



SAFE WORK PROCEDURE

SOTO
Mining Technologies

SOTO SAFETY TOW HITCH

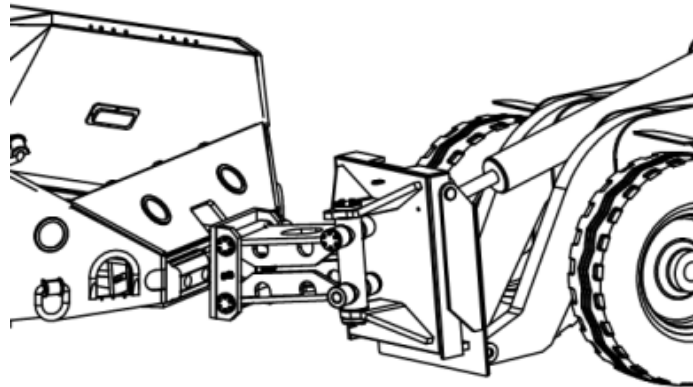


Figure 1: Shuttle Car being towed by EIMCO using SOTO Safety Tow Hitch

Movement of large equipment in an underground mine is one of the most significant hazards that miners are exposed to during each shift. SOTO have developed a Safety Tow Hitch in consultation with mine operators to allow for the controlled and reliable transport of heavy equipment within a mine. This device provides superior features to other commercially available tow devices and safety chains.

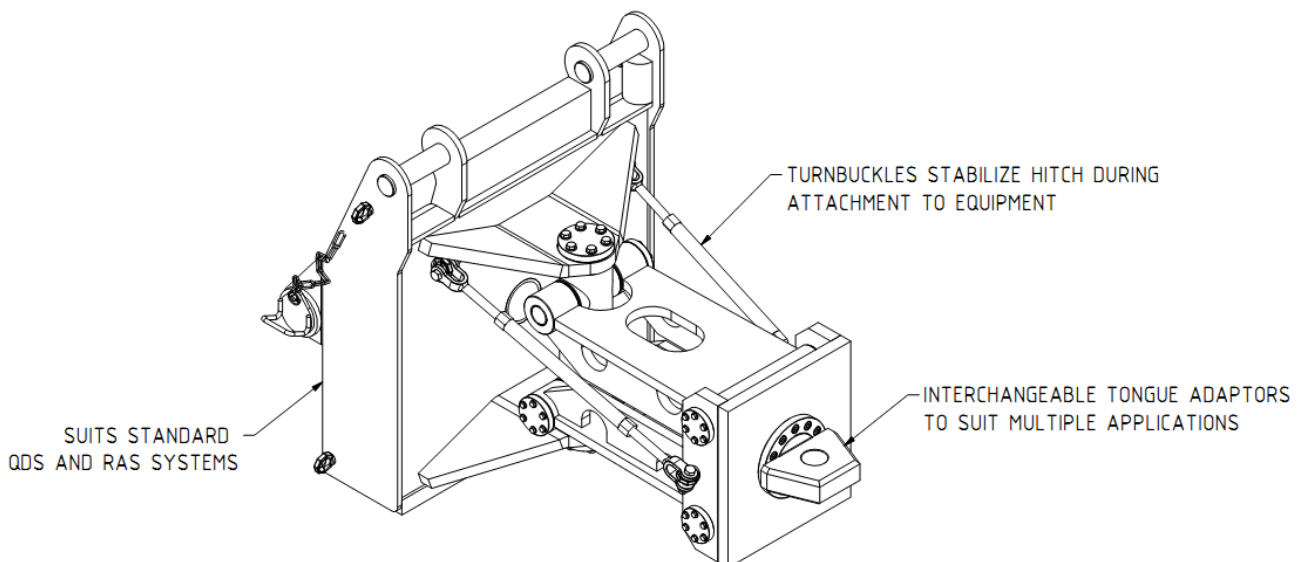


Figure 2: SOTO Safety Tow Hitch (Patent Pending)

Contact:

Jim Allan Chief Operating Officer

Ph: +61 2 4271 7755 F: +61 2 4271 5855 M: 0426 165 578 E: jim.allan@sotogroup.com.au
113 Princes Highway Unanderra NSW 2526 www.sotogroup.com.au



