

TECHNICAL SPECIFICATIONS
MIDWEST International
RETRACTABLE OPEN VEHICLE
and VESSEL LOADING SPOUT
and for OPEN STOCKPILING

TO 1400TPH*

ME36-OV/OS

TECHNICAL SPECIFICATIONS

PARAGON™ SERIES

OPEN VEHICLE LOADING, VESSEL LOADING OR OPEN STOCKPILING

DESIGN CRITERIA: The equipment described in this technical specification is designed to load dry dusty bulk products into open railcars and vessels or for stockpiling of raw materials at high loading rates, and will reduce or eliminate dust in compliance with most federal and local EPA regulations. This equipment is considered by most agencies to be the Best Available Current Technology (BACT) in terms of dust control however, it must be connected to suitable air and dust evacuation equipment.

DESCRIPTION: The **MIDWEST Paragon™** Series Retractable Bulk Loading Spout is designed for loading open vehicles and vessels or can be used for open stockpiling, and will accept dry dusty products through a top flanged inlet from an **Airflo™** Air Gravity Conveyor, **Multiflo™** Screw Conveyor, belt conveyor, drag conveyor or direct silo or bin withdrawal. The spout has its own reversible electric motor to extend or retract the lower spout discharge. The spout vertical travel is sized to reach the lowest floor of an open railcar or vessel. Dust and displaced air are withdrawn through the annular area between the product column and the **Rhinoflex™** Flexible Outer Spout, out through the flanged dust outlet and to a dust collector or scrubber. Consult the factory for a variety of supplemental equipment options and accessories available. The Retractable Bulk Loading Spout flanged dust outlet must be connected to a dust collector or scrubber which must be sized to place the spout and the vehicle or vessel compartment being loaded under a negative pressure or vacuum as recommended by **MIDWEST**, to evacuate dust and air being displaced by the product.

MODEL ME36-OV/OS OPEN VEHICLE OR VESSEL LOADER OR FOR OPEN STOCKPILING

MAIN PAN: ASTM-A-36 carbon steel 1/4 thick all welded box construction with top hinged access door over drive components. Main pan assembly also includes (2) side hinged access doors to allow easy access to the optional slack cable limit switches and drive cables, transfer sheaves and lift pulleys.

PRODUCT INLET: Flanged 18" diameter allows loader to be bolted to a **MIDWEST** Sliding Knife Gate, Withdrawal Valve, **Multiflo™** Screw Conveyor discharge, belt conveyor discharge or **MIDWEST Airflo™** Air Gravity Conveyor discharge box or fabricated transition. Alternate (NSP) flanged product inlets 18"x 18" and 26"x 26" available.

DRIVE: Electric motor drive winch with totally enclosed motor and gear reducer mounted under the main pan for weather protection. (1, 1.5, 2 and 3 HP) motors are used depending upon length of travel and class of construction. A rotating NEMA 4 up/down SPDT (2) position limit switch protects the gear reducer from damage by shutting off the motor at full up or down position. **This switch must be adjusted in the field after installation and before operation begins.** The **MIDWEST** gear reducer and drive components are not covered by warranty until both up and down adjustments have been completed according to the **MIDWEST** Instruction Manual. **Torquemaster™** Cable lifting pulleys are precision machined cast ductile steel and are keyed to the reducer shaft with

machined steel coupling. A (3) point cable lifting system on all **ME** or **(V)** 36's provides a robust lifting winch. Machined lifting bolts are provided on the lift ring for final leveling of the spout discharge. The drive access door on top of retractable spout main pan serves as a maintenance access to all drive components. Cable transfer sheaves are machined steel, oil impregnated bronze brushed and have keepers to prevent the lifting cables from snarling. Four (4) leveling support lugs are provided on top of main pan for leveling and supporting the main pan during installation. **NOTE:** Main pan and lower spout lift ring must be level for proper operation.

***PRODUCT VENTURI:** The **MIDWEST** Venturi is sized to load a maximum of 1400 TPH of 60 PCF product. For throughput capacities other than 1400 TPH consult factory. Throughput capacities are based on a consistent feed rate and entry free fall velocity of product into the spout of a minimum of 12ft/sec. When fully filled with product, the Venturi forms the product into a controlled column reducing or eliminating dust caused by column acceleration. For specifications on materials of construction, refer to next page.

