

TASK DESCRIPTION Hand Grinder (Operation of)






Purpose: This work instruction describes how to use a portable (125 mm) hand grinder along BHP WAIO railway lines. This work instruction should be read in conjunction with any site-specific safety instruction or work procedure that may be in place for the duration of the works.

**SAFETY**



Before commencing work, complete a TAKE 5 every time to check that no abnormal conditions exist and complete JHA if prompted by TAKE 5.

1. Hot work PPE including gloves and spats must be worn for protection against hot sparks.
2. Wear foam backed safety glasses or goggles and a face shield to protect against flying particles.
3. Wearing a P2 mask (if clean shaven) or Powered Air Purifying Respirator (PAPR) system is recommended to protect against airborne contaminants while grinding rails.

MATERIAL RISKS AND CONTROLS

Risk	Description of Risk	Critical Controls
	Extreme Weather Incident	Conduct inspections in your work area prior to the cyclone season. Complete area clean-ups to remove or secure loose objects. Make sure you know how to identify lightning risk and when precautionary action should be taken.
	Entanglement and Crushing	Check grinder guard is fitted, adjusted correctly, and protects from rotating parts, and hot sparks. Notify your Supervisor if guards are broken, not present or not operating as designed. Make sure interlocks, emergency shutdowns and warning devices are tested, visible, accessible, and performing their intended function.
	Uncontrolled Release of Energy	Confirm 'zero energy', conduct isolation checks and complete a try test before starting any work on the grinder, such as changing the disc. Complete a risk assessment to identify and control all potential energy sources for your task. Understand the isolation processes for your task and relevant procedures.
	Noise-Induced Hearing Loss	Select suitable hearing protection for your level of exposure and based on your personal fit testing results. Fit your hearing protection correctly.
	Electrocution	Check that fixed, mobile, portable and hand-held electrical equipment is registered, tagged, tested and approved for use on site. Ensure any high-risk electrical task you conduct is safely managed through relevant procedures, permits and / or checklists.






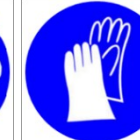
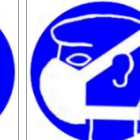
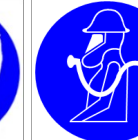
MATERIAL RISKS AND CONTROLS

Risk	Description of Risk	Critical Controls
 Flammability	Fire and Explosion	<p>Manage combustible materials during your hot work activities.</p> <p>Inspect the service date and condition of emergency response equipment and hot work equipment to be used for your task.</p> <p>Confirm your workgroup is trained and competent to complete tasks involving hot work.</p> <p>Be aware of, and always follow WAIO procedure and controls for hot work during a total fire ban.</p>
 Rolling Stock	Rail Mounted Equipment (RME)	<p>Verify appropriate protection from rail vehicles has been implemented in your work area before any work commences in the Danger Zone.</p> <p>Ensure your workgroup has a two-way radio tuned to the applicable train control channel when operating or working in the rail corridor.</p> <p>Confirm your workgroup is trained and competent to conduct work in the Danger Zone.</p> <p>Establish clear methods of communication with the TPO and / or Lookout when working in the Danger Zone.</p>

ADDITIONAL CONTROLS REQUIRED

Control Type	Reason for Control Requirements
Take 5	This is a minimum standard requirement performed at the start of the task, or if there is any change during the task.
Job Hazard Analysis (JHA)	As determined by take 5, individual, or by supervisor.
Permit to Work (if required)	Permit required for all hazardous hot work activities.
Onsite Safety Briefing	All personnel involved to discuss the job in detail with supervisor prior to commencing work to safely manage material risks and any high-risk work activity.
Track Occupancy Authority (TOA)	Authority used to provide safe access to the track danger zone.
Barricading / Warning Signs	Temporary control measure to protect personnel from hazards.
Spotter	Person to watch for something to happen. The spotter will, in the event of unsafe conditions alert others while work is being performed.

