

# The DC *Morrison* Company

*Home of The Morrison Keyseater*



## 3" Keyseater Control / Operations manual

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## Safety Notes

**CAUTION:** Only authorized and trained personnel may operate this equipment. You must always act in accordance with the Operator's manual, safety decals, safety procedures, and instructions for safe machine operation. Untrained personnel present a hazard to themselves and the machine

**IMPORTANT:** Do not operate this machine until you have read all warnings, cautions, and instruction

### CAUTION:

- When you use this machine, you must always follow basic safety precautions to reduce the risk of personal injury and mechanical damage.
- Do not operate without all guards and covers in place.
- Be sure machine is electrically grounded.
- Always follow safe machining practices when you run this machine.
- All machines present hazards from moving cutting tools, belts and pulleys, high voltage electricity, noise, and compressed air and hydraulics.
- The work area must be adequately illuminated to allow clear view and safe operation of the machine. Adequate illumination is the responsibility of the user.
- Cutting tools, workholding, workpiece and coolant are beyond the scope and control of DC Morrison / Morsco AEC LLC.
- Each of these potential hazards associated with it (sharp edges, heavy lifting considerations, chemical composition, etc) and it is the responsibility of the user to take appropriate action (PPE, training, etc).
- Cleaning of the machine is required during normal use and prior to maintenance or repair. Safe use of this equipment requires training and might require appropriate PPE and is the responsibility of the user.
- This operator's manual is intended as a reference guide and is not to be the sole source of training.

**DANGER:** Do not enter the machining area any time the machine is in motion, or at any time that machine motion is possible. Severe injury or death may result. Motion is possible when the power is on and the machine is not in [EMERGENCY STOP].

### Basic safety:

- This machine can cause severe bodily injury.
- This machine is automatically controlled and may start at any time.
- Consult your local safety codes and regulations before you operate the machine. Contact your dealer if you have questions about safety issues.
- It is the machine owner's responsibility to make sure that everyone who is involved in installing and operating the machine is fully acquainted with the operation and safety instructions provided with the machine, BEFORE they work with the machine. The

ultimate responsibility for safety rests with the machine owner and the individuals who work with the machine.

- Use appropriate eye and ear protection when you operate the machine.
- Use appropriate gloves to remove processed material and to clean the machine.

**Electrical safety:**

- The electrical power must meet the required specifications. Attempting to run the machine from any other source can cause severe damage and will void the warranty.
- The electrical panel should be closed and the key and latches on the control cabinet should be secured at all times, except during installation and service. At those times, only qualified electricians should have access to the panel. When the main circuit breaker is on, there is high voltage throughout the electrical panel (including the circuit boards and logic circuits) and some components operate at high temperatures; therefore, extreme caution is required. Once the machine is installed, the control cabinet must be locked, with the key available only to qualified service personnel.
- Do not reset a circuit breaker until the reason for the fault is investigated and understood.

**Electrical Wiring:**

In wiring motor, BE SURE the motor runs in the direction of the arrow which is located on the hydraulic pump.

Before switching on the power, the operator should insure that all obstructions around machine and cutter bar are removed. Check to make sure all enclosure doors are closed and all oil reservoirs are filled with proper oil.

**Machine Operation:**

Ensure power is on the hydraulic unit and the E-Stop button is pulled out. Depress the Green Start button on the hydraulic unit. This should power up the hydraulic unit. If the unit does not power up, check electrical supply to machine, check main fuses in hydraulic unit control panel.

At Operator Control Panel, pull Machine Stop button. The table top will retract and find "Home" Position.

Using the operator interface, select Cut Depth, Feed Distance and number of cleanup Passes. The Cut Depth and Feed Distance can be programmed in inches or millimeters.

Load and center the work-piece to be cut by using the centering vee so that it clears the cutter by approximately .100" (2,5 mm). Ensure that the cutter is just touching the cutter on both sides of the cutter and the centering vee. This will ensure that the work-piece is centered on the machine. Clamp the centering vee and work-piece securely. Adjust the overhead guide as close to the work-piece as possible and lock. Adjust the guide head against the cutter bar so that the spool is riding on the cutter bar and lock it in place.

The work-piece can be moved towards and away from the cutter in small increments by using the "Feed In" and "Feed Out" buttons located on the Operator Panel. The Feed buttons move the work-piece at the selected Feed Rate. The Feed buttons do not function once the Feed Start has been selected.