VERTICAL USEFUL TRAVEL: 6 feet to 45 feet standard travels available in 2' increments to 20 feet of travel and 5' increments to 45 feet of travel. Consult factory for travels other than standard.

FLEXIBLE OUTER SPOUT: The **MIDWEST Rhinoflex™** Flexible Outer Spout is constructed of 17 oz. white cross stitched polyester coated fabric (176° F max. to -45° F min.) and is double lock stitched. Alternate 35oz. black rubberized fabric available. 6061-T6 extruded aluminum outer rings and half round 6061-T6 extruded aluminum inner rings are riveted together for strength compressing the fabric into a concave area on the back side of the outer ring. Refer to optional classes of construction for temperature ratings to 1000° F. **MIDWEST** aluminum extrusions have rounded edges to avoid shearing of fabric. Top and bottom rings are secured to the top of the spout and also the lower lifting ring with (4) 3/8 NC lock bolts. All **MIDWEST Rhinoflex™** Flexible Outer Spouts include one (1) 1/8" diameter stainless steel grounding cable riveted to each aluminum outer ring. During operation of **MIDWEST** loading and stacking spouts the life expectancy of the **Rhinoflex™** Flexible Outer Spout is significantly increased if the spout is plumb or vertical plus or minus 2". If operated by pulling out of plumb more than 2" warranty is void.

CAUTION: Each end of the grounding cable includes a lug which must be firmly secured to the lifting ring and the upper main pan to assure continuity and to dissipate static electricity.

FLANGED DUST OUTLET: The **ME36-OV/OS** Retractable Bulk Loading Spout includes one 8" diameter flanged dust outlet which can be installed on either side of the top of the main pan assembly. (Refer to drawing). This flanged dust outlet must be connected to a dust collector or scrubber to obtain successful dust free loading. A second dust outlet can also be provided for special applications. Consult factory for air and dust withdrawal recommendations. Optional use of a front flanged outlet connection is for the installation of the **MIDWEST** Clean Air Fan, refer to **Vacupac™** I MA 30 and 36 series loading spouts with filter modules. **NOTE:** **MIDWEST**

also offers standard **Paragon™** Series compact high efficiency **Vacupac™** stand alone duct collectors sized to evacuate displaced air and dust. Consult factory for details.

LIFTING RING: Cast machined unpainted aluminum alloy lifting ring with mounting holes for Lower Scavenger. Consult factory for available alternate materials of construction. Lifting system is robust (3) point cable pick up suitable for Rotating Trimming Spoon, Product Relief Door Module/or **Chokefeeder®** module (vessel loading applications.)

OUTER SCAVENGER: The **MIDWEST** Outer Scavenger is flanged to connect to the bottom of the lifting ring with (4) 3/8 NC bolts. Class I Scavengers are constructed of low density cross linked white polymer. Other Outer Scavengers are available, including Class IA fabricated from A36 carbon steel and Class III, fabricated from 316L or 304 stainless steel. Specify Class of construction when ordering.

INNER CONES: **MIDWEST** Inner Cones are used for column control. Abrasive resistant cones are available and are attached with 1/4" x 2" flat nylon straps installed approximately 120 degrees apart, or with 1/4" diameter 7X19 wire rope and clamps, depending upon the materials of construction ordered. These cones control the product column over the full length of travel with the lower cone firmly secured inside cast lifting ring. Specify Class I, IA II, III, or V. (Refer to chart below).

CAUTION: Class I polymer cones may require a grounding cable to reduce the possibility of static electrical charges in a hazardous area. Consult factory for details.

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 Environment (Same as Class III A 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 V T	Abrasive Lumps High Impact (Triten™ Hard Coat)

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

ASSEMBLY: The **Paragon™** Series Retractable Bulk Loading

Spout is shipped completely assembled up to 8 feet of travel. Refer to **MIDWEST** Instruction Manual.

ESTIMATED MECHANICAL FIELD ERECTION: Four (4) hours for units shipped completely assembled excluding dust piping. For units over 8 feet of travel approximately (12) to (24) hours are required.

