

PLANT SERVICES

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Specs, Setup, Maintenance and Operation- 7-1-07 **Filler Feeder Silo with Continuous Weigh Flow Scale SN 2021&2022**

Silo must be emptied before raising the jacks and moving. Silo must be thoroughly cleaned of all material stored.

System Responsibility: User is responsible for understanding the equipment and their requirements. CRS shall make every effort to make equipment available to potential user for their inspection. User may request in writing for CRS to help adapt equipment to their specific need. CRS shall respond in writing.

Portable (Pintail Hitch and electric brakes) 350 bbl – (1400 cubic feet) with 150 sq ft shaker bag house .

When in Transport Position, 8.5' wide. 13.5' high about 26' feet Long- 9,000 lbs

45 degree cone –

9" Auger- variable speed, feeding continuous weigh scale with 8' to 8.5' discharge height.

4" fill pipe, 150 sq ft bag house with pneumatic Shaker Vibrator controlled by solenoid operated by Manual off Auto Switch ..Automatic being 10" photohelic set at 5" and a Post Shaker On 5 minute Timer.

High/Mid/Low Bindicator and alarm horn and indicator lights

Regarding Air Quality Pollution Control while filling; 1) bag houses are normally provided. 2) Lessee is required to operate correctly, acquire any necessary permits and maintain filters in good working condition. 2) CRS shall provide one set only free of charge plus ground shipping to lessee upon need and request by Lessee. 3) Upon such delivery of filters, customer is responsible for installing them correctly. 4) Lessee is required to clean roof of silo of any material vented. 5) Lessee shall inform Lesser in writing of any deficiencies in bag house operation before shipping at end of rental duration.

Material Flowability. CRS may propose the best readily available material controlling equipment based on application and material usage. Applications and materials may vary and be inconsistent. User must inform themselves of the materials being processed, their process equipment and equipment proposed. User accepts all responsibility of the application of these materials and proposed equipment to their process.

Training Terms: CRS provides on-site and phone training to operate and maintain equipment at an hourly rate plus expenses. The phone support is very beneficial to Users when 1) starting up and operating the equipment without on-site service 2) For whatever reason, User's Personnel were not completely trained or equipment not completely installed while Factory Support Personnel was on site. 3) Training other User's Personnel in the future without the expense Factory Support Travel and Living Expense.

Training local electrical and mechanical assistance ... these people should be available during on site training to help insure their understanding and expedite any potential trouble shooting and repair.

Material Discharge Hose. CRS is not responsible for providing hose used in discharging material from the leased equipment into the Lessee's Equipment. The length of hose needed from site to site varies. The hose is a wear item and needs replacement. Sometimes the equipment is supplied with discharge hose. Lessee may use this as needed. Lessee may purchase hose from CRS or their local supplier.

Level indication

Silo is provided with :3 level Bindicators that operate High , Middle and Low Lights.

These items are provided only as a convenience when they can be properly maintained. These are not to be depended upon for actual level. An inspection manhole is to be used for actual level confirmation.

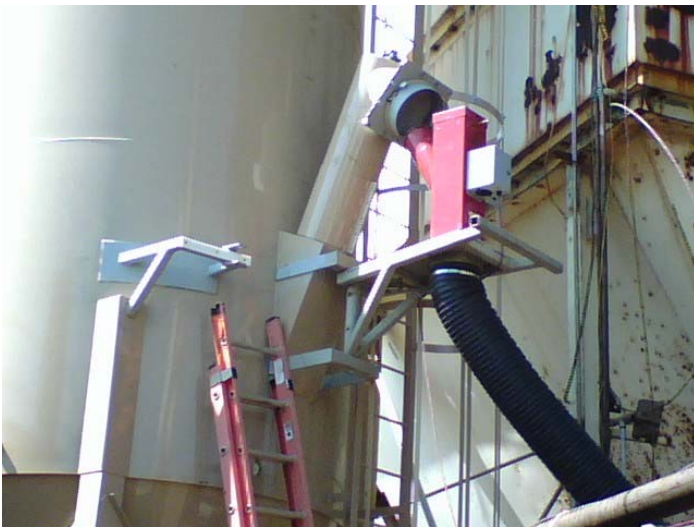
Local Control Enclosure with Operating Handle Disconnect, 480 Volt 3 phase, 60 amp
10 hp Variable Frequency Drive, Control Transformer, Shaker Vibrator Manual off Auto
Switch, Bag house Pressure Drop Gauge with Shaker Set points, Shaker On Light,
Emergency Stop, High Low Level Lights.
Sometimes provided with 175' feet of Control Cable





Flow Scale in Transit Position

Flow Scale in Production Position



The discharge elevation of the Flow Scale shall be about 12 foot (About 10' when using the divert chute. see page 3 drawing) above silo base. and protruding nearly 4 feet from the silo edge.

