



SHENGU IRRIGATION

CENTER PIVOT



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Pivot Point

Spans &
Overhangs

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Tower

Drive Train

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Sprinkler

Package

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Agent Network



● China

● Algeria

● Egypt

● Jordan

● Brazil

● Saudi Arabia

● Iraq

● Libya

● Canada

● Australia

Working principle and application of pointer typesprinkler irrigation machine

The structure of pointer type sprinkler irrigation machine Pointer type sprinkler irrigation machine is a large-scale mobile sprinkler irrigation equipment. This equipment is equipped with a sprinkler head on a stand that can move automatically.

During operation, the machine rotates around the center point of the water supply system while spraying water. Because its walking method is like the hands of a clock, it is called a pointer type sprinkler. It is called a center pivot sprinkler or a circular sprinkler. The traditional pointer type sprinkler irrigation machine mainly consists of a central pivot shaft seat, a truss, a tower truck, a cantilever, an adjustment control mechanism and a spraying system.

Tower truck

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Center pivot shaft seat

The center pivot seat is the rotation center of the entire sprinkler irrigation machine. The standard type is usually fixed with reinforced concrete and installed in the center of the irrigated farmland; the tow type usually fixes the central pivot axis seat on the four wheels and is equipped with a traction mechanism to complete the transfer of the field. The outside of the central pivot seat is a tower-shaped frame composed of columns, beams and bottom plates, and the central part is the rotating sleeve and the pivot bend. The upper part of the rotating sleeve is fixed on the frame, and the lower part is connected to the water source.

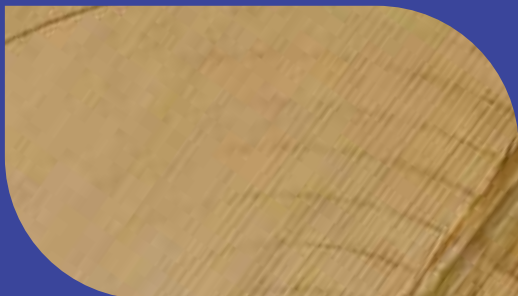
The vertical part of the pivot bend is located in the rotating sleeve and can rotate freely. The other end is usually ball-jointed with the water branch pipe of the first span truss to adapt to the vertical displacement of the first span truss due to terrain changes. The rotating sleeve is equipped with a fixed-point stopping

cantilever

The cantilever is mainly composed of water branch pipes, triangular brackets and steel wire ropes. The cantilever has two functions: first, to increase the length of the unit and expand the irrigation area; second, by adjusting its length, it can meet the needs of different fields for the length of the unit.

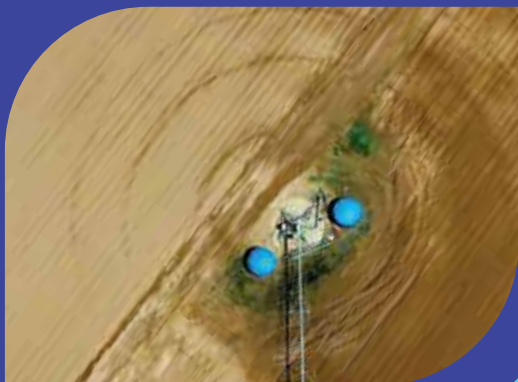
Truss

The truss is the main unit of a pointer-type sprinkler system, made up of branch pipes, triangular frames, and tie bars. To handle uneven terrain and keep the system synchronized, trusses are joined by ball joints and the pipes by flexible joints or rubber sleeves. Trusses are typically 2~3m above the ground, span 30~65m, and use pipes with diameters of 100~250mm. The number of trusses depends on the field size.



Spray system

The spray system mainly consists of spray branch pipes and sprinkler heads. The nozzles are installed on the spray branch pipes according to a specific meter spacing. At present, pointer sprinkler irrigation machines mainly use rocker nozzles and scattering nozzles.



Adjustment control mechanism

The adjustment and control mechanism is mainly composed of a central control box, collector ring, tower box, safety protection device, and other parts.

By adjusting the control mechanism, functions such as start-stop control, travel speed adjustment, automatic rotation and fixed-point stop of the unit, synchronous control of each tower truck, water overflow protection, operation monitoring, and fault alarm can be realized.



