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This product was distributed by the DME Company in the early 1990's.

DME does not offer any support or repairs for this product. The following pages contains
the documentation which was provided when the DME Company distributed this product.

Contact American MSI Corporation directly for assistance with this product.

Active Reasoning TECHNOLOGY

The State Of Science

Operations Manual
Version 5.01

ATC-System II

DME Company

Table Of Contents

Introduction

Thank you for purchasing the ATC-System II with *Active Reasoning Technology™
for your runnerless mold control requirments.

Should you have any questions regarding the operation of the system please do
not hesitate to contact our technical service group.

D-M-E Company

*Active Reasoning Technology is a trademark of American MSI Corporation.

SETUP

Once the ATC-System II has been properly connected to its rated supply, turn ON the main disconnect located on the panel front. Then switch ON the power supply to the control system located on the front of the monitor stand.

Once the system has completed its internal self-diagnostics the following message will appear on the monitor.

<div align="center">

WARNING
MOLD SETUP NOT YET LOADED: ENTER YOUR PASSWORD?
YES or NO

</div>

The WARNING message displayed is to remind the operator that he/she has not yet LOADED a mold setup into the system and that a PASSWORD **may** be required to LOAD the mold setup.

If a PASSWORD is required touch YES. (Go to - Entering Your Security Level.)
If a PASSWORD is not required answer NO.
(Go to - Entering MOLD SETUPS)

ENTERING YOUR SECURITY LEVEL (Password)

A new display will pop up onto the monitor labeled SECURITY. At the top of the display is the CURRENT LEVEL. This lets you know what security level the system is currently in.

Notice that a DEFAULT LEVEL is listed next. This level is what the system sets the security to, automatically, when the system is turned ON.

If the CURRENT LEVEL is at 0, then you may only make changes to those items listed that have a 0 beside them. For example: To change the setpoint of a particular zone you must have entered a security code that is equal to or exceeds the level listed. If ZONE SETPOINT/POWER LIMITS has a level 2 you cannot change a setpoint limit without first having entered a level 2 or 3 security code.

The SECURITY LEVELS may be changed only by someone operating with a level 3 code. (See CHANGE PASSWORDS & LEVELS for more information.)

DATA ENTRY SECURITY LEVELS

All systems are shipped with the following security levels being necessary for making any change to a particular part of the system:

ZONE SETPOINT/POWER LIMITS: 2
ZONE SETPOINTS: 1
ZONE ABORT WINDOW: 2
ZONE ALARM WINDOW: 2
ZONE SENSOR INPUT: 3
ZONE ON/OFF: 0
ZONE REGULATION: 1
ZONE PCM: 2
ZONE AMC: 2
ZONE SLAVE: 2
ZONE DUPLICATION: 1
STANDBY SETPOINTS: 2
STANDBY TIMERS: 2
BOOST SETPOINTS: 2
BOOST TIMERS: 2
MOLD SETUP FILE LOAD: 0
PRODUCTION DATA: 1
DIAGNOSTICS EXECUTION: 1
SYSTEM TIME/DATE CHANGE: 2
PRINTER CONTROL: 1

Entering Your PASSWORD

To enter your PASSWORD touch the SECURITY key (if the SECURITY screen is not displayed) located on the main graphics page.

Touch PSWD. A complete computer keyboard will be displayed including the keys DELETE,CLEAR,CANCEL and OK. Touch the keys that correspond to your code. For example: Your code is 1234 for a level 2 security clearance. Touch 1, then 2, 3, and 4. An asterisk will appear in the PASSWORD window for each key touched with the light pen. If you feel you have entered a wrong letter or digit, touch DELETE to back up one letter or number. If you feel you have entered the complete code wrong, touch CLEAR and start over.

When your code has been entered touch, OK. The keyboard will disappear and the CURRENT LEVEL will change to represent your code.

Entering Your PASSWORD - Continued

Should you enter the wrong code the system will automatically change the
CURRENT LEVEL to 0. The system believes you have no clearance or you wish
to reset the level to 0. Try again.

LOADING EXISTING MOLD SETUPS

Following start-up of the system and entering your security level the system will
automatically display the MOLD SETUPS screen. If a floppy disk is located in the
external drive all mold setups located on that disk will be displayed under
FLOPPY DISK. All mold setups located in the INTERNAL MEMORY will be
displayed under that column. Choose the existing mold you wish to load by
touching it with the light pen (it will highlight yellow). Then touch the key LOAD,
and the chosen mold is entered into the system. You may now start the mold or
run diagnostics.

LOADING A MOLD FOR THE FIRST TIME

From the MOLD SETUPS display you have the choice of completing a mold
setup by yourself entering all information, one step at a time or simply selecting
AUTO which will automatically setup the system based on the material you are
using for the part.

| NOTE: | Your particular material may or may not be listed in the data base. If it is not listed you may easily enter the information for the material as |

long as you verify that the data used is current, correct and meets material
supplier specifications. (See Adding Materials To The AUTOSET Data Base)

AUTO MOLD SETUP

From the MOLD SETUPS display, touch the AUTO key. The system will display
AUTOMATIC SETUP. Under the material column find your material type, then
locate your suppliers name.

| CAUTION: | Select the proper material from the proper supplier! Resins vary from supplier to supplier and the manufacturers suggested |

processing ranges may also vary. If you are unsure check the specifications on
the material before proceeding. If your material and its specifications are not
displayed you may add them. (See Adding Materials To The AUTOSET Data
Base)

AUTO MOLD SETUP - Continued

Touch the proper material with the light pen and it will turn yellow. Touch LOAD and a keyboard appears asking ENTER TEXT - MOLD SETUP NAME. The system requires that you enter a name for this new mold.

