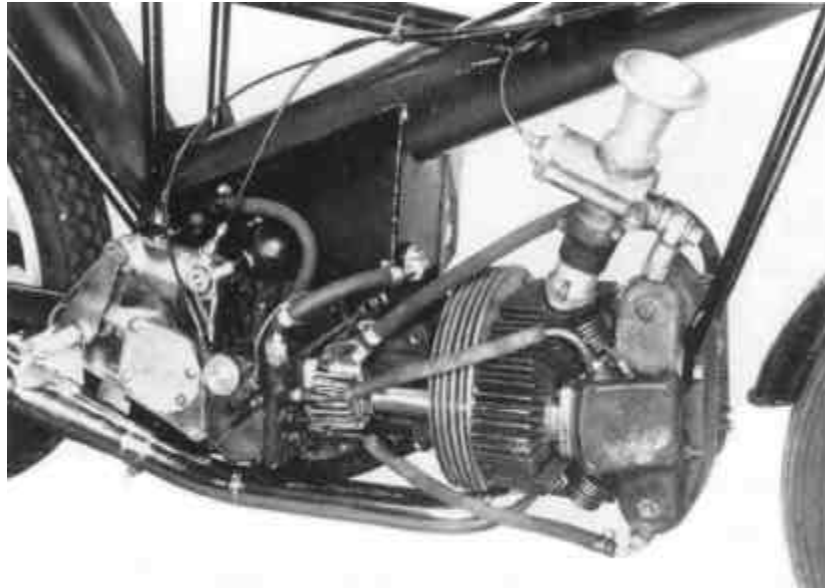


On a Reynolds frame for a 250cc Moto Guzzi flat single however, the gap was appreciably greater and was spanned by a channel-section light-alloy fabrication, bolted through two cross-tubes welded into the main tube (which doubled as an oil tank) and the box-section sump welded to its underside.

A substantially similar layout was used on Norton's unfinished Moto Guzzi-inspired experimental 500 cc flat single in the mid-1950s. In that case the oil was contained in a 114 mm.-diameter main tube and a welded-on underslung box that also supported the crankcase, while the fork pivot was bolted between a light-alloy gearbox plate on the left and an aluminium casting on the engine.

Believed to have now been completed and residing in the Sammy Miller museum, this Norton frame was being prepared for 1956 but was never finished by the factory. Oil was contained in the backbone and the underslung box, which supported the crankcase. Surprising, this box section was not used to support the swinging fork pivot, which was held between light alloy plates.
(MCW)



When a tall, bulky engine (such as a 1-litre twin-cam four abreast) has to be accommodated, an even bigger gap has to be spanned. A self-defeating scheme adopted by some frame builders was to bridge the gap with a pair of bolted-on light-alloy plates, which could make nonsense of the tube's torsional stiffness, depending on detail design.

An alternative arrangement was incorporated in the Foale frame for Honda and Kawasaki fours, in which a pair of tubular triangles splayed out from the rear of the tube to the sides of the fork pivot, so providing good support in both planes.

Another approach to the problem of accommodating a large engine is to split the beam around each side, thus we come to the "twin spar" frame initially popularised in the 1980s. These frames have been made in both steel and aluminium, but aluminium is normally the material of choice. Designed and constructed properly this frame type can be made quite stiff.



Note how the head stock is supported by the two side beams of this 1997 NSR 250 racing Honda. Frame material is aluminium alloy.