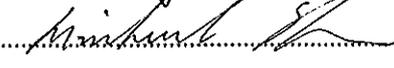


TEST REPORT EN ISO 11148-9: 2011 Hand-held non-electric power tools - Safety requirements - Part 9: Die grinders	
Report reference No.	: SH12111314-001
Tested by (+ signature).....	: Mikle Wang 
Approved by (+ signature)	: Michael Shen 
Date of issue.....	: December 6, 2012
Testing laboratory	: Intertek Testing Services Shanghai Ltd.
Address.....	: Building No.86, 1198 Qinzhou Road (North), Shanghai 200233, China
Testing location/procedure	: TL <input checked="" type="checkbox"/> RMT <input type="checkbox"/> SMT <input type="checkbox"/> WMT <input type="checkbox"/> TMP <input type="checkbox"/>
Address.....	: As above
Applicant	: Ningbo Steed Tools Co., Ltd
Address.....	: Fangjiada, Gulin Town, Yinzhou District, Ningbo, Zhejiang, P.R. China
Test specification:	
Standard	: EN ISO 11148-9: 2011
Test procedure	: CE-MD
Non-standard test method	: N/A
Test Report Form No	: TTRF EN ISO 11148_9A
TRF Originator	: Intertek Shanghai
Master TRF	: 2012-07
Test Item Description	: Air Die Grinder
Trademark.....	: See copy of marking plate
Model and/or type reference.....	: AT-7033L, AT-7034, AT-7035, AT-3170
Manufacturer.....	: Ningbo Steed Tools Co., Ltd Fangjiada, Gulin Town, Yinzhou District, Ningbo, Zhejiang, P. R. China
Rating(s)	: Max. air pressure: 6,3 bar, max grinding wheel Ø25mm, Chuck size: AT-7033L, AT-7034, AT-7035: Ø3mm, Ø6mm; AT-3170: Ø3mm AT-7033L: n ₀ 22000/min; AT-7034: n ₀ 25000/min AT-7035: n ₀ 20000/min; AT-3170: n ₀ 54000/min

Test case verdicts

Test case does not apply to the test object : N/A

Test item does meet the requirement..... : P(Pass)

Test item does not meet the requirement..... : F(Fail)

Testing

Date of receipt of test item : Nov.2, 2012

Date(s) of performance of test..... : Nov.2, 2012– Dec. 6, 2012

General remarks

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory.

"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a comma is used as the decimal separator.

Determination of the test results includes consideration of measurement uncertainty from the test equipment and methods.

General product information:

The products covered by this report are hand-held air dir grinders.

Remark:

This report based on report ref. no. SH10020607-001 issued on March 29, 2010 by Intertek Testing Services Shanghai Limited including following changes and/or additions:

Test standard changed from EN 792-9:2001+A1:2008 to EN ISO 11148-9: 2011.

Copy of marking plate

Air die grinder**AT-7033L****Max. air pressure: 6,3bar****Air inlet: 1/4inch****Rated speed n: 22000/min****Max. chuck size: ϕ 6mm****Max. Grinding wheel: ϕ 25mm****Series No.: [xxxxxxxx]****BJ: 2012**

Ningbo Steed Tools Co., Ltd
Fangjiada, Gulin Town, Yinzhou District, Ningbo, Zhejiang,
P.R. China

Authorised representative in EU:

Name: [xxxx] Adresse: [xxxxxxxx]

Air die grinder**AT-7034****Max. air pressure: 6,3bar****Air inlet: 1/4inch****Rated speed n: 25000/min****Max. chuck size: ϕ 6mm****Max. Grinding wheel: ϕ 25mm****Series No.: [xxxxxxxx]****BJ: 2012**

Ningbo Steed Tools Co., Ltd
Fangjiada, Gulin Town, Yinzhou District, Ningbo, Zhejiang,
P.R. China

Authorised representative in EU:

Name: [xxxx] Adresse: [xxxxxxxx]

Air die grinder**AT-7035**

Max. air pressure: 6,3bar
 Air inlet: 1/4inch
 Rated speed n: 20000/min
 Max. chuck size: ϕ 6mm
 Max. Grinding wheel: ϕ 25mm
 Series No.: [xxxxxxx]
 BJ: 2012



