

# **ANSI B151.1 AUDIT LIST**

**FOR EXISTING MACHINES MANUFACTURED PRIOR TO JULY 22,1998**

## **NOTICE TO CUSTOMER:**

**During the process of reviewing your machines, all items that are determined to be non-compliant with ANSI B151.1 will be indicated in the NOTES section at the end of this document. If, during the process of this review, personnel detect an item that is not specifically covered in this checklist, and that item is in need of repair or replacement, it will be indicated in the NOTES section of this document.**

# ANSI B151.1 AUDIT LIST

for existing machines manufactured prior to July 22, 1998

**Location:** \_\_\_\_\_  
**Machine Number:** \_\_\_\_\_  
**Manufacturer:** \_\_\_\_\_  
**Machine Serial Number:** \_\_\_\_\_  
**Date of Manufacture:** \_\_\_\_\_  
**Inspection Date:** \_\_\_\_\_

**Service Representative:** \_\_\_\_\_ / \_\_\_\_\_  
**Customer Rep.:** \_\_\_\_\_ / \_\_\_\_\_

Print Name

Signature

ANSI B151.1 Section/Paragraph	Pass	Fail	Other	Mode of Operation			
				SETUP	MAN	S-A	AUTO

## 6.2 Mold Area Guarding

### 6.2.1 Operator's gate(s)

- |    |  |                             |    |                          |
|----|--|-----------------------------|----|--------------------------|
| a) | Does the operator's gate provide a satisfactory barrier?                                 | YES                         | NO | <input type="checkbox"/> |
| b) | Are the interlocks in 6.2.2, 6.2.3, and 6.2.4 operational?                               | See 6.2.2, 6.2.3, and 6.2.4 |    |                          |
| c) | Is opening movement of the movable platen prevented with the operator's gate open?       | YES                         | NO | <input type="checkbox"/> |
| d) | If opening movement is possible, is access to any pinching or shearing points prevented? | YES                         | NO | <input type="checkbox"/> |

### 6.2.1.1 Power-operated gate

- |    |   |     |    |                          |
|----|---|-----|----|--------------------------|
| a) | When closing does the gate have an effective pressure-sensitive switch?                         | YES | NO | <input type="checkbox"/> |
| b) | Upon opening does the gate have an effective pressure sensitive switch?                         | YES | NO | <input type="checkbox"/> |
| c) | Does actuation of the pressure-sensitive switch stop or reverse the gate?                       | YES | NO | <input type="checkbox"/> |
| d) | Does failure of either pressure-sensitive switch duplicate actuation of the switch?             | YES | NO | <input type="checkbox"/> |
| e) | Does failure of the wiring and/or PLC input duplicate action of the switch?                     | YES | NO | <input type="checkbox"/> |
| f) | Does the power assist mechanism maintain the effectiveness of the operator's gate?              | YES | NO | <input type="checkbox"/> |
| g) | Does some action other than closure of the power-operated gate directly initiate an HIMM cycle? | YES | NO | <input type="checkbox"/> |
| h) | When the power-operated gate is closed, what initiates the HIMM cycle? _____                    |     |    | <input type="checkbox"/> |
| i) | If a robot is used does it provide the signal to initiate the HIMM cycle?                       | YES | NO | <input type="checkbox"/> |
| l) | Does closure of the operator's gate require direct and continuous action by the operator?       | YES | NO | N/A                      |

### 6.2.2 Electrical interlock

- |    |  |     |    |                          |
|----|--|-----|----|--------------------------|
| a) | Does opening the operator's gate prevent platen closing?   | YES | NO | <input type="checkbox"/> |
| b) | Does opening the operator's gate prevent injection forward?  | YES | NO | <input type="checkbox"/> |
| c) | Does opening the operator's gate prevent screw rotation?   | YES | NO | <input type="checkbox"/> |
| d) | Are each of the above interlocks hardwired?  | YES | NO | <input type="checkbox"/> |
| e) | Do the hardwired interlocks include removal of power from each of the above PLC outputs?                                   | YES | NO | <input type="checkbox"/> |
| f) | Are the hardwired interlocks located or protected to prevent accidental actuation?   | YES | NO | <input type="checkbox"/> |
| g) | If the HIMM is powered by other sources other than hydraulic, is an independent interlock provided?                        | YES | NO | <input type="checkbox"/> |
| h) | If the mechanical device is a jam bar, does platen motion continue to the adjusted open position until the device engages? | YES | NO | <input type="checkbox"/> |

