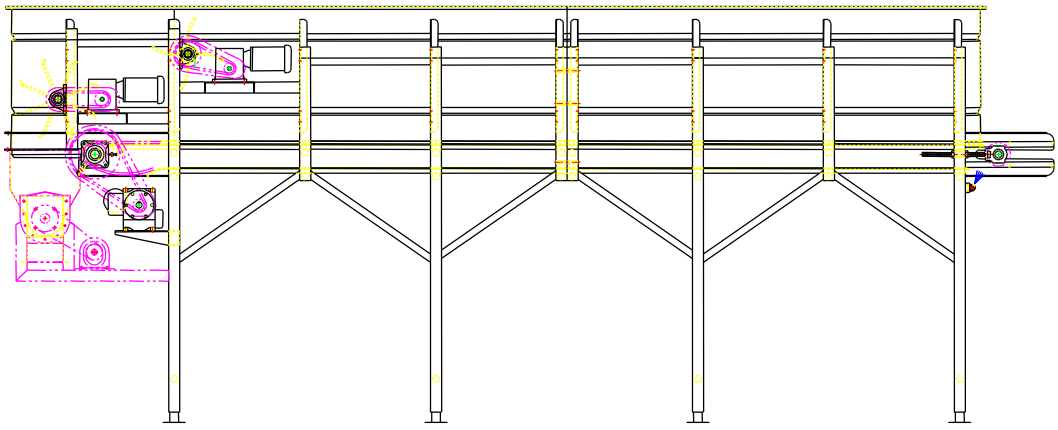
FMC FoodTech
Allen Systems PPM

OPERATING AND MAINTENANCE

MANUAL FOR

FMC

STOREVEYOR



FMC FoodTech
Allen Systems PPM

FMC Contact information:

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Newberg, OR 97132

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TABLE OF CONTENTS

FMC Foodtech Allen Systems reserves the right to make changes to the design, materials, and specification of the equipment described in this document without obligation to notify any person or organization of the revision of change. FMC Foodtech Allen Systems further reserves the right to discontinue the manufacture and sale of any components described in this document.

1 STORAGE CONVEYOR SYSTEM

1.1 INTRODUCTION

FMC Storage conveyor systems are designed to deliver a steady flow of product from production to packaging regardless of variances in the production rate. Product enters the storage conveyor form an overhead feed system that deposits product onto the slow moving belt in the storage conveyor. The storage belt regulates product output as required by down stream systems. The overhead feeder system can be comprised of one or more types of mechanical components. The overhead feeder is usually a belt conveyor on a trolley system. This traveling belt arrangement distributes product into the storage conveyor so that the first product in, is the first product out. Sometimes the overhead feed system consists of one or more vibratory conveyors with gates to distribute the product. Another method used to distribute product into the storage conveyor is a bucket elevator with strategically placed bucket dumping stations. In some instances a combination of these types of overhead feeders is custom designed to accomplish the desired product distribution. Since storage systems are built in a variety of custom configurations, it is important to **specify the model number** from the FMC tag attached to the machine **when ordering replacement parts**.

When designing equipment FMC Foodtech Allen Systems has taken into consideration product density, conveyor length/incline, and operating speed. If any of these parameters are changed from the original, consult our factory and the project manager to confirm the operation and capacities are still valid.

This manual should be read completely before operating the FMC Storage Conveyor System.

Failure to follow the operation and maintenance procedures contained in this manual could result in serious personal injury.

If it becomes necessary to make repairs to the storage system, please take corrective action immediately to avoid possible injury to personnel, the machine, and to guard against product contamination.

Engineering Staff (503) 538-3141
Parts department (503) 537-5302
Field service (503) 537-5324
FMC Foodtech Allen Systems
Customer Service Department
P.O. Box 469
Newberg, Oregon 97132

1.2 Safety

Safety must be considered a basic factor in machinery operation at all times. Maintain a safety training and safety equipment operation/maintenance program for all employees. Most accidents are the result of carelessness or negligence.

The following safety instructions are basic guidelines and should be considered as minimum provisions. Additional information shall be obtained by the purchaser from other sources including the latest editions of American Society of Mechanical Engineers. Refer to Standards ANSI B20.1 ANSI B15.1 ANSI A12.1 ANSI B20-1A1985.

