AirVantage®

ENERGY SAVING TECHNOLOGY

SAVE Energy • **SAVE** Compressor Cost • **SAVE** Operator Cost

US Patent # 5,996,627, 6,241,487 and 7,521,921. Other Patents Pending

Redefining Performance

- *Reduces air consumption up to 50%*
- *Adapts to process conditions*
- *Powered only by compressed air*
- *Saves energy while maintaining flow†*
- *Increases productivity*
- *Reduces compressor maintenance*

AirVantage Models:

Heavy Duty Ball

Standard Duty

Heavy Duty Flap

Hazardous Certified Options

SANDPIPER®
A WARREN RUPP, INC. BRAND

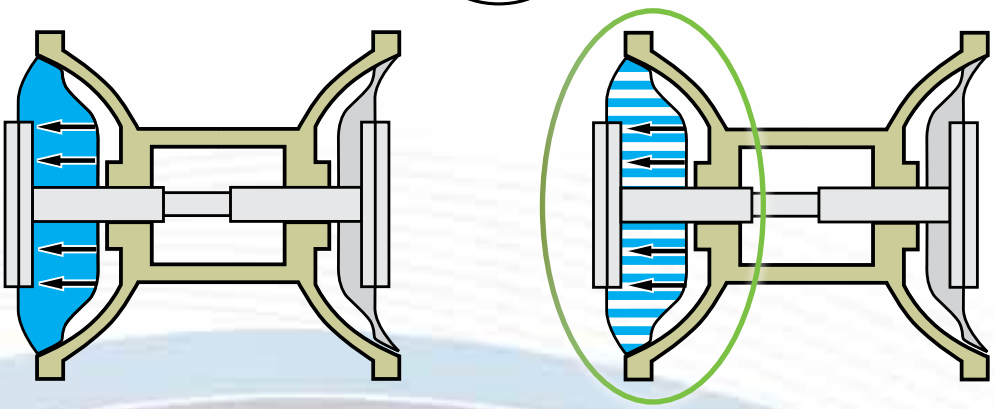
WWW.AIRVANTAGEPUMP.COM

IDEX FLUID & METERING

The AirVantage Difference

AirVantage is a new technology for Air Operated Double Diaphragm pumps that significantly reduces air consumption over conventional AODD pumps.

Conventional **vs.** AirVantage® ENERGY SAVING TECHNOLOGY



Without AirVantage

Conventional AODD pumps fully expand diaphragms to complete pump stroke, causing increased air usage and expense.

