Hurco Manufacturing Company reserves the right to incorporate any modifications or improvements in machines and machine specifications which it considers necessary, and does not assume any obligation to make any said changes in machines or equipment previously sold.

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Using This Manual

Standard Text Icons

This manual may contain the following icons:

![Caution Icon]

**Caution**

The machine may be damaged, or a part ruined, if the described procedure is not followed.

![Hints and Tricks Icon]

**Hints and Tricks**

Useful suggestions that show creative uses of the Ultimax features.

![Important Icon]

**Important**

Ensures proper operation of the machine and control.

![Troubleshooting Icon]

**Troubleshooting**

Steps that can be taken to solve potential problems.

![Warning Icon]

**Warning**

The operator may be injured and the machining center severely damaged if the described procedure is not followed.

![Where can we go from here? Icon]

**Where can we go from here?**

Lists several possible options the operator can take.
Sample Screens

Some sample screens in this manual were captured on a stand-alone Ultimax system. The screens on your system may vary slightly. The Input screen below illustrates softkeys and includes the software version (circled below).

**Figure 1. Input Screen**

Ultimax screens have three areas of primary interest:

- Softkeys on the right side of the touch screen. Available softkeys may change even when the text and data entry area does not.

- Fields to the left of the softkeys. A field is an area that display or receives information entered by the operator.

- Prompt and error message area at the bottom of the screen. In the sample screen above, the message area reads, “Select softkey or press <Enter> to change part program name.”
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On occasion, an error may occur during part programming or execution. Most errors occur because of incorrect data input and are easily corrected. Error messages for incorrect data are typically self-explanatory. This manual describes how to access the ATC and Machine Diagnostics screen, and provides possible solutions to less obvious errors.

**ATC and Machine Diagnostics Errors**

The system may display a message directing you to enter ATC and Machine Diagnostics. Since this message will appear whenever a problem arises, it can appear on any screen.

Follow these steps to display the ATC and Machine Diagnostics screen:

2. Touch the ATC & Machine Diagnostics softkey.
4. Once the error is corrected, the error message is cancelled and the machine can continue operation.
5. To exit the ATC & Machine Diagnostics screen, touch the Exit softkey to return to the Manual screen.
## Motion and Navigation Messages

The following is a list of error messages that may be generated if a navigation or motion error occurs. If one of these error messages appears while the control is in use, please call field support for assistance.

- Accel value is out of range for servo CMD on X,Y,Z,S,A,B.
- CMD conflict detected by the motion brd on axis X,Y,Z,S,A,B.
- Contour block transfer rate out of range for servo command.
- Could not access dual port ram for servo command.
- Ctrl law value is out of range for servo CMD on X,Y,Z,S,A,B.
- DAC value is out of range for servo CMD on X,Y,Z,S,A,B.
- Encoder fault on axis X,Y,Z,S,A,B.
- Error value is out of range for servo CMD on X,Y,Z,S,A,B.
- Following error on axis X,Y,Z,S,A,B.
- Invalid motion CMD during a stop detected on X,Y,Z,S,A,B.
- Invalid motion data detected on axis X,Y,Z,S,A,B.
- Invalid probe input selected for servo command.
- Marker pulse not detected on axis X,Y,Z,S,A,B.
- Motion complete IRQ not detected on axis X,Y,Z,S,A,B.
- Motion controller subsystem failure.
- Motion ctrl queue brkpnt not detected on axis X,Y,Z,S,A,B.
- Motion ctrl queue runout detected on axis X,Y,Z,S,A,B.
- Motion ctrl queue runout not detected on axis X,Y,Z,S,A,B.
- No axis was specified for servo command.
- No free contour blocks for servo command.
- No master specified for servo command.
- No module was specified for servo command.
- No motion control boards were detected in the system.
- Position value is out of range for servo CMD on X,Y,Z,S,A,B.
Diagnostic Messages

- Reversed encoder phase detected on axis X,Y,Z,S,A,B.
- Spindle must be stopped before a tap begins.
- Stop motion fault on axis X,Y,Z,S,A,B.
- The EStop line is inverted on the motion control board.
- The motion control board did not reset properly.
- Too many axes were specified for servo command.
- Too many masters specified for servo command.
- Unexpected limit switch detected on axis X,Y,Z,S,A,B.
- Unexpected motion ctrl IRQ detected on axis X,Y,Z,S,A,B.
- Velocity value is out of range for servo CMD on X,Y,Z,S,A,B.
Alphabetical List of Messages

Most messages listed on the following pages include brief descriptions and probable causes. An arrow symbol (➡️) marks the steps or options to try.

