the driving axle LBSC had to install an eccentric on the leading axle. The eccentric was split and driven by a pin projecting from the axle. The whole lot was held in place by the eccentric strap. We did not like the idea of driving the pump through the coupling rods for a start, so we adopted the driving axle driven pump from the 1931 design.

I have always thought that after the abortive trip to America LBSC must have needed additional income fast. Thence the constructional series in EM. The other thing we quickly discovered was that the Greenly the Atlantic was not a scale Brighton Atlantic. The Ayesha described in EM in 1931 was what he would have built, if starting from scratch again with ten additional years of experience.

So the team was formed for the Ayesha revival project. This consisted of the four of us mentioned above, helped on by Paul Dewstowe and Adrian Booth and about nine other members, who made

Des Adeley's personal recollections, cont'd

patterns another small components. At a meeting held in Peter garners house he volunteered to make a boiler, if anyone had a piece of 3 inch diameter tube. I insured a suitable piece was on his doorstep within three days. Based on Peter's experience of building many locomotives including several in 7 1/4 gauge he introduced the single pass radiant superheater and the non-wheezing whistle. This single pass superheater system greatly simplify the pipework in the Smokebox.

Our research as to where LBSC obtained his castings was incorrect. You may have seen a recent article about this by Eddie Castellan in Model Engineer where he has unearthed much more information. LBSC made his own cylinder patterns and then had them cast at a foundry in Croydon. The cylinder's external measurement of his Ayesha are exactly to Henry's Henry Greenly's 1915 design and drawing. While we had the locomotive on loan we did not take anything apart and only did a few cosmetic repairs.

Some years Mavis contacted me about selling Ayesha I put her in touch with two auction houses that advertised regularly in the Model Engineer magazine.

The firm in Bury St Edmunds said that their expert was not available and the Bristol firm said bring it to Bristol and we will have a look at it. Not really an option for a 70 something year old lady on her own. To cut a long story short the Association bought the locomotive so that it remained in public ownership did not disappear into a private collection and this insured it was available should any other club wish to display it. Since then some maintenance work has been carried out and it is certified and occasionally steamed our rallies.

I have the Ayesha II, as the replica got named by Mr Carpenter, the then editor of the Model Engineer, here, if you would like to photograph it. I and Simon Clough recently reboilered it . The original boiler failed with a leak in the fire box tube plate. The current situation is that it has passed a full hydraulic test and I have just to bolt on a fire box door and we can then steam test it. As both Simon and myself are nominated boiler testers and are neither the builder of the boiler or the direct owner we can carry out testing and certification.

When I drove our prototype Ayesha II was seriously impressed with how it went. It was certainly better than any other 2 1/2 inch cage locomotives I have driven in the past. The construction of serial began in Model Engineer in 2007 and within two years we knew sixteen locomotives that have been completed and steamed. Though we built two further chassis there were very few dimensional areas in the manually drawn drawings that crept through our checking. One error was introduced in transferring the drawings for the pictures of Model Engineer and one was brought to my attention only last year. Drawings and castings are still available from the National 2 1/2 inch gauge Association and are shown on our website.

We are holding an Ayesha rally on the 11th of September at then Rugby MES track at Only Lane, as this is the centenary of Ayesha's construction.

Des Adeley

Nonsense to amuse!

A frog goes into a bank and approaches the teller. He can see from her nameplate that her name is Patty Whack.

"Miss Whack, I'd like to get a £20,000 loan to take a holiday."

Patty looks at the frog in disbelief and asks his name. The frog says his name is Kermit Jagger, his dad is Mick Jagger, and that it's okay, he knows the bank manager.

Patty explains that he will need to secure the loan with some collateral.

The frog says, "Sure. I have this," and produces a tiny porcelain elephant, about an inch tall, bright pink, and perfectly formed.

Very confused, Patty explains that she'll have to consult with the bank manager and disappears into a back office.