With AirVantage

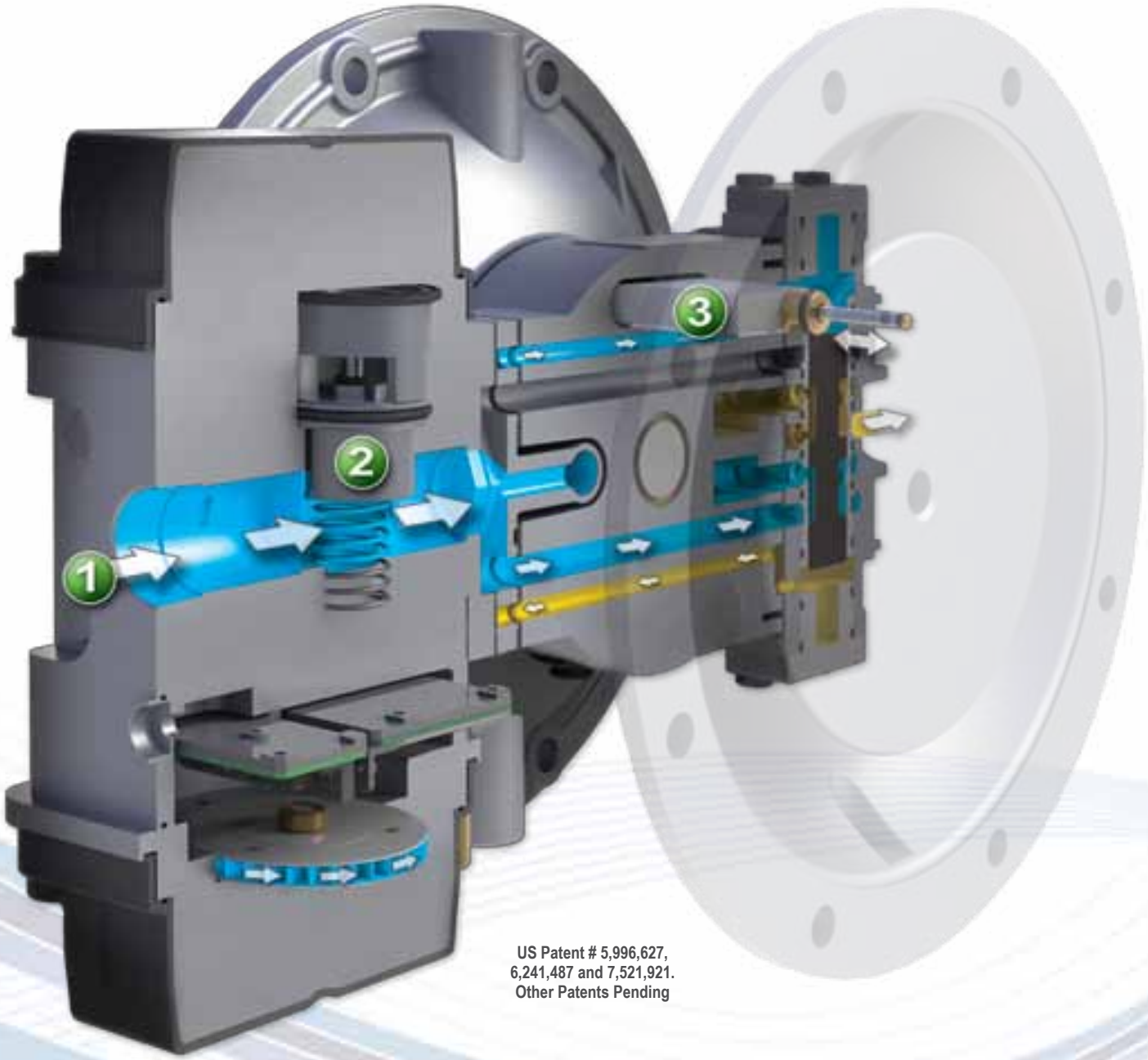
AirVantage uses advanced technology to complete full diaphragm expansion using up to 50% less air while maintaining flow.

Benefits of AirVantage

- ***Reduces air consumption***
  - Field testing shows up to 50% savings over conventional AODD pumps. AirVantage Technology is available with Sandpiper® metallic pumps with discharge line sizes of 2" or greater. Sandpiper center section upgrade kits are also available.
- ***Adapts to process conditions***
  - Using an advanced learning program that receives velocity feedback from an embedded sensor, AirVantage optimizes energy consumption and automatically adapts to changes in system demand, constantly managing energy consumption.
- ***Powered only by compressed air***
  - AirVantage uses a self-contained 12V power generator that converts a tiny portion of compressed air to power system electronics for managing energy.
- ***Saves energy while maintaining flow***
  - Field trials have proven that AirVantage can maintain comparable flow capacity while reducing air consumption saving thousands of dollars in annual energy costs.
- ***Increases productivity***
  - By using less air to operate pumps, AirVantage allows for more compressed air capacity system-wide to run more pumps generating greater productivity and better throughput.
- ***Reduces compressor maintenance***
  - Air compressors with reduced demand need fewer repairs, saving customers thousands of dollars in maintenance and repair parts.

†: Maintains plus or minus 5% flow variation

How AirVantage™ Works



US Patent # 5,996,627,
6,241,487 and 7,521,921.
Other Patents Pending

Step 1

- *Air enters main inlet.*
- *Small amount of air directed to turbine that powers the unit.*

Step 2

- *Air Regulator Valve controls air flow volume.*
- *Air continues on standard path through air system.*

Step 3

- *Sensor monitors pump velocity, sends data to microprocessor.*
- *Microprocessor calculates ideal air usage, regulates air valve.*

US Patent # 5,996,627, 6,241,487 and 7,521,921. Other Patents Pending

AirVantage®
ENERGY SAVING TECHNOLOGY

AirVantage Components

- **Air Regulator Control**
  Contains PowerGen regulator and electro/ pneumatic SMC pilot valve.
- **Mechanical Valve**
  Opens and partially closes as directed by the Velocity Feedback System to save air while maintaining flow.
- **Velocity Feedback System**
  Advanced learning program modulates air flow to optimize energy usage. Automatically adapts to changing process conditions. Green LED light is a diagnostic tool and indicates proper operation.
- **On/Off Switch**
  On/Off switch allows the operator to measure air consumption with or without AirVantage once the pump goes on-line. AirVantage defaults to standard pump performance when in “off” mode.
- **PowerGen**
  Self contained 12V PowerGen module generates power for system using existing air. No need to run electrical or replace batteries.