SAFE WORK PROCEDURE

SOTO
Mining Technologies

GENERAL	
Description	SOTO Safety Tow Hitch
Rated Towing capacity	40 Tonnes (Tractive effort) (MDG1/MDG15 compliant - includes Safety Factor of 2.5)
Weight	1.2 Tonnes
RANGE OF MOTION	
Vertical travel	520mm
Horizontal articulation	180deg
Tongue rotation	360deg
OPERATIONAL FEATURES	
Backing plate	Both QDS and RAS available
Hydraulic module	Allows control of towed vehicle braking and steering systems (MDG41 compliant)
Tongue adaptors	Easily changed for towing various manufacturers equipment
BENEFITS	
1	Maintains rigid connection and increases control of movement while towing heavy equipment underground
2	Maximises turning, tilt and elevation deviation capabilities and operates in three different planes
3	One person operation when towing
MAJOR SIGNIFICANCE	
1	Minimizes risk of an accident by an uncontrolled movement of the towed vehicle
2	Damage to machinery and cost of labour are significantly reduced

Contact:

Jim Allan Chief Operating Officer

Ph: +61 2 4271 7755 F: +61 2 4271 5855 M: 0426 165 578 E: jim.allan@sotogroup.com.au
113 Princes Highway Unanderra NSW 2526 www.sotogroup.com.au



SAFE WORK PROCEDURE

SOTO
Mining Technologies

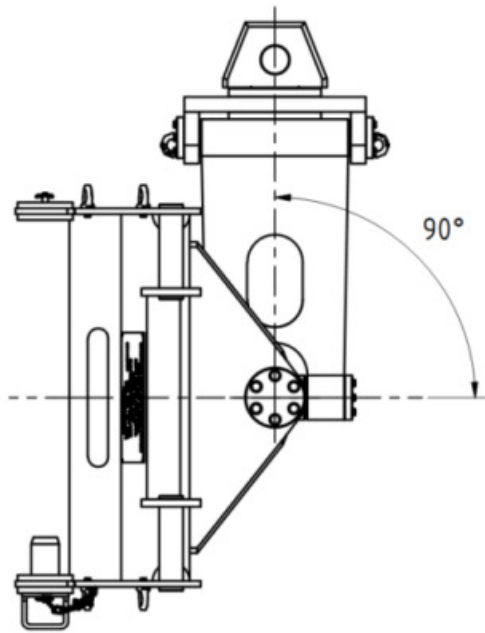


Figure 3: Horizontal articulation (TOP VIEW)

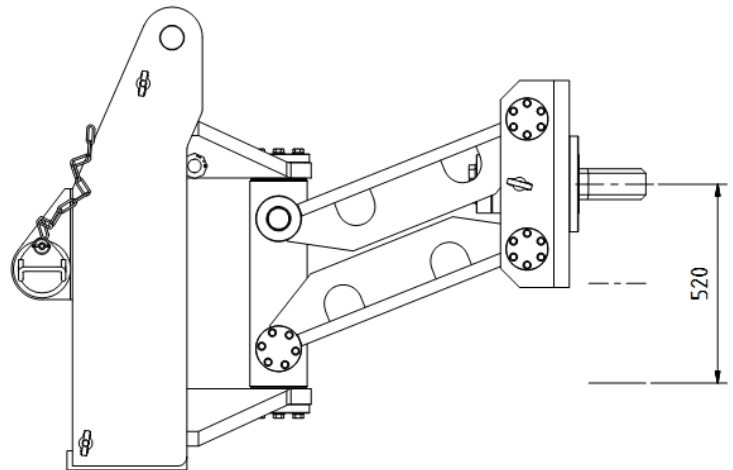


Figure 4: Vertical articulation (SIDE VIEW)