Ningbo Steed Tools Co., Ltd
 Fangjiada, Gulin Town, Yinzhou District, Ningbo, Zhejiang,
 P.R. China

Authorised representative in EU:
 Name: [xxxx] Adresse: [xxxxxxxx]

Air die grinder**AT-3170**

Max. air pressure: 6,3bar
 Air inlet: 1/4inch
 Rated speed n: 54000/min
 Max. chuck size: ϕ 3mm
 Max. Grinding wheel: ϕ 25mm
 Series No.: [xxxxxxxx]
 BJ: 2012



Ningbo Steed Tools Co., Ltd
 Fangjiada, Gulin Town, Yinzhou District, Ningbo, Zhejiang,
 P.R. China

Authorised representative in EU:
 Name: [xxxx] Adresse: [xxxxxxxx]



rotation marking shall be provided.

Summary of testing:

All tests are carried out in according to the EN ISO 11148-9:2011 and the test results meet the requirements specified in the above-mentioned standards.

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
4	Safety requirements and/or protective measures		
4.1	General		
	The machine shall comply with the following safety requirements and/or protective measures and be verified in accordance with Clause 5. In addition, the machine shall be designed in accordance with the principles of ISO 12100 for the relevant, but not necessarily significant, hazards, which are dealt with by this part of ISO 11148.		P
	The measures adopted to comply with the requirements of Clause 4 shall take account of the state-of-the-art.		P
	It is recognized that optimizing the design with respect to some safety measures can result in a degradation of performance against other safety requirements. In such cases, it is required to strike a balance between the various requirements in order to achieve a die grinder design that satisfies each requirement, so far as is reasonably practicable, and remains fit for purpose.		P
4.2	Mechanical safety		
4.2.1	Surfaces, edges and corners		
	Accessible parts of die grinders, except the insert tool, shall not have sharp edges or angles or rough or abrasive surfaces; see ISO 12100:2010, 6.2.2.1.		P
4.2.2	Supporting surface and stability		
	Die grinders shall be so designed that they can be laid aside and remain in a stable position on a plane surface.		P
4.2.3	Run-down time		
	The run-down time, after the stop command has been given, shall be as short as possible.	Less than 2s	P
4.2.4	Hydraulic fluid ejection		
	Hydraulic systems of the die grinder shall be enclosed so as to provide protection from high-pressure fluid ejection.	Pneumatic	N/A
4.2.5	Speed control		
	The rated speed of the die grinder shall not be exceeded under the conditions marked on the die grinder. It shall be possible to measure rotational speed using a tachometer.	AT-7033L: 18120/min<22000/min AT-7034: 18100/min<25000/min AT-7035: 17100/min<20000/min AT-3170: 44500/min<54000/min	P
	The speed control device of a die grinder shall be so designed as to prevent incorrect assembly. The speed control device shall be manufactured using no-corrodible material.		P

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
4.2.6	Guards		
	Guards covering the inserted tool are not required, with the following exception: die grinders intended for use with accessories larger than 50mm in diameter shall have a wheel guard.	Diameter of grinding wheel is not larger than 50mm. no guard is required.	P
4.2.7	Power tool construction		
	The die grinder shall be designed and constructed so as to prevent the loosening or loss of components during expected use, including rough handling and occasional dropping, which can compromise its safety functions. Verification shall be carried out in accordance with 5.5.		P
4.3	Thermal safety		
	Surface temperatures of parts of the die grinder which are held during use or which can be inadvertently touched shall follow the provisions of ISO 13732-1 and ISO 13732-3.		P
	Pneumatic tools shall be designed to minimize the cooling effects of exhaust air on the handles and other gripping zones.		P
4.4	Noise reduction	See Clause 5.2	P
4.5	Vibration	See Clause 5.3	P
4.6	Materials and substances processed, used or exhausted		
4.6.1	Exhaust air or gas		
	Pneumatic die grinders driven with compressed air or gas shall be designed in such a way that exhaust air or gases are directed so as not to cause a hazard to the operator and so that any other effects, such as blowing dust and reflected air or gas from the workpiece onto the operator, are minimized.	The direction is not toward operator	P
4.6.2	Dust and fumes		
	So far as is reasonably practicable, the die grinder shall be designed to facilitate the collection and removal or suppression of airborne dust particles and fumes generated by the work process. The instructions handbook shall include sufficient information to enable adequate control of the risks from dust and fumes.		P
4.6.3	Lubricants		
	When specifying lubricants, the manufacturer shall take environmental and occupational health aspects into account.		P
4.7	Ergonomics		
4.7.1	Design of the handle		

