Pivot HD by Otech

Otech GROUPE IRRIMEC
Water Saving Solutions

Hydraulically operated pivot
without need for electricity

ST1001-1T

UNIQUE

SELF-PROPELLED

RELIABLE

LOW COST OPERATION

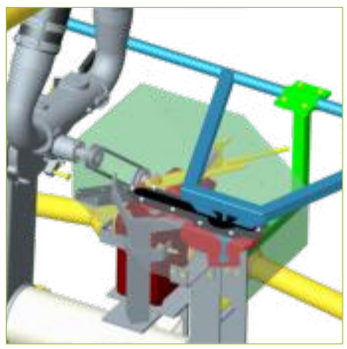
MAIN CRITERIA

Generally, a center pivot system is composed of a pivot point, one or more spans, an overhang, and as option, an end gun. Each span is usually fitted with an electrical center drive motor providing power to move the spans around the pivot point.
The system's flow/forward speed, determines the system's application rate.

The OTECH HD pivot is a single span center pivot which operates on water pressure, without need for electricity. The span pipe water flow is diverted thru a water turbine at the drive unit which provides power for the wheels.

An ultra-simplified, but heavy duty pivot point, without electric control panel. Requires a smaller concrete pivot pad (1.40 x 1.40 m) (4.59 ft x 4.59 ft) instead of 4 m x 4 m (13.2 x 13.2 ft) size of a standard pivot pad.

The span's electrical center drive has been replaced with a water turbine and a mechanical forward / reverse transmission.

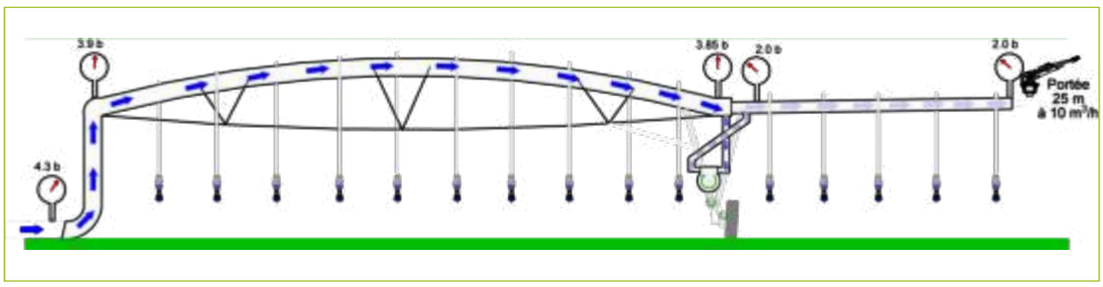


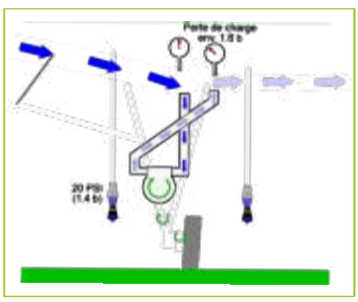
Mechanical auto reverse system.

How does it work ?

The below drawing details the system's operating pressures. The minimum pressure anywhere in the system is sufficient to properly operate the drop hose mounted sprinklers with proper water distribution uniformity.

The pressure required to operate the water turbine has been added to the pivot pressure thus insuring enough pressure to properly operate the sprinklers and end gun of the overhang pipe.



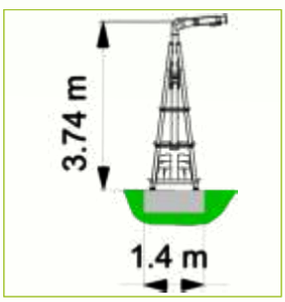


The following drawing shows the water circuit. The span pipe water flow is diverted at the span drive unit, down and through a water turbine located near the drive train components and back up to continue out the overhang pipe and end gun (if the end
gun option is selected). The turbine drives the reversible center gear box with a belt. Special drive shafts with flexible u-joints transfer power from the center gearbox to the standard wheel gearboxes that turn the wheels to move the span.

The turbine "consumes" around 1.8 bar (26.10 PSI) pressure which is the energy required to move the span. The inlet pressure is increased to power the turbine, operate and end gun, and maintain sufficient pressure on the drop mounted sprinklers to insure uniform droplet size for better water infiltration. The irrigation uniformity is secured by the use of a 1.4 bars (20 PSI) pressure regulator on each sprinkler outlet.

The water application rate is obtained by adjusting the forward speed according to the inlet flow. To achieve that, the mechanical gearbox has a selection of speeds and the water turbine has a diverter valve to regulate the quantity of water passing through the turbine. A table has been supplied to help the user select the proper settings for the desired irrigation application rate.

Mechanical specifications :

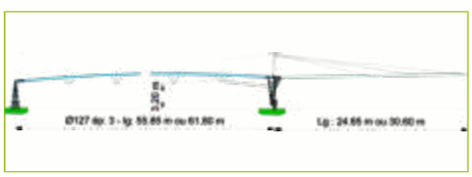


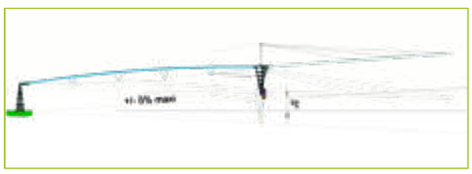
Center drive system	Hydraulic Turbine type 10/50
Primary transmission	Belt
Wheels transmission	Drive shafts with flexible u-joints
Dry run	Towable Gear box
Speed control	Turbine lever + mechanical gear box.
Travel direction	Integrated automatic auto reverse system
Wheels	11.2 x 24 on 10" rims, 12.4 x 24 on 11" rims or 14.9 x 24 on 13" rims

Specifications :

Sprinklers	Nelson Rotators or Senninger I Wob with compulsory 20 PSI pressure regulators
End Gun	Turbine end gun recommended, throw distance 20 m at 2 bars (29 PSI)
Required inlet pressure	4.3 to 4.5 bars (62 to 65 PSI)
Flow	From 33 to 80 m3/h (145 to 352 GPM)

Dimensions :





Pivot point	Mini pivot point width.
Concrete pad size	1.40 m x 1.40 m (4.59 ft x 4.59 ft).
Composition	1 Span + 1 Overhang + 1 End Gun
Span length	55.85 m or 61.80 m (183.23 ft or 202.75 ft)
Span diameter	Diam. 127 mm (5") 3 mm (11 gauge) wall thickness in galvanized steel or anti-corrosion Plascoat polyethylene coating as option.
Stub pipes	4 mm thick first and last pipe for extra strength at truss rod attachment locations
Overhang length	24.65 m or 30.60 m (80.87 ft or 100.39 ft).
Maxi irrigated radius	112.4 m (368.76 ft).
Maxi irrigated area	3.96 ha or 9.78 acres or 9.42 feddans or 15.84 Iraqi donems at 360 degrees.
Limit of use	Slopes of +/- 5% maxi.

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