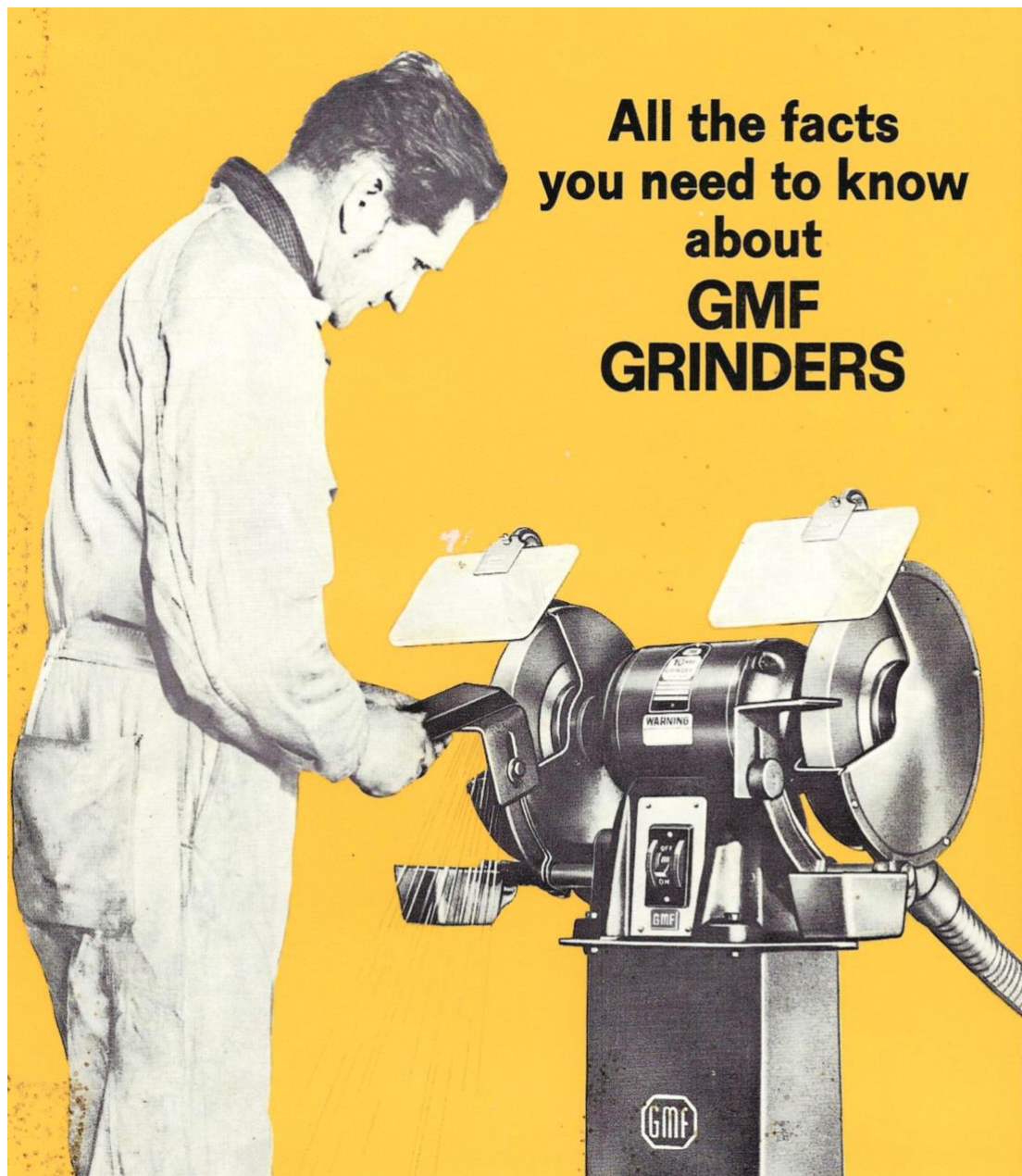


NEWS 188



All the facts
you need to know
about
**GMF
GRINDERS**

June 2026

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TTTG IS A MEMBER OF THE AUSTRALIAN MEN'S SHED ASSOCIATION

Report from the President & Secretary

John Deeble & John Bates

2026 is already whizzing by with almost half the year already gone. Our second sale this year on 17 May, saw 9 Sellers present 17 tables of interesting tools. As always, we thank our sellers for their participation and the team at Carbatec for actively promoting the sale. We are always pleased to welcome both new and old sellers and buyers to these events. The sales are an opportunity for socialising; information sharing and catch ups.

TTTG has now been running these Members and Friends Tool Sales since 2022, a total of 13 smaller sales in addition to the annual February Sydney Tool Sales. They have retained their popularity with both sellers and buyers with over 60 buyers attending on 17 May.

Two further Members and Friends Tool sales will take place, the next one on Sunday 23 August and the final sale for the year on Sunday 22 November 2026. Remember the new starting time of 9.00am. Get in early if you wish to book a table as they sell out very quickly.

It was most pleasing to see several new and returning members at the April 14 Members' Meeting. TTTG has welcomed 12 new members so far in 2026. Members are encouraged to bring along a friend to our members meetings hopefully to further expand our membership.

Our special thanks to Mike Williams for organising and Tom Marinov for staging the presentation on 18th century US vintage silver smithing in colonial Williamsburg at the April Members Meeting. The video displayed the amazing skills of these early craftsmen. A highlight was the opportunity to see a 200-year-old silver sugar pot from Mike's collection.

On Sunday 22 March, TTTG ran a successful Blade Sharpening Workshop. The seven workshop participants all actively engaged in the practical activities and left with sharp chisels and planes. Our friends from Carbatec most generously donated a \$25 in store gift voucher to each of the workshop participants and a generous gift voucher to TTTG. It was great to have Steven Hall and Cameron Thomson from Carbatec attend our workshop. We greatly appreciate all the support we receive from the Sydney Carbatec store. Our thanks also to Matt Pryor, Jim Windschuttle and Anton Marinov for facilitating the workshop.

