

# **READ THIS BEFORE OPERATING**



## WARNING

Read and understand the *Enerpac Pow'R-LOCK™ Instruction Sheet* before using the jack.

Failure to observe and comply with the safety precautions contained in the *Instruction Sheet* could result in death, serious personal injury and/or property damage.

- This *Use Guidelines* document is a supplement to the separate *Instruction Sheet* provided with the jack. It contains additional information and recommendations to help users operate the jack safely and efficiently.
- This *Use Guidelines* document is not intended as a substitute for the *Instruction Sheet*. All persons operating and servicing the jack must also read the *Instruction Sheet* before operating the jack.
- Refer to the *Instruction Sheet* for detailed safety precautions pertaining to jack operation and lifting safety. The safety precautions contained in Sections 1.2 and 6.1 of the *Instruction Sheet* are the most important. However, all safety precautions must be read, understood and completely followed.
- If the *Instruction Sheet* has been lost, a replacement copy (Enerpac document number L4075) can be downloaded free of charge from the Enerpac website at [www.enerpac.com](http://www.enerpac.com).

## INTRODUCTION

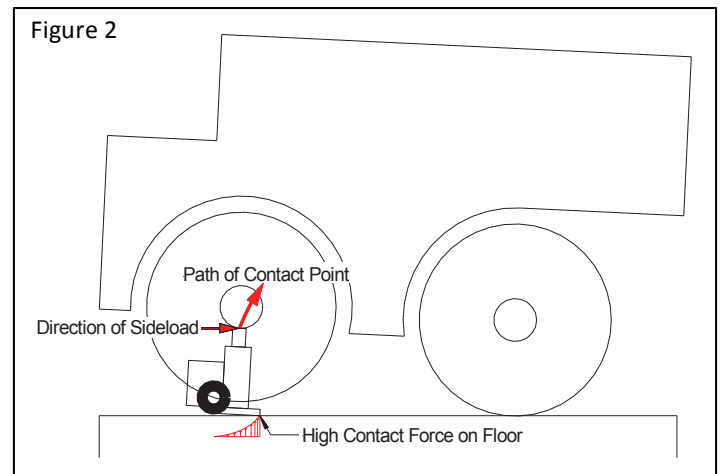
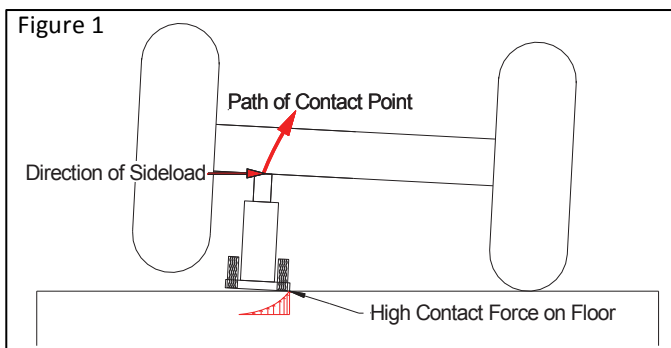
The Pow'R-LOCK™ jack is designed to lift large vehicles, such as mining trucks.

Before the jack is placed into operation, users must have an understanding of the dynamic effects and loading conditions that can occur between a vehicle, the jack, and the maintenance pad (flooring) during a lift.

Single point, two point and multipoint lifts require the jack to accommodate vehicle movement as it is lifted. In most cases, there will be some side loading produced by that movement.

However, excessive side loading should be avoided. Excessive side loading will result in increased friction and high bearing contact pressures. These conditions will make the jack work harder and will also accelerate wear in the lifting cylinder. Permanent damage to the jack could result.

Excessive side loading can also cause the jack to tip excessively, as it follows the movement of the vehicle. This can result in reduced stability during jacking as well as floor loading concentrations that have the potential to damage the maintenance pad (flooring) (See Figure 1 and Figure 2).



## LIFTING METHODS AND SIDE LOADING

### Single point or corner lifting:

Single point lifting is common for tire changing and for motor replacement on some electric vehicles.

The objective is to raise one wheel and tire off the ground sufficiently to perform the required maintenance.

Single point lifts are most likely to induce significant side loading conditions because the vehicle is not free to roll forward or backward to follow the vertical movement of the jack and the jack is not free to follow the tilting action of the vehicle side to side.

**Two point lifts – Lifting one end of the vehicle with two jacks while the other end of the vehicle remains on the ground:**

Two point lifts are commonly performed at the *horse collar* of a vehicle and when it is necessary to lift one end of the vehicle. The *horse collar* is typically a main frame cross member or other structural member that is designated as a lifting point by the vehicle manufacturer.

Two point lifts can create side load because the vehicle is not free to roll to follow the vertical movement of the jack as it lifts.

**Multipoint Lifts – Lifting the entire vehicle or frame off the ground such that it is completely supported with the jacks:**

Multipoint lifts require more communication between users during the lift.