NOTE:	<u>Use a name that is easily understood. Example: Don't use 123</u>
	<u>because it won't mean anything to the next operator. Use the part</u>

<u>number or the mold number off of the engineering drawing.</u>

Touch CLEAR to remove the existing name in the window. Then enter the new mold name. When you have finished, touch OK. The system will automatically setup up itself and go to the main graphics display.

Once the zones are at setpoint you may have to adjust individual zone temperatures for a cavity or a manifold but that's all.

SETTING UP A MOLD MANUALLY

From the MOLD SETUPS display (touch MOLD from the main graphics display) touch the NEW key. The system will now step you through the complete process of setting up a new mold.

Step 01.   Enter the mold name. Touch OK when finished.

System Message: Enter Production Information For Mold (touch OK)

Step 02.   To enter new information touch the DASHES next to the
                   item you wish to change. Example: Touch the DASHES next
                   to PART NUMBER.. A keyboard appears. Touch CLEAR to
                   remove the DASHES. Enter the appropriate information.
                   Touch OK when finished. When all items have been set with
                   the desired information touch OK.

System Message: Adjust Setpoints And Regulation For Zones (touch OK)

Step 03.   System displays ZONE TEMPERATURES
                   To set the setpoint for a zone, first touch the zone you wish
                   to change and it will turn yellow. Now to increase or
                   decrease the setpoint touch the +100,10,1 or -100,10,1 keys

SETTING UP A MOLD MANUALLY - Continued

until the desired setpoint is displayed. Example: Touch zone 5 (it turns yellow) setpoint is 300 and you want 450. Touch +100 once, and +10, five times.

You may also change more than one zone at a time.
For example:
You may change zones 1, 5, 7 and 12 all at the same time by simply touching each of them (turning them yellow) and then touching the + or - values of 100,10 or 1.

You may also change all zones at one time by touching the ALL key located in the upper right hand corner of the display. This turns all zones yellow and indicates that any change made will affect all zones.

| NOTE: | If you select a zone that you didn't mean to (turn one yellow that shouldn't be) just touch it again and it will toggle back to white or un-selected mode. Also to CLEAR all selected zones (those that are yellow) simply touch CLEAR. |

Step 04.   From the ZONE TEMPERATURES display...
Changing from AUTOMATIC to MANUAL or VIEW control on one, several or all zones. Again touch the zone to be changed from AUTO / MANUAL / VIEW. Touch AUTO / MANUAL /VIEW. This changes the control function.
Manual = Percentage control, no thermocouple used.
Auto = Automatic control, using a thermocouple.
View = No control, monitoring only.
After completion touch OK.

System Message: Adjust Standby Setpoints For Zones (touch OK)

Step 05.   All ATC-System II's come equipped with a manual STANDBY function. Optionally they may come equipped with an AUTOMATIC STANDBY function. Both are setup and selected in the same manner.

The column MANUAL is highlighted yellow. Touch the zones you wish to change the STANDBY setpoint on or to change them all at one time touch the ALL key in the upper right

SETTING UP A MOLD MANUALLY - Continued

hand corner of the display. Increase the setpoint by touching the positive numbers and decrease the setpoint by touching the negative numbers.

If you want NO CHANGE in setpoint to occur to a particular zone, touch the zone(s) highlighting it (them) and then touch NO CHNG key. A dashed line will replace the setpoint and when the STANDBY function is initiated this zone(s) will not lower to the STANDBY setpoint.

To input the settings for the AUTO-STANDBY function first touch the word AUTO at the top of the column beside MANUAL. Then repeat the steps used for MANUAL STANDBY. To set the STANDBY (MANUAL / AUTO) TIMERS touch the TIMERS key. Should you want the system to go into standby (lowering the temperatures) for a pre-determined time and then return to normal without having to touch the STANDBY key again, set a MANUAL STANDBY TIME. Touch the keys as shown to increase the time, decrease the time or eliminate the time.

Setting a TIMER to 00:00:00.0 causes the STANDBY function to work as an ON/OFF toggle. For example: If the TIMERS are set to zero you must touch the STANDBY key to turn ON STANDBY and then you must touch the STANDBY key again to turn OFF STANDBY and have the zones return to their normal setpoints.

The maximum time you may enter is 24:00.00.0.

When you are finished with the TIMERS touch OK. When you are finished with STANDBY touch OK.

System Message: Adjust BOOST Setpoints For Zones (touch OK)

Step 06.   All ATC-System II's come equipped with a manual BOOST function. Optionally they may come equipped with an AUTOMATIC BOOST function.