If you are unable to correct an error or are not qualified to perform a task, request help from authorized service personnel. If qualified personnel are not available at your facility, contact your full service distributor or Hurco.

Warning

Only authorized service personnel should attempt to work on the machine’s mechanical or electrical systems.

"AN ATC ERROR OCCURRED DURING TOOL FIXTURE SEQUENCE."
"(RESET SERVO'S TO CLEAR THIS MESSAGE)",
[FAULT] This message occurs if the tool change sequence does not complete. The message may result from a timeout or a missing switch signal. ➡️ Reset the servos, which will clear the screen message. If the error occurs again, check switches and wiring.

"ATC ERROR - ARM NOT RETRACTED!"
"ROTATE LOAD ARM TO "(UNCLAMP) HYDRAULIC ALARM!",
"ATC ERROR - DETECTED LOAD ARM BOTH 0.",
"ATC ERROR - EXCHANGE ARM DID NOT MOVE UP.",
"ATC ERROR - EXCHANGE ARM DID NOT MOVE DOWN.",
"ATC ERROR - EXCHANGE ARM DID NOT ROTATE!",
"ATC ERROR - LOAD ARM DID NOT ROTATE TO 60",
"ATC ERROR - LOAD ARM DID NOT ROTATE TO 0",
"ATC ERROR - LOAD ARM NOT AT 0",
"ATC ERROR - MAG IN POSITION SWITCH NOT SEEN.",
"ATC ERROR - MAGAZINE PIN DID NOT LOCK!",
"ATC ERROR - MAGAZINE PIN DID NOT UNLOCK!",
"ATC ERROR - MAGAZINE REFERENCE LIMIT SWITCH NOT SEEN."
"ATC ERROR - SHIFTER DID NOT MOVE DOWN. ",
"ATC ERROR - SHIFTER DID NOT MOVE UP. ",
"ATC ERROR - TOOL HOLDER DID NOT MOVE UP. ",
"ATC ERROR - TOOL HOLDER DID NOT MOVE DOWN. ",
"ATC ERROR - TOOL POCKET UP SWITCH FAULT. ",
"ATC FAULT - EXCHANGE ARM DOWN SWITCH FAULT. ",
"ATC FAULT - EXCHANGE ARM UP SWITCH FAULT. ",
"ATC FAULT - LOAD ARM 0 ",
"ATC FAULT - LOAD ARM 60 ",
"ATC FAULT - TOOL POCKET DOWN SWITCH FAULT. ",

[ERROR] The messages above are in response to failed steps during either a tool change or a requested action as part of Diagnostics.

These messages indicate which stage during the tool change an error occurred. Authorized service personnel should use Diagnostics to determine if there is a mechanical or electrical fault.

"ATC ERROR - DETECTED EXCHANGE ARM BOTH UP AND DOWN. ",
"ATC ERROR - DETECTED SPINDLE BOTH CLAMPED AND UNCLAMPED. ",
"ATC ERROR - DETECTED TOOL POCKET BOTH UP AND DOWN. ",

[ERROR] The messages above are in response to failed steps during either a tool change or a requested action as part of Diagnostics.

These messages advise that some mechanism is sensing contradictory position input states (for example, both up and down). This is either an I/O or wiring problem. Authorized service personnel should use Diagnostics to determine if there is a mechanical or electrical fault.

"ATC ERROR - DETECTED SPINDLE NEITHER CLAMPED NOR UNCLAMPED. ",

[ERROR] Neither the spindle clamped switch nor the spindle unclamped switch is “true.” There may be a problem with the clamping mechanism or with the switches. Inspect the switches and clamping mechanism.

"ATC ERROR ON SELECTED OPERATION ",

[ERROR] An error occurred. Determine the cause of the error and try the operation again. Telephone for technical assistance if needed.
"ATC ERROR - SPINDLE IS NOT DETECTED AT TOOL CHANGE HEIGHT."
[FAULT] Ability to move, or sensing of spindle height, is faulty. ➔ Check for smooth axis movement. Check axis encoding, cables and connectors.

"ATC ERROR - TOOL CHANGE CYCLE TOO LONG!"
"ENTER ATC & MACHINE DIAGNOSTICS",
[FAULT] This message means that the tool change took too long. ➔ Authorized service personnel should enter the Diagnostics screen to correct this condition.

"CALIBRATE LIMIT SWITCH NOT FOUND ON AXIS xxxx."
[FAULT] ➔ Check the limit switch and its wiring. Manually deflect each of the limit switches and verify message displayed on screen for + or - limit switch. Telephone for technical assistance.

