HAVER & BOECKER



DIE MASCHINENFABRIK

A SYMPHONY OF TECHNOLOGY MAKE YOUR TEAM THE CONDUCTOR OF YOUR PACKING PROCESS



A SYMPHONY OF TECHNOLOGY

Ladies & Gentlemen, welcome to your concert "A Symphony of Technology". My name is Q. Q is short for QUAT²RO[®]. You cannot see me, but you can hear me, and you can definitely experience me. I am your digital assistant. My job is to make you the conductor of your very own "Symphony of Technology". Together we will combine ability, diversification, harmony and the right timing to beauty.

First, let me introduce you to today's artists. Playing the base, we have "ROTO", short for ROTO-PACKER[®]. Playing the violin today is "RADI" short for RADIMAT[®]. Playing the guitar today is "AMI", short for AMICUS[®]. AMI is new to our orchestra.

ROTO, RADI and AMI will play a very special concert for you. Fully automatically they will identify the product you wish to pack by scanning the bag, they will then depalletize the empty bags, feed them into the bag applicator, apply the bags to the packing machine and simulate the packing process. Your job is to conduct them!





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THE ROTO-PACKER® THE ORIGINAL

In industrial processes, it is like in sports: You can only achieve peak performance if your heart function is adapted to the task at hand. The heartbeat of any process is generated by the machine technology that drives it. Do not compromise when it comes to the most important organ of your process. Make sure that the technology you use is adapted to your product and not the other way around. The development of our technology brands is driven by precisely this conviction and by the passion to make you as successful as you want to be.

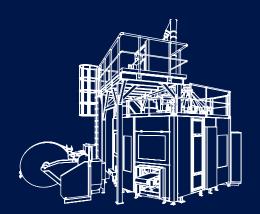
Our recommendation for the heartbeat of your perfect packing process: The original ROTO-PACKER[®] - the most advanced packing machine for industrial goods of our time.

The ROTO-PACKER[®] RS series packs your cement, building material or chemical products into formed, filled, sealed (FFS) bags, using ADAMS[®] technology.

The ROTO-PACKER[®] RV series packs your cement, building material or chemical products into valve bags. The valve bags can be made of paper, woven PP or even film.



YOUR FULLY AUTOMATIC FORM-FILL-SEAL LINE FOR POWDER – FROM TUBULAR FILM TO PERFECT BAGS



ROTO-PACKER® RST/RSL ADAMS® EDITION

The rotating high-performance system with up to 10 filling spouts achieves maximum performance when filling your powder products into PE bags.

PAGES 18|19

THE RS-SERIES

The ROTO-PACKER® RS series, with up to 10 filling spouts, packs your cement, building material or chemical products into formed, filled, sealed (FFS) bags at rates from 400 to 1,200 bags/hr (7-20 bags/min.), using ADAMS® technology. The result is a fully recyclable packaging with excellent protection for your product from weather conditions. In other words: The ADAMS® film bag is weatherproof, safe and profitable.



THE GAME CHANGER WEATHERPROOF. CLEAN. PROFITABLE.

With ADAMS[®] technology, HAVER & BOECKER has revolutionized the packing market worldwide. The polyethylene bags not only look classy, they are also tear-resistant and weatherproof. In this way, they protect the valuable contents and strengthen the end consumer's trust in the manufacturer and its brands. This also benefits profitability. Less breakage during transport. Because the bags are weatherproof, they can be stored for longer and even outdoors – which saves even more costs. The bags are also easy to empty, re-closeable and completely recyclable. And another significant advantage: the ADAMS[®] systems avoid dust during filling, which would otherwise contaminate working areas. The bag is formed in the machines from a prefabricated polyethylene tubular film, after which the product is filled and the bag is fully closed. The size of the packaging is variable; anything between 5 and 30 kilos will work. Speed is of the essence. Originally developed for cement plants, ADAMS[®] now fills a wide variety of building products, minerals and chemicals worldwide.



FROM THE TUBULAR FILM TO PERFECT BAGS

1



The tubular film

The polyethylene bags are delivered as film (PE side gusseted tubular film) on rolls, picked up on a carrier and fed manually into the machine.



The printing

The versatile marking systems ensure reliable and positionally accurate printing with your individual marking. We adapt this process step exactly to the speed requirements of the machine. Empty bag printing with laser (CO_2 + fiber laser), thermal transfer or labeler and full bag printing with inkjet are optionally available.



The bag scanner

The optional bag scanner scans the QR code printed on the film to ensure that the machine operator is using the correct bag roll selected for the product to be filled. QR codes can additionally be used for product and bag tracing.





The bag manufacturing: corner welding and bottom seam welding

Due to the diagonal welding of the side gussets, the bag bottoms are optimally formed. Among the advantages of corner welding are improved bag geometry, higher bag strength and very good stackability. This attractive positioning options on pallets, both in terms of storage positioning options on pallets. The machine automatically adjusts to different bag lengths as soon as the corresponding data have been entered. The system variably compensates for the bag lengths. Separated by a knife the bag is open at the top.



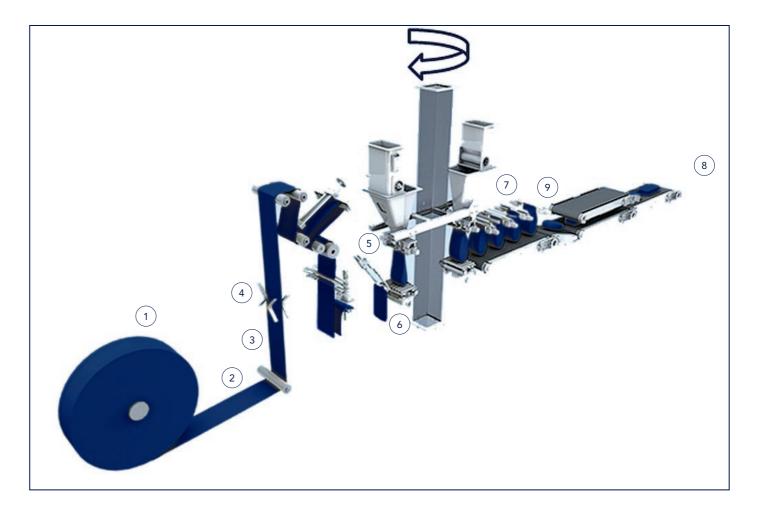
The hexagon filling spout

The bag gripper clamps the bag chest tight to the hexagonal filling spout, reesulting in a clean filling process.



The filling and bag closure

The combined MEC[®] control and weighing electronics - a development of HAVER & BOECKER - ensures exact filling quantities. Product compaction inside the bag is a fundamental requirement for achieving a clean and efficient final result. Inner and outer vibration compactors provide the required product compaction. The contents of the bags are efficiently compacted during filling. This reduces costs: compacted bag contents mean less volume and therefore less film.





The full-bag transport The filled bags are forwarded in an upright position, closed and placed on the conveyor belt.

(8)



The quality control



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(9)



The check-weigher for the "bag-check" with weight and closure control.



The bag forming section

The belt conveyor consists of various adjustable elements, that ensure proper filling and increase process reliability. By using a pressing belt, the filled and sealed bags are formed precisely and can thus be palletized perfectly.



CHOOSE YOUR FILLING MODULE FOR YOUR RS-SERIES:

The properties of your product determine the filling module. If you are packing fine powders, you'll choose the T-module. The "T" stands for "turbine", which means impeller. The product is transported into the bag by means of a turbine. The T-module is available in vertical and horizontal versions.

If you are packing mixed products that differ in grain size, select the L-module. "L" stands for "air". In this process, the product is conveyed from the pressure chamber into the bag by means of air pressure. The L-module is available in two versions, either with an angled or a fully ventilated base plate in the pressure chamber.

We offer the turbine filling technology and the air filling technology as a ST-module and a SL-module for the use of tubular film.

The two RS-modules are equipped with either a vibrating bottle or a vacuum lance to optimize deaeration during the filling process.

SL-Module (air) Tubular Film



ST-Module (turbine) Tubular Film



TECHNICAL DATA

THE ROTO-PACKER® RST/RSL ADAMS® EDITION

The rotating high-performance system with up to 10 filling spouts achieves maximum performance when filling your powder products into PE bags.

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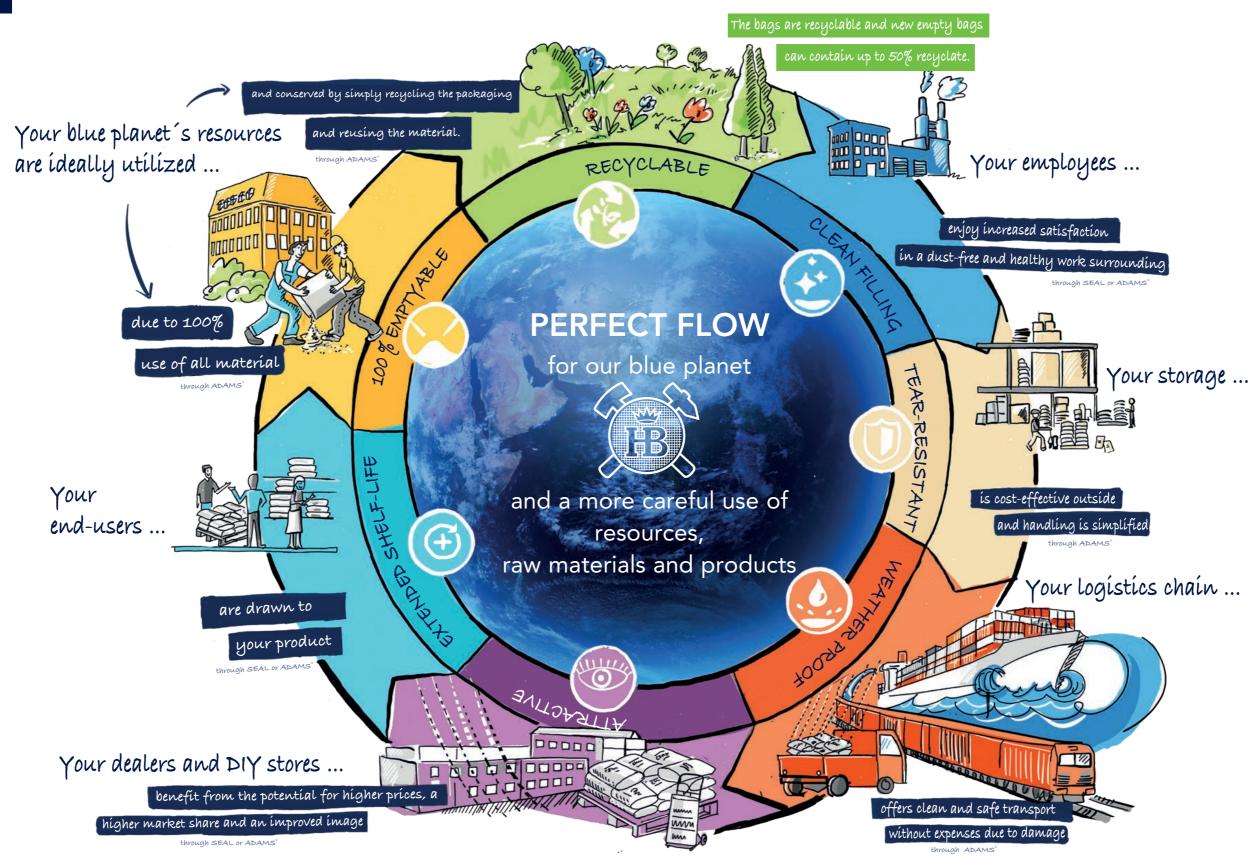
	2900000 000000		Chro		0000	
Number of spouts	Performance bags/hr per 25 kg	Performance class	Intuitive operation	Plug & Pack	Product variety	min./max. bag weights
10 (5) 8 (4) 4 (3), (2), (1)	up to 1,200	24/7	yes	yes	Up to 60 mm grain size	5 - 30 kg
	00		Sample			$\langle \bigcirc \rangle$
Bag sizes in mm	Range film thickness	Delivery of tubular film	Sample-bag function	Handle punch	Vibrating bottle	Hexagonal dust tight filling spout
width: 210 - 420* length: 350 - 710 550 - 910	100-200 μm	possible option	yes	possible option	yes	yes

 * Actual width range depends on bag material and filling spouts.



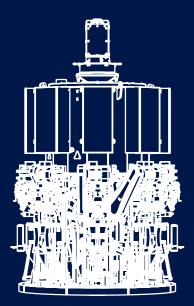
With our sustainability campaign "Planet Blue", we're directing our products and solutions towards a world in balance.





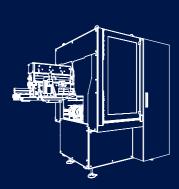
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YOUR FULLY AUTOMATIC VALVE BAG LINE – FROM EMPTY TO FULL BAG



ROTO-PACKER® RVT/RVL

The rotating high-performance system with up to 16 filling spouts, equippable with the ultra- line. It shoots the bags onto the sonic SEAL device for welding the valve shut after the filling process, achieves maximum performance when filling your products into valve bags.



RADIMAT® BAG APPLICATOR

The RADIMAT[®] bag applicator automates your rotating filling filling spouts of the packaging machine mechanically with a maximum performance of 6,000 bags/hr, and adapts to their PAGES 40|41 speed accurate.



AMICUS® DEPAL EDITION

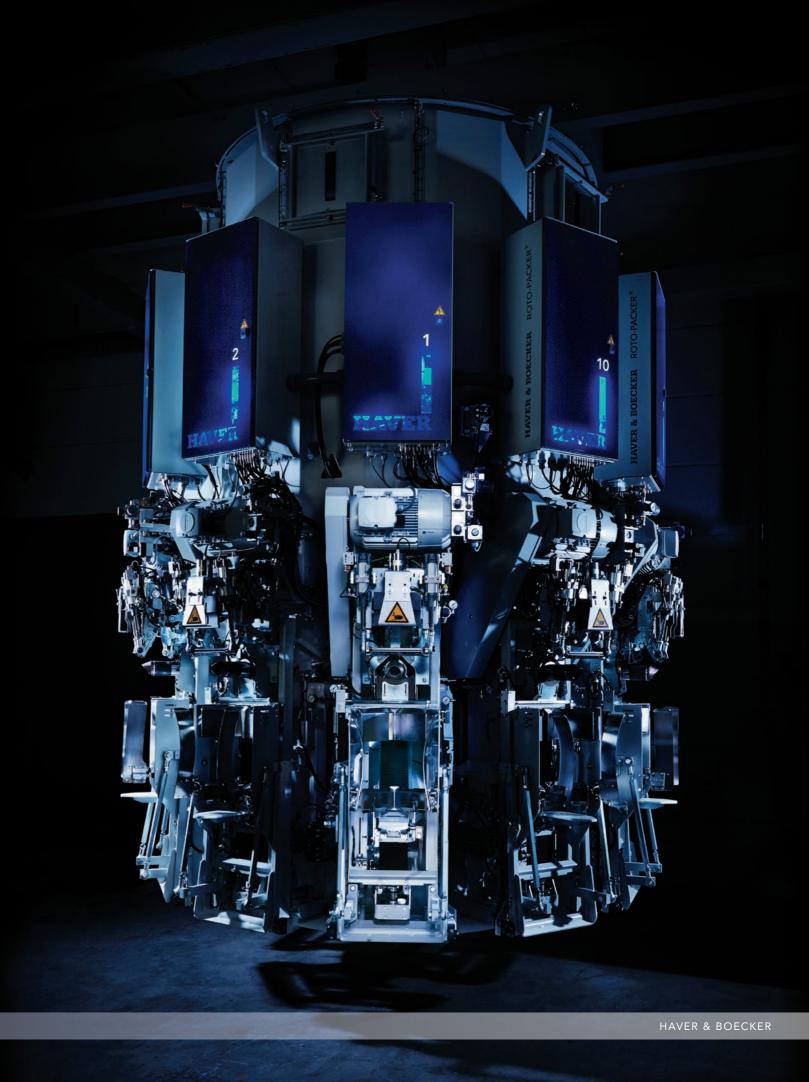
AMICUS® depalletizer to complete your automation from empty to full bag in harmony with an automatic bag applicator.

PAGES 32|33 AND 34|35

PAGES 36|37

THE RV-SERIES

The ROTO-PACKER® RV series with up to 16 filling spouts packs your cement, building material or chemical products into valve bags with a capacity between 1,000 and 6,000 bags/hr. (17-100 bags/min.). The valve bags can be made of paper, woven PP or even film. The automatic packaging machine is equippable with an ultrasonic sealing device. The packaging is safe, clean and profitable.



THE HIGH PERFORMER CLEAN. SAFE. PROFITABLE.

The original ROTO-PACKER® is the most advanced packaging machine for industrial goods of our time. The ROTO-PACKER® RV series with up to 16 filling spouts packs your cement, building material or chemical products into valve bags with a capacity between 1,000 and 6,000 bags/hr. Due to its modular design, it offers a previously unknown degree of flexibility. In combination with an automatic bag applicator RADIMAT® and optionally with a depalletizer, fully automatic operation is possible.

The traditional paper-valve bag was designed in 1926. But today, the natural tolerances in a paper valve when pressed against the bag construction after the filling process simply do not meet the cleanliness expectations of customers. Producers are nowadays paying special attention to ensure that their packages are compact, clean and looking sharp.

In response to this market trend, HAVER & BOECKER has developed the SEAL technology. The system was designed with the goal of creating a new standard when it comes to traditional valve bag filling technology. SEAL technology eliminates spillage by inflating a rubber sleeve lining in a specially designed filling spout during the filling process. After filling, the bag is carefully pulled off the spout and the specially designed paper valve is welded shut by an ultrasound sealing device. The result is an absolutely compact and clean bag, which will make the product stand out in any form of presentation.

More importantly, the SEAL technology prevents spillage during transport. It also eliminates any kind of contamination or criminally motivated product extraction during the complete logistical process. This allows the producer to increase his weight accuracy exponentially without having to overfill the bag. The resulting additional product profit to the producing operation is significant.



THE PERFECT AND SUSTAINABLE PROCESS FOR YOUR VALVE BAG FILLING



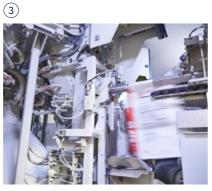
The empty bags

The plant is supplied with empty bags via palletized bag bundles or empty bags on a roll. Maximum performance and easy handling are achieved with a double roll changer.



AMICUS[®] – the automatic de-palletizer for bag bundles

The camera system on the de-palletizer locates the empty bag bundles. The bag bundles are picked up from the pallet by the gripper and placed on the deposit table at the RADIMAT[®].



The automatic bag placer RADIMAT® The bag placer is loaded with empty valve bags from a bundle or from a roll and shoots the bags mechanically onto the filling spouts of the packaging machine. An optional bag scanner enables grade selection control and provides the desired data transfer.



The dust-free silo filling Your product is filled into the ROTO-PACKER® quietly, dust-free, and consistently below the product level without unnecessary air intake.



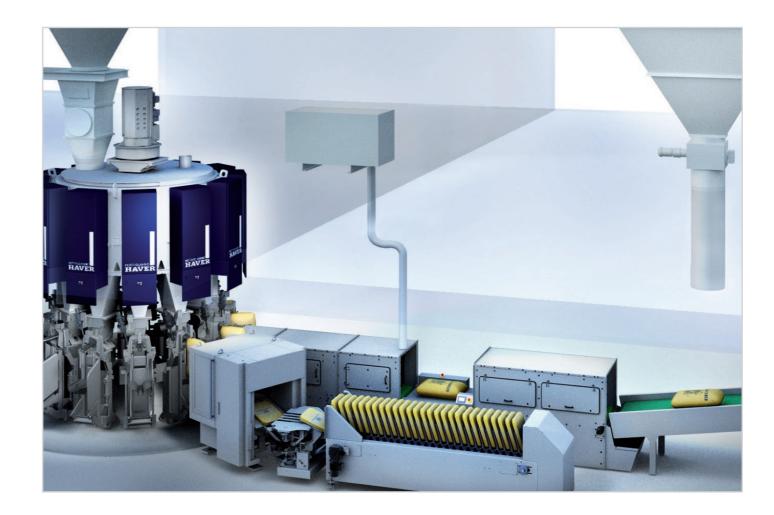
The dosing system

The new patented and high-performance dosing unit with the filling box ensures the clean filling of valve bags, even for high blaine cements.



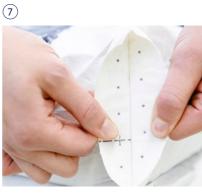
Filling tubes

Iron cast long lasting filling tubes are characterized by a longer service life. Alternatively, we recommend the use of filling tubes with an inflatable sleeve.