SETTING UP A MOLD MANUALLY - Continued

Both are setup and selected in the same manner.

The column MANUAL is highlighted yellow.
Touch the zones you wish to change the BOOST
setpoint on or to change them all at one time, touch
the ALL key in the upper right hand corner of the
display. Increase the setpoint by touching the
positive numbers and decrease the setpoint by
touching the negative numbers.

If you want NO CHANGE in setpoint to occur to a
particular zone, touch the zone(s) highlighting
it (them) and then touch NO CHNG key. A dashed
line will replace the setpoint and when the BOOST
function is initiated this zone(s) will not raise to the
BOOST setpoint.

To input the settings for the AUTO-BOOST
function first touch the word AUTO at the top of the
column beside MANUAL. Then repeat the steps
used for MANUAL BOOST.
To set the BOOST (MANUAL / AUTO) TIMERS
touch the TIMERS key. Should you want the system
to go into boost (raising the temperatures) for a
pre-determined time and then return to normal
without having to touch the BOOST key again, set
a MANUAL BOOST TIME. Touch the keys as
shown to increase the time, decrease the time or
eliminate the time.

Setting a TIMER to 00:00:00.0 causes the BOOST
function to work as an ON/OFF toggle. For example:
If the TIMERS are set to zero you must touch the
BOOST key to turn ON BOOST and then you
must touch the BOOST key again to turn OFF
BOOST and have the zones return to their normal
setpoints.

When you are finished with the TIMERS touch OK.
When you are finished with BOOST touch OK.

9

SETTING UP A MOLD MANUALLY - Continued

The display will now automatically go to the main graphics screen. You may now touch the START key and your mold will begin to build its KNOWLEDGE BASE.

CHANGING ANY SETTING ON ANY ZONE - Changing A Single Setpoint

From the main graphics display visually decide which zone you wish to change the setpoint temperature of and touch it with the light pen.

The QUICK SET display will appear on the screen. The ZONE NUMBER its description (NAME) the ACTUAL TEMPERATURE and the POWER OUTPUT are listed, including the NORMAL SETPOINT, MANUAL STANDBY and BOOST. If you have AUTO BOOST and STANDBY options their setpoints will also be displayed on the QUICK SET window.

Notice the NORMAL SETPT is highlighted yellow. This indicates that you may make a change to the normal setpoint for this zone. To change the normal setpoint simply touch the + numbers to increase the setting and touch the - numbers to decrease the setting. When you have completed the change touch OK.

Changing The Standby And Boost Setpoints

From the main graphics display visually decide which zone you wish to change the setpoint temperature of and touch it with the light pen. Should you wish to change the MANUAL or AUTO BOOST, MANUAL or AUTO STANDBY temperature settings first touch the one you wish to change. It will now be highlighted. Next touch the (+) numbers to increase the setting and touch the (-) numbers to decrease the setting. When you have completed the change touch OK. You may STANDBY a single zone or several zones only by touching the number above or below their bar (highlighting it yellow) and then touching the STANDBY key. Only the selected zones will now go into standby.

Turning A Zone On Or OFF

From the main graphics display visually decide which zone you wish to change the setpoint temperature of and touch it with the light pen. If you wish to turn the zone OFF or ON, touch the ON or OFF key while the QUICK SET screen is displayed and the zone will be turned ON or OFF. When you have completed the change touch OK. When a zone is OFF it is displayed as a WHITE BAR.

Making Changes To More Than One Zone At A Time

From the main graphics display visually decide which zones you wish to make a change to and then touch the number at the top or bottom of the graphics bar with the light pen. The number will highlight, turning yellow, now touch the graphics bar on one of the highlighted zones. The QUICK SET screen will appear. Make any change and it will be duplicated on all of the previously selected zones.

Making Changes To All Zones At One Time

From the main graphics display touch the ALL key in the upper right hand corner of the screen. Make any change and it will be duplicated on all of the zones.

USING THE HELP FUNCTION

The ATC-System II has a very complete HELP function that will guide you through any question regarding anything on any display. To activate the HELP function first touch the HELP key in the upper right hand corner of the screen.

The HELP function, when active, displays the HELP key with a yellow background and is visible from all screens.

With the HELP function active touch any key, part or portion of any display and the corresponding HELP information will appear. The first explanation is a brief one and if an example of how to use the key, part or portion touched would further help the operator, you need only to touch the MORE... key on the HELP window.

EXAMPLE: I want to know what the scale is on the left side of the main graphics display. First I touch the HELP key, activating the HELP function. Next I touch the scale. The HELP program displays...

SET SCALE

Touch the scale on the left hand side of the display to set the maximum and minimum values and change the resolution and range of the bar graphs. Touch Auto to set the range automatically.

Note: The system will automatically scale anytime you make a change.

USING THE HELP FUNCTION - Continued

Once you have completed learning about one or several areas of a particular display, remember to touch the HELP key again to turn OFF the HELP function. No other functions except for START / STOP / BOOST and STANDBY will operate while the HELP function is active.

CHANGING THE GRAPHICS DISPLAY FORMAT

From the main graphics display touch the DISPLAY key and you will see the display change. There are 3 modes to the display:

MODE 1 =   Full Vertical Scale, All zones are displayed on one screen and each zone is displayed in full height of the screen.