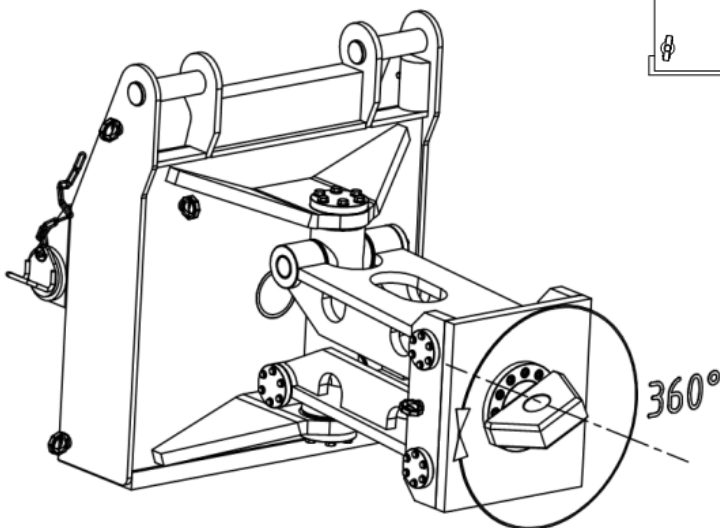


Figure 5: Rotation of tongue

Connection and Disconnection of the Soto Safety Tow Hitch using QDS and Shuttle Car

Contact:

Jim Allan Chief Operating Officer

Ph: +61 2 4271 7755 F: +61 2 4271 5855 M: 0426 165 578 E: jim.allan@sotogroup.com.au
113 Princes Highway Unanderra NSW 2526 www.sotogroup.com.au



SAFE WORK PROCEDURE

SOTO
Mining Technologies

Purpose:

The purpose of this document is to provide a step by step procedure that identifies hazards and controls associated with a specific task. This document should be used in conjunction with site specific risk assessments.

Scope:

This document is to provide the operators of the LHD and Shuttle Car with a safe and understandable procedure to connect and disconnect the Soto QDS Shuttle Car Tow Hitch.

Design:

The base design was taken to provide a safe and secure towing application while using the LHD to maneuver the Shuttle Car throughout the mine. This tow hitch provides a positive and safely rated connection.

The design has been used to allow for maximum turning, tilt and elevation deviation that will not restrict or heed in the current operational task while maintaining a rigid connection.

Hazards / Controls:

HAZARDS	CONTROLS
Personal Injury (Crush) due to unplanned movement of the shuttle car or LHD	Do not stand in pinch points and make all drivers aware of your position, during installation and removal
Strains / Sprains while maneuvering the tow hitch end	Allow the LHD to make any movement and utilise the mechanical turnbuckles to fine adjust for connection
Incorrect installation of Shuttle Car Hitch Pin	Positive connection to be made. Competent shuttle car operator to assist
Damaging Tow hitch from failure to remove turnbuckles prior to operation	Turn buckles to be removed and fixed to the side of the QDS on the RUD eye bolts.

Equipment / Skills:

EQUIPMENT	SKILLS
PPE such as eye protection, Gloves and Hearing Protection	Competent LHD Operator
Large shifting spanner	Competent Shuttle Car Operator
Wheel Chocks	

Contact:

Jim Allan Chief Operating Officer

Ph: +61 2 4271 7755 F: +61 2 4271 5855 M: 0426 165 578 E: jim.allan@sotogroup.com.au
113 Princes Highway Unanderra NSW 2526 www.sotogroup.com.au



SAFE WORK PROCEDURE

SOTO
Mining Technologies

Job Steps:

As each step is completed please tick off at the last step completed.

	COMPLETED
Connection Procedure	
1. Park the Shuttle Car in a safe and appropriate area	
2. Carry out a Take 5 or equivalent visual assessment	
3. Chock the Shuttle Car wheels in both directions	
4. Before connecting the Tow Hitch to the LHD. Examine the Tow Hitch to make the 2 x turn buckles (see photo) securing the Tow Hitch are tight and secure	
5. Attach the QDS Tow Hitch to the LHD and fully engage the QDS Lock Pin	
6. Maneuver the LHD and Tow Hitch to the Shuttle Car and while using a second operator align the Tow Hitch Tongue into the Shuttle Car towing clevis	
7. Adjust the 2 x turn buckles on the Tow Hitch if required to align the tongue into the Shuttle Car towing clevis. Make sure the LHD operator has fully come to a stop and the park brake is applied between adjustments	
8. Align the Tow Hitch Tongue and insert the Shuttle Car Towing clevis retaining pin	
9. With the weight taken. Proceed to loosen and remove the 2 x turn buckles	
10. Relocate the 2 x turn buckles and fix to the RUD eye bolts on the sides of the QDS plate	
11. Have the LHD operator take the weight of the Shuttle Car and remove the chocks	
Disconnection Procedure	
1. Bring both Shuttle Car and LHD to complete stop, apply park brake to LHD	
2. Carry out Take 5 or equivalent visual assessment	
3. Chock Shuttle Car in both Directions	
4. Lengthen 2 x turn buckles and re connect to front of Tow Hitch, tighten turn buckles to take weight of Tow Hitch tongue in Shuttle Car towing clevis	
5. Remove Shuttle Car towing clevis retaining pin	
6. Move LHD slowly away from Shuttle Car, making sure there is still no chance of Tow Hitch Jamming onto Shuttle Car	
7. Position Tow Hitch in safe location and remove from LHD QDS	