"CANNOT INITIATE OR RESUME PART PROGRAM"
"WITH ATC HYDRAULIC ALARM!"
"CANNOT INITIATE TOOL CHANGE - HYDRAULIC PRESSURE LOW!",
[FAULT] These messages apply to machines equipped with a hydraulic system, which is used to control and move ATC components. The “alarm” is simply a message that pops up on the screen when the hydraulic pressure is below a pre-set level. (The control detects this condition via a pressure switch). ➔ Check the hydraulic system for the following: low oil, leak, failed or faulty pump.

"CANNOT INITIATE TOOL CHANGE WITH LOW AIR PRESSURE."
[FAULT] The required air pressure is not present. ➔ Inspect the compressed air supply, FRL Unit and lines.

"Cannot open DXF file!"
[FAULT] Refer to the File Errors listed in the previous section.

"CAUTION: ATC IS DISABLED!"
[STATUS] The machine’s tool change system has been configured for manual operation only. ➔ In order to change a tool, load the spindle by hand.

"CLAMP THE SPINDLE BEFORE AUTO ATC."
[INSTRUCTION] This message means that you must clamp the spindle before attempting a tool change. ➔ If message is wrong, check clamp sensor and wiring. Check ATC Diagnostics screen for status of the clamp.

"CLAMP TOOL BEFORE ENABLING SPINDLE."
[INSTRUCTION] The spindle will not start if unclamped. ➔ If message is wrong, check clamp sensor and wiring. Check ATC Diagnostics screen for status of the clamp.

"Data error (CRC)!
[FAULT] Refer to the File Errors listed in the previous section.

"Drive not ready!
[FAULT] See the File Errors listed in the previous section.

"ENCODER FAULT ON AXIS xxxx."
[FAULT] Encoder or encoder harness for the axis may be damaged. ➔ Check wiring. Call for technical assistance.

"ERROR POSITIONING TO MARKER ON AXIS xxxx."
[FAULT] Calibration error. Cannot position exactly to marker. ➔ Move to zero position and recalibrate. If this does not correct the error, phone for technical assistance – the machine may require “axis tuning” or “parameter adjustment.”

"ERROR UPDATING CONFIGURATION FILE. <filename.sys>
[FAULT] Refer to the File Errors listed in the previous section.

"FAILED TO OPEN FILE.
[FAULT] See the File Errors listed in the previous section.

"FOLLOWING ERROR ON AXIS xxxx."
[FAULT] ➔ Check the incoming voltage. Make sure axis movement is smooth with no binding. Look for loose or disconnected motor/encoder harness. Telephone for technical assistance if needed.

"INDEXER NOT INSTALLED OR CONFIGURED PROPERLY.",
"INDEXER IN POSITION 10 SECOND TIME OUT",
"INDEXER POSITION LESS THAN 1",
"INDEXER NOT IN POSITION AFTER MOVE",
"INDEXER NOT IN POSITION AT START",

[FAULT] These error messages can occur when the indexer doesn’t move in the prescribed amount of time. Typically, this would be due to a faulty or slow indexer, or a problem with I/O. ➔ Check the indexer switch and connections. Telephone for technical assistance if necessary.

"INVALID MOTION DATA DETECTED ON AXIS xxxx."
[FAULT] Software detects an invalid motion request. ➔ 1) Write down the error code. 2) Reduce program feedrates and/or axis override while running program. 3) Telephone for technical assistance.

"MAGAZINE CALIBRATE TIMEOUT; MAGAZINE REFERENCE LS NOT SEEN.",
[ERROR] During calibration, the number of pockets is counted. If the count exceeds the number of pockets on the tool changer and the limit switch (LS) is not detected, then the switch is probably faulty or is not adjusted properly. ➔ Inspect the switch.

"MARKER PULSE NOT DETECTED ON AXIS xxxx."
[FAULT] ➔ Encoder may be bad – requires “axis tuning” or “parameter adjustment.” Telephone for technical assistance.

"MOTION COMPLETE IRQ NOT DETECTED ON AXIS xxxx."
[FAULT] A software communication verification did not occur. ➔ Reduce program feedrates and/or reduce overrides during run program. Telephone for technical assistance if needed.

"MOTION CONTROLLER SUBSYSTEM FAILURE."
[FAULT] The Matrix 4 card has reset. ➔ Try resetting the machine, which may return the machine to operation. If not, phone for technical assistance. (An authorized service engineer should reseat the DSP boards and/or check harness connections.)

