

# ← Super Cub →

## Heavy Duty Main Gear

By Mark Drath

On a Super Cub, we always want to keep things as light as possible. Yet sometimes we take these aircraft to rough landing areas, and we expect the main gear to take the abuse. The Super Cub main gear is about as good as it gets when it comes to strength to weight. But if you hit something that is just too big, something has got to give. If you have safety cables, you hope what gives is either the shock strut or cabane. If these break with safety cables installed, it is a minor inconvenience. But if the gear V itself fails, you may end up laying on a wing tip with a prop strike. The gear V itself should definitely be the strongest part of the landing gear.

Heavy Duty replacement gear V's have been available for a long time. Atlee Dodge, Airframes Inc., Cub Crafters, and Univair all have them available. These gear are built from oversized, thicker walled tubing. The axles are thicker walled, and the axle-to-leg gussets are larger, and have a reinforcement sleeve on the legs. Recently, the fabric formers across the top of the V have been replaced with square tubing. This helps reduce flexing of the V, and is a part of the Wipaire gross weight increase STC.

If you have older gear with fabric formers, and the formers keep breaking, your gear is flexing excessively. Shimming between the gear V and fuselage attachments with washers to eliminate fore and aft movement, and installing the square tube will eliminate the problem.

A lot of aftermarket gear being sold is also extended. You will typically see either 3" or 6" extended gear. What this means is that the front tube is extended by this amount. This is not the total amount of lift given to the gear. For example, 3" extended gear will raise most Cubs just a little over 2". When extended gear is installed, the cabane and hydrasorbs stay the same. Just the lower shock strut is replaced with a longer unit, and a longer safety cable is needed. The extended gear gives increased prop clearance, which is needed for some wheel and ski installations when a Borer prop is installed. It also gives the wings a higher angle of attack when 3 point.

With extended gear, it is important to remember that by extending the V's, the increase in the distance between the main gear will be roughly two times the gain in gear height. In simple terms, by extending the gear, the wheels or skis get moved out closer to the wing tips. This gives more stability when operating on side slopes, and in cross winds. It also means that a little more airspeed is needed to tip the plane up onto the upwind wheel in crosswinds. And it will take a little more room to turn a ski plane around with extended gear. But the ski plane with extended gear will be easier to taxi in a tail wind. There are always trade offs, and it is up to the owner to consider how the plane is operated and decide if extended gear is appropriate or not. These days, 6" gear is rarely seen, and

3" gear has become so popular that it is probably considered to be the standard replacement gear.

Axle size is available in either the 1.25" stock diameter or 1.5". The heavy duty 1.25" axles are thicker walled than stock. There is no need to install tubes inside the axles to strengthen them, which was a common practice with stock gear. The heavy duty 1.25" axles are plenty strong, and most people stay with this size on replacement gear. Probably the biggest reason is that any wheels or skis that are built for Cubs are built to fit 1.25" axles. If you want to install something designed for 1.5" axles, you simply put a sleeve over the 1.25" axle and bolt it on. But if you have a 1.5" axle, there is no way to install something designed for a 1.25" axle.

*Stock gear V with both tubes severed in its weak spot right above the small axle gussets.*



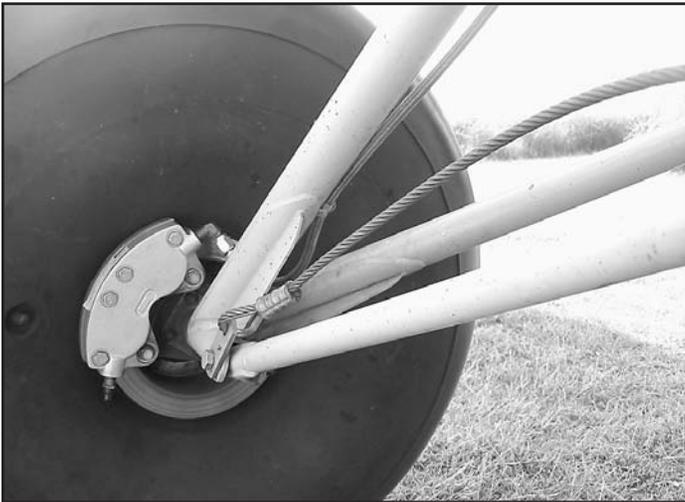
*A heavy duty gear with the shock strut mounts tore off the end of the axle.*



*Square tubing installed in place of the fabric former.*



*Large gussets and sleeves on a heavy duty gear.*



*Another view of the large gussets and sleeves.*



*Cub Crafters heavy duty gear with machined axle/shock strut mounts.*

---