ADDITIONAL PPE REQUIRED

 Standard PPE	 Hearing Protection	 Dual Eye Protection	 Safety Glasses	 Goggles	 Gloves	 P2 Dust Mask	 Breathing Apparatus
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Work Instruction

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SPECIFIC COMPETENCIES, KNOWLEDGE AND SKILLS REQUIRED

Grinder Operator VOC
 Spotter with Fire Extinguisher Training
 Hot Work Training
 Track Infrastructure Card
 Track Occupancy Authority (TOA)

TOOLING AND EQUIPMENT REQUIRED

- 125 mm (5") Hand Grinder
- Grinding Discs
- Multi-Purpose Spanner (disc removing tool)
- Generator
- RCD Power Box
- Fire Extinguisher
- Signage (road and hot works)
- Barricading (If required for area)
- Spare Battery(s) (for battery operated grinders)
- Extension Lead

REFERENCE DOCUMENTATION

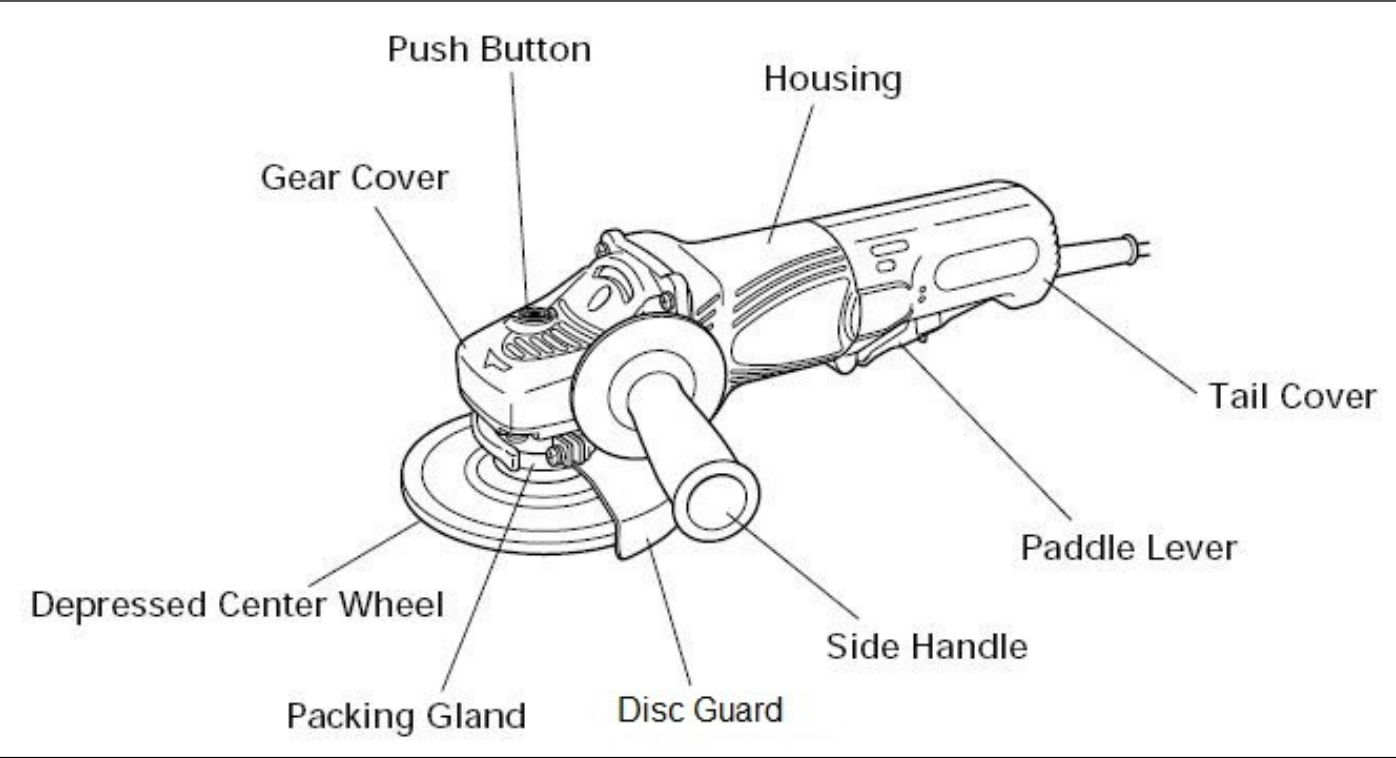
Document Reference Number	Document Description
0125523	Conducting a Take 5
0124548	Conducting a Job Hazard Analysis (JHA)
0116319	Permit to Work
0127717	Isolations and Barricading
0136618	Onsite Safety Briefing
REG-IHS-SAF-026	WAIO Prohibited and Restricted Items
SPR-IHS-SAF-040	Portable Hand Tools
SPR-IHS-SAF-071	Hot works Procedure
0162700	Hot Work During Total Fire Ban Pilbara Rail Network Procedure
0162629	Total Fire Ban Activity Checklist - Hot Work
0002664	Track Maintenance Code of Practice
0119114	Rail Rule Book (RRB) module 1 – General Rail Rules & Procedures
0119115	Rail Rule Book (RRB) module 2 – Trackside Safety
0121599	Extreme Weather Procedure
SPR-IHS-SAF-002	Event Management Procedure
SPR-IHS-SAF-006	WAIO Personal Protective Equipment (PPE)
SPR-IOH-SAF-006	Iron Ore Injury and Illness Classification and Reporting Procedure
WIN-RTS-RTM-128	Traffic Control Devices