8

Quality controls



Clean and fully closed valve bag

SEAL technology prevents material loss. A sleeve in the filling tube inflates at the beginning of the filling process. After dustfree filling, the bag is carefully pulled off the spout and the specially designed bag valve is welded shut by means of the ultrasonic sealing unit.



Mirko Hoffmann Head of Sales Phone: +49 (0) 2522 30-662 E-mail: m.hoffmann@haverboecker.com g filling tubes are onger service life. ommend the use of inflatable sleeve.

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The electronic check-weighing system provides automatic compensation of the packing machine weigher, including statistical data of filling spouts. Use the interface for remote adjustment of the check-weigher.



Palletizing and loading

For safe transport, the filled valve bags are palletized automatically, by robot if preferred. Loading is carried out manually, semi-automatically or fully automatically according to your requirements.



CHOOSE YOUR FILLING MODULE FOR YOUR RV-SERIES:

The properties of your product determine the filling module. If you are packing fine powders, you'll choose the T-module. The "T" stands for "turbine", which means impeller. The product is transported into the bag by means of a turbine. The T-module is available in vertical and horizontal versions.

If you are packing mixed products that differ in grain size, select the L-module. "L" stands for "air". In this process, the product is conveyed from the pressure chamber into the bag by means of air pressure. The L-module is available in two versions, either with an angled or a fully ventilated base plate in the pressure chamber.

We offer the turbine filling technology and the air filling technology as a VT-module and a VL-module.

The two RV-modules are available in a standard version or as a SEAL upgrade to weld the valve shut after the filling process. The T-module can be equipped with standard sliding plates or the patented ROTO-LOCK[®] dosing system.

VL-Module (air) Valve Bag



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VT-Module (turbine) Valve Bag

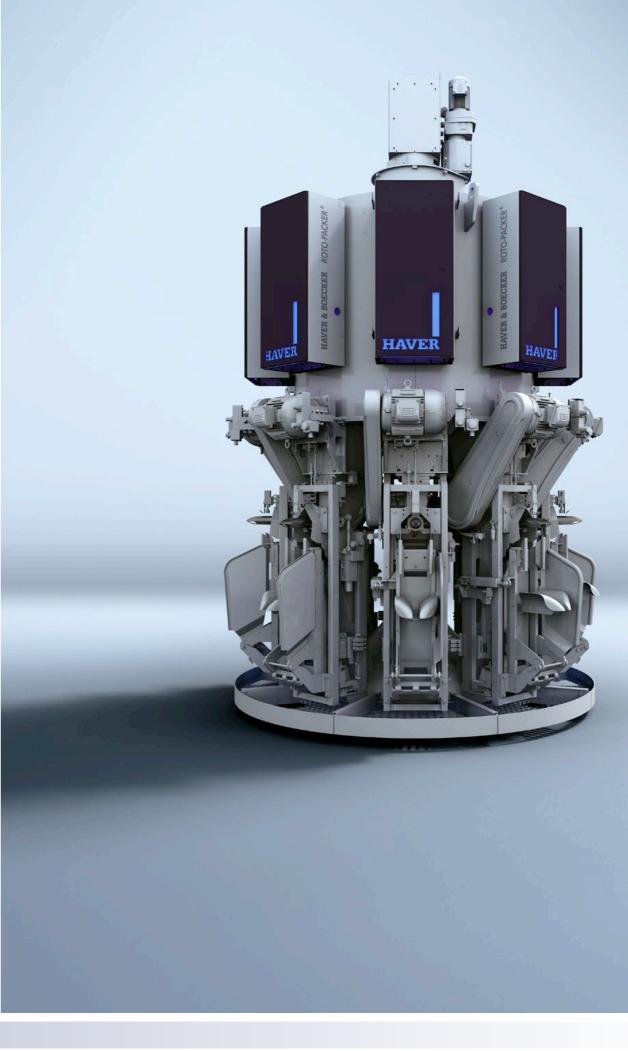
TECHNICAL DATA

THE ROTO-PACKER® RVT/RVL

The rotating high-performance system with up to 16 filling spouts achieves maximum performance when filling your products into valve bags.

	000000		(Jun)	
Number of spouts	Performance bags/hr per 25 kg	Performance class	Intuitive operation	Product variety
4, 6, 8, 10, 12, 14 or 16 (blind spouts possible)	up to 375 per spout	24/7	yes	all types of cement, buil- ding products, minerals and chemical products
				PE WPP Paper
min./max. bag weights	Bag sizes in mm	Delivery of empty bags	Bag type	Bag material
10 - 50 kg	width: 300 - 550* length: 350 - 650 550 - 850	possible option	glued or sewn	paper, PE or WPP (coated)

* Actual width range depends on bag material and filling spouts.



TECHNICAL DATA

THE ROTO-PACKER® RVT/RVL SEAL EDITION

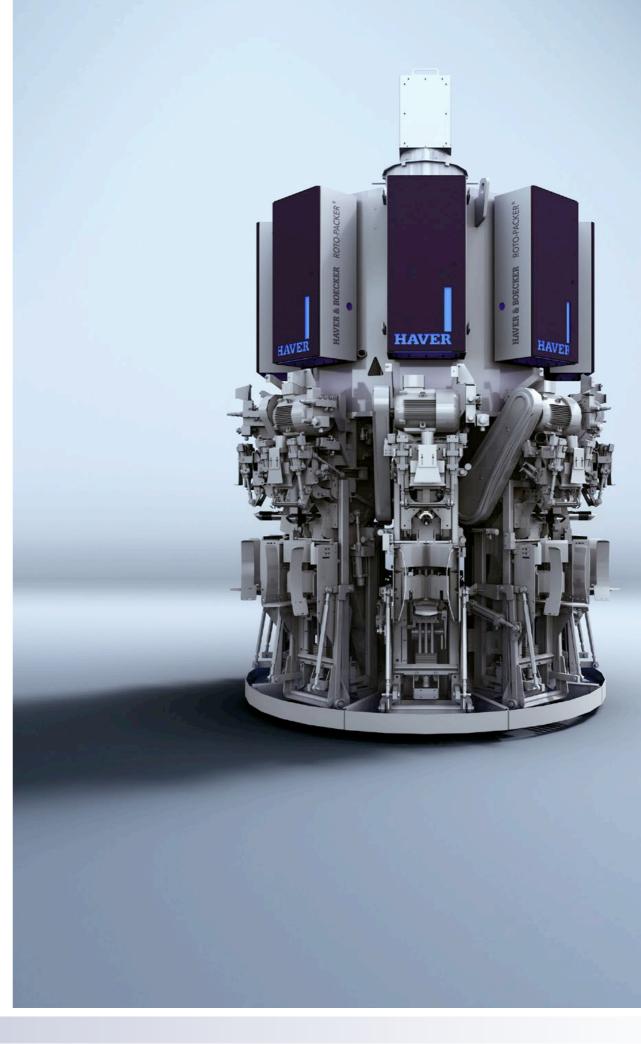
The rotating high-performance system with up to 16 filling spouts, equipped with the ultrasonic SEAL device for welding the valve shut after the filling process, achieves maximum performance when filling your products into valve bags.

	000000		(Jun)	
Number of spouts	Performance bags/hr per 25 kg	Performance class	Intuitive operation	Product variety
4, 6, 8, 10, 12, 14 or 16 (blind spouts possible)	up to 375 per spout	24/7	yes	all types of cement, buil- ding products, minerals and chemical products
				PE WPP Paper
min./max. bag weights	Bag sizes in mm	Delivery of empty bags	Bag type	Bag material
10 - 50 kg	width: 300 - 550* length: 350 - 650 550 - 850	possible option	glued or sewn	paper, PE or WPP (coated)

* Actual width range depends on bag material and filling spouts.



With our sustainability campaign "Planet Blue", we're directing our products and solutions towards a world in balance.



THE RADIMAT®

The demands for a reduction in manufacturing costs, an increase in profitability, clean filling and consistently high quality are continuously increasing, certainly also in your market. Very importantly, optimizing the packing process must not be at the expense of the environment and the health of your employees. The solution: equip your workflow with a RADIMAT[®].



TECHNICAL DATA

THE RADIMAT® NC/HC BAG APPLICATOR

The RADIMAT[®] bag applicator automates your rotating filling line. It shoots the bags onto the filling spouts of the packaging machine mechanically with a maximum performance of 6,000 bags/hr, and adapts to their speed accurate. Accessories for the bag feeding are a turntable, the empty bag magazine for bag bundles or the empty bag reel system also as double reel changer for empty bags from the reel.

0000000		(Chron		
Performance bags/hr per 25 kg	Performance class	Intuitive operation	min./max. bag weights	Bag sizes in mm
up to 6,000	24/7	yes	10 - 50 kg	width: 210 - 420* length: 350 - 710 550 - 910
		11 2		R
Delivery of empty bags	Automatic bundle check	Pre-selection of the variety	Empty bag feeding	Automatic bundle feeding

* Actual width range depends on bag material and filling spouts.





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HAVER & BOECKER

AMICUS[®] - the Latin word for "friend" - is HAVER & BOECKER's new advanced family of robots to further complement its line expertise for complete, fully automatic and thus laborsaving packaging systems. The first member of this new family is the AMICUS® DEPAL Edition for use as a depalletizer of empty bags for fully automatic placement with an automatic bag applicator. The tool of this AMICUS® DEPAL Edition is an in-house development and thus the continued competence of HAVER & BOECKER engineers.



TECHNICAL DATA

THE AMICUS® DEPAL EDITION DEPALLETIZER

The AMICUS® DEPAL Edition is unique: fast finding and secure gripping of loose empty bag bundles without strapping! With the help of the associated camera system, the innovative gripper very quickly finds the unstrapped empty bag bundles on the pallet, grips them securely and reliably brings them into the system. This is the starting point for your efficient and complete automation!

000000		(Chra		
Performance bags/hr per 25 kg	Performance class	Intuitive operation	min./max. bag weights	Bag sizes in mm
up to 6,000	24/7	yes	10 - 50 kg	width: 210 - 420* length: 350 - 710 550 - 910
Delivery of empty bags	Automatic bundle check	Pre-selection of the variety	Empty bag feeding	Automatic bag application
possible option	yes	optional with a wireless barcode scanner	bundle or reel	option with RADIMAT®

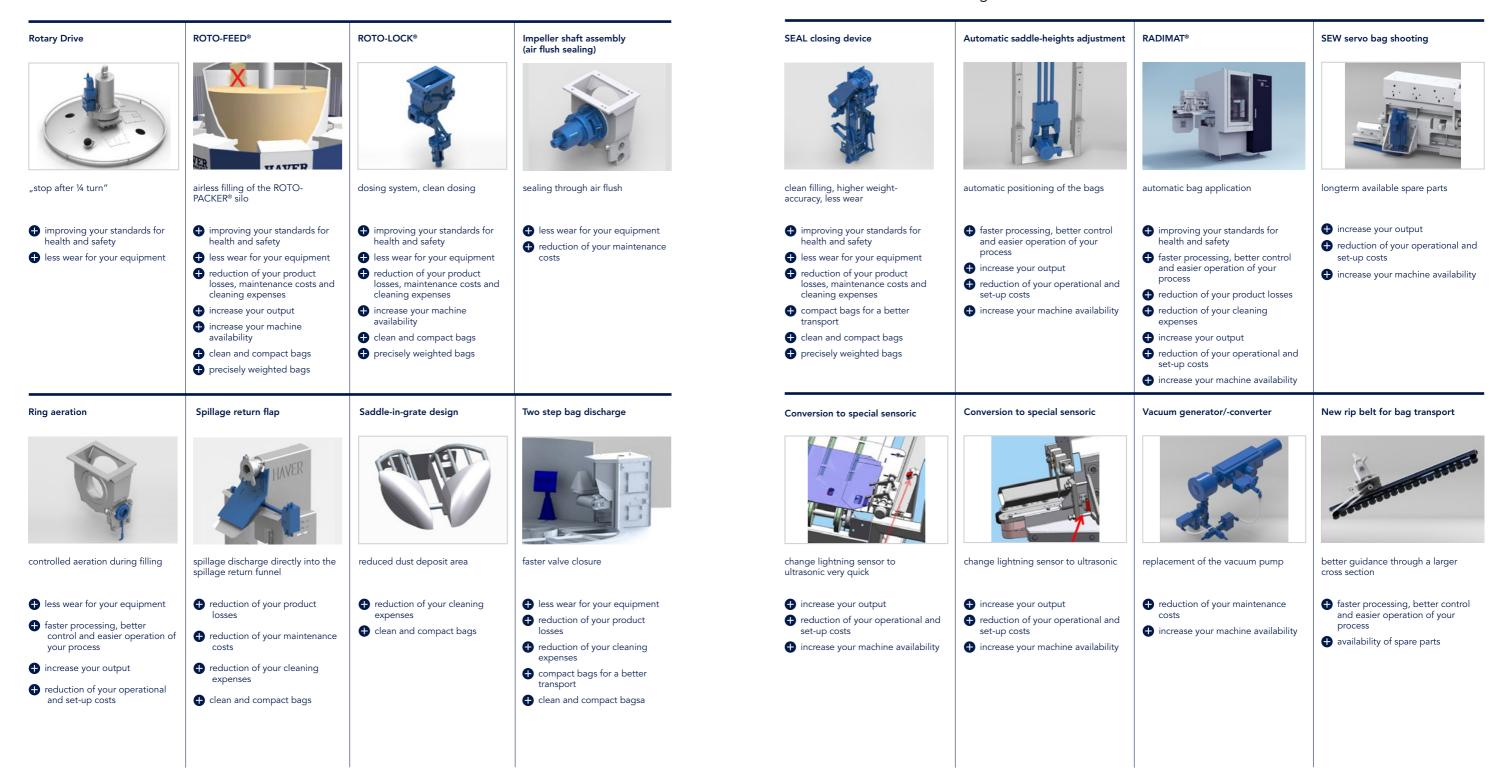
* Actual width range depends on bag material and filling spouts.



REBUILDS & UPGRADES

REBUILDS & UPGRADES

Why not simply prolong the life of your current packing equipment or, better yet, optimize its functionality?



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Rebuilds & Upgrades

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ACCESSORIES

ACCESSORIES

QUAT²RO[®] Remote Service QUAT²RO® DPS QUAT²RO[®] Monitoring QUAT²RO[®] Analytics Data processing system Intelligent system monitoring Remote support by experienced Make the long-term interpretations Software for storage and evaluation OEM-experts of your system data usable of weighing data Informs continuously about Monitor the production of your Enjoy the OEM security that Convert these insights into machines in real time your systems work optimally profit and optimized operating product quality conditions + Recognize wear and tear at an Get concrete advice on Display can be individually echnical and filling questions Take advantage for predictive early stage configured maintenance and optimum Increase your efficiency by • Saves data as proof of your Enjoy knowing there is always spare parts stocking comparing the machine data someone who can help quality controls • Profit from ideal maintenance • Motivate your team and give Proactively plan your • Offers export and import of work time management maintenance based on the them safety data machine data Motivate your team, give them Offer your team a perfect confidence and the perfect Check machine settings and support with learning effects support with learning effects optimize your planning • Reduce your downtimes • Reduce machine downtime Bag scanner Fully automatic reel changer Printing systems/Labelers Belt conveyor The bag scanner as a reliable Film reel changer for highest pro-Position accurate bag printing control unit duction output transport Checking whether it is Increased economic efficiency

High degree of automation

Product variety

Short set-up times

The following printing options are available: through reduced downtimes

> Empty bag printing by laser (CO₂ and fiber laser), inkjet or labolor + Full bag printing by inkjet



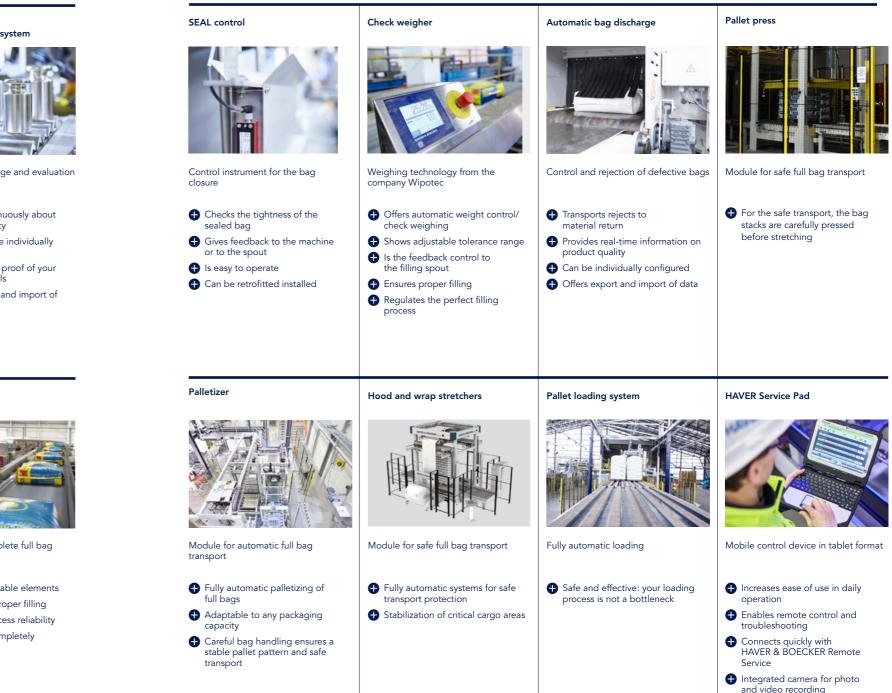
Modules for complete full bag

Various adjustable elements

Guarantees proper filling Increases process reliability

Optionally completely encapsulated

If you want optimum results, you can equip your ROTO-PACKER® line with the appropriate additional technology. In interaction, the machine shows its full potential.



50 51

the correct tubular film for

• Control whether the printing is correct, if a printer or labeler

is connected upstream

the selected product

- and video recording

PERFECT FLOW PROCHECK PLANET BLUE

PERFECT FLOW

We master the interaction between product, packaging and machine technology and combine it with over 135 years of machine development and manufacturing. This is the basis of our expertise and the starting point to make your process flow perfectly.

In everything we do, we make things flow

"Flow" is the most important part of our DNA. And because this task is part of our innermost core, we know the answer how to ensure a steady, reliable, trouble-free, clean and efficient material flow. That is why we advise you multi-dimensionally – based on our packaging triang-le: Product, packaging and machine technology.

Decisive basics

Product, packaging and machine technology influence, how efficient your process can be. And they influence each other. We analyze your product in detail, define the ideal technology based on results and design the perfect packaging to fit it precisely. Always in focus: Your requirements for performance, cleanliness and weight accuracy. If you change one element, it always requires changes to the other components and variables of influence.

For your success

Our experts at the HAVER & BOECKER Institute and our technology subsidiaries have assessed and analyzed over 20,000 products to date. Use this experience for yourself and for your perfect flow!







BRING LIFE TO YOUR PROCESS!



We are at your side throughout the entire life cycle

Mastering the three dimensions of product, packaging or screening media and machine technology is the basis of our expertise and the starting point for your perfect flow. With our PROcheck life-cycle approach, we add the time component and accompany you on the way to your goal. We understand it as our philosophy and it's our understanding for a functioning and successful partnership to always have your process in view and to look after it throughout its entire life cycle with our products, our services and our tools. We've developed PROcheck as an orientation for precisely this because "we are always there for you". PROcheck systematizes all instruments and actions with which you can keep an eye on the efficiency and potential of your processes at all times and optimize your success:

With PROcheck, we show you very specifically where and how you can sustainably maximize your productivity and thus your results over the entire life cycle of your plants, systems and machines. So that you'll be also in perfect flow in the future!

We are always there for you

To accompany and inspire you on your way to your "Perfect Flow", we have developed PROcheck. Our commitment to and our understanding of this approach have a lot in common with all of our personal lives. After all, it makes sense to identify the root causes of our challenges, to focus on the right equipment, to consume intelligently and sustainably, to replace what needs to be replaced, to constantly adapt to current requirements, to combine our own experience with the know-how of experts, to implement plans and goals with uncompromising, comprehensive solutions, and to shape concepts and ideas with experience-based services.

PROcheck stands exactely for this "we are always there for you".

PROcheck will help you:





reducina

product loss



saving

resources



PLANET BLUE

"I always thought that my neighborhood was my home and everything I needed. Today planet Earth is my home."

Michael James Massimino

What Planet Blue means for us

With our sustainability campaign "Planet Blue", we're directing our ideas and actions towards a world in balance. Our mission: We strive to improve living conditions for humanity with our storage, packing, mixing and filling technologies, as well as our palletizing and loading technology.



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