

TECHNICAL SPECIFICATIONS
MIDWEST International
INTERNALLY VENTED
ROUNABOUT™ SPOUT POSITIONER
STANDARD and LOW PROFILE

TO 1400TPH*

SERIES
 300-2
 600-2
 900-2
 1200-2
 1800-2

MRSPV

TECHNICAL SPECIFICATIONS

ROUNABOUT™ SERIES

Internally Vented Rotational Spout Positioner Standard and Low Profile (LP)

DESIGN CRITERIA: The equipment described in this technical specification is designed to be used with a MIDWEST Paragon™ Series Internally Vented Retractable Bulk Loading Spout for positioning the spout discharge over the top of trucks or railcars to facilitate loading. This combination can significantly reduce the loading time by positioning the spout discharge instead of moving the vehicle.

DESCRIPTION: The MIDWEST Internally Vented Roundabout™ Spout Positioner with Paragon™ MV22, MV30 or MV36 Series Internally Vented Loading Spout connected to the lower flange of the positioner or with a Vaculoader® or Compaculoader™ located on top, is designed to load vehicles in up to half the normal loading time and dust free if applied, installed and operated properly. *This system is designed to load up to 1400 TPH of 60 PCF dry free flowing moderately aerated fines or the equivalent capacity of granular or lumpy products. Consult factory for throughput capacities, inlet velocities and hopper design to accommodate required loading rate. Because of its internally vented feature the complete stackup of modules or "system" is placed under a negative pressure or vacuum which when maintained, will not allow dust to escape to the atmosphere. Using this Roundabout™ rotational spout positioner the loading operator can load side or center hatches located on top of a railcar and can also rotate the positioner up to 350 degrees to position the loading spout over other hatches and usually over another railcar compartment significantly reducing loading time. Most (2) compartment railcars can be loaded without respotting the car. This Paragon™ Series Roundabout™ rotational spout positioner is available with horizontal travels up to a total of 16 ft.

MIDWEST MRSPV ROUNABOUT™ SPOUT POSITIONER TRAVELS AVAILABLE

MRSPV 300- 2 (2') MRSPV 600- 2 (4')

MRSPV 900- 2 (6') MRSPV 1200- 2 (8')

MRSPV 1800- 2 (12') MRSPV 2500- 2 (16')

MAIN PAN: ASTM-A-36 carbon steel 3/16" thick all welded box construction. Underside of main pan lined with 316L bright finish (2B) stainless steel providing low coefficient of friction between hopper seal and main pan.

PRODUCT INLET AND TOP SUPPORT PLATE: Top Support plate is robust 3/4" thick A36 plate 36"x48" and is used to support the Roundabout™ and Paragon™ Series Bulk Loading Spout. Support beams (by others) are usually designed into the system and under the support plate parallel to the 36" width of the plate. The product inlet is 16.625" diameter and includes the product inlet venturi. Eight (8) tapped holes in the support plate allows for interface with Vaculoader®, Compaculoader™, Airflo™ Air Gravity Conveyor, or silo withdrawal. A 6" or 8" diameter flanged dust outlet is available as an option for installations without

Vaculoader® or Compaculoader™. NOTE: This MIDWEST system is internally vented and requires no flexible duct.

HORIZONTAL POSITIONING DRIVE: Electric motor positioning drive includes 1/2 HP TEFC motor and reducer mounted under the main pan for weather protection. A rotating NEMA 4 up/down SPDT (2) position limit switch protects the gear reducer from damage by shutting off the motor when full limits of horizontal positioning travel have been reached. This switch must be adjusted in the field after installation and before using. A third limit switch position can be furnished as an accessory for use in automatically stopping the positioner travel in an intermediate position or for providing a signal. A heavy duty chain and sprocket shuttle drive is located under the main pan to drive the positioner hopper from end to end of positioner travel. Refer to drawing for aerated low profile hoppers or contact the factory for hopper configurations other than standard.

