

**PUMPS**

**PUMP GLOSSARY**

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A.N.S.I Standards

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| *American National Standards Institute. Set of specifications for centrifugal pump manufactured in the U.S.A.* |
| *Connects and aligns the power end of a pump to the wet-end* |
| *Predict how capacity, head and horpower are affected by changes in impeller diamand shaft speed* |
| *Air entering the stuffing box due to negative suction pressure* |
| *When centerline of pump is perfectly aligned to centerline of driver* |
| *Description of the fluid and operating conditions you are trying to pump* |
| *Pressure of the atmosphere on earth. Sea level is 14.7 PSI* |
| *The best efficiency point. It is the point where the power coming out of the pump (water horse power) is the closest to the power coming into the pump (brake horse power) fromthe driver. This is also the point where there is no radial deflection of the shaft cause by unequal hydraulic forces acting on the impeller.* |
| *Brake horse power. The actual amount of horsepower being consumed by the pump as measured on a pony brake or dynamometer.* |
| *Used in some centrifugal pumps to position stuffing box and provide a wear surface for the impeller* |
| *The pump and motor mount on this unit* |
| *A moving streamof liquid or gas exerts less sideway pressure than if it were at rest. The result is that material appears to be drawn into the stream, but are actually being pushed in by higher pressure fromoutside* |
| *Surface pump used to increase pressure in a fluid line or to pull froma storage tank or pit. Also used to*  *pressurize a water system* |
| *A method of measuring hardness of metal parts. Hardness higher than 350 can be difficult to machine* |
| *Recirculates fluid frompump discharge to stuffing box* |
| *Fluid flow measured in gpm, liters/min, M 3 /hr. etc.* |
| *Vacuumcreated when discharge capacity of pump exceeds the replacement in the suction line. Cavitation can occur when diameter of the input line is too small or too long. These bubbles vibrate and can damage pump* |
| *Pump that mechanically spins solution in order to push it out by centrifugal force* |
| *Valve that allows solution to flow in one direction only* |
| *Pump impeller mounts directly to drive mechanismshaft* |
| *Change to elastic shape when exposed to heat. Round O-ring becomes flat* |
| *Any object of elastic material has a natural period of vibration. At this speed, minor vibrations will be magnified* |
| *Directs pumped solution to the discharge port. May be a high wear point* |
| *Touching of a component to dissipate vibration* |
| *Movement or displacement of a shaft in the radial dimension. (run-out)* |
| *Precise tool used to measure deflection or shape of shaft* |
| *Housing or part that fits around impeller. Strips solution fromthe rotating impeller & forces it out the discharge line, reducing solution velocity while increasing static pressure. Sometimes this feature is designed into volute* |
| *This design incorporates two cut waters to prevent shaft deflection when pump is running off-B.E.P.. Lowers*  *efficiency and not used in smaller pumps* |

Adapter Affinity law s

Air ingestion Alignment Application

Atmospheric pressure

**B.E.P.**

**B.H.P.**

Back plate Base Plate

Bernoulli's Law

Booster pump Brinnell hardness

Bypass line Capacity

Cavitation Centrifugal pump

Check valve Close coupled Compression set

Critical speed

Cut w ater Damping Deflection

Dial indicator

Diffuser Double volute

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| *Property of a metal allowing deformation without cracking* |
| *The pump head created by friction in the piping system* |
| *Power in / power put* |
| *A rubber like material that when compressed, will return to 90% of original shape in less than five seconds* |
| *The center of the impeller where fluid enters* |
| *A second impeller used to lower the stuffing box pressure.* |
| *Responds to changes in fluid level, preventing overflow by blocking input flow* |
| *Volume of fluid moving past a given point, in a unit time. (gal/min)* |
| *Part of frame that supports wet and power end of pump. Attaches to base plate* |
| *(check valve) Placed below a surface pump to prevent reverse flow in a pipe when pump is off. So pump will not*  *loose prime* |
| *Common impeller shape used in the range of 1500-4000 rpm* |
| *loss of fluid pressure due to length of pipe or elbows on discharge* |
| *List of metals where in a certain medium(eg: salt water) the more noble metals will be attacked by the less noble* |
| *The part that holds one half of the mechanical seal to the stufing box* |
| *The equivalent height of the liquid. 20°C. water is used as the standard where 10 meters (33.9 ft.) of water equals one atmosphere (14.7 psi. or 1 bar). The termhead is used instead of pressure in the centrifugal pump*  *business.* |
| *33,000 foot pound / min* |
| *Rotating centrifugal pump part with vanes propelling solution outward creating centrifugal forceand driving solution to the discharge. Three basic design types: Closed / open and semi-open* |
| *Open impellers require a clearance between the volute or the pump back plate depending upon design. This clearance must be set when the pump is at operating temperature and must be reset to compensate for wear. (0.015" to 0.020" or 0,04 mmto 0,05 mmis typical)* |
| *Open eye in center with vanes on both sides* |
| *Open eye with water wheel shape* |
| *Eye in center with vane on one side only* |
| *Plates located on both sides of impeller to pervent solids frompenetrating* |
| *Blade between eye and outside diamof impeller directing solution flow* |
| *Cavitation or compression of air bubbles making noises and damaging pump parts* |
| *Small axial flow vane attached to impeller to increase N.P.S.H. available* |
| *Corrosion at the grain boundires of a body of material* |
| *Loss of efficiency caused by solution flow between wear rings or impeller/volute clearance.* |
| *A device used to supply lubricant to packing. Usually located in the middle of the packing ring set.* |
| *Can cause excess heat inside pump. Rise of 10 degrees C is excessive. Usually caused by throttling discharge*  *valve or reduced pipe ID due to residue build-up* |
| *A condition that can cause excessive heat inside the pump volute. A temperature rise of 10°C (18°F) across the operating pump is considered excessive. Normally caused by throttling a pump discharge valve.* |
| *The net positive suction head available to prevent cavitation of the pump. It is defined as: Atmospheric pressure + gage pressure + static pressure - vapor pressure - friction loss in the suction piping* |
| *Net Positive Suction Head required to stop a pump fromcavitating, Number Is usually supplied by manufacturer* |
| *Original Equipment Manufacterer of the pump, not the distributor* |
| *(potential Hydrogen) Measure of acidity or alkalinity of a solution. Where 7 is neutral, a higher number is alkaline*  *and alower number is acidic* |
| *Strain put on a pump which can change the shape causing impeller contact* |
| *Surface voids in metal caused by corrosion, erosion or cavitation* |
| *Initiating solution flow in a dry pump by manually filling volute* |

