Joint Market Surveillance Actions on GPSD Products - JA 2016
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Assessment of Risks from (Missing) Safety-Related Warnings and Instructions on Power Tools

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1 Introduction

Market surveillance authorities frequently come across products with missing warnings or instructions and have to assess the risk posed by such non-compliances. This is not always obvious to do and many market surveillance authorities have struggled with explaining how a missing warning can make a product dangerous.

The purpose of this document is to provide guidance to market surveillance authorities in assessing risks arising from missing warnings and instructions on power tools. Warnings and instructions are a crucial part of the tool, so they have to be present in the correct language for the user to use the tool correctly without any unnecessary risk.

Risk assessment is done using the risk assessment method from the RAPEX guidelines (2010/15/EC, Annex I).

The guideline presents the results from risk assessment related to omissions of all warnings that are required according to the standard (EN 60745-2-3). The scenarios behind the results are presented in an annex to this report.

None of the scenarios end in risk levels higher than medium risk. This is because the scenarios presume that the products are safe in themselves, and the only non-compliance is the missing warning or instruction. An overview is given in table 1.

2 How to use this guideline

2.1 Missing warnings and instructions on power tools

To assess the risk resulting from a missing warning or instruction, the market surveillance official should go through these three steps:

1. Inspect the tool and check the marking using the standard EN 60745-2-3.
2. If a warning or instruction is missing, look it up in the relevant section of chapter 3.
3. Each section presents a table that indicates the inherent risk for each of the warnings and instructions that are found in the referenced section of EN 60745-2-3. The risk level can be read from the table.

Please note that the risk levels identified in the tables in chapter 3 should be seen as guidance. The risk assessor must always carefully review the presented assessment and revise is as appropriate for the specific case. The risk assessor must also include the scenario with the specific probabilities in his risk assessment report.

Example:

When examining the safety instructions in the user's guide for an angle grinder, the inspectors notes that the warning "The rated speed of the accessory must be at least equal to the maximum speed marked on the power tool." is missing.

The text is required by EN 60745-2-3, clause 8.12.1.101. In this clause it features as instruction d. (This can also be seen from chapter 3.1 below).

The letter "d" is found in table 1 in the cell with the intersection between injury level 3 and probability level "> 1/100 000". The colour of the cell is yellow, so the risk level is "medium risk"

2.2 Partly missing or incorrect warnings or instructions on power tools

This guideline discusses missing warnings or instructions. The user will have to assess other shortcomings such as poorly translated or partially incorrect warnings or instructions himself using the methods from this document.

This also goes for cases where a power tool is missing several warnings which might cause a cumulative effect.

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2.3 Missing or incorrect warnings and instructions on other products

If the risk assessor is considering a case dealing with another product than a power tool, he can still use the principles behind the risk assessment in this guideline and seek inspiration in the many scenarios in the Annex.

Generally, these scenarios are built by using the following approach:

1. Find out what the warning is supposed to protect the consumer from. It may help to ask the question ”What will happen if the user consciously violates the warning?”
2. Find out how this could injure the user.
3. Try to formulate an injury scenario that describes what will happen due to the missing warning and that ends with the likely injury.

   The scenario will often fit into this model:

   a. The warning is missing.
   b. The user does exactly what the warning tells him not to do.
   c. A hazardous situation arises. (“The risk manifests itself.”)
   d. The user is injured.
4. Estimate the probabilities and the risk.

Examples and inspiration can be found found in the Annex.

3 The risks

3.1 Clause 8.12.1.101 Safety instructions for all operations

Table 1 indicates the risk level that normally results from a missing safety instruction according to clause 8.12.1.101 when no special conditions apply.

Probability	Severity of injury			
	1	2	3	4
> 50%				
>1/10				
>1/100				
>1/1 000				
>1/10 000	n	o		
>1/100 000		j, k, l, m, p	c, d, e, f, g	
>1/1 000 000	i	a, b, h		
<1/1 000 000				

Risk Level
Serious risk
High risk
Medium risk
Low risk

Table 1: Commonly found risk levels for missing warnings and safety instructions according to EN 60745-2-3, clause 8.12.1.101.

