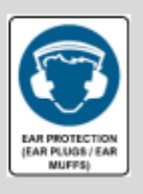




VUL-SWP-072a 015 - Tooling

STANDARD WORK PROCEDURE (SWP)	
Description	Tooling
Site	Vulcan Mine
Department	Maintenance – Tyres
Purpose	The purpose of this SWP is to provide a documented way of working to achieve an acceptable level of risk. The steps outlined pertain to the titled task only. All other SHMS requirements such as SOPs must be followed e.g.: VUL-SOP-065-PPE, VUL-SOP-089-Dust etc.
PPE Required	Job Step Analysis Reference
    	RMX-WI-TTL-001. This integrated SWP forms part of VUL-SOP-072a-Tyres, Wheels & Rims Mgmt.
	Other Relevant Information
	☐ Relevant OEM instructions & specification available
Task Specific PPE	ERT resources available on-site during operations.
  	Personnel performing tyre fitting and maintenance tasks shall be assessed as competent in the specific units of competency according to the state OR national regulations • AURKTJ011 Remove, inspect, and fit earthmoving and off-the-road tyres. • AURKTJ012 Remove, inspect, and fit earthmoving and off-the-road wheel / rim assemblies. • RIIVEH307D Operate heavy rigid vehicle. • RIIHAN307D Operate a vehicle loading crane.
The purpose of this SWP is to provide a documented way of working to achieve an acceptable level of risk. The steps outlined pertain to the titled task only. All other SHMS requirements such as SOPs must be followed e.g., VUL-SOP-065-PPE, VUL-SOP-089-Dust etc.	Work Instruction is based on working in a controlled environment (Tyre Bay) on OEM standard Machine. If the environment, tools, equipment changes and or a deviation from this Work Instruction, a new JHA must be created and approved by all workers conducting the task.
Critical (Hazard) Risks	
Ensure controls are in place for critical risks associated with this task. These include:	    
1. Planning and preparation	
1. Attend daily pre-start Meeting 2. Confirm tasks with supervisor 3. Complete personal hazard id tool (take five). 4. Establish Work Zone – Refer to:	• VUL-SWP-072a-004-Establishment of Work Zones • VUL-SOP-094-Check, Examine and Restrict Work Areas



2. General Tooling Instructions

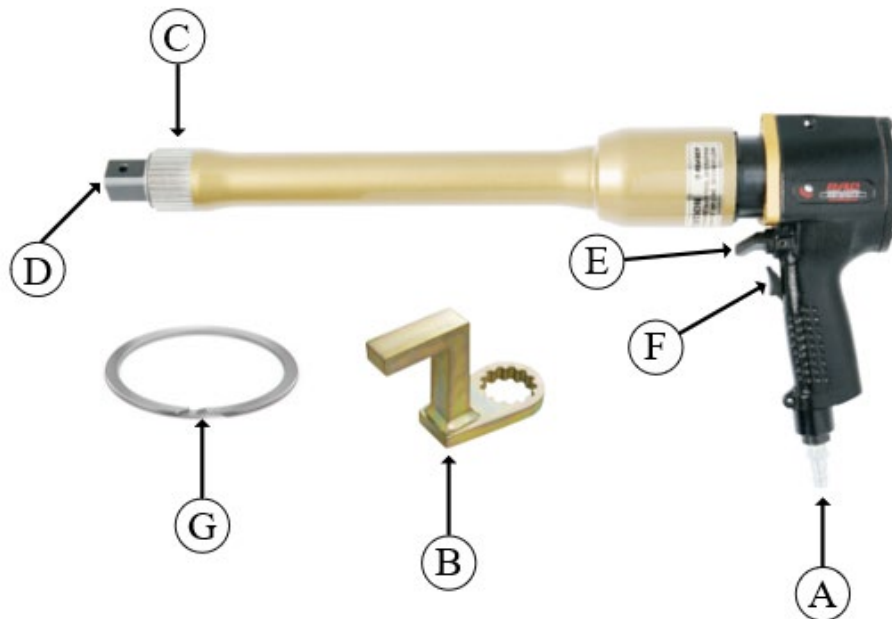
1. Control all energy sources using all tools available.
2. Always isolate and de-energise energy sources that might pose a threat to the personnel conducting the task.
3. Confirm the Isolation and tagging of objects, and stored energy de-energisation procedures required for the task in accordance with **VUL-SOP-068-Isolation and Tagging**.
4. Thoroughly inspect the tools and equipment necessary for the job.

