INSTALLATION GUIDE

Silo Installation Manual

Step-by-step installation guide for bolted and welded steel silos: foundation, assembly, welding, inspection, and commissioning.

Doc. No.	Version	Issued	Category	Website
MX-IG-001	Rev 1.0	October 2026	Installation Guides	www.manxingstorage.com

1. Scope and Application

This manual covers the installation of Manxing bolted and welded steel silos for bulk material storage. It describes foundation requirements, assembly sequence, welding, inspection, testing and commissioning. It is intended for erection contractors and site supervisors; project-specific drawings always take precedence.

2. Tools and Equipment

- Mobile crane or crawler crane with rigging selected for panel/plate weight
- Torque wrench (calibrated), impact wrenches, spanner sets
- Welding sets (SMAW / GMAW), electrodes matching WPS, wind shields
- Level instrument (total station or rotating laser), steel tape, plumb line
- Ladders, scaffolds, safety harnesses and edge protection
- Leak-test equipment: soap solution or air-supply and pressure gauge
- Aeration test blower and manometer for floor testing

3. Foundation Requirements

Item	Requirement
Soil bearing capacity	Minimum 150 kPa, or per project geotechnical report
Concrete grade / curing	C30-C35; cured minimum 28 days before erection
Anchor bolts	Embedded per drawing; projection tolerance +/-5 mm; galvanized
Base ring levelness	Maximum 1/1000 over the diameter; checked with level instrument
Anchor bolt tensioning	Torque per bolt grade; re-checked after first filling
Drainage	No water accumulation at the base; slope away from foundation

4. Bolted Silo Assembly

- Step 1: Clean the base ring, position the first course of panels, fix with temporary bolts.
- Step 2: Erect courses upward, typically 2-3 courses at a time; use inside scaffolding or cage.
- Step 3: Align each panel course; check verticality (tolerance H/1000) and roundness.
- Step 4: Install sealing strips (EPDM or PVC) between every panel joint.
- Step 5: Final torque of all bolts to 180-220 Nm for M16/M20; mark and record torque values.
- Step 6: Install roof, manhole, level and temperature nozzles, ladder and platform.
- Step 7: Air-tightness test: pressurize to 1.25 x design pressure; no pressure drop over 30 minutes.
- Step 8: Aeration floor installation and resistance test before silo is put into service.

5. Welded Silo Assembly

- Plate prefabrication: cutting, rolling and edge preparation in the workshop with MTCs
- Welding procedure specification (WPS) approved before site welding starts
- Sequence: bottom ring, shell courses, cone/hopper, roof, nozzles and attachments

- Welders qualified per EN 287 / GB 50205; electrodes stored dry and preheated if required
- No welding in rain, snow or wind above limit, or when humidity exceeds 90%
- Preheat for thick plates or ambient temperature below 5 degC per WPS
- Non-destructive testing: 100% visual; MT/PT and UT sampling 10-20% of key welds

6. Inspection and Acceptance

Check	Method	Acceptance
Foundation and anchor bolts	Visual, dimensional	Per drawing and Section 3
Verticality	Total station / plumb	H/1000 maximum
Roundness	Tape measurement	Within +/-30 mm of nominal diameter
Weld quality	Visual, MT/PT, UT sampling	EN ISO 5817 level B / GB 50205
Air tightness	Pressure hold test	No drop over 30 minutes at 1.25 x design pressure
Aeration floor	Resistance and uniformity test	Even airflow, no blocked pads
Coating	Dry film thickness (DFT)	Per coating specification, minimum 2 measurements per 100 m2

7. Commissioning

- Empty run: blowers, rotary valves, dust collector and instruments checked without material
- Instrument calibration: level, temperature, pressure and weighing systems
- First filling: fill to 20-30% and hold 24 hours; re-check anchor bolts and settlement
- Aeration commissioning: verify fluidization at each zone and discharge rate
- Full-load test: fill to design level, verify relief valve and filter performance
- Operator training and handover of as-built documentation and maintenance schedule

8. Safety During Installation

- Work-at-height protection: harnesses, guardrails and safety nets from 2 m
- Crane operations under a certified lift plan; exclusion zone below the load
- Confined space procedure for entry into the silo (permit, gas testing, attendant)
- Personal protective equipment: helmet, gloves, safety boots, eye protection
- Weather limits: stop lifting above 6-7 Beaufort or in lightning conditions

Contact Manxing

For quotations, engineering review and site assessment, please contact the Manxing engineering team. Our engineers will respond within one business day.

Email	info@manxingim.com
Tel / WhatsApp	+86 159 3903 7000
Website	https://www.manxingstorage.com
Address	Zhengzhou City, Henan Province, China

This document is provided by Manxing Silo Engineering for technical reference. Specifications are subject to confirmation at the time of order. info@manxingim.com | +86 159 3903 7000 | https://www.manxingstorage.com