Rotate the "Ram Start/Stop" switch to Start. This will start the cutter motion up and down. If the stroke of the cutter needs to be adjusted, the upper and lower limit switches are located on the side of the machine. The top limit should be adjusted so that the cutter clears the top of the part. The bottom limit should be adjusted so that the cutter clears the top of the table. For a blind keyway, the bottom limit should be adjusted to the height of the bottom of the keyway. It is advisable that the cutter be stopped using the "Ram Start/Stop" switch before making any adjustments.

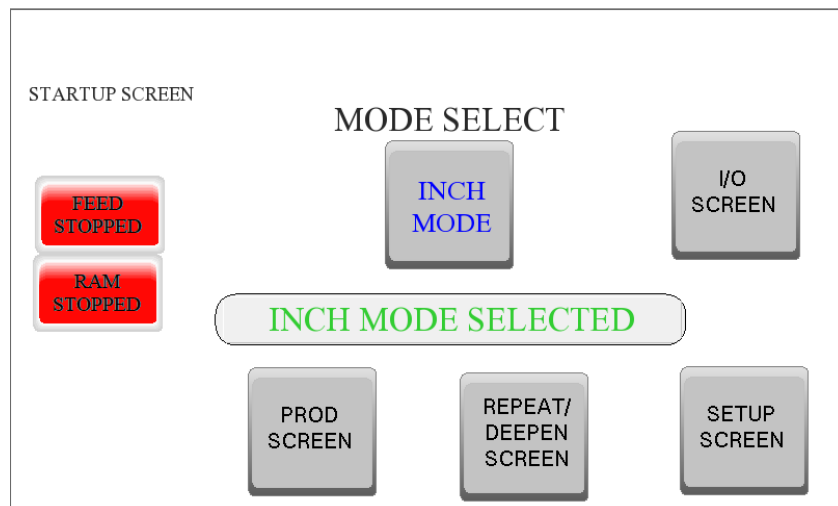
With the cutter cycling up and down, move the work-piece towards the cutter by using the "Feed In" switch. Continue feeding the work-piece until the cutter is just touching the work-piece as it moves up and down.

## Keyseater Controls

The Keyseater is controlled by a Logic PLC with a Touch Screen operator interface. The system has a number of screens that control and monitor the operating parameters of the Ketseater. The Control screens are called based on the Operating Mode of the Machine. In Inch Mode, the navigation buttons will move to the Inch screens and in MM Mode, the navigation buttons will move to the MM screens. The Navigation Buttons are on the bottom of the screen.

### Startup Screen

The Startup Screen is the screen that pops up upon power up. From this screen the Operator selects the Mode. Inch or MM. This determines how the Machine will be setup. The operator selects Inch Mode or MM Mode by depressing the Mode Select button. After selecting the mode, next select Setup Screen by depressing the Setup Screen button.



## Setup Screen

Depending on the Mode selected, determines which Setup Screen pops up. From this screen select the Cut Depth (0 – 1.65”, 0 – 41.27 MM). Feed Dist (.001 - .006, or .01- .15 MM), and # of Cleanup Cuts (1 – 9). The Control uses this data to define the entire cut cycle.

**CUT DEPTH** – By depressing the CUT DEPTH button, a numeric key pad will pop up on the screen. Input the Depth that you want cut the key. This depth is limited to 0 – 1.625 inches.

**FEED DIST** – By depressing the FEED DIST button, a numeric key pad will pop up on the screen. Input the distance to feed each cut. This is limited to .001 - .006 inches.

**CLEANUP CUTS** - By depressing the CLEANUP CUTS button, a numeric key pad will pop up on the screen. Input the number of Cleanup cuts that the machine will make after the Cut depth is reached. This is limited to 1 – 9 cuts.

INCH SETUP

FEED STOPPED

RAM STOPPED

PROD SCREEN

START SCREEN

CUT DEPTH ###

FEED DIST ###

CLEANUP CUTS #

MM SETUP

FEED STOPPED

RAM STOPPED

PROD SCREEN

START SCREEN

CUT DEPTH ##.##

FEED DIST ###

CLEANUP CUTS #

## Production Screen

This screen displays the cycle of the machine. The data is calculated based upon the information input on the setup screen. The information on this screen is updated when the “Auto Feed” is Activated.

CYCLE TIME UP – Time in seconds for the Ram to move up.

CYCLE TIME DOWN – Time in seconds for the Ram to move down.

CLEAN UP CUTS – # of Clean Up Cuts made out of total # of cleanup cuts.