MODE 2 =   Split Scale - One half of the total number of zones is displayed on one screen in Full Vertical Scale. To see the second half, you must touch PAGE and it will shift from, for example, 1-6 to 7-12 on a 12 zone system.

MODE 3 =   Half Vertical Scale, All zones are displayed on one screen but zones are displayed in a divided fashion on two horizontal lines.

USING THE ON BOARD DRAWING UTILITY / LEAVING MESSAGES

From the main graphics display touch the NOTES key and the NOTES screen will appear.

Along the bottom of the screen are 8 keys. From left to right they are - CLEAR (touch this to erase the drawing or the note on the screen), GRAY (touch this to act as an eraser for anything on the drawing or note), WHITE (touch this to draw or write in white), BLUE (touch this to draw or write in blue), RED (touch this to draw or write in red), YELLOW (touch this to draw or write in yellow), GREEN (touch this to draw or write in green), OK (touch this to leave the drawing or note in place).

When you leave the NOTE page with writing of any type left on the screen, the NOTES key in the main graphics window will flash yellow. This is to alert anyone looking at the system that there is a note on the screen and it should be read.

CHANGING TEMPERATURE SCALES FROM FAHRENHEIT TO CELSIUS

Touch the F/C key on the main graphics page and the scales will be instantly transformed from one to the other. To return to the previous setting, simply touch the F/C key again. <u>NOTE: Reset the SCALE by touching it and then touching AUTO when you change from F to C or C to F.</u>

EDITING THE MOLD PRODUCTION INFORMATION DATA

From the main graphics display touch the INFO key and the PRODUCTION INFORMATION screen will appear. To edit any line of information touch the DASHES next to the item you wish to change. Example: Touch the DASHES next to PART NUMBER.. A keyboard appears. Touch CLEAR to remove the DASHES. Enter the appropriate information. Touch OK when finished.

Each time any input is changed in the system, the time and date of that change will be logged at the bottom of the PRODUCTION INFORMATION screen. When all line items have been set with the desired information touch OK.

HOW TO USE THE CHART RECORDING FUNCTION

From the main graphics display touch the CHARTS key and the chart recorders will appear.

On selection of the CHARTS Zone 01 and Zone 02 will be displayed. The screen is split so that any two zones may be viewed at any time.

| NOTE: | <u>The scale will be set to 0 to 1000F and may be adjusted to your setpoints by first touching the scale and at the SCALE window touching</u> |

<u>AUTO. This will set the range of the CHART. Obviously you may fine tune or set the scale at any range that suits your purpose. The system will automatically set the range if you change the setpoint.</u>

To view other zones touch the actual number of the zone (white digit) located in the upper right hand corner of either chart. (If you touch the word ZONE nothing will occur.) The zone number highlights yellow and now by touching the +/- 100,10, or 1 you will increase the zone count. Any two zones may be viewed simultaneously.

Other Chart Functions

To CLEAR the chart touch CLEAR. To Stop or Restart the chart touch R/S. To SAVE a chart (only the 6 minute window will be saved, and only one chart per zone at a time is saved) touch the SAVE key. To LOAD the saved chart, touch LOAD. When finished reviewing the chart, touch R/S.

NOTE: The RED lines indicate the Abort Limit Setting, the YELLOW lines indicate the Warning Limit Setting, the GREEN line indicates the setpoint and the BLUE indicates the actual temperature. The ORANGE display indicates the power output. When finished with the CHART display touch OK.

SETTING STANDBY TEMPERATURES

All ATC-System II's come equipped with a manual STANDBY function. Optionally they may come equipped with an AUTOMATIC STANDBY function. Touch the STANDBY key from the main graphic display. Both are setup and selected in the same manner. The column MANUAL is highlighted yellow. Touch the zones you wish to change the STANDBY setpoint on or to change them all at one time touch the ALL key in the upper right hand corner of the   display. Increase the setpoint by touching the positive numbers and decrease the setpoint by touching the negative numbers.

If you want NO CHANGE in setpoint to occur, to a particular zone when STANDBY is initiated, touch the zone(s), highlighting it (them), and then touch NO CHNG key. A dashed line will replace the setpoint and when the STANDBY function is initiated this zone(s) will not lower to the STANDBY setpoint.

To input the settings for the AUTO-STANDBY function first touch the word AUTO at the top of the column beside MANUAL. Then repeat the steps used for MANUAL STANDBY.

Setting Standby Timers

To set the STANDBY (MANUAL / AUTO) TIMERS touch the TIMERS key. Should you want the system to go into standby (lowering the temperatures) for a pre-determined time and then return to normal without having to touch the STANDBY key again, set a MANUAL STANDBY TIME. Touch the keys as shown to increase the time, decrease the time or eliminate the time.

Setting a TIMER to 00:00:00.0 causes the STANDBY function to work as an ON/OFF toggle. For example: If the TIMERS are set to zero you must touch the

Setting Standby Timers - Continued

STANDBY key too turn ON STANDBY and then you must touch the STANDBY key again to turn OFF STANDBY and have the zones return to their normal setpoints.

