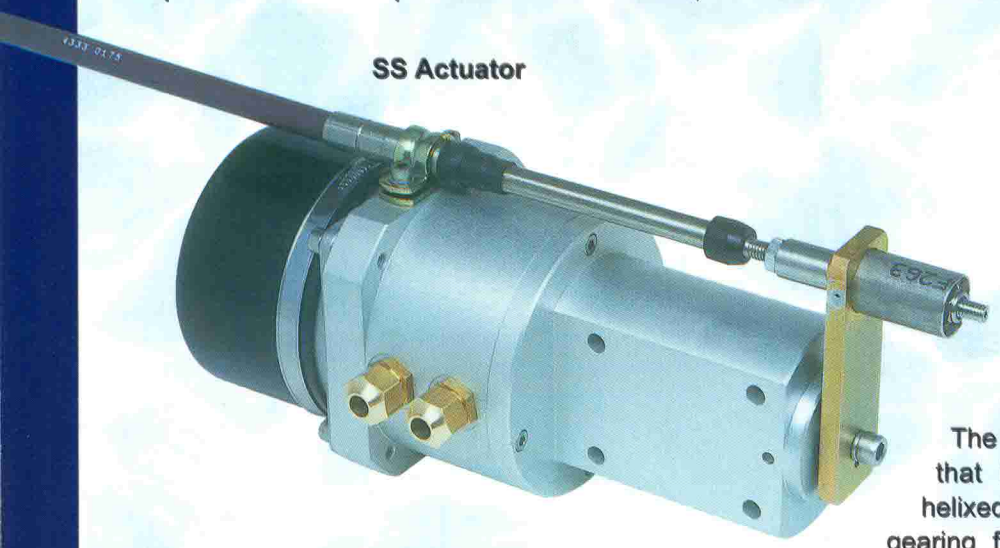
ELECTRICAL MECHANICAL INTERFACE FOR PITCH AND SPEED CONTROL

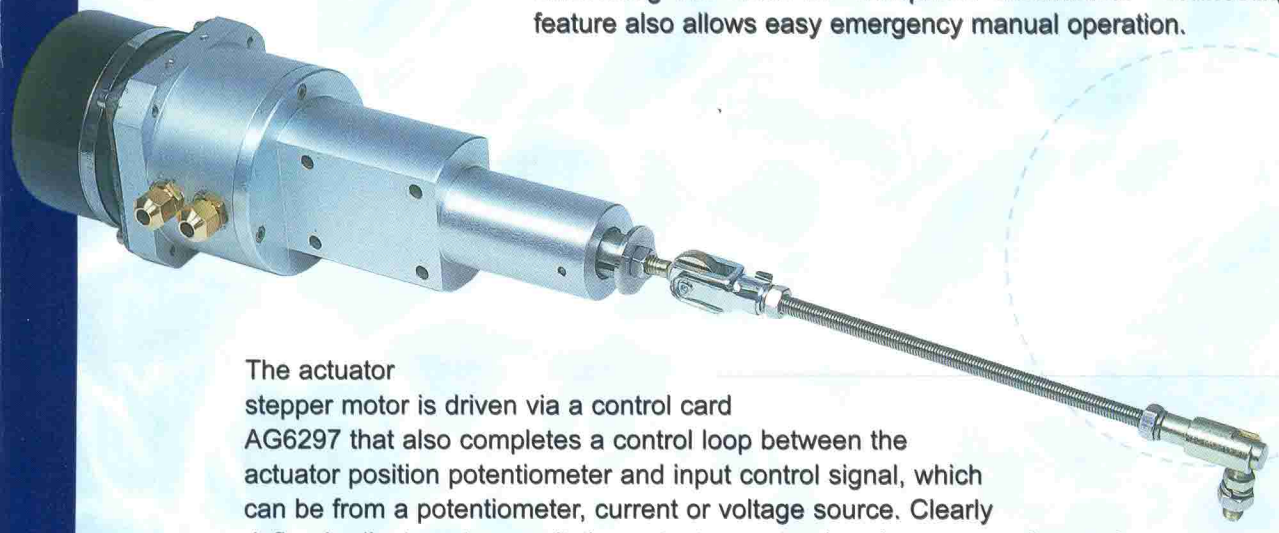
Linear actuators, type AG6248, are supplied as long stroke (LS) or short stroke (SS) units to optimise space and stroke requirements and provide the ideal control medium for C.P.Propellers, Voith thrusters, etc. The short stroke actuator is also offered fitted with a mechanical cable link so that for example on engines where space is limited for speed control connections, the actuator can be mounted off engine.

SS Actuator



The use of a high torque stepper motor that is connected direct to a steeply helixed lead screw eliminates reduction gearing from the drive line and provides very precise speed and positional control. The actuator can be backdriven thus eliminating the need for collapsible mechanical connecting links. This feature also allows easy emergency manual operation.

LS Actuator



The actuator stepper motor is driven via a control card AG6297 that also completes a control loop between the actuator position potentiometer and input control signal, which can be from a potentiometer, current or voltage source. Clearly defined adjustments permit the actuators extend and retract strokes to be independently set as well as its speed of operation and sensitivity. A separate output signal is available to drive remote instruments to show the actuator position.

INTERFACING TO ELECTRONIC GOVERNORS

Electro/electronic interfaces are catered for with card type AG6544, which is supplied in various build states to:

a) Accept control input from a potentiometer, 2 to 10 volt signal range or 4-20mA.

b) Provide signal output in the range 4-20mA, 0-2v, 0-4 or 0-10 volts and pulse width modulated signals to interface with "CAT" engines.

On card adjustments allow the end points for the signal range to be set as required.

TYPICAL LOGIC ENCLOSURE

The control logic is housed in Bulkhead mounting enclosures that are sized to suit the Bridge control logic and any system enhancements.

SYSTEM ENHANCEMENTS

Overload protection and load control interface and sensing

The interface for overload protection or load control is provided though a daughter card type AG6282 which plugs directly on to the actuator drive card, type AG6297.

The interface card causes the pitch setting actuator to respond to three load level inputs, which are generated from either:

a) Switch unit type AG6287 which is mechanically operated from the engine rack to indicate three engine load levels.

b) Control card AG6331 which monitors an electronic rack position indicating signal to provide the three switch engine load levels.

c) Load control system type AG6439. This computes the engine fuel pump rack signal with an engine speed signal and triggers the three switch engine load level signal appropriate to the speed that the engine is running at.

Operating of the three load level signals in sequence has the following effect on the pitch control system.

Switch 1 slows the rate at which pitch can be increased.

Switch 2 (full load) inhibits the application of further pitch.

Switch 3 (overload) reduces pitch until switch 2 or switch 1 condition is sensed. This controls the engine power within closely defined limits with minimum hunting of the propeller pitch.

Other features are available, such as:

- **Constant engine speed selection**
- **Clutch engagement interlocks**
- **Interface to D.P. control systems**
- **Combinator control**