TTTG membership is just \$50 each year and renewals become due on 01 July. Online renewals via the TTTG website are not yet possible but we plan to add this feature in future upgrades. Our current membership renewal options are:

* Cheque or money order for \$50 made out to TTTG Inc sent to

The Secretary
The Traditional Tools Group Inc
PO Box 140 West Ryde NSW 1685

* Direct deposit \$50 to TTTG's bank account

Commonwealth Bank of Australia
BSB No. 062271 Account No. 10334075

* Cash payment of \$50 at our August Member Meetings or the 23 August Tool Sale.

Please use your name or Membership Number as the payment reference.

The Traditional Tools Group (TTTG)

Tool Sale

On 22 February 2026, The Traditional Tools Group (TTTG) held its annual tool sale at the Brickpit, Thornleigh. A few Woodworkers Association of NSW members were at the Tool Sale as vendors of tools and treasures, and as purchasers of the same.

Henry Black, long term WWANSW member and supervisor, was also the founder of the Tool Sale and has provided the history of the Tool Sale and photographs from the early sales.

John Bates, TTTG Secretary, has provided perspectives on the growth, purposes, and future of the Tool Sale.

The history and growth of the Annual Tool Sale

Henry Black held the first Sydney Tool Sale & Swap in 1986, after attending a similar event in the parking lot of a San Diego tool shop in Christmas 1983. The sellers at his first sale were all fellow members of the NSW Woodworkers Group. The sale was initially once a year only. The first sale was in a huge, shared workshop Henry was using at Botany. Later venues included a Sea Scout Hall and various school auditoriums and basketball courts.



ABOVE: the first Tool Sale and Swap at shared workshop in Botany. Leon and Simon Sadubin (far left) and Mike Jeffries (second from right)

BELOW: a big smile from Leon Sadubin and family



In 1991 Henry put out a questionnaire at the tool sale to see if there was interest in forming a tool collector's club in Sydney and received 100 positive responses. Subsequently a meeting of 16 interested parties in Henry's Concord workshop started the club off. This became the Traditional Tool Group, with most of the founding members also members of the NSW Woodies.

The Sydney Tool Sale & Swap continued as Henry Black's personal sale with attendances of 400-500 buyers each year. The largest attendance was 800 buyers in 1991, thanks to an article in the Sydney Morning Herald "Good Weekend" and ongoing support from the Australian Woodworker magazine.

After a few years of diminishing numbers and Henry's kids (formerly enthusiastic helpers) starting their careers, Henry handed the Sydney Tool Sale & Swap over to the Traditional Tools Group. The Traditional Tools Group tool sale started in 2012. Since then, TTTG has continued to hold a sale every year apart from 2022 when COVID forced its cancellation.

It is difficult to compare figures over the years, but TTTG has recorded visitor numbers since 2013 after moving the event to the Brickpit Sports Stadium at Thornleigh. In line with Henry's experience the average attendance hovers around the 400 mark. I have personally attended these events since the early 1990s, and my thoughts are that numbers have continued to be extremely healthy. I think the longevity of the Sale, forty years old and still going strong, supports that view.



Of course we could not hold the Sale without the sellers. The range of tools sold by our sellers is amazing. Individually, the volume of tools sold by each seller varies greatly. Some sellers hire just one table while our largest seller hires 12 tables.

For insurance reasons we only allow TTTG members to sell at the Sale. This ensures that everyone has public liability and accident cover. Indeed, the venue manager demands we have adequate insurance cover.



One of our regular sellers is Lifeline. Early in the TTTG Sales era we decided to standardise the seller tables and purchase 50 blow-moulded, folding leg, plastic trestle tables. We added to the number of tables over the years and now have about 80 tables. Storing these was a real issue. Then, via one of our members, Lifeline offered to store the tables if we allowed Lifeline to

use them at the various Lifeline book sales held around Sydney. TTTG only needs the tables on one day each year, so this has proved to be a real win for both organisations.

What are the other benefits of the Tool Sale?

Ironically TTTG does not aim to sell tools at the Sale. The TTTG stand at the Sale does offer tools for sale but only on a small scale. One aim is to raise funds to pay our operating costs such as the rent for our workshop at Marsfield, our website, group insurance, tool collection, etc. But the Sale also allows TTTG to raise interest in and awareness of traditional tools, demonstrate the use of tools, recruit new members, and expand the diversity of traditional tool users and collectors. We are certainly seeing a younger and more diverse demographic at the Sales.

How did this year's Tool Sale go?

The 2026 Sale was a great success. Many sellers reported a successful day, and the TTTG bank account now reflects that result. TTTG also signed up some new members. Plus, the Lifeline book seller reported their 'best ever' result at the Sale.

Plans for future Tool Sales

At present TTTG intends to continue with the Sydney Tool Sale in its current format and at the same venue. Members have suggested we look to another venue in a location more central within the Sydney basin. The biggest challenge is finding such a venue with all the attributes we need and at a reasonable price. If anyone has a suggestion I would be pleased to hear from them.

NOTE: this article originally appeared in the NEWSLETTER Woodworker Association of NSW, March/April 2026 and reprinted with the permission and kind assistance of the Association.

The next TTTG Sydney Tool Sale will be on Sunday 21 February 2027 at the Brickpit Sports Stadium, Thornleigh, NSW.

The Jig Saw to the Rescue

Mike Williams

Some time ago my wife Penny and I spied a wrecked Georgian urn stand in a local auction and because of the damage, the auction estimate was appropriately very low. We estimated that the stand was salvageable with a bit of work and fortunately not too many other people were interested and our bid was successful.



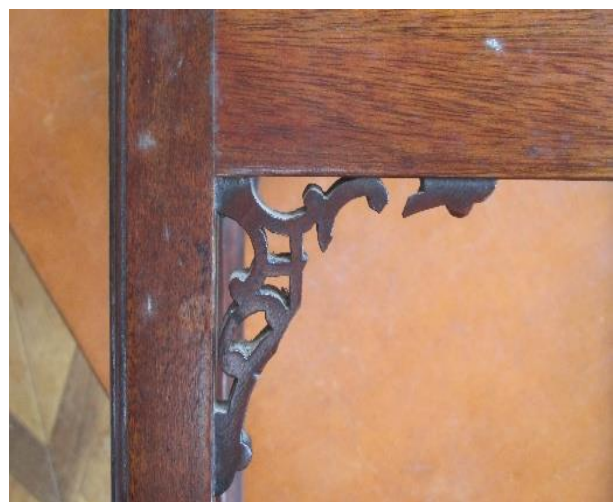
The Urn table as found in auction. Note the bits of remaining stretchers lower down the legs.