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
	Gripping areas of the die grinder shall be designed to provide a convenient, effective means for the operator to exercise full control over the die grinder.		P
	Handles and other parts used for gripping the die grinder shall be designed to ensure that the operator is able to grip the die grinder correctly and to perform the expected work. Handles shall suit the functional anatomy of the hand and the dimensions of the hands of the operator population. Further guidance on ergonomic design principles can be found in EN 614-1		P
	Die grinders having a mass greater than 2 kg (including the inserted tool) shall be capable of being supported by two hands whilst being lifted or operated.	≤ 2 Kg	N/A
	The grip shall be such that normal feed force and reaction torque can be transmitted in an ergonomic way from the hand of the operator to the die grinder.		P
4.7.2	Suspension device		
	Provision shall be made, where appropriate, to enable the attachment of a suspension device to the die grinder in order to reduce, where practicable, the physical strain placed on the operator by the weight of the die grinder. The fitting of a suspension device shall not introduce an additional hazard.	No suspension device used	N/A
4.8	Controls		
4.8.1	Start-and-stop device		
	Die grinders shall be equipped with a single control device to start and/or stop them. It shall be adapted to the handle or to the part of the die grinder being gripped, so that it can be held comfortable in the run position, and so that the operator can activate it without releasing the grip on the handles.		P
	Start-and-stop devices shall be so designed that the inserted tool ceases to be powered when the start-and stop device is released. Without manual effort and when completely released, the device shall move to the stop position, i.e. shall be of the hold-to-run type.	Hold to run type	P
	Start-and-stop devices shall be in the stop position or immediately move to the stop position when the die grinder is connected to the energy supply.	In the stop position	P
	It shall not be possible to lock the start-and-stop device in the running position, with the following exception.	No lock in the running position	P

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
	- For die grinders with an output power of 300W or less, the start-and-stop device may be designed to be locked in the on position if it can easily be unlocked without relinquishing hold of the die grinder.	For AT-3170	P
	- For die grinders with maximum collet capacity of diameter 3,0mm (or 1/8 in), foot-activation is permitted and they do not need to have a hold-to-run start-and-stop device.	No foot-activation device	N/A
4.8.2	Unintentional start		
	The start-and-stop device shall be so designed, positioned or guarded that the risk of unintentional start is minimized. Verification shall be carried out in accordance with 5.4.		P
	For die grinders with an output power greater than 500W, the start-and-stop device shall be so designed that it requires two separate and dissimilar actions to start the die grinder.		N/A
4.8.3	Actuating forces		
	For die grinders that are intended for frequent starts or for use with precision work, the actuating force shall be small.		P
	For die grinders that are normally used in operations of long duration, the force required to keep the start device in the run position should be small.		P
	For further information on trigger forces for control devices see EN 894-3.		P
5	Verification		
5.1	General conditions for tests		
	Tests according to this part of ISO 11148 are type tests		P
5.2	Noise		
	The noise-emission values shall be measured and declared in accordance with ISO 15744.	AT-7033L/ AT-7034/ AT-7035: L _{PA,d} : 85dBA L _{WA,d} : 96dBA AT-3170: L _{PA,d} : 76dBA L _{WA,d} : 87dBA	P
	Compliance with 4.4 may be verified through the comparison of the noise emission values with those for other machines of the same family or with machines of similar size and performance characteristics.		P
5.3	Vibration		