Certified Best in Class

ISO 9001 QMI REGISTERED QUALITY SYSTEM

ISO 14001 QMI REGISTERED ENVIRONMENTAL MANAGEMENT SYSTEM

Hydraulic Institute

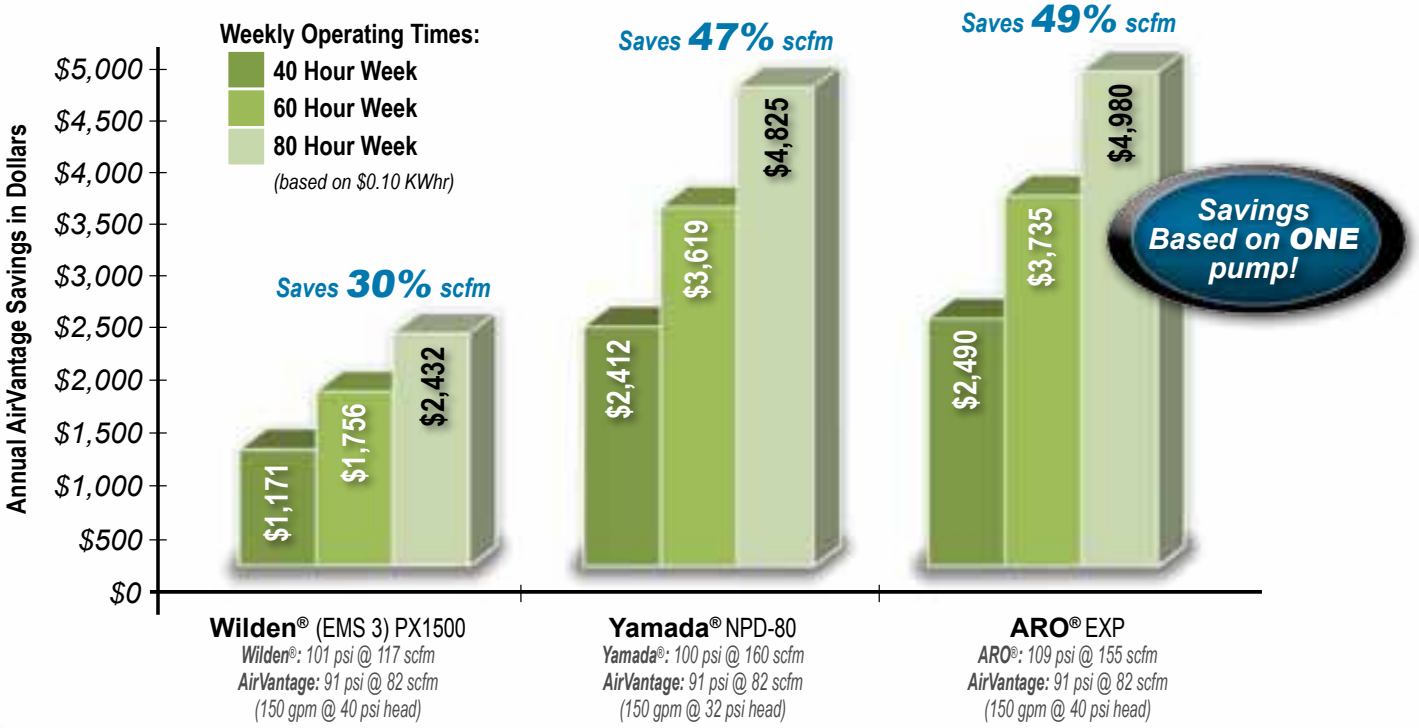
Let us show you how much you can save with our

FREE 30-day trial in your facility.

Receive a complete test report.

