





FERN™

*A new movement in seating*



## Put People at the Center

For people at work, few things evoke a stronger emotion than a chair. It's their personal work tool—an intimate object that enables their performance throughout the day.

If you want to optimize your investment in people, you need talented, engaged employees who give your organization an innovative edge. Happy, engaged workers are driven to perform, so why not help them be their best with supportive, ergonomic seating?

Fern is a new movement for the human experience. It's a benchmark in task seating for people at work—a chair that responds to you.

Human capital is every organization's greatest asset—as well as its single greatest expense—up to 80 percent of total costs.

### Engagement

Consistently ranked in the top five challenges facing organizations.

Only 33% of US workers describe themselves as being engaged.

### Well-being

Illness and injury—specifically, back and neck pain caused by poor ergonomics—are the most common reasons for absenteeism.

75% of work in industrialized countries is performed while seated.

In 2016, US employers spent an average of \$.47 per hour, per worker, on civilian workers' compensation claims across industries.



*natural freedom, total support*



## More Human, Less Machine

Inspired by the fluid strength and beauty of nature, Fern provides new levels of balance, flexibility, and performance. It's designed from the inside out, putting the person at the center. Much like the human body's spinal anatomy, Fern's responsive motion flows from a centralized Stem™. Fern enhances the sitting experience by providing the ability to move with natural freedom, comfort, and total support.

From the beginning, the design vision for Fern was “embedded intelligence”—you could see and feel how the chair worked without being overtly mechanical. Its natural architecture is as familiar as the fern in nature, which was the inspiration: simple in appearance but complex in design, engineering, and advanced materials.

Flexibility and support are integrated into the chair. In fact, Fern was design-engineered and tuned to your body. It creates a stored energy that responds to movement and provides you with an edgeless comfort experience.

On the outside, Fern's soft, approachable aesthetic and its array of color and finish options allow it to integrate into any environment, or make a statement—whatever fits with your design approach.

## Science + Design

Through our collaboration with the Human Performance Institute at Western Michigan University (WMU), we have collected 5.5+ billion data points from our seating research that informs our seating development.

Consultations with medical professionals at the beginning of the design process verified the need to focus on support for the entire back, especially the thoracic region, as well as providing a chair back that moves with the body. These professionals represented a variety of disciplines, including biomechanics, physical therapy, kinesiology, and chiropractic.

Designing solutions that benefit people at work begins with understanding the physical relationship between a person and a seating surface. Our development approach involves collaboration with experts combined with an iterative process of testing and evaluation.

For example, we collaborate with ergonomic research partners such as the Human Performance Institute at Western Michigan University—an ongoing relationship since 2004—and apply this knowledge to create ergonomic and comfortable solutions that best support people while seated at work, all around the world.

Through on-site and in-lab assessments, we conduct both qualitative and quantitative research testing. The proof? Years of comfort studies, endless measurements, and validated correlation to comfort that ensures a larger percentage of people find Fern comfortable.





*collaboration and expertise*

## Technology + Craft

Unlike many products today created solely with computer-aided tools, Fern designers employed a process that merges hands-on craftsmanship with advanced technology to create a physical product.

The designers explored the back concept using a fixture that was tuned like an instrument and crafted by hand. Working with Haworth's ergonomist and engineers, they merged the results of experimental and experiential evaluations to determine the right shape that addressed body types, testing and manufacturing requirements, and material strength and flexibility.

The result? Fern naturally responds to your every twist, turn, reach, and recline. With no hard edges, Fern provides new levels of movement, comfort, and support so you can get through your day without the distraction of discomfort.







## Evidence-Based Comfort

One hundred years ago, people sat in wooden chairs at work. Fifty years ago, they sat in chairs that had metal frames with upholstered foam cushions. Then came mesh. Now, it's Wave Suspension™.

Fern is a new paradigm in total back support that has transformed task seating. It builds upon the science that informed one of the best ergonomic chairs in the industry: Zody®.

Fern eliminates the structural barriers inherent in other task chairs—like hard edges and limited flex, which create discomfort and lead to distraction—so people can perform at their best.

Wave Suspension is the heart of the chair and the key to its back comfort and flexibility, embracing the performance demands of today's workers. It supports the total back, allowing a person's spine to serve as the pivot point of movement. It creates a more flexible and active chair, providing unparalleled levels of responsive movement and the feeling of edgeless comfort.

Fern moves with you, not against you.

In pressure map testing, Fern was the only task chair among three competitors' chairs with no reports of discomfort for participants sitting in the upright posture. In each of the other four postures tested, Fern had the fewest reports of discomfort.

