

INFOMATE

Introduction

Welcome to the 17th issue of our newsletter. The newsletter is used to send product and information updates to our customers on a regular basis.

Cincinnati-Lamb Retrofit Kit for Arrow Control

Cincinnati-Lamb is now delivering a retrofit kit for the Arrow CNC control using the **MACHINEMATE**® CNC with the M267 front panel. The kit enables a control replacement to be completed in just a few days.

The Cincinnati-Lamb sales flyer for the kit is available on the MachineMate web site at: http://www.machinemate.com/CL_MachineMate_Flyer.pdf. A link to the flyer is also provided from the web page of retrofit articles (Past Applications). At the time of writing this newsletter, the flyer was not available yet from the CL web site.

There are quite a few Cincinnati Arrow 500 and 750 vertical machining centers installed with the Control Techniques (CT) CNC control. Cincinnati-Lamb developed a kit for the replacement of the CT control hardware. The **MACHINEMATE** front panel in this kit (the M267 shown on the next page) is the same size and its mounting holes are in the same locations as the old front panel to make that exchange easy. The LW CNC and its associated hardware are mounted on a single subpanel (shown in the picture at the right) for the back panel of the control cabinet and this subpanel requires no drilling so that its installation is also quick. The retrofit typically takes less than a week, from start (removing the old control hardware) to finish (installing the new control, testing the machine and training the operator).



Cincinnati-Lamb also worked with **MACHINEMATE** Inc to develop a transition plan for the NC programmers getting this replacement kit for their CT control. The part programs written for the CT can be converted to the **MACHINEMATE** CNC format. For example, the new control will run the same 12 canned drilling cycles (G73,G74,G76,G81-G89) as the CT even though the standard **MACHINEMATE** control comes with only the typical 9 G-codes (G81-G89) for these drilling cycles.

The **MACHINEMATE** CNC offers a faster servo update rate than the CT control resulting in a significant reduction in the NC block processing time. With the faster control the machine will run the same parts in less time as proven by the initial retrofit customers.

The new front panel provides a 15" TFT touch screen display whereas the old control was just a 9" color CRT. The new control offers a hard disk with a part program capacity of over 20GB while the old control had rather limited part program storage, 99KB.

HMI Enhancement for the M267 Front Panel

The M267 (shown below) is the MACHINEMATE complete front panel that was introduced in late 2004. The panel has a 15" TFT color display with a touch screen, a machine tool builder's panel (MTBP) (with the basic operator switches and buttons) and a manual pulse generator (MPG; its handwheel has 100 positions). This is the combination of three options: the 15" TFT display in an IP65 front panel, the slim line MTBP and an MPG. The built-in MTBP includes two rotary switches for the feedrate and spindle speed overrides, lighted cycle start and stop push buttons, an emergency stop push button (turn to release), a lighted machine start push button and twelve general purpose push buttons that can be custom engraved with any legend required (2 lines of up to 7 characters each); each of these 12 buttons also has a programmable LED.



By combining these options into a single integrated front panel, the result is a complete low-cost panel for many integration applications. This panel is also being used in the Cincinnati-Lamb retrofit kit mentioned above.

With the MPG integrated into the front panel, the CNC operator interface can be enhanced to take advantage of this convenient mechanism. The MPG is usually on a remote handheld unit making it less convenient for the interaction with the operator display described here. There are several enhancements that can be included:

- 1) The increment for each click of the handwheel is set by a soft key on the display rather than by an operator switch (like one of the push buttons on the panel). The increment selection is either 0.0001"/0.001mm, 0.001"/0.010mm or 0.010"/0.100mm.
- 2) The work offsets can be set directly from a display showing the axis positions in machine coordinates; the work offset values (G54 to G59) and soft keys to manage the axis selection and the increment for the handwheel.
- 3) The tool data can be set directly from a display showing the axis positions, the tool data (tool length and tool radius) and soft keys to manage both the axis selection and the increment for the handwheel. This tool data management also includes a mechanism to set a tool datum, in the case of a gage block being used to set the tool length.

Those controls getting this enhancement will have the addendum to the Operator's Manual installed (all in pdf) so that the customer and the operator can read the descriptions for this HMI enhancement.

There are three different versions of this HMI enhancement.

- 1) The typical 3-axes machine with X, Y, Z.
- 2) The typical 2-axes machine with X and Z.
- 3) The 4-axes milling machine with X, Y, Z linear axes and a rotary axis (A, B or C).

The variations in the operator interface come from the soft key assignments to the axes. In the case of the 2-axes machine the tool data display includes the tool offsets for both X and Z (as would be required for the turret on a lathe) whereas in a machine with X/Y/Z the tool length is commonly applied only to the Z-axis (the axis collinear with the tool in the spindle).

The letter for any axis can be changed, if required, with the most likely mismatch being the rotary axis letter which varies depending on the specific machine configuration.

USB External Port Options

The USB external port option is available (shown to the right with a USB pen disk inserted into the port; the pen disk is not included), allowing the integrator to mount it on the control cabinet wherever appropriate. The list price for this M168 option is \$75 and includes the spring loaded industrial PVC cover, a single USB type A connector, a 6 foot USB cable to the PC, the mounting screws and a gasket.



Sometimes the manual pulse generator is provided on a handheld unit with the control system allowing the handwheel to control the motions when the operator is closer to the machine, not at the display panel. The M267 can have its standard MPG replaced by an external USB port option. This option is desirable when the M267 panel contains the desired features for the operator (the 15" color display with touch screen and the slim line MTBP), the customer requests a USB port on the operator's front panel (like the M168 option above) and the control package already has a remote handheld MPG so the MPG on the front panel is not needed and/or is not convenient. The MPG on the M267 panel can be replaced by the M168 option; an example of this combination is shown to the right. This front panel option can be ordered by M267D.



Conclusion

If you do not want to receive this newsletter, please tell us with a phone call or just respond with an e-mail with 'unsubscribe' in the subject line. If you received a printed issue and you wish to receive it via e-mail, please tell us that by an e-mail to us at info@machinemate.com or call us at 920-907-0001.

Our web site www.machinemate.com has lots of information about our products and applications; a link can be provided to our customers for the complete manual set. A number of MACHINEMATE control retrofit articles are available. Please periodically check the site for news.

Thank you,

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