AirVantage™ vs. Competition

Annual Savings: AirVantage RS30 vs. Competition



*Comparisons made from published data

Wilden® is a registered tradename of Wilden Pump & Engineering Company a Dover Resources Company
ARO® is a registered tradename of Ingersoll-Rand Company • Yamada® is a registered tradename of Yamada Corporation

AirVantage Saves More Than Energy

Sandpiper AirVantage vs. Standard Pump

Ways You Save with AirVantage	50% Energy Savings	25% Energy Savings
1. Energy Savings (20-50%)	$3,000	$1,500
2. Less Energy Draw From Compressor Systems • Avoid buying additional air compressor	$25,000	$25,000
3. Reduced Air Compressor Maintenance Expense • 50% annually, including spare parts	$2,500	$1,250
4. Reduced Pump Maintenance & Operating Costs	$1,750	$1,750
5. Reduced Decibel Levels 8-10% • Based on single OSHA violation expense	$1,500	$1,500
Total Value Calculated	$33,750	$31,000
Total Value minus Air Compressor	$8,750	$6,000

Results may vary: • Estimates shown are based on a 3" size pump, operating at 40 hours per week using $.10/KWhr
• Average factory air compressor maintenance costs estimated to be $5,000 on repair parts and labor.

In addition to saving energy, these are some examples of how AirVantage can add value to your overall operation:

- When AODD pumps require less energy for operation, there is lower demand for compressed air throughout the facility.
- Lower air compressor demand reduces annual repair parts and maintenance costs.
- Because AirVantage is self-adapting, less time is spent monitoring and manually adjusting the air-valve settings for optimizing energy consumption.
- AirVantage also operates at lower decibel levels, making for a safer work environment.

Hazardous Certified Option

RS20 with Hazardous Certified Option

AirVantage is the only electronic air savings device in the world that is certified for hazardous locations. The ATEX Certified option is rated explosion proof and has passed both ATEX and UL/CSA standards for hazardous duty applications.

Improved Characteristics:

- ATEX valve housing armor to meet explosion-proof guidelines
- Recessed on-off switch with ATEX safety plug
- Static-free borosilicate glass LED lens cover
- Intrinsically Safe electrical fittings for ATEX compliant cables and glands
- ATEX approved circuitry

Definitions:

ATEX: **AT**mospheres **EX**plosibles, European Standard for equipment certified safe to be used in potentially hazardous environments.

UL/CSA: Underwriters Laboratory/Canadian Standards Association, North American standards for equipment certified safe to be used in potentially hazardous environments.

Explosion Proof: Pump prevents transmission of internal explosions by enclosing parts that could ignite the surrounding atmosphere.

Hazardous Duty: Term for our ATEX certified pumps.

AirVantage Applications

Industries:

- Chemical / Petrochemical Processing
- Ceramic Glaze / Slip Processing
- Paints, Inks and Coatings
- Pulp and Paper Converters
- Adhesives Processing
- Industrial / Municipal Wastewater
- Construction / Utilities

Typical Applications & Usage:

Characteristics:	Application Type:	Description:
Long Hours of Operation	Recirculation, Mixing, Batching	Long hours of continuous operation consume the most energy. Small improvements in air consumption make huge impact on bottom line
High SCFM Consumption	Transfer, Loading, Offloading	Opportunities to reduce highest percentage of SCFM consumption
High Air Compressor Costs	Facility air capacity is at a premium	Reducing between 3-7 HP per pump can make a significant difference to compressor operation. *(ex: 40 pumps x 5HP = 200 HP reduction)*
Hazardous Duty ATEX Certified	Recirculation, Mixing, Batching, Transfer, Loading, Offloading, and Processing	*Paints, Solvents, Fuels, Acids, and Hazardous Chemicals*

AirVantage™ Testimonial

Saint Gobain • Niagara Falls, NY

See how AirVantage is saving customers money and how it works for them. If you need more proof, take our FREE 30-Day Trial Challenge and get the exact numbers for your facility.

Grains and Powders Manufacturing Facility
Saint Gobain • Niagara Falls, NY

AirVantage®
ENERGY SAVING TECHNOLOGY

"At Saint Gobain, we took the 30-Day Energy Savings Challenge within our facility and ***reduced our energy cost by 23%*** *at our fluid separation point.*

Fluid separation points at Saint Gobain are the most process-critical applications within our facility. They serve multiple functions, including recirculation and batch transfer. They run 24 hours a day, seven days a week. Over this period of time, AirVantage™ reduced our air consumption by 23% ***while maintaining our desired flow rates.***

It was simple. All we did was install the trial AirVantage™ pump and it did the rest, ***optimizing our energy consumption without special handling or monitoring.*** *As the pump application switched from batch transfer to recirculation to fluid separation, the AirVantage™ self-adjusted to the pressure drops and changing condition-points all by itself, using just the right amount of compressed air to operate our pump.*

At the end of the product trial, test results showed the amount of compressed air the pump consumed with AirVantage™ versus data points collected prior to the product trial. We were surprised to learn that we can save as much as ***$1,200 in energy costs and increase our air compressor capacity by 2.5 HP per pump.***

We were very satisfied with the performance of the new system, and we plan to use AirVantage™ on all AODD pumps in the future."