Two of the six decorative corner brackets below the stand top were damaged but the surviving brackets were in reasonable shape. They were all decoratively pierced which was probably why two of the brackets were damaged but at least we had four remaining brackets to copy. There were no witness marks from brackets on the back, indicating that the stand had been made to be put against a wall and hence didn't need visible brackets.

As an occasional table, the urn stand was a useful surface although it looked a bit the worse for wear, so it was relegated to the "future project" category until we had the time to devote to its restoration.

Along came COVID and like everybody else we were house bound so perhaps this was the time to look at the urn stand to see what could be done.

The main problem was the fact that the stand had originally had some sort of stretcher arrangement to stabilise the long legs and although one of the legs just had holes where the stretchers had been, the other three legs had small pieces of the original stretchers sticking out which indicated that the stretchers weren't just going crosswise from leg to the opposite leg but were going up at an angle probably to meet at a central boss.



One of the damaged corner brackets



View of the top surface showing the veneer cracked and damaged in the centre by heat and water. Note also the teapot slide, in reasonable condition but missing its knob.

The top surface of the stand had been veneered on mahogany with a rather “swirly” piece of mahogany veneer but the heat and occasional water from an urn had all but destroyed it in the centre and would have to be replaced. The challenge was to find a new piece of veneer but as luck would have it, I had a piece of solid mahogany of about the right thickness that had an attractive grain pattern so I decided to replace the stand top insert entirely, a solution that was probably better than the original with respect to possible future damage.

The first job was to replace the two damaged corner brackets and once again I was fortunate to have a piece of Cuban mahogany of the same thickness in my store of “useful material.” It was

actually the top of a small occasional table which had lost three of its four legs and was itself quite damaged in one corner and I had purchased it for the timber for a few dollars at a local garage sale.

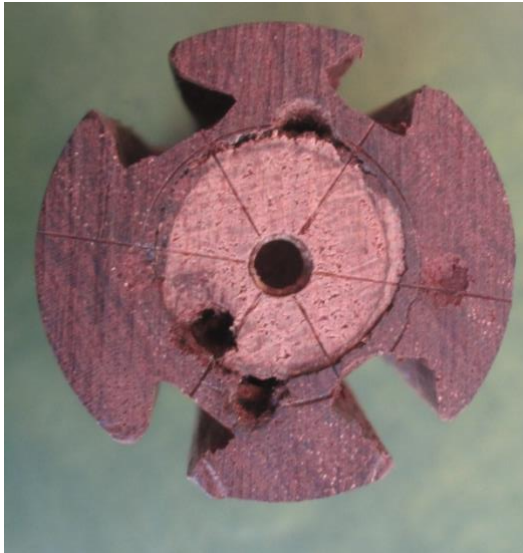


The two new fretted corner brackets overlaid with one of the original damaged brackets

I traced out a couple of corner brackets and set up my treadle jig saw (which readers would have seen in one of my earlier articles).

A few coats of shellac later and the new brackets were ready to be glued into place.

Now for the main event! What did we think the stretchers would have looked like? Taking our cue from the fretted corner brackets, we imagined that the stretchers would have had the same sort of design feel. Probably they would have been pierced and on the chunky side, not delicate like some other Georgian table stretchers which were probably designed to show off the skill of the cabinet maker rather than anything else.



View of the central boss with its sliding dovetails and still with its lathe centre.

Meanwhile, Penny started to imagine what the stretcher design might have looked like and made several full-size sketches to flesh out her ideas.

I then set up a trial assembly of all of the parts to ensure that it would all fit together in the end and that the boss would be in the centre. I set the table on a large piece of ruled drawing paper to make sure that everything was aligned.

As I mentioned before, from an examination of the remaining stubs, they seemed to be rising towards some sort of central boss, so this is the idea that we adopted. I had enough of the little tabletop wood leftover after fretting the corner brackets so we decided that the stretchers could be made the same thickness. That was where the pseudo logic stopped so Penny set herself the task of designing the stretchers and I busied myself with turning up a suitable looking central boss and cut four sliding dovetails into it to take the stretchers if and when we had made them.



Sketch of a possible stretcher design with a blank stretcher and central boss for size guidance.



I set a turned small finial on top to gauge whether it would be visually big enough with respect to the table size. OK at this stage!

Trial assembly of the stretcher blanks. Note that the fourth stretcher blank has been removed for clarity. The small finial seemed to be about the right size but only after the blanks had been pierced would we be able to confirm this.



The final design!

Having settled on a stretcher design, we made four copies and glued them to the mahogany stretcher blanks with stationery paste ready for piercing. I set up the treadle jig saw again and set to work. The treadle jig saw gives me fine control for the design.



Carefully cutting out the stretchers on the jig saw.



The completed urn stand with urn and slop bowl. Note the slide now has a new small brass knob.

When finally cut out and test assembled, it became obvious that visually there needed to be another larger piercing next to the centre boss to lighten the design so back to the jig saw again for a final cut. The photo at left shows the stand all glued up, polished and ready to dispense hot water from an urn.

First stretcher "fret" completed



Collecting Sidchrome Spanners (3rd edition)

by Dick Lynch

A new edition of everyone's favourite book, Collecting Sidchrome Spanners by Dick Lynch, will soon be available. Still 520 pages long but now in hard cover making it perfect for the coffee table.

The updated third edition has around fifty improved and additional images together with one hundred text and caption additions and changes. Some of these changes are corrections but most are more information.



First published in 2022 the book has now sold hundreds of copies. Dick regularly fields requests from Sidchrome collectors and it would be fair to say that Collecting Sidchrome Spanners has now become the “bible” for those in the thrall of this great Aussie tool icon.

Please direct your enquiries concerning purchase of the book direct to Dick Lynch via email at dicklynch43@gmail.com or mobile 0419 393 042. It will also be available on eBay.