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

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

INSTRUCTION MANUALS: **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) electrics as a n 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

PREWIRING: Retractable Bulk Loading Spout accessories are completely prewired to a common NEMA 4X junction box with a numbered terminal strip located on the main pan assembly. Wiring is contained inside liquid tight conduit or hard piping if required for (XP) applications. (XP) junction boxes are also available.

MOTOR PREWIRING: **MIDWEST** can prewire loading spout drive motor to an independent NEMA 4X or (XP) junction box. NOTE: Usually applies to multiple equipment stackups consisting of loading spout and positioner and/or **Vaculoader™**. **MIDWEST** supplied motor controls (MCC) are also available.

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

ACCESSORIES:

NOTE: Accessories 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 an intermediate set point to shut down product feed or provide an intermediate electrical signal. Example: For stockpiling applications intermediate signal can be used to signal "top of pile" with signal used to shut off conveyor and raise spout to fully retracted position.

SLACK CABLE LIMIT SWITCH KIT: Available when loading open vehicles when spout scavenger makes contact with the side of an open truck. This option includes (2) NEMA 4 lever limit switches which shut off drive motor when contact is made by either switch. Temperature range, (230° F max. to -40° F min).

AUTOMATIC RAISING KIT: As product pile increases in height and pushes **MIDWEST** Flexible Skirt out, the tilt switch probe sends a signal to the Automatic Raising Kit NEMA 4X controller (shipped loose) which signals the spout to raise. Two timers are

included to adjust probe sensitivity and duration of raising mode. Timer (#1) is used to delay signal to prevent accidental tilting and timer (#2) is used to signal motor how high to raise. One (1) probe standard, 2, 3 or 4 optional. stainless steel 6" diameter floatation ball included for light fluffy aerated products.

FLEXIBLE SKIRT: The Standard Flexible Skirt is constructed from neoprene or optional anti-static rubber. Skirt clamps to the lower rim of Outer Scavenger and conforms to product pile, reducing dust emissions around spout discharge and increasing capture velocity. When using the skirt, the automatic raising probe is usually suspended on the outside of the skirt and is activated when the skirt pushes the probe out and at an angle above 10 degrees to engage the lifting motor.

BULLDOG™ FLEXIBLE SKIRT: This heavy duty flexible slitted skirt is manufactured from conveyor belting, is a double skirt, ie; (1) layer inside and (1) layer outside. The outside layer is

"looped and riveted" to provide a very durable lower discharge which conforms to pile. This is a desirable option for loading or stockpiling large lumps.

AIR VIBRATOR KIT: Two (2) piston type air vibrators can be located on lower lifting ring to vibrate loose product from inside of spout after loading. Vibrators are controlled by a 120 VAC or 240 VAC NEMA 4X solenoid valve located on the main pan. Vibrators and solenoid valve are connected by a flexible air line festooned down the back end of the **Rhinoflex™** Flexible Outer Spout. Air supply and field connection to solenoid valve are the customers responsibilities. Plant air consumption 6 CFM (intermittant) @ 50 to 80 psig. NOTE: Electric vibrators are available but less effecient. Consult factory for pricing.

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

Technical specifications are subject to change without prior notification

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

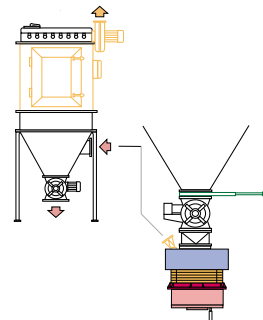
EQUIPMENT OUTLINED IS AVAILABLE. CONSULT **MIDWEST** FOR DETAILS.

