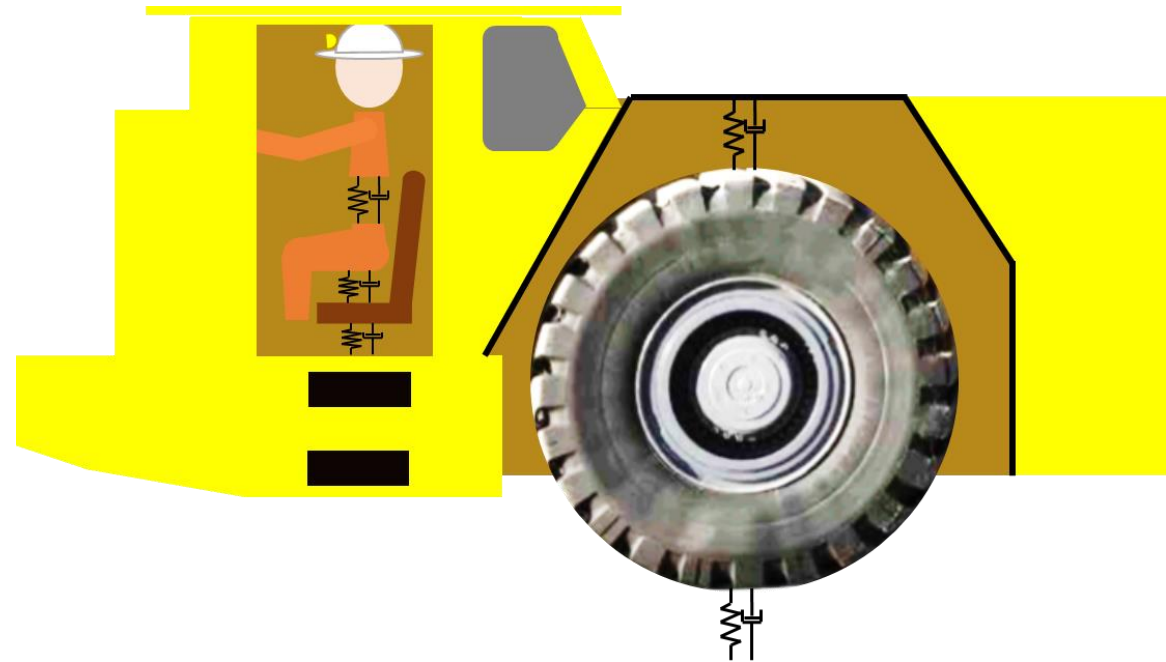


BHP

Whole Body Vibration (WBV) Project Photos of the Initiatives



State Of The Nation FY22Q3

BOS IN ACTION

Reducing impacts from whole body vibration through our improvement cycle



Olympic Dam Mine – SEG Hygiene Data Summary: H1 FY21

SEG	Occupational Exposure Limits
HYG - Diesel Trucking Miner	0.5 ms ⁻² r.m.s. (8h)
HYG - Diesel Loading Miner	0.5 ms ⁻² r.m.s. (8h)
HYG - Magazine Attender	0.5 ms ⁻² r.m.s. (8h)
HYG - Production Drilling Miner	0.5 ms ⁻² r.m.s. (8h)
HYG - Production Preparation Miner	0.5 ms ⁻² r.m.s. (8h)
HYG - Road Preparation Miner	0.5 ms ⁻² r.m.s. (8h)
HYG - Rockbreaking Miner	0.5 ms ⁻² r.m.s. (8h)
HYG - Slope Blasting Miner	0.5 ms ⁻² r.m.s. (8h)
HYG - Ventilation Officer	0.5 ms ⁻² r.m.s. (8h)
HYG - Ventilation Services Miner	0.5 ms ⁻² r.m.s. (8h)

1. Identify & Raise Concern Strip
Production UG had the highest occupational exposure limits to Whole Body Vibration causing higher instances of lower back injuries. The need for improvement was identified through visualising performance and then raising a concern strip to trigger an improvement opportunity.

2. Go-See & Problem Solve

An exercise physiologist was brought into the team to help better understand the problem. The team spoke to team members (customers) to get their views and gathered ideas to sustainably solve the problem at the root cause.