"MOTION CTRL QUEUE BRKPNT NOT DETECTED ON AXIS xxxx."
[FAULT] DSP Communications problem. ➔ Reduce program feedrates and/or reduce overrides during run program. Telephone for technical assistance if needed.

"MOTION CTRL QUEUE RUNOUT DETECTED ON AXIS xxxx."

[FAULT] Motion controller is not getting instructions – probable communication problem in controller. ➔ Reduce program feedrates and/or reduce overrides during run program. Telephone for technical assistance if necessary.

"MOTION CTRL QUEUE RUNOUT NOT DETECTED ON AXIS xxxx."

[FAULT] Program motion ended without software acknowledging it. Communications problem. ➔ Reduce program feedrates and/or reduce overrides during run program. Telephone for technical assistance.

"NC PART PROGRAM FAILED TO READ."

"NC PART PROGRAM FAILED TO WRITE."

[FAULT] See the File Errors listed in the previous section.

"NON-SYSTEM DISK DETECTED. PRESS ANY KEY."

[FAULT] There is a diskette in the floppy drive. Remove the diskette. Turn console power off and then on again.

"PORT xxxx BREAK DETECTED; CHECK CABLES."

"PORT xxxx FRAMING ERROR; CHECK BAUD RATES OR STOP BITS."

"PORT xxxx INPUT QUEUE OVERFLOW; CHECK PROTOCOL."

"PORT xxxx PARITY ERROR; CHECK PARITY SETTINGS."

"PORT xxxx OVERRUN ERROR; RETRY THE LOAD."

[FAULT] A problem occurred in loading the program. Serial port error ➔
1) Try again. If the program fails repeatedly, try a different program.
2) Check external harness connections.
3) Recheck protocol, parity, etc.
4) Use Hurco CONUPDN.EXE or NCUPDN.EXE
5) Telephone your full service distributor or Hurco for technical assistance.

"Read error!"

[FAULT] Refer to the File Errors listed in the previous section.
"RECOVERY RESTART MODE COMPLETE; SELECT A MODE KEY."

[STATUS MSG.] Not an error message. The Recovery/Restart function in Auto is completed ➔ Selecting another key cancels Auto mode. 1) Press start to rerun the Recovery/Restart again. 2) Reselect Auto to reset Start/End blocks.

"REVERSED ENCODER PHASE DETECTED ON AXIS xxxx."

[FAULT] Requested motion does not happen, or table moves backwards. Wiring reversed, or friction prevents motion. ➔ If table movement is in the wrong direction, check wiring. If table movement binds, inspect the lubrication system. Slideway surfaces should have a light, uniform coating of clean lubricant; check the level in the reservoir. If necessary, telephone for technical assistance. If the fault occurs during calibration, the axis limit switch may be too close to the mechanical hard stop – adjust the limit switch.

"Sector not found!"

[FAULT] See the File Errors listed in the previous section.

"SECURITY DEVICE IS INVALID; REPLACE TO CONTINUE."

[FAULT] The security device (key) in the back of the machine is not installed or, is not the required key. The machine will not run without the correct key. ➔ 1) Install the correct key. 2) If the correct key is installed, check parallel port internal harness connections to CPU. 3) Telephone for technical assistance.

"SECURITY DEVICE IS INVALID OR HAS FAILED."

[FAULT] The software security key was removed, is broken, or is not properly connected. Switch the control off and remove the security key. If the key is damaged, replace it. Reconnect the key and restore console power.

"Seek error!"

[FAULT] Refer to the File Errors listed in the previous section.

"SERVO FAULT - xxxx AXIS."

[FAULT] ➔ Read the error number from LED on the servo amplifier for that axis, and refer to servo amplifier manual. Telephone for technical assistance.
"SERVO POWER IS OFF; PRESS START THEN RESELECT COMMAND."
[INSTRUCTION] A softkey command was selected with servo power off. Servo power may have dropped out unexpectedly.  
1) Power on, pressing buttons/keys in this sequence: Manual button, RESET SERVO softkey, Power On button, and Start Cycle button.  
2) Check operation of Start button in Diagnostics mode.

"START OF PROGRAM NOT IN MEMORY; SELECT A MODE KEY"
[FAULT] No error message. "%" of program is no longer in memory (scrolled out of memory in order to fit remaining program)  
Reload the program.

"STOP MOTION FAULT ON AXIS xxxx."
[FAULT]  
1) Reset the machine and run again. Motion card may be faulty.  
2) If fault occurs again, cycle the machine power.  
3) Telephone for technical assistance.