She finds the manager and says, "There's a frog called Kermit Jagger out there who claims to know you and wants to borrow £20,000, and he wants to use this as collateral." She holds up the tiny pink elephant. "I mean, what in the world is this?"

The bank manager looks back at her and says, "It's a knickknack, Patty Whack. Give the frog a loan. His old man's a Rolling Stone."

(You sang it, didn't you? Yeah, I know you did.)

In the Forward to the original edition of the Live Steam Book by "L.B.S.C.", Percival Marshall wrote,

A story is attached to the naming of Ayesha which is worth quoting at length. Apart from its interests as the inspiration for the selection of this name, the story has related by "LBSC" himself is a gem of humorous literary condensation, which I feel is deserving of permanent preservation in print.

It appears that when "Ayesha" was first constructed, a model engineer looking her over was very sceptical about her wearing qualities. He prophesied an early return to the shops for replacements and repairs. "LBSC" in referring to this incident says: -

"I guess most of you have read or anyway heard of Rider Haggard's tale *She*. The ladies name was Ayesha, and through having had a sort of patent fire bath in her early years, she 'stayed put' for about 2000 years without having to bother about lipsticks, face powder, or any other kind of beauty preserver. With no nightclubs, dances, cigarettes, cocktails etc., her long life was getting a bit tame, when all of a sudden she hit upon reincarnation of her old lover, whom she had 'done in' in a fit of jealousy all those years ago. 'I had better make sure of keeping him this time,' she thought; and as the firebath department was still going strong she trotted him along to sample it; but not being an engineman who has opened fire box door without putting blower on, naturally he felt funky. 'Well', said Ayesha, 'you're a poor sort of guy I must say. See here now - if I go in first will you take a chance? 'Sure,' said he. 'Then right forward-all aboard! said Ayesha and dressing herself like lady Godiva she stepped right into the fire bath. But she had forgotten that you can have too much of a good thing; and sad to tell, No 2 firebath promptly cancelled out all the effects of firebath No 1, so that poor Ayesha just collappsd into a heap of bones and dust ;while her fiance, scared stiff headed for home with a wide-open throttle. That is how the tale goes, with allowances for 'excessive condensation!' One day the old Atlantic engine was merrily bowling up and down my line at Norbury in charge of a Brighton engineman friend and I happened to mention about the 'model expert's' pronouncement at which he laughed heartily. 'Fall to pieces - not she?' said he emphatically if ungrammatically. ' Why, bless your soul, she'll be just like Ayesha in Rider Haggart's book- run for 2000 years before she collapses up into a heap of junk. Anyway the name stuck all right and in due course was consolidated by a pair of little name plates on the driving splashers."

Help for an old boiler?

Help is sought to find out who may have manufactured a boiler around 1988 to 1990. Also of course, where, why and for whom if that information is available and shareable.

There are a few clues,

1. It is stamped 560 2 89 GM. Who is GM?
2. GM appears to be the maker and finished in Feb 1989. Was this his 560th? Or 5" gauge for loco No 60.
3. It is professionally made.
4. It appears to be a "Princess of Wales" boiler in 5" gauge of course.
5. It can be assumed with some reliability that it was steamed once and then taken for display purposes only, hence the accumulated dust on the axle in view.

Any information to your editor please,
david.goyder@fmes.org.uk

How to select the best Turning Insert & Grade for your job

With kind permission of Cutwel Limited to reproduce their blog article

When choosing a turning insert, finding the best insert for the job is just half the battle. The rest of it is selecting the best grade and chip breaker.

Below we outline how to approach selecting the best insert shape and grade for your specific jobs.

What is the best insert geometry & shape for roughing or finishing?

The first question you must ask is are you roughing, finishing or just doing some general turning? Negative inserts are strongest and the best option for roughing and general turning applications, as these will allow deeper depths of cut and higher feed rates due to strong insert shapes and thickness.

Top tip - Lever Lock or double clamp style tool holders give higher clamping strength and stability compared to screw clamp_holders.