Problem Statement	Who	Why	When	Where
1. High back pain in UG	Miners	Excessive vibration	8h	UG
2. Lower back pain (aching pain) (aching pain)	Miners	Excessive vibration	8h	UG
3. Pain in lower back (aching pain) (aching pain)	Miners	Excessive vibration	8h	UG
4. Pain in lower back (aching pain) (aching pain)	Miners	Excessive vibration	8h	UG
5. Pain in lower back (aching pain) (aching pain)	Miners	Excessive vibration	8h	UG
6. Pain in lower back (aching pain) (aching pain)	Miners	Excessive vibration	8h	UG



3. Manage Improvement Project

Outcomes from Problem Solving were turned into an improvement project which including:

- Reviewing seat set up & education
- Alternatives for self-resuser placement
- Educate on impacts of truck over-breaking and road maintenance
- Increase usage of preventative physio

Item	Start Date	End Date	Status	Owner
1. Reviewing seat set up & education	2021-08-01	2021-08-31	Completed	John Doe
2. Alternatives for self-resuser placement	2021-09-01	2021-09-30	In Progress	Jane Smith
3. Educate on impacts of truck over-breaking and road maintenance	2021-10-01	2021-10-31	Not Started	John Doe
4. Increase usage of preventative physio	2021-11-01	2021-11-30	Not Started	Jane Smith

BHP WHY STAND?

Benefits Include:

- Reduces lower back pain
- Improves circulation
- Improves posture
- Reduces disc damage
- Stronger bones
- Burns more calories
- Delays muscle degeneration
- Boosts mood & focus
- Increases lung capacity

During breaks take the opportunity to stand

5. Share Improvements
As actions are implemented, we are sharing our learnings for others to benefit and share in our success

HOW TO ADJUST MY MT65 OEM SEAT

Seat Number	Explanation
1. Head Rest	Adjust the headrest to support the head and neck. It should be level with the top of the head.
2. Backrest	Adjust the backrest to support the lower back. It should be at a 100-degree angle.
3. Seat Height	Adjust the seat height so that the feet are flat on the floor and the knees are at a 90-degree angle.
4. Armrests	Adjust the armrests to support the forearms. They should be at a 90-degree angle to the upper arms.
5. Lumbar Support	Adjust the lumbar support to support the lower back. It should be at the level of the lumbar vertebrae.

4. Implement and Monitor KPIs

Weekly tracking of progress of the improvement project supported the actions being completed. Since the start of the project there has been a reduction in the number of back injuries/illnesses

Self-rescuer Door Storage Pocket

Before



After



Installed to decrease 2.5kg carried on the operators belt (around hips and lumbar spine) when seated in the trucks for up to 12 hours a day.

MT65 Truck Trainer Seat

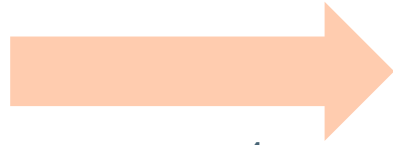
Current



New Seat Design



New custom designed engineered trainer seat ready for a trial. This seat has lumbar support, cushioning and suspension. The current seat only has a firm base platform, offering minimal support.



Stand Up Tall Table in Underground Crib Rooms

Before



After



Tall tables installed in the underground crib rooms and 420 hard rock café. This was to encourage the Load and Haul truck/loader operators to stand when on crib break.

Tall Tables, Electric Stand Up Desks & Posters



Three electric stand-up desks were also installed in the stopes underground office. “Why Stand” posters are displayed in the underground offices and crib rooms to encourage standing during a truck operators break.

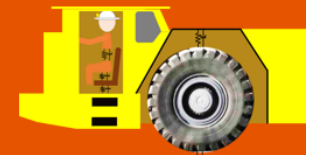


BHP WHY STAND?

Benefits Include:

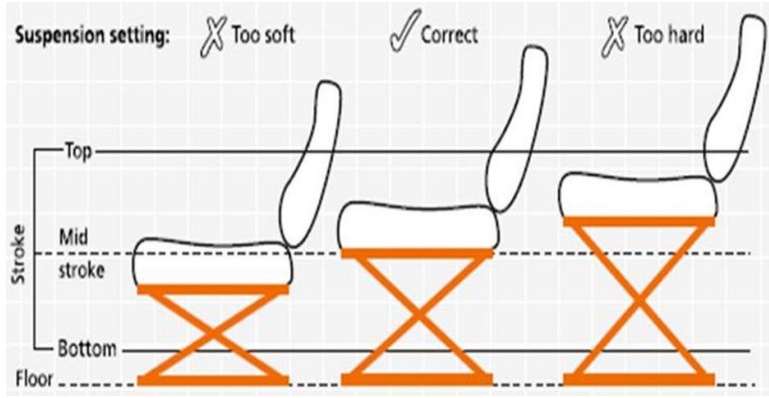
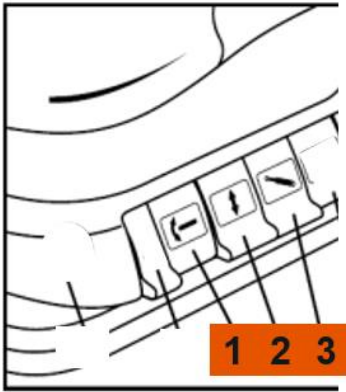
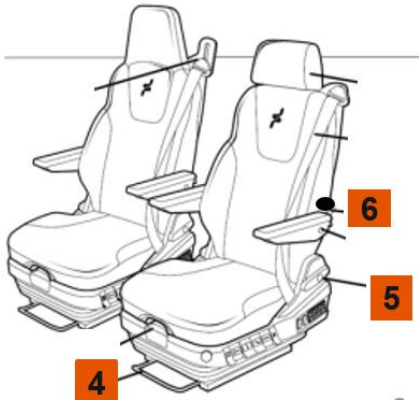
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During breaks
take the
opportunity to
stand



