



CCVC-SAFETY-0001

Introduction to Snatch Recoveries

Preamble:

The purpose of this document is to explain the reasons for the CCVC tow hook & tow hook mounting specifications (CCVC-SAFETY-0002 Minimum Standards for Tow Hook Mounting, CCVC-SAFETY-0003 Minimum Requirements for Recovery Hooks).

The standards described are designed to prevent tow hooks from breaking or becoming detached during snatch recovery.

Snatch recovery is the process of pulling a 'stuck' vehicle, using a kinetic (stretch) recovery strap (or rope).

This process generates large amounts of energy, and the tow hooks must be able to take this level of energy and remain intact and connected to the vehicle.

A vehicle that is stuck can require a huge amount of energy to extract it. For example: a vehicle in mud, to the chassis rails, requires a force of 3 x vehicle mass to move it. On a Suzuki Vitara (approx 1250kg loaded) this means a tow hook can have a force of 3.75 tonnes on it during snatch recovery. An 80 series Toyota Landcruiser (approx 2500kg loaded) could have a hook loading of up to 7.5 tonnes. Most recovery straps are rated at 8000kg – kinetic ropes can be rated to 12,000kg or higher.

A snatch recovery involves the recovery vehicle accelerating until all slack is taken out of the recovery strap and then stretching the strap. As the strap stretches, energy is stored in the strap. When the recovery vehicle reaches the limit of stretch in the strap, the energy is transferred to the 'stuck' vehicle, hopefully extracting it.

If neither vehicle moves, and instead the tow hook comes off (or breaks) that energy (7.5 tonnes worth) which was stored in the strap now propels the tow hook at high speed.

It has been calculated that a tow hook coming off (or breaking) during a hard recovery will move at approximately 500km/h. This will go through the panel steel of a vehicle (and any soft items – like human bodies) easily.

That is why we have these safety specifications!