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
	For die grinders, the vibration total value shall be measured and reported in accordance with ISO 28927-12.	AT-7033L:2,17 m/s ² / AT-7034:2,31 m/s ² /AT- 7035:2,21 m/s ² AT- 3170:1,05 m/s ²	P
	The vibration-emission value and its uncertainty shall be declared in accordance with EN 12096.		P
	Compliance with 4.5 may be verified through the comparison of the vibration-emission values with those for other machines of the same family or with machines of similar size and performance characteristics.		P
5.4	Unintentional start		
	Compliance with 4.8.2 shall be verified as follows.		
	The die grinder shall be connected to the energy supply and placed and maintained in any position and pulled over the horizontal plane by its hose.		P
	Continuous operation of the start-and-stop device shall not occur.		P
	Additionally, those die grinders for which lock-off start-and-stop to start are required shall be checked by visual inspection to verify that the device is present and effective.		N/A
5.5	Power tool construction		
	Compliance with 4.2.7 shall be verified by dropping a sample die grinder three times onto a concrete surface from a height of 1 m without affecting its operational and safety functions. The sample shall be positioned so as to vary the point of impact.		P
5.6	Structure of verification of safety requirements		
	Table 1 — Structure of verification	Satisfy the table 1	P
6	Information for use		
6.1	Marking, signs and written warnings		
	Die grinders shall be marked visibly, legibly and indelibly with the following information:		
	- name and full address of the manufacturer and, where applicable, his/her authorized representative		P
	- designation of series or type		P
	- serial number or batch number;		P
	- year of construction, that is the year in which the manufacturing process is completed;		P
	- rated speed, in revolutions per minute		P
	- for pneumatic die grinders: the rated air pressure marked as (max.)		P
	- for hydraulic die grinders: the nominal pressure and flow; the maximum allowable setting for the pressure relief valve		N/A

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
	Die grinders shall be permanently marked with a graphical symbol in accordance with Annex C showing that the operator's instructions shall be read before work starts.		P
	The direction of rotation shall be permanently marked in accordance with Annex C.		P
6.2	Instruction handbook		
6.2.1	General		
	For the information to be provided to the user, the content of Clause 6 together with ISO 12100:2010, 6.4.5.2 and 6.4.5.3, apply.	See copy of manual	P
	The information provided by the manufacturer is an important, but not exclusive, basis for safe use of the tool. It shall provide sufficient information for the end user to perform an initial risk assessment.		P
	The hazards identified in 6.2.2.4 to 6.2.2.13 are foreseeable in the general use of hand-held die grinders. The information provided with the tool shall state that the user or the user's employer shall assess the specific risks that can be present as a result of each use.		P
	The instruction handbook shall contain information relating to at least the following:		P
	- name and address of the manufacturer or supplier or any other agent responsible for placing the die grinder on the market;		P
	- designation of the series or type;		P
	- operating instructions; see 6.3;		P
	- information on noise emission; see 6.4.2;		P
	- information on vibration transmitted to the hands of the operator; see 6.4.3		P
	- maintenance instructions; see 6.5		P
	- explanations of any symbols marked on the die grinder; see Annex C;		P
	- information about residual risks and how to control them		P
6.2.2	Operator's instructions		
6.2.2.1	General		
	The instructions and warnings stated in 6.2.2 to 6.2.4 shall be given with all die grinders unless the risk assessment shows that they are not relevant to a particular die grinder. Words of equivalent meaning may be used.		P
6.2.2.2	Statement of use		

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
	The operator's instructions shall include a description of the correct use of the die grinder and shall make reference to the appropriate inserted tools. The operator's instructions shall state that any other use is forbidden. Foreseeable misuse of the die grinder, which experience has shown can occur, shall be warned against.		P
6.2.2.3	Allowance for user		
	The operator's instructions shall be written primarily for professional users. Where a tool can be used by nonprofessional users, additional information for use shall be provided		P
6.2.2.4	General safety rules		
	- For multiple hazards, read and understand the safety instructions before installing, operating, repairing, maintaining, changing accessories on, or working near the die grinder. Failure to do so can result in serious bodily injury.		P
	- Only qualified and trained operators should install, adjust or use the die grinder.		P
	- Do not modify this die grinder. Modifications can reduce the effectiveness of safety measures and increase the risks to the operator.		P
	- Do not discard the safety instructions; give them to the operator.		P
	- Do not use the die grinder if it has been damaged.		P
	Tools shall be inspected periodically to verify that the ratings and markings required by this part of ISO 11148 are legibly marked on the tool. The employer/user shall contact the manufacturer to obtain replacement marking labels when necessary.		P
6.2.2.5	Projectile hazards		
	- Be aware that the failure of the workpiece or accessories, or even of the inserted tool itself can generate high-velocity projectiles.		P
	- Always wear impact-resistant eye protection during the operation of the die grinder or when changing accessories on the tool. The grade of protection required should be assessed for each use.		P
	- Ensure that the workpiece is securely fixed.		P
	- Check regularly that the speed of the die grinder is not higher than that marked on it. These speed checks shall be carried out without the abrasive product mounted and in accordance with the instructions given by the manufacturer.		P
	- Ensure that sparks and debris resulting from use do not create a hazard.		P
	- Disconnect the grinder from the energy supply before changing abrasive product and servicing.		P

