



Sydney Branch Gear Inspection procedure for IRB motors
Tohatsu 25hp steering tube and tilt tolerance

This document describes a test which is intended to be conducted to determine when an engine's upper and lower steering tube and transom bracket bushes are worn to the point of requiring replacement. A panel of experts have determined this to be a reasonable and repeatable procedure which will ensure safety and consistency across the branch.

Measurements were taken with aged motors exhibiting worn upper & lower bushes clearly in need of replacement and the range was 10 to 13kgs. Measurements were taken with brand new motors with new bushes and the range was 21 to 24kgs.

- It was agreed that a test which requires 15kgs (of force equivalent) or less would fail the motor for gear inspection and require replacement of the bushes in question.
- The test only needs to be done if it is determined that there is considerable play in worn steering tube or **tilt** bushes or if there is disagreement as to the failure of the engine and is designed to give predictability and consistency to surf clubs preparing motors for inspection.

The test will be carried out as follows:

1. The rope/ cord or cable used shall be no longer than 400mm and with no elasticity.
2. It will be hooked to the bottom of the propeller guard and attached to a portable (luggage/ fish) type scale at the other end.
3. Ensure the motor is clamped and held securely, and keep the rope parallel to and directly beneath the propeller shaft.
4. **Insert taper gauge between steering bracket and exhaust leg. Record clearance. Remove gauge. See attached photos**
5. Using a smooth action apply force to the handle on the scale until the motor starts to lift and change angle from resting.
6. **Reinsert taper gauge and record reading. Calculate difference. Change greater than 1mm indicate steering bushes unfit for service.**
7. Continue until the motor has moved between 50mm and 150mm and the scale has registered a maximum reading.
8. Repeat steps **4 to 6** of the test a minimum of 3 times to get reliable readings.
9. Readings greater than 15kg indicate that the bushings inside the **tilt** assembly are likely fit for service.
10. **Readings calculated from step 4 and 6 indicate steering bushes have reached their operational limits and will require replacement.**







