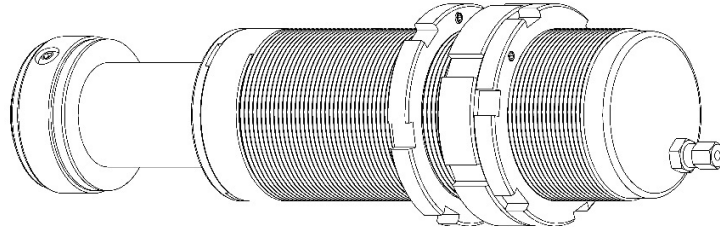




## Dobinsons Hydraulic Bump Stops

*Please leave this manual with the vehicle owner once finished.*



Thankyou for purchasing Dobinsons hydraulic bump stops. Dobinsons hydraulic bump stops utilize a 30mm or 40mm shock absorber rod in conjunction with a 50mm or 60mm diameter piston. This high quality hydraulic bump stop provides smooth bottom out control without excessive rebound associated with regular rubber and polyurethane bump stops. Dobinsons hydraulic bump stops have a M56 x 1.5 or M66 x 1.5 threaded high strength steel body for easy adjustment. It is important to ensure that the bump stops are installed and adjusted correctly and safely to provide optimum performance.

Always check your local federal, state or territory laws before installation to ensure compliance for road registered vehicles – if engineering approval is required an engineer should be consulted before install.

### Safety Warning:

When fitting aftermarket replacement parts, it is important to note that your vehicle may behave and handle differently. Always follow relevant road rules and always use safe driving and vehicle operating practices.

These bump stops are pressurized with high pressure nitrogen gas and should never be heated or opened whilst pressurized. These bump stops should only be opened by a qualified technician. Take extreme care when de-gassing these bump stops and ensure that the bump stop is in the upright position for 10 minutes to allow the oil to settle to the bottom as there is no physical barrier between the oil and gas which may cause oil to escape from the schrader valve. Always cover the schrader valve with a cloth when de-gassing.

### Installation Warning:

These bump stops should be installed only by a qualified technician. Attempts to install these products without knowledge or experience may jeopardize the safety of the vehicle. As bump stops are a universal product that can be installed in many applications it is the installer and engineers responsibility to ensure correct and safe installation. These instructions provide only a basic guideline for installation and do not cover vehicle disassembly or re-assembly. The installer is responsible to insure a safe and controllable vehicle after performing modifications. Do not perform test drives on public roads with partially completed installations. Always double and triple check your work before use.

### Selection of Bump stops

Dobinsons offer 3 different size hydraulic bump stops – HBS56-001/006 (56mm o.d. x 50mm stroke), HBS66-002 (66mm o.d. x 57mm stroke) and HBS66-003 (66mm o.d. x 85mm stroke).

Each application is different in its own right and vehicle owners have different desired outcomes, however a basic guide for selecting your bump stop is below.

For most small to medium size production 4wd's and mid-size pickup's (Toyota Hilux / Tacoma, Jeep Wrangler, Toyota Prado etc) the HBS56-001/006 bump stop will be sufficient for most non-race and light race applications & where space does not allow fitment of a larger bump stop. If the vehicle weight exceeds around 2200 kgs the larger bump stops should be considered.

For most larger production 4wds with lift kits around 2 – 4" (Nissan Patrol, Toyota Landcruiser/Tundra etc) the HBS66-002 bump stop will be sufficient. This bump stop will also be suitable for race applications and vehicles with less than 6" of compression travel.

For most larger production 4wds with lift kits 4" or higher, vehicles with more than 6" compression travel or race vehicles with more than 5" compression travel the HBS66-003 bump stop is recommended.

For non-race vehicles it is recommended to use a shorter stroke bump stops to prevent continual contact on the bump stops. Race and predominately offroad driven vehicles may use longer bump stops to provide improved bottom out control. Hydraulic bump stops are not designed to be contacted frequently as they will generate large amounts of heat and should be use mainly for bottom out control on large in-frequent bumps.

### Selection of Fitting Kit

Dobinsons hydraulic bump stops are supplied without any threaded mounting cans or fitting kit. Threaded mounting cans are available for all Dobinsons Hydraulic bump stops – for HBS56-001/006 use threaded mounting can kit HBS56-004fk and for HBS66-002 and HBS66-003 use threaded mounting can kit HBS66-005fk. Vehicle specific fitting kits are also available – check Dobinsons online catalogue.

