

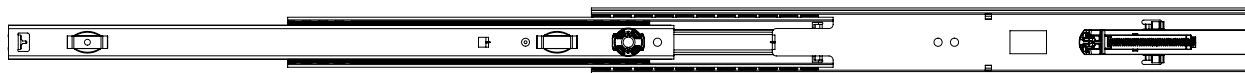


Appliance Storage in Motion:



Slides for next-generation appliances

Today's appliances—from the kitchen to the laundry room—are being asked to perform in ways never before imagined. Knap & Vogt® helps your engineers design with motion in your appliances. And if we haven't built it yet, rest assured that our team of design engineers and fabricators can easily become your fastest path to successful innovation. We are truly dedicated to *"the business of motion"* — an entire company optimized for flexibility, efficiency, and speed. Come see what we've done for some of the world's largest appliance pioneers—and what we're ready to do for you.



KNAPE & VOGT®



In today's appliances, slide performance opens the door to a superior customer experience

When it comes to the daily experience of using your products, the quality, performance, and “feel” of the drawer slide plays a significant role in consumer perception.

Knapé & Vogt has been a trusted partner to some of the largest OEMs in the industry, delivering products, engineering expertise, practical manufacturing know-how, and a “can-do” attitude that accelerates the path to success.

Our relentless focus on advancing slide features and performance prepares us to quickly fulfill the goals of your product development—and exceed your expectations.



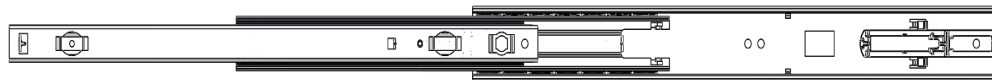
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Self-close mechanism for bottom-mount freezers

KV's patented self-close mechanism provides a value added option for optimizing end user experience and user convenience. The self-close feature has been designed with a long stroke closure and -40°C operating temperature with high humidity conditions in mind.

- *Exceeds 300,000 life cycle test*
- *Optimized for heavy-duty use*
- *Appliance-rated finish provides high corrosion resistance within extreme temperature and humidity environments*
- *RoHS compliant*

