BEAR

INSTRUCTION MANUAL

DECLARATION OF CONFORMITY

We, the company:

RJH Finishing Systems Ltd.
Artillery Street,
Heckmondwike,
West Yorkshire,
WF16 0NR.
Tel: (01924) 402490
Fax: (01924) 404635

Hereby declare that:

Tool Grinders (BR Series)

Serial Nº:.....

Year of Manufacture: 2012

Are considered to be in conformity with the following:

Harmonised Standards:

BS EN ISO 12100:2010, BS EN ISO 13850:2008, BS EN 614-1:2006, BS EN 60204-1:2006, BS EN ISO 13857:2008

British Standards: 4163:2007

And meets the Essential Health and Safety Requirements of Machinery Directive 2006/42/EC and subsequent amendments. Electrical control and its Components are in accordance with the Low Voltage (2006/95/EC) and EMC (2004/108/EC) Directives.

Signed by: .....

J.R.Gathercole C.Eng
Engineering Director
For and on behalf of RJH Finishing Systems Ltd.

1. Safe Handling & Installation

2. Safety

3. Machine Operation

4. Maintenance

5. Risk Assessment

6. Troubleshooting

Appendix

1. Recommended Spare Parts

2. Machine Footprint

3. Cutting Oil Data Sheet

4. Contact Details

Due to a policy of continuous improvement, your machine may differ slightly to the exhibits shown in this manual

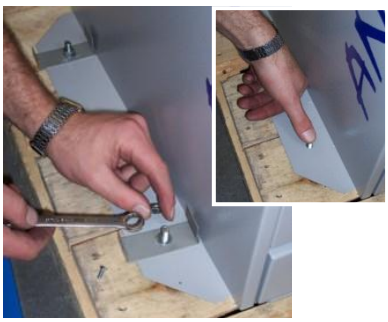
1.1 GENERAL DESCRIPTION

These robust tool grinders come with an integral force fed re-circulatory coolant system, filter and oil reservoir. They are supplied with grinding wheels fitted as standard and are therefore ready to use once installation has been completed.
NOTE: A can of grinding wheel oil is supplied with the compliments of RJH Finishing Systems Ltd.

1.2 SAFE OFF-LOADING & POSITIONING

The Bear tool grinder is a stable, freestanding unit with a sizable footprint and consequently a good resistance to toppling. The machine is supplied bolted to a pallet so that it can be safely lifted, transported and positioned as described below.
NOTE!!! THOUGH IMAGES SHOWN ARE OF A DIFFERENT MACHINE THE METHOD FOR OFFLOADING IS THE SAME.

1. Remove the two base covers to expose transit bolts.



2. Release & Remove the transit bolts (see insert).

3. Position Fork Lift extensions in-line with pallet top.

4. Slide the machine onto the fork lift extensions.

5. With the machine sat stable on the Fork Lift extensions – lower to the ground.

6. Slide the machine off the Fork Lift extensions onto the ground.

PLEASE NOTE!!! For protection during transit certain components may have been packed separately around the base of the machine. A wall chart highlighting operational methods is supplied with the machine. This wall chart should be displayed near to the machine when in its final position.

GREAT CARE MUST ALWAYS BE TAKEN WHEN MOVING ALL MACHINES, TO PREVENT INJURY AND DAMAGE. ONLY SUITABLY TRAINED PERSONNEL SHOULD LIFT/MANOEUVRE HEAVY MACHINERY TO AVOID INJURY/DAMAGE TO BOTH INDIVIDUALS AND EQUIPMENT. ONCE THE MACHINE HAS BEEN UNPACKED, IT SHOULD BE FULLY INSTALLED AS DESCRIBED.

1.3 MACHINE WEIGHT

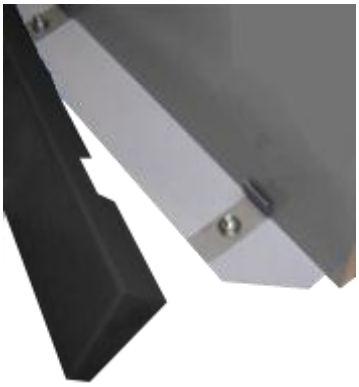
MACHINE MODEL	PACKED WEIGHT (Kg)
BEAR1	105
BEAR2	115

1.4 INSTALLATION

Refer to Appendix 2 for individual machine footprints.