It is the responsibility of the contractor, installer, owner, and user to install, maintain, and operate the conveyor components and conveyor assemblies manufactured and supplied by FMC FOODTECH ALLEN SYSTEMS INC. in such a manner as to comply with the Williams-Steiger Occupational Safety and Health Act, and with all state and local laws and ordinances and the American National Standard Institute Safety code.

SAFETY DEVICES AND CONTROLS must be purchased and provided by the purchaser/owner as required by applicable laws, standards, and good practice.

1.3 General precautions

Before connecting the power supply, make sure that the supply voltage and frequency corresponds to the equipment nameplate ratings, the equipment is properly grounded, and all conductors are adequately sized to carry the nameplate voltage and current.

Before operating the storage conveyor system, make sure the following list and programs are completed:

-Emergency stop switches are installed, working and are clearly visible.
-All of the guards and covers are in place.
-Correct motor rotation has been achieved.
-The machine is clear of obstructions, shipping blocks, supports, and tools.
-All bolted connections are tightened properly.
-All personnel are at a safe distance from machine and have been advised of the Location and operation of all emergency controls and devices. Clear access to these controls and devices must be maintained at all times.
-Area of operation must be clean with proper lighting.
-Do not walk or stand on any part of the conveyor at any time.
-Do not poke or prod material in the conveyor.
-Do not place hands, feet or any part of the body or clothing near any type of machinery.
-Do not overload conveyor or attempt to use it for other than its intended use.

Carefully read this entire manual before operating this machine.

1.4 Warranty Information

FMC Foodtech Allen Systems' warranty is available only to the original purchaser of this equipment and applies only to defects in material and workmanship for a period of one (1) year from the date of shipment. There are no other warranties, which extend beyond the description of the goods at the time of sale, and no other warranties may be deemed made by or implied against FMC Foodtech Allen Systems.

In addition, FMC Foodtech Allen Systems' liability is limited to the repair or replacement, at its option, of any defective goods F.O.B. its place of business at Newberg, Oregon. FMC Foodtech Allen Systems shall in no event be liable for any special, incidental or consequential damages, or loss of product/production resulting from any defect in goods sold by it.

Unauthorized modifications or the use of unauthorized replacement parts may damage the machine. Use only FMC Foodtech Allen Systems approved replacement parts. FMC Foodtech Allen Systems will not assume responsibilities for equipment performance subsequent to unauthorized modifications or the use of unauthorized replacement parts.

2 INSTALLATION

2.1 Uncrating

Inspect shipping crate prior to opening for visible damage. Document any damage on the bill of lading and notify both the Freight Company and FMC Foodtech Allen Systems. Care should be taken as you open/remove the shipping crate and the equipment should be thoroughly examined for any damage that may have occurred during shipment. Check to ensure that there are no small parts left in the crate, such as belts, bolts, support members, etc. Freight damaged goods are the responsibility of the customer and the shipping company. Equipment manuals are attached to the frame of the machine, or located inside the electrical control panels.

ALWAYS LIFT CONVEYOR EVENLY FROM INTENDED SUPPORT POINTS IN FRAME.

2.2 Assembly

The FMC storage conveyor system is shipped to you fully assembled whenever possible. Should size or other factors require it to be shipped in sections, it will have been tested at the factory and each section clearly marked for assembly on location. A drawing of the storage system is supplied as a reference to assist in the assembly of the system. Place in desired location and anchor loosely to floor with shims if necessary to level and plumb the machine. Carefully observe match marks, if applicable. In some cases all or part of the system may need to be attached to the building or other support. After assembling the storage system, check to ensure that vertical and horizontal alignment is correct as you firmly tighten all anchor and support bolts. The system must be squared and plumbed to achieve satisfactory performance. If product belt(s) are not already installed this should be done at this time.

2.3 Electrical Requirements

The standard motor used on FMC equipment operates at 1200 RPM or 1800 RPM, 230/460V, 3 phase, and 60 hertz. In some cases motors with different power requirements are supplied at the customers request. Before connecting the power supply, make sure that the supply voltage and frequency correspond to the equipment nameplate ratings, the equipment is properly grounded, and all conductors are adequately sized to carry the nameplate voltage and current.

If the prewire option was purchased with the unit, the system will be supplied with emergency stop switches or devices. These emergency stop devices are mounted and pre-wired to a common junction box on or near the storage system. Upon installation, the emergency stop devices are to be integrated into the existing control system. Make sure that all emergency stop devices are functional before operating the machine.