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
	- The risks to others should also be assessed at this time.		P
6.2.2.6	Entanglement hazards		
	Choking, scaling and/or lacerations can occur if loose clothing, personal jewellery, neckware, hair or gloves are not kept away from the tool and accessories.		P
6.2.2.7	Operating hazards		
	- Avoid contact with the rotating spindle and inserted tool to prevent cutting of hands and other body parts.		P
	- Use of the tool can expose the operator's hands to hazards, including cuts and abrasions and heat. Wear suitable gloves to protect hands.		P
	- Operators and maintenance personnel shall be physically able to handle the bulk, weight and power of the tool.		P
	- Hold the tool correctly; be ready to counteract normal or sudden movements and have both hands available.		P
	- Maintain a balanced body position and secure footing.		P
	- Release the start-and-stop device in the case of an interruption of the energy supply.		P
	- Use only lubricants recommended by the manufacturer.		P
	- Personal protective safety glasses shall be used; suitable gloves and protective clothing are recommend.		P
	- A rotary file shall not be operated at a speed exceeding the rated speed.		P
	- For overhead work, wear a safety helmet.		P
	- Be aware that there is a running-on of the rotary inserted tool after the start-and-stop device has been released.		P
	- Warnings shall be given against the risk of explosion or fire due to the material being processed.		P
6.2.2.8	Repetitive motions hazards		
	- When using a die grinder to perform work-related activities, the operator can experience discomfort in the hands, arms, shoulders, neck, or other parts of the body.		P
	- While using a die grinder, the operator should adopt a comfortable posture whilst maintaining secure footing and avoiding awkward or off-balanced postures. The operator should change posture during extended tasks, this can help avoid discomfort and fatigue		P

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
	- If the operator experiences symptoms such as persistent or recurring discomfort, pain, throbbing, aching, tingling, numbness, burning sensations or stiffness, these warning signs should not be ignored. The operator should tell the employer and consult a qualified health professional.		P
6.2.2.9	Accessory hazards		
	- Disconnect the die grinder from the energy supply before fitting or changing the inserted tool or accessory.		P
	- Use only sizes and types of accessories and consumables that are recommended by the die grinder manufacturer; do not use other types or sizes of accessories or consumable.		P
	- Avoid direct contact with the inserted tool during and after use as it can be hot or sharp.		P
	- The maximum operating speed of the inserted tool shall equal or exceed the rated speed marked on the tool.		P
	- Never mount a grinding wheel, cut-off wheel or router cutter on a die grinder. A grinding wheel that bursts can cause very serious injury or death.		P
	- Do not use mounted wheels which are chipped or cracked or which could have been dropped.		P
	- Use only permitted inserted tools of the correct shaft diameter.		P
	- Pay attention to the fact that the permitted speed of the mounted point has to be lowered due to the increase of the length of the shaft between the end of the collet and the mounted point (overhang). Make sure that the minimum gripping length of 10 mm is observed (see Figure 1 and the recommendations of the manufacturer of mounted points).		P
	- Be aware of the risk of mismatching the diameter of the shaft of the mounted point and that of the collet.		P
6.2.2.10	Workplace hazards		
	- Slips, trips and falls are major causes of workplace injury. Be aware of slippery surfaces caused by the use of the tool and also of trip hazards caused by the air line or hydraulic hose		P
	- Proceed with care in unfamiliar surroundings. There can be hidden hazards, such as electricity or other utility lines.		P
	- The die grinder is not intended for use in potentially explosive atmospheres and is not insulated against contact with electric power.		P
	- Ensure that there are no electrical cables, gas pipes, etc., which can cause a hazard if damaged by use of the tool		P
6.2.2.11	Dust and fume hazards		