Just a Pile of ‘Old Spanners’: Focus No.1

John Daniel



“Not just a pile of old spanners” (NEWS 187), to the keen-eyed ‘new chum’, it is more of a collection of intriguing shapes designed to tighten, loosen, or adjust.

Obviously from the variety, some are general-purpose while others are for some specific application, however each one has its place in the heirarchy of spanners and wrenches.

Let’s focus on a few of the individual spanners singled out from the pile.

Below are a couple of pliers commonly known as ‘slip-joint’ pliers. These are usually supplied in most car kits, often ending up in kitchen drawers and tool boxes because of their versatility. The purpose of the slip-joint allows the pliers to be a multi tool gripping both nuts and small bar, and at a pinch, a bottle opener in the kitchen.



The top example is stamped **RED DEVIL S&H Co USA No 1024**. This is a well machined tool with crisp lines and smooth positive action and fits nicely in the hand; one could say, “a quality tool.”

The one below is clearly marked **FORD**, perhaps the most recognisable of all car spanners. This pair of pliers is economically manufactured, quite loose in action with little sign of refinement. The end of one arm has been formed as a screwdriver. Crudely made, however still fit for purpose and, one could say, “indestructible.”

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F W Hercus: Machine Tool Manufacturer

an address by Peter Hercus

Preamble by the TTTG Secretary

The transcript was in a letter dated 1984 from Peter Hercus. Somehow this fell into my hands, and I only recently uncovered it in my archives. Unfortunately, the diagrams and illustrations referred to are not available.

I confess to not having obtained permission to publish this material, but it seemed of such historical significance and worth that I felt compelled to put it into NEWS. Mea culpa.

Transcript of an Address by Peter Hercus - 1984

I will speak to you tonight about machine tool manufacture.

Now this is a very wide subject and I will be confirming my remarks to the principles and methods of manufacture applied to those machine tools manufactured at F W Hercus Pty Ltd. These consist of a range of conventional machine tools of small size and intended for use by both industry and technical training institutions. These machines, made in both inch and metric form, are designed for world, not just Australian, markets.

The volume of manufacture varies from machines made by jobbing methods to high-volume lines with throughput in the order of 50 to 60 machines per month. Even this of course is small when compared with the output associated with traditional consumer items.

We handle complete manufacture from castings to final assembly and inspection, the only exceptions being sheet metal work and certain specialised heat treatment.

All machines save one are to our own design. That one exception, a well-known American machine, was quite shamelessly pirated. It has since been subject to considerable redesign at our hands but a large amount of the original remains. Even at this distance in time, I cannot help but admire the genius of the twin brothers John and Miles O'Brien who first conceived it (Miles O'Brien, with his identical twin brother John, developed an industrial lathe for manufacturing gun barrels and founded the South Bend Lathe Works in 1906).

In common with other Australian manufacturers, F W Hercus faces the chronic problems of high and rising labour costs. To stay in business, it becomes necessary to find ways of making increasingly efficient use of the labour for which we must pay so dearly.

The search for economy in manufacture begins at the design stage. We believe that the designer must consider the question of how to make an item when considering what it must do and what form it should take. Economies at this stage are more far reaching and less costly to obtain than anything achievable by even the most ingenious feats of the methods engineer and tool designer afterwards.

To offset, as far as possible, the small volumes involved we endeavour to make maximum use of interchangeable components. Where this cannot be done it is still often possible to use standardised dimensions on such things as dovetails slide-ways or broached hobs.

Tolerances

F W Hercus gives particular attention to the specification of tolerances. Using tolerances achieves three basic aims. First to ensure the correct functioning and performance of the finished product, second to ensure interchangeability of components and third to ease assembly. It is a mark of superior design to meet these aims with a minimum of difficult to hold or difficult to measure tolerances. A tolerance after all is of no intrinsic value.

There is amongst draughtsmen an unfortunate tendency to place a 0.001" tolerance on any dimension of which they are unsure. Not surprisingly much wasted time and effort come from holding tight tolerance on fresh air fits. We may not yet have entirely cured this tendency but at least our draughtsmen know that if they set a tolerance they will, in all probability, need explain why they did so.

Machine Tool Size

Our machine tools fall within the smaller end of the size range. This means that we avoid many of the problems inherent in the production of larger machines. It also brings in other problems peculiar to small machines, principally due to the reduced weight of sliding members. As the weight of these members tends to vary with the cube of machine size this can mean that weight of moving parts is reduced to the point where alternative means must be found for stabilising areas of small machines which in larger ones can be satisfactorily left to their own weight.

One example of this is the design of the cross slide of a Tool and Cutter grinding machine. Many of you will be familiar with the Vee-flat arrangement used on many makes of No.2 size machines such as Macson, Cincinnati, and Jones & Shipman (Fig XX). This configuration of slide, an unqualified success on machines of this size and weight, is a very doubtful proposition when applied to a smaller machine where to achieve a truly stable cross slide it becomes necessary to revert to the dovetails configuration.

Another example is lathe bed design. In Fig XX at A and B we can see two conventional bed configurations. Both have been in use for many years and given excellent service. Applied to a smaller lathe without the necessary weight to keep the saddle firmly seated on the single Vee guide this same configuration displays none of the testability which makes it so successful on larger machines. On conventional turning with cutting pressures directed downward onto the guide it performs deceptively well. As soon however as we get a situation in which pressures are being applied at or toward the unguided rear area, as is the case in using a rear mounted tool, a copy slide or taper turning attachment, the saddle can begin to walk along the bed unless adjustment of the keep plates can be maintained at a condition nearer to perfection than could be reasonably expected in the conditions under which the machine will have to work. Consequently, we have stayed with twin-Vee configuration shown at C. This is more costly to produce and more difficult to fit than the others, but all our tests and experiments lead us back to it as the best for a small lathe.

Machine Tool Slide Ways

Broken down into components a considerable part of a machine tool consists of such mundane items such as screws, bushes, levers, pulleys, base plates, spacers, guards etc. These are produced by traditional machining process using conventional machine tools

ranging from engine lathes to automatics depending on the volume. The work involved is little different from that performed in many other engineering works.

