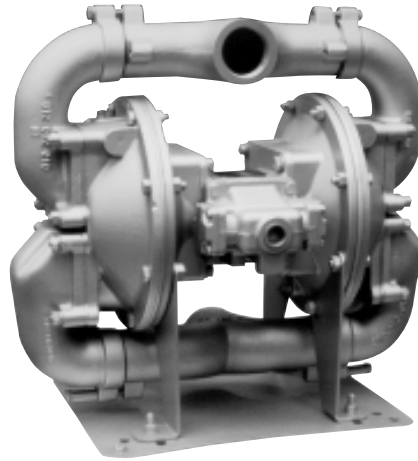


**WARREN
RUPP®**

Quality System
ISO9001 Certified

Environmental
Management System
ISO14001 Certified

IDEX
IDEX CORPORATION



SandPIPER®

FLAP VALVE MSA2 Type 4 MINE PUMP Air-Powered Double-Diaphragm Pump

ENGINEERING, PERFORMANCE
& CONSTRUCTION DATA

INTAKE/DISCHARGE PIPE SIZE 2" (50mm) NPT(F)	CAPACITY 0 to 140 gallons per minute (0 to 530 liters per minute)	AIR-VALVE No-lube, no-stall design	SOLIDS-HANDLING Up to nearly 2" (50mm)	HEADS UP TO 125 psi or 289 ft. of water (8.8 Kg/cm2 or 88 meters)
---	--	---	---	--

Model MSA2 provides all the time-tested SandPIPER® benefits with even more features and benefits designed especially for the mining industries. The air distribution system features a unique, externally serviceable heavy duty pilot valve with replaceable o-rings to simplify maintenance and reduce the costs of repairs due to "dirty" air. Elastomers are of Neoprene or Hytrel®, an exclusive material with superior abrasion resistance qualities and longer flex life for fewer failures and less downtime. As an added quality feature, each manifold is secured with an extra, impact-resistant bolt. The world's best-performing double-diaphragm air powered pump has been made still more dependable and sturdy specifically for the mining industry.

SandPIPER® Benefits:

- Heads to 125 PSI or 289 feet of water.
- Self-priming from dry start.
- Leakproof. No seals or packing glands. No impellers, rotors, gears, or other close-fitting or rotating parts.
- Can run dry indefinitely without damage.
- Explosion-proof. No electrical motors or switches.
- Low internal velocities for trouble-free pumping of abrasives and viscous materials.
- Can be equipped with Warren Rupp Tranquilizer® for pulse-free flow.
- Stops automatically if discharge is closed. Resumes running when line is opened. No by-passes or switches required.
- Infinitely variable flow control up to pump's maximum capacity. Uses only enough air to do the job.

The Unique ESADS+Plus®

Externally Serviceable Air Distribution...PLUS

- No Lubrication needed.
- More tolerant to dirty air, and rough handling.
- Less parts inventory required.
- Most easily serviced in the industry.
- No matched sets of precision components.
- Positive o-ring seal prevents air leakage.
- Easy access to normal-wearing o-rings.
- Cost-effective service.

MATERIALS OF CONSTRUCTION

Model MSA2-A	Manifold Porting			Manifold	Outer Chamber	Inner Chamber	Outer Diaphragm Plate	Inner Diaphragm Plate	Intermediate Housing	Diaphragm Rod	Valve Seat	Hardware	Diaphragm	Flap Valve Material	Manifold Gasket Seating Rings	Shipping Wt. (lbs.)
	Top	Side	Bottom													
DA-4-A			X	AL380DC	AL380DC	AL380DC	PS	PS	356-T6AL	416SS	316SS/B	PS	N	R	N	115
DN-4-A			X	AL380DC	AL380DC	AL380DC	PS	PS	356-T6AL	416SS	316SS/B	PS	N	N	N	115
DR-4-A			X	AL380DC	AL380DC	AL380DC	PS	PS	356-T6AL	416SS	316SS/B	PS	N	H	N	115
DN-4-CI			X	CI	CI	AL380DC	PS	PS	356-T6AL	416SS	316SS/B	PS	N	N	N	115

