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Servo (servo mechanism)

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- Seismograph. Refers to an instrument in which a heavy mass has been poised in such a way that a vibration of its support, together with the inertia of the mass, causes a relative motion of mass and support, that when amplified produces the record. The recording in older instruments has been by a stylus on a rotating drum and in more modern instruments an electro-magnetic current operates a mirror galvanometer to give a photographic trace. An observatory may have N-S and E-W horizontal instruments plus a vertical recorder.
- Seizure of Seizing Up. Refers to the locking of two moving surface. such as in a bearing due to the partial welding together of the two surfaces, caused by insufficient lubrication of insufficient clearance between the two surfaces.
- Self-aligning Ball-bearing. Refers to a ball-bearing with two rows of balls between an inner race and a spherical surface for an outer race, thereby allowing considerable shaft deviation from the normal.
- Semi-rotary Pump. The alternate action of a semi-rotary pump is illustrated in Figure.



Servo (servo mechanism). A device which is used for converting a small movement into one of greater amplitude or to exert a greater force.

Servo Control (in an aircraft). Refers to an additional mechanism which is devised to reinforce a pilot's effort by a relay.

Servo Mechanisms. Servo mechanisms have been of two types, with open loop or closed loop controlling systems. In the open-loop system there has been nothing in the mechanism to measure the result of the application and errors cannot be rectified. In the closed-loop system, the results of the operation have been fed back into the control circuits so that they can rectify errors. In guided missiles, the servo-loop has been closed by controlling impulses coming from the ground control and by error-sensing devices within the missile.

Servomotor

- (a) Refers to a motor, linear or rotary, which receives the out-put from an amplifier element and drives the load, being the final control element in a servo mechanism. An example of a linear servomotor is hydraulic ram.
- (b) Refers to a device for magnifying a small effort by using hydraulic means.
- Servo System. Refers to a closed-circuit automatic control system, which has been designed so that the output follows closely the input; it usually includes power amplification and is capable of following rapid variations of input.
- Servo Tab. Refers to a small hinged surface of an aeroplane control or flap, which is operated directly by a pilot to produce aerodynamic forces which, in turn, move the control surface (or flap).
- Servovalve. Refers to a hydraulic valve which makes a large flow of hydraulic fluid to be switched, by a very small initial force, from one part of a mechanism to another.
- Setting Gauge. Refers to a gauge which is used for checking the setting of an adjustable workshop guage or an inspection gauge or a compressor.
- Sewing Machine. A machine for sewing fabrics with a mechanism operating a needle bar, reciprocally vertically, having the thread for the pointed-eye needle supplied from a spool on the frame, plus usually a lock stitch mechanism.

Surface Plate (planometer)

Supercharger. Refers to an axial flow or centrifugal compressor which supplies air, or a combustible, mixture, to a piston-engine at a pressure greater than atmospheric and gets driven either directly by the engine or by gas turbine motivated by the exhaust gases. The latter is termed as an 'exhaust-driven supercharger' or a 'turbo-supercharger'. Supercharging months to announce the second states and the second

- (a) Refers to the maintenance of ground-level pressure in the inlet pipe of an aero-engine up to the rated altitude by a supercharger. upo coliny golffortor
 - (b) Boosting.

Superfinishing. A process which involves short strokes at a very rapid rate with a lighter pressure than in honing and lapping and with copious amounts of coolant and lubricant. It could be applied to both cylindrical and flat surfaces and surfaces finish is usually in the range 25-100 nm (1 \times 10⁻⁹ to 4 \times 10⁻⁹ in) 10 nm (4 \times 10⁻¹⁰ in and toxic the dat hak of in) can be obtained.

Superheated Steam. Refers to steam which is heated at constant pressure to a temperature above that dure to saturation and out

of contact with water from which it was formed.

Super Miser. Refers to a combination of air preheater and econo-

mizer for boilers. Surface Chuck. Face chuck.

- Surface Condenser. A condenser in which cooling water gets circu-
- lated in tubes to condense the steam and a vacuum is maintained by an air-pump.
- Surface Grinding Machine. A machine which is used for finishing flat surfaces with a high-speed abrasive wheel mounted above a reciprocating, or rotating, work table on which the work is held often by a magnetic chuck.
- Surface Meter. An instrument which is used for measuring the texture of surfaces, using a stylus whose up and down motion is magnified up to 100,000 times to produce a graph of crosssection of the surface and a number representing the centre-line

average height. Surface Plate (planometer). A rigid, accurately flat, cast iron plate which is used for testing the flatness of other surfaces and to

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provide a plane datum surface for marking off work for machinery.

Surface Texture. The term used for the appearance and characteristics of a metal surface after machining.

Surging

- (a) Refers to a severe fluctuation or abrupt decrease in the delivery pressure of a centrifugal supercharger or of a compressor.
- (b) Refers to the coincidence of a harmonic of a cam's lift curve with its controlling valve spring's natural frequency of vibration, leading to irregular action.
- Suspension. Refers to that portion of a mechanism which is designed to damp vibration and reduce the effect of external shock loads on the major portion of the assembly.
- Suspension Links (vibrating links). Refers to two parallel flat rods which lift and lower the slot links of a steam-engine for reversal. One end of the pair has been loosely attached to the tail of the slot link and the other is attached to a short lever keyed on the weight shaft.
- Swashplate (wabbling disc). A circular plate which is mounted obliquely on a shaft, as a substitute for a crank mechanism.
- Sweat Cooling. Refers to the cooling of a component of an engine or mechanism by evaluating fluid through a porous surface layer, like in rocket-engines and gas turbine blades.
- Swiss Machine (schiffle or shuttle machine). An embroidery machine having the shuttles placed diagonally.
- Swivel-head Lathe. A special lathe which is used for boring and turning tapered objects having the mandrel headstock mounted and pivotable on a base plate.
- Synchromesh Gear. Refers to a gear in which the driving and driven members have been automatically synchronized by small cone clutches before engagement.
- Synchronizing Gear. A gear to synchronize the firing mechanism of a gun with the rotation of the airscrew so that the bullets do not meet the blades.