THREADEXPRESS V3.0

BUILD NOTES AND

SUPPORT DOCUMENTATION

Introduction

ThreadExpress is an indexing and thread milling attachment which can be mounted vertically on a Bridgeport style milling machine (with a turret and ram), or horizontally on a suitable horizontal milling machine.

It is capable of indexing in 30 degree increments, and cutting metric and imperial threads, both internal and external. It can cut from very small diameter threads to larger threads up to the capacity of the workholding method, and in a range of pitches from 0.4mm up to 2.5mm. It is capable of threads per inch from 64TPI up to 10TPI.

Threads are cut using a shop made thread milling cutter or a purchased proprietary cutter (useful for small internal threads) held in either the vertical spindle for a knee mill or in the horizontal spindle for a horizontal mill. The single point flycutter bit can be ground to any thread profile to suit the work being undertaken.

There is provision to tilt the headstock of ThreadExpress over to a helix angle to suit the size and pitch of thread being cut. This ensures that an accurate thread profile can be cut without profile errors caused by unwanted cutter undercutting (for example as sometimes generated via 3 axis CNC thread interpolation milling).

The workpiece can be held in a standard ER 32 collet chuck or a 100mm self centering 3 jaw chuck. The work is rotated using a 4:1 reduction bevel gear driven by a hand operated crank. This allows the operator to stop the thread cutting process precisely at a shoulder. Because ThreadExpress is entirely driven by hand, there is no need for a motor or external power supply to be used.

ThreadExpress can be removed from the milling machine when not being used. It is held in place by two bolts and a centre stud. Fitting it to the mill only takes a few minutes.

Threadexpress History

ThreadExpress was invented and prototyped in 2009 by Cliff Hall, a professional toolmaker from New Zealand. Cliff worked on the design over a number of years, refining and improving ThreadExpress up to version 2.2. Cliff at first attempted to sell the design to a tool manufacturing or kitset company, but eventually decided to make the design directly available. Because ThreadExpress had been built as a prototype, a decision was made to upgrade the design to Version 3.0 and incorporate a number of refinements. The redesign was carried out as a partnership with Mark Presling, a retired Industrial Technology teacher from Australia. Mark created a complete 3D model and a full set of 2D drawings and assembly drawings using Autodesk Inventor.

Mark has also built a complete ThreadExpress V3.0 from the new set of drawings to validate the design and verify that the drawings are as complete as possible, at the same time producing a series of YouTube videos outlining the build process.

There are different options for the spindle thread and bearings of ThreadExpress V3.0. One drawing shows a main spindle with a 1 1/4" X 7TPI thread and angular contact main bearings and the second drawing shows a M32 X 3.5 thread and taper roller main bearings.

Some Notes on Construction

Some users may wish to substitute imperial fasteners of their own choice so, in most cases, fasteners have not been included in the original 3D model or the parts list. Users should, however, try to use substitutes of a similar size to the original metric hole diameters and sensible length fasteners should be chosen to ensure adequate thread engagement.

Material substitutions can be made, but obviously it is up to the user to decide if an alternative material will be suitable. 6061 aluminium is specified for many of the components because of ease of machining and also for a lighter overall weight on completion.

Please note: Making a ThreadExpress attachment is not an easy beginners project. There is a lot of really helpful information on Mark Presling's and the ThreadExpress YouTube channels, however builders will need a good level of skill and experience (or a lot of patience) to sucessfully complete this build without support.

There is no warranty or support included the information package. It is hoped that a ThreadExpress forum or Facebook group will be started so that builders can support each other, hopefully Mark and Cliff will at times be available to contribute.

Files and licence to build one ThreadExpress

Website https://hallmarkdesign.co.nz (ThreadExpress page) has downloads and purchasing details.

YouTube Video Links

For the full build series of ThreadExpress V3.0 by Mark Presling (@Preso58)
https://www.youtube.com/watch?v=LtFxkI0XQsk&list=PLbPzkHRZCQB8KBb8UXvyCXoRFvYWKFJ-n&pp=gAQB

For Cliff Hall's videos and YouTube channel @Threadexpress

Enjoy the build!   Mark Presling and Cliff Hall