Other items such as lathe beds, work tables, slide ways, work or cutter spindles, feed screws and precision gearing are more peculiar to machine tools, either because of the nature of the component itself or because of some special accuracy requirement. It is the manufacture of these components together with the final fitting and assembly which makes such differences as may exist between machine tool manufacture and other branches of engineering.

Machine Tool slide ways can take many forms depending on their place and function and some of those more commonly employed are shown in Fig XX.

At A we have a few typical lathe bed configurations. The duties involved here are low sliding speeds, sometimes under heavy pressures, mainly downwards and dirty conditions.

At B is the typical Vee-flat configuration frequently employed in grinding machine ways. Here the duties involve higher speeds, lower pressures, almost exclusively downward, and clean conditions.

At C is shown the conventional dovetail slide-way used for overhung, heavy, or wrenching type loads in all directions. Typical applications are milling machine knees and tables and shaping and slotting machine rams. Dovetail ways are also employed for small slides which must be constrained in all directions instead of being seated by their own weight. At D is a typical anti-friction slide way employing balls on hardened steel tracks. This type of slide is used for situations requiring free movement, sensitivity, and freedom from friction. It is commonly seen in the table ways of Tool and Cutter Grinding machines.

Casting Iron Parts

All our slide ways apart from anti-friction slides are of cast iron in grades ranging from 10 to 17. Melting is done in a conventional balanced blast cupola. Metal grades are achieved by varying carbon and silicon contents with up to 0.5% of copper added to grades 14 and 17. For controlling metal specifications we employ chill wedges, stepped test blocks, and tensile test bars. Normal practice is to take a wedge test from every furnace tapping and test block of each grade from every cast. Tensile testing and chemical analysis are made at less frequent intervals.

Except for some large grinding machine frames which are required only infrequently all castings are machine moulded in synthetic green sand using either jolt squeeze or jolt rollover machines. On certain heavy castings slide surfaces are faced with either CO₂ or self-setting sand. Wherever possible working surfaces are cast down, and moulds are filled quickly through strainer cores and small down gates.

Placing of working surfaces at the bottom is not always compatible with ease of moulding and Fig XX illustrates how this was overcome on bed castings for 9" lathes. At A is a section of the lathe bed, drawn Vee's down. The obvious joint line is shown by the line x but by conventional moulding methods this would require a 3-part box with the second joint as shown by the line y. This was overcome by means of a collapsible pattern, the sequence of operations of which are shown at B, C and D.

Machining and Finishing of Components

Machining of slide ways normally involves a rough machining operation followed by either natural aging or stress relieving and sometimes a secondary machining operation prior to finishing by either grinding or scraping.

Most of our preliminary machining is now done by milling with planing being used only on large, small volume components or items whose configuration renders milling impracticable. Lathe beds are milled using a gang of throw-way tipped cutters which cover the whole of the upper surface in one pass at a feed of 5 inches per minute. The beds are then released re-clamped and a secondary cut taken right away.

Following this the beds are allowed to stand in the shop for a minimum of 6 months during which time they undergo other operations such as drilling and tapping and painting before being finish ground. In the case of flame hardened beds, it has been found necessary to make 2grinding operations with about 3 months between.

Lathe beds are peripheral ground on a horizontal spindle machine using diamond formed wheels. Grinding is done wet and the wheels used are of silicon carbide. Straightness tolerance on a bed is from zero to 0.001" convex in its length. This is achieved by springing the bed down in the centre by approximately 0.0005" before grinding.

We have found the peripheral methods of grinding to be the most efficient and in addition to lathe beds employ it on all other applications within its capabilities. This includes items such as grinding machine tables and slide ways as well as the undersides of lathe headstock and tailstock. Anti-friction slide ways are also peripheral ground and on these it is our practice to grind the hardened steel inserts in place.

Dovetail ways which cannot be peripheral ground are finished on slideway grinding machines using flaring cup wheels on universal spindles and typical spindle and wheel arrangements are shown in Fig XY. Since angular settings of the spindle must be changed several times during the grinding of each component it is necessary to have a simple and accurate procedure for doing so. The method we employ is to use a sine block and spirit level and this is also shown in Fig XY.

The other traditional method of finishing slide surface is hand scraping. This is employed both for bedding in of small sliding members such as lathe saddles and for finishing slideways on large components which by reason of shape or size cannot be conveniently ground.

For the latter purpose it is more troublesome than grinding and thus we use it only on heavy items made in small numbers such as the main frames of cylindrical grinding machines or slotting machine bodies.

The manufacturing procedure is the same as for a ground slide except that the final machining operation is by planing. Providing the planing machine is in good condition and the work is skilfully done the resulting surface will be as straight and true as the ground one. The main shortcomings are the difficulty in achieving a sufficiently good match, particularly with Vee flat or double Vee slides and quality of finish. Scraping then becomes primarily a

matter of removing tool marks and matching slides together and in capable hands is a straightforward job, especially if the matching part has been ground.

Hand scraping can of course also be used to produce true and accurate conjugate members from unreliable beginnings but, satisfying as this may be as a feat of craftsmanship it is just not an economical proposition in a competitive market.

Machine Tool Bearings

For work and cutter spindles we have standardised on tapered roller bearings using races of varying degrees of accuracy depending on the application. A typical arrangement such as is used on lathe and milling machine spindles is shown in Fig XX. This is a conventional indirect mounting, arrangement with adjustment by a single nut at the back.

Spindles are pre-loaded to a pre-determined figure measured by a spring balance and a cord wound around a drum fixed to the spindle. In taking this measurement, it is important that the spindle be started from rest by hand and the measurement be made of the torque required to keep it turning. When seals are present these must be released in their housings and allowed to rotate freely with the spindle in order that their friction does not give an exaggerated reading.

Grinding wheel spindles are carried on precision angular contact ball bearings mounted in tandem with spring loading applied at the pulley end. This gives a stable free running spindle requiring no adjustment throughout the life of the bearings. Wheel spindles mounted in this manner must be lubricated with oil only and the use of grease will produce bearing failure in a matter of hours.

