

Universal Joints and Shaft Couplings

DT Workshop Equipment Reference — D&T / STEM resource for school workshops | Robotics & Mechatronics

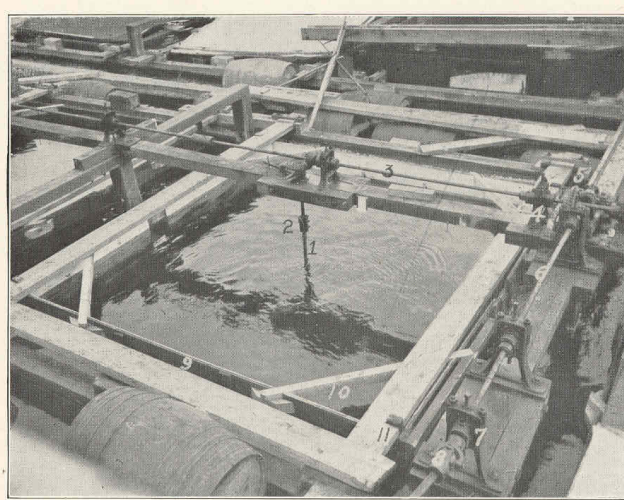


FIG. 4.—Car with propeller in motion. From propeller the shafting may be followed back (1-8) to the universal joint. 1, propeller shaft; 2, sleeve coupling; 3, longitudinal shaft; 4, adjustable shaft hanger; 5, gear trains from longitudinal to transverse shafts; 6, transverse horizontal shaft of float; 7, shaft hanger; 8, ball joint connecting shaft with that of house boat; 9, edge of rearing box; 10, brace across corner of rearing box; 11, holding-down plank mortised into corner post; 12, shaft beam.

Photo: A. D. Mead — Public domain — via Wikimedia Commons (FMIB_47524_Car_with_propeller_in_motion_From_propeller_the_shafting_may_be_followed_back_(1-8)_to_the_universal_joint_1_Propeller_shaft_2.jpeg)

Couplings connect two shafts to transmit torque: rigid and flexible beam couplings align light drives, while universal joints (U-joints) pass drive through angles. Both solve the mismatch between motor shafts and driven shafts.

Key Features

- Flexible beam and jaw couplings
- Universal joints in small sizes
- Set screw or clamp fittings
- Shaft bores 3-12 mm
- Aluminium, steel and acetal

Typical Uses in the Workshop

- Couple motors to lead screws and axles
- Transmit drive through angles
- Connect CNC and printer steppers
- Join misaligned light shafts

Safe Operation

1. Select the coupling bore for the shafts
2. Check shafts are aligned for rigid types
3. Fit and tighten the set screws or clamps
4. Check for runout when rotating
5. Use flexible types for slight misalignment

SAFETY NOTES

- Keep guard fingers clear of rotating couplings
- Do not run misaligned rigid couplings
- Check set screws bite the shafts
- Do not exceed the coupling torque rating
- Inspect couplings for cracks and wear

Maintenance & Consumables

- Check the set screws periodically
- Inspect flexible elements for wear
- Clean the coupling area of swarf
- Lubricate where specified
- Replace worn couplings with spares

Specification & Buying Notes

Beam or jaw couplings with clamp bores suit motors and leadscrews; small U-joints suit angled drives. Quality couplings transmit true; cheap ones wobble and slip.