Ductility Dynamic Head

Efficiency Elastom er

Eye of the Impeller

Expeller Float valve Flow rate

Foot Foot valve

Francis' vane Friction loss

Galvanic series

Gland Head pressure Horse pow er

Impeller

Impeller setting Closed impeller

Open Semi-open

Impeller shroud Impeller vane

Implode Inducer

Intergranular corrosion Internal recirculation

Lantern Ring Low flow

Minimum Flow

**N.P.S.H.A.**

**N.P.S.H.R.**

**O.E.M.**

pH Pipe strain

Pitting

Priming

Pump curve

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| *A diagramsupplied by the pump manufacture to describe the relationship between the head and the capacity of a particular pump using various size impellers. The curve also include information about efficiency, horse power consumption, N.P.S.H. required, etc.* |
| *A second impeller used to lower the stuffing box pressure.* |
| *Centrifugal pump is designed to remove air fromthe suction vs. "flood" pump requiring manual priming* |
| *The pumps are connected with the discharge of the first pump discharging to the suction of the other. The speed and impeller must be matched or the difference in capacities could cause cavitation or over heating problems.* |
| *Max head that can be generated with a given impeller design and horsepower* |
| *Solids present in a liquid* |
| *Density (weight/ unit area) vs. water(1.0)* |
| *Formula to describe the shape of an impeller. Higher specific speed = lower N.P.S.H.* |
| *Max height a liquid can be pumped* |
| *Distance below static water level where a pump is set* |
| *Motor/pump combination designed to be placed entirely below solution level* |
| *Head on the suction side of pump. Subtract suction head fromdischarge to determine actual head.* |
| *Total vertical distance fromthe surface of a liquid to pump body* |
| *Total discharge head. A combination of suction head and the head produced by the pump* |
| *Material that can be softened or melted repeatedly without losing properties (injection molding)* |
| *Can be softened & melted, but not re-usable* |
| *Axial movement of shaft (forward & back)* |
| *The amount of head produced by the pump. Discharge head minus suction head. If suction head is a negative*  *number it is added to the discharge head* |
| *Sensor atached to pump to monitor vibration amplitude and frequency* |
| *Disturbance in fluid causing cavitation problem. Often caused by elbow too close to pump suction input* |
| *Type of cavitation caused by impeller / cutwater clearance too small* |
| *Used to control flow in a systemby varying the frequency of the motor. Recommended for circulating systems and any other systemwhere the main head is friction losses in the piping system.* |
| *Pressure and temperature coordinate where liquid will vaporize* |
| *Distance traveled by a body in a unit of time (feet/min)* |
| *Used to remove gas or air fromsystem* |
| *Resistance to pouring. Higher viscosities can restrict seal movement. Centrifugal pumps can handle a maximum viscosity similar to 30 weight oil at roomtemperature. Above this viscosity a positive displacement pump should*  *be used* |
| *Housing that contains impeller & diffuser. Solution is propelled through the volute's enlarging spiral chamber,*  *increasing the centrifugal effects of the impeller* |
| *Spiral shape of volute that converts velocity energy to pressure energy* |
| *Creating a "whirlpool effect" that can draw air into the suction of the pump.* |
| *(WHP) head X GPM / 3960* |
| *Used with closed impellers to resist leakage fromhigh pressure side of pump to low. Normally replaced when*  *clearnace is doubled original* |
| *Parts of pump that sees solution, including: volute, casing, stuffing box, impeller, wear rings and shaft* |

Repeller/Expeller Self-priming pump

Series Operation Shut-off head

Slurry Specific Gravity Specific speed Static head Submergence

Submersible pump

Suction head Suction lift

**T.D.H.**

Thermo plastic Thermo set plastic

Thrust

Total Head Transducer Turbulence

Vane passing syndrome

Variable speed motor Vapor pressure

Velocity

Vent Viscosity

Volute / Casing

Volute shape Vortexing liquid

Water horse pow er

Wear ring Wet end