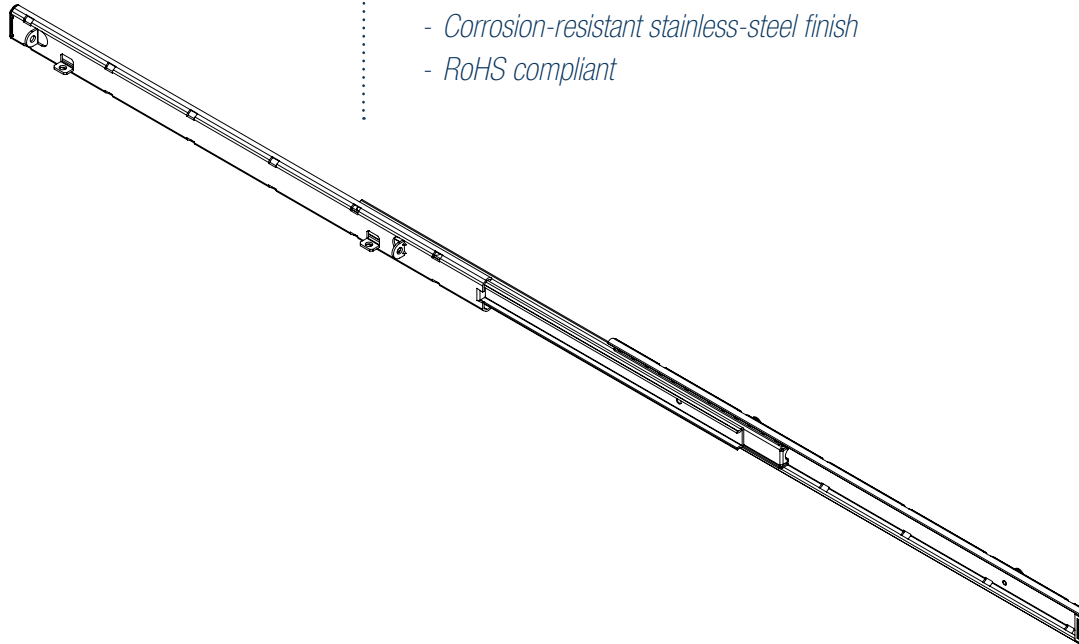




Sliding system solutions for dishwashers

Improvements in dishwasher design have resulted in developments like the 3rd rack and other low-profile solutions. KV's ability to provide an unmatched variety of solutions helps dishwasher designers innovate with the confidence that a high-quality slide will be available to fulfill their vision.

- *Options for attachment features*
- *Optimized slides to dampen sound*
- *Corrosion-resistant stainless-steel finish*
- *RoHS compliant*



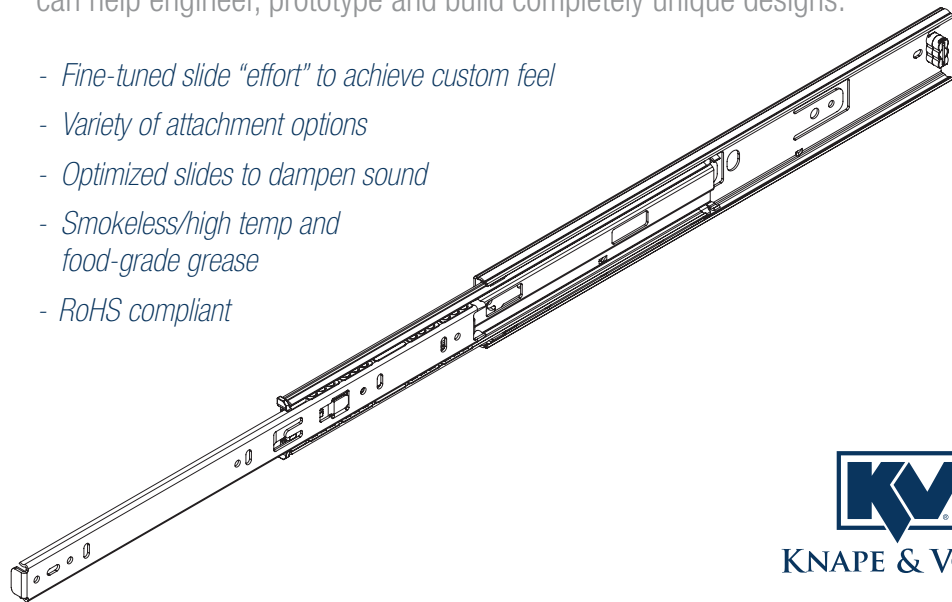
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Solutions for pantry refrigeration drawers, wine coolers, crisper drawers, freezer drawers, ovens slides, warming drawers, and other appliances

Today's custom kitchen designers are incorporating a growing number of integrated appliance concepts into their projects and consumer demand for these products is on the rise. KV provides a wide range of slide options for high-temp and food-grade applications that have been thoroughly field-tested and proven. And for new products that push the envelope, our team can help engineer, prototype and build completely unique designs.

- *Fine-tuned slide "effort" to achieve custom feel*
- *Variety of attachment options*
- *Optimized slides to dampen sound*
- *Smokeless/high temp and food-grade grease*
- *RoHS compliant*



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*A history of innovation:
Recent highlights in
slide technology for a
new product with
extreme demands*

At KV, we're always on the lookout for ways to refine and even re-think the way our customers use our products. We make your challenges our challenges—bringing a well-honed VAVE perspective to every project.

Fabric refresher unit

This fabric clothing refresher is a consumer product designed to remove wrinkles and odors at home, reducing the need for expensive dry cleaning and reducing excessive washing to extend the life of clothes. Slides represented



a critical component of the product and needed to provide a lifetime of trouble-free service within an extreme environment of high temperatures and high humidity. KV provides the manufacturer with a set of optimized, corrosion free slides in a low-profile design that suits the appliance's sleek design.