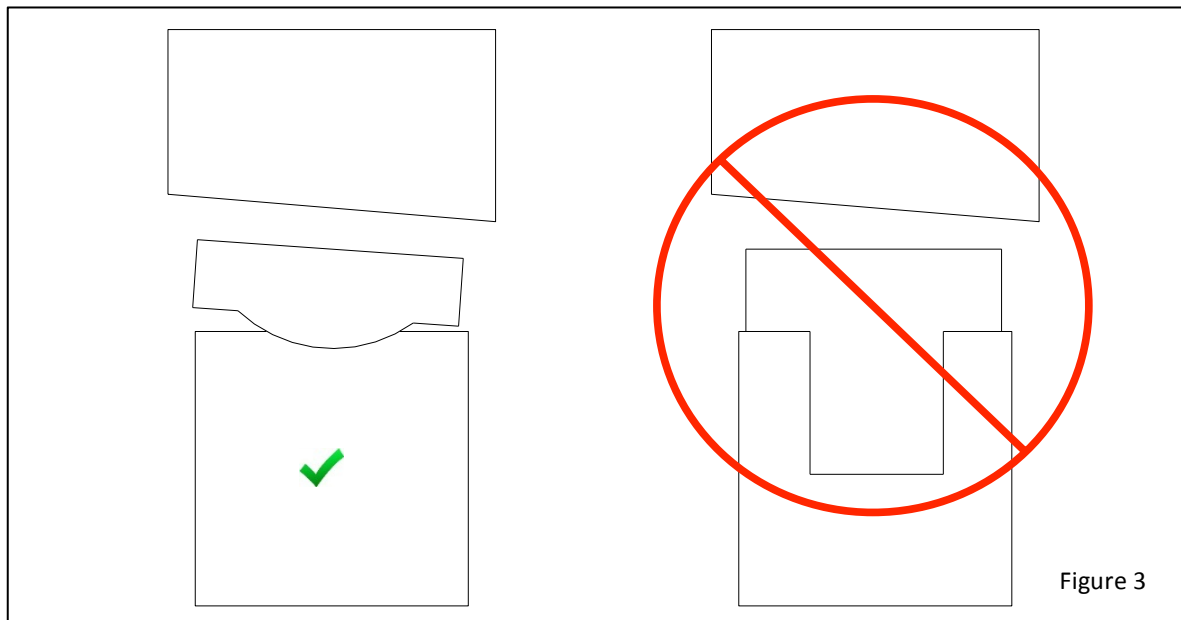
Multipoint lifts can create side load if the vehicle is not lifted level.

**REDUCING SIDE LOADING**

To reduce the amount of side loading, observe the following guidelines when performing lifts with Pow'R-LOCK™ jacks (refer to items 1 through 5):

**1. Use of the swivel cap when performing lifts. (See Figure 3)**

- The swivel cap minimizes the effects of side load that can occur from misalignment between the top of the jack and the vehicle lifting point.
- Always perform single and two point lifts with a swivel cap.
- Swivel caps are preferred for multipoint lifts. However, A non-swivel cap may be used, provided that the vehicle lifting points contact the cap evenly across the lifting face and do not concentrate the load on the edges of the cap (due to misalignment between the cap and the lifting point under the load).



**2. Do not use the jack on maintenance pads (floors) that are not level. (See Figure 4)**

- The swivel cap may not have enough tilt to accommodate uneven and out of level pads and misaligned lifting points.

