

DESIGN OF A MOTORISED ELBOW SPLINT

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Though double acting gas motors are the method of choice in many centres nowadays, the detailed design is important. A two cylinder system using full driven cylinder pressurization and flow control of the exhausting cylinder to atmosphere, not only provides an even torque at all positions because of the pulley system, with great smoothness of action and quick response, but can be compact because nylon sleeved piston cables can replace rods.

The design shown in New York in 1960 has now been improved by the important further development of a central pillar to take the thrust of the pulley against the motor. It will, therefore, prevent distortion of the splint. But it will also absorb the twisting tendency which arises from the fact that the application of power is off centre. This enables the whole bearing system of the splint to be revised.

A heavy splint design is no longer required to keep the medial and lateral bearings co-axial: indeed the motor can act as one side iron for the upper arm gutter, the other side iron can be discarded, and only one bearing used.

If the forearm is then lifted by a cranked lever provided with a wrist sling, the system is inherently self-aligning, since once adjusted on first fitting to the patient, the tip of the forearm lever remains in the middle of the wrist whatever its position in the pronation, supination range and as the wrist hangs from the lever, if the latter should slip it is pulled back into line.

This design is cheaper, easier to engineer and fit to the patient, easier to put on, more comfortable and less obtrusive.