Making Feed and Leadscrews

Feed and leadscrews are produced by whirling from solid using a special grade of stress relieved precision turned bar. Whirling is a high-speed milling process using a single point internal cutter rotating around the blank in an offset position and inclined to the helix angle of the thread. The basic relationship of work and cutter are shown in Fig XX. Feed and half nuts are screw-cut on 'Cridan' machines with taps being used for final sizing only. This is necessary to ensure that the threads are square and true to the nut mounting faces.

Gear Drives

Gear drives on machine tools can vary from normal commercial quality gears for low-speed drives to the high precision gears required to ensure smooth and quiet running of high-speed work and cutter spindles. This aspect of machine tool design is coming under increasing scrutiny because of moves to curb industrial noise.

For non-critical applications such as feed mechanisms gears produced by the conventional generating techniques of hobbing, shaping or planing are usually adequate. As operating requirements grow more stringent however we frequently reach a point where it becomes necessary to introduce a secondary finishing operation such as shaving or grinding. This is particularly true of gears which are to be heat treated.

Shaving is a precision finishing operation using a cutter which takes the form of a helical gear having a series of grooves cut down the tooth flanks to form cutting edges. The shaving cutter and gear are run together under pressure on crossed axes while the gear is

reciprocated along its axis. The amount of stock removed is small, 0.002 to 0.004, but shaving is nevertheless a cutting and not a lapping or burnishing operation. Shaving will remove minor errors of form, spacing or concentricity but will not correct large errors. Gears which are to be finished by shaving are cut to greater than standard depths using special protuberance type cutters which provide relief in the root to clear the tips of the shaving cutters.

In theory one shaving cutter of each pitch and pressure angle will cover gears of any number of teeth or degree of correction but in practice this is not so. To produce the best results as having cutter should be designed around the gear it is to shave. Where production volumes are large this in fact is what is done but for lower volume work a cutter can be made to cover a range of gears. Numbers of teeth from about 16 upwards can be catered for by 6 or 8 cutters without serious loss of accuracy provided excessive degrees of correction are not involved.

Although shaving is done prior to hardening its action in removing the stressed surface layer of metal tends to reduce distortion of the teeth in heat treatment so that shaved gears may be hardened without risk of undue loss of accuracy, providing all other necessary precautions are observed.

As an added aid to smooth running and to offset heat treatment distortion, which is minimised but not eliminated by shaving, one gear in each pair may be crown shaved. This is achieved by a cam action in the shaving machine and produces a tooth slightly fat in the centre, thus effectively preventing teeth from bearing hard at one end. The amount of crowning is of the order of 0.0003 to 0.0005 over the face, irrespective of the width.

For hardened gears in particular the ultimate method of finishing is by grinding if for no other reason than that it takes place after heat treatment. Grinding is a more costly process than shaving, but on the other hand the tooling involved is more universal in its application.

Because of this grinding may be employed on short run jobs where suitable shaving cutters are not available. The gear grinding processes which we employ are the Pratt and Whitney and Reishauer methods, both of which are generating processes. The Pratt and Whitney principle employs a single wheel dressed to the pressure angle of the gear being ground to simulate one tooth of the generating rack. This wheel is given a reciprocating motion across the face while the gear is made to roll past it along an imaginary pitch cylinder Fig XX. The Reishauer (<http://www.reishauer.com>) machine works on the same principle as the hobbing machine, using a wide grinding wheel dressed to the form of a worm.

Methods of gear inspection fall into 2 classes, functional or dual flank and analytical or single flank. Dual flank testing employs a rolling type testing machine in which the gear to be checked is rolled in mesh with a master gear of known accuracy, Fig XX. One gear, usually the master is mounted on a floating carriage which is spring loaded to hold the two into mesh.

As the gears are rotated errors or irregularities present cause the floating carriage to move in or out of mesh. This movement may be observed directly on a dial indicator or recorded on a graph which will look something like the line shown on the right of Fig XX. Such a graph

records what are described as composite errors, that is, the effective nett total of all errors present. These comprise tooth to tooth composite errors, shown by the small individual loops on the graph and being the nett effect of adjacent pitch error, pressure angle and form error; and total composite error, shown by the distance between the highest and lowest point on the graph and being the nett effect of such things as eccentricity, accumulated pitch error, out of roundness etc.

For smooth running and noise control purposes tooth to tooth accuracy is the more critical of the two. Dual flank testing is a fast and simple method of separating good gears from bad. All our routine testing is done by this method with single flank testing used only as a back-up. This backup is necessary since a dual flank test, while able to detect a bad gear will not pinpoint the nature of the error. Single flank testing, involving a full profile analysis of the whole tooth flank is a slower and more involved process but enables the exact nature and position of the error to be determined so that corrective action may be taken.

Final Assembly and Alignment

The final assembly and alignment of a machine tool in our experience accounts for about 30% of the man hours expended in its manufacture and consists primarily of precision fitting of a high order. It is normally carried out in three stages.

The first stage comprises the building up of sub-assemblies. These are put together on the bench and run and tested as complete units.

The second stage covers building up of these sub-assemblies into a finished machine which can then be run and tested through all motions under power. At this point we have a machine all present and correct, run in and functioning but not necessarily accurate in its alignments. Due to the accumulation of errors, individual tolerancing of components will not automatically produce the required degree of accuracy in the finished product. This is taken care of in the third stage where individual alignment errors are measured and corrected in a rational sequence. In smaller machines the parts are lighter making hand scraping of mating surfaces more convenient. Thus, all correction on 9" Swing Lathes is done by hand scraping of the mounting faces of headstock, tailstock, and saddle.

On larger machines where the components become large and difficult to handle it is usual to design correction points into the machine. These frequently take the form of flat joint faces suitable for surface grinding and adjustable packing strips. An example of this can be seen on the 14" swing lathe as illustrated in Fig XX. Here the headstock sits on a flat base with a lip along one edge which pulls up against the side of the bed over packing blocks at front and rear. During assembly, these machines were fitted with a special headstock- lid having four machined mounting pads. This enabled the complete headstock to be lifted bodily from the lathe, set up on the table of a surface grinder and a predetermined correction ground into the bottom face to correct the alignment in the vertical plane. With this done correction of the horizontal alignment then became a simple matter of grinding one or other of the packing blocks.

Peter Hercus, 1984

More Sidchrome Gold

by The Editor

Sidchrome 'gold' tools could be in your toolbox, shed, or car boot. For example, Sidchrome produced just two magnetic sockets - yes just two. Both were 1/2-inch drive in sizes 3/8 AF (MAG.S 1212) and 7/16 AF (MAG.S. 1214) and were included in the 141-piece de luxe tool cabinet Cat No.SC139 (see extracts below from a 1970 Repco catalogue and Sidchrome catalogue R2-71 from 1971. They noted as being useful for self-taping body screws

SIDCHROME

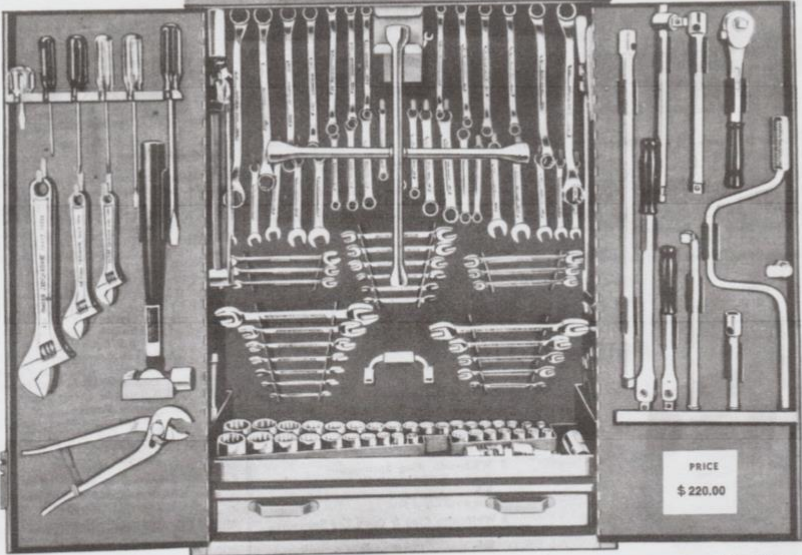
QUALITY TOOLS

141 PIECE De Luxe
TOOL CABINET

SIDCHROME

1/2" SQUARE DRIVE

CAT. No. **SC.139**
COMBINATION
A/F (S.A.E.),
WHITWORTH/B.S.
& METRIC



A/F (S.A.E.) SIZES—

7 Open End Spanners—
3/8, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 3/4, 1 7/8, 2, 2 1/4, 2 3/4, 3, 3 1/4, 3 3/8, 3 1/2, 3 3/4, 4, 4 1/4, 4 1/2, 4 3/4, 5, 5 1/4, 5 1/2, 5 3/4, 6, 6 1/4, 6 1/2, 6 3/4, 7, 7 1/4, 7 1/2, 7 3/4, 8, 8 1/4, 8 1/2, 8 3/4, 9, 9 1/4, 9 1/2, 9 3/4, 10, 10 1/4, 10 1/2, 10 3/4, 11, 11 1/4, 11 1/2, 11 3/4, 12, 12 1/4, 12 1/2, 12 3/4, 13, 13 1/4, 13 1/2, 13 3/4, 14, 14 1/4, 14 1/2, 14 3/4, 15, 15 1/4, 15 1/2, 15 3/4, 16, 16 1/4, 16 1/2, 16 3/4, 17, 17 1/4, 17 1/2, 17 3/4, 18, 18 1/4, 18 1/2, 18 3/4, 19, 19 1/4, 19 1/2, 19 3/4, 20, 20 1/4, 20 1/2, 20 3/4, 21, 21 1/4, 21 1/2, 21 3/4, 22, 22 1/4, 22 1/2, 22 3/4, 23, 23 1/4, 23 1/2, 23 3/4, 24, 24 1/4, 24 1/2, 24 3/4, 25, 25 1/4, 25 1/2, 25 3/4, 26, 26 1/4, 26 1/2, 26 3/4, 27, 27 1/4, 27 1/2, 27 3/4, 28, 28 1/4, 28 1/2, 28 3/4, 29, 29 1/4, 29 1/2, 29 3/4, 30, 30 1/4, 30 1/2, 30 3/4, 31, 31 1/4, 31 1/2, 31 3/4, 32, 32 1/4, 32 1/2, 32 3/4, 33, 33 1/4, 33 1/2, 33 3/4, 34, 34 1/4, 34 1/2, 34 3/4, 35, 35 1/4, 35 1/2, 35 3/4, 36, 36 1/4, 36 1/2, 36 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SOCKETS

1/2"

SQUARE
DRIVE

CAT. No.		DESCRIPTION	PRICE EACH
NEW	OLD		

(A)

SINGLE HEX — INDIVIDUAL

1487-5	SS.1212	3/8	\$0.67
1488-3	SS.1214	7/16	.67
1489-1	SS.1216	1/2	.67
1490-4	SS.1218	9/16	.67
1491-2	SS.1220	5/8	.75
1492-0	SS.1222	11/16	.75
1493-9	SS.1224	3/4	.75
1494-7	SS.1226	13/16	.87
1495-5	SS.1228	7/8	.87
1496-3	SS.1230	15/16	1.00
1497-1	SS.1232	1	1.00

(B)

DOUBLE HEX — INDIVIDUAL

1509-3	S.1214	7/16	.67
1510-6	S.1216	1/2	.67
1511-4	S.1218	9/16	.67
1512-2	S.1219	19/32	.75
1513-0	S.1220	5/8	.75
1514-8	S.1221	21/32	.75
1515-7	S.1222	11/16	.75
1516-5	S.1224	3/4	.75
1517-3	S.1225	29/32	.87
1518-1	S.1226	13/16	.87
1520-2	S.1228	7/8	.87
1521-0	S.1229	15/16	1.00
1522-8	S.1232	1	1.00
1523-7	S.1234	1-1/16	1.08
1524-5	S.1236	1-1/8	1.08
1525-3	S.1238	1-3/16	1.33
1526-1	S.1240	1-1/4	1.33

(C)

SPARK PLUG

1541-3	SP.1226	13/16" / 14 mm	1.87
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(D)

FORD CON ROD

1542-1	FS.1218	9/16	.82
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(E)

MAGNETIC SOCKETS — SINGLE HEX
Suitable for Hexagon Headed Self-tapping
Body Screws.