The AUTO STANDBY timers (optional) function in the same manner, however they operate from an external dry contact closure and not from a manual key touch.

When you are finished with the TIMERS touch OK.
When you are finished with STANDBY touch OK.

SETTING BOOST SETPOINTS

All ATC-System II's come equipped with a manual BOOST function. Optionally they may come equipped with an AUTOMATIC BOOST function. Both are setup and selected in the same manner. The column MANUAL is highlighted yellow. Touch the zones you wish to change the BOOST setpoint on or to change them all at one time, touch the ALL key in the upper right hand corner of the display. Increase the setpoint by touching the positive numbers and decrease the setpoint by touching the negative numbers.

If you want NO CHANGE in setpoint to occur to a particular zone, touch the zone(s) highlighting it (them) and then touch NO CHNG key. A dashed line will replace the setpoint and when the BOOST function is initiated this zone(s) will not raise to the BOOST setpoint.

To input the settings for the AUTO-BOOST function first touch the word AUTO at the top of the column beside MANUAL. Then repeat the steps used for MANUAL BOOST.

Setting Boost Timers

To set the BOOST (MANUAL / AUTO) TIMERS touch the TIMERS key. Should you want the system to go into boost (raising the temperatures) for a pre-determined time and then return to normal without having to touch the BOOST key again, set a MANUAL BOOST TIME. Touch the keys as shown to increase the time, decrease the time or eliminate the time.

Setting a TIMER to 00:00:00.0 causes the BOOST function to work as an ON/OFF toggle. For example: If the TIMERS are set to zero you must touch the

Setting Boost Timers - Continued

BOOST key to turn ON BOOST and then you must touch the BOOST key again to turn OFF BOOST and have the zones return to their normal setpoints.

The AUTO BOOST timers (optional) function in the same manner, however they operate from an external dry contact closure and not from a manual key touch.

When you are finished with the TIMERS touch OK.
When you are finished with BOOST touch OK.

MOLD SETUP FILE MANAGEMENT

From the main graphics display touch MOLD. This enters you into the MOLD SETUPS screen. From here you may manage all of your mold setups, transfer them from the internal memory to external floppy disks and vice-versa. You may COPY current mold setups to new names or DUPLICATE the setups to a floppy disk or from the floppy to the internal memory.

When the MOLD screen is accessed, all files in the internal memory and on a floppy disk (if inserted) are displayed in their respective columns. To select an existing mold to LOAD into the system, simply touch the mold name desired (it will highlight yellow) and touch LOAD, the ATC- System II does the rest.

To DELETE any mold setup touch the mold setup to be deleted and then touch DELETE. The system will ask you to confirm the delete, by touching YES. The file will be deleted.

CHANGING PASSWORD LEVELS

From the main graphics display touch the SECURITY key and the SECURITY screen will appear.

You must have a LEVEL 3 clearance before you may change LEVEL 1,2, or 3. To start enter your LEVEL 3 code by touching PSWD. The system asks for your password, enter it and touch OK.

CHANGING PASSWORD LEVELS - Continued

| NOTE: | If you enter the wrong code the system will deny access and set the current level to 0. |

EXAMPLE: Change LEVEL 1 - Touch LEVEL 1 key, and the system asks you to re-enter your LEVEL 3 clearance, enter your code and touch OK. The system will ask you to enter the NEW PASSWORD FOR LEVEL ONE, after doing this touch OK. LEVEL 1 has now been changed.

Repeat these steps for any LEVEL.

| CAUTION: | If you enter your LEVEL 3 code and change the LEVEL 3 password and do not record the change, you may create a SECURITY LOCK if in the future you need to use the LEVEL 3 clearance again and do not remember the proper password. The cost for factory re-setting of the SECURITY system is $250.00 each occurrence, so take care! |

When finished in the SECURITY display, touch OK.

OPERATING FROM THE TEXT DISPLAY

From the main graphics display touch the TEXT key and the ZONE TEMPERATURES will be displayed in TEXT format.

Each ZONE is listed by NUMBER, NAME (location) SET-PT, ACTUAL (temperature), POWER (output), and REG (regulation method).

Up to 40 zones are displayed in TEXT mode on one screen. If you have more than 40 zones you would have to touch the PAGE key to see the next 40 zones.

You may touch individual or multiple zones and make setpoint changes to them or turn them ON or OFF. You may also set them into AUTOMATIC or MANUAL or VIEW mode and finally you may re-set the NAME (location) all by just touching the corresponding key.

SETTING UP THE ZONE NAMES

From the main graphics display touch the TEXT key and the ZONE TEMPERATURES display will appear.

Touch the zone that you wish to re-name (example: Change ZONE-01 to CAV-01 etc.) and then touch NAME. The keyboard will appear, touch CLEAR to remove the OLD NAME and then enter your new name. When finished touch OK.