The safety instructions included in the table are the following:

a. This power tool is intended to function as a grinder, sander, wire brush, polisher or cut-off tool …
b. Operations such as grinding, sanding, wire brushing, polishing or cutting-off are not recommended to be performed with this power tool.

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c. Do not use accessories which are not specifically designed and recommended by the tool manufacturer.
d. The rated speed of the accessory must be at least equal to the maximum speed marked on the power tool.
e. The outside diameter and the thickness of your accessory must be within the capacity rating of your power tool.
f. The arbour size of wheels, flanges, backing pads or any other accessory must properly fit the spindle of the power tool.
g. Do not use a damaged accessory …
h. Wear personal protective equipment …
i. Keep bystanders a safe distance away from work area …
j. Hold power tool by insulated gripping surfaces only …
k. Position the cord clear of the spinning accessory.
l. Never lay the power tool down until the accessory has come to a complete stop.
m. Do not run the power tool while carrying it at your side.
n. Regularly clean the power tool's air vents.
o. Do not operate the power tool near flammable materials.
p. Do not use accessories that require liquid coolants.

Please refer to EN 60745-2-3:2011, clause 8.12.1.101 for the full safety instructions and further explanation.

3.2 Clause 8.12.1.102 Kickback and related warnings

Table 2 indicates the risk level that normally results from a missing safety instruction according to clause 8.12.1.102 when no special conditions apply.

The safety instructions included in the table are the following:

a. Maintain a firm grip on the power tool and position your body and arm to allow you to resist kickback forces …
b. Never place your hand near the rotating accessory.
c. Do not position your body in the area where power tool will move if kickback occurs.
d. Use special care when working corners, sharp edges etc. Avoid bouncing and snagging the accessory.
e. Do not attach a saw chain woodcarving blade or toothed saw blade.

Please refer to EN 60745-2-3:2011, clause 8.12.1.102 for the full safety instructions and further explanation.

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Probability	Severity of injury			
	1	2	3	4
> 50%				
>1/10				
>1/100				
>1/1 000				
>1/10 000		a, b, c, d, e		
>1/100 000				
>1/1 000 000				
<1/1 000 000				

Risk Level
Serious risk
High risk
Medium risk
Low risk

Table 2: Commonly found risk levels for missing warnings and safety instructions according to EN 60745-2-3, clause 8.12.1.102.

3.3 Clause 8.12.1.103 Additional safety instructions for grinding and cutting-off operations

Table 3 indicates the risk level that normally results from a missing safety instruction according to clause 8.12.1.103 when no special conditions apply.

The safety instructions included in the table are the following:

a. Use only wheel types that are recommended for your power tool …
b. The guard must be securely attached to the power tool and positioned for maximum safety …
c. Wheels must be used only for recommended applications …
d. Always use undamaged wheel flanges that are of correct size and shape for your selected wheel.
e. Do not use worn down wheels from larger power tools.

Please refer to EN 60745-2-3:2011, clause 8.12.1.103 for the full safety instructions and further explanation.

Probability	Severity of injury			
	1	2	3	4
> 50%				
>1/10				
>1/100				
>1/1 000				
>1/10 000				
>1/100 000			a, c, d, e	
>1/1 000 000			b	
<1/1 000 000				

Risk Level
Serious risk
High risk
Medium risk
Low risk

Table 3: Commonly found risk levels for missing warnings and safety instructions according to EN 60745-2-3, clause 8.12.1.103.

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3.4 Clause 8.12.1.104 Additional safety instructions for cutting-off operations

Table 4indicates the risk level that normally results from a missing safety instruction according to clause 8.12.1.104 when no special conditions apply.

