

# Hydraulic jack up system for storage tanks



1. Main Control Cabinet
2. PLC-control with touch screen
3. Hydraulic pump
4. Hydraulic cylinder
5. Stroke sensor
6. Control cable
7. Sensor cable
8. Hydraulic hose
9. Three-phase asynchronous motor axial plunger pump
10. Solenoid control valves flow control valve and pressure gauge

We offer a high-quality hydraulic jack up system to lift and level tank course for top-down constructed storage tanks. This allows shell plates' horizontal and vertical welding to be done efficiently and safely at the ground level manually or with our Automatic Tank Welder.

Double acting cylinder range offers the up most in versatility and durability. Specially designed for heavy duty lifting.

**Capacity per lifting module:**  
**50t-125t**

**Max. Lifting capacity of the whole pack:**  
**2000t**

**Maximum stroke:**  
**3.3m**

**Accuracy:**  
**1mm**

**Maximum Operating Pressure:**  
**25MPa**

## Parameters:

Lifting force per Jack - Max. 250 KN

Effective stroke - Max. 3300mm Working

Pressure - 25 MPa

Lifting speed - 200 mm/min (Chain) and 100mm/min (Piston)

Pump flow rate - 2.5-5 L/min

Min. cylinder height - 2028mm

Height of the lowest lifting point from ground - 91mm

Control voltage - 24V

Weight of hydraulic cylinder - 400 kg

Weight of pump - 200 kg

Collapse height - 1910mm

Total weight of standard hydraulic jacking module - 1000kg

Operating distance between adjacent cylinders - < 5m



All Time synchronous lifting system with PLC control unit used to lift the tank during crude oil tank construction

## Synchronous Lifting Applications

The Synchronous Lift system uses feedback from multiple sensors to control the lifting, lowering, and positioning of storage tanks with different capacities and weight distribution.

Synchronous lifting reduces the risk of bending, twisting, or tilting, due to uneven weight distribution or load shifts between the lift points.

A PLC controller monitors each lift position stroke and load transducers located at each lift point. By varying the oil flow to each lift point, the system maintains very accurate positional control. This control maintains structural integrity and can increase the productivity and safety of the lift, by eliminating manual intervention in the event of a load-shift or other problems.

Programmable and fail-safe monitoring and safety alarms include operating parameters and hydraulic conditions. Programmable data recording and position calibration option allow a load to be manipulated into a pre-set position.

## Safety

Features an overload protection valve and anti-extrusion seals.

With a highly secure system that displays a warning and stop features.

Comes equipped with a hydraulic lock installed on both oil inlet and outlet to prevent tank falling caused by sudden power failure, demolition or cut of any high-pressure rubber hose.

Cylinder single-step time delay alarm can detect and prevent trouble in single step distance.

The tank's lifting height is twice of piston's stroke allowing the gravity of cylinder to increase only by half of the tank's lifting height, making it more stable and safer. Support and guide roller installed on the top of cylinder to anti-drift of the tank during lifting and lowering.

The pump trolley and cover are designed to protect the motor, valves, and local control box from onsite damage and Raining.

## Versatility

Comes compatible with manual and automatic welding methods for tank ID and OD welding.

Module design provides the flexibility to lift tank with different weights by adding or decreasing the number of modules only.

The module scale is variable from 1 pump with 2 cylinders to 1 pump with 5 cylinders.

Works smoothly with expanding ring to eliminate the tank shell deformation during lifting especially for thin wall to ease the girth welds fit-up difficulty.

Equipped with universal wheels with brakes both on pump and central control cabinet to save lay-out time.

With a straightforward installation and a simple operation process; featuring stable, consistent, synchronous lifting and lowering. Operators can get started easily, without spending an excessive amount of training time.

## Lifting Performance

- Comes with a one-time lifting tank plate width up to 3.0m within 15mins the fastest.
- Installed with a state-of-the-art synchronous lifting system eliminates the intense coordination and the possibility of human error.
- Our rugged double-acting cylinder provides substantial pulling force in the piston retraction mode. Also provides fast, controlled retraction for continuous duty cycle operation.
- Extremely low breakdown rate & easy troubleshooting.



## System Operation

- PLC control, user friendly touch screen.
- Feature a user-friendly PLC base synchronous lift control system with stroke sensor to control the stroke of up to 80 lifting points to minimize leveling time.
- High accuracy (+/- 1mm). The digital hydraulic control system maintains vertical position accuracy to within 1mm of each lifting point.
- Comes with automatic data reporting and graphical presentation.
- Accurate real-time position and work status (UP/ Down/STOP) of each module monitoring by the controller and displaying by touch screen for monitoring purpose, allowing it to aim at the problematic cylinder instantly.
- Allows user to easily calibrate cylinder in real-time position to zero or any height.
- Features real-time display of each module's initial height, current height and collecting height.
- Equipped with visual differential-pressure indicator and filter alarm indicator to indicate filter replacement.
- Our central control (Remote) not only can control all the modules up/down automatically, but also allowing users to operate the individual module up/down manually. Eliminating the downtime onsite and increasing efficiency.





Storage tank welding automation and tank jacking systems.

Tank Welding LLC.

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