If you are finishing, positive inserts are always the best option as these create less cutting forces and can

therefore get away with lower depths of cut, eliminating vibration.

CNMG (rhomboid 80 degree), DNMG (diamond 55 degree) and WNMG (trigon 80 degree) are the most popular roughing inserts. For heavier roughing operations, SNMGs are an excellent choice with a 45-degree approach angle allowing for larger depths of cut and reduced cutting loads.

CCMT (rhomboid 80 degree), DCMT (diamond 55 degree), VCMT or VBMT_(diamond 35 degree) are the most popular finishing inserts.

For roughing applications, you would usually opt for a 0.8mm or 1.2mm radius depending on your machine's horsepower and the depth of cut you plan on taking.

For finishing operations, 0.4mm or 0.2mm rad would be the best option. This allows you to take the smallest depth of cut without causing vibration.

Selecting the correct chip breaker to suit the application is more important than you may think. A chipbreaker can make a huge difference to cutting load, chip control, vibration and even prevent work hardening in materials like Stainless Steel or Inconel.

If you are roughing, it is important to go with a roughing chip breaker (such as Korloy's RM, HR, B25, GS & VP4 chipbreakers) to deal with the chip load and the depth of cut.

For finishing, Korloy's AK, VF, MP & VP1 are popular chip breakers.

All chip breakers have a minimum depth required to get the chip breaker working. However, instead of struggling to figure out the right chip breaker for your job, please ask our Technical Team to advise.

They can help you work out the best chipbreaker for your material and applications, whilst also recommending the minimum and maximum depth of cut you should take.

Top Tip for Finishing: Use a finishing chip breaker with a small enough radius to get the chip breaker working. This is a common mistake engineers make: trying to finish with an 0.8mm rad with a medium chip breaker taking a 0.1mm cut. This is just going to rub on the work piece and cause poor surface finish. Furthermore, on stainless steel you will just put heat into the job and make it unmachinable.

I would always express to my new recruits that there isn't really any bad turning grades, but instead turning grades wrongly applied. You can have the best insert geometry and chipbreaker, but if the grade of carbide doesn't suit the material you're cutting, you'll just be wasting your time.

Once you have selected the material-specific grade of carbide, we then need to determine whether you are roughing, medium or finish turning.

How to select the best Turning Insert & Grade for your job, cont'd

The below guide should give you a good grounding in which grade suits which material / application.

A roughing grade is very tough and will run at slower surface speed but withstands intermittent cuts well. However, your roughing may be very different to someone else's roughing. For example, a turner on a VTL turning large stainless steel castings will be taking 5mm+ depth of cut, whereas a turner on a smaller lathe will be roughing with much smaller depths of cut.

In these cases, it may be useful to talk to one of our engineers and discuss your requirements using information like:

- Diameter of workpiece.
- Material.
- Shape (e.g. rough, hexagon).
- Machine capability.

From this, they can make a quick assessment of the most suitable grade of carbide for your job.

A finishing grade will be the hardest grade run at

Korloy Turning Grade Guide

			Continuous Cutting & Finishing		Continuous Cutting & Light Intermittant Cutting		Light Intermittant to Roughing	
			High Speed		Medium Speed		Low Speed	
P	Steel		NC3010	NC3215	NC3220	NC3225	NC3030	PC5300
	Low carbon/mild steel	Surface Speed (m/min)	250-400	100-320	100-280	100-285	50-150	100-170
	High Carbon steel 10-30HRc		220-340	80-270	80-245	80-245	50-150	80-160
	Alloy steel <27HRc		200-330	70-250	70-220	70-220	50-120	80-150
	Pre-hardened steel (30-50HRc)		200-250	50-220	50-160	50-160	50-100	50-130
	Chipbreakers Negative		VQ, VF, MP		MP, VM		VM, HR	
	Chipbreakers Positive		VF, C25, MP		C25, MP, HMP		HMP	
M	Stainless		PC5040	NC9115/PC8105	NC9125/PC8110	PC8115	NC9135	PC5300/PC9030
	Austenitic (303,304, 316, 321)	Surface Speed (m/min)	80-160	160-220	150-200	140-190	100-135	100-135
	Ferritic & martensitic (400 series)		100-180	150-250	120-220	130-200	100-135	100-135
	Duplex / Superduplex		60-140	120-160	100-140	90-130	60-100	60-100
	PH stainless (e.g. 17-4PH)		50-100	50-110	40-110	40-100	30-100	30-100
	Chipbreakers Negative		-	VP,MM	MM, RM, HS, VP		RM, GS, MM	
	Chipbreakers Positive		AK	MM	MP		HMP	
S	Exotics		H01/H05	PC8105	PC8110	PC8115	PC5300	PC5400
	Hastelloy/Inconel/Stellite	(m/min)	-	50-70	45-65	35-55	20-40	20-35
	Titanium alloy		50-90 / 45-70	-	-	-	40-60	30-50
	Chipbreakers Negative		VP1, VP2, HA		HA, VP2, VP3, HS		VP3, HS	
	Chipbreakers Positive		MP, HMP		MP, HMP		HMP	
K	Cast Iron		NC6205		NC6215		NC6215	
	Grey Cast Iron	(m/min)	300-500		150-400		120-300	
	Ductile Cast Iron		220-450		140-380		110-350	
	Chipbreakers Negative		HM, B25		HM, VR		VR, VM	
	Chipbreakers Positive				C25, HMP		HMP	
K	Aluminium		DP150	H01				
	Aluminum	Surface Speed (m/min)	1000-3000	300-1000				
	Aluminum alloy (medium silicon)		600-2500	250-500				
	Aluminum alloy (high silicon)		300-700	-				
	Chipbreakers Negative		-	HA				
	Chipbreakers Positive		-	AK, AR				
H	High Hardened Steel		DNC250		KB420	KB320	KB330	
	50-70 HRc hardened steel	(m/min)	120-220		130-170	120-150	80-110	

How to select the best Turning Insert & Grade for your job, cont'd

What do all the numbers & letters mean in turning grades?

Whilst they may look like random numbers, there is a logic behind the coding in turning grades.

A) Grades beginning with **N** (e.g. NC3225) are CVD coated. These grades cope with higher cutting speeds than PVD grades and can withstand longer contact periods with the workpiece. They are most suited to medium to large diameter workpieces.

B) Grades beginning with **P** (e.g. PC8115) are PVD coated. These grades work at lower cutting speeds than CVD grades and are more suited to shorter contact periods with the workpiece. They are most suited for small to medium diameter workpieces and also make excellent multipurpose grades.

C) The next part is the material application. E.g. NC**3**225 is for steel as the first number is 3.

D) The final part represents the toughness according to the ISO scale. NC32**25** ends with 25, as it is for steel it has a toughness of P25.

Which number represents each material (C on above diagram)?

3 = Steel

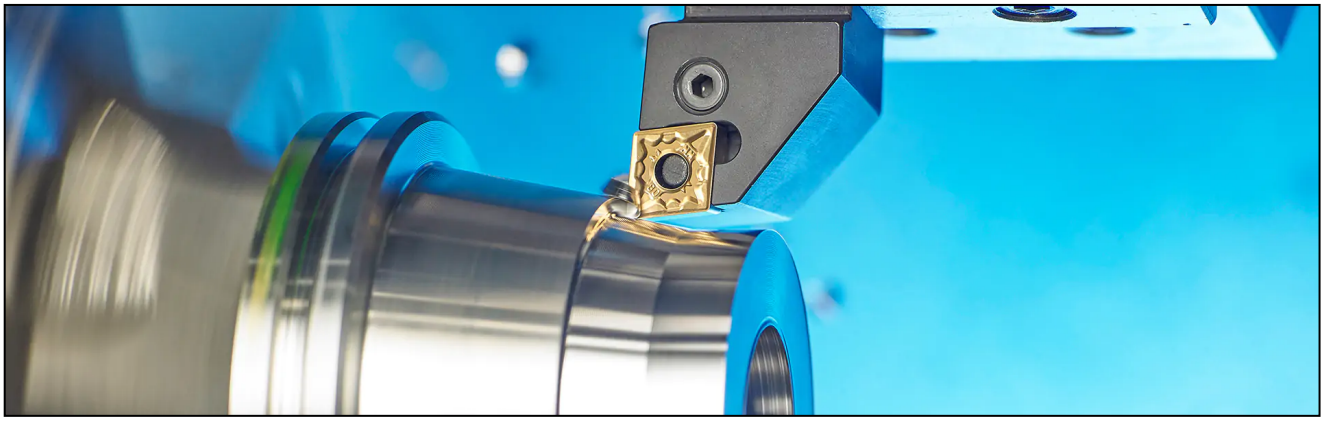
9 =Stainless

8 =Exotics

6 = Cast iron

5 = General

H = Ali/Titanium



Taper Pins

by Ron Head, City of Oxford Society of Model Engineers

When you need to taper pin a component to a shaft, chances are that you will drill and ream the hole, rummage in your tin of taper pins until you find one that looks about right, and hammer it in. All well and good, but how do you know it's the right pin for the hole?

Most folk are blissfully unaware that imperial and metric taper pins are two different things. Imperial pins have a taper of 1 in 48 (this being the slope of one side relative to the other side, not the slope of one side relative to the centre line). Metric pins, on the other hand, have a 1 in 50 taper. Therefore, a metric pin inserted into an imperial reamed hole, or vice versa, will not engage properly and will soon fall out.

Taper Pins cont'd

To add to the confusion, imperial pins are specified by the large end diameter, while metric pins are specified by the small end diameter – which is actually more logical, as it corresponds to the size of the hole that needs to be drilled prior to reaming.

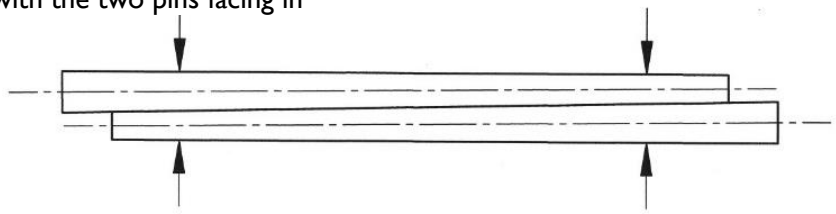
To check a pin you're unsure about is quite easy, just measure (very accurately) the major and minor diameters and length, then divide the length by the difference in diameters. For instance, if a pin is 25mm long and the difference in diameters is 0.5mm, then the taper is 25/0.5 = 1 in 50.

A quick way of checking an unknown pin is to lay it against a known pin, with the two pins facing in opposite directions. Measure across the pins at each end and if the measurements are the same, the two pins must be of the same taper, even if the diameters are different.

I recently bought some allegedly imperial taper pins from a supplier, but they turned out to be metric. Another batch, bought from a different supplier turned out to be of a totally alien taper and completely useless, although to his credit he did issue a refund.

You have been warned!

Ron Head.



BOTH DIMENSIONS MUST BE THE SAME

Publications Available from Federation of MES

The FMES publications listed below are available from our stand at rallies and exhibitions or by post from David Mayall. Please make contact first by phone or email to get combined postage costs when ordering more than one item. (See note below). The figures shown here are for single items only. Please make cheques payable to 'Federation MES' or use BACS to Sort Code 20-71-82 Acct 43755967.

Title	From Our Stand
Examination & Testing of Miniature Steam Boilers BTC 2018 - Orange Book	Free
Vol 1, 3 bar litres to 1100 bar litres.	
Vol 2 under 3 bar litres.	
Vol 3 LPG tanks under 250 ml.	
Boiler Test Certificates - Pad of 50	FREE*
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Molly

From the ghostly pen of Bob Lumb
West Riding Society

The woman looked down upon the station from high above the platforms patiently watching the arrival of trains from the south. She was alone, as she had been for all those years. Many years. She had seen changes in that time and had observed the activity at the station by day and by night. She knew that her time here was coming to an end, it would not be long before she was required. Not until then would she receive deliverance from her long and lonely vigil and be allowed to pass.