### Selection of Rod End

Dobinsons Hydraulic bump stops are also provided with a hard nylon and rubber rod ends. These ends are interchangeable by removing the 2 lower Allen head bolts and swapping the ends. Use a small amount of Loctite when re-fitting the bolts. The rubber end will be more suitable for street driven vehicles and will be much quieter but wear quicker whereas the hard nylon end will be louder but will not wear as fast.

### Setup and Installation

The bump stops are provided with a tall and short locking ring – they can be positioned in either direction however if fitting directly inside of an existing hollow sleeve (not threaded) the bump stop should not be loose inside the sleeve and the larger locking ring must always be fitted to the bottom / shaft side.

If using a vehicle specific mounting kit it can be fitted and tack welded in place first. Using a belt sander or similar sand away the outer Zinc coating from the threaded mounting cans to allow proper welding, the zinc coating will remain on the inside of the sleeve to prevent rusting.

The installer may choose to install the bump stops and set the mounting height either by installing the bump stops gas charged as supplied or de-gassed depending if a gas charging kit as available. If installing the bump stops while gassed the heights and stroke will need to be taken into calculation. If installing the bump stops de-gassed – leave the bump stops upright with the schrader valve upwards for 10 minutes to allow the oil to settle to prevent it leaking from the valve and hold a cloth over the valve when releasing the gas pressure. This will allow the bump stops to be installed and the vehicle lowered into the fully bottomed position.

Determine the bump stop position before tacking – there are a lot of factors to take into account. These include but are not limited to.

- Preventing shock bottom out
- Preventing coil bind
- Allow future adjustment of bump stop height
- Steering and suspension component bind
- Engine mount rubber crush and engine to axle clearance, sump clearance

- Axle clearances
- Any other clearance issues
- Striking angle, side load and axle/arm movement also need to be taken into consideration

Ensure the vehicle battery is disconnected before welding. Thread the bump stops into the threaded sleeves, set the height and tack the sleeves in place. Lower the vehicle into position until the bump stop is almost fully closed (or just touching if still gassed – minus the stroke) and ensure the position is correct. Once you're happy with the position, remove the bump stop from the sleeves and fully weld. This may require welding in sections to prevent excessive heat build up. Allow the sleeve and surrounding area to fully cool and paint to prevent rust. Re-install the bump stops. Tighten the upper and lower locking rings and then tighten the locking grub screws into the sleeve. Re-gas the bump stops if they have been de-gassed (see next section).

Slide the O-Ring travel indicators up against the body and test drive the vehicle. Adjust the gas pressure as required. Re-tension the locking rings and locking grub screws. Check and re-tension the locking rings after 50klms and after each race or periodically when used offroad.

### Gas Pressure & Oil Level

Dobinsons hydraulic bump stops are supplied with 150 psi. The gas pressure can be set between 100 and 300 psi depending on the application and vehicle weight. Higher gas pressures will also result in faster rebound. If setting the gas pressure, it is recommended to start higher and use the travel indicator on the shaft to see if the vehicle is using the entire travel range in the desired terrain.