It is recommended that a minimum area of 1m is allowed at the front of the machine for general operation (including opening cabinet door) and a further 0.5m to the rear of the machine to allow access for maintenance work.

The Bear2 and Bear2S models have a left hand cone wheel attachment. An additional 1m should be allowed to gain access to this attachment.



Position the machine so that it does not cause obstruction in use. The machine must be securely bolted through the holes provided using proprietary bolts (Para-bolts/Raw-bolts) with Ø10mm and 60mm length. Access is gained by removing the two base covers as shown.

Before use the machine needs to be filled with oil. Refer to section 4.3.

1.5 ELECTRICAL DETAILS

Ensure that the mains electrical supply complies with the supply voltage indicated on the serial name plate and connect the machine to the electrical supply. A qualified electrician **MUST** always carry this out and earth connections must be provided.

THREE PHASE UNITS – should be connected to a fused isolator, 3 phase electrical supply of **400v**, **50Hz**, **10amp** capacity. Check that the terminal panel connections correspond to the mains supply. Once the machine has been connected, press **START** button and check grinding wheel is rotating clockwise when viewed from above. If not, isolate the machine and switch two phases around.

SINGLE PHASE UNITS – machines are supplied with a suitable plug, but can be hard wired to a fused **13amp** electrical supply if required.

MODEL	Kw	ELECTRICS	FLC amps	FUSE RATE amps
BEAR1 & BEAR2	0.18	400/3/50	0.5	5
BEAR1S & BEAR2S	0.25	230/1/50	2.3	5

2.1 SAFETY FEATURES

These tool grinders are supplied in accordance with the European Machinery Directive 2006/42/EC and subsequent amendments.

2.2 STANDARD SAFETY FEATURES

- No volt overload push button starter, which will stop the machine if the motor becomes overloaded or if a power failure is incurred. The machine will **NOT** restart until the **STOP** button is released and **START** button pressed.
- Automatic safety cut out when cabinet door is opened.

2.3 OPTIONAL SAFETY FEATURES

- Foot stop switch and lockable triple pole isolator can be supplied if required.

2.4 VIBRATION

Hand Arm Vibration is a consideration with all off-hand operations. Whilst the idling vibration generated is generally less than the 2.5m/s² (A8 target limit), though levels in excess of this may be experienced by the operator.

Depending on the nature of the operation and load applied by the operator, accelerations in the 3-5m/s² range are possible and in such cases, exposure times may need to be reduced to meet the A8 (2.5m/s²) target, typically 5.5 hours for a level of 3m/s² and 2 hours for a level of 5m/s² maximum. However, due to the nature of these machines exposure times tend to be limited and so it is likely that the A8 target can be achieved in most cases.

In production environments, these values can only be determined by assessment in operation by using hand arm monitoring equipment. The regular checking of wheels etc... is highly recommended to prevent abnormal vibrations being experienced.

2.5 NOISE EMISSIONS

Under normal operating conditions the noise level is below 80dbA and ear protection is not mandatory. However, depending on the consumables used and work piece material, the noise level can in some cases rise above the 80dbA threshold, in which case ear defenders are **MANDATORY**.

2.6 MANDATORY PPE

SAFETY GLASSES ARE MANDATORY

EAR DEFENDERS ARE MANDATORY

2.7 SAFE WORKING PRACTICES

- Bear machines have been designed and manufactured to provide many years reliable service as a tool grinder. Use for any other purpose may lead to personal injury and/or damage to the machine.
- Persons operating these machines should be thoroughly familiar with the properties and hazards attached to both the machine and any work piece material.
- Rules regarding the wearing of protective clothing should be enforced.
- Don't wear a tie, jewellery or loose clothing whilst operating the machine and ensure long hair is tied back preventing entanglement.
- It is important that wheels are kept in good condition – please refer to section 4.5 grinding wheel maintenance.
- Any oil spillage should be cleaned up immediately to avoid accidents.

DO'S	DONT'S
✓ Always wear suitable eye protection	✗ Force sharp or knife like objects into the wheel, as this will lead to wheel disintegration.
✓ Clean the machine regularly especially when polishing different types of materials	✗ Enter the electrical control panel unless qualified and the electrical supply is isolated
✓ Monitor the vibration levels of the machine and operators	

3.1 SHARPENING A CHISEL/PLANE BLADE

- Ensure that every operator has been instructed in the use of all the machine controls.
- Insert the swivel arm into the inspection position Fig 1.
- Slacken the black knurled knob in the swivel arm and insert the blade to be sharpened, allowing enough protrusion of the blade to ensure that the tool carrier is clear of the grinding wheel. Re-tighten the knurled knob.
- Move the swivel arm back to the grinding position as shown in Fig 2. Position the blade ensuring that the edge is flat on the grinding wheel, which is necessary to ensure an even grind.