The Evacuation Train April 1942

We were held at New Street, delayed by the late arrival of the last of the children. After a while one of the station staff came down the platform to tell me that their road transport had had to find an alternative route due to a damaged bridge caused by the previous nights air raid. Eventually they arrived and after boarding the train supervised by impatient station staff we at last got the "right away". Our train loco, one of the many versatile Horwich "Crabs" from Saltley shed was performing well once we got the Birmingham suburbs behind us and were given a clear road. Behind the tender our train was comprised of a motley collection of elderly stock including several wooden bodied non corridor examples.

Our train was terminating at York, however I heard the evacuees were then to travel on to a number of market towns in the East Riding. Our route was to take us via Derby but it was before this city on the approach to Burton that our first incident occurred.

We'd stopped at a danger signal alongside a signal box, my young fireman had his head out of the cab looking at the overflow on an injector he'd been having a problem with. On looking around he noticed our guard walking down the six foot towards an open door on one of the carriages. The guard reached up and slammed the door shut

Molly

before reprimanding one of the occupants before he climbed back on board prior to the signal clearing.

Soon after this we drew to a halt in Derby as scheduled. It wasn't long before a few of the older children from the train had disembarked and a small group of them walked down the platform towards the train loco. I was getting some air leaning on a cab door having a quiet smoke watching them, a tall lad moved forward towards me and spoke.

"When is this train going to get going? I could run faster than this moves" he said, "Is the engine due for scrapping? It looks like one my granddad used to work on". I looked him up and down, he was wearing short trousers with a striped pullover that had holes in the elbows and had a rather cocky air about him. Before I could reply he continued.

"Can you give me a cigarette Mister? I haven't had a smoke since we left."

"No" I said firmly, "at your age you definitely shouldn't be smoking, it will stunt your growth. Now, all of you, get back onto the train, we'll be away shortly". The others began to move off, but there was a pronounced pause before the big lad followed.

Noticing our guard walking down the platform, I continued to watch the lads as they boarded the train. As our guard approached he attracted my attention.

"We were stopped back there because a door was reported open by the signaller in the previous 'box. They've put some of the older children in the non corridor coaches, unfortunately there are not enough adults accompanying these children and there's been some horseplay. Some of the lads have been messing about with the doors and one had flung open. I'm going to have to lock the doors on the compartments which don't have supervisors inside, as much as anything for their own safety".

I nodded in agreement, the last thing we wanted was an open door flapping around while we were moving. He walked back down the platform and further down the train I saw him lock the carriage doors on the non corridor stock prior to entering the guards compartment. Not very long after that the peg was pulled off and we were given the right away.

We pulled steadily away from Derby onto the down relief as the sun began to set, our Horwich crab pulling hard with a deafening exhaust as we accelerated towards our next scheduled stop at Sheffield Midland. Arriving there our passengers had the chance of refreshments provided by the local W.I. A couple of middle aged ladies were cheerfully manning a heavily laden platform trolley beneath one of the platform lamps. Smoking a cigarette I looked around for our relief who should have been waiting on the platform noticing our guard walking alongside the carriages swiftly unlocking the doors as he passed by. The children were soon heading for the trolley where tea and home baked cakes were freely available and a queue quickly formed. Shortly after this a few of the older lads walked moodily down the platform. The same boy who had approached me in Derby was dribbling a small ball with his feet as he walked along the platform. Reaching me he halted before flicking the ball into the air with his foot, then neatly catching it before putting it in his pocket.

"What time do you think we're going to get there Mister", he shouted up to me, "it's just that we've finished all our grub now and some of us are getting a bit hungry".