Probability	Severity of injury			
	1	2	3	4
> 50%				
>1/10				
>1/100				
>1/1 000				
>1/10 000		a, b, c, d, e, f		
>1/100 000				
>1/1 000 000				
<1/1 000 000				

Risk Level
Serious risk
High risk
Medium risk
Low risk

Table 4: Commonly found risk levels for missing warnings and safety instructions according to EN 60745-2-3, clause 8.12.1.104.

The safety instructions included in the table are the following:

a. Do not "jam" the cut-off wheel or apply excessive pressure …
b. Do not position your body in line with and behind the rotating wheel.
c. When wheel is binding or when interrupting a cut for any reason, switch off the power tool …
d. Do not restart the cutting operation in the workpiece …
e. Support panels or any oversized workpiece to minimize the risk of wheel pinching and kickback.
f. Use extra caution when making a "pocket cut" into existing walls or other blind areas.

Please refer to EN 60745-2-3:2011, clause 8.12.1.104 for the full safety instructions and further explanation.

3.5 Clause 8.12.1.105 Additional safety instructions for sanding operations

Table 5 indicates the risk level that normally results from a missing safety instruction according to clause 8.12.1.105 when no special conditions apply.

The safety instructions included in the table are the following:

a. Do not use excessively oversized sanding disc paper …

Please refer to EN 60745-2-3:2011, clause 8.12.1.105 for the full safety instruction and further explanation.

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Probability	Severity of injury			
	1	2	3	4
> 50%				
>1/10				
>1/100				
>1/1 000				
>1/10 000				
>1/100 000	a			
>1/1 000 000				
<1/1 000 000				

Risk Level
Serious risk
High risk
Medium risk
Low risk

Table 5: Commonly found risk levels for missing warnings and safety instructions according to EN 60745-2-3, clause 8.12.1.105.

3.6 Clause 8.12.1.106 Additional safety instructions for polishing operations

Table 6 indicates the risk level that normally results from a missing safety instruction according to clause 8.12.1.105 when no special conditions apply.

The safety instructions included in the table are the following:

a. Do not allow any loose portion of the polishing bonnet or its attachment strings to spin freely …

Please refer to EN 60745-2-3:2011, clause 8.12.1.106 for the full safety instruction and further explanation.

Probability	Severity of injury			
	1	2	3	4
> 50%				
>1/10				
>1/100				
>1/1 000				
>1/10 000				
>1/100 000	a			
>1/1 000 000				
<1/1 000 000				

Risk Level
Serious risk
High risk
Medium risk
Low risk

Table 6: Commonly found risk levels for missing warnings and safety instructions according to EN 60745-2-3, clause 8.12.1.106.

3.7 Clause 8.12.1.107 Additional safety instructions for wire brushing operations

Table 7 indicates the risk level that normally results from a missing safety instruction according to clause 8.12.1.107 when no special conditions apply.

The safety instructions included in the table are the following:

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a. Be aware that wire bristles are thrown by the brush even during ordinary operation …
b. If the use of a guard is recommended for wire brushing, do not allow any interference of the wire wheel or brush with the guard.

Please refer to EN 60745-2-3:2011, clause 8.12.1.107 for the full safety instructions and further explanation.

Probability	Severity of injury			
	1	2	3	4
> 50%				
>1/10				
>1/100				
>1/1 000	a			
>1/10 000				
>1/100 000				
>1/1 000 000	b			
<1/1 000 000				

Risk Level
Serious risk
High risk
Medium risk
Low risk

Table 7: Commonly found risk levels for missing warnings and safety instructions according to EN 60745-2-3, clause 8.12.1.107.

4 Concluding remarks

This document presents guidance and should be applied as such. Every case must be assessed carefully on its own allowing fully for the specific characteristics of the particular case.

The risk assessor should document all considerations and rationales carefully in the risk assessment report so others can understand the lines of thinking. Such explanations will also help the risk assessor if he has to explain the case at a later stage – for the economic operator or in a court case.

