What are different type of pumps?

There are several types of pumps, each with its own specific use and operation.

1. **Centrifugal Pumps**: These are common in industrial applications and can be built from a wide range of materials. They are capable of handling capacities up to 6000 gpm and heads up to 600 feet without special drivers. However, their performance decreases when handling viscous fluids or when air or vapor are present in the liquid. Centrifugal pumps are typically smaller and lighter than other types, making them more cost-effective 1 .
2. **Positive Displacement Pumps**: These pumps operate by trapping a fixed volume of liquid and then releasing it to a higher pressure through a piston or rotary gear 1 .
3. **Reciprocating Pumps**: These pumps use a piston, plunger, or diaphragm to increase the pressure of a liquid. The pumping chambers are surrounded by one-way valves, allowing liquid to move only from the low-pressure side to the high-pressure side. They can be "single acting" (fluid is moved only on the downstroke) or "double acting" (fluid is moved by both sides of the piston) 1 .
4. **Vertical Turbine Pumps**: Commonly used in groundwater wells, these pumps are driven by a shaft rotated by a motor on the surface. The shaft turns the impellers within the pump housing, while the water moves up the column. This type of pumping system is also known as a line-shaft turbine 2 .
5. **Rotary Pumps**: These pumps are typically used in high head, low flow applications. They are suitable for high viscosity and low vapor pressure fluids. The fluid pumped must be "lubricating", and solids cannot be present. A key difference from centrifugal pumps is that discharge pressure variation has little effect on capacity 3 .
6. **KWP K 100**: This is a specific type of pump with different impeller forms such as K (channel-type impeller), F (free-flow impeller, special), and O (open multi-vane impeller) 4 .

What is the startup procedure?

The startup procedure for a pump typically involves the following steps:

1. Fully open the shut-off element in the suction head/suction lift line 1 .
2. Close or slightly open the shut-off element in the discharge line 1 .
3. Start up the motor 1 .
4. Immediately after the pump has reached full rotational speed, slowly open the shut-off element in the discharge line and adjust it to comply with the duty point 1 .

Please note that the exact procedure may vary depending on the specific type of pump and its operational requirements.

What is the code number cause for driver overloaded fault?

The code numbers associated with the fault "Driver is overloaded" are 12, 13, 14, 15, 23, 27, and 28 1 .

Explain how to interpret the code of designation of the pump set

The code of designation for a pump set provides specific information about the pump's characteristics. Here's an example of how to interpret it:  
  
Given the code: B 16 B/2 VN / V1

* B: This represents the type series of the pump 1 .
* 16: This indicates the well diameter in inches. In this case, the well diameter is 16 inches 1 .
* B: This represents the hydraulic system, specifically the B impeller 1 .
* 2: This indicates the number of stages of the hydraulic system 1 .
* VN: This represents the type of installation. In this case, VN means the discharge nozzle is above the floor 1 .
* V1: This represents the type of drive. In this case, V1 means direct drive by a vertical electric motor 1 .  
    
  Please note that the exact interpretation may vary depending on the specific type of pump and its operational requirements.

What is the remedy for rotor out of balance?

The remedy for a rotor out of balance includes cleaning the rotor and re-balancing it dynamically 1 .

What is the difference between Verticals Turbine Pump and Submersible Pump?

Vertical Turbine Pumps and Submersible Pumps are both commonly used in groundwater wells, but they have different structures and operational mechanisms.  
  
A Vertical Turbine Pump is driven by a shaft rotated by a motor on the surface. The shaft turns the impellers within the pump housing while the water moves up the column. This type of pumping system is also known as a line-shaft turbine. The rotating shaft in a line-shaft turbine is actually housed within the column pipe that delivers the water to the surface 1 .  
  
On the other hand, Submersible Pumps are designed to be fully submerged in the water they are pumping. They may be operated manually with a switch located above ground level or automatically with a pressure switch, electrodes, or float control devices. Submersible pumps should always be operated below the water level. The pump should be installed at a higher level than the well screen to prevent pump fluid suction break, which could lead to a burnt motor 2 .

In terms of structure, the key difference is that in a Vertical Turbine Pump, the motor is located above the water and connected to the impellers via a long shaft, whereas in a Submersible Pump, the entire pump, including the motor, is submerged in the water 3 2 .

How can I avoid submersible motor failures?

To avoid submersible motor failures, you can follow these guidelines:

1. **Proper Overload Protection**: Selecting the right overload protection is crucial for a successful submersible installation. The submersible motor starters should provide positive motor protection against single phasing, sustained overload in excess of 115% of motor rating, and rotor stalling. The tripping timers should be independent of ambient temperature 1 .
2. **Lightning and Power Surge Protection**: Lightning and power surge damage are major causes of submersible motor failures. Installing a three-phase lightning arrestor is recommended. The arrestor should be mounted in the pump panel and grounded to both ground terminals onto the pump panel and well head. If you use plastic pipe, the ground wire should also be connected to a stud on the motor to obtain good grounding and maximum benefit from the arrestor 2 .
3. **Proper Grounding**: A faulty motor or wiring can be a serious electrical shock hazard if it is accessible to human contact. To avoid this danger, connect the motor frame to the power supply grounding terminal with a copper conductor no smaller than the circuit conductors 2 .
4. **Proper Installation**: The pump should be installed at a higher level than the well screen to prevent pump fluid suction break, which could lead to a burnt motor 3 .
5. **Regular Checks**: Regular checks are required to detect indications of potential damage at an early stage. Possible indications of potential damage include temperature rise in the fluid handled, increased sand content of the fluid handled, change in current consumption, change in discharge head/flow rate, change in rpm at startup, and increase in noise and vibration levels 4 .
6. **Proper Fuse Size**: Using the wrong fuse size can lead to motor failures. Ensure that the correct fuse size is fitted 4 .  
     
   Remember, if problems occur that are not described in the guidelines, consultation with the pump manufacturer's customer service is required 4 .