PRECAUTIONS FOR USE AND OPERATION OF 4-POINTER SPRINKLER IRRIGATION MACHINE

In order to maximize the effectiveness of the pointer sprinkler, standardized operation is necessary. Before the machine is put into operation, safety inspections must be carried out on all components, and obstacles on the wheels that may affect walking must be removed. All settings must be consistent with the operating requirements. Check whether the synchronous control device is sensitive and reliable, and ensure that the rotation direction of the drive motors of each tower truck is consistent.

During operation, ensure that all components are functioning normally and operating stably. Make sure there is no leakage at the seals and that the nozzles are working properly. Try to avoid using water with excessive sediment content for sprinkler irrigation operations in order to reduce wear on the sprinkler nozzles and prevent adverse effects on crop growth.

HOW CAN WE ACHIEVE REASONABLE IRRIGATION?

01

Understand the water needs of plants

Before implementing proper irrigation, it is crucial to understand the water needs of your plants. Different crops have different water requirements at various growth stages. Farmers should be familiar with the growth habits and water demand patterns of different crops so that they can make appropriate adjustments according to actual conditions.

05

Timing and frequency of irrigation

Proper timing and frequency of irrigation are crucial to plant growth. Generally speaking, plants do better when irrigated in the morning or evening, when evaporation is lower and the soil is better able to absorb water. In addition, the frequency of irrigation should be determined according to the needs of the plants and the characteristics of the soil to avoid over-irrigation or drought.

02

Determine soil moisture content

Accurate measurement of soil moisture content is the basis for rational irrigation. Farmers can use soil moisture sensors or simple soil moisture testing methods to assess soil moisture content. Based on the measurement of soil moisture, the amount and frequency of irrigation can be adjusted appropriately to ensure that plants get the moisture they need.

04

Consider reducing evaporation losses

Reducing evaporation loss is the key to achieving efficient and reasonable irrigation. Measures such as mulch, straw mulching, and soil amendments can reduce evaporation from the soil surface. In addition, farmers can choose drought-resistant crop varieties to reduce the impact of water evaporation.

03

Scientific fertilization

Reasonable fertilization can improve the water use efficiency of plants. Farmers should fertilize scientifically based on soil quality and plant nutrient needs to avoid wasting water caused by excessive fertilization.

06

Monitoring and Adjustment

Proper irrigation requires constant monitoring and adjustment. Farmers can regularly check the growth status of plants and soil moisture, and make corresponding adjustments based on actual conditions. In addition, recording and analyzing irrigation data can also help farmers better understand the water needs of plants and achieve efficient and rational irrigation.



The equipment runs in a circular trajectory.

The equipment runs in a circular trajectory.

One end of the device is fixed in the center of the plot, and the fuselage with the motor and tires is connected to each other and rotates around the center point. The water flows from a central point through evenly distributed sprinklers on the fuselage to irrigate the ground. Because the trajectory is circular, it is also called a circular irrigation machine, referred to as a circular machine. Suitable for irrigation of square plots.

Equipment length

unit span length 54.5m or 61.3m; Cantilever length: 7 options from 3.4m to 26.8m; Optional tail gun. Different numbers and lengths of spans and combinations of cantilever and tail guns are used to achieve the irrigation radius required by the customer. The maximum length of the device is 800m.

Main features

Compared with other forms of irrigation: sturdy and durable, simple to manage, uniform irrigation, saving a lot of energy and labor. Compared with large-scale translation machine: the utilization rate of the plot can reach 90%, the equipment purchase, operation and management costs are low, the supporting facilities are simple, and the irrigation cycle time period.

Cross-body parameters

pipe diameter 141/168/203/254mm
Sprinkler spacing 0.76/1.52/2.28m
The passing height is 2.9/3.4/3.9/4.9m.

Power and water source

power supply mode: buried cable or generator set Water supply method: buried pipeline or reservoir for secondary water lifting.

Spray head and tail spray gun

The irrigation system is equipped with a complete sprinkler package designed to suit various terrains, crops, and weather conditions.

These sprinklers operate at low pressure and provide uniform water distribution along the entire pivot arm, helping to lower operational costs by reducing energy consumption and ensuring efficient water usage.

Integrated pressure regulators ensure consistent pressure and flow throughout the system.

A range of end gun options is available, along with an optional booster pump for enhanced performance.





Constructed with additional cross-ties to support span lengths up to 62 meters (203.5 feet). Features a composite PC material U-shaped elbow, with an optional stainless steel swivel elbow for enhanced durability.



The collector ring is designed to prevent the electrical cable from twisting or breaking as the machine rotates.



