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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB 10395.8-2006

**Tractors and machinery for agriculture and forestry - Technical
means for ensuring safety - Part 8: Irrigation pumps and
machines**

农林拖拉机和机械 安全技术要求 第8部分：排灌泵和泵机组

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1 Scope

Part 8 of China's mandatory agricultural and forestry machinery safety series, covering irrigation pumps and machines. Irrigation equipment is not obviously dangerous, which is much of the problem: a pump driven from a tractor power take-off is a rotating shaft at working height in an open field, and the power take-off drive is one of the classic causes of fatal entanglement in agriculture - a loose garment catches, and the shaft turns faster than anyone can pull free. The other hazards are electrical and hydraulic. Pumps are run from portable supplies in wet ground, which is the worst combination for electric shock, and a pressurised irrigation line stores energy that releases violently if a coupling is opened under pressure. The standard specifies the guarding of drives and couplings, the electrical protection and earthing, the requirements for pressure components and their relief, and the marking and instructions that go with equipment operated by people working alone.

This Part of GB 10395 specifies the technical requirements for ensuring the safety of operators and other operators, during the normal operation, maintenance, use of irrigation pumps and machines. This Part is a supplement to GB 10395.1. This Part applies to all kinds of pumps and machines for irrigation. It does not apply to all kinds of pumps and machines for industrial operations (hereinafter collectively referred to as machines).

2 Normative references

The provisions in following documents become the provisions of this Part of

GB 10395, through reference in this Part. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Part; however, parties

who reach an agreement based on this Part are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB 1971 Rotating electrical machines - Terminal markings and direction of rotation

GB/T 4942.1 Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification (GB/T 4942.1-2006, IEC 60034- 5:2000, IDT)

GB/T 9480 Tractors machinery for agriculture and forestry, powered lawn and garden equipment - Operators manuals - Content and presentation (GB/T 9480-2001, eqv ISO 3600:1996)

GB 10395.1 Tractors and machinery for agriculture and forestry - Technical means for ensuring safety - Part 1: General (GB 10395.1-2001, eqv ISO 4254-1:1989)

GB 10396 Tractors, machinery for agriculture and forestry, powered lawn and garden equipment - Safety signs and hazard pictorials - General principles (GB 10396-2006, ISO 11684:1995, MOD) not exceed the leakage current limit, which is specified in the corresponding product standard, during normal operation.

6.4 Temperature rise The temperature rise of the motor winding shall comply with the provisions of the corresponding product standards. The temperature rise of the parts, that the operator may touch, such as electrical pins, switches, power cords, operating parts, etc., shall comply with the provisions of the relevant standards, so as not to cause harm to the operator.

6.5 Moisture (water) resistance The machine shall be able to withstand the wet conditions, which may occur in normal use. During the operation of the machine, for the electrical components, on which the transport liquid may be splashed, their electrical insulation shall not be affected by the splashing of liquid. Machine parts, which have an appropriate waterproof rating, shall comply with the provisions of the corresponding product standards.

6.6 Insulation resistance and electric strength The machine shall have sufficient insulation and electrical strength. Its requirements shall comply with the provisions of the corresponding product standards.

6.7 Overload protection The machine shall be equipped with overload protection device. Under normal operating conditions, the overload protection device shall not operate.

6.8 Internal wiring The internal wiring of the motor refers to the internal wiring, except the windings. They shall be fixed firmly and not allowed to be loose. Two or more wires, in the same direction, shall be bundled together. Conductors shall not be placed on parts, which have sharp angles or sharp edges. They shall be effectively prevented from contact with moving parts. For the metal holes, through which the insulated conductors pass, the surface shall be smooth, rounded, or equipped with sleeves. The internal wiring shall be well

insulated; the outgoing wire shall meet the standard of outgoing wire. Effective insulation measures shall be taken at the wire connection and fixed reliably.

6.9 Mains connection and external flexible cables and cords The power connection and external flexible cables and cords shall comply with the relevant standards of the flexible cables and cords; they shall match the rated voltage and current of the motor. The power connection and external flexible cables and cords shall be insulated, properly fixed, clamped, etc., to prevent dangerous accidents caused by tension, displacement, wear. The connection method, between the flexible cable or the flexible wire and the machine, shall comply with the provisions of the corresponding standards.

7 Machinery's safety requirements

7.1 Stability The pump and power machine shall have a base. The machine shall be placed or fixed stably, without support. Mobile machines shall have sufficient stability. Under normal use, the machine shall be tilted 10° to the most unfavorable direction AND shall not tip over.

7.2 Moving parts and power transmission parts For the transmission gears, belts and pulleys, couplings, fans, fan wheels and other moving parts, which may cause danger during normal starting or operation of the machine, they shall be placed in a safe position OR protected by protective covers, protective shells or baffles or similar guards, to protect against accidental contact. Protective casings, shields and similar protective devices shall have sufficient mechanical strength AND be firmly fixed to the machine, so that they cannot be removed without tools. For protective devices, which are designed to be openable or movable, if there is danger after opening or moving, THEN, safety signs warning of danger shall be set on the protective device or near the danger, OR the protective device shall be designed as a linkage type (when such guards are opened or moved, the guarded moving parts stop running). The protective device and the relevant safety distance requirements shall comply with the provisions of GB 10395.1.

7.3 Component structure Under the conditions of not affecting the machine use, accessible parts of the machine shall be free from sharp edges, sharp corners, rough surfaces, protrusions, openings that could scratch the body or clothing, especially that the edges of the thin metal sheet shall be blunt, folded or trimmed; the open ends of the tubes, which may cause scratches, shall be wrapped.

7.4 Thermal protection device Protective devices or baffles shall be installed, on the surface of the engine's exhaust components, which have an area greater than 10 cm², AND on the surface of the machine greater than 80 °C, when it is normally operated at the ambient temperature of 23 °C ± 3 °C, to prevent accidental contact. The thermal insulation device shall be firmly fixed AND not easy to remove.

7.5 Exhaust pipe outlet The direction of the engine's exhaust pipe outlet shall avoid the operator who is in the operating position.

7.6 Engine controls The engine control device shall comply with the requirements of the corresponding standards for engine products. Electric starting devices shall be used for engines, which have rated power greater than 10 kW. The gasoline engine's rope starter shall be a permanent part of the machine. The engine shall have a suitable speed regulating device, The engine shall have a stop device, which does not rely on the operator to exert continuous force. The stop position shall be clearly marked.

7.7 Fuel tank The fuel tank's opening cover shall be firm. It shall not be loosened, due to vibration during engine operation. The fuel tank shall be arranged in such a way, that the leaked or overflowed fuel shall not enter the engine, exhaust pipe, projection area of the exhaust port, electrical equipment. Appropriate protective measures shall be taken, if necessary.

7.8 Machine frame For hand-lifting mobile machine, the whole machine shall be installed in a frame, which has sufficient strength. The frame shall be able to protect the machine, from damage from all sides. There shall be four handling handles. The handle shall be located above the center of gravity of the entire machine, to avoid any possibility of tipping, when the machine is being transported. When handling or in a non-working position, the handle shall be firmly locked. Except for small machines and trolley units, which can be carried by one or two people, The regulating device or similar device shall have regulating direction signs, which indicate the increase or decrease of the characteristic value. The signs, which are required by this Part, shall be legible and durable. The signs shall be on the main part. They shall be clearly visible from the outside (after opening the cover, if necessary), when the machine is installed and fixed in normal use. Switches, regulators, other controls shall be marked near these components. They shall not be marked on removable parts, if the replacement of these components would lead to misunderstanding.