The scale discharge has about a 10” round adapter allowing a ribbed hose to be attached to it and channel the material to the boot of the bag house dust auger
Or to another auger that discharges into the bag house dust auger. Any which way, our responsibility ends at controlling the metering of the material out of the flow scale.

Provisions will have to be made to capture some material in 55 gallon drum in order to do a material calibration.

Silo Cone Views in Transport Position

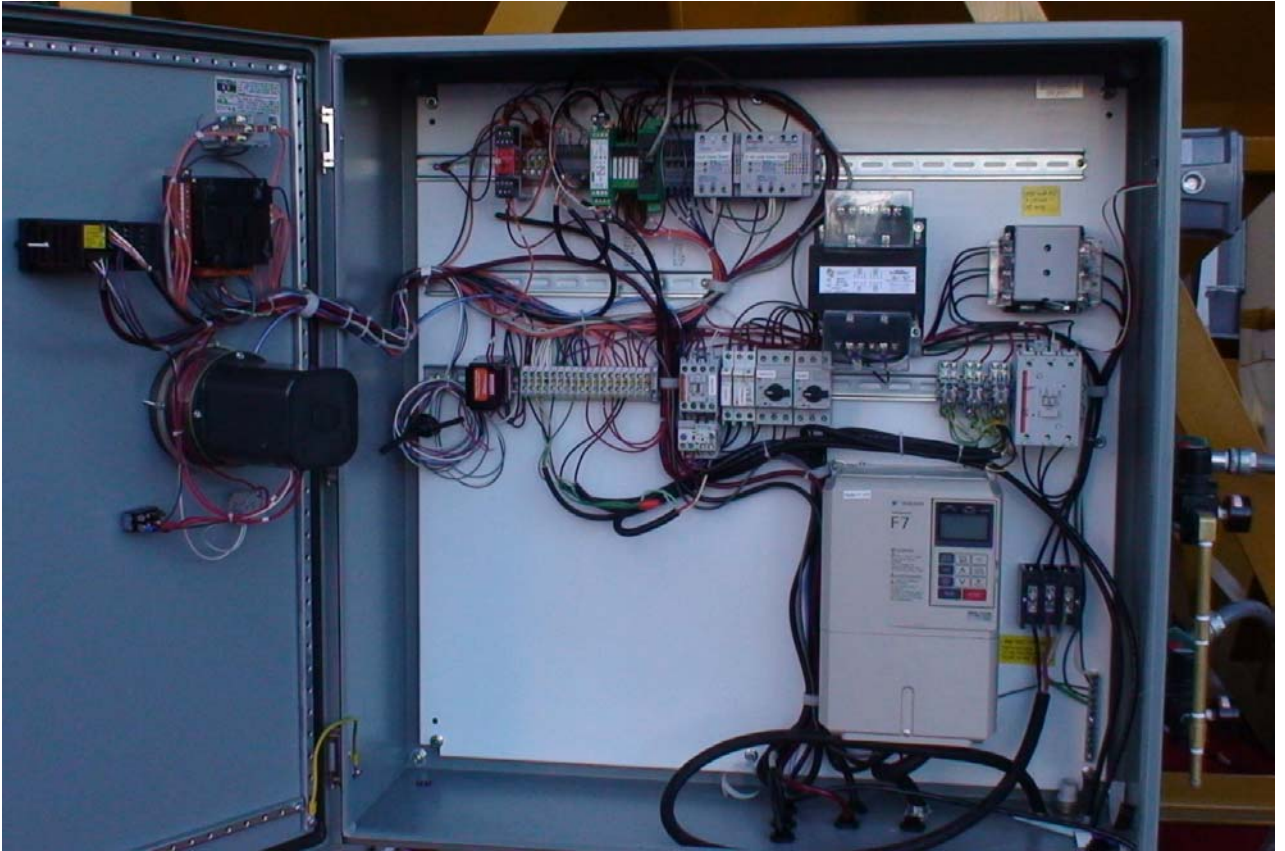
Local Control and Motor Control-Power Panel

Electric:

480 volt 3 phase... 60 amp (when using 20 hp discharge auger- 20 foot –12 “)

Total Compressed Air: 60 cfm 110 psi.

