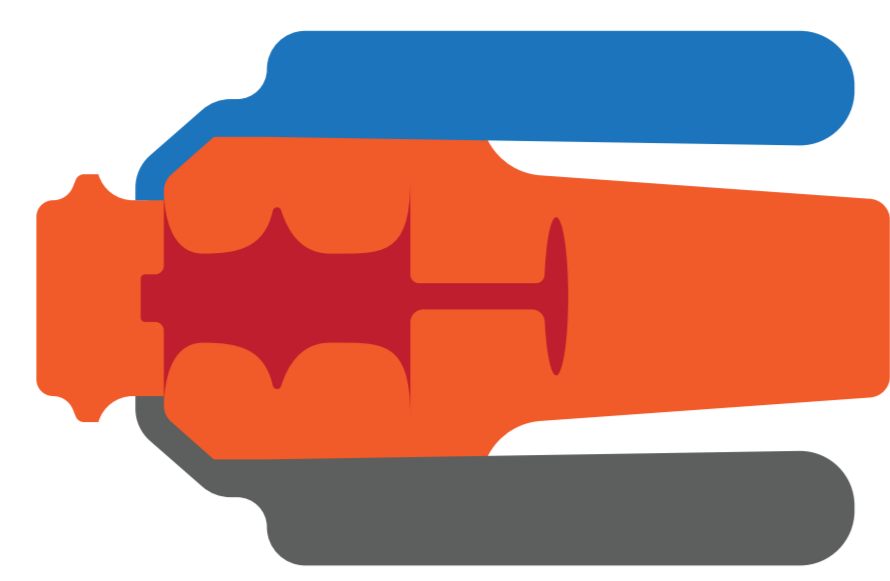
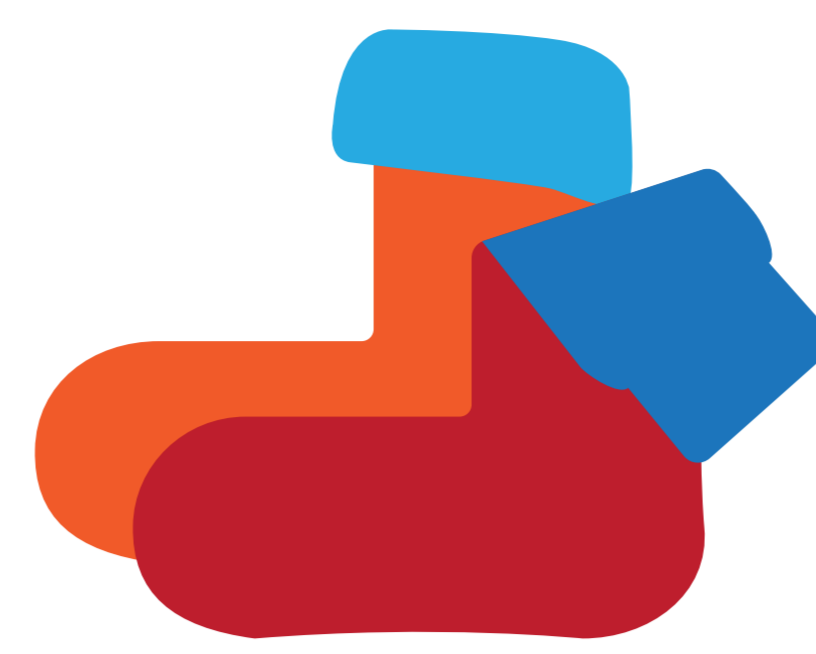