TABLE POSITION – The Current Table Position. The Table resets to 0 after it completes a Homing Cycle.

CUT START POSITION – The Machine automatically captures the “Cut Start Position”. When the Feed Start selector is started, the current position of the table is captured and stored in the Cut Start Position. This is the table position used for the “Repeat Cut” function.

CUT END POSITION – The Machine automatically captures the “Cut End Position”. When the Feed Start selector is started, Cut Depth is added to the Cut Start Position and is stored in the “Cut End Position:”. This is the table position used for the “Deepen Cut” function.

CUT DEPTH REMAINING – This is the current distance remaining to be cut. This is the “Cut End Position minus the Table Position.

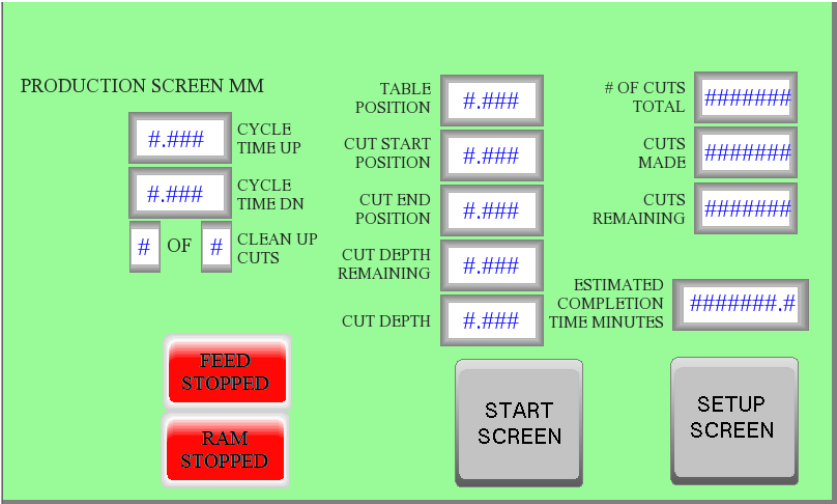
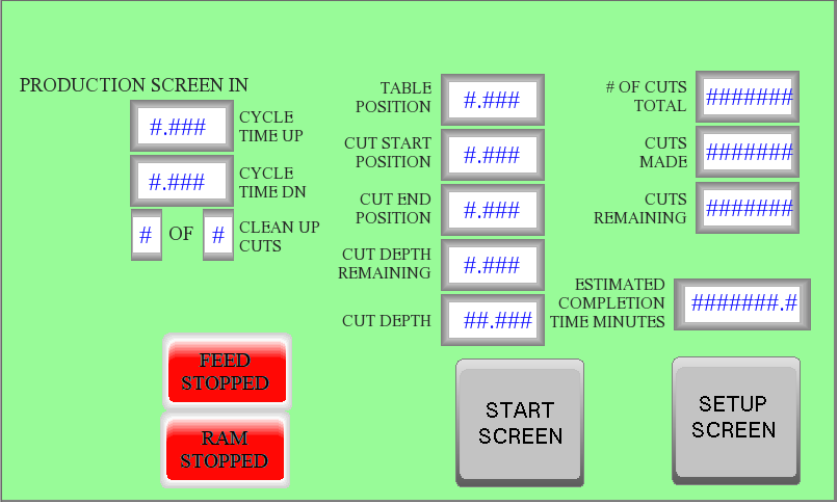
CUT DEPTH – Displays the Feed Dist set on the Set Up screen. This is display only. If you want to change the amount of each cut, you must navigate to the Set Up screen and change it there. Changes made during a cycle will take effect immediately.

# OF CUTS TOTAL – Displays the total number of cuts that need to be made based on the Cut Depth and Feed Distance input on the Set UP SCREEN.

CUTS MADE – Displays the total number of cuts made since the cutting cycle started.

CUTS REMAINING – Displays the number of cycles left before the cutting cycle completes.

ESTIMATES COMPLETION TIME MINUTES - Estimated time in minutes until the cut cycle completes. This is an estimate based on the last Cycle Time Up and Cycle Time Down multiplied by the # of Cuts Remaining.