ANSI B151.1 Section/Paragraph		Pass	Fail	Other	Mode of Operation			
					SETUP	MAN	S-A	AUTO
<b>6.2.3</b>	<b>Mechanical interlock</b>							
	a) Is a mechanical device provided?	YES	NO	<input type="checkbox"/>				
	b) Circle the type is used? <b>RATCHET BAR / JAM BAR / OTHER (specify)</b>							
	c) When the operator's gate is opened, is the platen physically prevented from closing when the platen is in the adjusted open position?	YES	NO	<input type="checkbox"/>				
	d) If the bar is monitored, is the monitoring functioning properly?	YES	NO					
<b>6.2.4</b>	<b>Hydraulic or pneumatic interlock</b>							
	a) If the operator's gate is opened, does the hydraulic or pneumatic interlock prevent platen closure?	YES	NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	b) Is the hydraulic or pneumatic interlock independent of all other interlocks?	YES	NO	<input type="checkbox"/>				
	c) Circle how the hydraulic interlock is actuated? <b>MECHANICALLY / ELECTRICALLY</b>							
	d) If electrically operated, is a monitoring device provided?	YES	NO	N/A				
	e) If improper operation of the monitored device is detected, is the HIMM cycle inhibited?	YES	NO	N/A			<input type="checkbox"/>	<input type="checkbox"/>
	f) If improper operation of the monitored device is detected, is an alarm activated?	YES	NO	N/A				
<b>6.2.5</b>	<b>Rear guard</b> (NOTE: May be replaced by a rear operator's gate that must be in compliance with all of the appropriate sections).							
	a) Does the mold area opposite the operator of the HIMM have a rear guard?	YES	NO	<input type="checkbox"/>				
	b) Does the rear guard have at least one interlock?	YES	NO	<input type="checkbox"/>				
	c) Does the interlock prevent all machine motion?	YES	NO	<input type="checkbox"/>				
	d) Is sufficient space provided between the guard and the platens or frame for water lines and other necessary items?	YES	NO	<input type="checkbox"/>				
<b>6.2.6</b>	<b>Top guard</b>							
	a) If it is possible to reach over guards is a top guard provided?	YES	NO	N/A				
	c) If the top guard is movable, is an interlock provided?	YES	NO	N/A				
	d) If the top guard is movable, does the interlock prevent all motion of the HIMM when the guard is open or removed?	YES	NO	N/A				
<b>6.2.7</b>	<b>Parts discharge opening</b>							
	a) Is the parts discharge opening (front) guarded to prevent access to mold area hazards? (<19.7")	YES	NO					
	b) Is the parts discharge opening (rear) guarded to prevent access to mold area hazards?(<19.7")	YES	NO					
	c) If unguarded is a conveyor used as a guard?	YES	NO	N/A				
	d) If unguarded is a chute used as a guard?	YES	NO	N/A				
	e) Are all other areas which permit access to mold area guarded? (If no, describe area)	YES	NO	N/A				
<b>6.2.8</b>	<b>Nozzle shutoff device</b>							
	a) Does the machine have a nozzle shut-off device? <b>YES / NO</b>							
	b) If the operator's gate is opened sufficiently to permit access, is screw rotation permitted only when the nozzle shut-off device is in the closed position?	YES	NO	N/A			<input type="checkbox"/>	<input type="checkbox"/>
	c) Does the nozzle shut-off device default to the open position in manual and mold set modes? Exception: Default to the closed position is acceptable for 2-stage, co-injection, gas assist and IMM's with special processing requirements.	YES	NO	N/A			<input type="checkbox"/>	<input type="checkbox"/>
	d) If the machine has more than one device, is each one interlocked correctly?	YES	NO	N/A				

ANSI B151.1 Section/Paragraph	Pass	Fail	Other	Mode of Operation			
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**6.3 General guarding (other than mold area guarding)**

**6.3.1 Guards**

a) Are movable guards interlocked? ( Front ) ( Rear ) ( Other )	YES	NO	N/A
b) Is hazardous motion stopped when the movable guard is moved? ( Front ) ( Rear ) ( Other )	YES	NO	N/A
c) Is hazardous motion stopped when the movable guard is removed? ( Front ) ( Rear ) ( Other )	YES	NO	N/A

**6.3.2 Feed openings**

a) Is the feed opening guarded against inadvertent insertion of hands?	YES	NO	<input type="checkbox"/>
b) What type of guarding is used? <b>HOPPER / OTHER</b> (specify) _____	YES	NO	
c) Is the appropriate warning sign located close to the feed opening?	YES	NO	

**6.3.3 Vent cover**

a) Does the machine have a vented barrel? <b>YES / NO</b>			
b) If vented, does the vent port have a cover that provides adequate protection from expelled hot plastic and/or vapors?	YES	NO	N/A

**6.3.4 Electrical systems**

a) Does the machine comply with ANSI/NFPA 79 with regards to personnel safety? (See ANSI/NFPA 79 Clause 6 - Safeguarding of personnel) <b>**CUSTOMER RESPONSIBILITY / NOT CONFIRMED BY OEM**</b>			<input type="checkbox"/>
b) Does the electrical enclosure(s) have an operational disconnect?	YES	NO	<input type="checkbox"/>
c) Is the machine grounded?	YES	NO	<input type="checkbox"/>

**6.3.5 Purging protection**

a) Does the machine have a guard that protects the front, rear, and top of the purging area behind the stationary platen? ( FRONT ACCESS ) ( REAR ACCESS ) ( OTHER ) (specify)	YES	NO	<input type="checkbox"/>			
b) Is the guard interlocked to prevent screw rotation when the guard is not in position?	YES	NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Is the guard interlocked to prevent screw (plunger) forward when the guard is not in position?	YES	NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Is the guard interlocked to prevent electrically actuated injection carriage forward motion when the guard is not in position?	YES	NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f) If the pull in cylinder is used for swivel, has an additional interlock been provided to permit carriage forward motion with the guard open only when swivel motion is required?	YES	NO	N/A	<input type="checkbox"/>	<input type="checkbox"/>	
g) If the operator's gate is in any position other than fully closed, is purging prevented?	YES	NO	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**6.3.6 Injection barrel covers**

a) Does the injection barrel cover or barrier prevent inadvertent contact with high voltage and/or high barrel temperatures when the injection unit is in the normal operating position?	YES	NO	<input type="checkbox"/>
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**6.4 Additional safety measures for large HIMMs** (i.e. >47" tie bar spacing)

**6.4.1 Area between operator's gate and the mold area**

**FRONT GATE:**

- a) Where it is possible to stand between the operator's gate and the mold area, has an emergency stop or emergency reverse push-button been provided in a readily accessible area? **YES NO N/A**
- b) Does the emergency stop or emergency reverse push-button function correctly? **YES NO N/A**
- c) Which of the three additional safety measures has been provided? (At least one must be provided.)
  - 1) Gate block? **YES / NO**
  - 2) Double acknowledgment system? **YES / NO**
  - 3) Presence-sensing device? **YES / NO**

**GATE BLOCK:**

- a) Does the device operate with each opening movement of the operator's gate? **YES NO N/A**
- b) Does the device prevent unintentional return of the gate to the closed position? **YES NO N/A**
- c) Is direct and continuous action required by the operator to disengage the device and close the operator's gate? **YES NO N/A**
- d) Does the position from which the device is disengaged and the closure of the operator's gate provide a clear view of the mold area? **YES NO N/A**
- e) If a Robot is used is the disengagement of this device and closure of the operator's gate initiated by a signal from a robot? **YES NO N/A**


**DOUBLE ACKNOWLEDGMENT SYSTEM:**

- a) Is push-button #1 located inside of the operator's gate, and is it in full view of the mold area? **YES NO N/A**
- b) Is push-button #2 located outside of the operator's gate such that it cannot be actuated from inside the closed operators gate? **YES NO N/A**
- c) Is start of a cycle only possible after the following sequence of events within a prescribed time interval:
  - 1) push button #1; **YES NO N/A**
  - 2) close operator's gate; **YES NO N/A**
  - 3) push button #2 - cycle initiation? **YES NO N/A**
- d) Does a monitoring system exist to check the operation of each push-button? **YES NO N/A**
- e) If improper operation or sequencing is detected, is the Large HIMM cycle inhibited? **YES NO N/A**
- f) If improper operation or sequencing is detected, is an alarm activated? **YES NO N/A**

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**PRESENCE-SENSING DEVICE:**

- a) Is a presence-sensing device provided and positioned such that it would be activated by a person between the operator's gate and the mold area, and closure of the operator's gate would be prevented, stopped, or reversed? **YES NO N/A**

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**6.4.2 Area between the rear guard and the mold area**

- a) Where it is possible to stand between the rear guard and the mold area, has an emergency stop or emergency reverse push-button been provided in a readily accessible area? **YES NO N/A**
- b) Does the emergency stop or emergency reverse push-button function correctly? **YES NO N/A**

