



Issue date: 2009-03-30, Rev.1

Job No.

I. Nature of the inspection

- First inspection Follow-up inspection

II. Details of the machine:

_____ In-house system designation

	Designation	Type	Ser. No.	Year of construction	Manufacturer/Supplier	Site
1.						
2.						
3.						

III. Information concerning the scope of the inspection

The inspection was carried out in accordance with the checklist for Tooling Machines, dated 2007-12-10.

IV. Inspection results

- The machine / system comply with the current FSS 5 checklist.
- The machine / system do not meet every requirement of the FSS 5 checklist. However, the machine / system may be used as the functions concerned are not critical in terms of safety.**
- The machine/ system do not comply with the current FSS 5 checklist.
- The machine / system will be upgraded.
Initial cost estimate: _____ Deadline: _____
Follow-up inspection required!
- The machine / system will be removed from service by _____ at the latest.
Until this time, technical and / or organizational measures have been implemented to ensure safe operation, as laid down in the attachment.
- Date of next regular inspection: _____.

V. Distribution list

Responsible person for corrections and improvements:

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Responsible person for documentation and files:

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VI. Inspection performance

	Mechanical part	Electrical part	Production	Others
Name				
Date				
Signature				



Check Machine / system designation _____		Irrelevant	OK	Not OK	Remarks	Cost estimate
1.	Operating manual, circuit diagrams, technical data sheets					
1.1	Is an operating manual available for the machine?					
1.2	Are the circuit diagrams available?					
1.3	Are instructions for use available?					
1.4	Is a maintenance schedule available?					
2.	General condition of the machine / system <u>Visual inspection; enclosures; barriers; cables; hoses; lines</u>					
2.1	Have all enclosures and barriers been secured in a suitable manner and to an adequate extent (with safety bolts where necessary)?					
2.2	Are all enclosures and barriers in faultless condition?					
2.3	Are all parts of the machine protected against the hazards associated with used energy supplies (hydraulic, pneumatic) in a suitable manner and to an adequate extent?				EN 982 and EN 983	
2.4	Are all lines, hoses and other facilities used to generate and carry energy protected against mechanical, thermal and/or chemical damage?					
2.5	Has the machine been installed and secured in accordance with the manufacturer's instructions and to withstand the normal loads and stresses encountered in operational service?					
3.	Risk of mechanical contact with moving (machine) components <u>Visual inspection and function test; checking with reference to the operating instructions</u>					
3.1	Are safety devices and guards in place that prevent access to hazardous zones or bring potentially hazardous movements to a standstill before the hazardous zone is reached? Do these also apply at openings where material is fed into the machine?					



	Check Machine / system designation _____	Irrelevant	OK	Not OK	Remarks	Cost estimate																											
3.2	Are the moving guards and safety mechanisms for the working zone monitored electrically and are there facilities to keep them closed on machines that have tools with longer slowing down times?																																
3.3	<p>Have the guards and safety mechanisms been designed and dimensioned in such a way that they are capable of withstanding foreseeable impact energy (where workpieces or machine components are thrown out)?</p> <table border="1" data-bbox="427 549 1115 963"> <thead> <tr> <th data-bbox="427 549 602 679">Art des Werkstoffes der trennenden Schutzeinrichtung</th> <th data-bbox="602 549 819 679">Max. Geschwindigkeit des Werkzeuges [m/s]</th> <th data-bbox="819 549 1115 679">Dicke des Werkstoffes der trennenden Schutzeinrichtung [mm] <small>Bei innenliegender, unbeschädigter Sichtscheiben und ausreichendem Überstand mit mindestens 25mm Überdeckung</small></th> </tr> </thead> <tbody> <tr> <td data-bbox="427 679 602 715">St 12.03</td> <td data-bbox="602 679 819 715">80</td> <td data-bbox="819 679 1115 715">1,5</td> </tr> <tr> <td data-bbox="427 715 602 750"></td> <td data-bbox="602 715 819 750">115</td> <td data-bbox="819 715 1115 750">3,0</td> </tr> <tr> <td data-bbox="427 750 602 785">Polycarbonat</td> <td data-bbox="602 750 819 785">85</td> <td data-bbox="819 750 1115 785">4,0</td> </tr> <tr> <td data-bbox="427 785 602 820"></td> <td data-bbox="602 785 819 820">100</td> <td data-bbox="819 785 1115 820">6,0</td> </tr> <tr> <td data-bbox="427 820 602 855"></td> <td data-bbox="602 820 819 855">120</td> <td data-bbox="819 820 1115 855">8,0</td> </tr> <tr> <td data-bbox="427 855 602 890"></td> <td data-bbox="602 855 819 890">150</td> <td data-bbox="819 855 1115 890">12,0</td> </tr> <tr> <td data-bbox="427 890 602 925"></td> <td data-bbox="602 890 819 925">170</td> <td data-bbox="819 890 1115 925">2*6,0</td> </tr> <tr> <td data-bbox="427 925 602 963"></td> <td data-bbox="602 925 819 963">230</td> <td data-bbox="819 925 1115 963">2*12,0</td> </tr> </tbody> </table> <p data-bbox="226 991 1155 1010">Diese Tabelle zeigt nur einen Ausschnitt zur groben Information der in den Normen DIN EN 13128 und 12417 beschriebenen Werte.</p> <p data-bbox="226 1043 896 1062">Geschwindigkeit v= größter Werkzeugdurchmesser [m] * π* höchster Spindeldrehzahl [U/sec]</p>	Art des Werkstoffes der trennenden Schutzeinrichtung	Max. Geschwindigkeit des Werkzeuges [m/s]	Dicke des Werkstoffes der trennenden Schutzeinrichtung [mm] <small>Bei innenliegender, unbeschädigter Sichtscheiben und ausreichendem Überstand mit mindestens 25mm Überdeckung</small>	St 12.03	80	1,5		115	3,0	Polycarbonat	85	4,0		100	6,0		120	8,0		150	12,0		170	2*6,0		230	2*12,0				EN 13128; EN 12417	
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3.4	Have the inspection windows in guards and safety mechanisms been fitted on the inside and bolted to the guard or safety mechanism, and are they resistant to damage caused by chips and cooling lubricant, or have replacement intervals been defined?																																
3.5	Has the closing force for powered guards and safety mechanisms been restricted to 150 N?																																
3.6	Is it impossible to bypass the guards and safety mechanisms or render them ineffective by <u>easy</u> means? No easily accessible roll limit switch																																
3.7	Is sufficient clearance maintained between the guards and safety mechanisms and the hazardous zone?																																