ROTATIONAL DRIVE: Electric motor rotating positioner drive allows loadout operator to rotate the Roundabout™ positioner main pan with horizontal drive 350 degrees which doubles the effective horizontal travel. A 3/4 HP 1200 RPM TEFC electric motor rotates the traveling positioner at 8 RPM or 350 degrees in 75 seconds using heavy duty hollow ring gear and motorized pinion gear drive. Rotating movement, controlled with NEMA 4 Rotating Limit Switch which limits movement to 350 degrees. NOTE: Most installations require 180 degree rotation if all hatches are on center of vehicle. Additional rotational movement is used to load railcars with side and center hatches or trucks not positioned accurately left to right on the scale.

SUPPORT PLATE: This A36 structural support plate is 3/4" thick A36 carbon steel and is 36" wide x 48" long. Plate includes drilled and tapped holes per drawing, to allow installation of Vaculoader®, Compaculoader™, Airflo™ Air Gravity Conveyor discharge box or direct silo withdrawal valve. This plate can also support Vaculoader® support legs (MVL 37 and 43 series only) eliminating the need for additional horizontal support beams.

PRODUCT INLET VENTURI: Factory installed inside the inlet of the main support plate, the product venturi is sized to accommodate the product flow from the silo discharge, Airflo™ Air Gravity Conveyor or other methods of conveying product to the Roundabout™ Rotational Spout Positioner. Available in Class IA, II, III, V and VT construction. Three factory engineered product venturi sizes are available to insure that the flow into the positioner hopper is 10 percent less than the flow through the MIDWEST Paragon™ MV Series Retractable Bulk Loading Spout reducing the possibility of aerated product pressurizing the positioner hopper.

POSITIONER TRAVEL: Horizontal travels of 2 feet, 4 feet, 6 feet, 8 feet, 12 feet and 16 feet are available as standard. NOTE: Models indicated are nominal metric sizes. Contact factory for travels other than standard (NSP).

HOPPER: Positioner hopper is 11GA and includes double wall construction to provide smooth flow of product from the inlet venturi into the Paragon™ Series MV Series Bulk Loading Spout. The positioner inner hopper with discharge venturi is 10% larger than positioner inlet venturi for the appropriate MV Series spout.

Specify Class of construction for inner hopper with spout venturi IA, II, III, V or VT available. Hopper top seal includes (4) part labyrinth felt seal 1" x 1" captivated in a rectangular cavity and spring loaded flat wafer springs which apply seal pressure against stainless steel surface under main pan. Hopper includes exclusive **MIDWEST** heavy duty cam rollers with adjustable up/down eccentrics to allow field adjusting of hopper seal against main pan.

HOPPER OUTLET: Interfaces with top of **Paragon™** Series **MV** Retractable Bulk Loading Spouts. Support angles on hopper provide additional support for same **MV** Series loading spout and allows for field leveling. Inner hopper discharge actually becomes the venturi for the **MV** Series bulk loading spout.

CLASSES OF CONSTRUCTION AVAILABLE:

Class I	*Abrasive Fines (High-density AR cross-linked polymer) to 176° F and -40° F
Class I(FG)	*Abrasive Fines (Same as class I except White Food Grade)
Class IA	Mildly Abrasive Granules (A36 carbon steel)
Class IB	*Contamination Free Fines and Pellets (6061 T6 aluminum)
Class II	Abrasive Granules (250 BHN AR steel)
Class III	Stainless Steel Product Flow Area only (304 furnished as standard, 316 available)
Class III(FG)	Food Grade Products (Same as class III with ground and polished welds)
Class IIIA	Stainless Steel all Fabricated Metal Components (304 furnished as standard, 316L available)
Class IIIA(FG)	Corrosive or Non-Contaminate Food Grade Environment (Same as Class IIIA with stainless steel fastings)
Class IVA	High Temperature 177° F to 400° F
Class IVB	High Temperature to 1000° F
Class V	Abrasive Lumps High Impact (400 BHN AR steel)
Class VA	Abrasive Lumps High Impact (400 BHN AR steel Venturi, with integral rockbox to reduce wear)
Class VT	Abrasive Lumps High Impact (Triten™ Hard Coat)

*(NOT AVAILABLE)

PAINT: Mechanical Clean with (3) mils white two part epoxy standard. Consult factory for optional paint systems.