Rick Klok
Plant Manager
Grains and Powders Manufacturing Facility
Saint Gobain • Niagara Falls, NY

Saint Gobain Statistics:

Industry: Construction Materials

Energy Reduction: 23%

Annual Energy Savings: $1,200

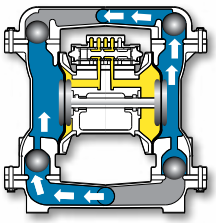
Compressor Gain: 2.5 HP per pump

RS20 with Standard Muffler

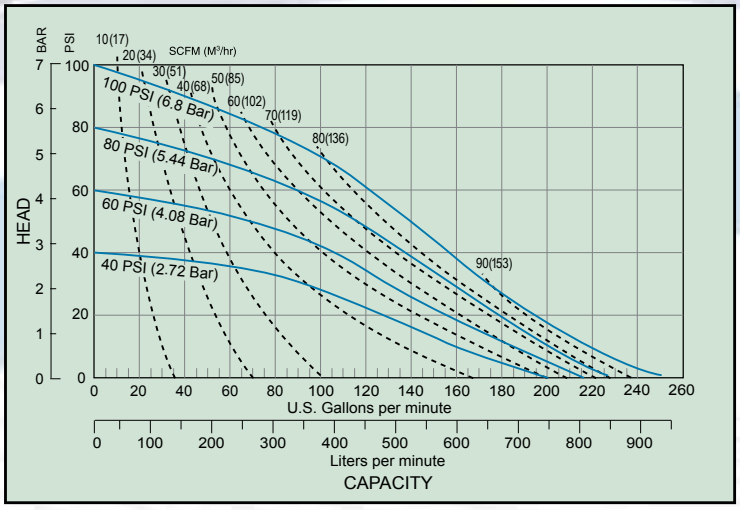
AirVantage™ Standard Duty

RS30

- AirVantage - Standard Duty
- ESADS+Plus®
- All bolted construction
- Top discharge
- Ball check valves
- Durable diaphragm connecting rod
- Light weight - portable
- 90˚ - 180˚ manifold connection rotation
- Solids range +.25" (6mm) to .38" (9.65mm)
- Dry primes up to 20 feet of water
- Complete center section upgrade kits available



Curve: RS30



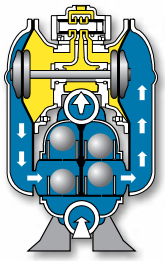
Performance based on the following: elastomer fitted pump, flooded suction, water at ambient conditions. The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.

Characteristics:		Standard Duty AirVantage
Fluid Characteristics	Water (base reference)	Best Type
	Suspended Solids	Best Type
	Non-Suspended Solids	Limitations
	Line Size Solids	Unsuitable
	Sludge / Slurry	Suitable
	High Viscosity (Flowable Fluids)	Suitable
	Erosion / Abrasive Fluids - High	Suitable
	Erosion / Abrasive Fluids - Moderate	Suitable
	Erosion / Abrasive Fluids - Low	Best Type
	Corrosion	Suitable
Installation	Permanent	Suitable
	Portable	Best Type
	Containment / Prevention	Limitations
	Flooded Suction	Suitable
	Suction Lift	Suitable
	Submerged	Suitable
Duty	Intermittent / On-Demand	Best Type
	Continuous	Suitable

Pump Model	Pump Design	Pipe Size		Capacity		Air Valve: No-lube, No-stall Guarantee	Solids Handling Up to		Heads - Up to				Displacement per Stroke		ATEX Certified Option
		Intake	Discharge	GPM	LPM		Inch	MM	PSI	ft. of Water	BAR	M	Gallon	Liter	
RS20	Standard Duty	2" (internal)	2" (internal)	0-145	0-549	Yes	.25	6	125	289	8.6	88	.42	1.59	Yes
RS30	Standard Duty	3" (internal)	3" (internal)	0-235	0-889	Yes	.38	9.65	125	289	8.6	88	1	3.78	Yes