Local Control Enclosure with Operating Handle Disconnect, 480 Volt 3 phase, 60 amp 20 hp Variable Frequency Drive, Control Transformer, Shaker Vibrator Manual off Auto Switch, Bag house Pressure Drop Gauge with Shaker Set points, Shaker On Light, Emergency Stop, High and Low Level Lights and (Trial Basis) Continuous Level Indicator
Blend/Batch Switch



Remote Control Panel (175 feet cord).

Remote Control Sloped Box with a 12" X 10" foot print

With 165 feet of Extension Cable.

Emergency Stop, High/Low Level Lights and Trial Continuous Level Indicator

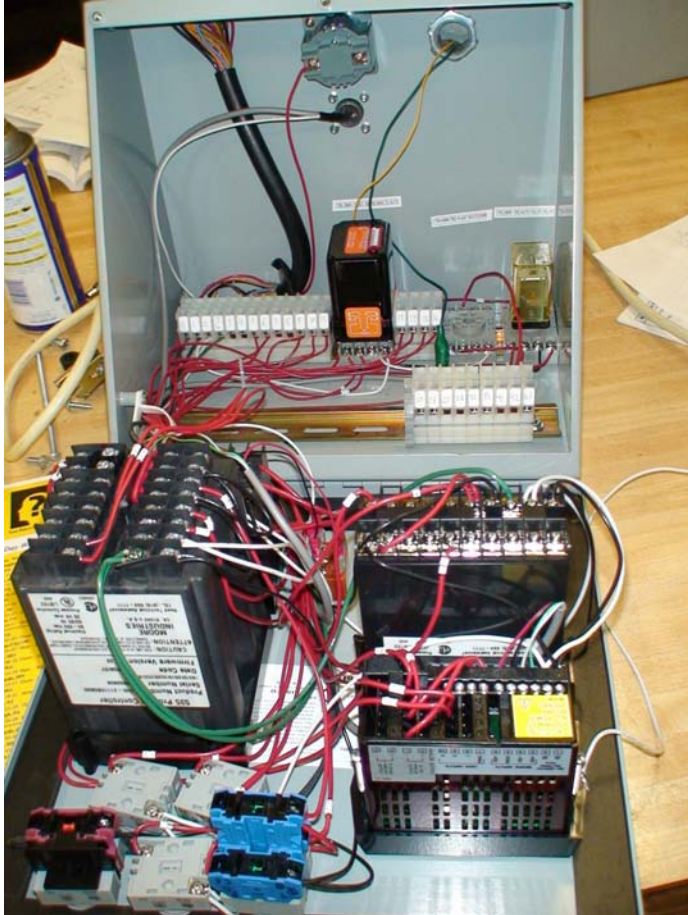
Frequency-Analog Remote Set point Input

Manual off Auto Switch with Automatic Blending Control and Startup

Continuous Weigh Scale Rate Indicator and Totalizer

Variable Speed Drive Keypad-Status Indicator





Flow Scale mounted directly under Silo Auger discharge.

Flow Scale must be material calibrated in a 55 gallon drum or larger with a scale to weigh it.



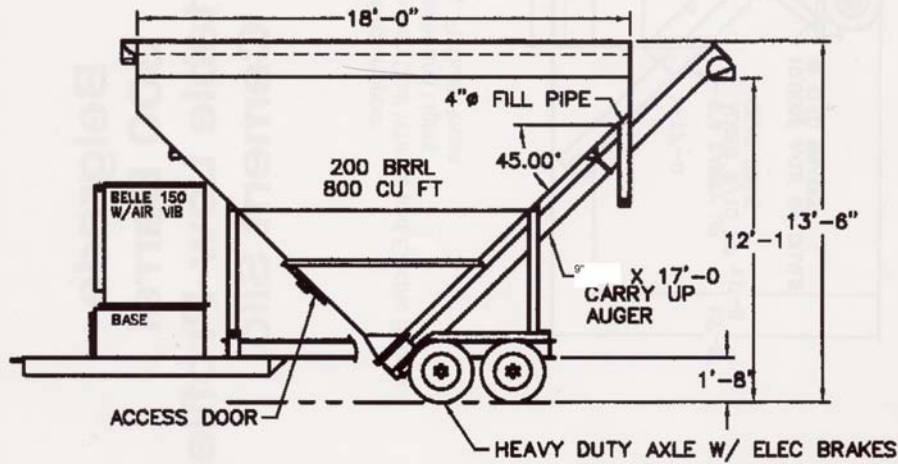
Fill Pipe and Cautions





200 Barrel Low-Profile Cement Silo

- 200 Barrel Capacity/800 Cu. Ft.
- Legal 8'6" Wide x Legal 13'6" Tall
- 26' Over All Length
- 9" Carry Up Screw Standard
- 10 HP Gear Box Drive
- Jamgate Assembly
- Two 6,000# Axles w/Wheels and Tires
- Electric Brakes and Lights
- Belle 150 Sq. Ft. Dust House w/Air Vibrator Standard
- WT. 8,000#



Transmission, 1.75" keyed shaft 18 tooth #100 chain

Auger sprocket, 2" keyed shaft 24 tooth sprocket #100 chain

Silo Maintenance

PORTABLE SILO

Portable Silo is equipped with all the necessary equipment for operation except for the electrical wiring. Options such as bin level indicators, electrical package, and special dust houses are available.

The unique feature of this silo is the positive feed drive auger system. A brief study of the schematic will familiarize you with its function. Foreign objects or hardened cement will cause the auger system to jam. Be sure to keep the silo as moisture free as possible. Clean out holes are installed in the auger to free jammed auger. If the silo is not to be used for an extended length of time it should be cleaned out completely, as not to have hardened material dislodge into the auger system upon resumption of use. The auger system is designed to start under a full load, but it is best to clean out the auger by disengaging the jaw clutch when the tank is not to be used for the balance of the day. The auger will not clean out 100%; however, this will take the greater part of the load off the auger. Keep the bearings greased (do not over grease) and check the lubricant level in the gear box, as it is not to run dry. Running dry will cause major damage to power transmission unit. Keep the auger discharge free of cement build up. Cement build up at the discharge point has been a common problem. Take the extension pipe off at the flange and free any hardened materials. Neglect causes the drive to be over worked and could cause the motor to burn out. The auger systems are designed with a gear reducer mount assembly located on the end of the auger. Attach the gear reducer to the mount assembly and secure with the bolts provided. Attach the motor to the gear reducer, via the c-face connecting flange and secure with the bolts provided. (The motor will come equipped with foot mounting capabilities, but will not be used.) Connect chain to sprockets and install safety guard.

The cone area of the silo is equipped with eight aeration pads and one manifold. Connect each air pad to the ports on the manifold with the poly tube and fittings provided. Connect your air supply to the port on the end of the manifold and provide manifold with approximately 10 psi of dry air. Increase pressure gradually if necessary. (Do not exceed 40 psi.)

This silo is equipped with a Belle Style Dust House. Be sure to check the dust socks for excess build up of cement. There are different types of dust houses and shaker systems available but all require your attention to make sure the socks remain on holders and they are cleaned out properly. Neglect may cause damage to the dust socks or possible damage to the silo. Care of these units depend upon how much the unit is used. Specs are listed on the enclosed brochure. The dust house is equipped with either an air powered or electric powered vibrator used for the cleaning of the bags. If air powered, connect air supply line to the port located on center above the door, and supply the vibrator with 80 psi oiled or non-oiled air. If electric powered, provide the correct voltage to the control box supplied. Operate vibration for approx. 5 - 10 minutes after each load of material has been blown in.

*This silo is equipped with an emergency pop-off valve. If the socks or air transfer system would plug, the valve will lift up relieving the pressure. The valve is adjustable and should be set by the user per the C.F.M. rate of the transport. Recommended filling pressure at 8# - 10# psi. **DO NOT OVER TIGHTEN.** Do not over fill the silo. Over filling of this unit could cause a hazardous situation. The air transfer system will plug and the pop-off valve may also be rendered unable to function, causing the dust house to break loose or the top to be forced open or possibly off. **BE CAREFUL NOT TO OVERFILL.***

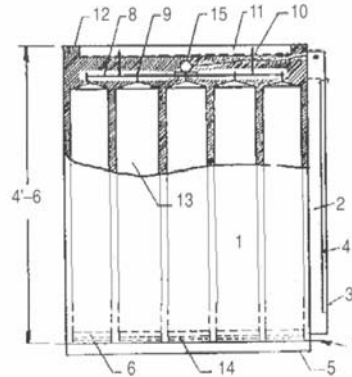
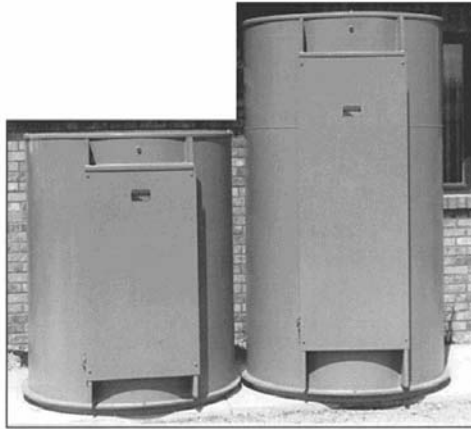
For the bin level indicator see Monitor schematic.

Cone Aeration..

Check and Maintain Desiccant Dryer and Post and Pre Filters for aerating the cone. material dependant. usually up to 50 cfm to fluidize material...Adjust pressure to the manifold 5-10 psi.

Check and maintain **Baghouse Filters**.. Replace when necessary

“Belle” Style Dust House



SQUARE FT. BAG AREA	CAP. CEMENT
150	375 C.F.M.
225	675 C.F.M.

Parts List	150 Sq. Ft.	225 Sq. Ft.
1. Housing	4'6" x 10' x 14 Ga.	6'6" x 10' x 14 Ga.
2. Door Frame	4'4" x 4 1/2" x 12 Ga.	6'4" x 4 1/2" x 12 Ga.
3. Door Frame Screw (2)	21" x 4 3/4" x 12 Ga.	same
4. Door	42" x 24" x 14 Ga.	60" x 24" x 14 Ga.
5. Mating Flange	2" x 2" x 3/16 Angle 44" Diameter	same
6. Sock Holders	8" Diameter - 18 Pcs.	same
7. Base	48" Dia. x 10 Ga.	same
8. Shaker Plate	36" Dia. x 12 Ga.	same
9. Open Eye Bolt	1/4" x 3" - 18 Pcs.	same
10. Suspension Bolts (4)	3/8" x 5" Hex	same
11. Suspension Bar Ass'm	Angle Iron Support	same
12. Cover	47" Dia. x 14 Ga.	same
13. Polyester Socks	(18) 4' x 8" Dia.	(18) 6' x 8" Dia.
14. Band Clamps	18 Required	same
15. Vibrator	VS 190	same
Opt: Single Phase Electric Vibrator		

“Belle” Filter Stock Specifications	
Style	PE 37
Fiber	100% Polyester
Weight	9 oz./Sq. Yd.
Construction	Spun/Spun
Count	100W x 60F
Air Permeability	20-30 C.F.M.
Mullen Burst	500 PSI
Tensile Strength	Warp Direction 300# Fil Direction 275#
Thermal Stability	2% Max. 300 Degrees F
Max Operating Temp	275 Degrees F
Efficiency	99.99%

Operation Recommendations

Air Pressure: Do not run vibrator over 80 PSI. Too low air pressure and lack of adequate air supply (too small line to vib.), however, is one of the primary causes for poor performance of air vibrators. For example, 80 PSI at 50 CFM through 150' of 1/2" hose or pipe will lose more than 30 lbs. of pressure due to friction loss. Fittings and bends in the line and other obstructions will also reduce the air pressure. A general rule for estimating compressor output is 5 CFM to 1 HP compressor.

Erecting and Supporting

Silo locations are variable and variables like wind and earth quake exposure is different than other areas around the country or in your locale. The weight of your mineral filler is a variable also. If we

use a number of the maximum weight per cubic foot of 65 pounds for this silo, (260 pounds X 350 bbls = 91,000 pounds or 45.5 tons of material plus the 6 ton for the silo).