The documentation should also include the conclusions from a sensitivity analysis to show how sensitive the resulting risk level is to changes in the input parameters; how much can the probabilities change before the resulting risk level changes.

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Annex 1: Scenarios

Chapter 3.1, Clause 8.12.1.101 Safety instructions for all operations

Non-compliance The power tool is missing one or more of the ***warnings a, b or h*** listed in EN 60745-2-3:2011, Clause 8.12.1.101 Safety instructions for all operations.		
Injury Laceration or cut, external (deep), more than 10 cm long on body or more than 5 cm long on face, requiring stiches. Injury severity level = 2		
Step no.	**Step**	**Probability**
1	The user is not warned only to use the tool for its intended use and only wearing appropriate protective equipment.	100%
2	The user uses the tool for an unintended use or without protective equipment.	100%
3	The unintended use poses a risk to the consumer.	0,1%
4	The power tool injures the user and cuts a deep laceration in his body, arm or thigh	0,1%
	Total probability =	0,000 001
Risk level Injury level 2 combined with a probability of 0,000 001 gives **low risk**.		

Non-compliance The power tool is missing one or more of the ***warnings c, d, e, f or g*** listed in EN 60745-2-3:2011, Clause 8.12.1.101 Safety instructions for all operations.		
Injury Eye injuries, foreign body in eye, partial loss of sight, permanent loss of sight on one eye. Injury severity level = 3		
Step no.	**Step**	**Probability**
1	The user is not warned only to use appropriate accessories with the power tool.	100%
2	The user uses the tool with an unsuitable or damaged accessory.	100%
3	The workpiece pinches the accessory that stalls and breaks.	10%
4	Large fragments from the accessory are thrown towards the user's face.	10%
5	A fragment hits the user in the eye in a way that leads to (partial) loss of sight on that eye.	0,1%
	Total probability =	0,000 01

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Risk level Injury level 3 combined with a probability of 0,000 01 gives **medium risk**.

Non-compliance The power tool is missing the ***warning i*** from EN 60745-2-3:2011, Clause 8.12.1.101 Safety instructions for all operations.		
Injury Eye injury, foreign body in eye. Temporary pain in eye without need for treatment. Injury severity level = 1		
Step no.	**Step**	**Probability**
1	The user is not warned to keep bystanders at a safe distance.	100%
2	The user is using the power tool with bystanders being too close.	100%
3	The unintended use poses a risk to the consumer because of fragments being thrown out.	1%
4	Fragments from the accessory are thrown towards a bystander's face.	1%
5	A fragment hits the bystander in the eye in a way that causes temporary pains.	5%
	Total probability =	0,000 005
Risk level Injury level 1 combined with a probability of 0,000 005 gives **low risk**.		

Non-compliance The power tool is missing one or both of the ***warnings j and k*** from EN 60745-2-3:2011, Clause 8.12.1.101 Safety instructions for all operations.		
Injury Electric shock, local effects (temporary cramps or muscle paralysis). Injury severity level = 2		
Step no.	**Step**	**Probability**
1	The user is not warned only to hold the tool by isolating gripping surfaces and to keep the cord clear of the spinning accessory.	100%
2	The user uses the tool holding on metal parts of the tool or with the risk of the supply cord being entangled with the spinning accessory.	100%
3	The user hits the supply cord with the running tool.	5%
4	The insulation on the supply cord is cut through, but the electric wires stay in connection with the power tool and energises metal parts of it.	0,1%
5	The user's fingers cramps so he can't release his grip before a colleague interrupts the power supply.	50%

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	Total probability =	0,000 025
Risk level Injury level 2 combined with a probability of 0,000 025 gives **low risk**.		