ANSI B151.1 Section/Paragraph	Pass	Fail	Note	Mode of Operation			
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6.4.3 Mold area protection

6.4.3.1 Mold area with working platform:      USED                      NOT USED                      (CIRCLE)

- a) Which of these presence-sensing devices has been provided?
  - 1) Safety mat?                      YES / NO
  - 2) Interlocked platform?                      YES / NO
  - 3) Photoelectric beam?                      YES / NO
  - 4) Similar device? (If used, specify device type) \_\_\_\_\_
- b) Will a person standing on the platform activate the device?                      YES      NO      N/A
- c) Does the actuated device prevent initiation of platen motion?                      YES      NO      N/A
- d) Does the actuated device prevent powered operator's gate closing motion?                      YES      NO      N/A
- e) Does the actuated device prevent core motion?                      YES      NO      N/A
- f) If core motion is not prevented, does this motion create a hazard?                      YES      NO      N/A
- g) Does the actuated device prevent ejector motion?                      YES      NO      N/A
- h) If ejector motion is not prevented, does this motion create a hazard?                      YES      NO      N/A
- i) Does the actuated device prevent injection (plunger) motion?                      YES      NO      N/A
- j) Does actuation of the device during platen closing stop all motion?                      YES      NO      N/A
- k) Does actuation of the device during platen closing require manual resetting of the Large HIMM before a new cycle can be initiated?                      YES      NO      N/A

6.4.3.2 Mold area without working platform:      APPLIES                      DOES NOT APPLY                      (CIRCLE)

- a) Which of the two safety measures has been provided?
  - 1) Gate block?                      YES / NO
  - 2) Double acknowledgment system?                      YES / NO
- GATE BLOCK:** The device must be in compliance with 6.4.1
  - a) Does the device operate with each opening movement of the operator's gate?                      YES      NO      N/A
  - b) Does the device prevent unintentional return of the gate to the closed position?                      YES      NO      N/A
  - c) Is direct and continuous action required by the operator to disengage the device and close the operator's gate?                      YES      NO      N/A
  - d) Does the position from which the device is disengaged and the closure of the operator's gate provide a clear view of the mold area?                      YES      NO      N/A
  - e) If a robot is used is the disengagement of this device and closure of the operator's gate initiated by a signal from a robot?                      YES      NO      N/A
- DOUBLE ACKNOWLEDGMENT SYSTEM:** The device must operate in compliance with 6.4.1
  - a) Is push-button #1 located inside of the operator's gate, and is it in full view of the mold area?                      YES      NO      N/A
  - b) Is push-button #2 located outside of the operator's gate such that it cannot be actuated from inside the closed operators gate?                      YES      NO      N/A
  - c) Is start of a cycle only possible after the following sequence of events within a prescribed time interval:
    - 1) push button #1;                      YES      NO      N/A
    - 2) close operator's gate;                      YES      NO      N/A
    - 3) push button #2 - cycle initiation?                      YES      NO      N/A
  - d) Does a monitoring system exist to check the operation of each push-button?                      YES      NO      N/A
  - e) If improper operation or sequencing is detected, is the Large HIMM cycle inhibited?                      YES      NO      N/A
  - f) If improper operation or sequencing is detected, is an alarm activated?                      YES      NO      N/A


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**6.4.4 Cycle initiation**

**FRONT GATE:**

- a) Does some action other than closure of the operator's gate directly initiate Large HIMM motion?
- b) Does closure of the operator's gate require direct and continuous action by the operator?

YES	NO	
YES	NO	


**6.5 Emergency stop push-button**

- a) Does each operator's control station include one emergency stop button?
- b) Does each operator's control station emergency stop button function correctly?


**6.6 Window**

- a) Is the window used in a gate or guard intact?

YES	NO
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**6.7 Safety signs**

- a) Are safety signs present and legible?

YES	NO
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**Ancillary Devices - ROBOTS**

- a) Is the machine interfaced with a robot?      **YES / NO**
- b) Is the robot area guarded?
- c) Is the robot control emergency stop integrated into the machine control?
- d) Is the machine control emergency stop integrated into the robot control?


**SAFETY NOTES ON FAILED ITEMS:**

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_
- 6) \_\_\_\_\_
- 7) \_\_\_\_\_
- 8) \_\_\_\_\_
- 9) \_\_\_\_\_
- 10) \_\_\_\_\_
- 11) \_\_\_\_\_
- 12) \_\_\_\_\_