Vertomat
Rotary Transfer Machines

The economical and versatile answer to Primary & Secondary Precision Machining and Assembly.

For Machine Sales, Spare Parts Sales, Component Feasibility/Machine Capability, Component Layout & Machines tooled to produce your component contact:

BriterAmt Machines
Vertomat Rotary Transfer Machines

Vertomat Rotary Transfer Machines have been developed over many years and are extremely adaptable for the rapid production of many types of components. Originally designed for fast production of small precision machined components from bar or loaded blanks (hand/automatically), Vertomat machines have evolved into an extremely versatile machine capable of manufacturing components both large and small. A range of machining options is listed on the following pages.

The basic Vertomat Mk1, Mk2 - V4 and V8 machines comprise a base that incorporates the main electrical control gear, press button panels, the air equipment with pressure control regulators and coolant piping. Mounted onto the base is the Base Ring carrying beneath the indexing mechanism, drive motors, the flex drive gearboxes and the camshaft timing unit. Visible on the Base Ring is the fitted Toolplate, an extension of the index mechanism.

A wide range of toolheads is available for drilling, tapping, sawing, etc. Standard vertical or horizontal brackets can be positioned easily around the toolplate for each machining operation, and where convenient, standard combination brackets to take both vertical and horizontal head can be used to perform two operations at one index station. Each head is motor driven, and the quill feed is by roller and cam driven by a flexible shaft. Each flexible shaft is positively driven through a flex drive box from the main index box. This gives synchronization of feed and indexing.

**List of Capabilities**

1. Toolplate & Component loading options
2. Drilling
3. Threading & Tapping
4. Sawing, Slotting & Light duty Milling
5. Chamfering, De-burring & Underneath Machining
6. Broaching
7. Assemblies
Toolplate & Component loading options

The toolplate forms an essential part of the basic machine and must be fitted by a qualified Vertomat engineer. Toolplates can be designed and manufactured to suit a customer’s requirements but the greater number of machines are fitted with toolplates of the following types:

1) The Plain Toolplate is basically a rotating table onto which work holding fixtures can be mounted. Generally used for machining or assembly work on components not suited for chucking on the pneumatic toolplate.

2) The Pneumatic Toolplate is fitted with a two lever chuck at each station (*note some Mk1 vertomat machines are fitted with an all mechanical mechanism that carries out the same function as pneumatic toolplate version). The levers are machined at their outer ends to accept split jaw inserts with gripping surfaces to accommodate the component. Both vertical and horizontal loading is permissible.

3) Collet Toolplate. These have been developed for both vertical and horizontal plane loading of components. Example of a vertical collet toolplate top right.

Machine loading can be by either bar/coil feed or individual component insertion. Bar/Coil materials are feed into the toolplate chuck and sawn off to the length required by a cut-off unit comprising a standard head with saw attachment.

Individual component loading into the toolplate chucks can be either by hand or automatically by, for example, a “pick and place” attachment usually accompanied by a bowl feeder or similar device. It should be noted that Vertomat machines as standard have the facility to close the chuck before the toolplate indexes to the next station (safety feature when hand feeding) as well as delay closing the chuck until the indexing has started which is useful when automatically loading.
Drilling

There are two main types of Standard Drilling units that can easily be fixed to any of the Brackets that bolt onto the Base Ring:

Mk 1 Drill Units feature a “live” spindle that accepts BE 200 series collets and nose nut. Mk 1 drill units are more commonly used for small diameter holes but can accommodate drill sizes up to 10mm diameter.

Mk2 Drill Units are heavy duty “quill” type heads. The standard drill shaft encased in the quill features a .5” diameter hole with a key slot to accept collet type drill adaptors with .5” shank. Alternatively drills bushed up to .5” diameter can be fitted directly into the shaft.

Both types of drill unit feature tooth belt drive pulleys, changeable, to provide a range of spindle speeds. Feed is by cam mechanism.

Examples of Component machined on Vertomat Mk2.

Engine Oil Flow Bolt 14mm.
2 off 4.5mm diameter cross holes @ 90 degrees.
1 off 9mm blind hole @ 31mm deep. Material 8.8.
Vertomat V8 Machine utilized.
Tapping & Threading

Available are several different types of Threading unit. Component configuration will determine best type of unit to use.

Types.
Mk1 Geared Cork clutch type.
Primarily used for high speed precision tapping using small to medium size taps. Spindle end incorporates BE 200 series collets and nose nut. The cork clutch allows slight float when tapping in and precise depth of thread. Toothed belt pulleys allow a range of tapping speeds, the internal gearing allows rapid withdrawal of the tap. Cam driven feed.

Direct drive threading units utilizing Mk1 and Mk2 drill units.
Primarily used for tapping tough materials and external threading. Spindles are direct drive and fitted with a floating holder that accepts the tap or die/die box. Forward and reverse speeds are controlled by electrical control signaled by cam activated micro switches. Toothed belt pulleys dictate threading speeds. Cam driven feed.

Pitch Control threading Units available by special request.

Special purpose Tapping and Threading.
Drill units either Mk1 or Mk2 can be adapted to accommodate commercially available threading units such as Tapmatic etc. Contact us to discuss your particular requirement.

Component examples.
1) Insert for vernier cam on high performance motor engine. M6 tapped thread. Hytenspeed 55 (55 carbon) component material. Mk1 Geared Cork Clutch tapping unit attached to Mk 1 Vertomat which also chamfered and drilled tapping size hole. Cycle time 2.5 seconds.

2) 32mm diameter Fan Hub featuring 2x cross drill and tap ¼" UNF. Into 7mm diameter bore. Machine =Vertomat MK 2 V8 with 5.5 seconds cycle time.
Sawing, Slotting & Light-duty Milling

Sawing and Machined Slots are easily achieved using the Light Duty Milling Head.
Good stability and support assist of the actual milling head is achieved by the larger (than a drill head) quill.
The geared head spindle that carries the cutters is at 90 degrees to the drive spindle and the speed is reduced by 50% of
the drive spindle speed.
Maximum cutter diameter = 3” (75mm).

Underneath Slotting Attachment.
This unit may be used for light duty slotting only. It enables components to be machined from the underneath of the
toolplate and fits directly to the front of a Mk1 drilling unit.

Milling by use of end mills is permissible by using a special purpose unit developed by ourselves. Details upon request.

Component examples
1) Clevis –Mild Steel, Single side and face cutter. Light duty milling head used. Mk 2 Vertomat
2) Fork end- Mild Steel, Gang of two cutters. Light duty milling head used. Mk 2 Vertomat
3) Formed Draw Bolt- CZ121 Brass or mild steel material, plain and formed 8mm dia. End mills. Mk 1 Vertomat.

1. 2. 3.
Chamfering, De-burring & Underneath Machining

Chamfering or Centre drilling to the front face of a component is achieved by use of a standard drill head often using a Drill Bush bracket Assembly. This ensures accurate chamfering or centering especially onto a round face of a component.

De-Burring.
De-burring after a hole has been drilled or tapped can be achieved in the forward motion as per instructions for Chamfering etc. above, but without the need of drill bush bracket.

The de-burring of the rear of cross holes and holes crossing another hole (see picture of engine bolt featured on Drilling units page) is achievable by use of propriety de-burr tools currently available.
Please contact us for cam design and implementation of these de-burr tools.

Underneath Machining.
The underneath machining unit will allow machining operations to be carried out underneath the Toolplate Chucks. Typical machining operations carried out by this unit are chamfering through holes, drilling, counter boring, reaming etc.
Broaching

Shaped holes other than round can be achieved on a Vertomat: Hexagon, Square, Star etc. shaped holes can be generated by using a propriety, rotary (wobbly) broaching attachment and tool bit fitted to a standard drill head. A rim cam (heads back system) must be used to ensure removal of tool from the generated hole and retention of component in the chuck is encouraged.

Similarly, direct broaching is possible in “soft” materials (brass, aluminium etc.) using the heavy duty quill head. Again a rim cam (heads back system) must be used to ensure 100% removal of the broach tool and support underneath the chuck is recommended. Please contact us to discuss the limitations of using this method.

Typical set up on a four station Vertomat would be St. 1 Load/unload component. St.2 Centre drill. St.3 Drill pilot Hole. St.4 Broach Hole.

We have experience of Broaching components on our in-house Vertomats – please contact us with any queries and enquiries.

Component example.
Hexagon hole in M4 Csk. Screw.
Material Mild Steel

Broaching Tool example.
Assemblies

In addition to the many machining operations available on a Vertomat can be added stand-alone assemblies of introduced parts as well as machining and assembly within the cycle of the machine.

Within the constraints of “component size vs machine capacity” there are almost limitless opportunities to assemble parts, from, for example, putting a screw into a part using bowl feed and auto screw driver, to the fitting and fixing of the fuse holding clip on to the live pin in a 13amp plug. This assembly followed the machining of the cut pin to accept the clip that was firstly placed onto the spigot and secured by expander then spun riveted to 100% secure. These examples are just two of many possibilities.

Contact us to discuss your project.

Photo 1. screw inserted component.

Photo 2. 13 amp plug live pin assembly.
About Briter AMT Machines

With over 40 years experience with Rotary Transfer Machinery & units, Briter AMT Machine are the go-to suppliers for:
• Supplying complete and ready to run Rotary Transfer Machines
• Complete working units
• Reconditioned machines, parts and units
• Spare parts
• Technical expertise

We provide a full service from initial enquiry to provision of solutions for your specific component needs.

This is provided on a worldwide platform - we have recently designed, provided and commissioned several complete machine solutions in China to bespoke customer component requirements.

Whatever your query, contact us – we would be delighted to assist you.