Check		Irrelevant	OK	Not OK	Remarks	Cost estimate
Machine / system designation _____						
3.8	Do the guards and/or safety mechanisms obstruct the necessary observation of the working cycle?					
4.	Workpiece loading / unloading facilities / openings					
4.1	Is access to potentially hazardous areas prevented by fixed and/or electrically monitored moving guards and safety mechanisms?					
4.2	Where access is necessary, can movements only be initiated (where necessary) by activating a permissive facility in conjunction with a jog switch or two-hand start control?					
5.	Tool changer / tool magazine					
5.1	Is access to potentially hazardous areas prevented by fixed and/or electrically monitored moving guards and safety mechanisms?					
5.2	Where access is necessary, can movements only be initiated (where necessary) by activating a permissive facility in conjunction with a jog switch or two-hand start control?					
6.	Workpiece clamping facilities / jaw chucks (lathes)					
6.1	Is the actuating force of the workpiece clamping facility monitored and have measures been taken to prevent the main spindle starting if the clamping force does not reached the specified value?					
6.2	Have measures been taken to prevent fingers being pinched when loading and unloading? (4 mm max. clamping travel, or step-by-step clamping movement in increments not exceeding 4 mm, or 4 mm/s max. closing speed)					
7.	Tailstock sleeve (lathes)					
7.1	Are powered movements of the center sleeve restricted to 20 mm/s with guards and safety mechanisms open?					
7.2	Is there a control facility with automatic reset (jog switch / foot switch) to trigger the powered movement?					
8.	Chip collection and disposal?					
8.1	Is access to potentially hazardous areas prevented by fixed and/or electrically monitored moving guards and safety mechanisms?					



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9.	Drive elements (belts, chains, gearwheels, shafts)					
9.1	Is access to potentially hazardous areas prevented by fixed and/or electrically monitored moving guards and safety mechanisms?					
10.	Hazards caused by gas, vapor, mist, liquid and dust <u>Visual inspection, working zone analysis, test record</u>					
10.1	Have facilities been provided to restrain and/or to discharge such emissions <u>at source?</u> (cooling lubricant, dust)					
10.2	Are the employees protected against the release of substances that are generated, used or stored in the equipment and facilities?					
11.	Command facilities <u>Visual inspection and function test</u>					
11.1	Are the command facilities clearly recognizable as such and are their functions easily distinguishable?					
11.2	Are the command facilities fitted outside the hazardous zone(s) and can they be operated safely?					
11.3	Can the command facilities be operated inadvertently?					
12.	Operating modes					
12.1	Are operating modes selected by means of a keylock switch, an access code or in another secure manner?					
12.2	Operating mode 1 (automatic mode) Can the machine only be operated with isolating guards and safety mechanisms closed and/or non-isolating guards and safety mechanisms effective?					
12.3	Operating mode 2 (set-up mode) Are axis movements restricted to no more than 2 m/min, or in increments not exceeding 10 mm with guards and/or safety mechanisms open?					