To change a series of zones, like 1-32 to be cavities and 33 to 40 to be manifolds do the following:

From the TEXT - ZONE TEMPERATURES display, touch BLOCK in the upper right hand corner of the display. Touch Zone 01, then touch Zone 32. All zones 01 to 32 are now highlighted yellow. Touch NAME, after the keyboard appears, touch CLEAR. Enter the abbreviation of the new name (example: CAV for cavity) and then touch the - key. This is a short-cut to have the system automatically number the cavities in order 01 to 32. Then touch OK. NOTE: You are allow a maximum of 7 spaces for the zone name.

The system will automatically sequentially number each of the zones to CAV-01 to CAV-32. Touch CLEAR to eliminate the highlight over zones 01-32.

To set zones 33 to 40 as MAN (manifolds) follow the same procedure again except BLOCK zones 33 to 40.

When finished setting new names touch OK.

BUILDING KNOWLEDGE BASE - On Start - Up

NOTE: Prior to starting the system for any production run you are strongly urged to run the TEST program (See TESTING MOLDS). This will permit the ATC to locate any problems prior to building its knowledge base.

On the first start up of any new mold setup, the ACTIVE REASONING system must build a preliminary KNOWLEDGE BASE. This information will be stored and automatically updated 4 times per second during operation. Once a mold has had its preliminary knowledge base built, the system will not have to go through this process again. NOTE: The time for the system to build the knowledge base will vary. It could take as little as 15 minutes, it could take up to 30 minutes.

BUILDING KNOWLEDGE BASE - On Start-Up Continued

CAUTION: You must permit the system to complete its building of the KNOWLEDGE BASE with the mold in the machine, cooling water ON and platens closed. Once the system has completed its task it will alert you that it is ready to be STARTED.

By not allowing the ATC to build a knowledge base your mold may or may not be controlled properly. The systems ability to do its job is much the same as any humans. If it has no education, it cannot do the job. You wouldn't hand a scalpel to a person who had no training in surgery and say "Go ahead, I trust you." and so you should not run any mold without first permitting the system to become educated in the specifics of the mold.

Don't be fooled. Every mold, no matter how similar the part or material, performs slightly different. Let the ACTIVE REASONING do its job so your job will be easier.

Using the ART Operation Once A Knowledge Base Is Built

In the event a heater or thermocouple is replaced in a mold after the knowledge base has been built it may be necessary for the system to learn if there is a difference between the old and the new. If a zone (after the preliminary knowledge base is built) acts "funny" or doesn't seem to operate consistently it may be necessary for the system to start over with that zones knowledge base.
To do this while the controller is in operation you must stop the press because the system will place all zones in STAND-BY while it creates the new knowledge base for a particular zone or zones. On completion of the knowledge base building the system will automatically return all zones to normal.

How To Use The On-line ART Program

Touch the zone (its QUICK SET display will pop up) you feel is not acting properly. Touch MORE from the QUICK SET display. Touch ART. The system will ask you if you are sure, answer YES. The system will now build the knowledge base for the selected zone only.

NOTE: You may select (under the SELECTION TABLE) multiple zones, all zones or just the one zone and have the system build the knowledge base again at the same time.

Testing Molds

When a new mold is being introduced to the factory or an existing mold has been out for repair, it is imperative to run the MOLD TEST DIAGNOSTICS program prior to starting up the mold.

From the main graphics display touch TEST.

The DIAGNOSTICS program appears and is completely ready to start.
01.   Verify that your cables are connected correctly from the controller to the mold junction box.

| NOTE: | Insure that the mold and controller have the same EARTH connection. If the mold is on a bench attach a wire from the mold plate surface to |

the controllers ground buss inside the cabinet. This will prevent any ground loops.

02.   Turn ON the system and load or create the mold setup file.
03.   Touch TEST from the main graphics display.
04.   Touch START.
05.   The system will now automatically test each zone and display the result of the test on both the THERMAL RESPONSE ANALYSIS and in text format.
06.   To view the zones as they are tested touch +1,10 to skip to the next zone or -1,10 to backup.
07.   At completion of the test routines for all zones the system will automatically turn OFF.

Thermal Response Analysis

A curve is generated during the testing of each zone. This curve demonstrates the responsiveness of each thermal load. Cavity to cavity, the response should be nearly identical. If one zone is not reacting the same as the others then a problem may exist in the thermocouple, its location or the heating element may be under or over sized. The TRA provides, never before available, information showing the consistency zone to zone in a mold. The BLUE (current zone shown) curve overlays all other zones (displayed in WHITE) showing exactly how each inter-relates to the other. In the event one (or multiple) zones greatly deviate there is reason to worry about the performance of the mold.

NOTE: Manifolds and probes (in most applications) react very differently.

OPTIONS - Printer

To printout any mold setups, or current information on a mold that is running you must touch OPTIONS and then touch PRINTER.

The screen will display PRINT CONTROL

STATUS:	Idle [Printing] or [Waiting]
FREQUENCY:	00:05 [You may enter no less than 5 minutes and no more than 24 hours]
FORMAT:	Temps Only [All Data]
ENABLE:	No [Yes]

The keys displayed are +1.00 / -1.00 hour, +10.0 / -10.0 minutes, and +1.0 / -1.0 minutes. Also MOLDS and SYSTEM are displayed.

Printing Documents

NOTE:	Insure that your printer is connected and ON-LINE and has the proper setting for the serial output from the ATC-System II.