FIG 1

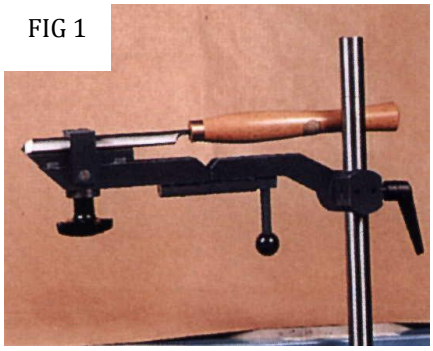
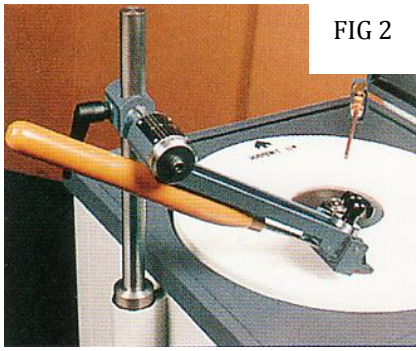


FIG 2



- If the blade is not flat, it needs to be adjusted. Do this by loosening the locking screw in the centre of the swivel arm using an allen key and reposition the blade edge.
- Set the required angle by moving the swivel arm on the support column until the required angle is achieved.
- Retighten the locking screw.
- Press the **START** button to initiate the machine. To stop the machine, press the **STOP** button or **FOOT STOP** depending on which machine model.
- Set the cutting oil flow rate using the control valve. Ensure that the grinding wheel is adequately lubricated throughout the grinding process.
- The blade can be inspected at any time by lifting the swivel arm up into the inspection position.

3.2 GOUGE SHARPENING

- In order to sharpen gouges which have both inner and outer edges, it is necessary to use the radius attachment. **NOTE!!!** The radius attachment is supplied with Bear2 models only.
- Insert blade to be sharpened as detailed in section 3.1.
- In addition to section 3.1, use the top handle on the tool holder to rotate the gouge back and forth throughout the grinding process. This will grind a radius round the full edge of the gouge.

3.3 CONE WHEEL – BEAR2 MODELS ONLY

- The cone wheel is used to remove any burrs formed on the inner face of a gouge after sharpening.
- Adjust the height of the work rest to the required position.
- Start the machine and set the oil flow rate.
- Gently put the gouge inner onto the cone to remove any burrs. Be careful not to apply too much pressure onto the wheel.

3.4 DRESSING THE WHEEL

- Over time the grinding wheel will become worn or glazed. To return it to effective grinding it is necessary to 'dress' the wheel.
- To use the wheel dresser, remove the swivel arm or radius attachment from the support column.
- Fit the wheel dresser arm onto the support column and secure in place by tightening the socket screw into the pre-drilled dimple on the support column. Ensure that the diamond point on the wheel dresser is clear of the wheel.
- Unlock the locking nut on the wheel dresser adjustment screw and move the dresser close to the wheel.
- Turn oil feed off and move arm away from the wheel. Now start the machine.
- Move the arm across the face of the wheel, lowering the dresser so that it takes a small cut into the wheel. Repeat this action once more and then bring the arm off the wheel. Lower the dresser again and re-tighten locking nut.
- Move the arm back and forth across the face of the wheel in a smooth action until no more cutting takes place. If necessary lower the dresser further and repeat this step until the wheel is fully dressed.
- Stop the machine, remove the wheel dresser and replace the swivel arm. Remember to turn the oil feed on.

4.1 GENERAL

- All machines in this family are relatively simple and need little attention by way of maintenance.
- The machine is fitted with sealed for life bearings and will require no further lubrication.
- It is recommended that any dust/debris is periodically cleaned off.
- Check the machine after each use for damage or broken parts and repair/replace parts immediately.

4.2 ELECTRICAL

- Electrical control circuits must be checked by authorised personnel only.
- Access to the contactor assembly is via the inspection hatch on the right hand side when viewed from the front.