HOW TO ADJUST MY MT65 OEM SEAT

Quick Reference Guides (QRG) were placed in all Epiroc trucks, to assist operators with how to set up their seat correctly using the 6 functions.



Seat Number	Explanation
1. Seat Tilt	Lever to position seat base. Lift lever & gently push seat base down/pull up to adjust.
2. Height Adjustment Switch	To raise seat, lift lever upwards. To lower, press it downwards.
3. Adjustable Shock Absorber Switch	To adjust seat firmness pull lever upwards. Push lever down in order to decrease firmness. Refer to image above for correct suspension .
4. Horizontal Adjustment Lever	To move entire seat. Pull lever upward and slide seat forward or backwards to desired position.
5. Backrest Adjustment Lever	Pull lever upward and gently push/pull backrest to desired position.
6. Lumbar Adjustment Knob	Turn knob to adjust lumbar support. Lumbar support will be felt at base of backrest.

Simulator Seat

Before



New Epiroc MT65 seat installed in truck simulator for training. We identified the operators were training on a seat which was used 15-20 years ago and no longer exists in the haul trucks.

After



MT65 Epiroc
Seat in Truck



Cushions

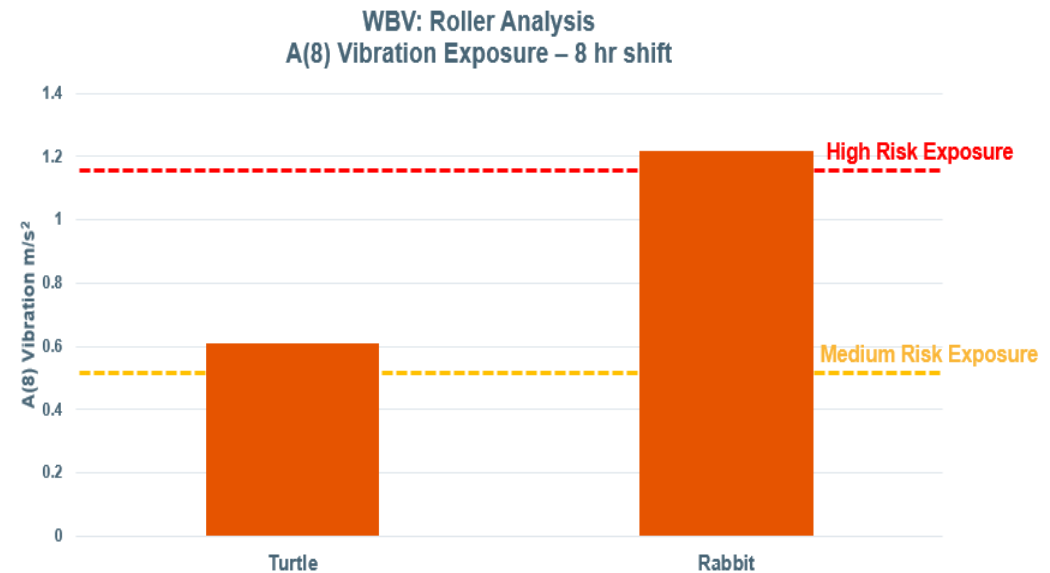
Cushions for operators to use in the trucks for additional support/cushioning.



Underground Roller Speed Restriction



Rabbit mode results in high risk exposure for operators across an 8-hour shift. Turtle mode is significantly less.



Underground roller top speed reduced from 12km/hr (rabbit speed) to 6km/hr (turtle speed) to reduce operator whole body vibration when tramping from one site to another.