1544-8	MAG.S.1212	3/8	.82
1545-6	MAG.S.1214	7/16	.95

SIDCHROME CATALOGUE
R2-71 PAGE 13

These sockets must now be super rare and worth their weight in Sidchrome 'gold.'

Good hunting.

Bakelite Marking Gauge by RIDEX

by John Daniel



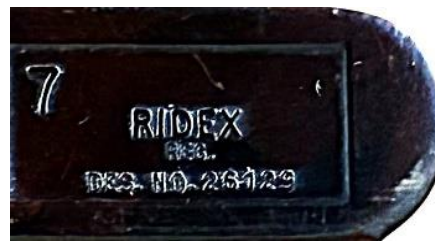
“**Bakelite** was the first synthetic plastic, invented by Leo Baekeland in 1907 for electronics.

Bakelite was strong, moldable, and cheap to make, leading to its use in many products. Bakelite fell out of favor because newer plastics held their color better and were less brittle.”¹



Occasionally one may find a tool with a Bakelite handle such as a screwdriver or a saw, rarely a tool is

found wholly cast from Bakelite.



Consequently, when spotting a dirty 'plastic' marking gauge at

a weekend market, it needed to come home to be given a nice warm bath in soapy water and a bit of TLC ... a good go-over with a finely-abrasive car polish and a lot of elbow grease clearly revealed that it was Bakelite **and the bonus was that it revealed that it was** made by RIDEX Des. No. 26129.

Maker: Ridex Engineering & Plastic Midges ²

Products: Bakelite marking gauge - Design No. 26129

State: NSW

JD

References

1. <https://duckduckgo.com/?q=Bakelite&atb=v315-1&ia=web>

2. <https://www.htpaa.org.au/hand-tools/australian-tools-makers/australian-makers/directory-of-australian-makers-full-list/872-ridex>

G15 FERRO PAK RUST PREVENTATIVE

G15 is a contact corrosion inhibitor for the protection of ferrous and non-ferrous metals.

G15 – provides long-term corrosion resistance

- Is thermally stable from -40°C to 260°C without cracking, chipping, peeling, or sagging.
- Is thixotropic and therefore will not sag, run-off and is ideal for clean trouble-free application. G15 holds on sharp edges.
- Is resistant to sunlight. It has been tested for exterior exposure under adverse conditions and has passed such long-term tests without failure.
- Does not stain metal surfaces. When used over steel, copper, aluminium, and their alloys; the coating does not stain under normal conditions of exposure.
- Has good water displacing properties.
- Can be used as a general-purpose lubricant.



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12 CANS FOR \$250 !!**

ON SALE AT ALL MEETINGS AND TOOL SALES

JD's: Genuine Shed Find or Rust & Dust

by John Daniel



Barry, my brother, shared these photos of a “genuine shed-find of rust and dust” ...his words, not mine, however, aptly described.

A country boy at heart and always being interested in Folk-history and early machinery and the like. Barry, rarely misses an opportunity to ‘investigate’ old sheds and relics of structures from a bygone era out of curiosity, and maybe occasionally in the hope of ‘finding a treasure,’

or salvaging things that can be re-purposed, re-furbished or just to bring them 'out into the light' of reflection on that bygone era.



Not a lot of apparent 'treasures' in this lot, however, that is all in the eye of the beholder, and to the ever-optimist, there could be a little surprise under that dust.

To country folk, it would be obvious that this lot came out of an old sheering shed; maybe too many, just a pile of old scrap metal with its value only measured by its weight.

Others can appreciate the brutal evidence of a passing era and feel a reluctance to let it go without some acknowledgement; historians, conservators, collectors are playing their part, though, disappointing for some, just garden ornaments to encourage the process of rusting for others.



ABOVE: Wedding Venue West of Tamworth, NSW

It's heartening to see that in some instances some of the rust is being lifted out of the dust and put back in place and re-purposed endeavouring to preserve the atmosphere of these old re-furbished and repurposed sheds, herding in wedding Guests rather than sheep.

Thank goodness for progress but let us not get in the practice of "throwing the baby out with the bath-water" when moving forward, and remember, maybe that the soap may also come in handy down the track.

JD

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Workshops & Events

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\$25 each

TTTG Sharp Oil (**back in stock**) ...

\$6 per bottle or 2 bottles for \$10

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Best on Oil Stones & Diamond Plates – Contains 240ml
NOT TO BE TAKEN – KEEP OUT OF REACH OF CHILDREN

SHAKE WELL BEFORE USE!

BONUS BUY – 2 BOTTLES FOR \$10

TTTG Citric Acid ... **terrific value** ...

\$5 per 250 gm jar

G-15 'Ferro Pak' Rust Prevention ...

\$24 per can ... or
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TTTG Fees and Contacts 2025/26

TTTG Membership & Entry Fees:

Membership (1 July 2025 to 30 June 2026)	\$50.00
'Real Skills' Workshops	\$70.00
Members Meetings entry	\$5.00
Members & Friends Tool Sales entry	\$5.00
TTTG Sydney Tool Sale entry (21 Feb 2027)	\$10.00

TTTG NEWS Magazine & Tool Sales:

NEWS Magazine Editorial, Articles & Advertising:

John Bates secretary@tttg.org.au

All Tools Sales Information and Table Bookings

John Bates secretary@tttg.org.au

TTTG Memberships & Secretary:

John Bates secretary@tttg.org.au

TTTG Members Meeting & AUCTIONS

Old Eastwood Town Hall, 74 Agincourt Road, Marsfield, NSW

Members Meetings (open to all) are held on the second Tuesday in:

February, April, June, August, October, and December

NEXT MEMBER'S MEETING Tuesday 11 August 2026

NEXT TOOL SALE Sunday 23 August 2026

TTTG Auctions surplus tools – bargains galore!

Braces, hammers, saws, spanners, pliers, auger bits, and more.

**WHY DO WE HAVE TOOL AUCTIONS? WELL, WE HAVE TO PAY
THE BILLS SOMEHOW! SO PLEASE BID GENEROUSLY**

For event details and news items see the NEW TTTG website

www.tttg.org.au