

# PERFORMANCE CHECK-LIST

If moving your aircraft has become difficult and will weigh in on your decision to take a flight, it is probably time to consider purchasing an aircraft tug. There are several factors to consider in your decision making to help ensure you purchase the proper tug with the right power source. As pilots, we can all agree that you can never have too much power when you really need it.

Minimax Aircraft Tugs are highly engineered and designed to be affordable, light-weight, portable, and capable of towing aircraft to 4,000 lbs. gross weight. With this said, there are some considerations which should be understood before purchasing. Namely, what is the slope into your hangar and what type door track or curb do you have to cross to hangar your aircraft.

Slope is calculated as a percentage of rise and run with 45° being 100%. (i.e. 2.5" rise in 10' run = 2%)



To understand slope (gradient) consider for every 1% gradient the energy required to move an object up-slope will increase by 15%. This means at 1% gradient your aircraft is now 15% harder to move. At maximum 2% gradient it is 30% harder to move. Our tugs will move your aircraft and negotiate a maximum 2% gradient. Any gradient over this is enough for your aircraft to roll under its own weight. 6% gradient is the generally accepted maximum allowed in mountainous road construction.

Door tracks or thresholds are typically the most problematic area of moving one's aircraft, but are relatively simple to overcome. On a level surface, if you have a 1" high curb or door track, a ramp 36" long x 1" high tapered to 1/8" will create a gradient of 2%. For every 1/4" of obstacle height the ramp must be at least 9" long. We have found that most Cabinet Shops will come to your hangar to measure and estimate making the ramps (2-pcs. tapered hardwood 8" wide) for each aircraft main wheel. The aircraft nose wheel typically does not require a ramp.

## **LOW AIRCRAFT TIRE AIR PRESSURE IS THE NUMBER ONE REASON FOR POOR TOWING PERFORMANCE!**

In our experience this condition can make moving your aircraft extremely difficult. For safety's sake and easy towing, it's good practice to often check aircraft tire air pressure.

Our cordless electric tugs are considered "assist" tugs in the industry and are not designed for continuous, long distance towing over 500' at a time or continuous tight radius turning as they do not have transaxles. Although the tug itself will function without issue in these conditions, the Lithium Ion battery providing power to the drill will by design shut down to prevent damage from over-heating. The battery will automatically reset to function once cooled. Auto reset can take 10-30 minutes.