Check Machine / system designation _____		Irrelevant	OK	Not OK	Remarks	Cost estimate
12.4	Are self-resetting operator control elements used to control the axis movements? Does movement cease when the operator control element is released?					
12.5	Operating mode 3 (operation with manual intervention) When the guards and/or safety mechanisms open, can the machine only be operated with the permissive facility actuated?					
12.6	Do the operating instructions draw special attention to the potential hazards of "operating mode 3"?					
12.7	Operating mode 4 (special mode, operation with guards and safety mechanisms ineffective, without permissive facility) Is "operating mode 4" necessary for production engineering reasons?					
12.8	Does a separate keylock switch have to be operated in order to select "operating mode 4"?					
12.9	Do the operating instructions draw special attention to the potential hazards of "operating mode 4"?					
12.10	Have organizational measures been implemented to ensure that "operating mode 4" is only used by suitably qualified personnel who have received special instruction?					
13.	Shutting the machine / system down (switching off) <u>Function test: checking with reference to circuit documents and operating instructions</u>					
13.1	Is there a master switch to turn the <u>complete</u> machine on and off and can this switch be secured with at least 5 locks?					
13.2	Does shutdown result in the machine assuming a safe state?					
13.3	Is the command to shut the machine down given precedence over the command to start the machine?					
13.4	Can the energy supply to the drive(s) be interrupted after the machine has been switched off completely?					



Check		Irrelevant	OK	Not OK	Remarks	Cost estimate
Machine / system designation _____						
13.5	Are clearly recognizable facilities provided to disconnect the machine from every <u>single</u> energy source?					
13.6	Is it possible to disconnect the electrical power supply?					
13.7	Is it possible to disconnect the pneumatic energy supply?					
13.8	Is it possible to disconnect the hydraulic energy supply?					
14.	Emergency STOP facilities <u>Visual inspection and function test; checking with reference to circuit documents</u>					
14.1	Are emergency STOP facilities provided?					
14.2	Does the emergency STOP facility bring potentially hazardous movements or processes to a standstill as quickly as possible? And does the emergency STOP facility put the machine in a safe state?					
14.3	In doing so, does the emergency STOP facility not generate any other potential hazards?					
14.4	Is the emergency STOP facility accessible quickly, easily and safely and is it marked conspicuously?					
14.5	Is the emergency STOP facility integrated into an intrinsically safe / self-testing emergency STOP circuit?				<i>Is an error in the emergency STOP circuit detected (machine cannot be restarted)?</i>	
14.6	Can the machine only be restarted by deliberately operating the command facilities provided for this purpose?					
15.	Lighting <u>Visual inspection; measurement</u>					
15.1	Are the <u>working zones</u> adequately illuminated for the work performed in them?					
16.	Alarm facilities <u>Visual inspection and function test</u>					



Check Machine / system designation _____		Irrelevant	OK	Not OK	Remarks	Cost estimate
16.1	Are the <u>visual</u> alarm signals easily seen and unmistakable?					
16.2	Are the <u>acoustic</u> alarm signals easily heard and unmistakable?					
17.	Using equipment and facilities <u>Visual inspection; checking with reference to the operating manual and the instructions for use</u>					
17.1	Is the equipment solely used for the intended purpose specified by the manufacturer?					
18.	Preventive and corrective maintenance work, cleaning <u>Checking with reference to the operating manual, the instructions for use and the maintenance schedule</u>				Refer to FSS 1	
19.	Identification markings <u>Visual inspection</u>					
19.1	Does the machine bear the necessary safety identification markings and hazard warnings specified according to the statutory requirements in the country of use?					
20.	Risk of fire, explosion and overheating equipment <u>Visual inspection and function test, checking with reference to the operating manual and the work instructions</u>					
20.1	Are the employees protected against the potential hazards resulting from fire and overheating equipment?					
20.2	Have protective measures been taken on machines used to process materials that produce self-igniting or explosive particles to prevent fire and/or explosion? (Reducing the amount of dust produced, facilities to collect and remove dust, equipment to dampen dust produced by the machine.)					
20.3	Where potential fire and/or explosion hazards cannot be eliminated completely, have measures been implemented to deal with the hazards? (Fire extinguishers, explosion pressure relief)					



	Check Machine / system designation _____	Irrelevant	OK	Not OK	Remarks	Cost estimate
21.	Contact with electric current <u>Visual inspection and function test, checking with reference to the operating manual, measurement</u>					
21.1	Does the equipment offer the employee protection against <u>direct</u> contact with electric current?					
21.2	Does the equipment offer the employee protection against <u>indirect</u> contact with electric current?					
22.	Risk of people slipping, tripping or falling (in connection with machines) <u>Visual inspection</u>					
22.1	Have measures been taken to ensure that personnel cannot slip, trip or fall?					