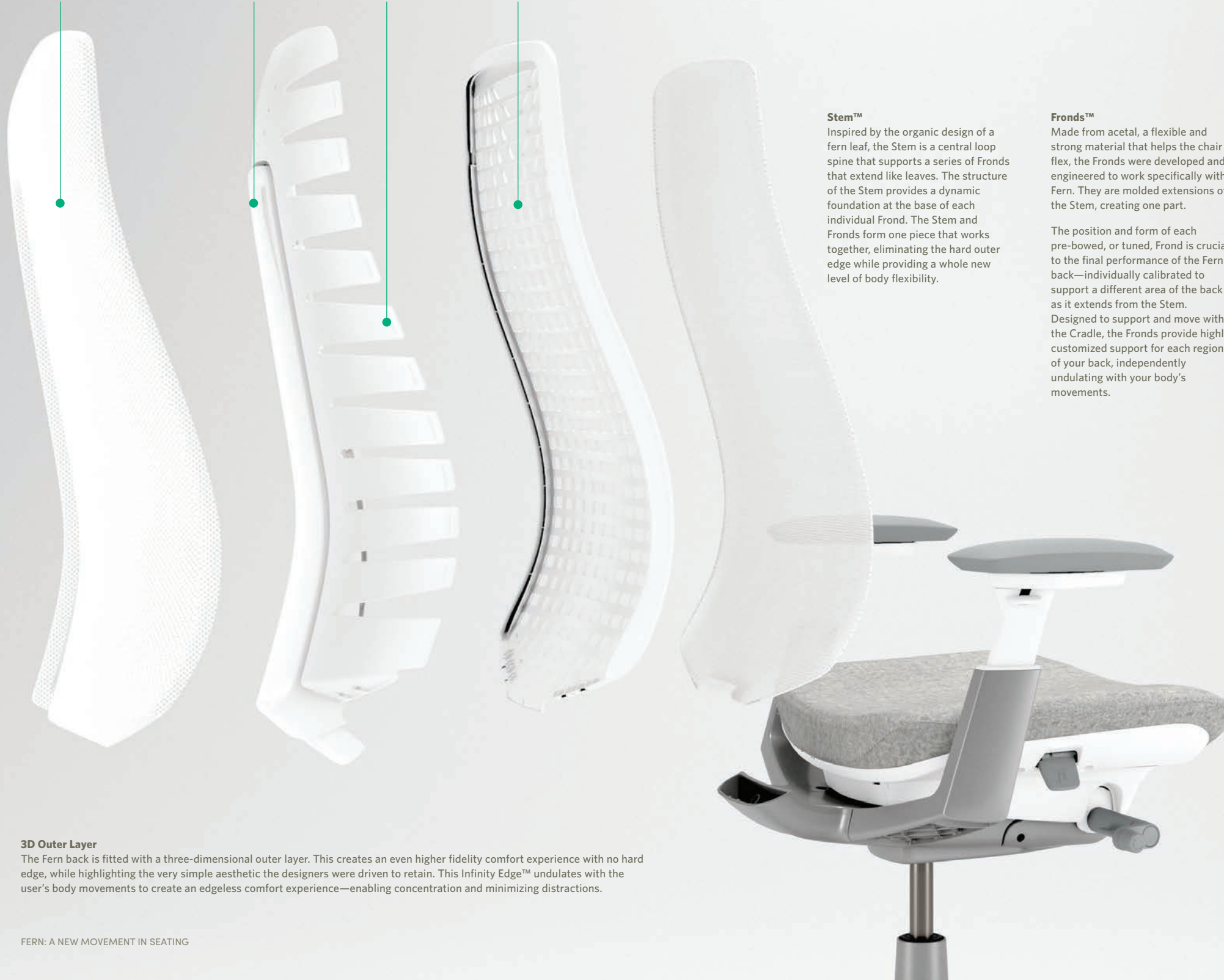
## Wave Suspension System

3D Outer Layer

Stem

Fronds

Cradle



### Stem™

Inspired by the organic design of a fern leaf, the Stem is a central loop spine that supports a series of Fronds that extend like leaves. The structure of the Stem provides a dynamic foundation at the base of each individual Frond. The Stem and Fronds form one piece that works together, eliminating the hard outer edge while providing a whole new level of body flexibility.

### Fronds™

Made from acetel, a flexible and strong material that helps the chair flex, the Fronds were developed and engineered to work specifically with Fern. They are molded extensions of the Stem, creating one part.