4.3 FILLING THE OIL RESERVOIR

- Ensure that the machine is turned off and open the cabinet door.
- Fill the tank with approximately 2.5litres of the oil provided. Once filled, the oil should cover the brass filter. Check that all the drain pipes are located within the large compartment of the tank, which has a separate filter.
- Close the cabinet door and start the machine.
- Adjust the flow of oil onto the wheel using the tap in the rear left hand corner. There should be sufficient oil to lubricate the grinding wheel without flooding it. Any excess oil will drain back into the tank.
- Over time the grinding wheel will soak up the oil, particularly when it is a new wheel. It is important that the oil level in the tank is maintained and should be checked regularly.

4.4 CLEANING THE FILTER

- Ensure that the machine is turned off and open the cabinet door.
- Unbolt the filter tray. Remove the filter from the tray and wash it in paraffin to remove excessive build-up of waste grinding materials.
- Replace the clean filter and close the cabinet door. It is now safe to start the machine.

4.5 GRINDING WHEEL MAINTENANCE

- Every wheel must carry an indication of the maker, binder, wheel dimensions and maximum permissible speed.
- All Bear machines are designed to accept Ø406 x 32mm wheels.
- New wheels should be subjected to a ‘ringing’ test before being fitted. A ringing test entails a light tap on the wheel which should produce a clear ringing noise.

- Chipped or damaged wheels should be replaced immediately.
- If a grinding wheel is to cut properly it must run true and not be 'loaded' or 'glazed'. Loading is when the porous structure of the wheel becomes clogged with work piece material. Loading can occur when:
    1. Soft materials are being ground.
    2. The wheel is too hard for a particular job.
    3. The wheel has been used repeatedly without dressing.
- When 'loading' is evident the grinding wheel should be dressed by means of a wheel dresser such as a diamond dresser, leaving the surface of the wheel clean and edges neatly rounded.
- Keep spare wheels in a dry place at an even temperature and always in accordance with manufacturer's instructions.

4.6 VIBRATION & CHATTER

Vibration causes the wheel to wear unevenly and chatter marks will appear on the work surface. These may be caused by:

1. The machine not being correctly mounted.
2. Loose bearings.
3. Wheel being out of balance.
4. Build up of dust and grease on the grinding wheel.

4.7 GRINDING WHEEL SELECTION

When selecting the grit and grade of a grinding wheel for a particular application the following guidelines should be taken into account.

1. **MATERIAL TO BE GROUND** – In general the harder the work piece material the softer the grade of wheel required. Aluminium Oxide should be used for grinding metals of high tensile strength such as steel. Carbon Silicate should be used for metals with low tensile strength such as brass or cast iron.
2. **STOCK MATERIAL TO BE REMOVED** – For rapid material removal when a perfect finish is not required, a course grade open structure wheel is ideal.
3. **FINISH** – To a large extent the finish depends upon the grain size used in the wheel.
4. **WHEEL CONTACT** – Greater the area of contact between wheel and work piece, the softer the wheel required e.g. surface grinding with the periphery of a wheel where area approximates a line, requires a harder and finer wheel than when surface grinding with a cup wheel where the area of contact is comparatively large.
5. **WHEEL SPEED** – Hard wheels can be made softer by running them at a slow speed. It is advisable to run a grinding wheel at the speed recommended by the manufacturer and never exceed the stated maximum operating speed.

4.8 WHEEL CHANGE

- Grinding wheels **MUST** be changed by suitably trained personnel and in accordance with the Abrasive Wheels Regulations.
- Isolate/disconnect the power supply.
- Remove the nut on the spindle and take off the wheel with the clamp plates.
- Clean the area prior to fitting the new wheel.
- Replace the wheel.
- Ensure that blotters are correctly fitted between the clamp plates and wheel. Only use the original clamp plates supplied with the machine.
- Lock the wheel in place using the supplied nut and clamp plates, ensure the wheel rotates correctly.

5.1 RISK ASSESSMENT

Bear machines have been developed from machines that RJH Finishing Systems Ltd have supplied into the market place for many years and have an excellent safety pedigree. However, like all machines of this type they can be dangerous if used carelessly or incorrectly.

It is therefore essential that all **HAZARDS** are identified and **SAFE WORKING PRACTICES** are adhered to. What follows is an assessment of the **RISKS**.

5.2 HAZARDS

FIRE & EXPLOSION not considered to be of any great risk since the grinding process is well lubricated.