ATTACHED PICTURES, DRAWINGS OR DIAGRAMS

Battery Grinder, Electric Grinder, Grinding Disc & Disc Spanner



Name of Parts



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No.	Task Steps	Photo or Diagram	Notes
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Tasks to be Done Under Running Conditions

1. Preparation

- 1.1. Conduct an onsite safety briefing.
Assign a dedicated fire spotter who must remain in close proximity to the hot work, dedicated solely to detecting and suppressing any fire caused by the hot work.



Note: Ensures all workers are aware of tasks to be completed, hazards, and controls in place.

Ref: 0136618 Onsite Safety Briefing.

- 1.2. Before commencing hot works, identify if work area is classified as a 'Hazardous Area Hot Works' in accordance with section 4 of SPR-HIS-SAF-071, Hot Works Procedure.
If the work area is 'hazardous' follow the steps illustrated in the hot works flow chart.

Ref: [Appendix 1, Section 4. Hazardous Area Hot Works](#)

Ref: [Appendix 2, Hot Works Flow Chart](#)

Ref: SPR-HIS-SAF-071 Hot Works Procedure.

- 1.3. Complete a Take 5 for each task.



Note: This is a minimum standard requirement.

Note: If hazard rating is H11 or higher, complete a JHA with entire workgroup.

- 1.4. Complete a WAIO Job Hazard Analysis (JHA) Form for any hazards or job steps not covered in this work instruction with all members of the work party if hazard rating is H11 or higher.

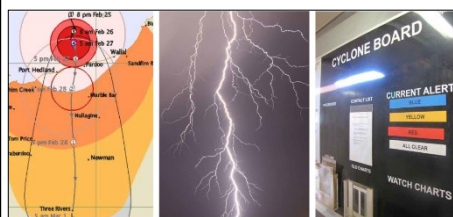
Note: JHA must be completed for all hazardous hot work activities.

Note: All members of the work party must review and sign on to the JHA.

Note: Consider hazards such as weather conditions and embankments.

Ref: 0124550 WAIO Job Hazard Analysis (JHA) Form.








- 1.5. Assess suitability of existing and forecast weather conditions for duration of task.



Ref: 0121599 WAIO Extreme Weather Procedure for lightning or cyclonic weather conditions.