It is the responsibility of the contractor, installer, owner and user to install, maintain and operate the conveyor components and conveyor assemblies manufactured and supplied by FMC FOODTECH ALLEN SYSTEMS, INC., in such a manner as to comply the Williams-Steiger Occupational Safety and Health Act and with all state and local laws and ordinances and the American National Standard Institute Safety Code.

SAFETY DEVICES AND CONTROLS must be purchased and provided by the purchaser/owner as required by applicable laws, standards and good practice.

2.4 Wiring

There may be more than one motor requiring a power connection. The actual drive location(s) may vary depending on the application. Be sure to install all wiring and conduit in accordance with applicable standards and codes. Install proper sized wires, a proper-sized starter with start/stop controls, and motor protection fuses for the amps shown on the motor nameplate. **The motor(s) must be wired so that the output shaft of the gear reducer rotates in the proper direction.** If it becomes necessary to work on the power connection, always lock the power off at the control panel. The drive chain should also be disconnected from the drive before doing any work on the system. Before re-applying power to the system make sure the rotation of the motor is correct.

2.5 Start Up

Before start-up, all guards must be in place, all emergency stop devices working, and all moving parts must be free to move. With all personnel, tools, and debris clear, the storage conveyor system can now be turned on.

At the initial start-up, operate system for several hours empty as a break in period. Observe all components for bearing heat up, unusual noises or belt misalignment. Should any of these occur, check the following and take necessary corrective steps.

-Check chain drive for proper tension and ensure chain is not skipping during start-up.
-Check for proper lubrication, insufficient or excess lubricant will cause high operating temperatures.
-Check for the cause of any noises and correct promptly (loose drive chains, fasteners, clamps, etc.).
-Check for misalignment of components and/or in-correct belt tracking.
-After (8) hours of operation, check all bolted connections for correct torque settings as shown in the recommended torque values chart (Appendix B).

FMC Foodtech Allen Systems should be consulted prior to performing any modifications to any part of the conveyor.

2.6 Adjusting Belt Tension & Tracking

Belt tension and tracking is critical to the proper operation of the belt conveyor(s) in your storage system. The belt tension and tracking is done by turning the nuts on the threaded take-up rods located on each side of the infeed end of the belt conveyor. When adjusting be sure tension is as even as possible on both sides. The belt should be tensioned enough to prevent sagging in the middle without stretching the belt excessively. At the same time the belt tracking should be adjusted so that the belt runs centered in the conveyor bed/frame. The pulleys are crowned in the center to facilitate belt tracking. Be sure lock nuts on take-up assembly are tightened after adjusting. This setting should be monitored monthly and re-adjusted as necessary to keep correct tension and tracking.

IMPORTANT: DO NOT over tension belts. Proper belt tension and tracking is essential to the successful long-term operation of your storage conveyor system.

2.7 Installing Additional Components

After your FMC storage system is properly assembled and aligned, you will need to install covers or guards if applicable. After initial installation, additional guarding or safety switches may be needed to meet applicable safety codes, regulations, etc. at your facility. FMC Foodtech Allen Systems provides guarding to meet safety codes and guide lines for normal access to storage systems. Once the system is positioned in the facility, it is the customers and/or the installation contractor's responsibility to review and verify that all safety codes for personnel around the storage system have been met.

3 OPERATION

Most operations on a storage system are automated. The controls operating the system are integrated into the facilities processing system. Operators should be trained to watch for and avoid any unexpected changes in product flow, both at intake and discharge. If an unusual condition occurs, the power should immediately be turned off to avoid unnecessary wear on the components. The situation must be corrected before continuing operation. Maintenance should be done at the first sign of any abnormal condition such as unusual sounds, or improper belt tracking which may cause excessive belt wear. Frequently check belt tension and tracking. Correct as necessary as described in the Installation section.

Do not operate the storage system at speeds greater than the design perimeters. Small changes in speed may be accomplished by a change of drive sprockets. If increasing speed substantially, consult FMC Foodtech Allen Systems prior to making changes.

CAUTION: **DO NOT** exceed amp reading on motor nameplate. Greater increase in speed may require replacing the speed reducer and a higher horsepower motor. Please consult the FMC Foodtech Allen Systems.

4 MAINTENANCE

Proper maintenance of your FMC storage system is essential to maintain long service and the dependability you expect. Preventive maintenance can avoid production breakdown repairs.

4.1 Cleaning

Set up a regular cleaning schedule and follow it. Product can build up of on the under side of the belt and/or the pulley face. This can create belt-tracking problems, which can cause excessive belt wear. Product can also build up around the ends of the return rollers bearing surfaces. They must be kept clean and free rolling or the belt will wear a flat spot in the roller. The system may be steam cleaned at no more than 220 degrees. Consult with FMC Foodtech Allen Systems before using caustic cleaners on the storage system. Never spray water directly at any type of electrical component. Keep the area around equipment cleaned up. Serious conveyor damage can occur from brooms, squeegees, or hoses, left leaning on or against the storage system.

4.2 Lubrication

I Shaft Bearings

Grease every 1000 hours, which computes to every six months at 8 hours daily operation or two months at 24 hours daily operation.

DO NOT OVER GREASE. Too much grease or under too much pressure will rupture the seals, reducing the life of the bearings.

Use any good quality gun type grease. Apply until a very slight bead appears around the bearing seal.

II Chain

Lubricate every 500 hours, which computes to every 3 months at 8 hours daily operation and every month at 24 hours daily operation. To extend chain life, apply two drops of oil between the link side plates on each side of the chain at each roller using a good quality food grade mineral oil.

III Speed Reducer & Motor

Speed reducers used by FMC Foodtech Allen Systems are properly filled at the factory with sufficient lubrication. Most gear manufactures recommend that the oil be changed using good quality gear oil after the initial 250 hours of operation, and thereafter at regular intervals of 2500 hours or every 6 months. If synthetic oil is being used, it is recommended that the oil be changed after the initial 1500 hours of operation, and thereafter at regular intervals of 5000 hours. Change the oil when performing maintenance that requires gearbox disassembly

If your machine is equipped with a Dodge/Reliance gear reducer with the Relialube system, the break-in period and subsequent oil change ordinarily experienced with conventional reducers has been eliminated. No oil needs to be added at installation. The oil needs to be changed only after the unit has been put into service at regular intervals of 5000 hours.

FMC Foodtech Allen Systems recommends using synthetic oil Mobil SHC-634. If re-lubrication of the input bore is required use Fel-Pro CSA Antisieze or Mobiltemp 78 grease in the bore and on the motor shaft. A food grade lubricant may be supplied at customer's request. If you need assistance determining the correct lubricants to use in a particular application, contact the FMC Foodtech Allen Systems customer service department.

The bearings in the motor are greased during manufacturing, but require periodic maintenance. Motor manufactures usually recommend that the bearings be lubricated with grease at regular intervals of 12,000 hours or every 12 months of operation.

4.3 RETURN MERCHANDISE PROCEDURE:

1) Have part number and purchase order ready.
2) **Call FMC Parts Department @ 1-503-538-3141 ext. 5302, obtain a RMA#.**
   a. FMC Parts Department will not be able to tell you if the parts are under warranty, as they need to inspect the parts.
   b. Although your parts may be less than one year old, it depends on the type or cause of failure and may not be under warranty.
   c. FMC Foodtech Allen Systems reviews failures and determines if the parts are under warranty.
3) Send parts back to: **FMC Foodtech Allen Systems, Inc.**
   500 E. Illinois St.
   Newberg, Oregon 97132
   RMA#
   a. Items returned w/o an RMA # will NOT BE ACCEPTED and will be sent back to customer.
3) Once parts are repaired they will be sent back to our customer VIA:
   a. **UPS ground (5 days) unless otherwise arranged.**

The information in this publication is intended to cover a variety of installations and requirements. It is to be expected that situations will arise that have not been adequately covered by the foregoing data and should difficulties arise please contact your local representative of FMC Foodtech Allen Systems who will assist you to obtain a satisfactory installation or contact the FMC Service Department at the above number.

5 RECOMMENDED SPARE PARTS

We recommend that you carry in stock a minimum quantity of spare parts for your FMC storage system. Please be sure to **specify Model Number** of conveyor when ordering parts
It is recommended that you stock the following parts for every **THREE** machines on site.

DESCRIPTION	QUANTITY
Motor	1
Reducer	1
Bearing	1 SET
Connector link (for drive chain)	1
Belt section (Approx. 6ft) w/ lacing or full length replacement w/ lacing (Note: there may be more than one belt conveyor in your system)	1

There may be included with this manual, a **custom recommended spare parts list** and drawings specific to your storage conveyor system. When ordering parts for any machine, please specify model number shown on serial number tag when ordering parts.

ADD YOUR CONVEYOR INFORMATION HERE FOR FUTURE REFERENCE

NOTE: THE FMC FOODTECH ALLEN SYSTEMS MODEL NUMBER IS THE MOST HELPFUL INFORMATION
FOR IDENTIFICATION

MODEL NO:- SSD-_____

SERIAL NO:- SPC-_____

DESCRIPTION:- _____STORAGE SYSTEM

6 GENERAL NOTES

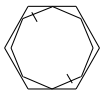
The information in this publication is intended to cover a variety of installations and requirements. Situations may arise that have not been adequately covered by this manual. Should difficulties arise, please contact FMC Foodtech Allen Systems to assist you in obtaining a satisfactory installation.

FMC Foodtech Allen Systems would also appreciate any comments on the documentation received.

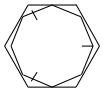
Addresses and phone numbers are in the Introduction section toward the beginning of this manual.

APPENDIX A CAPSCREW IDENTIFICATION

SAE Grade 1 / SAE Grade 2 / ASTM A307 (unacceptable)



SAE Grade 3 (unacceptable)

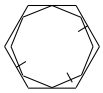


SAE Grade 5 / ASTM A449 (acceptable)

ASTM A325 (acceptable)

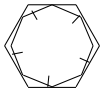
ASTM A354 Grade BB (acceptable)

ASTM A354 Grade BC (acceptable)

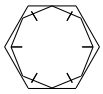


SAE Grade 5.1 (acceptable)

ASTM A193 Grade B7 (acceptable)



SAE Grade 7 (acceptable)



SAE Grade 8 (acceptable)

ASTM A490 (acceptable)

APPENDIX B RECOMMENDED TORQUE VALUES

BOLT SIZE	S.A.E. GRADE 5 TORQUE DRY (FT. LBS.)	S.A.E. GRADE 5 TORQUE LUBRICATED OR PLATED (FT. LBS.)	S.A.E. GRADE 8 TORQUE DRY (FT. LBS.)	S.A.E. GRADE 8 TORQUE LUBRICATED OR PLATED (FT. LBS.)
1/4-20	8	6	12	9
1/4-28	10	8	14	10
5/16-18	17	13	24	18
5/16-24	19	15	27	20
3/8-16	30	23	45	34
3/8-24	35	27	50	38
7/16-14	50	38	70	53
7/16-20	55	42	80	61
1/2-13	75	57	105	80
1/2-20	85	65	120	91
9/16-12	110	84	155	118
9/16-18	120	91	170	129
5/8-11	150	114	210	160
5/8-18	170	129	240	182
3/4-10	270	205	375	285
3/4-16	300	228	420	320
7/8-9	430	327	610	464
7/8-14	475	361	670	509
1”-8	645	490	910	692
1”-12	705	535	1000	760
1”-14	720	547	1015	771

7 LOST OR DAMAGED GOODS:

THOROUGHLY INSPECT AND COUNT ALL SHIPMENTS IMMEDIATELY UPON ARRIVAL. OUR RESPONSILBILTY FOR ALL SHIPMENTS IS CEASED WHEN THE CARRIER SIGNED THE BILL OF LADING.

If goods are received short or in a damaged condition, it is important that you notify the carrier and insist on a notation of the loss or damage across the face of the freight bill; otherwise no claim can be enforced against the transportation company.

If concealed loss or damage is discovered, notify your carrier at once and request an inspection. This is absolutely necessary. A concealed damage report must be made within 15 days of delivery of shipment. Unless you do this, the carrier will not entertain any claim for loss or damage. The agent will make an inspection and grant a concealed damage notation. If you give the Transportation Company a clear receipt for goods that have been lost in transit, you do so at your own risk and expense.

We are willing to assist you to collect claims for loss or damage, but this willingness on our part does not make us responsible for collection of claims or replacement of material. The actual filing and processing of claims is your responsibility.

* If your shipment is crated or wrapped, you should sign the Bill of Lading noting “subject to Concealed Damages”.