LOW RISK

LIMB ABRASION probably the most common hazard since the process of manual grinding involves contact with the abrasive wheel, which can lead to skin abrasion. Good quality gloves (Chrome or Leather) are recommended.

LOW RISK

ENTANGLEMENT potentially the most serious risk since the top of the wheel is exposed, but provided the safe working practices are followed the risk is considered to be low.

LOW RISK

BURNING as with all grinding processes considerable heat can be generated in the work piece and burning of the skin can result if handled carelessly. Good quality gloves (Chrome or Leather) are strongly recommended along with a quenching aid such as water etc…

LOW RISK

ELECTROCUTION all electrically powered appliances have the potential to kill. Even though the machine has simple electrical controls with isolation, overloads, emergency stop and no volt release there remains a danger. Only qualified personnel **MUST** access the control panel.

LOW RISK

EYE DAMAGE with any grinding process there is the possibility of dust/debris entering the eye(s). The wearing of safety glasses is **MANDATORY**.

LOW RISK

EJECTION OF PARTS/COMPONENTS is present with all grinding processes. Avoid applying excessive pressure or pressing sharp objects into the wheel as this will increase the risk of ejection and can result in wheel damage or even breakage.

LOW RISK

VIBRATION caused by the operation will be transmitted to the operator's arm(s) and in extreme cases can lead to Hand Arm Vibration Syndrome. The idling vibration is generally less than 0.5m/s². However, the problem is more operation related than simply a function of the machine, consumables and process techniques require evaluation and close monitoring.

TO BE ASSESSED

NOISE depends on the consumables used during operation. Machines such as this will usually be below 80dbA though it is still highly recommended that ear defenders are worn.

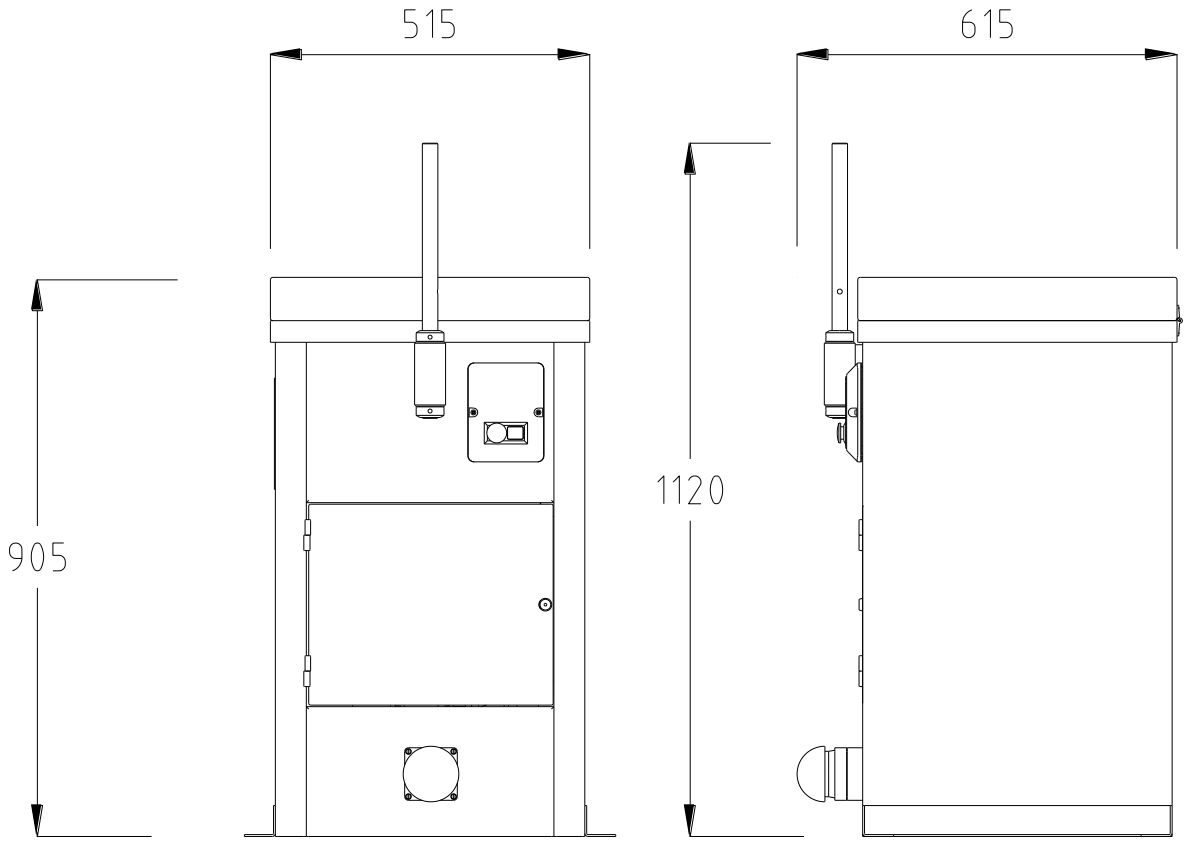
LOW-MEDIUM RISK

This type of manual equipment has been available for decades and the various processes with their associated operating hazards are well known, largely chronicled and manageable. It is our belief that with good operator training and adherence to the safe working practices this family of machines can be considered to have an overall **LOW RISK** for the purposes of the Provision and Use of Work Equipment Regulations (PUWER).

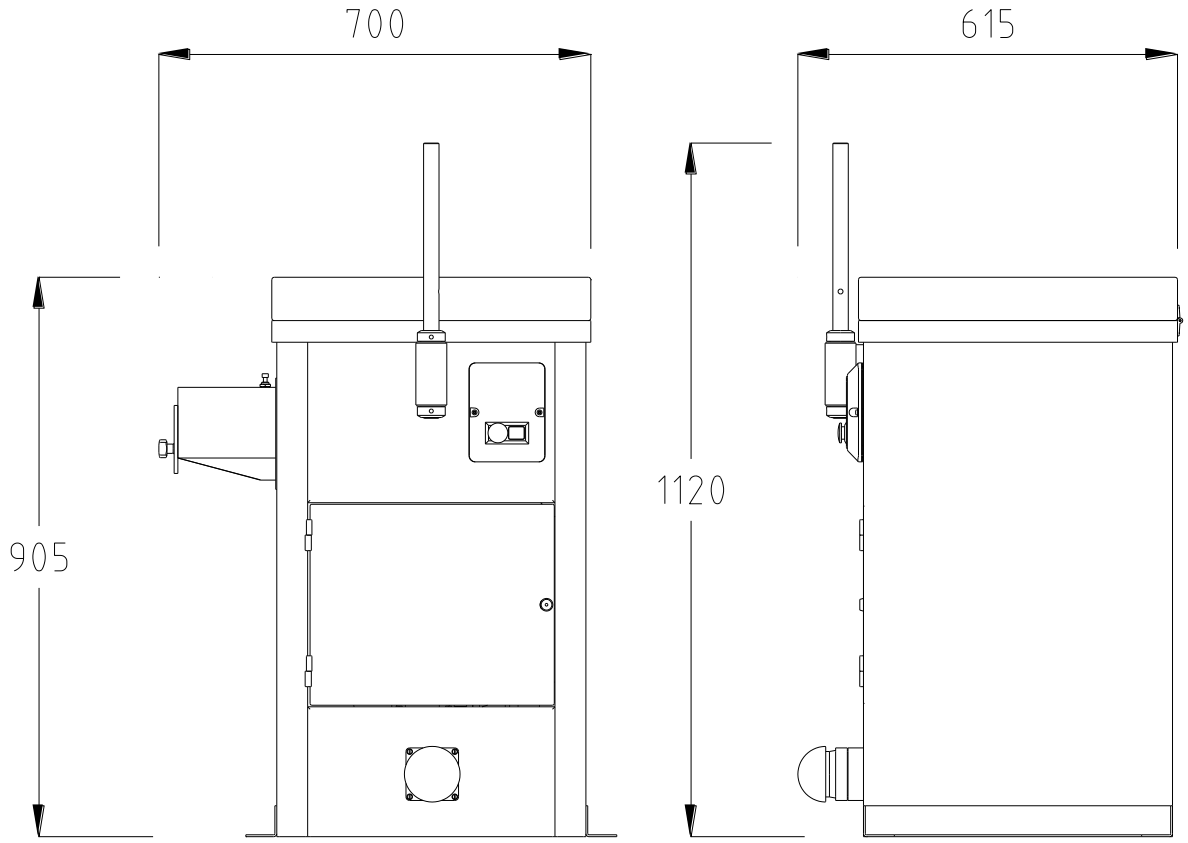
SYMPTOM	CHECK	ACTION
Machine will not start	Mains On	Switch on Isolator
	Emergency Stop	Release 'E' Stop
	Control Overloads	Requires Electrician
	Control Fuses	Requires Electrician
No oil feed	Pipes	Clear blockages
	Control valve	Open if closed
	Tank oil level	Top up if necessary
Poor Grinding Performance	Wheel selection	Replace with more appropriate wheel for the job. Seek advice if needed.
	Wheel condition	Replace if necessary