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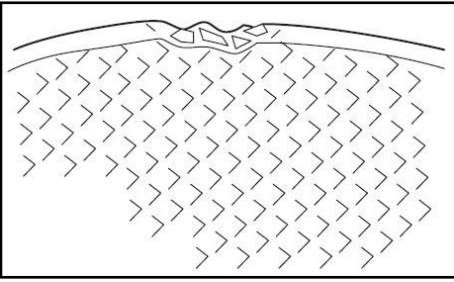

No.	Task Steps	Photo or Diagram	Notes
1.6.	Permission obtained from train control to proceed/obstruct track (if required).		 Track Occupancy Authority is the minimum level of protection required to work on a portion of a track.  Be aware of other traffic, wildlife and rolling stock movement – constant vigilance.
1.7.	Set up hot works area, including signage.		 Use correct gloves, avoid pinch points, and only carry one sign at a time. Ref: SPR-IHS-SAF-071 Hot Works Procedure & TGI 1311-03 Hot Works Site Setup on Track.
1.8.	 Confirm fire extinguisher is accessible and within test date. Clear work site of all flammable materials.		 Have a fire watch person trained in fire extinguisher training for the duration of the hot work activity and for a minimum of 30 minutes after the hot work has been completed. Ref: 0162700 Hot Work During Total Fire Ban Pilbara Rail Network Procedure must be followed during days of total fire bans.

2. Pre-Start Inspection

2.1.	Confirm the grinder meets WAIO operational requirements. <ul style="list-style-type: none"> • Fail safe / dead-man switch is installed. • Discs shall be used with the correct RPM rating. • Guarding should be kept in place. 		 NEVER use a grinder unless it meets WAIO requirements. Ref: REG-IHS-SAF-026 WAIO Prohibited and Restricted Items & SPR-IHS-SAF-040 Portable Hand Tools.
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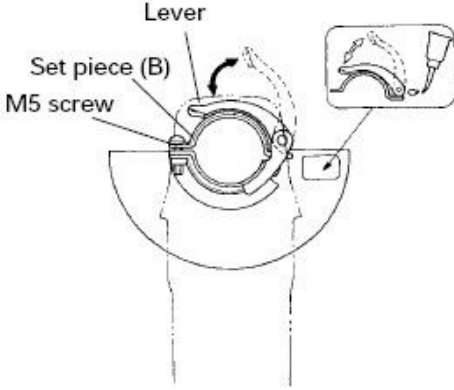

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No.	Task Steps	Photo or Diagram	Notes
2.2.	Before use, the grinder, and all accessories (extension leads, RCD box and generator etc.) must be thoroughly inspected.		Note: This inspection phase is carried out to ensure that the different elements are in good condition and have not suffered from any damage during transport or storage.
2.3.	Check protective guard, moulded side handle and body of grinder: <ul style="list-style-type: none"> Visual check to make sure that there are no external defects, deformations, superficial cracks, marks, wear, or corrosion. Protective guard and side handle must be fitted. 		 Do not use a defective grinder, tag out-of-service if the grinder fails any part of the pre-start inspection.  NEVER use a grinder unless the protective guard and side handle are in place.
2.4.	 Inspect all electrical equipment to verify that all tags are up to date and equipment is in working order. <ul style="list-style-type: none"> Check grinder lead, RCD boxes and extension leads for damage and correct tags. Confirm RCD safety switches are in good working order. 		 Tag out-of-service all damaged or out of date equipment and report to supervisor. Note: For battery operated disc grinders, make sure the battery is adequately charged including any spare batteries.
2.5.	Check the disc: <ul style="list-style-type: none"> Check the disc is mounted correctly and rotates freely. Ensure the disc is not cracked or damaged in any other way (as shown). Ensure correct disc is used. Ensure disc is within expiry date. 		 Discard of faulty discs immediately and replace them with discs in perfect condition. Ref: Appendix 3, Disc Assembly and Disassembly