Non-compliance The power tool is missing one or both of the ***warnings l and m*** from EN 60745-2-3:2011, Clause 8.12.1.101 Safety instructions for all operations.		
Injury Laceration or cut, external (deep), more than 10 cm long on body or more than 5 cm long on face, requiring stiches. Injury severity level = 2		
Step no.	**Step**	**Probability**
1	The user is not warned not to lay down the power tool until the accessory has come to a complete stop or to stop the power tool while carrying it.	100%
2	The user lays down the power tool before the accessory has come to a complete stop or carries it without stopping it.	100%
3	The tool catches something nearby and kicks back towards the user.	1%
4	The rotating accessory hits the user and cuts a deep laceration in the torso or thigh	0,1%
	Total probability =	0,000 01
Risk level Injury level 2 combined with a probability of 0,000 01 gives **low risk**.		

Non-compliance The power tool is missing the ***warning n*** from EN 60745-2-3:2011, Clause 8.12.1.101 Safety instructions for all operations.		
Injury Burns or scalds, first degree. Injury severity level = 1		
Step no.	**Step**	**Probability**
1	The user is not warned to clear the tool's air vents regularly.	100%
2	The user uses the tool with the air vents blocked.	100%
3	The tool overheats without the user noticing.	10%
4	The user gets first degree burns on his hands when picking up the tool.	0,1%
	Total probability =	0,000 1
Risk level Injury level 1 combined with a probability of 0,000 1 gives **low risk**.		

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Non-compliance

The power tool is missing the ***warning o*** from EN 60745-2-3:2011, Clause 8.12.1.101 Safety instructions for all operations.

Injury

Poisoning from inhaling toxic fumes, reversible damage to internal organs.

Injury severity level = 2

Step no.	Step	Probability
1	The user is not warned not to operate the tool near flammable materials.	100%
2	The user uses the tool near flammable materials.	100%
3	A spark from the tool puts fire to the flammable material without the user noticing.	10%
4	The user inhales toxic fumes and suffers from reversible damage to internal organs.	0,1%
	Total probability =	0,000 1

Risk level

Injury level 2 combined with a probability of 0,000 1 gives **medium risk**.

Non-compliance

The power tool is missing the ***warning p*** from EN 60745-2-3:2011, Clause 8.12.1.101 Safety instructions for all operations.

Injury

Electric shock, local effects (temporary cramps or muscle paralysis).

Injury severity level = 2

Step no.	Step	Probability
1	The user is not warned not to use accessories that require liquid coolants.	100%
2	The user uses an accessories with a liquid coolant.	100%
3	The user hits the tube supplying liquid coolant to the accessory and cuts a hole in it.	5%
4	The liquid coolant gets into the tool and causes a short-circuit that energises metal parts of the tool.	1%
5	The user can't release his grip of the tool before a colleague interrupts the power supply.	5%
	Total probability =	0,000 025

Risk level

Injury level 2 combined with a probability of 0,000 025 gives **low risk**.

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Chapter 3.2, Clause 8.12.1.102 Kickback and related warnings

Non-compliance The power tool is missing one or more of the ***warnings a, b, c, d or e*** listed in EN 60745-2-3:2011, Clause 8.12.1.102 Kickback and related warnings		
Injury Laceration or cut, external (deep), more than 10 cm long on body or more than 5 cm long on face, requiring stiches. Injury severity level = 2		
Step no.	**Step**	**Probability**
1	The user is not warned about the risk for kick-back because the safety instruction is missing from the tool.	100%
2	The user is cutting into an inside corner using an angle grinder with a cutting disc.	100%
3	When the cut is almost through, the loose part begins to move and pinches the cutting disc so the disc stalls.	10%
4	The grinder kicks back towards the user.	50%
5	The rotating disc hits the user and cuts a deep laceration in his thigh	1%
	Total probability =	0,000 5
Risk level Injury level 2 combined with a probability of 0,000 5 gives **medium risk**.		