The position and form of each pre-bowed, or tuned, Frond is crucial to the final performance of the Fern back—individually calibrated to support a different area of the back as it extends from the Stem. Designed to support and move with the Cradle, the Fronds provide highly customized support for each region of your back, independently undulating with your body's movements.

### Cradle™

Overlaying the Fronds and Stem, the Cradle works in concert with them for effortless support, cradling and suspending your body. It is the main surface that allows you a new freedom and comfort. It harnesses a balance of sprung energy—similar to a bow and string—to provide proper flex and total back support, responding to every movement intuitively.

In assembly, the system of Fronds is bent forward and held in tension by the Cradle, which is flexible and non-supportive on its own. This tension, along with the geometry of the Cradle, works in harmony to provide proper pressure distribution and support the curvature of the spine by keeping the pelvis rotated forward for good posture. This is achieved by having thicker bands toward the bottom of the Cradle.

### 3D Outer Layer

The Fern back is fitted with a three-dimensional outer layer. This creates an even higher fidelity comfort experience with no hard edge, while highlighting the very simple aesthetic the designers were driven to retain. This Infinity Edge™ undulates with the user's body movements to create an edgeless comfort experience—enabling concentration and minimizing distractions.



## Total Back Support

Fern's taller back was derived from research advising the need for total back support—from the neck and thoracic spine all the way down to the pelvis. When meeting with medical experts, it was confirmed that most chairs do not have enough thoracic support, which is why it was incorporated into Fern.

Fern's centerline curve matches a wide range of people, but you can further tailor your lower back support with an optional lumbar support. It adjusts up and down to fit the curvature of your back and continues to provide support as the backrest moves—conforming up and down, side to side.

The optional headrest was designed with the same inviting aesthetic that makes Fern more human, less machine. Its pillow form complements Fern's design to create a lounge experience in a task chair. Mounted to the back in line with the central loop spine, the headrest enhances Fern's total body support. It flexes for support, while responding to natural movements, allowing you to work well in a reclined or upright position. The headrest was designed to fit the curvature of the neck while still supporting the head, moving with you as you roll your head to the side.



*complete chair comfort*

## Sit *in* the Chair, Rather than *on* It

Fern had the least reported discomfort occurrences in use testing, as compared to competitive task chairs when participants sat with their legs crossed.

The competitive chairs also have pressure indicated under the tailbone. According to ergonomists, pressure in this area should be avoided.

Providing a seat that fits and offers the proper support for the sitter's weight is important. Otherwise, soft tissue can become compressed and distorted in a short period of time, resulting in obstructed blood vessels that impede blood flow to the skin. The Fern seat was developed for both stability and flexibility, designed with a strong core that provides inherent flexibility and comfort under the thighs.

From the Western Michigan University research, Haworth inferred that the seat is a primary consideration in overall chair comfort as well as the importance of movement while sitting. Haworth also researched movement/flexibility in the seat pan, and from this and the Western Michigan University research, the Fern development team determined there was a preference to provide constant, stable support in the back of the seat pan and varying support in the front, which resulted in Fern's seat pan having a flexible front edge.

The seat's foam works in harmony with the seat pan's built-in flex zones along the edge. Its contoured shape is the result of our years of research, including pressure mapping and sit tests conducted with a variety of body sizes in both genders. The seat is central to stability, supported by a tilt mechanism that accommodates the range of seated workers, including smaller framed people who can adjust it enough to easily recline. In fact, Fern accommodates one of the widest ranges of users—enabling both the light, petite person and the heavier, larger person to have the same sitting experience.

You feel like you're sitting *in* the chair, rather than *on* it.

## Make a Statement in Any Environment

People spend their day doing a variety of tasks in different spaces—from focused work in a touchdown space to collaboration in a team area. Fern suits a breadth of applications, including private offices and conference rooms, as well as hospitality and home environments. Dress Fern up with a faux leather upholstery option and headrest for the executive or specify Fern stools for standing height preferences.



Private Office



Hotel Room



Conference Room



Workstations

## Features and Finishes



### Back

Flexible back with built-in Wave Suspension wrapped in a three-dimensional outer layer

### Seat

Flexible seat pan with upholstered foam

Standard fixed seat

Seat depth adjustment\*  
range: 3" (76mm)

### Height-adjustable lumbar support\*

Range: 4" (102mm)

### Headrest\*

Adjustment range:  
2.5" (64mm)

### Arms

4D Arms fluidly move fore, aft, side to side, and pivot in and out.