Current Mold Temperatures Only

To print the current mold hot runner temperature information only, touch the FORMAT text (not the word FORMAT but Temps Only or All Data) until the words Temps Only are displayed. Touch the ENABLE text (not the word ENABLE but NO or YES) until the word Yes is displayed. The STATUS will change to PRINTING. Your hard copy of the current setpoints, actual temperatures and power outputs will be generated.

Printing The Current Mold Setup Including Its Temperatures

To print the mold hot runner setup and temperature information, touch the FORMAT text (not the word FORMAT but Temps Only or All Data) until the words All Data are displayed. Touch the ENABLE text (not the word ENABLE but NO or YES) until the word Yes is displayed. The STATUS will change to PRINTING. Your hard copy of the complete mold information will be generated.

Printing All Mold Setup Names In Internal Memory

Touch the ENABLE text and set it to Yes, then touch the MOLDS key. Your hard copy will be generated.

OPTIONS - Printer Continued...

Printing The Entire System Configuration

Touch the ENABLE text and set it to Yes, then touch the SYSTEM key. Your hard copy will be generated.

OPTIONS - Statistical Quality Control

If you have purchased the SQC option you have the ability to save all crucial mold information as often as every 15 seconds.

| NOTE: | There is a high speed SQC option available that will save information as often as every second. |

This data will be stored to a 1.44 megabyte floppy disk that has been formatted to DOS level 3.1 or higher. You must place the floppy into the external drive located behind the key locked floppy door. Once the disk is in place you may now touch the OPTIONS key and then the SQC key. The system will access the drive on this command and determine how much FREE SPACE you have and showing it in the proper manner. As the disk fills you will see the 0 to 100% bar graph also fill to display how much room is remaining on the disk.

Once the disk has been inserted into the floppy drive, set your desired frequency by touching the + and - keys on the display. Then touch the ENABLE text (not the word ENABLE but the text YES or NO) turning on the logging function.

If you desire to record every operator process change set the LOG CHANGES function to YES as well. (Do this by touching the LOG CHANGES text not the word LOG CHANGES.)

The screen will display...

FREQUENCY:	00:00:15	[No less than 15 seconds no more than 24 hours.]
ENABLE:	Yes	[Yes or No]
LOG CHANGES:	Yes	[Yes or No]
FREE SPACE:	0.00	[Zero to 1.4 Megabytes]

OPTIONS - SPI Protocol

If you have purchased the SPI protocol option you may set up its functions by touching OPTIONS first then the SPI key. Once doing so the screen will display...

SPI INTERFACE

BAUD RATE:	9600	[19.2K,1200,2400,4800]
DEVICE ID:	26h	
ADDRESS:	32	[32 to a max. of 252]
ENABLE:	No	[Yes or No]

Depending on the speed of your connected equipment you may select from 5 different BAUD rates. To change the rates simply touch the rate itself and it will scroll through them.

The DEVICE ID is required by the SPI protocol software and you will not change this.

The ADDRESS tells the connected system where this hot runner control is located. It may have a location of 32 to 252. No two controls are permitted to have the same address.

To ENABLE or DISABLE the SPI function touch the ENABLE text (not the word ENABLE but the text Yes or No).

ERROR MESSAGES And Their Meaning

ALM OVER TEMP

Status message indicating this zone's actual temperature has exceeded the upper WARNING limits established during the mold setup.

Correction

Establish that the system is controlling temperature correctly. When the zone is over temperature there should be no output to the heater. If the graph is displaying no power and the temperature is staying over setpoint determine the external cause.

ABT OVER TEMP

Status message indicating this zone's actual temperature has exceeded the upper ABORT limits established during the mold setup.

ALM UNDER TEMP

Status message indicating this zone's actual temperature has exceeded the lower WARNING limits established during the mold setup.

ABT UNDER TEMP

Status message indicating this zone's actual temperature has exceeded the lower ABORT limits established during the mold setup.

BAD REQUEST STRUCTURE LENGTH

This is an internal operating system warning. After seeing this warning, first note the warning on a paper and then touch OK on the warning display.

Correction

Call the factory.

CANNOT DELETE CURRENT MOLD SETUP

Window message indicating you are attempting to delete the mold setup currently loaded into the system.

24

ERROR MESSAGES And Their Meaning - Continued

DRIVE NOT READY

This is an internal operating system warning.

Correction

Touch OK on the warning display and insert a
formatted floppy disk in the external drive, then start
over.

DATA ERROR

This is an internal operating system warning. After
seeing this warning, first note the warning on a paper
and then touch OK on the warning display.

Correction

Try to start over and if it doesn't work on the 2nd
attempt, call the factory.

DISK FULL OPERATION CANCELED

The external floppy is full and will not accept any
more data.

Correction

Touch OK on the warning display and insert a new
formatted floppy disk in the external drive, and start
over.

DISK IS WRITE PROTECTED

The floppy disk is write protected.

Correction

Touch OK on the warning display and remove the
floppy disk. Reset the write protect key on the disk
and start over.

DISK READ ERROR OPERATION CANCELED

The system is unable to read the disk.