3. Torquing Device (RAD Gun)

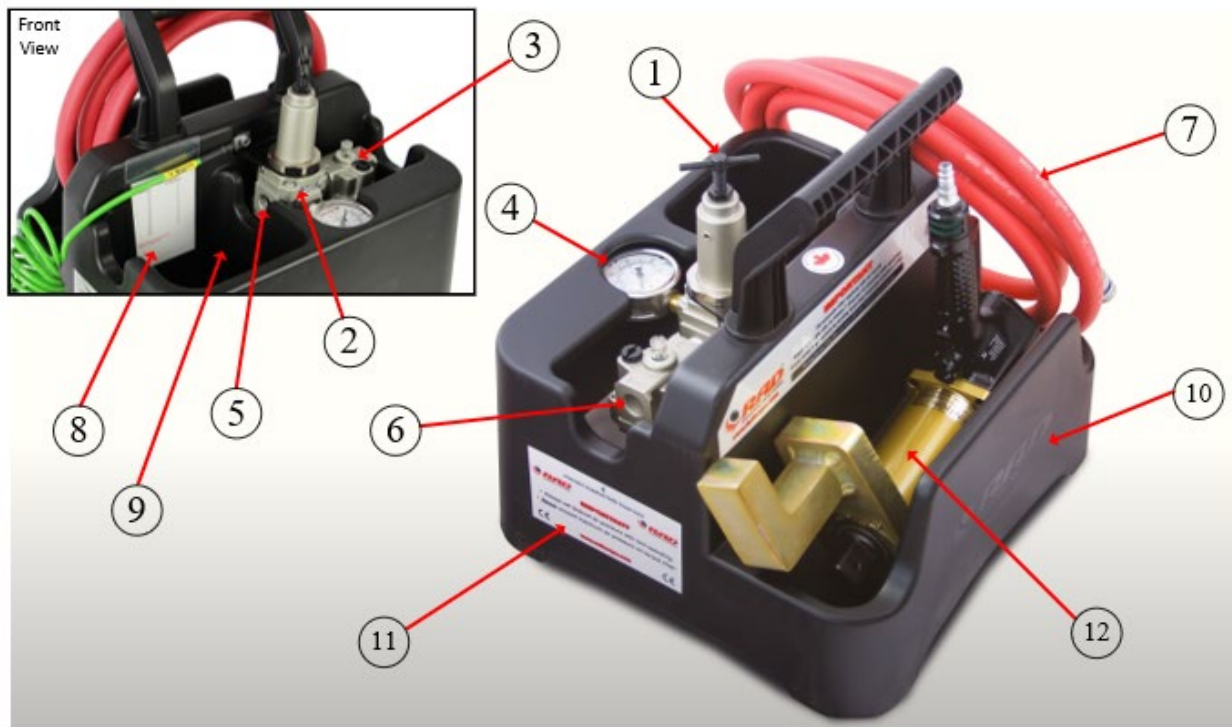
3.1 General Operating Requirements

- Clean dry air supply up to 100 psi.
- Use a minimum ½" airline to the cage assembly as this will allow for adequate flow.
- Use of proper reaction arm.
- Impact or high torque socket must be used.
- Only set the air pressure when the tool is running freely but not on fastener.
- Always use regulator and lubricator that is supplied.

3.2 Component List & Tool Setup



Components	
A	Air Inlet
B	Reaction Arm
C	Spline or Serpentine
D	Output Square Drive
E	Forward and Reverse Switch
F	Trigger
G	Self-retaining Ring



Components		Descriptions
1	Air Pressure Regulator	Turn this knob to regulate the air pressure: • Clockwise: INCREASE air supply • Counter-clockwise: DECREASE air supply Note: The tool must always be running when regulating air pressure.
2	Air Filter	-
3	Automatic Oiler (Lubricator)	Fill the oiler with air tool oil only.
4	Liquid-filled Pressure Gauge	-
5	½" NPT Inlet	Install the air supply hose to the ½" female port in the regulator.
6	½" NPT Outlet	Install the supplied airline to the ½" NPT outlet port on the automatic oiler.
7	Air line	-
8	Torque Chart	A chart outlines the air pressure required to produce corresponding torque value.
9	Filter Drain Valve	Located at the bottom of air regulator and filter, accessed from under cage assembly.
10	RAD Tool Storage Cage	-
11	Warning Labels	-
12	Pneumatic Torqueing Device	-

Step 1: Assembly

1. Blow out hoses before connecting.
2. Connect the **air supply** to the ½" NPT inlet (5) of the Cage Assembly.
3. Check oil level in the **lubricator** (3) and fill to correct level. Only use oil that is supplied by the manufacturer.
4. Attach **Reaction Arm (B)** to **Spline or Serpentine (C)**. Secure it with a **circlip/self-retaining ring (G)**.

NOTE: Do not remove the airline which connects the torquing device to the FRL Unit.

NOTE: Make sure the reaction arm's snap ring is securely in place to hold the reaction arm or blank in place.

CAUTION: Secure all connections to the tool before turning on the air supply to avoid hazard from whipping air hoses.

CAUTION: Always keep hands clear from the line of fire of the reaction arm when using the tool to prevent severe injury.



Step 2: Torque Settings

If torque test facility is available, verify torque setting with a transducer prior the use of the equipment.

For Bolt Tightening

1. Ensure the Forward and Reverse switch (E) is set to "Forward".
2. Establish the air pressure required using Torque Chart (8).
3. Adjust the regulator (1) on the FRL unit until the correct pressure is achieved and shown on the master gauge.

For Bolt Loosening

1. Ensure that the Forward and Reverse switch (E) is pointing towards "Reverse".
2. Establish maximum air pressure using the Torque Chart (8).
3. Set to the desired air pressure by adjusting the regulator (1) to produce desired torque.

NOTE: The torquing device must be free running while adjusting air pressure.

CAUTION: Exceeding the maximum air pressure stated on the torque chart will overload the torquing device and may cause severe personal and/or equipment damage.

Step 3: Set the Oiler

1. Close the **oiler (3)**.
2. Set the air pressure to 90 PSI while allows the torquing device to run without resistance.
3. Depending on the size of the torquing device, the number of oil drops per second is set as follows:

Torque	Oil dropping rate
Up to 2,000 Nm	One drop per second (1.5 turns)
2,000 – 3,400 Nm	Two drop per second (2 turns)
3,400 – 15,000 Nm	Three drop per second (2.5 turns)

CAUTION: Before the first use, or after a long period of time without using the torquing device, RAD advises to add 5 drops of oil through the quick connect fitting on the torquing device.

Step 4: Operating the Torquing Device

1. Fit the torquing device with an impact or high torque socket that suit the bolt.
2. Check that the **Forward and Reverse switch (E)** is set correctly.
3. Rotate the swivelling tool handle to a convenient position relative to the reaction arm.
4. Fit the torquing device onto the bolt with the **reaction arm (B)** adjacent to the reaction point.
5. Activate the **Trigger (F)** partially to bring the **reaction arm (B)** into contact with the reaction point. Ensure hands and arms are out of the crush or pinch zone.
6. Fully press the **Trigger (F)** until the torquing device stalls.
7. After the torquing device is stalled, release **Trigger (F)**.
8. Remove the tool from bolt.

NOTE: The torquing device must be supported when in use to prevent unexpected release in the event of a fasteners or component failure.

CAUTION: Keep hands clear from the reaction arm at all times.