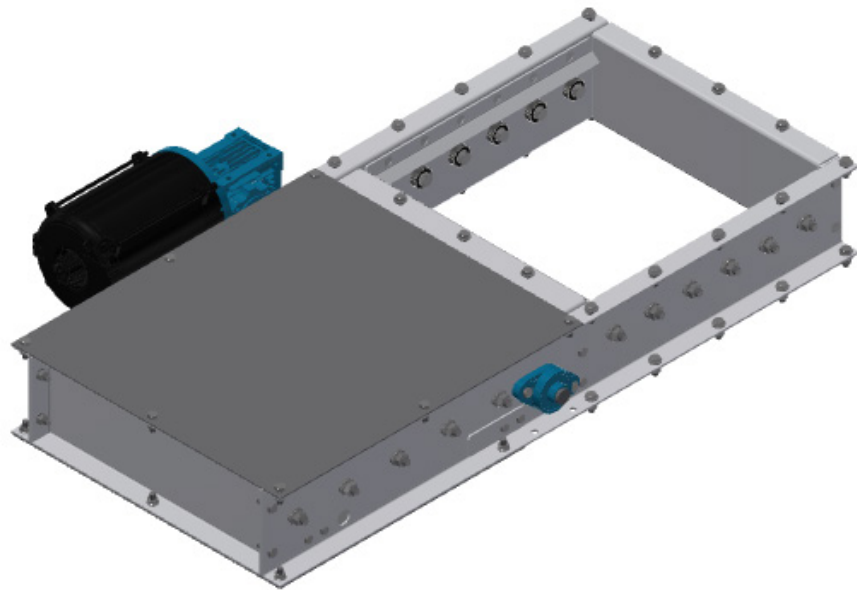


INSTALLATION MANUAL & OPERATIONS GUIDE

ROLLER GATES



**MID-STATES
MATERIAL HANDLING
AND FABRICATION**

2019 Edition



CONTENTS

CHAPTER ONE | INTRODUCTION

General Information 2
 General Safety 2
 Replacement Parts..... 2

CHAPTER TWO | SAFETY

Safety Guidelines 3
 Cautionary Symbols Definitions 3
 Safety Cautions 3
 Safety Sign-Off Form 3

CHAPTER THREE | DECALS & MACHINE PLATES

CHAPTER FOUR | INSTALLATION

Receiving Inspection 3
 Pre-Installation Preparation..... 3
 Gate Assembly 3
 Manual Gate Installation..... 3
 Motorized Gate Installation..... 3

CHAPTER FIVE | OPERATION

Pre-Startup Procedure 3
 Start-Up 3
 Go-Switches 3

CHAPTER SIX | MAINTENANCE AND REPAIR

General Maintenance 3
 Periodic Inspection 3
 Lubrication 3
 General Housekeeping 3
 Shaft Removal 3

CHAPTER SEVEN | TROUBLESHOOTING

CHAPTER EIGHT | WARRANTY



ROLLER GATES

MANUAL & OPERATION GUIDE

Chapter One

INTRODUCTION



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MATERIAL HANDLING
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GENERAL INFORMATION

Mid-States Material Handling and Fabrication's gates have been designed to give our customers many years of service. Our slide gate can be used manually or electronically. This manual shows both options, and how each should be installed and operated. Always comply with the Bin manufacturers unloading procedures. The instructions in this manual should be adhered to as close as possible to ensure a well-functioning gate and long lifespan. Our instructions are intended to help installation crews determine the best way to connect our gates. Please refer to the table of contents for fast, quick location of specific items. For detailed operating procedures and to see what set up fits you best, please contact MMF directly.

You can contact us with these requests at 515-382-1225

This manual is to provide operation and installation instructions and recommendations for the MMF slide gate. Pictures and diagrams are included in this manual to help the reader, and give them a fast, accurate reference. We strongly recommend that this manual is read in detail by those who install, operate, and maintain any MMF gates. We recommend a qualified contractor to provide on-site expertise.