Chapter 3.3, Clause 8.12.1.103 Additional safety instructions for grinding and cutting-off operations

Non-compliance The power tool is missing one or more of the ***warnings a, c, d or e*** listed in EN 60745-2-3:2011, Clause 8.12.1.103 Additional safety instructions for grinding and cutting-off operations.		
Injury Eye injuries, foreign body in eye, partial loss of sight, permanent loss of sight on one eye. Injury severity level = 3		
Step no.	**Step**	**Probability**
1	The user is not warned only to use recommended wheel types suited to the specific application with the tool.	100%
2	The user is cutting a workpiece using an unsuitable or worn-down disc type.	100%
3	The workpiece pinches the cutting disc and the disc breaks.	10%
4	Large fragments from the broken disc are thrown towards the user's face.	10%
5	A fragment hits the user in the eye in a way that leads to (partial) loss of sight on that eye.	0,1%

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	Total probability =	0,000 01
Risk level Injury level 3 combined with a probability of 0,000 01 gives **medium risk**.		

Non-compliance The power tool is missing the ***warning b*** from EN 60745-2-3:2011, Clause 8.12.1.103 Additional safety instructions for grinding and cutting-off operations.		
Injury Eye injuries, foreign body in eye, partial loss of sight, permanent loss of sight on one eye. Injury severity level = 3		
Step no.	**Step**	**Probability**
1	The user is not warned that the guard must be securely fastened to the tool.	100%
2	The user is cutting a workpiece without fastening the guard appropriately.	100%
3	The workpiece pinches the cutting disc and the disc breaks.	1%
4	Large fragments from the broken disc are thrown towards the user's face. The guard doesn't provide adequate protection because it is improperly fastened.	20%
5	A fragment hits the user in the eye in a way that leads to (partial) loss of sight on that eye.	0,1%
	Total probability =	0,000 002
Risk level Injury level 3 combined with a probability of 0,000 002 gives **low risk**.		

Chapter 3.4, Clause 8.12.1.104 Additional safety instructions for cutting-off operations

Non-compliance The power tool is missing one or more of the ***warnings a, b, d, e or f*** from EN 60745-2-3:2011, Clause 8.12.1.104 Additional safety instructions for cutting-off operations		
Injury Laceration or cut, external (deep), more than 10 cm long on body or more than 5 cm long on face, requiring stiches. Injury severity level = 2		
Step no.	**Step**	**Probability**
1	The user is not warned about the risk to "jam" the cut-off wheel under certain cutting-off operations or conditions and not to position the body in line with the rotating wheel.	100%
2	The user is cutting a workpiece.	100%

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3	The rotating disc stalls during the cut.	10%
4	The tool kicks back towards the user.	50%
5	The rotating disc hits the user and cuts a deep laceration in his thigh	1%
	Total probability =	0,000 5
Risk level Injury level 2 combined with a probability of 0,000 5 gives **medium risk**.		

Non-compliance The power tool is missing ***warning c*** from EN 60745-2-3:2011, Clause 8.12.1.104 Additional safety instructions for cutting-off operations		
Injury Laceration or cut, external (deep), more than 10 cm long on body or more than 5 cm long on face, requiring stiches. Injury severity level = 2		
Step no.	**Step**	**Probability**
1	The user is not warned to switch off the tool when interrupting a cut.	100%
2	The user is using the tool and interrupts the cut to brush away some dirt from the workpiece.	100%
3	The user holds the spinning tool in his hand. While focussing his attention on the workpiece, the tool catches something nearby and kicks back towards the user.	1%
4	The rotating disc hits the user and cuts a deep laceration in his thigh	5%
	Total probability =	0,000 5
Risk level Injury level 2 combined with a probability of 0,000 5 gives **medium risk**.		