Early stages

- Identify Trends
- Define Problem/opportunity
- Ideation
- Brainstorm project specs
- Explore existing solutions
- Share application expertise
- Refine concepts & designs

Development/Testing

- Benchmarking
- In-house prototyping
- In-house testing
- CAD integration
- Sample production/support

Tooling/Manufacturing

- U.S. & International
- Pre-tool sample support
- Project management
- Schedule-driven

Deliver and Support

- Global QA & support
- On-time / On-budget
- Responsive services
- Proven logistics and inventory support

A well-honed process keeps everything moving forward.

Working together with appliance designers and product development experts, Knape & Vogt's sliding systems engineers, testers, fabricators, and logistics personnel ensure the success of your design—from initial ideation and concepting to steady shipment of finished components and on-the-ground service anywhere in the world.

Tap us at any point in the process and we'll quickly become a responsive and effective part of your team.

Our expertise includes:

- Market Intelligence & Analysis
- Ideation
- Engineering, Modeling and Prototyping
- Project Management
- Fabrication and Manufacturing at-Scale
- Product Testing, QA, and Regulatory Validation
- Value Engineering
- Global Supply Chain Support & Service



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Optimizing your slide design characteristics

In designing a precision ball bearing slide, there are 10 main characteristics to consider. The Knap & Vogt team is ready to match our products and capabilities to your requirements.

PROFILE PLATFORM

To meet application needs
2- and 3-member solutions
www.knapeandvogt.com/slide-profiles

EXTENSION/TRAVEL

- One-way travel
- Two-way travel
- Full extension
- Less or more than full extension

EFFORT

Target effort specs needed for motion

ATTACHMENTS

Key attachment & locating features

- Threaded studs/nuts
- Brackets
- Locator/assembly assist

POSITIONING

Detent options include:

- Full forward
- Rearward
- Multiple position

LOCKING

- Lock-out-open
- Lock-in-closed
- Lock-in and out

CLOSURE

- Push-to-open
- Self-close
- Soft-close

STABILITY

- Structural enhancements include C-channel and L-channel reinforcements

SOUND

- Sound-sensitive applications
- Dampening requirements

APPEARANCE

What materials and finishes are required?

- A menu of options



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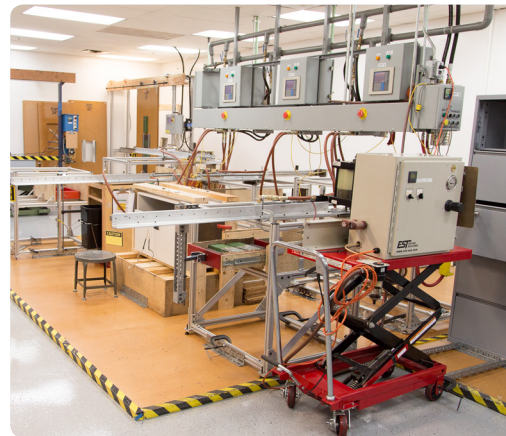


Component and application testing help support your project needs.

Knape and Vogt has extensive in-house testing capabilities designed to ensure that our slides and appliance components consistently outperform expectations and stand ready to meet tomorrow's design challenges.

We pride ourselves on exceeding your expectations at every turn.

Our in-house testing protocols can support standard industry and customized testing needs, including:



- Life cycle
- Slam
- Out stop / rebound
- Static loader
- Dynamic loading
- Deflection curves
- Closing rates
- Corrosion



Everywhere you need us to be

Based in Grand Rapids, MI—with manufacturing in North America and Asia—Knapé & Vogt exceeds the highest demands of global appliance makers, matching uncompromising quality with reliable logistics and superior customer support. Our global support network, is available to you at a moment's notice.

We welcome your inquiries

Whether you're just beginning to brainstorm a new design—or you're pressed to execute a project that's already underway, our engineers and sliding systems experts stand ready to lend a hand. Please contact us and let us know how Knapé & Vogt can help you create appliance sliding systems that will set you apart.



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