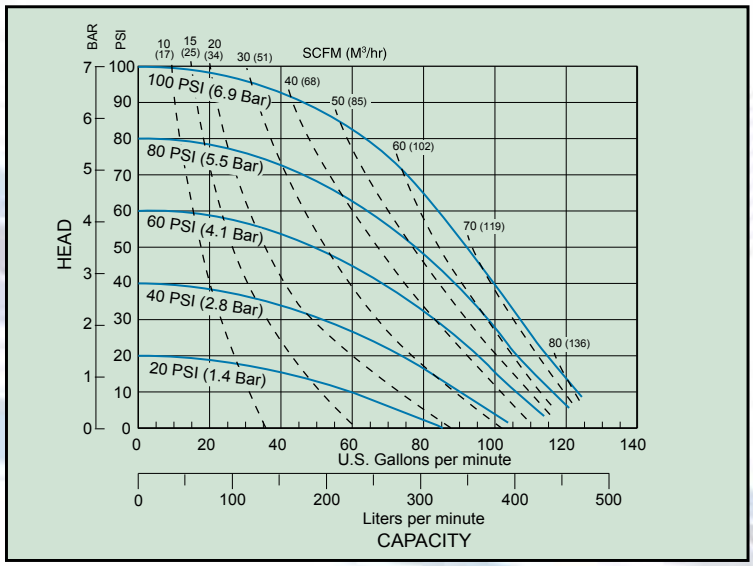
AirVantage™ Heavy Duty Ball

RHDB2
with Standard Muffler



- AirVantage - Heavy Duty Ball
- ESADS+Plus®
- All bolted construction
- Bottom or top discharge
- Thick wall construction
- Durable diaphragm connecting rod
- Horizontal & vertical manifold connections
- Solids up to .375 (9mm)
- Dry primes up to 20 feet of water
- Free standing support base
- HD extended wear package
- Complete center section upgrade kits available

Curve: RHDB2



Performance based on the following: elastomer fitted pump, flooded suction, water at ambient conditions.
The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.

Characteristics:		Heavy Duty Ball AirVantage
Fluid Characteristics	Water (base reference)	Best Type
	Suspended Solids	Best Type
	Non-Suspended Solids	Best Type
	Line Size Solids	Unsuitable
	Sludge / Slurry	Best Type
	High Viscosity (Flowable Fluids)	Best Type
	Erosion / Abrasive Fluids - High	Best Type
	Erosion / Abrasive Fluids - Moderate	Best Type
	Erosion / Abrasive Fluids - Low	Best Type
	Corrosion	Suitable
Installation	Permanent	Best Type
	Portable	Suitable
	Containment / Prevention	Limitations
	Flooded Suction	Best Type
	Suction Lift	Suitable
	Submerged	Suitable
Duty	Intermittent / On-Demand	Best Type
	Continuous	Best Type

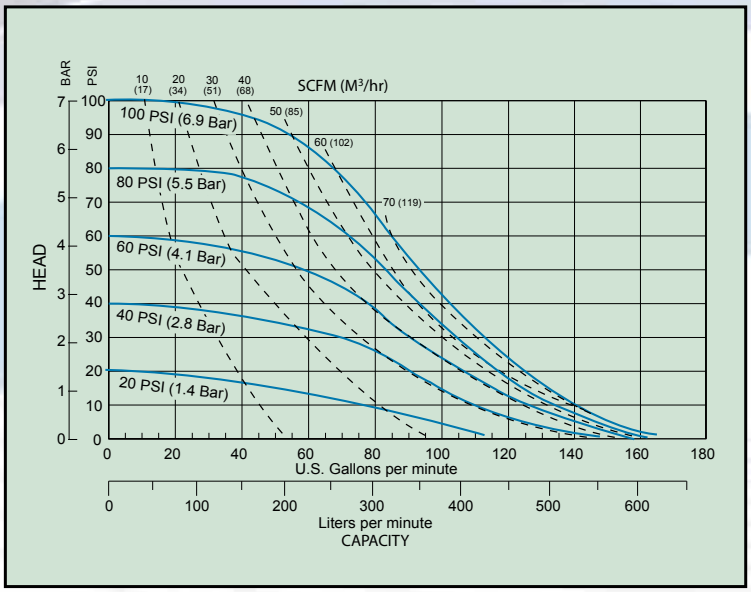
Pump Model	Pump Design	Pipe Size		Capacity		Air Valve: No-lube, No-stall Guarantee	Solids Handling Up to		Heads - Up to				Displacement per Stroke		ATEX Certified Option
		Intake	Discharge	GPM	LPM		Inch	MM	PSI	ft. of Water	BAR	M	Gallon	Liter	
RHDB2	Heavy DutyBall	2" (internal)	2" (internal)	0-130	0-492	Yes	.375	9	125	289	8.6	88	.47	1.77	Yes

AirVantage™ Heavy Duty Flap

RHDF2

- AirVantage - Heavy Duty Flap
- ESADS+Plus®
- All bolted construction
- Bottom discharge
- Flap check valves
- Thick wall construction
- Durable diaphragm connecting rod
- 90˚ - 180˚ manifold connection rotation
- Solids up to 2" (50mm)
- Dry primes up to 24 feet of water
- Free standing support base
- HD extended wear package
- Complete center section upgrade kits available

Curve: RHDF2



Performance based on the following: elastomer fitted pump, flooded suction, water at ambient conditions.
The use of other materials and varying hydraulic conditions may result in deviations in excess of 5%.

Characteristics:		Heavy Duty Flap AirVantage
Fluid Characteristics	Water (base reference)	Best Type
	Suspended Solids	Suitable
	Non-Suspended Solids	Best Type
	Line Size Solids	Best Type
	Sludge / Slurry	Best Type
	High Viscosity (Flowable Fluids)	Suitable
	Erosion / Abrasive Fluids - High	Best Type
	Erosion / Abrasive Fluids - Moderate	Best Type
	Erosion / Abrasive Fluids - Low	Best Type
	Corrosion	Suitable
Installation	Permanent	Best Type
	Portable	Best Type
	Containment / Prevention	Limitations
	Flooded Suction	Suitable
	Suction Lift	Best Type
	Submerged	Suitable
Duty	Intermittent / On-Demand	Best Type
	Continuous	Suitable

Pump Model	Pump Design	Pipe Size		Capacity		Air Valve: No-lube, No-stall Guarantee	Solids Handling Up to		Heads - Up to				Displacement per Stroke		ATEX Certified Option
		Intake	Discharge	GPM	LPM		Inch	MM	PSI	ft. of Water	BAR	M	Gallon	Liter	
RHDF2	Heavy Duty Flap	2" (internal)	2" (internal)	0-165	0-625	Yes	2	50	125	289	8.6	88	.48	181	Yes

AirVantage™ Construction Options

Construction Options: AirVantage RS20 & RS30

Diaphragm Material (temp range)	Wetted Material	Valve Material	Seat Material	Options
EPDM *(280°F / -40°F, 138°C / -40°C)*	**Alloy C** (Hastelloy® Equiv.)	**EPDM**	**Aluminum**	**ATEX Certified**
FKM (Fluoracarbon) *(350°F / -40°F, 177°C/ -40°C)*	**Aluminum**	**Neoprene**	**Carbon Steel**	**AirVantage:** PowerGen or 110V electric plug-in
Neoprene *(200°F / -10°F, 93°C / -23°C)*	**Cast Iron**	**Nitrile**	**EPDM**	**Kit:** 10-30VDC Pulse Output Kit
Nitrile *(190°F / -10°F, 88°C / -23°C)*	**Stainless Steel**	**PTFE**	**FKM**	**Kit:** 110/120 or 220/240VAC Pulse Output Kit
Polypropylene *(180°F/ 32°F, 82°C/ 0°C)*		**Santoprene®**	**Neoprene**	**Kit:** Stroke Indicator Pins
Santoprene® *(275°F / -40°F, 135°C / -40°C)*			**Nitrile**	**Porting:** NPT Threads
Virgin PTFE *(220°F / -35°F, 104°C / -37°C)*			**PTFE**	**Porting:** BSP (Tapered) Threads
			Stainless Steel	**Porting:** Raised Face 150# Threaded ANSI Flange

Construction Options: AirVantage RHDB2

Diaphragm Material (temp range)	Wetted Material	Valve Material	Seat Material	Options
EPDM *(280°F / -40°F, 138°C / -40°C)*	**Aluminum**	**EPDM**	**Stainless Steel**	**ATEX Certified**
FKM (Fluoracarbon) *(350°F / -40°F, 177°C/ -40°C)*	**Cast Iron**	**FDA Nitrile**	**Stainless/EPDM**	**AirVantage:** PowerGen or 110V electric plug-in
Neoprene *(200°F / -10°F, 93°C / -23°C)*	**Stainless Steel**	**FKM**		**Kit:** 10-30VDC Pulse Output Kit
Nitrile *(190°F / -10°F, 88°C / -23°C)*		**Hytrel**		**Kit:** 110/120 or 220/240VAC Pulse Output Kit
Polypropylene *(180°F/ 32°F, 82°C/ 0°C)*		**Neoprene**		**Kit:** Stroke Indicator Pins
Santoprene® *(275°F / -40°F, 135°C / -40°C)*		**Nitrile**		**Porting:** NPT Threads
Virgin PTFE *(220°F / -35°F, 104°C / -37°C)*		**PTFE**		
UHMW Polyethylene *(180°F/ 32°F, 82°C/ 0°C)*		**Santoprene®**		
		Urethane		

Construction Options: AirVantage RHDF2

Diaphragm Material (temp range)	Wetted Material	Valve Material	Seat Material	Options
EPDM *(280°F / -40°F, 138°C / -40°C)*	**Aluminum**	**EPDM**	**Stainless Steel**	**ATEX Certified**
FKM (Fluoracarbon) *(350°F / -40°F, 177°C/ -40°C)*	**Cast Iron**	**FDA Nitrile**	**Stainless/EPDM**	**AirVantage:** PowerGen or 110V electric plug-in
Neoprene *(200°F / -10°F, 93°C / -23°C)*	**Stainless Steel**	**FKM**		**Kit:** 10-30VDC Pulse Output Kit
Nitrile *(190°F / -10°F, 88°C / -23°C)*		**Hytrel**		**Kit:** 110/120 or 220/240VAC Pulse Output Kit
Polypropylene *(180°F/ 32°F, 82°C/ 0°C)*		**Neoprene**		**Kit:** Stroke Indicator Pins
Santoprene® *(275°F / -40°F, 135°C / -40°C)*		**Nitrile**		**Porting:** NPT Threads
Virgin PTFE *(220°F / -35°F, 104°C / -37°C)*		**PTFE**		
UHMW Polyethylene *(180°F/ 32°F, 82°C/ 0°C)*		**Santoprene®**		
		Urethane		

Hastelloy® is a registered trademark of Haynes International, Inc. • Santoprene® is a registered tradename of Exxon Mobil Corp.

Optional Accessories:

Surge Suppressors
Maintains a constant air cushion volume for the most effective surge suppression.

Air Dryer
Removes 99% of the water, rust and other contaminants in compressed air lines.

Speed Control
Accurate control of variable flow rates with electric speed control system.

Filter/Regulators
Clean, dry air optimizes AODD pump operation and reduces maintenance.

AirVantage®
ENERGY SAVING TECHNOLOGY

FREE 30-DAY TRIAL

FREE 30-DAY TRIAL

Take the AirVantage Challenge, contact your local Sandpiper distributor to schedule a ***FREE*** on-site analysis.

Only AirVantage goes beyond talking and shows you how much you can save by putting our pump in your facility for ***FREE.***
Its as easy as 1-2-3.

1. Contact Your Local Distributor

- Tell them you want to take the FREE AirVantage Challenge.

2. Schedule a FREE Evaluation

- We install monitors on your system to evaluate current air consumption (SCFM).
- Then we install AirVantage and evaluate air consumption (SCFM).

3. Review your FREE Test Results

- Data from the on-site testing is presented in a comprehensive report.
- We review the report with you and show how AirVantage can save you money.
- We provide you with a savings estimate.

We install our monitor to your system and evaluate air consumption (SCFM). Then we install AirVantage and show you the results.

---

5 YEAR LIMITED WARRANTY

GUARANTEED AIR VALVE PERFORMANCE

Distributed By:

PRINTED WITH SOY INK

This eco-friendly product is printed using soy-based inks on paper which is acid-free, contains 55% recycled content including 30% post-consumer waste, is bleached without using chlorine and the wood pulp is harvested from sustainable forests.

SANDPIPER®
A WARREN RUPP, INC. BRAND
PH: 419.524.8388 • Fax: 419.522.7867 • www.airvantagepump.com
Warren Rupp, Inc., A Unit of IDEX Corp. • 800 N. Main St. • P.O. Box 1568 • Mansfield, OH 44901 USA

IDEX FLUID & METERING
spav-rev0810