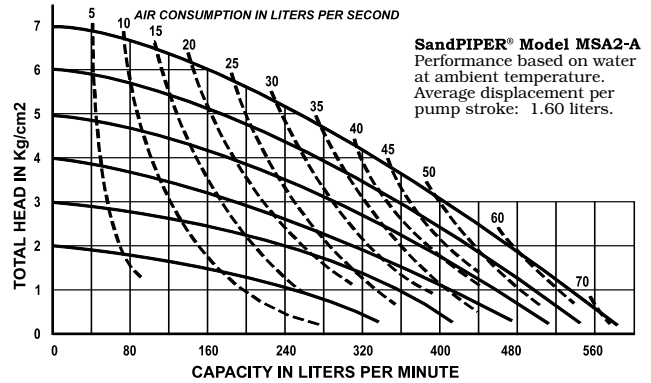
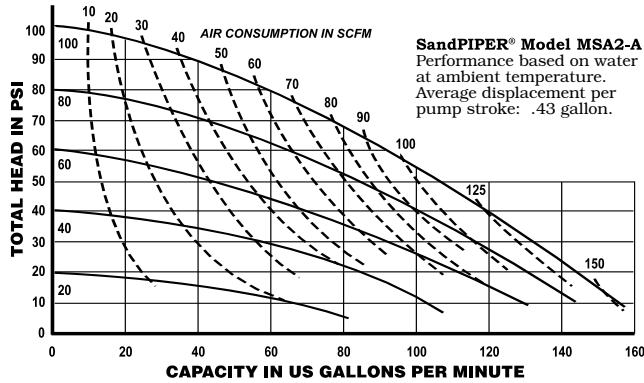
Meanings of Abbreviations:

AL = Aluminum DC = Die Cast N = Neoprene R = Rupplon® 316SS/B = 316SS w/Buna-N Sealing Bead
 CI = Cast Iron H = Hytrel® PS = Plated Steel SS = Stainless Steel
 Hytrel® is a registered tradename of E.I. DuPont SandPIPER® & Rupplon® are registered tradenames of Warren Rupp, Inc.

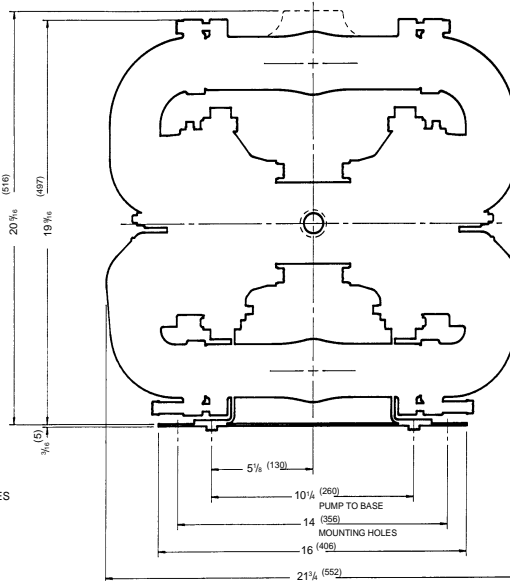
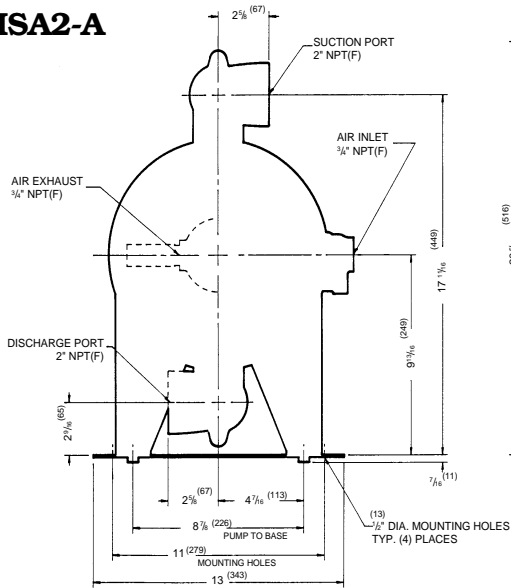
MSA2 FLAP VALVE SandPIPER®

PERFORMANCE CURVES

(SandPIPER® pumps are designed to be powered only by compressed air)
 Temperature Limit: 212°F - 100°C MAXIMUM



MSA2-A



NOTES:

1. Dimension with suction port rotated 90° to vertical position (shown with broken lines)
2. Dimensions in Parenthesis are metric (to the nearest millimeter).

2" NPT(F) Suction and Discharge • 3/4" NPT(F) Air Inlet Port • 3/4" NPT(F) Air Exhaust Port