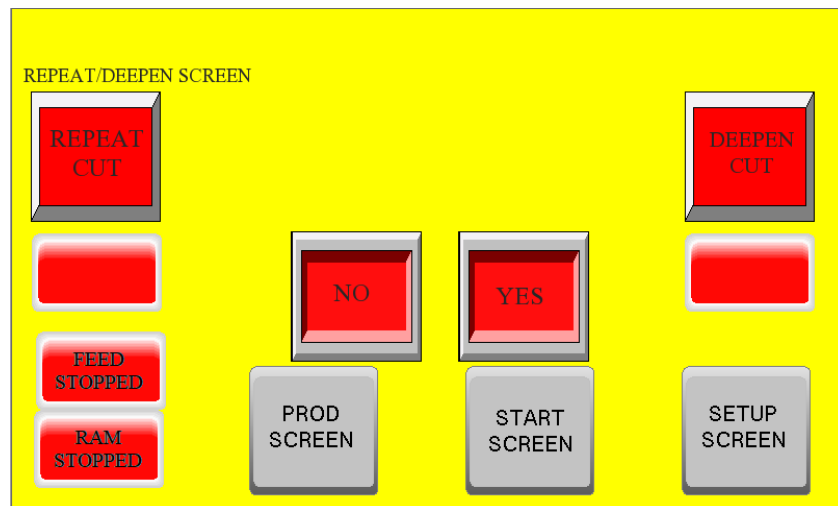


Note – The data on this screen is for display only. The operator cannot change any setpoints from this screen. The data on this screen is estimated. Actual numbers may vary. The depth of the cut is based on the actual table.



## Repeat / Deepen Screen

This screen can only be selected from the START SCREEN. It allows the operator to either Deepen the last cut or Repeat the last cut. When either button is depressed, the YES and NO button will become visible. If the operator selects NO, the function resets. If the operator selects YES, the table moves to either the current Start Position or current End Position minus an Offset. The Offset is 3 times the Feed distance. When Repeat Cut or Deepen Cut is selected, the Cut Start Position and Cut End Position are not updated. Cut Start Position and Cut End Position are updated when the Feed Start is switched on and Repeat Cut and Deepen Cut are Not selected.



## MACHINE HOMING

This Machine Homing message is displayed whenever the machine is executing a Home Function. The machine executed a HOME function when:

- a. The Machine Stop button is reset.
- b. When the machine completes a cycle.

While the machine is homing, the Ram Start and Feed Start selectors are disabled. If Ram Start or Feed Start are active, they are reset at the start of the Homing process. This message is visible from all screens.



**- MACHINE HOMING -**

## FEED PAUSE

This FEED PAUSE message is displayed if the Feed Stop selector is selected after the machine has started cycling. While the FEED PAUSE is active, the Ram will continue cycling, but the Table will not feed. To restart the feed, select Feed Start. This message is visible from all screens.



**FEED PAUSED**

## RAM ERROR

If the Ram Stop selector is selected while the Table is Feeding, this message will be displayed for 5 seconds. The Ram CAN NOT be stopped if the Auto Feed is active. This message is visible from all screens.



**- RAM ERROR -  
STOP FEED BEFORE  
STOPPING RAM**

## JOG ERROR

If either the Jog + or Jog – is depressed while the Auto Feed is active, this message will be displayed for 5 seconds. The Jog buttons are not active if the Auto Feed is active. This message is visible from all screens.

A yellow rectangular box with a gradient, containing red text.

**- JOG ERROR -  
STOP CYCLE BEFORE  
JOGGING TABLE**

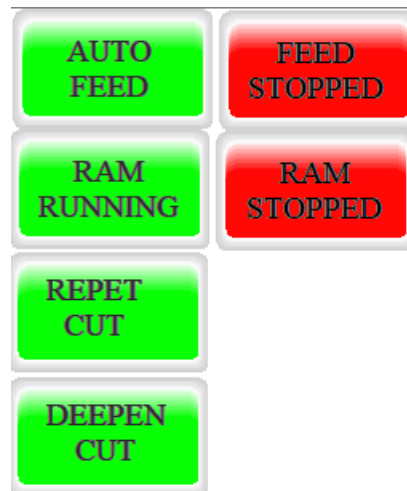
## Additional Messages

Auto Feed – When Green, Auto feed is active. When Red, Auto Feed is stopped. This message is visible from all screens.

Ram Running – When Green, Ram is cycling. When Red, Ram is stopped. This message is visible from all screens.

Repeat Cut – Visible while Repeat Cut Function is active. This message is visible from all screens.

Deepen Cut - Visible while Deepen Cut Function is active. This message is visible from all screens.



## I/O SCREEN

This screen is accessible from the START SCREEN. It displays the status of all Inputs and Outputs to the PLC. This can be useful in trouble shooting the machine if there are problems.