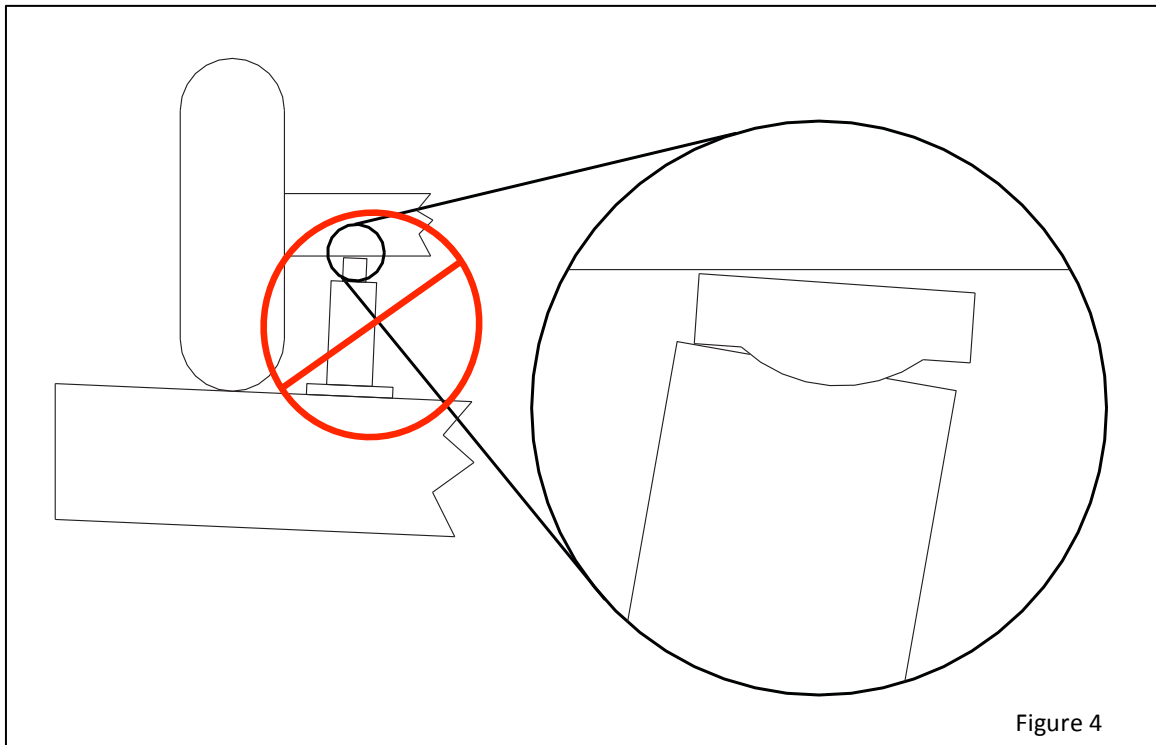


Figure 4

**3. Do not raise the vehicle higher than is necessary. The probability of the jack tipping increases as lifting height increases.**

On single point lifts:

- As the lifted height of the vehicle increases, the sideways movement of the vehicle increases the side load on the jack. This side loading typically also causes the jack to tip on its base at the floor.
- Jacking past the point where the tire is off the ground more than 2-3 inches (50-75 mm) dramatically increases the side loading exerted on the jack and the maximum surface pressure on the floor.
- Jacking operations that require additional lift height should be performed using multiple jacks.

**4. Do not completely fill the space between the vehicle lift point and the jack load cap with extensions. (See Figure 5)**

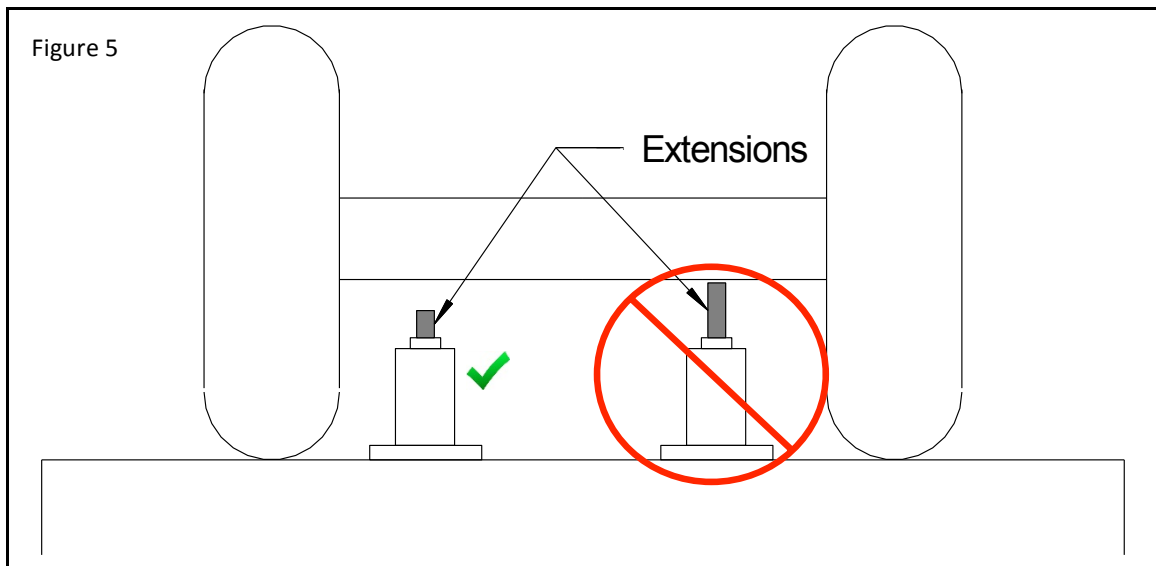
- Allow the jack as much free travel before contacting the vehicle as possible based on the final lifted height required. Add extensions only if the final lifted height cannot be achieved with the available stroke of the jack. Use the shortest possible extension/spacer combination that achieves the required lift height.
- The maximum recommended lifted height of the PL20014-ASA jack is 47 inches (1190 mm) without extensions.
- The maximum recommended lifted height of the PL20025-ASA jack is 69 inches (1750 mm) without extensions.

On single point lifts:

- Most single point lifts on struts and rear axles only need about 10-12 inches (250-300 mm) of lift after the jack has made contact.

On two point lifts:

- Many two point lifts require increased jack travel to unload the struts. Those lifts may require the use of the PL20025-ASA jack.
- Use extension stack lengths that allow the jack to extend as far as possible before contact with the load.
- Consider a multiple point lift when maximum possible jack lifting heights are required.



##### 5. Keep the vehicle level throughout a lift

- Maintain the center of gravity of the vehicle and the balance of the load distribution between the lifting points.
- Lift and lower slowly enough to control the lifting and lowering operations.
- The shutoff valve on the jack can be partially closed to restrict the air supply and vary the speed of the jack to allow better control of the lifting operation.



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