"Not too long now, but don't count on getting fed as soon as we arrive, I think you'll probably have to travel a bit further" I replied, just as the signal arm rose in front of us, the green aspect shining brightly. There was no relief crew, we were told to take the train forward as I knew the road. It looked like it was going to be a long shift.

"Get back on the train now, we've got the signal to leave". Flicking the tab end of my cigarette through the open fire hole door I looked at my mate who nodded his head to indicate all was well.

Once we had left Sheffield and cleared the south Yorkshire coalfield we had an uneventful journey all the way through to the junction at Church Fenton, just a few miles south of our destination. With clear signals on the approach to York we were running well. That is, until my ears picked up the sound of the air raid sirens as we passed the yards at Dringhouses.

The night was clear with little cloud above us as we approached York station, travelling slowly towards one of the south facing bay platforms. The air raid sirens were still wailing, but, a new insistent noise was rapidly rising above this sound to become dominant

Molly

in my ears. It was a low pitched droning noise created by countless heavy aircraft. Soon this was all I could hear.

Apprehensively I glanced briefly upwards into the night sky before my concentration returned to driving the train onto the platform road, almost immediately there was an explosion that erupted with a bright flash of orange light over on the far side of the station. Coming to a halt on reaching the end of the bay a string of further explosions rocked our train causing masonry and shattered glass to fall around us. Shouting across to my young fireman to get off the loco I rapidly wound on the handbrake before jumping off the footplate myself. A quick glance around and I realised that we had arrived at the worst possible time, explosions, with the outbreak of fires through the use of incendiaries seemed to be occurring all around the station. Looking down the platform I watched as our passengers were hurriedly leaving the train. They were being directed by an elderly ARP warden towards a brick built shelter at the head of the platform. My attention was drawn to our guard, some way down the platform, he was frantically unlocking the doors of the non corridor stock before he was violently thrown off his feet, as an explosion, very close, shook the ground. I found myself flung hard against one of the station roof pillars striking my head and immediately blacking out.

I don't think I was unconscious long, when I came round my hearing had gone and I was feeling very dizzy. I managed to get to a sitting position and looked down the platform, what I could see through billowing smoke appalled me.

Part of the train was on fire, most of the carriage doors were open and panic stricken children were being urged to move quickly along the platform to the air raid shelter just visible through the smoke. Becoming more alert but still without hearing I could see that the flames were coming from the non corridor stock. Horrifically, children's faces were visible at the windows as they tried in vain to open the doors. Trying to rise from my position I collapsed back down again as my legs would not support me.

Molly

The woman had watched the train arrive at the bay platform from the south. She had heard the wailing of the air raid sirens followed soon after by the loud explosions with brightly coloured flashes of light in the station area. These had continued as the train cautiously proceeded down the platform before coming to a halt as the final explosions rocked the carriages. She knew now that this was the train and watched with increasing alarm the flames and smoke from the carriages burning fiercely. Moving down closer to the platform level she was able to see the horrified looks on the trapped children's faces as they hammered frantically on the carriage windows with their bare hands. Now she knew why she had been tasked with her vigil for all those years and what she must do to obtain final release from her imprisonment at the station. Her thoughts returned to that fateful day when she had first arrived in York.

The young nurse was awakened reluctantly from her restless sleep, cut short by the gentle but persistent shaking of her shoulder. Opening her eyes she acknowledged her caller with a raised hand before swinging her legs out of the narrow bottom bunk bed while stretching her left arm to feel for her tunic. Neatly folded with the red cross uppermost, it was placed within reach on the adjacent stool. Reporting to the hospital train in Dover early the previous morning she had been quickly put to work assisting in the loading of patients from the moored adjacent ship. Since then the nurse had had little rest before finally reaching her bed late in the night.