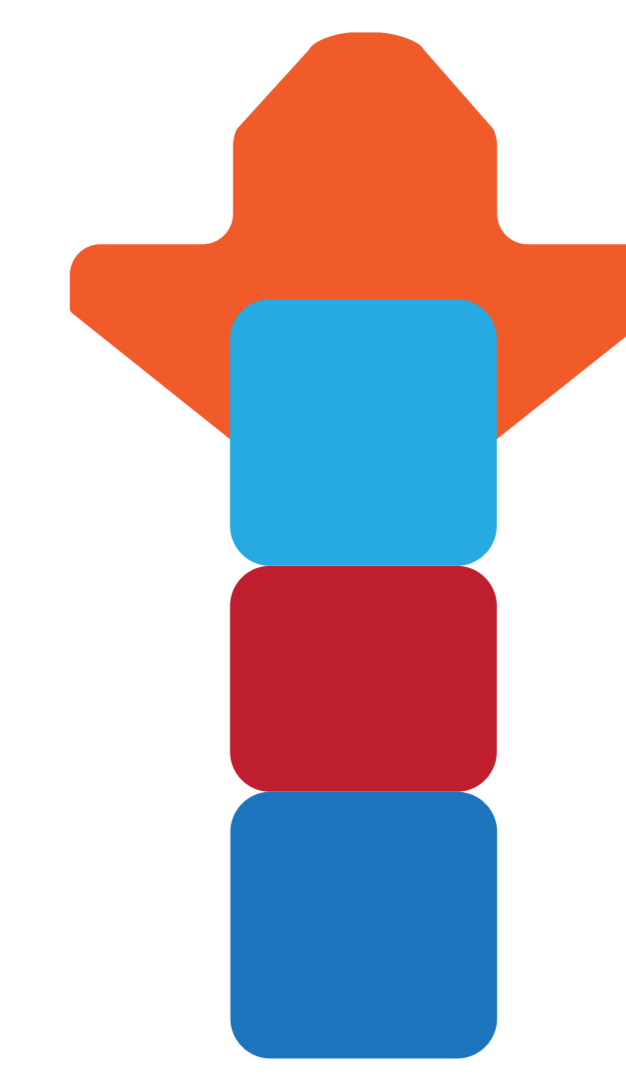
Development Schema



Elevation form inspired by the Rover W.2B engine designed by Sir Frank Whittle.

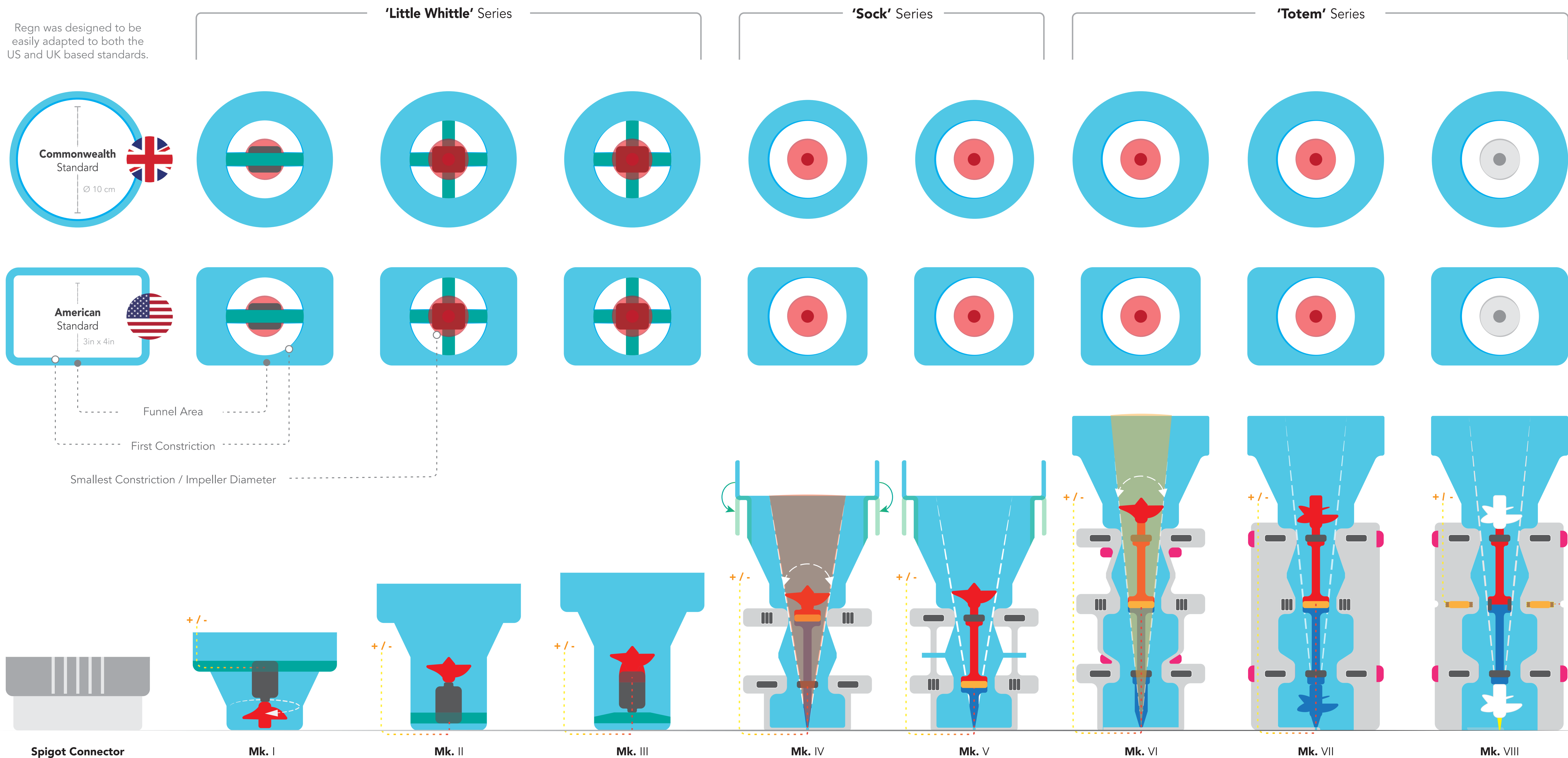


The everyday pair of socks - folding outward onto itself.



Totem poles from Native American cultures and the concept of multi-stage stacking.

Regn was designed to be easily adapted to both the US and UK based standards.