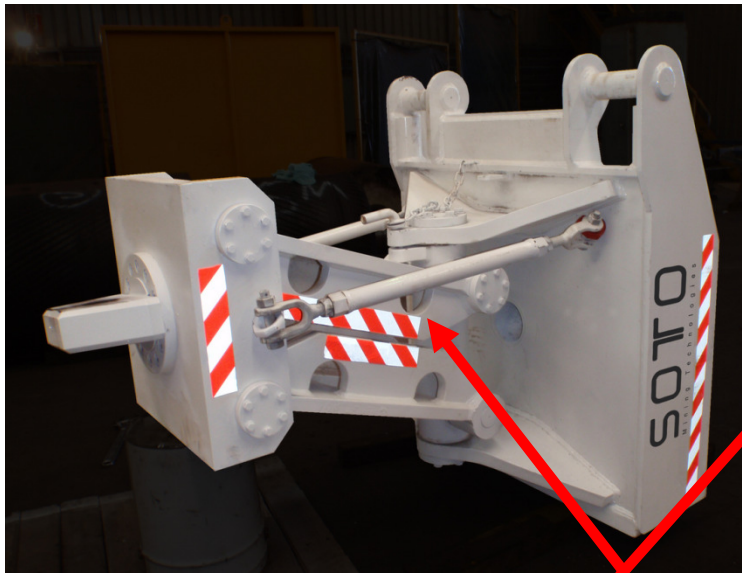
Contact:

Jim Allan Chief Operating Officer

Ph: +61 2 4271 7755 F: +61 2 4271 5855 M: 0426 165 578 E: jim.allan@sotogroup.com.au
113 Princes Highway Unanderra NSW 2526 www.sotogroup.com.au



SAFE WORK PROCEDURE

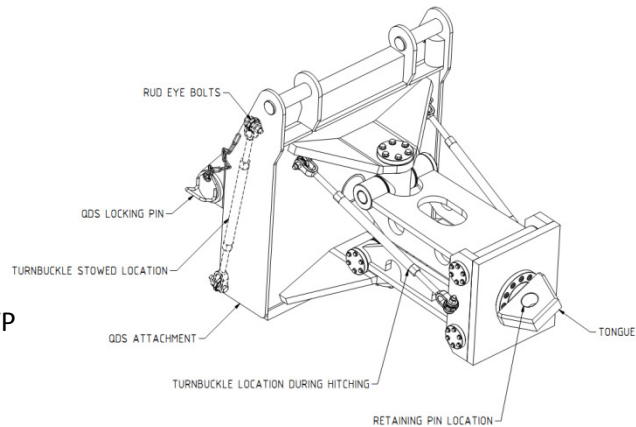


Turn buckles

Note:

If unforeseen details make this procedure invalid you should:

- a) Stop Work
- b) Inform Supervisor of circumstances
- c) Carry out a Take 5 or Risk assessment
- d) Record all changes along with this SWP and submit to supervisors



Review:

Were there any hazards associated with the task that were not identified by this procedure?

YES | NO

Can the procedure be improved or does it need a review /update?

YES | NO

Comments:

Contact:

Jim Allan Chief Operating Officer

Ph: +61 2 4271 7755 F: +61 2 4271 5855 M: 0426 165 578 E: jim.allan@sotogroup.com.au
113 Princes Highway Unanderra NSW 2526 www.sotogroup.com.au