



IS 11501 : 2023 Engine Monoset Pumps for Clear, Cold, Water for Agricultural Purposes Specification

The Indian Standard specifies technical requirements for engine **monoset pumps** used in agricultural applications to handle clear, cold water. These centrifugal pumps, driven by internal combustion engines, come in self-priming and non-self-priming types with a **maximum flow rate of 50 liters per second**. Designed to operate with water at a maximum temperature of 33°C, they handle water with limited impurities—up to 50 ppm turbidity, 500 ppm chloride, and a **pH range between 6.5 and 8.5**. The specific gravity **should not exceed 1.004**, ensuring suitability for agricultural irrigation and water supply tasks.

The standard outlines materials and construction specifications, recommending cast iron for pump casings and leaded tin bronze for specific parts, aligning with IS 210 and IS 318 standards. **Additionally, seals, gaskets, and packings must comply with IS 5120** to enhance durability and compatibility with clear water applications. Design requirements ensure that the pump and engine are balanced to prevent overload across various operating conditions. They are capable of sustaining a manometric suction lift of up to 6 meters at speeds up to 1800 rpm, with adjustments for higher altitudes and water temperature.

Testing protocols for both the engine and pump are defined to ensure **performance efficiency and fuel economy**. The engine is tested for fuel consumption and operational reliability according to IS 11170 and IS 7347, while the pump's total head, discharge rate, and fuel usage are measured across specified duty points. Additional testing for priming time is conducted on self-priming pumps. Fuel consumption standards differ for diesel and spark-ignition engines, with slightly higher allowances for **self-priming pumps**.

Each pump must display detailed markings, including the manufacturer's information, serial number, engine rating, size, total head, capacity, fuel consumption, and performance ranges. **BIS certification** is required, in accordance with the **Bureau of Indian Standards Act of 2016**, to verify compliance. Manufacturers provide a performance guarantee for the pump's material and workmanship, valid for 15 months from dispatch or 12 months from commissioning. Performance guarantees for head, flow rate, and power input are set **within tolerances of -6% for head, -8% for flow, and +10% for power input**. The first revision of IS 11501 reflects the latest advancements and standards **in pump technology**, ensuring reliable performance and quality for agricultural water handling needs.