ASSEMBLY: Most models of the **MIDWEST** Internally Vented Spout Positioners are factory tested and shipped completely assembled however, the Rotating Limit Switch(es) must be field adjusted for full end positions of travel. Refer to **MIDWEST** Instruction Manual.

ESTIMATED MECHANICAL FIELD ERECTION: Twelve (12) hours excluding dust piping and structural modifications.

ESTIMATED ELECTRICAL FIELD WIRING: One (1) hour with power available within 7 feet providing prewiring option is purchased.

FIELD SUPERVISION: Erection and/or start up assistance by **MIDWEST** is available at a per diem cost. Consult factory for prices.

INSTRUCTION MANUAL: **MIDWEST** provides two Installation Operating and Maintenance Manuals, one shipped with equipment and one forwarded to the Purchasing Department at time of shipment. Additional copies can be purchased at additional cost.

CAUTION: Many dry bulk products contain explosive dust. **MIDWEST** offers explosion proof (XP) electricals as an option for all electrical components and PLC controls. Intrinsically safe barriers are also available for hazardous areas. Consult factory for additional information and pricing.

OPTIONS AVAILABLE:

DUST OUTLET: Flanged dust outlet (non **Vaculoader®** or **Compaculoader™**) 6" or 8" diameter sized by **MIDWEST**, is used to place the **Roundabout™** positioner, **Paragon™** loading spout and vehicle being loaded under a negative pressure reducing or eliminating dust. Includes air vibrator mounting pad for (1) pneumatic vibrator.

LOW PROFILE HOPPER: This option is available for applications with limited head room or to reduce the height of the silo if used in new construction. Low profile hopper is aerated to provide a cushion of air for certain products such as cement, flyash, lime, etc. and to assist in the flowability of the product through the system and into the vehicle. The low profile hopper includes an aeration blower installed and piped.

AUTOMATIC RETURN TO CENTER FEATURE: With appropriate push button installed in operator control panel or pendant the spout positioner can automatically be returned to the center position after each loading has been completed.

PAL™ PROGRAMMABLE AUTOMATED LOCATOR: This optional **PAL™** automatic hatch finder is located on the **Paragon™** series loading spout and automatically seeks and locates an open truck hatch. Operator actuated, this hatch finder will "hunt" for an open hatch in both directions of travel. When activated, the **Paragon™** Series Bulk Loading Spout will lower down to a point 6" above the truck hatch and begin seeking an "opening". When found the loading spout will lower down and into the hatch. Slack cable limit switch contact will inform the operator that the silo withdrawal valve can be opened and loading can begin. Optional green "ready to load" light can be included in the control panel or pendant or the system can be completely automatic with the slack cable limit switch signals automatically opening the product withdrawal valve.

PREWIRING/PREPIPING: **MIDWEST** Internally Vented Spout Positioner accessories can be prewired to a common NEMA 4X junction box with a numbered terminal strip located on main pan. The drive motor is not prewired unless specified.

MOTOR PREWIRING: Spout positioner motors can be prewired to a common NEMA 4X junction box near the accessory prewiring junction box and to also accept the intermediate spout motor prewiring

UTILITY FESTOONING: This rolled diamond rail with trolleys provides organized utilities including power and control cables as well as pneumatic hose for pneumatic vibrators or **MIDWEST** product trimmers. Complete with short tangent allowing space for trolley parking. Refer to **MIDWEST** drawing. Consult factory for various diameters available and for inlet transitions used to reduce diamond rail diameter. Available with MCC motor controls and special mounting plates.