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
	- Dust and fumes generated when using die grinders can cause ill health (for example, cancer, birth defects, asthma and/or dermatitis); risk assessment and implementation of appropriate controls for these hazards are essential.		P
	- Risk assessment should include dust created by the use of the tool and the potential for disturbing existing dust.		P
	- Operate and maintain the die grinder as recommended in these instructions, to minimize dust and fume emissions.		P
	- Direct the exhaust so as to minimize disturbance of dust in a dust-filled environment		P
	- Where dust or fumes are created, the priority shall be to control them at the point of emission		P
	- All integral features or accessories for the collection, extraction or suppression of airborne dust or fumes should be correctly used and maintained in accordance with the manufacturer's instructions.		P
	- Select, maintain and replace the consumable/inserted tool as recommended in the instructions, to prevent an unnecessary increase in dust or fumes.		P
	- Use respiratory protection in accordance with employer's instructions and as required by occupational health and safety regulations.		P
	- Working in certain materials creates emission of dust and fumes, causing a potentially explosive environment.		P
6.2.2.12	Noise hazards		
	- Exposure to high noise levels can cause permanent, disabling hearing loss and other problems, such as tinnitus (ringing, buzzing, whistling or humming in the ears). Therefore, risk assessment and implementation of appropriate controls for these hazards are essential.		P
	- Appropriate controls to reduce the risk may include actions such as damping materials to prevent workpieces from "ringing".		P
	- Use hearing protection in accordance with employer's instructions and as required by occupational health and safety regulations.		P
	- Operate and maintain the die grinder as recommended in the instruction handbook, to prevent an unnecessary increase in noise levels.		P
	- Select, maintain and replace the consumable/inserted tool as recommended in the instruction handbook, to prevent an unnecessary increase in noise		P
	- If the die grinder has a silencer, always ensure that it is in place and in good working order when the die grinder is being operated.		N/A
6.2.2.13	Vibration hazards		

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
	The information for use shall draw attention to vibration hazards that have not been eliminated by design and construction and remain as residual vibration risks. It shall enable employers to identify the circumstances in which the operator is likely to be at risk from vibration exposure. If the vibration-emission value obtained using ISO 28927-12 does not adequately represent the vibration emission in the intended uses (and foreseeable misuses) of the machine, additional information and/or warnings shall be supplied to enable the risks arising from vibration to be assessed and managed.		P
	- Exposure to vibration can cause disabling damage to the nerves and blood supply of the hands and arms		P
	- Wear warm clothing when working in cold conditions and keep your hands warm and dry.		P
	- If you experience numbness, tingling, pain or whitening of the skin in your fingers or hands, stop using the die grinder, tell your employer and consult a physician.		P
	- Operate and maintain the die grinder as recommended in the instruction handbook, to prevent an unnecessary increase in vibration levels		P
	- Select, maintain and replace the consumable/inserted tool as recommended in the instruction handbook, to prevent an unnecessary increase in vibration levels.		P
	- Support the weight of the tool in a stand, tensioner or balancer, if possible		P
	- Hold the tool with a light but safe grip, taking account of the required hand reaction forces, because the risk from vibration is generally greater when the grip force is higher.		P
	- An improperly mounted or damaged inserted tool can cause excessive vibration levels.		P
6.2.3	Additional safety instructions for pneumatic power tools		
	- Air under pressure can cause severe injury.		P
	- Always shut off air supply, drain hose of air pressure and disconnect tool from air supply when not in use, before changing accessories or when making repairs;		P
	- Never direct air at yourself or anyone else.		P
	- Whipping hoses can cause severe injury. Always check for damaged or loose hoses and fittings		P
	- Whenever universal twist couplings (claw couplings) are used, lock pins shall be installed and whipcheck safety cables shall be used to safeguard against possible hose-to-tool connection failure.		P
	- Do not exceed the maximum air pressure stated on the tool.		P
	- Never carry an air tool by the hose.		P