Correction

Touch OK on the warning display and insert a new
formatted floppy disk in the external drive, and start
over.

ERROR MESSAGES And Their Meaning - Continued

K SECTOR NOT FOUND

There is a problem with the internal memory.

Correction

Try to start over and if it doesn't work on the 2nd attempt, call the factory.

DISK SEEK ERROR

There is a problem with the internal memory or the external floppy.

Correction

If the warning appeared after using a floppy, replace it. If the warning appeared and you were using no floppy try to start over and if it doesn't work on the 2nd attempt, call the factory.

DISK WRITE ERROR OPERATION CANCELED

There is a problem with the internal memory or the external floppy.

Correction

If the warning appeared after using a floppy, replace it. If the warning appeared and you were using no floppy try to start over and if it doesn't work on the 2nd attempt, call the factory.

DEVICE WRITE FAULT

There is a problem with the internal memory or the external floppy.

Correction

If the warning appeared after using a floppy, replace it. If the warning appeared and you were using no floppy try to start over and if it doesn't work on the 2nd attempt, call the factory.

FUSE BLOWN

A fuse is blown on the indicated zone.

Correction

Turn OFF all power to the control. Open the cabinet and locate the indicated zone. Replace both fuses on the indicated zone with EXACTLY the same fuse.

ERROR MESSAGES And Their Meaning - Continued

GENERAL SYSTEM ERROR

This is an operating system warning.

Correction

If there is a floppy in the external drive remove it and start over. If there is no floppy in the drive make a second attempt (if unsuccessful), call the factory.

INVALID DISK CHANGE

This is an internal operating system warning. After seeing this warning, first note the warning on a paper and then touch OK on the warning display.

Correction

Try to start over and if it doesn't work on the 2nd attempt, call the factory.

INVALID DRIVE

A problem may have occurred with your internal or external memory system.

Correction

Try to start over and if it doesn't work on the 2nd attempt, call the factory.

INVALID INPUT OPERATION CANCELED

The data you entered is not valid.

Correction

Touch OK and start over.

LOST THERM

The indicated input thermocouple from your mold has become disconnected or is damaged.

Corrections

Check all connections at control and mold.
Set zone into manual and adjust accordingly.
Slave indicated zone to an adjacent cavity or manifold. (Cavity to cavity or manifold to manifold, never cavity to manifold.) Make a visual inspection of the TC when the mold is open during the next maintenance routine.

ERROR MESSAGES And Their Meaning - Continued

LOST THERM-AMC

The indicated input thermocouple from your mold has become disconnected or is damaged.

Corrections

The system has automatically went into automatic manual control. At the earliest possible time:
Inspect the TC connections -
Inspect internal junction box connections -
Inspect the TC internal to the mold.

NO RESPONSE

The system has detected no response from the indicated thermocouple.

Corrections

The TC may be pinched or the mold may be mis-wired. Run TEST program and the system will deter-mine if there are any problems in wiring. If the problem is a suspected pinched TC, slave the zone to an adjacent one. (Cavity to cavity or manifold to manifold, never cavity to manifold.)

NO SELECTED ZONES OPERATION CANCELED

No zones have been highlighted (turned yellow) permitting a change to be made.

Corrections

Touch the zone or zones you wish to change and then perform your desired operation.

OUT OF MEMORY OPERATION CANCELED

The system has no more available memory. You will be unable to save any further data.

Corrections

Delete (after backing up) some files

PRINTER OUT OF PAPER

Your connected printer is out of paper.

Corrections

Add paper.

ERROR MESSAGES And Their Meaning - Continued

REVERSED ERROR CODE

This is an internal operating system warning. After seeing this warning, first note the warning on a paper and then touch OK on the warning display.

Correction

Try to start over and if it doesn't work on the 2nd attempt, call the factory.

REVERSED T/C

The indicated thermocouple has been input with the positive connection on the negative and visa-versa.

Corrections

Reinstall the TC input wires at the location where they were reversed.

SCALE MAXIMUM

The system scale is at maximum.

Correction

You cannot go beyond the maximum. Reduce the scale or leave at maximum.

SCALE MINIMUM

The system scale is at its minimum.

Corrections

You cannot go beyond the minimum. Increase the scale or leave it at the minimum.

SECURITY VIOLATION ACCESS DENIED

You have attempted to enter a portion of the system that has a security level that exceeds your own.

Corrections

See your Supervisor for the next level code or stop the attempt.

ERROR MESSAGES And Their Meaning - Continued

SYSTEM MUST BE LOADED FROM INTERNAL MEMORY

This is an internal operating system warning. After seeing this warning, first note the warning on a paper and then touch OK on the warning display.

Correction

Try to start over and if it doesn't work on the 2nd attempt, call the factory.

UNKNOWN COMMAND REQUESTED

This is an internal operating system warning. After seeing this warning, first note the warning on a paper and then touch OK on the warning display.

Correction

Try to start over and if it doesn't work on the 2nd attempt, call the factory.

UNKNOWN DISK FORMAT

This is an internal operating system warning, that the system cannot understand the format of the disk.

Correction

Try a new disk properly formatted. Then start over and if it doesn't work on the 2nd attempt, call the factory.