PART Nº	DESCRIPTION	QTY
7242-001	START BUTTON	1
7242-002	STOP BUTTON	1
8625-001	OIL (5 LITRE)	1
BRFILTER	FILTER BLOCK	1
H BRA80	GRINDING WHEEL	1
O BRRAO	RADIUS ARM	1
BER-1-0071	CHISEL ARM ASSEMBLY	1
H BRA80/17	CONE WHEEL	1
7373-164	NON RETURN VALVE	1
N100024	PUMP	1
BER-1-0022	LID ASSEMBLY	1
L 10036	PRESSURE RELEASE VALVE	1
K BEARSEALS	OIL SEAL	1
N LINKBELT	DRIVE BELT	1
L 10046	STRAINER	1

BEAR1 TOOL GRINDER



BEAR2 TOOL GRINDER



Health & Safety Data Sheet

NEAT CUTTING OILS

PENNINE LUBRICANTS
UNIT 35, NUTWOOD TRADING ESTATE
LIMESTONE COTTAGE LANE
SHEFFIELD
S6 1NL
TEL: 0114 2852987
FAX: 0114 2852988

PRODUCT NAME: METACUT 22, 32, T, G, H, AL, CF, BC, HONING FLUID, FORM GRINDING OIL, COMBICUT FG
PRODUCT CODE: AF0, AF1, AF2, AF3, AF4, AF5, AF7, AF9, AES, AXX1
APPLICATION: Neat metalworking fluids.

2. COMPOSITION / INFORMATION ON INGREDIENTS

General: These products are based on highly refined mineral oil with additives, some containing chlorinated paraffins.

3. HAZARD IDENTIFICATION

General: These products are not classified as hazardous.

4. FIRST AID MEASURES

Eyes: Immediately wash eye thoroughly with plenty of clean water.
Skin: Following contact with the product, wash thoroughly with soap and water. Remove heavily contaminated clothing. wash contaminated clothing before re-use. If irritation persists, obtain medical advice.
Ingestion: DO NOT INDUCE VOMITING. Wash out mouth with water and obtain medical attention. Treat symptomatically. If aspiration is suspected, obtain immediate medical attention.
Pressure Injection: Always obtain immediate medical attention.

5. FIRE FIGHTING MEASURES

Flammability: May support combustion in a serious fire.
Extinguishing Media: Foam, dry powder, CO_2, sand or earth.
Products of Combustion: See Section 10

6. ACCIDENTAL RELEASE MEASURES

Always prevent entry into drains or watercourses.
Spillages can be slippery.
Small Spills: Soak in absorbent granules or sand.
Large Spills: Bund using absorbent granules, sand or earth and reclaim bulk liquid.
Disposal of Spillage: Via authorised waste disposal contractor. Disposal must be in accordance with the Environmental Protection Act 1990.

7. HANDLING AND STORAGE

Handling: To avoid the possibility of skin disorders, avoid repeated or prolonged contact with the product.
Storage: Store in dry conditions between 0 and 40^{o} C.

8. EXPOSURE CONTROL / PERSONAL PROTECTION

Exposure Limits: As for mineral oil mist: 5mg/m^3 (8 Hr TWA)

Skin: Wear oil impervious gloves in cases of prolonged or repeated skin contact. Change heavily contaminated clothing and overalls as soon as possible.
Inhalation: Respiratory protection is not normally required.
Industrial Hygiene: Wash hands after use, before eating, drinking or smoking and before and after using the toilet.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odour: Mobile Liquid with Characteristic Odour
Specific Gravity @ 20$_o$ C: 0.88
Solubility in water: Insoluble
Flash Point (C): >100 Autoignition Temp.: >150
Flammability limits in air: Not Known
Vapour Pressure @ 20$_o$ C: Not known Vapour Density: Not Known
Boiling Point (C): >250 Melting Point (C): <0
Viscosity @ 40 $_o$ C (cSt) As viscosity grade for individual product.