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
6.2.4	Additional safety instructions for hydraulic power tools		
	- Do not exceed the maximum relief-valve setting stated on the tool		N/A
	- Carry out a daily check for damaged or worn hoses or hydraulic connections and replace if necessary		N/A
	- Use only clean oil and filling equipment		N/A
	- Power units require a free flow of air for cooling purposes and should, therefore, be positioned in a well ventilated area free from hazardous fumes.		N/A
	- Ensure that couplings are clean and correctly engaged before operation		N/A
	- Do not inspect or clean the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury		N/A
	- Do not install or remove the tool while the hydraulic power source is connected. Accidental engagement of the tool can cause serious injury		N/A
	- Be sure all hose connections are tight.		N/A
	- Wipe all couplers clean before connecting. Failure to do so can result in damage to the quick couplers and cause overheating.		N/A
	Instructions shall be given that only hydraulic fluid recommended by the manufacturer shall be used.		N/A
6.2.5	Specific safety instructions		
	Warnings shall be given about any specific or unusual hazards associated with the use of the die grinder. Such warnings shall indicate the nature of the hazard, the risk of injury and the avoidance action to take.		P
6.3	Operating instructions		
	The instructions shall include, where appropriate		
	- instructions for setting up or fixing the grinder in a stable position as appropriate for grinders that can be mounted in a support		P
	- assembly instructions, including recommended guards, accessories and inserted tools		P
	- an illustrated description of functions;		P
	- limitation on tool use due to environmental conditions		P
	- instructions for setting and testing		P
	- general instructions for use, including changing inserted tools and limits on the size and type of workpiece		P
6.4	Data		
6.4.1	General		
	The instructions shall include the information on the data plate and the following		
	- mass of the die grinder;		P

EN ISO 11148-9:2011			
Clause	Requirement - Test	Result - Remark	Verdict
	- for hydraulic die grinder:		N/A
	- specification of the coupling;		N/A
	- specification of hoses with regard to pressure and flow		N/A
	- maximum inlet temperature of the inlet fluid		N/A
6.4.2	Noise		
6.4.2.1	Declaration of emission		
	The instructions shall include a noise-emission declaration in accordance with ISO 15744.		P
6.4.2.2	Additional information		
	If the values for noise emissions obtained using the appropriate tests defined in 5.2 do not adequately represent the emissions during the intended uses of the machine, additional information and/or warnings shall be supplied to enable an assessment and the management of the associated risks.		N/A
	Information on noise emission should also be provided in the sales literature.		P
6.4.3	Vibration		
6.4.3.1	Declaration of emission		
	The instruction shall include the vibration-emission value and uncertainty as specified in 5.3 and the reference number of the test code in accordance with ISO 28927-12.	AT-7033L/ AT-7034/ AT-7035: Max. 3,0 m/s ² AT-3170: < 2,5 m/s ²	P
6.4.3.2	Additional information		
	If the vibration-emission values obtained using the appropriate tests defined in 5.3 do not adequately represent the emissions during the intended uses of the machine, additional information and/or warnings shall be supplied to enable an assessment and the management of the associated risks.		N/A
	Information on vibration emission should also be provided in the sales literature.		P
6.5	Maintenance instructions		
	The maintenance instructions shall contain:		
	- instructions to keep the die grinder safe by regular preventative maintenance,		P
	- information on when the regular preventative maintenance shall be carried out, for instance after a specified time of operation, a specified number of cycles/operations or a stated number of times per year,		P
	- instructions for disposal so as not to expose personnel and the environment to hazards,		P
	- list of the service operations that the user should carry out,		P

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Clause	Requirement - Test	Result - Remark	Verdict
	- instructions for lubrication, if required,		P
	- instructions to check the speed and make a simple check of the vibration level after each service,		P
	- instructions to check the speed regularly,		P
	- specifications of the spare parts to use when these affect the health and safety of operators.		P
	Maintenance instructions shall include the precautions to take to avoid exposure to hazardous substances deposited (due to work processes) on the tool.		P
Annex A	List of significant hazards		
Annex B	Examples of die grinders covered by this part of ISO 11148		
Annex C	Symbols for labels and signs		
Annex D	Examples of abrasive products for use with die grinders		