The pivot point is available with an optional 4-wheel configuration.



It comes complete with anchor bolts, pivot feet, reinforcement legs, a ladder, a rotating elbow, a riser pipe, and a bottom elbow.



Why Pivot Irrigation Is the Smart Choice for Large and Rugged Farmlands

Compared with other forms of irrigation, the pivot sprinkler system offers several advantages. It is highly durable, easy to manage, and ensures uniform irrigation across the entire field. The system also delivers a high irrigation rate while significantly reducing energy and labor requirements.

This makes it an ideal choice for irrigating large areas of farmland. Additionally, it is well-suited for uneven or rough terrain, with the ability to operate effectively on slopes of more than 30%.



THE CONNECTION BETWEEN THE TOWER LEGS AND PIPELINES IS DOUBLE FIXED, GREATLY IMPROVING THE STABILITY OF EQUIPMENT OPERATION



TRUSS ROD DIAMETER Φ 20MM AND Φ 22MM MANGANESE STEEL, FORGED IN ONE GO AT BOTH ENDS, WITH HIGH TENSILE STRENGTH, NO WELDS, AND NO FRACTURES.



THE TOWER IS V-SHAPED, WHICH CAN EFFECTIVELY SUPPORT THE TRUSS AND GREATLY IMPROVE THE STABILITY OF THE EQUIPMENT;

Drive Train



Motor and Transmission System

The drive train assembly is specifically designed to meet the challenges posed by today's longer span lengths. Each component — including the gear motor, gearbox, coupler, shaft, and wheels — is engineered to deliver the required torque based on your specific soil and tire combinations.

Motor

High-strength motors with proven reliability, designed for irrigation use, offering an efficiency of 95%.

Gear Motor

Gearboxes made of high-strength steel, built to operate efficiently under all working conditions.

Advantages of Pivot Sprinkler Irrigation

Compared with other forms of irrigation, the pivot sprinkler system stands out due to its durability, ease of management, uniform water distribution, and high irrigation efficiency. It significantly reduces energy and labor requirements, making it a cost-effective solution.

This system is the optimal choice for irrigating large areas of farmland. It is also well-suited for rough and uneven terrain, with a climbing capacity of $\geq 30\%$.



■ Characteristics of Work

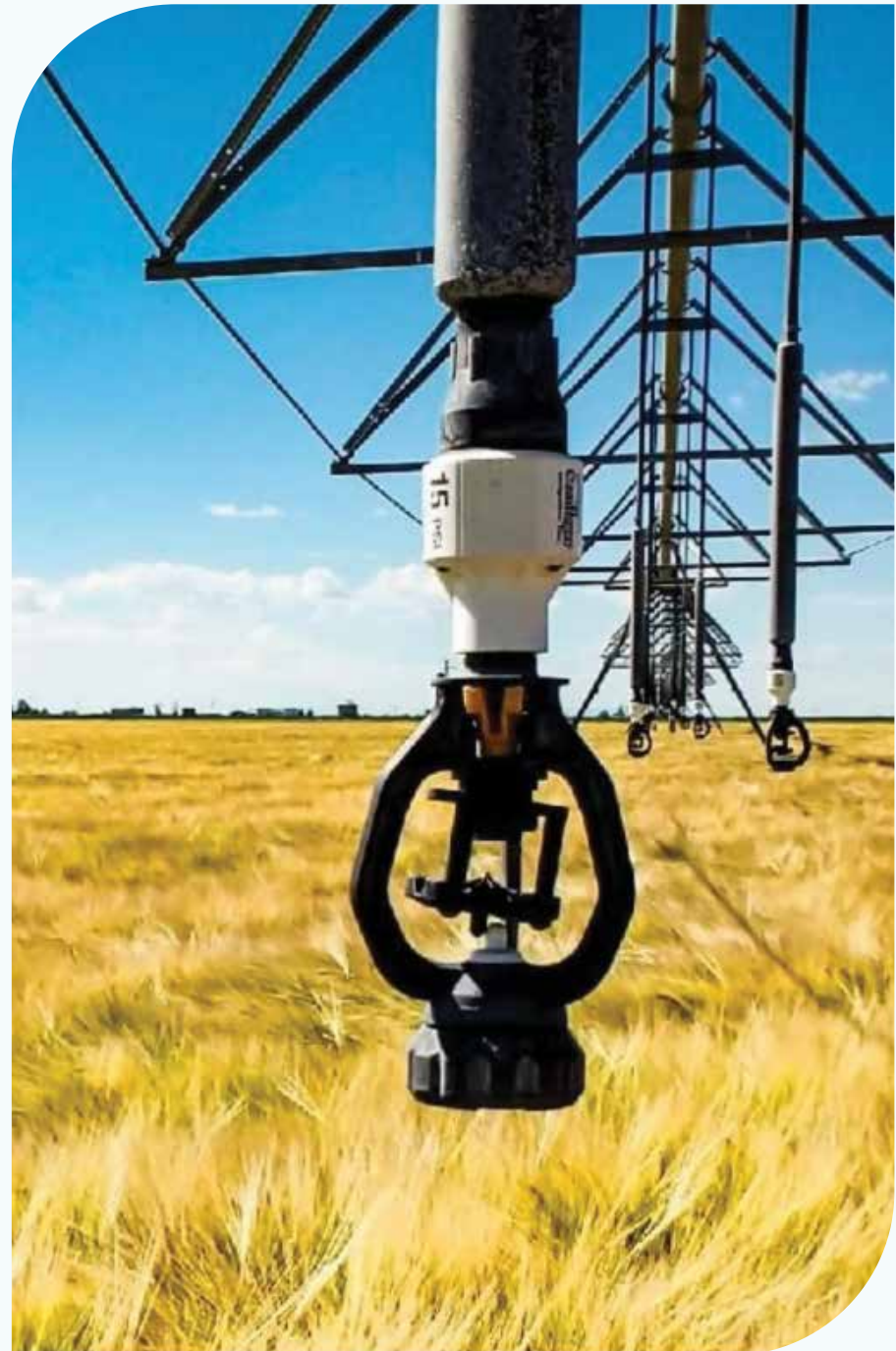
The length of the commonly used pointer sprinkler can reach 100619m, and it takes 1~20d to rotate around (adjustable according to needs), and the irrigation area can reach 3~120 ha.

