

3.11.8 Maintenance and Inspection of Safety/Rescue Equipment

Condition of the safety and rescue equipment shall be monitored during routine site visits by operations staff. When a safety/rescue item is issued from the stores it will be accompanied by instructions for its use, storage and maintenance. Inspection and operational checks shall be carried out before and after every use.

- a) Seek advice from the manufacturer if in doubt or if any faults or defects are found with a unit
- b) Inspect for loose bolts, bent or damaged parts, signs of corrosion and fully legible labels and instructions are present
- c) Examine the housing for wear, cuts, damage, distortion, fractures or other damage
- d) Gas detectors to be calibrated by qualified personnel, as required
- e) Operate the mechanism and confirm the device activates correctly
- f) Remove from service and return to authorized dealer for service
- g) Document the inspection in the inspection log

3.12 Maintenance Tasks Frequency

3.12.1 Maintenance of Pumps

The importance of pumps to the daily operation of buildings and processes necessitates a proactive maintenance program. Most pump maintenance activities center on checking packing and mechanical seals for leakage, performing preventive/predictive maintenance activities on bearings, assuring proper alignment, and validating proper motor condition and function. The following are the diagnostic tools used for pump condition analysis:

- a) Ultrasonic Analyzer: Fluid pumping systems emit very distinct sound patterns around bearings and impellers. In most cases, these sounds are not audible to the unaided ear, or are drown-out by other equipment noises. Using an ultrasonic detector, the analyst is able to isolate the frequency of sound being emitted by the bearing or impeller. Changes in these ultrasonic wave emissions are indicative of changes in equipment condition-some of these changes can be a precursor to component degradation and failure.
- b) Vibration Analyzer: Within a fluid pump, there are many moving parts; some in rotational motion and some in linear motion. In either case, these parts generate a distinct pattern and level of vibration. Using a vibration analyzer and signature analysis software, the analyst can discern the vibration amplitude of the point on the equipment being monitored. This amplitude is then compared with trended readings. Changes in these readings are indicative of changes in equipment condition.

3.12.2 Maintenance of Tubewell Pumps

Sound operation of pumps and engines is a prerequisite to pump water from a Tubewell economically. For pumps to operate properly under less than ideal physical and chemical conditions, and especially when pumping brackish and saline drainage water, they shall be properly maintained. Decreases in discharge rates are caused by the wearing of parts in the pump and by leakage in the pipes bringing the water to the surface.

The following checklist shall be performed as part of a maintenance program to determine the condition of the pumping unit, where vertical turbine and submersible pumps are employed: