

VFD INSTRUCTION

- The VFD can be used always to reduce the starting current and to reduce the pressure “water hammer” starting.
- The VFD must have one RLC output filter to limit the voltage peaks and/or to reduce the dV/dt of the pulses generated by the inverter. The application of the filter will help to reduce the stress on the motor insulation (thermal and electrical). The filter can be installed at the inverter output to reduce the dV/dt value or at the motor terminals to attenuate the voltage peaks amplitude.
- Tesla suggests these MAX values for 6” submersible motor

6” GF motor

Max. Vpeak voltage: 1000 V phase-phase

Max. dV/dt :2000 V/ μ s

- Normally the filters are also applied when the supply cable length of the motor is very long (length > 50 ft).
- Usually Tesla s.r.l. suggests the use of one input filter when the VFD is used in one residential area, to protect other devices connected to the same mains from noise caused by the VFD.
- The flow rate must be always 0.65 ft/s for 6” motor.
- Frequency range: 30 Hz – 60 Hz
- Ramp-up time / Ramp down time: $|df/dt| > 30$ Hz/sec (where f indicates the frequency) to ensure the life of the thrust bearings.
- Drive carrier frequency: The range must be from 4.5k to 5k Hz . The risk of using high values is to increase the quantity of Voltage Spikes \times per second and reduce motor insulation lifetime. The risk of using low values is to obtain a poor shape of the power curve.
- Motor overload protection must trip within a time equal to or faster than how indicated by Class 10 overload curve and must trip within 115% of the nameplate Max. Amp.
- To control the temperature of the motor it is possible to apply the Pt100 or PTC sensor (6” motor).