The degree of mechanization and automation of the pointer irrigation machine is high and can be operated continuously and automatically for a long time without manual operation.

More sprinklers can be installed on the spraying branch pipe to overlap each other for spraying, with high operation efficiency and good irrigation uniformity.

Each tower vehicle is equipped with drive wheels, which has strong climbing ability and can adapt to high and low terrain.

In addition, in order to solve the problem that the four corners of the square plot cannot be sprayed, the sprinkler irrigation area can be increased by installing devices such as corner and end spray guns.



Working Principle

The central pivot shaft seat of the sprinkler is installed in the center of the farmland.

The lower end of the center of the pivot seat is connected with the well pump outlet pipe or pressure pipe, and the upper end is connected with the rotating elbow through a rotating mechanism (collector ring).

The sprinkler irrigation pipes are installed on several trusses that can walk autonomously, and the trusses are connected by flexible joints to accommodate operations such as slopes. The truss is supported on the tower car, driven by the motor, and rotates around the central pivot.

In the process of rotation, the irrigation water is transported to the sprinkler irrigation pipeline from the central pivot and is sprayed out by the sprinkler to realize the sprinkler irrigation operation.

The rotation can irrigate a circular area with a radius slightly greater than the length of the sprinkler irrigation machine.





Company Profile

HEBEI SHENGU SPRINKLER IRRIGATION IMPORT AND EXPORT TRADING CO., LTD

Main business

Production and sales of sprinkler equipment and accessories

Address

Handan City, Hebei Province, China

Contact information

0086 1853 1088 898





Irrigation water standards

- ① pH value: between 5.5–8.5, most suitable for crops grow.
- ② Total dissolved solids (TDS): less than 2000 mg/L, otherwise it will cause soil salinization.
- ③ Chloride ion content: less than 300 mg/L, otherwise can adversely affect crops.
- ④ Sulfate content: less than 500 mg/L, otherwise can adversely affect soil and crops.
- ⑤ Nitrogen, phosphorus and potassium content: within the appropriate range, not will affect the growth and quality of crops.
- ⑥ Heavy metal content: lower than the limit specified by national standards; otherwise, it will cause harm to crops and human health.
- ⑦ Pesticide and chemical fertilizer residues: should be lower than those stipulated by the state limit, otherwise it will endanger crops and human health. Harmful.



Daniel Liu
Sales Manager



Miss. LI
Sales



Miss. ZHANG
Founder



Mr. CHU
After-sales



Karrar Al-Hamami
Technology