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No.	Task Steps	Photo or Diagram	Notes
2.6.	<p>Adjust disc guard at an angle that will protect the operator's body from injury by a broken disc piece.</p> <ul style="list-style-type: none"> Loosen the lever on the disc guard. Turn the disc guard to the angle suitable for operation. (Loosen M5 screw and readjust if the disc guard does not rotate smoothly) After the adjustment, set the lever in closed position to fix it completely. 		<p> If the disc guard is not attached properly, a broken disc may result in and cause death or serious injury.</p> <p>Note: Lubricate the sliding section of the set piece (B) and the lever if the lever does not move smoothly.</p>
2.7.	<p>Test the grinder before using.</p> <ul style="list-style-type: none"> Make sure the push button is disengaged by pushing push button two or three times. Turn the grinder "ON", and make sure the grinder runs smoothly and shows no abnormalities. 		<p>Note: Duration of the trial run is as follows:</p> <ul style="list-style-type: none"> 3 minutes or more when disc is replaced. 1 minute or more when starting work.





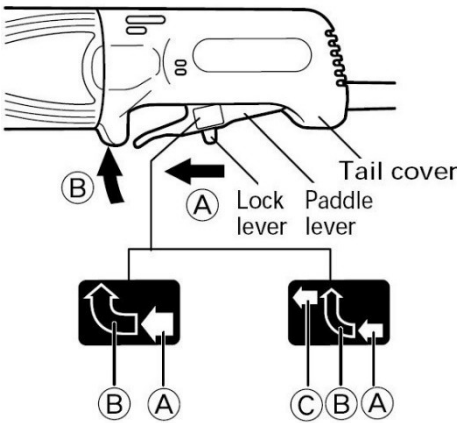


Tasks to be Done Under Track Occupancy Authority (or higher level of protection)

3. Safe Use

<p>3.1.</p> <p></p> <p>Fit the following PPE if not already worn:</p> <ul style="list-style-type: none"> Gloves (vibration and hot work rated). Hearing protection. Approved foam backed safety glasses. Full face mask shield. Leather spats Hot work PPE. 		<p> Possible airborne contaminants. Wearing a P2 mask or Powered Air Purifying Respirator (PAPR) system is recommended while grinding rails.</p>
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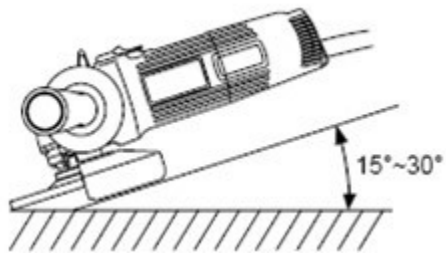
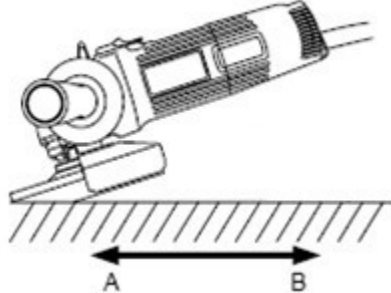

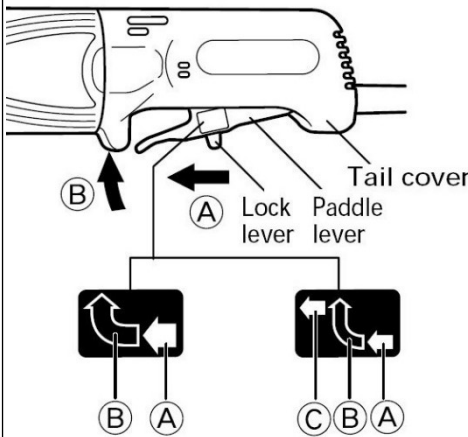
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No.	Task Steps	Photo or Diagram	Notes
3.2.	<p>Confirm the following prior to beginning grinding operations:</p> <ul style="list-style-type: none"> Fire spotter is in position and is wearing additional PPE (spats and hearing protection). Fire spotter is dedicated <u>only</u> to this task. Fire extinguisher is within reach of fire spotter. 		<p> Fire watch person must be trained in the use of fire extinguishers and remain in place for the duration of the hot work activity and for a minimum of 30 minutes after the hot work has been completed.</p>
3.3.	<p>Position yourself comfortably over work piece, clear from line of fire.</p> <p>Hold the grinder firmly by its housing and side handle.</p>		<p> Maintain sure footing and be aware of loose foundation / ballast.</p> <p>Note: The grinder produces a counterforce which must be controlled by firmly holding onto the grinder.</p>
3.4.	<p>Switch operation.</p> <p><u>To switch ON:</u></p> <p>Slide the lock lever in the direction of (A) and press the paddle lever in the direction of (B).</p> <p><u>To switch OFF:</u></p> <p>Release the paddle lever.</p>		<p>Note: This instruction is specific to WAIO approved grinders with fail safe / dead-man switch installed.</p>
3.5.	<p>Commence grinding by using light grinding pressure.</p> <p>There is no need to press hard when grinding. Usually, the grinder's own weight is sufficient to allow the required light contact with the surface to be ground.</p>		<p> Do not press the grinder forcibly against the surface to be ground. Heavy pressure can result in disc breakage and serious injury. It can also damage the surface being ground or damage the grinder's motor.</p>