GENERAL SAFETY STATEMENTS

- 1 MMF's Roller Gates are designed and manufactured with the operator's safety in mind. However, residual hazards remain due to the nature of material handling systems, and specific material hazards. Always use extreme caution.
- 2 Modifications to equipment may cause extremely dangerous situations that could result in damage to the equipment as well as serious injury or death to the operator. Never modify the equipment. Modification of the MMF Roller Gates will void any warranty.
- 3 Mid-States Material Handling and Fabrication recommends that you contact your local power company to survey the installation to ensure compatible wiring and adequate power is supplied to the unit.

REPLACEMENT PARTS

Mid-States Material Handling and Fabrication Roller Gates are built to last, but as with any machine, parts do wear out and fail. It is Mid-States Material Handling and Fabrication's recommendation that a small supply of spare parts be kept on hand to cover any minor breakdowns. A separate Spare Parts/ Price List will be sent identifying the suggested spare parts. It is also necessary to check the certified drawings, which will list any special or custom components utilized on this equipment. The certified drawings furnished with the roller gates list the components which are likely to require replacement. Replacements for any other components, including structural members can be supplied upon request.

For direct parts orders or requests for technical assistance to your sales representative or to:

MID-STATES MATERIAL HANDLING AND FABRICATION
 1280 SOUTH B AVE, NEVADA, IA 50201 50201
 PHONE: 515-382-6280 | FAX: 515-382-4407

PLEASE HAVE THE MODEL/SERIAL NUMBER, CUSTOMER ORDER NUMBER & INSTALLATION LOCATION OF THE EQUIPMENT AVAILABLE.

ROLLER GATES

MANUAL & OPERATION GUIDE

Chapter Two:

SAFETY & DECALS



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SAFETY GUIDELINES


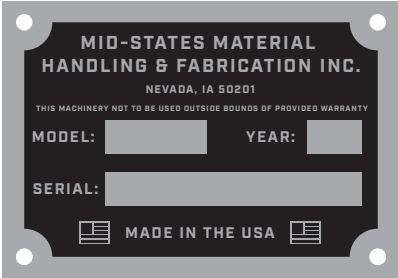
These safety guidelines range from broad to specific safety rules. This manual exists to help you, the user, understand safe operating procedures and problems that can be encountered by the operator and other personnel when using this equipment. Save these safety guidelines in a secure place for future reference.

GENERAL SAFETY PRECAUTIONS AND NOTES

- 1 It is the responsibility of the buyer to inform, educate and share this manual with all personnel that are involved with operation or maintenance of this equipment. Personnel operating or working around equipment must read this manual and follow all safety, installation, and operating procedures. Failure to read this manual and its safety instructions is a misuse of the equipment.
- 2 Power lockout is very important prior to installation, adjustment, and maintenance of the product. Be sure the power is turned off and locked out during any type of installation, adjustment, or maintenance on the roller gates.
- 3 Safety labels and guards have been installed by the manufacturer and/or the installer. These devices shall remain intact with the unit and should never be removed, altered, or tampered with. Doing so will void all liability and warranty of the manufacturer. It is the responsibility of the owner and or user to inspect the roller gates for proper safety stickers. If the stickers somehow become missing, it is the responsibility of the owner to provide and replace the safety stickers.
- 4 The covers and guards on our products create a barrier to prevent others from entering, reaching, or falling into the machinery. Operating the product with guards and covers missing or improperly installed may result in serious injury or death. Do not step on or walk on any part of the roller gates.
- 5 MMF recommends the buyer train all affected employees in the safe operation of roller gates.
- 6 As owner or operator, you are responsible for understanding the requirements, hazards, and precautions that exist and to inform others as required. Unqualified persons must always keep out of the work area. Long hair must be tied back and all jewelry must be removed when operating this product. Loose clothing should not be worn when operating the roller gates.
- 7 Alterations must not be made to the equipment. Alterations can produce dangerous situations resulting in serious injury or death. Any alterations made will immediately void any warranty on the product.
- 8 This equipment must be installed in accordance with the current installation codes and applicable regulations. Authorities having jurisdiction must be consulted before installations are made.
- 9 When it is applicable, you must consider the installation location relative to electrical, fuel and water utilities.


SAFETY DECALS AND MACHINE PLATE

The decals on your equipment are there to alert you to potential safety hazards. All safety decals are indicators that must be understood by all personnel before operation of your product. If a safety decal is missing or damaged, it is the responsibility of the owner to replace and re-install the sticker. Replacement safety stickers can be obtained by contacting MMF at 515-382-1225.

ITEM	IMAGE	LOCATION
Safety Sticker		On front of Gate
Machine Plate		Bolted on to gate

CAUTIONARY SYMBOLS DEFINITIONS

Cautionary symbols appear in this manual and on the equipment's safety decals. Knowing these symbols and what they mean is essential to the safe operation of this product.

SYMBOL	IMAGE	DESCRIPTION
Caution Symbol		Warning

FOLLOW SAFETY INSTRUCTIONS

Carefully read all safety content in this manual and the safety decals on this machine. Make sure signs are always cleaned off and readable. If a sign is missing or damaged, replace it as soon as possible. Replacements are available through the manufacturer.

Learn how to properly operate this machinery before use. Do not let anyone who lacks the knowledge of this machine's operation use it.

If any part of this manual needs further clarification, contact the manufacturer.

MAINTAIN EQUIPMENT AND WORK AREA

Never service equipment during operation. Always lock out power before performing any service on equipment. Keep your equipment dry, clean and in proper working condition. Be sure to replace any worn or broken parts as soon as possible.

MMF standard gates are painted unless noted otherwise. If the paint chips, contact MMF to find a suitable solution or to order touch-up paint.



ROLLER GATES

MANUAL & OPERATION GUIDE

Chapter Three

INSTALLATION



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RECEIVING INSPECTION

Carefully inspect the shipment upon receipt for damage. Verify all necessary parts are included and correspond with the packing slip. Note any concealed damages and/or shortages on the bill of lading and contact the manufacturer immediately. Report any damage or missing parts to the carrier on arrival. Any damage to the equipment is the fault of the delivering party as per the bill of lading. Save all paperwork related to the roller gates's delivery, its parts and its operation.

THERE ARE MULTIPLE MODELS & CONFIGURATIONS OF MMF GATES. UPON DELIVERY, BE SURE THAT YOU HAVE RECEIVED THE CORRECT MODEL.

PRE-INSTALLATION

Make sure to read this entire manual prior to installation to ensure that you are compliant with all osha/ansi, electrical and other applicable codes.

Only qualified millwrights or contractors should install the roller gates and its accompanying equipment and structures. Retention of a licensed engineer is essential for planning the installation of the roller gates.

No responsibility is assumed by MMF for the installation of the roller gates. The directions of this manual are simply the manufacturer's considerations. The end user or installer of the MMF roller gates should consult a structural/civil engineer about this unit's design, construction and installation.

GENERAL ROLLER GATE INSTALLATION

After uncrating the roller gates, arrange the parts as they will be upon final installation. Set the parts on supports such as wood blocks, sawhorses or other similar items. The suspension of the roller gates on items such as these will help in the process of assembly.

This is MMF's recommended, and the typical industry procedure of roller gates installation. Depending on the situation, a different order of assembly may be necessary.

Our roller gates are scalable in design, and built for the parameters and operating specifications supplied by you, the buyer, at the time of design and P.O. issuance. Because there is a variance in components, some of this information might not apply to your specific roller gates. See your bill of materials to know which information pertains to your specific product.

MMF Slide gates may be operated in two different ways. These include a gate operated with a hand wheel or an electronically operated gate powered by a motor and gear reducer.

ELECTRICALLY OPERATED ROLLER GATE INSTALLATION

These gates are "electrically controlled" by a MCC or PLC. MMF manual gates are included with hand wheel. All of our electric gate shafts have a keyway at the end to match the input on the gear reducer.

MMF will install the limit switches on the gate at the time of shipment, however it is the electrician's responsibility to fine tune the limit switches if need be during wiring.

MMF gates can be used either as "left handed gates" or "right handed" gates. It is up to the end

user which style they want. A “right handed gate” is one which the shaft must be turned in the clockwise direction to open the gate. A “left handed gate” is one which the shaft must be turned in the counterclockwise direction to open the gate. Two drawings are shown below with gate A being a right-handed gate and gate B being a left handed gate.

Gate Discharge Capacity (BPH)= Gate Width(in) x Gate Opening(in) x 70

MANUALLY OPERATED ROLLER GATE INSTALLATION

These MMF gates are “manually controlled” by an operator walking under the bin through the reclaim tunnel and opening the gate using a hand wheel. MMF manual gates have hand wheels included. All of our manual gate shafts have a keyway at the end so they can easily be transformed into electric gates if needed.

It is recommended that the installer plainly mark the operating controls of the gate so that any personnel can tell from a glance if the slide is in an “open” or “closed” position.

MMF gates can be used either as “left handed” gates or “right handed” gates. It is up to the end user which style they want. A “right handed” gate is one in which the hand wheel has to be turned in the clockwise direction to open the gate. A “left handed” gate is one in which the hand wheel has to be turned in the counterclockwise direction to open the gate. Two drawings are shown below with gate A being a right handed gate and gate B being a left handed gate.

Keep in mind while following bin unloading procedures that gates should only be opened to match the reclaim conveyor's capacity therefore not to plug the reclaim conveyor. The number of square inches the grain is following through the gate is relative to how many bushels are going through the gate. The formula that should be used to calculate the amount of bushel is as follows:

Gate Discharge Capacity (BPH)= Gate Width(in) x Gate Opening(in) x 75

Keep in mind while following bin unloading procedures that gates should only be opened to match the reclaim conveyor's capacity therefore not to plug the reclaim conveyor. The number of square inches the grain is following through the gate is relative to how many bushels are going through the gate. The formula that should be used to estimate the amount of bushel is as follows:



ROLLER GATES

MANUAL & OPERATION GUIDE

Chapter Four

OPERATION



**MID-STATES
MATERIAL HANDLING
AND FABRICATION**

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START-UP PROCEDURE

Before the installer turns over duty to the operator of the MMF Roller Gates make sure the machinery is fully ready for operation. Ensure every item on this list is complete and re-checked before startup of the MMF Roller Gates.

- Check bolts, caulked joints, shafts, gaskets, and throughout roller gates, address as needed.
- Ensure that no long spouting or misaligned flange should be connected to the MMF slide gate as a twist in the gates frame could occur.

After this list is complete, run the roller gates with no material pressure if there. Listen for any sounds that are different than the ordinary operation noise. If an unusual sound is heard, it must be located and addressed before moving any further. Declining to do so will cause unnecessary wear and major damage.

GENERAL OPERATION NOTES

MMF slide gates are meant to slowly shut off grain flow while grain is still flowing freely throughout the gate. Our gates should never be torqued, as they are not designed to shear through product in a plugged spout condition.

Gates that are used in outside environments that are exposed to cold weather should include a top weather cover to prevent ice from getting inside the gate and interfering with the gates rack and pinion.

Bottom weather covers may be included to keep limbs out of the slide during operation. Failure to purchase weather covers voids any warranties associated with the gate.

MMF suggests that all gates should be locked unless those gates are being used. This helps prevent unnecessary opening of the gates. Improper unloading of the bin can cause severe damage.

MMF gates should only be opened the minimum distance to account for the capacity of the reclaim conveyor as calculated by the bushel per square inch formula

RESPONSIBILITY OF INSTALLING PARTY

After installation is complete and the installer is satisfied with the function of the machine's operation, they must pass on this information to the intended operator.

- A basic introduction of maintenance and differences in the MMF Roller Gates's operation as compared to other gates.
- The locations of all pertinent parts such as the start and stop stations and electrical disconnects for locking out power.
- The startup and shutdown sequence for the machinery.
- How to clear the machinery of foreign objects and plugs.
- The importance of following the recommended procedures of this manual.
- Operation of discharges, detector tail (if applicable), and valves.
- Operators of slide gates should always be aware of their surrounding and always keep limbs out of any internal moving part of the gate.

ROLLER GATES

MANUAL & OPERATION GUIDE

Chapter Five

MAINTENANCE, REPAIR & TROUBLESHOOTING



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MANUAL & OPERATION GUIDE

Chapter Five

WARRANTY



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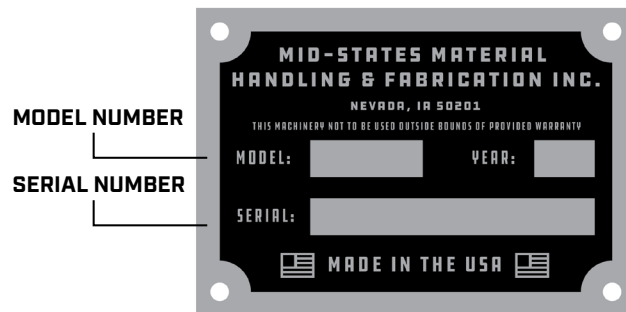
REPLACEMENT PARTS

The MMF Roller Gates are built to our highest standards, a heavy duty construction ensures a high lifespan. As with any machine, parts wear out and break. It is MMF's recommendation that a small supply of spare parts be kept on hand to cover any minor part wear or damage. It is also necessary to check the certified drawings, which will list any special or custom components utilized on your roller gates. The engineer-certified drawings furnished with the roller gates list out the components which are most likely to require replacement. Replacements for any other parts of the roller gates, including structural members can be ordered upon the customer's request.

To reorder parts, contact your sales representative or contact us directly at:

Mid-States Material Handling and Fabrication
1280 South B Ave, Nevada, IA
Nevada, Iowa 50201
Phone: 515-382-1225
Fax: 515-382-1128

PLEASE HAVE THE MODEL/SERIAL NUMBER, CUSTOMER ORDER NUMBER & INSTALLATION LOCATION OF THE EQUIPMENT AVAILABLE.



WARRANTY

MMF warrants all products manufactured to be free of defects in material and workmanship under normal usage for a twelve-month period after retail sale to the original end buyer of such products. MMF has the obligation to repair or replace, at MMF's sole judgement, defect due to materials or workmanship.

Except for the above stated express limited warranties MMF makes no warranty of any kind, expressed or implied, including, without limitation, warranties or merchantability of fitness for a purpose or use in the connection with the product manufactured or sold by MMF, any advice, instruction, recommendation, or suggestion by MMF regarding, configuration, installation, layout, suitability for a purpose, or design of such product or products. In no event shall MMF be liable for any direct, indirect, incidental or consequential damages, including, without limitation, loss of anticipated profit or benefits.

MMF assumes no responsibility for field modifications or erection defects, which may create structural problems. Modifications to the product not specifically covered by this manual will nullify any product warranty that might have been otherwise available.

The foregoing warranty shall not cover product or parts which have been damaged by negligent use, misuse, alteration or accident. This warranty covers only the products manufactured by MMF. This warranty is exclusive and in lieu of all other warranties express or implied, MMF reserves the right to make design or specification changes at any time. It is the responsibility of the buyer to research and comply with all federal, state and local codes, which may apply to the location and installation of our products.

FINAL DISCLOSURES

Mid-States Material Handling and Fabrication reserves the right to improve our product whenever possible and practical to do so. We reserve the right to change, improve and modify our products at any time without obligation to make changes, improvements and modifications on equipment sold prior to the improvements.

MID-STATES MATERIAL HANDLING AND FABRICATION (MMF) IS NOT RESPONSIBLE FOR THE INSTALLATION OF THIS PRODUCT.