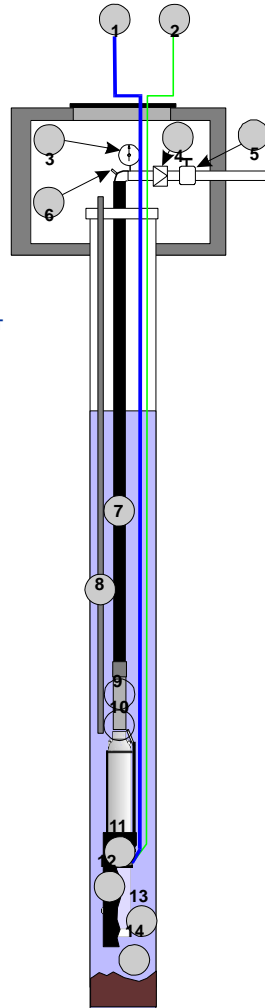


MINIMUM REQUIREMENTS: BOREHOLE PUMP INSTALLATION

- 1 **CABLE SIZING**
Cable sizes **MUST** be based on the distance between the supply entry point (transformer) and the motor. Consult the cable manufacturer. Tie the cable securely to the rising main.
- 2 **EARTHING**
Use an insulated earth wire, one size larger than the drop cable. Connect to the fourth wire of the motor lead out cable and M.O.V. Type arrestors. Arrestors **MUST** be installed as close to the motor (top of the borehole) as possible.
- 3 **PRESSURE GAUGE**
Preferably with drag pointer to indicate the presence of water hammer.
- 4 **NON-RETURN VALVE:**
Surface NRV is optional **BUT** A VACUUM BREAKER **MUST** BE FITTED BETWEEN THE PUMP AND SURFACE NRVS. DRILLING OF HOLES IN THE PUMP NRV IS NOT RECOMMENDED
- 5 **REGULATING VALVE**
A suitable control type valve, preferably one size smaller than the pipeline, is recommended. Consult a reputable control valve specifier/supplier.
- 6 **WATERHAMMER:**
If surface valves are installed, a vacuum breaker must be fitted. Schrader (tyre valve) or brass check valves can be used. Air-release valve is **NOT** acceptable.
- 7 **UP-THRUSTING**
For boreholes with high static water levels, upthrusting on start-up can be minimised by using a smaller size rising main.
- 8 **LEVEL MEASUREMENT**
Dipper tube (open at the bottom) for measuring static and dynamic water levels. Tie the tube to the rising main.
- 9 **CORROSION CONTROL**
1/2 to 1 metre of screwed and socketed galvanised pipe. Connect pipe to the motor with a stainless steel conductor.
- 10 **NON RETURN VALVE**
MUST be installed at the discharge of the pump.
- 11 **COUPLING AND SPLINE LUBRICATION**
The pump coupling must be filled with a good quality water resistant grease eg SHELL ALVANIA WR. Rotate the coupling while joining the motor to the pump.
- 12 **INDUCER SLEEVE**
An inducer sleeve **MUST** be fitted if the pump is installed below the main inflow point or if the inflow point is unknown
- 13 is unknown.
- 14 **MOTOR PROTECTION**
Motor protection must open the circuit within 10 seconds of a locked rotor, single phasing or dry running condition occurring.
- 14 **PREVENTING INGRESS OF SAND AND SILT** Pump and motor must be installed a minimum of 5m from start of sediment or borehole bottom. **CORRECT BOREHOLE CONSTRUCTION IS CRITICAL TO THE COST EFFECTIVE OPERATION OF THE ENTIRE SYSTEM. THE SERVICES OF A PROFESSIONAL CONSULTANT SHOULD BE RETAINED TO ENSURE ACCEPTABLE SERVICE LEVELS**



- NOTES: 1) Pump duty point must always fall within the middle third of the pump's operating curve.
- 2) Pressure surges must be prevented using appropriate valves and reticulation design.
 - 3) Do not exceed the maximum number of starts per hour as shown in the manufacturer's installation manual.
 - 4) All electrical control apparatus must be in good working condition. Regular checks should be made for loose connections and burnt contactor points.
 - 5) Prolonged operation against a closed or partially open valve must be avoided.