OPERATOR CONTROLS AND MOTOR CONTROLS (MCC): Available for all models. Refer to **MIDWEST** Electrical Options. Consult factory for pricing.

ACCESSORIES:

NOTE: Accessory items are shipped in kit form to be field installed however, are factory installed if **MIDWEST** prewiring option is purchased.

LIMIT SWITCH, THIRD INTERMEDIATE POSITION: Provides intermediate signal to stop hopper movement at some point between each end of horizontal travel limits.

OVER TRAVEL LIMIT SWITCH KIT: Avoids positioner hopper over travel if rotating limit switch is not adjusted properly.

AIR VIBRATOR KIT "A" : For positioners with **Vaculoader®** or **Compactuloader™** and without flanged dust outlet. One (1) piston type air vibrator can be located on sloped side of hopper to vibrate loose product from inside product area and dust withdrawal

surfaces during or after loading. Vibrator(s) are controlled by a 120 VAC NEMA 4 X solenoid valve and are connected by a flexible air line festooned on the outside of hopper. Air supply and field connection to valve are the customers responsibilities. Dry air consumption 6 CFM @ 45 to 100 PSI required for peak performance. NOTE: Not required for low profile hoppers.

AIR VIBRATOR KIT "B" : Same as Air Vibrator kit "A" except includes (2) piston type air vibrators. Applicable to positioners using flanged dust outlet, ie; non **Vaculoader®** or **Compactuloader™** applications.

FILTER REGULATOR LUBRICATOR (VIBRATORS): Includes .5 (1/2") NPT maintenance valve with lockout feature.

NOTE: Positioner hopper includes one (1) air vibrator mounting pad on sloped side of hopper as standard.

Technical specifications are subject to change without prior notification

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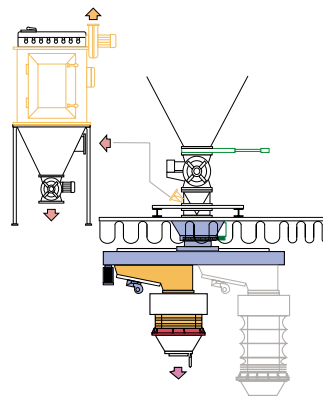
EQUIPMENT INDICATED IN SOLID COLOR IS INCLUDED IN THIS TECHNICAL SPECIFICATION.

EQUIPMENT OUTLINED IS AVAILABLE. CONSULT **MIDWEST** FOR DETAILS.

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LTD



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TECHNICAL DATA

MRSPV PARAGON™ SERIES

INTERNALLY VENTED ROUNDABOUT™ ROTATING SPOUT POSITIONER

Loading Capacities

PRODUCT	TEMP	DENSITY (PCF)	LOAD RATE STPH	MTPH

SCREEN ANALYSIS

%
 IN/MM
 Microns
 Blaine

MODEL	TRAVEL	WEIGHT
<input type="checkbox"/> MRSPV 300-2	2' (305)	1051 LBS (461) KG
<input type="checkbox"/> MRSPV 600-2	4' (610)	1125 LBS (511) KG
<input type="checkbox"/> MRSPV 900-2	6' (914)	1264 LBS (575) KG
<input type="checkbox"/> MRSPV 1200-2	8' (1219)	1600 LBS (727) KG
<input type="checkbox"/> MRSPV 1800-2	10' (1829)	2025 LBS (920) KG

Standard shipping container shipped completely assembled and inverted, strapped to wood skid.