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No.	Task Steps	Photo or Diagram	Notes
3.6.	Use proper grinding angle. Grind only with the disc's edge by lifting the grinder 15° to 30°		Note: Do not use the entire surface of the disc. Use only the edge of the disc.
3.7.	Move the grinder in the proper direction. When using a new disc in direction (A), the wheel edge may cut into the workpiece. In this case, grind in direction (B).		Note: Once the wheel edge is worn, the workpiece can be ground in both directions.
3.8.	Keep grip with both hands until disk has come to a complete stop before changing position.		Note: Take regular breaks and rotate grinding task amongst other workers.
3.9.	Adjust operation of grinder to desired finish.		Note: For a fine finish, decrease pressure by lifting slightly and grind slowly, and at the appropriate speed.
3.10.	At completion of grinding, switch "OFF" the grinder by releasing the paddle lever.		Note: The revolving disc will create air turbulence. Do not lay the grinder down in areas of dust or dirt until it has come to a complete stop.

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No.	Task Steps	Photo or Diagram	Notes
Completion Tasks			
4.	Task Completion		
4.1.	Ensure work area is clean and tidy, with all tools and equipment packed away. Remove battery from battery-operated grinders.		 Use gloves and take care when picking up sharp objects. Note: Ensure equipment is stored correctly in vehicle
4.2.	Call train control when clear and track is safe for traffic.		
4.3.	Mark-up work instruction (WIN) if changes are required to improve work process and safety.		Note: Escalate any issues to Work Area Owner who will after reviewing, pass the copy of marked-up WIN to Technical Writer for updating.

ATTACHED PICTURES, DRAWINGS OR DIAGRAMS

Appendix 1, Section 4. Hazardous Area Hot Works¹**4. Hazardous Area Hot Works**

A hazardous area is defined as an area in which flammable liquids, vapours or gases, combustible liquids, dusts or fibres, or other flammable or explosive substances may be present. This includes hot works in confined spaces. An area shall not be considered hazardous if it is:

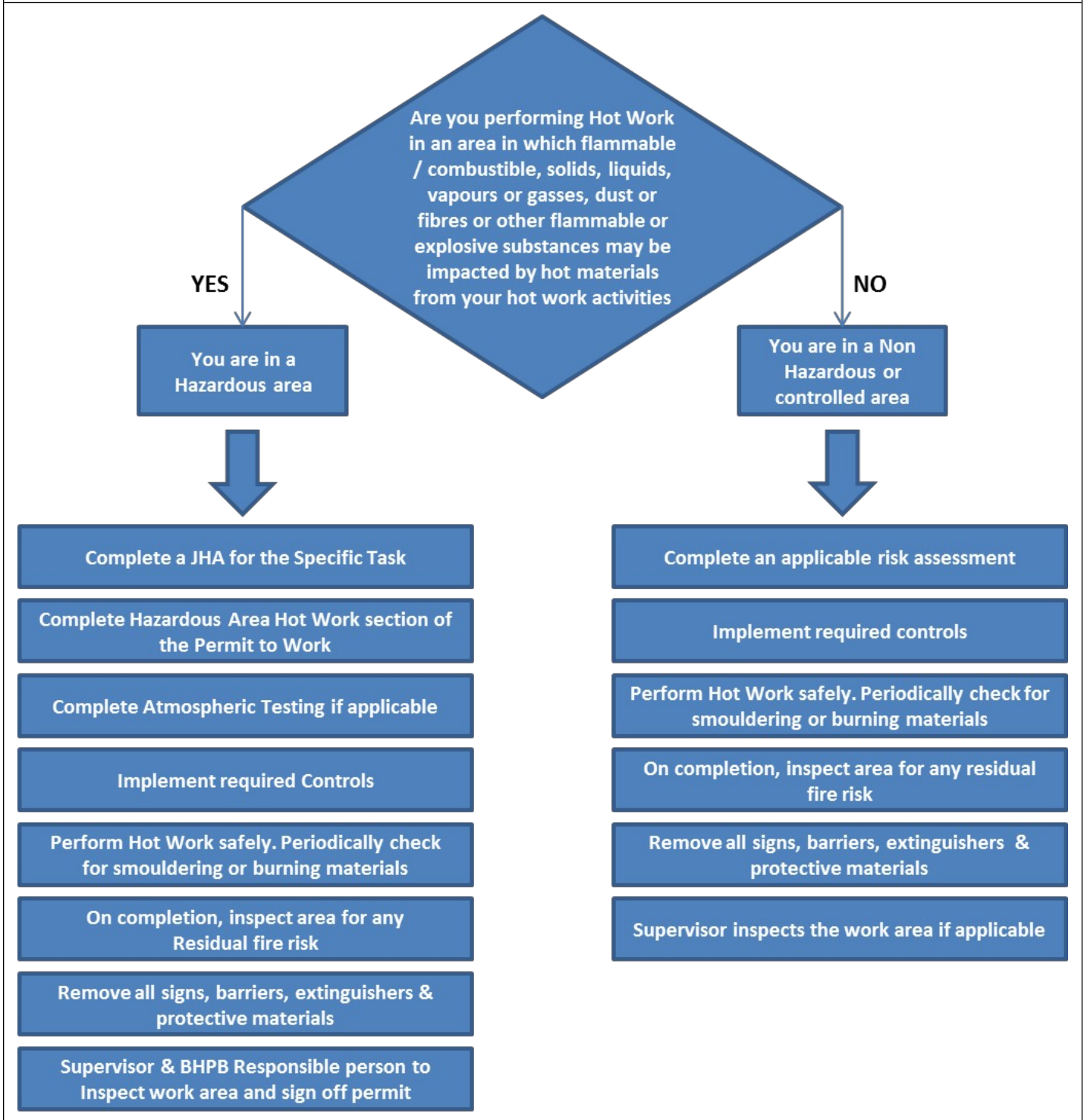
- a workshop or similar controlled work environment; or
- a workplace protected by a fixed fire suppression controls

Before commencing hot works in a hazardous area, personnel must complete the Permit to Work – Hot Works Section. Where identified in the risk assessment, the atmosphere must be tested and/or monitored throughout.

¹ Extract from SPR-HIS-SAF-071 (Version No: 25.0), Hot Works Procedure.

ATTACHED PICTURES, DRAWINGS OR DIAGRAMS

Appendix 2, Hot Works Flow Chart



ATTACHED PICTURES, DRAWINGS OR DIAGRAMS

Appendix 3, Disc Assembly and Disassembly

Assembly:

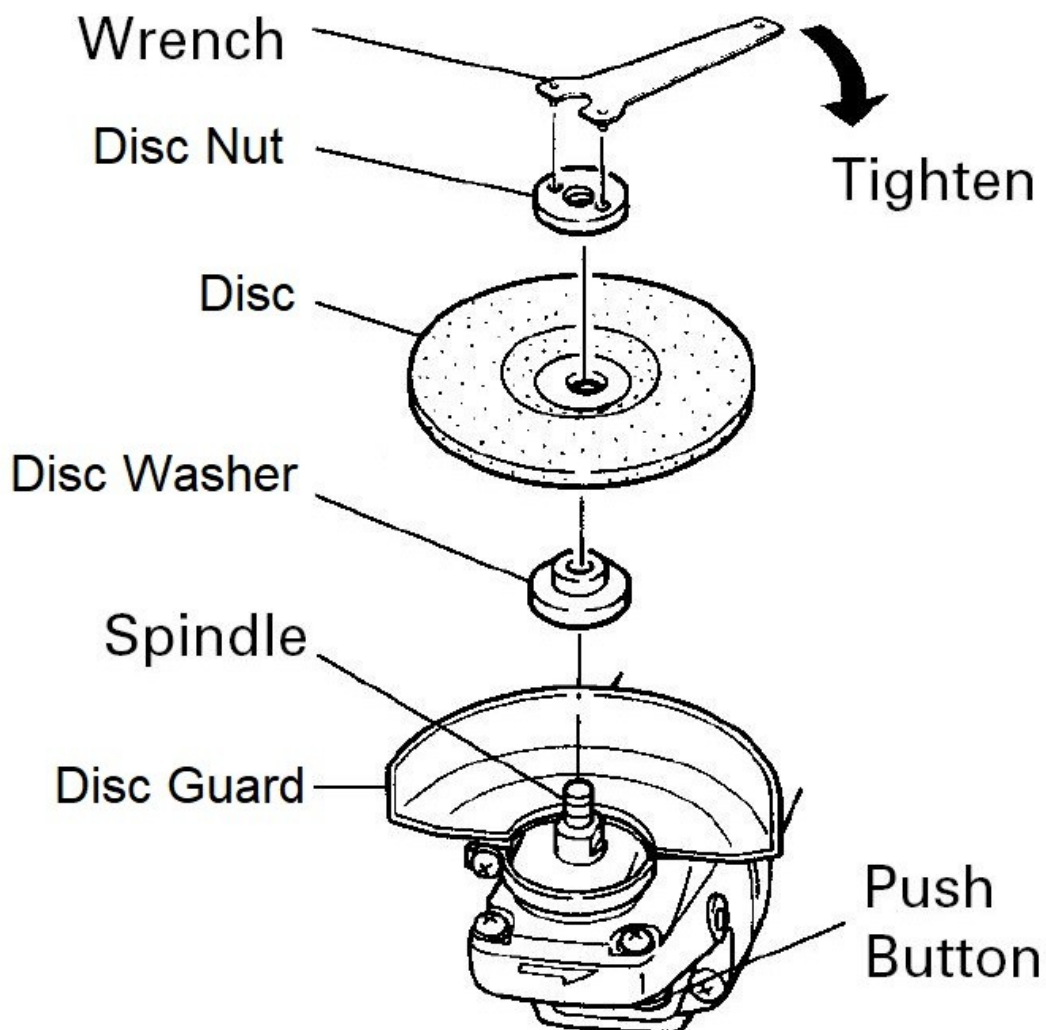
1. Turn the disc grinder upside-down so that the spindle is facing upward.
2. Align the oval-shaped indentation of the disc washer with the notched part of the spindle, then attach them.
3. Fit the protuberance of the disc onto the disc washer.
4. Screw the disc nut onto the spindle.
5. While pushing the push button with one hand, lock the spindle by turning the disc slowly with the other hand. Tighten the disc nut by using the supplied wrench as shown below.



Tighten the disc nut securely and confirm that the disc does not wobble.

Disassembly:

To remove the disc, simply reverse the above-mentioned steps.



ADDITIONAL WORK IDENTIFIED

Maintainable Item	Details and comments on Work Required	Notification #

FEEDBACK (To support content improvement)

General Feedback: