RULES OF THUMB FOR SELECTION AND USE OF CENTRIFUGAL PUMPS

GENERAL PUMP INFORMATION

> Match materials of construction to fluid properties of liquid to be pumped; is it abrasive or corrosive?
> Confirm materials compatibility with liquid being pumped.
> When in doubt, ALWAYS consult us.
> Check operating pressure against pump maximum in catalogue.

SUCTION CONDITIONS/NET POSITIVE SUCTION HEAD (NPSH)

> Correct for NPSH available due to varying vapour pressure caused by higher altitude or increased temperature.
> Reduce the NPSHA (available) or atmospheric pressure available by 1 foot for every 1,000 feet above sea level.
> If no other information is available, NPSHR (required) varies to the square of the speed change on speed increase and directly to the ratio on speed decrease.
> NPSHA must always be greater than NPSHR; allow additional safety factor and don't cut too close.

OPERATING SYSTEM INFORMATION/ SYSTEM DESIGN

> Ideal suction line velocities should be 3-5 feet per second.
> Ideal discharge line velocities should be 5-10 feet per second.

DRIVE/MOTOR CONSIDERATIONS/ INFORMATION

> For every 10 above the 40°C on electric motor, the motor life is reduced by 50 percent.
> Electric motors operate most efficiently at 75 percent of nameplate horsepower.
> For motors and panels, check with local authorities to see what type of starter is required (across-the-line, partwind, or auto-transformer).

SEALING INFORMATION

> When applying water flush to a mechanical seal, use 5-10 PSI over pump discharge pressure .25 - 1 GPM flow.
> Double and/or tandem seals with a barrier fluid are required when pumping certain hazardous fluids.
> Use a seal instead of packing if no stuffing box leakage is desired.
> Special pumpage (abrasive, chemicals, temperature, etc.) require special materials of construction - packing or seal (usually more expensive).
> Outside water flushes may be required.

OPERATION & MAINTENANCE – START UP

> Always read Operating & Maintenance manual prior to start-up.
> Be sure suction line is clear prior to start-up.
> Be sure pump is primed prior to start-up; do not run pump without any liquid in the pump casing.
> Adjust packing as recommended by operating manual; do not over-tighten.
> Do not regulate flow with a valve on suction side of the pump.
> Always verify NPSHA (system) is greater than NPSHR (pump).
> If pump is direct-coupled, check coupling alignment prior to start-up.
> Install suction piping so that air will not become trapped or accumulate (no high points).
> Strainers installed in the suction line should be checked for contaminants and cleaned.
> Never operate the pump dry or with the suction side valve closed. Otherwise, the pump will be damaged.
> In the event of cavitation, stop the pump within a minute.
> If a magnetic driven pump is being operated and the magnet coupling decouples, stop the pump within a minute. The power of the magnet coupling will be reduced if operation is continued with the coupling disconnected.
> The pump should never be operated with the discharge valve closed. A resultant rise in the temperature of liquid in the pump can cause damage to the pump.
> In the event of a service power failure during pump operation, turn off the power switch immediately and close the discharge valve.