Classes of Construction Available:

- Class I **Abrasive or Corrosive Fines:** (High-density AR Cross-Linked Polymer) Temperature Rating: to +176 F, -40 F. Product Flow Area.
- Class IFG **Abrasive Fines:** Same as Class I except White Food Grade Polymer.
- Class IA **Non-Abrasive Fines:** A36 Carbon Steel Product Flow Area.
- Class IB **Contamination Free Fines and Pellets:** Aluminum Construction 6061-T6 Castings, Extrusions and/or Machined (spun).
- Class II **Abrasive Granules:** 250 BHN AR Steel, Product Flow Area.
- Class III **Corrosive Fines, Granules, Soft Lumps:** Stainless Steel Product Flow Area, 304 SS, 316 SS, 316 L (2B or 4B) available (specify).
- Class III FG **Food Grade Products:** Same Construction as Class III with Ground and Polished Welds.
- Class IIIA **Corrosive or Non-Contaminate Environment:** Stainless Steel Fabricated Components 304 SS, 316 SS, 316 L 2B and 4B available (specify) Non-Product Flow Area.
- Class IIIA/FG **Corrosive or Non-Contaminate Environment:** Same as Class IIIA with Stainless Steel Fastenings. Non-Product Flow Area.
- Class IVA **Hot Materials:** Temperature of Product being loaded, 177 F to 400 F, High Temp Rhinoflex™ Flexible Outer Spout "Orange" Color.
- Class IVB **Hot Materials:** To 1000 F, Rhinoflex™ Fiberglass, "White" Color.
- Class V **Abrasive Granules and Lumps with Sharp Edges:** High Impact 400 BHN AR Steel.
- Class VA **Abrasive Granules and Lumps with Sharp Edges:** High Impact 400 BHN AR Steel with Rock Box. Applicable to Loading Spout Venturies or (NSP) Inlet Transitions Only.
- Class VT **Abrasive Lumps and High Impact:** Triten™ Hard Coat

CAUTION: Many dry bulk products contain explosive dust. Midwest offers explosion proof (XP) electrics as an option for all electrical components and PLC controls. Intrinsically safe barriers are also available for hazardous areas. Consult factory for additional information and pricing.

NOTE: All standard fastenings are zinc plated to resist surface rust. Stainless steel and grade 8 high strength fastenings are available. Standard loading spout lift rings are cast 6061T6 machined aluminum alloy and are unpainted. Cast malleable steel (painted) and cast stainless steel available. Contact factory for (NSP) cost.

Important

Loading capacities are based on product bulk density of 60 PCF fines and 12 FT/SEC vertical entry velocity. Variations in density and lump size will affect loading capacity. Variations in entry velocity and trajectories other than vertical product entry could cause premature wear in product flow areas. Midwest recommendations for classes of construction are based on product samples supplied.

Shuttle Drive Data

Reducer Capacity: 914 in LBS Ratio 60:1
 Motor: .5 HP RPM Vac 3 PH
 Hz TEFC NEMA 56C Frame
 Horizontal Positioning Velocity: 14 FPM
 Special :

Rotating Drive Data

Reducer Capacity: 2782 IN. LBS RATIO 162:1
 Motor: 1.0 HP RPM VAC
 Three PH HZ TEFC
 Rotation Velocity: 90 Degrees in 18 Seconds
 Special: (NSP)

Accessories

- Limit Switch, Third Intermediate Position
- Air Vibrator Kit: (6 CFM, 45 to 80 PSIG Required)
NEMA 14x Solenoid Valve VAC
- Filter, Regulator, Lubricator w/ Maintenance Valve .5 NPT
- Filter Regulator Lubricator (For Installations with Vaculoder® or Compaculoder™)
- Automatic Return to Center Kit
- PAL™ Programable Automatic Locator (Automatic Hatch Finder)

Options

- Explosion Proof (XP) Electrics, NEMA
- Accessory Prewiring, NEMA
- Motor Prewiring (2) Motors
- Inlet Venting Transition with IN. Venturi
Class Flow Area SQ. IN.
- PAL™ Programable Automatic Locator (Automatic Hatch Finder)
- Intrinsically Safe Barrier (Control Voltage)
- Low Profile Feature: Aeration Air SCFM
@ SPWG HP, RPM Volts
- Other

Air Withdrawal Guide

Consult Midwest for verification
MRSPV Internally Vented Rotating
Spout Positioner

*Based on 60 PCF fines. Add air gravity conveyor aeration and 50% of silo aeration air if applicable.