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I N T E R

LTD


An
Air
Ecology
Company



Form 0496
Revised: 21 Jan. 2002
Run Date: 21 Jan. 2002
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TECHNICAL DATA

ME36-OV PARAGON™ SERIES

LOADING SPOUT

Loading Capacities

PRODUCT	TEMP	DENSITY (PCF)	LOAD RATE STPH	RATE MTPH

SCREEN ANALYSIS

	%		IN/MM		%		IN/MM
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	VERTICAL TRAVEL	RETRACTED HEIGHT	WEIGHT CLASS I	WEIGHT IA,II,IV,V
<input type="checkbox"/>	06' (1.8)	38" (.97)	1145 (520)	1235 (561)
<input type="checkbox"/>	08' (2.5)	41" (1.04)	1210 (550)	1360 (618)
<input type="checkbox"/>	10' (3.0)	44" (1.12)	1250 (568)	1430 (650)
<input type="checkbox"/>	12' (3.5)	48" (1.22)	1305 (594)	1515 (689)
<input type="checkbox"/>	14' (4.2)	51" (1.30)	1340 (609)	1585 (720)
<input type="checkbox"/>	16' (4.8)	53" (1.35)	1385 (630)	1655 (752)
<input type="checkbox"/>	18' (5.5)	57" (1.45)	1425 (648)	1725 (784)
<input type="checkbox"/>	20' (6.0)	60" (1.52)	1465 (666)	1795 (816)
<input type="checkbox"/>	25' (6.0)	70" (1.78)	1590 (723)	2010 (914)
<input type="checkbox"/>	30' (6.0)	76" (1.93)	1705 (775)	2215 (1007)
<input type="checkbox"/>	35' (10.7)	86" (2.18)	1830 (832)	2430 (1105)
<input type="checkbox"/>	40' (12.2)	92" (2.34)	1945 (884)	2635 (1198)
<input type="checkbox"/>	45' (13.7)			
<input type="checkbox"/>	OTHER			

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. Midwest loading spouts are designed to load product only in the plumb (vertical) position. Consult Midwest for horizontal spout positioners available.

Drive Winch Data

- 1/4" (6.35) or 3/8" (9.52) diameter lift cables, as applicable (3) point pickup 14 FPM lifting velocity (Average)
- 1.0 (1) HP Brake Motor, TEFC Enclosure, 1750 RPM. Reducer 162:1 ratio 5,951 IN/LBS Torque, [] Safety Factor
 - 2.0 (2) HP Brake Motor, TEFC Enclosure, 1750 RPM. Reducer 267:1 ratio 19,700 IN/LBS Torque, [] Safety Factor
 - 3.0 (3) HP Brake Motor, TEFC Enclosure, 1750 RPM. Reducer 250/34:1 ratio 27,417 IN/LBS Torque, [] [] Safety Factor
 - Special or (NSP) []

Dust Outlet Data(1400 STPH, 60 PCF Product = 2526 CFM)

- 8" Diameter: Maximum Throughput 800 STPH=1554 CFM@4466 FMP/V
 - 9" Diameter: Maximum Throughput 1000 STPH=1943 CFM@4405 FMP/V
 - 10" Diameter: Maximum Throughput 1400 STPH=2720 CFM@4147 FMP/V
 - 10.5" Diameter: Maximum Throughput 1400 STPH=2720 CFM@4525 FMP/V
- NOTE: (2) Dust Outlets Available

Accessories

- Limit Switch, Third Intermediate Position
- Slack Cable Limit Switch Kit: DPDT NEMA 4 Standard
- Automatic Raising Kit: NEMA [] Type [] [] VAC
- Air Vibrator Kit: (6 CFM, 45/80 PSI Required) NEMA [] Solenoid Valve [] VAC
- Pneumatic Filter, Regulator, Lubricator [] NPT (Vibrators)
- Flexible Skirt: [] Long
- Operator Controls: NEMA [] IP []
- Motor Controls: NEMA [] IP []
- Special Paint: []

Options

- (NSP) Dust Outlet: [] Refer to Chart (8" dia. Standard)
- Explosion Proof (XP) Electrics, NEMA []
- Accessory Prewiring, NEMA []
- Motor Prewire: [] Motor(s)
- Intrinsically Safe Barrier (For XP Controls)

Air Withdrawal Guide

Consult Midwest for verification ME36-EV. NOTE: Do not exceed 1800 CFM (5184 FPM) through loading spout.

*Based on 60 PCF fines. Add air gravity conveyor aeration and 50% of silo aeration air if applicable. 1400 STPH, 60 PCF materials equals 2720 CFM.

Revised: 17 Oct. 2001
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