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| <p>Spigot Connector</p> <p>i. Off-the-shelf Components: Impeller and micro-hydro generator.</p> <p>ii. Monocoque Funnel: Integrated generator bracing.</p> <p>a. Fluid flow cross-section obstructed due to ribbings required for maintaining torsional stability.</p> | <p>Mk. I</p> <p>i. Hydrodynamic Efficiency: Impeller positioned at top to better capture swash.</p> <p>ii. Torsional Stability: Generator bracing cross-ribbed to increase stiffness.</p> <p>a. Flow cross-section obstruction increased due to cross ribs to maintain torsional stability.</p> <p>b. Risk of fibre-strand clogging increased due to spindle position.</p> | <p>Mk. II</p> <p>i. Spinder Efficiency: Impeller and generator cowling integrated into single form.</p> <p>ii. Fibre-strand Clogging Reduction: Cowling integration reduces opportunities for obstruction lodging on upper segment.</p> <p>a. Non-true vertical rotation develops due to misaligned pipelines and account for component cavitation wear.</p> <p>b. Fluid flow cross-section area still obstructed due to cross ribs to maintain torsional stability.</p> | <p>Mk. III</p> <p>i. Spindle Efficiency: Levitated shaft makes physical contact at a single point reducing generated friction. Flow cross-section is recovered.</p> <p>ii. Clogging/Obstruction Tolerance: Magnetically levitated shaft allows spindle to forcefully 'bounce' off to side walls in the event of foreign object entry.</p> <p>iii. Rubber 'Sock' Fitting: Better watertight sealing at joints.</p> <p>a. Generator components segregated into magnets and coils complicating construction.</p> <p>b. Additional housing components required to brace segregated components as monocoque funnel shell is no longer feasible.</p> <p>c. Fluid flow bottleneck created due to bulk of coils on spindle.</p> <p>d. Current plane of levitation causes frequent displacement of spindle.</p> <p>e. Twisted output wiring was consistently encountered leading to stress build up in between exposed and shielded wire sections.</p> <p>f. Spindle tip wears out too quickly.</p> | <p>Mk. IV</p> <p>i. Rectified Levitation Plane: Spindle is less prone to frequent displacement due to cavitation. Fluid is less prone to bottleneck at smallest constriction.</p> <p>ii. Refined Housing: A simplified two-part housing reduces number of overall components. Added 'sock' mounting points to rigidly hold funnel core open.</p> <p>a. Unshielded butadiene components degrades under long periods of exposure to UV radiation.</p> <p>b. Severe cavitation still causes spindle displacement due to non-rigid funnel shell and singular plane of force to arrest spindle.</p> <p>c. Spinning resistance is increased as spindle is tethered by electrical output wiring line.</p> <p>d. Twisted output wiring was consistently encountered leading to stress build up in between exposed and shielded wire sections.</p> <p>e. Spindle tip wears out too quickly.</p> | <p>Mk. V</p> <p>i. Reduced Spindle Precession: Additional levitation plane reduces allowed angle of precession and places additional downforce on spindle tip.</p> <p>ii. PVC Shielding: The housing and funnel shell would be made of PVC instead of butadiene based materials.</p> <p>iii. Rounded Spindle Tip: Tip profile was blunted to reduce abrasive contact between wiring and tip base.</p> <p>a. Twisted output wiring was consistently encountered leading to stress build up in between exposed and shielded wire sections.</p> <p>b. Clumsy housing form made insertion into existing pipeline due to high amount of ridges.</p> <p>c. Elastic bands loose elasticity and degrades with time despite.</p> <p>c. Spindle tip wears out too quickly.</p> | <p>Mk. VI</p> <p>i. Refined Housing: Ridges have been replaced with smoothed exterior walls.</p> <p>ii. Three-Blade Impeller: Increases the swash capture surface area with minimal sacrifice in unobstructed flow cross section.</p> <p>iii. Reusable Cable Ties: Nylon (polyamide) cable ties are used to fasten housing shell halves together and facilitate maintenance.</p> <p>a. Twisted output wiring was consistently encountered leading to stress build up in between exposed and shielded wire sections.</p> <p>b. Three-blade impeller complicates injection moulding process for spindle parts.</p> <p>c. Spindle tip wears out too quickly.</p> | <p>Mk. VII</p> <p>i. Refined Housing: Housing simplified to symmetrical half shell with snap-off spindle tip base.</p> <p>ii. Coil-Magnet Position Swap: Coils are now wound around Seeger rings (circlip) circling around the funnel shell exterior. Magnets occupy mid-point of spindle. Layers of Seeger rings produce similar lamination effect to eliminate detrimental eddy current generation.</p> <p>iii. Segregated Impellers: Impellers are now separate components from spindle to reduce moulding complexity. Connection points correspond to distinct top and bottom spindle ends.</p> <p>iv. Tungsten-Carbide Tip: Tips from expanded Bic 'Biro/Cristal' styled ballpoint pens fit into bottom spindle end. Any leftover oil-based ink helps lubricate spin point.</p> <p>v. Scalloped Spindle Base: Internal scalloped ridge feature on housing improves spindle retention during spin.</p> <p>a. Increased overall component count offset by use of off-the-shelf components, improved efficiency and enhanced reliability.</p> | <p>Mk. VIII</p> |
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