Height adjustment  
range: 4.8" (122mm)

Standard with soft arm caps

Height-adjustable, fixed, and armless options also available

### Mechanism

Synchronized 3-point tilt; standard tilt tension adjustment

### Pneumatic height adjustment

Standard range:  
16.5"-21.5"  
(419mm-546mm)

Low position seat  
height range: 15"-17.5"  
(381mm-445mm)

Stool height range:  
21.75"-29.25"  
(552mm-743mm)

### Back stop\*

5 positions

### Forward tilt (with back stop)\*

5° downward from initial position

### Casters

Hard casters in Black or two-tone Grey

Soft casters in Black only

The ability to fine-tune for comfort and fit is especially important for longer term, focused work. Fern offers a wide range of tactile, intuitive, ergonomic adjustments that are easy to find and use—no matter your size or shape.



Available in 11 standard mesh colors and 24 graded-in COM mesh colors—from expressive to constrained and warm to cool.

Available in three plastic trim colors, two plastic base colors, and four aluminum trim/base colors.

Back also available in faux leather options.

\* Optional

## Development Team

Haworth collaborates with research and development partners to identify, develop, and launch new and breakthrough innovations.

The Fern development team included the cross-functional expertise of Haworth industrial designers, our corporate ergonomist, engineers, and global collaboration with ITO Design, who worked together to build science + design into our products.

The team evaluated the chair throughout its development to ensure it met the targets established at the beginning of the design process, which were based on ergonomics standards and guidelines.







## Fern meets global standards, guidelines, and certifications.

### **Ergonomics**

*Designed to accommodate 5th percentile female to 95th percentile male*

*BIFMA G1-2013: Ergonomics Guideline for Furniture Used in Office Work Spaces Designed for Computer Use*

*Strategic Partnership with the American Physical Therapy Association*

*Certified by US Ergonomics consulting firm*

*ANSI/HFES 100-2007: Human Factors Engineering of Computer Workstations*

*CSA-Z412-00 (R2011): Guideline on Office Ergonomics*

*CAN/CGSB-44.232-2008: Task Chairs for Office Environments*

*EN 1335-1:2000: Office Furniture – Office Work Chair – Part 1: Dimensions – Determination of Dimensions*

*TÜV Rheinland Group 2 PfG 947/03.04 March 2004: Test programme of TÜV Rheinland for conformity with the requirements of the “Ergonomics Approved” mark for office swivel chairs*

*VHP Ergonomics Test Institute*

*AS/NZS 4438:1997: Australian/New Zealand Standard® Height adjustable swivel chairs*

*JIS S 1032: 2004 Office Furniture – Chairs*

*Singapore Standard SS S14: 2005, Code of Practice for Office Ergonomics*

*Hong Kong Occupational Safety and Health Branch, Labour Department – 1st edition, June 2002: A Health Guide on Working with Display Screen Equipment*

### **Sustainability**

*92% recyclable*

*Up to 41% recycled content*

*GREENGUARD® certified*

*BIFMA level 3® certified*

### **Manufacturing**

*Backed by a 12-year 24/7 use warranty*

*Manufactured in an ISO 14001 facility*

### **Awards & Innovation**

*Bronze Award, IDEA 2017*

*Red Dot Award: Product Design 2017*

*Interior Design Best of Year 2016*

*Interior Design HiP at NeoCon 2016*

*Protected by multiple global patents*

### **Sources**

*Page 5*

*BOSTI, Disproving Widespread Myths about Workplace Design, 2001.*

*Deloitte Development LLC, Global Human Capital Trends, 2016.*

*Gallup, U.S. Employee Engagement Study in June, 2016*

*Integrated Benefits Institute, Workforce Health and Productivity: How Employers Measure, Benchmark and Use Productivity Outcomes, 2011.*

*Pynt J, Mackey M.G., Higgs J. “Kyphosed Seated Postures: Extending Concepts of Postural Health Beyond the Office.” Journal of Occupational Rehabilitation, 18, (2008): pp 35-45.*

*Bureau of Labor Statistics, Employer Costs for Employee Compensation Historical Listing: National Compensation Survey, 2017.*

*Pages 17 and 24*

*Haworth, Inc. Research Brief: Fern™ Provides Evidence-Based Superior Comfort and Support, 2017.*

HAWORTH®

Haworth creates inspiring spaces that enrich lives and businesses around the world. To learn more about how Fern can enrich the sitting experience, visit [haworth.com](http://haworth.com).