10. STABILITY AND REACTIVITY

Stability: These products are stable and unlikely to react in a hazardous manner under normal conditions of use.
Conditions to Avoid: Extremes of temperature. Store between 0 and 40$_o$C.
Materials to Avoid: Strong oxidising agents.
Decomposition Products: Oxides of carbon, water and traces of other compounds, may include chlorine compounds.

11. TOXICOLOGICAL INFORMATION

Eyes: Eye contact with product may cause transient irritation.
Skin: The product in occasional skin contact is unlikely to cause any significant reaction.
Inhalation: The product is unlikely to present any significant inhalation hazard at ambient temperatures. High temperatures or atomising systems may lead to generation of vapours, mists or fumes which could cause irritation to eyes or respiratory tract. Repeated excessive exposures to oil mists may cause respiratory damage and a condition resembling pneumonia.
Ingestion: The product has a low order of acute oral toxicity; ingestion is not regarded as a significant health hazard likely to arise in normal use. Swallowing significant quantities may cause discomfort, nausea and diarrhoea.
Aspiration: Aspiration into the lungs caused by vomiting following ingestion can be hazardous with possible resultant chemically induced pneumonia.

12. ECOLOGICAL INFORMATION

Environmental Assessment: When used and disposed of as intended, no adverse environmental effects are foreseen.
Persistence and Degradability: Inherently biodegradable.
Ecotoxicity: Not expected to be ecotoxic to fish / daphnia / algae, or inhibitory to sewage bacteria.

13. DISPOSAL CONSIDERATIONS

All means of disposal should comply with local regulations and the Environmental Protection Act 1990. Dispose of the product and containers carefully and responsibly. Do not allow product to contaminate ponds, water courses, soil or drains.
Used Product: The product may be incinerated in suitable equipment under controlled conditions. Alternatively, the product can be disposed of via an authorised person / licensed waste disposal contractor.
Unused Product: May be sent for reclamation.

14. TRANSPORT INFORMATION

Classification: Not classified as dangerous for conveyance.
UN Number: Not Applicable.

15. REGULATORY INFORMATION

16. OTHER INFORMATION

Legislation: Chemical (Hazards, Information and Packaging) regulations 1993.
Environmental Protection Act 1990.
Control of Pollution Act 1974.
The Environmental Protection (Duty of Care) Regulations 1991.
HSE Publications: EH 26 Occupational Skin Diseases. Health and Safety Precautions.

EH 40 Occupational Exposure Limits.
EH 58 The Carcinogenicity of Mineral Oils.
EH 62 Metalworking Fluids - Health Precautions.
SHW 397 Effects of Mineral Oil on the Skin

Product Data Sheet

HONING FLUID (NEAT CUTTING OIL)

Product Code: AF3.

Product Description

Pennine Honing Fluid is manufactured from highly refined mineral oils treated with active extreme pressure and lubricity improving agents. It is used primarily in all honing applications including power stroke honing where cooling units may be utilised. It is particularly suitable for the horizontal honing of long sections. The low viscosity of this product ensures that fine swarf is easily flushed away and helps to prevent the build up of heat whilst it's additive treatment gives good lubricity and film strength to help prevent high heat generation and to avoid pick-up.

Applications

As well as honing applications, the lubricant can be used on deep hole drilling and boring on steels nickel alloys and non-ferrous materials. It is also used on precision automatic work.

Typical Test Data

Density @ 20^{o}C	0.91
K. V. @ 40^{o}C (cSt)	11.5
Flash Point (^{o}C)	150
Pour Point (^{o}C)	-28

Availability

Pennine Honing Fluid is available in bulk, 205 litre barrels, 25 litre drums and 5 litre plastic bottles.

Storage

Barrels of lubricant should always be stored in such a way that will prevent the ingress of water when stored in the open.

Health and Safety

Please refer to the relevant Health and Safety Data Sheet, a copy of which is freely available to all our customers.

Data represented is typical of that obtained with normal production tolerances and does not constitute a specification. The policy of Pennine Lubricants is one of continual improvement, we therefore reserve the right to change specifications without notice.

ARTILLERY STREET

HECKMONDWIKE

WEST YORKSHIRE

WF16 0NR

TEL: +44 (0)1924 402490

FAX: +44 (0)1924 404635

E-MAIL: sales@rjhfinishing.co.uk

WEB: www.rjhfinishing.co.uk