"TOOL IN SPINDLE NOT VERIFIED."
[STATUS MSG.] Requires a known tool in spindle before continuing. The CNC does not recognize the tool in spindle.  
To continue, respond to the tool entry request. Go to Manual mode and select the TOOL IN SPINDLE softkey. (Refer to the Ultimax Operator's Manual.)

"TURN OFF THE SPINDLE BEFORE AUTO ATC."
[INSTRUCTION] This message means that you must stop the spindle before attempting a tool change.

"UNEXPECTED LIMIT SWITCH DETECTED ON AXIS xxxx."
[FAULT]  
1) Check machine configuration parameters.  
2) Jog off limit switch.  
3) Verify using Rapid Jog buttons that machine motion is from 0 to maximum travel without detecting limit switch.  
4) If not, telephone for technical assistance.

"UNEXPECTED MOTION CTRL IRQ DETECTED ON AXIS xxxx."
[FAULT] Software notes an unexpected signal.  
1) Reduce program feedrates and/or reduce overrides during run program.  
2) Telephone for technical assistance.
"Unknown media!"

[FAULT] The diskette in the floppy drive is not in DOS format. ➔ Use only DOS formatted disks.

"WARNING – ATC MAP WILL BE ERASED!",

[INSTRUCTION] This message appears after operator has pressed CLEAR ATC MAP softkey – warning intended to prevent operator from erasing the ATC Map by mistake. ➔ To erase the ATC Map, press the YES softkey. To prevent erasing, press the NO softkey or EXIT to abort the operation.

"WARNING – DEFAULTS USED DURING CONFIG, VERIFY BEFORE USING."

[STATUS MSG.] Message for operator. This message is normal if booting from floppy diskette or new hard drive. ➔ However, if the machine defaults and program defaults are different, operator must make corrections in order to run program. If message occurs at power up, telephone for technical assistance.

"WARNING – X AXIS TOOL CHANGE POSITION WILL BE REPLACED WITH CURRENT POSITION!",
"WARNING – Y AXIS TOOL CHANGE POSITION WILL BE REPLACED WITH CURRENT POSITION!",
"WARNING – Z AXIS TOOL CHANGE POSITION WILL BE REPLACED WITH CURRENT POSITION!"

[INSTRUCTION] These messages warn that the operator is about to change the X, Y, Z tool change positions. ➔ To adjust the X, Y, Z tool change positions, select the YES softkey. To avoid changing the positions, select the NO softkey. This is accessible only from the ATC Diagnostics screen.

"WAY LUBE OIL LEVEL IS LOW; ENTER MACHINE DIAGNOSTICS."

[FAULT] Sensor indicates that oil level is low. ➔ 1) Check the oil level and fill if needed. 2) Enter Machine Diagnostics to clear the error. 3) If the level is not low, check cable connections to the sensor. 4) If you cannot correct the error condition, telephone for technical assistance.
Technical Assistance

Call your full service distributor or Hurco for technical help if any of the following is true:

- You are not familiar with the machine.
- You do not understand how to troubleshoot the problem
- You have not been trained for a task at hand.
- You have finished troubleshooting and the problem is not solved.

General Information Needed

When calling your full service distributor or Hurco, please provide the information below.

WHEN YOU CALL, HAVE THIS INFORMATION READY:

- Your company’s name
- Your company’s telephone number
- Your name and job title
- Machine model number
- Machine serial number (machine serial number is labeled on the electrical cabinet door).
- Operator control model
- Operator control serial number
- The software version and machine configuration parameters:
  - The software version number appears on the top of the "Input" screen.
  - The “Machine Configuration" parameters screen appears after the machine is turned on. The machine configuration parameters can be also viewed by selecting the Machine Configuration softkey in Auxiliary mode.
Diagnostic Information Needed

WHEN YOU CALL, BE ABLE TO DESCRIBE:

- Machine Message
  Some messages look nearly the same, but may point to different parts of the machine. Write down each message exactly as it appears.

- Symptoms
  Provide a detailed description.

- When the Problem(s) Occurs
  For example, do the symptoms appear at a certain place in the program, with a special tool, after a specific operation, or during a particular time of day?

- Which Printed Circuit Board LEDs lighted
  If you are an authorized service technician, you can open the electrical cabinet to view the control PC boards. Certain PC boards contain LEDs that light to indicate an error condition. If any LEDs are lighted, determine on which PC board(s). Observe the color and location of the LED(s).
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