Becoming alert she noted that her train was now stationary, lifting the corner of the blind on the carriage window she could see that they within the confines of a huge station. Hearing the noise from raised voices on the platform, punctuated by the occasional sounds of a locomotive whistle she looked on, mesmerised by the busy scene before her. Outside her window, dawn was beginning to break and her eyes were drawn to the weak shafts of sunlight now penetrating through the curved wrought iron arches high above her before coming to rest on the platform surface below.

Here, along the platforms away from the shafts of sunlight, gas lights were still casting a soft yellow glow over medical orderlies busily unloading patients from her train. The patients were being carefully strapped onto stretchers prior to being laid quietly and efficiently on the long curved platform surface in orderly rows.

Noting from the watch clipped to her tunic that her duty time was now approaching, the nurse finished dressing quickly before adjusting the position of the small gold crucifix fastened on a chain around her neck. A gift from her late mother she wore it discreetly within her tunic contrary to regulations.

Casting aside the exhaustion she felt despite her short rest, she briefly splashed cold water on her hands and face using the pot jug and enamel bowl located on the small cabinet beneath her window. Moving swiftly, after drying herself on a hand towel she entered the adjoining carriage. Patients, the ones that were awake, watched her from the three tiers of bunk beds either side of the centre aisle as she strode down the carriage to report to the duty sister, a women not much older than herself. The sister who was stood behind a wooden pedestal desk looked up from writing in a register as she approached.

“Nurse, we are to receive a delivery of dressings and other items here. Go and see if you can locate the delivery detail for this train. Hurry now, I don't think we will be here very long once we have finished transferring these patients.”

The nurse departed the train finding herself near the station concourse, medical orderlies were now moving the stretcher cases into motor powered ambulances. Looking around her, trying to locate a delivery vehicle she bypassed a large group of civilians stood awaiting a train on a south facing bay platform.

Now, moving quickly up the platform, her eyes searching ahead, she was startled by a sudden and prolonged high pitched scream emitting from a women close by, clutching a small child the distraught woman was frantically pointing with her free hand to the adjacent platform edge. Grasping her long skirt to give her easier movement the nurse ran across the broad platform in the direction indicated.

As she approached the edge of the platform, a perambulator could be seen to be laid between the twin railway lines. Turned upon its side, she could hear but not see an infant crying from within the 'pram, just as her attention was distracted by the sound and movement of an approaching train bearing down

Molly

towards it on the same track. With no time to consider her actions, she lowered herself without hesitation onto the platform edge before dropping swiftly down onto the line side. Feeling with trembling hands for the infant underneath the tightly wrapped covers where the child was restrained by strapping, she fumbled with the buckles. With the brakes of the oncoming locomotive grinding noisily, only now yards away, she released the final strap before frantically tossing the infant up onto the platform. Moments later she was struck hard across her temple by the front of the locomotive, fracturing her skull, her death was believed to be instantaneous.

The Evacuation Train April 1942

Becoming more alert I managed to manoeuvre myself into a sitting position with my back against a roof pillar. Looking at the smoke further along the platform a curiously faint image of a woman wearing a long dress with apron appeared. Becoming clearer she walked briskly alongside the burning carriages apparently unaffected by the smoke or the heat from the flames. As she passed the carriages I could see her hand opening the doors, seemingly with ease. Once released children could be seen jumping quickly down onto the platform and running along the platform passing by me to reach the safety of the shelter. One of them fell as he jumped from a door, the woman helped him onto his feet. I saw that it was the tall lad with the striped pullover as he hobbled away with a pained and frightened expression on his face. My last recollections before losing conscious again was of the woman approaching me, she was now quite distinct. She was quite young wearing an old style nurses tunic with a red cross on the front.

Despite my predicament my curiosity was aroused and I asked her who she was. I could see her lips move but I was still quite deaf and unable to hear her reply. I pointed to my ears and she seemed to understand this, smiling weakly she thrust a small item into my hand before apparently fading away. Later when I regained conscious I found myself at an improvised first aid post laid on a stretcher. My hand was tightly clutching a small hard object, puzzled, I brought it up to my face and saw that it was a gold crucifix engraved with the name Molly.

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