Chapter 3.5, Clause 8.12.1.105 Additional safety instructions for sanding operations

Non-compliance The power tool is missing ***warning a*** from EN 60745-2-3:2011, Clause 8.12.1.105 Additional safety instructions for sanding operations		
Injury Eye injury, foreign body in eye. Temporary pain in eye without need for treatment. Injury severity level = 1		
Step no.	**Step no.**	**Probability**
1	The user is not warned not to use excessively oversized sanding paper.	100%
2	The user is sanding an object with the power tool using excessively oversized sanding paper.	100%

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3	Fragments of the sanding paper are torn off and thrown away from the tool.	20%
4	The loose parts hit the head of the user. (Probability is estimated from geometrical conditions. It is reduced as loose parts will be thrown in other directions than the user's head.)	0,1%
5	The loose part hits the user in the eye causing temporary pain. (Probability is estimated from geometrical conditions – area of eye relative to area of the face.)	5%
	Total probability =	0,000 01
Risk level Injury level 1 combined with a probability of 0,000 01 gives **low risk**.		

Chapter 3.6, Clause 8.12.1.106 Additional safety instructions for polishing operations

Non-compliance The power tool is missing ***warning a*** EN 60745-2-3:2011, Clause 8.12.1.106 Additional safety instructions for polishing operations		
Injury Eye injury, foreign body in eye. Temporary pain in eye without need for treatment. Injury severity level = 1		
Step no.	**Step**	**Probability**
1	The user is not warned not to let loose portions of the polishing bonnet spin freely.	100%
2	The user is polishing an object with the power tool.	100%
3	The user lets a loose portion of the polishing bonnet spin freely.	100%
4	The loose part comes off and hits the head of the user. (Probability is estimated from geometrical conditions. It is reduced as loose parts will be thrown in other directions than the user's head.)	0,1%
5	The loose part hits the user in the eye causing temporary pain. (Probability is estimated from geometrical conditions – area of eye relative to area of the face.)	5%
	Total probability =	0,000 05
Risk level Injury level 1 combined with a probability of 0,000 05 gives **low risk**.		

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Chapter 3.7, Clause 8.12.1.107 Additional safety instructions for wire brushing operations

Non-compliance The power tool is missing ***warning a*** listed in EN 60745-2-3:2011, Clause 8.12.1.107 Additional safety instructions for wire brushing operations		
Injury Eye injury, foreign body in eye. Temporary pain in eye without need for treatment. Injury severity level = 1		
Step no.	**Step**	**Probability**
1	The user is not warned about the risk that wire bristles are thrown from the brush during use.	100%
2	The user is wire brushing a metal object with the power tool.	100%
3	Wire bristles are thrown from the brush during operation.	100%
4	The wire bristles hit the head of the user. (Probability is estimated from geometrical conditions.)	10%
5	The wire bristles hit the user in the eye causing temporary pain. (Probability is estimated from geometrical conditions – area of eye relative to area of the face.)	5%
	Total probability =	0,005
Risk level Injury level 1 combined with a probability of 0,005 gives **low risk**.		

Non-compliance The power tool is missing ***warning b*** listed in EN 60745-2-3:2011, Clause 8.12.1.107 Additional safety instructions for wire brushing operations		
Injury Eye injury, foreign body in eye. Temporary pain in eye without need for treatment. Injury severity level = 1		
Step no.	**Step**	**Probability**
1	The user is not warned that the wire brush shouldn't interfere with the guard (if the use of a guard is recommended).	100%
2	The user is wire brushing a metal object with the power tool in a situation where a guard is recommended.	100%
3	The wire brush interferes with the guard and wire bristles are thrown from the brush.	50%
4	The wire bristles hit the head of the user. (Probability is expected to be low as the bristles are thrown in other directions than towards the head.)	1%

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5	The wire bristles hit the user in the eye causing temporary pain. (Probability is estimated from geometrical conditions – area of eye relative to area of the face. Probability is lowered 100 times as the bristles in general are expected to have very low energy when hitting the face.)	0,05%
	Total probability =	0,000 002 5
Risk level Injury level 1 combined with a probability of 0,000 002 5 gives **low risk**.		

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