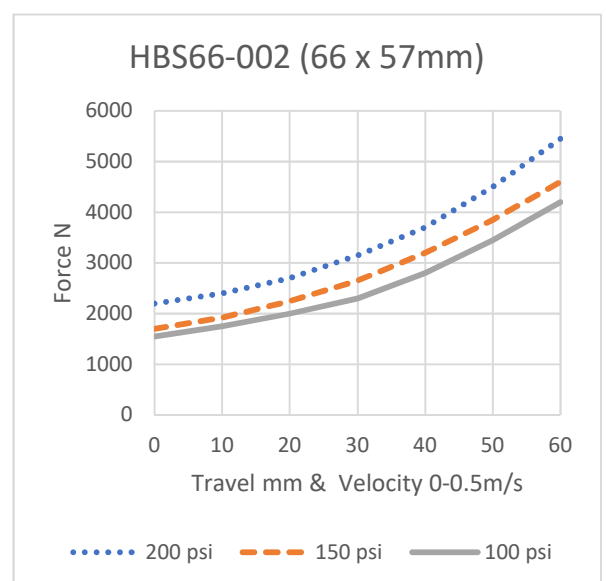
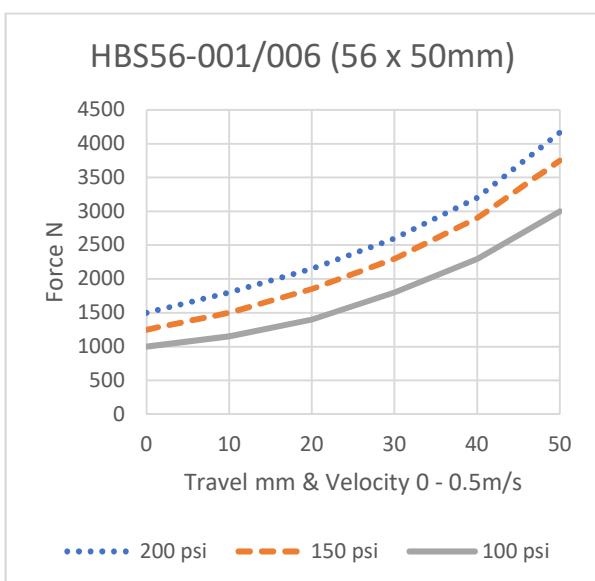
Generally, the oil levels should not need to be altered however oil levels can be altered by qualified technicians. Base oil levels are measured with the rod and piston assembly completely removed and measuring from the inside base (where the shraider valve threads in to) to the top of the oil. Adding more oil will increase the strength of the bump stop, it is not recommended to go lower. Oil can be added by degassing, completely removing the shraider valve and filling with a small syringe or similar. Oil should be added in increments of 10ml at a time for HBS56-001 and 15ml at a time for HBS66-002 & HBS66-003. Base oil depths are as follows:

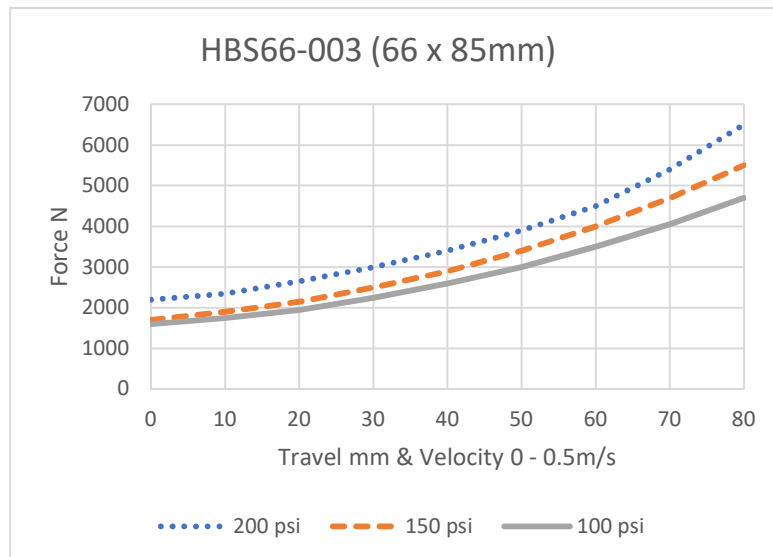
HBS56-001/006 : 42mm (approximately 80ml)

HBS66-002 : 75mm (approximately 210ml)

HBS66-003 : 80mm (approximately 225ml)

*A combination of a small amount of compression valving shims and gas pressure provide the following approximate force values – measured for the length of the stroke and starting at 0 m/s upto 0.5 m/s.*





### Maintenance

Dobinsons hydraulic bump stops are completely rebuildable and tunable. The bump stops should be kept clean and the locking rings inspected regularly to ensure they are tight. For non-race applications the bump stops can be inspected periodically and at regular service intervals for signs of oil leaks, damage to the shaft and gas pressure. For race applications the bump stops should be inspected before and after each meet for signs of damage or oil leaks. Gas pressure should be checked before each race meet. For severe race applications it is recommended to rebuild and service the bump stops periodically.

### Warranty

Dobinsons hydraulic bumpstops have a limited 2 year warranty for non-race vehicle applications from date of original sale against faulty manufacture. For full warranty terms and conditions for hydraulic bump stops please visit [www.dobinsonsprings.com](http://www.dobinsonsprings.com)