



## **Rimless Frame Technology & Eyewear Performance**

### **A Wearer's Guide to the 21st century**

As consumers today, we could be defined as technophiles en masse. We have become experts (or struggle to become experts) on an array of sophisticated gadgetry from cell phones to GPS devices, X-Box to TiVO. 20 years ago, the VCR and the answering machine were considered complicated enough. Today, we program Blackberries, load I-pods, take videos on our cell phones and monitor our personal websites.

This fascination with technology is not limited to the electronic. Discuss bikes with a cyclist, clubs with a golfer or hair and skin products with women (and men, for that matter) and you're likely to get an earful on how and why they've chosen the products that they use. You will be educated on a product's materials, design, performance, and often, even the corporate policies of its manufacturer.

Oddly enough however, there is one product employed by millions of consumers everyday that is rarely discussed or even understood. Eyewear. Corrective eyewear is worn by over 50% of the population under 44 years old, and 82.3% of the population over 55.<sup>1</sup> Yet, few people know about the rapid developments in eyewear technology over the last ten years, and how they can greatly enhance a consumer's vision and quality of life.

Conversations about eyewear seem stuck on its 20<sup>th</sup> century attributes: color (black or brown), material (metal or plastic), style (big or bigger), lenses (glass or plastic, thick or thin). Today's eyewear, however, is vastly superior to eyewear made even a decade ago and there is a much wider range of options to consider. Understanding the new technologies available for eyeglass wearers, can lead to vast improvements in sight, comfort and, ultimately, in performance.



## The Rimless Eyewear Frame: Components

First, it is good to know the different components of an eyewear frame, which is manufactured separately from the lenses in every case with the exception of non-prescription sunglasses.

1. The temples: Side parts or arms of a frame that extend to the ear.
2. The front: The face of the frame that holds the lenses.
3. The bridge: The connection piece of a frame front that lies across the nose.
4. The nosepads: found directly under the bridge and help to distribute weight
5. The lenses: the prescription part of the frame
6. Nylon/ eyewire: Used in semi-rimless frames to hold the lenses to the frame (not pictured).



### Design:

There have been enormous improvements in rimless eyewear design in the past decade. One of the biggest has been in new, screwless designs. In the past, eyewear designs needed to utilize screws to hold different components of the frame together. The challenge with the screws was that they continually came loose or even fell out. Even today, eyewear kits are still sold with small screw drivers to tighten old-styled eyewear frames. Occasionally, one still sees some poor eyeglass wearer holding one and squinting at the frame pieces in their hands. With modern eyewear, screws are not necessary. Innovative designs, such as Silhouette's Titan Minimal Art and

Titan Next Generation, eliminate the need for screws, making eyewear much more dependable. In fact, both of these frames are used by NASA astronauts during their space missions for this very reason. Astronauts, particularly on space walks when they are wearing helmets, cannot risk screws falling out and potentially floating into their eyes or, more dangerously, their breathing apparatuses.



**Astronaut William McArthur in Silhouette's Titan Minimal Art Rimless Eyewear**

Even hingeless eyewear is now available as an option. Improvements in design combined with new material technologies have lead to styles that can gently hold the head. This is achieved through a subtle, wrapping ergonomic bend to the temple. This type of design also takes pressure off the nose and distributes weight more evenly. Although many people enjoy hinges for the convenience of folding a frame, they can add to overall bulk and weight.

**Materials:**

New materials, both in synthetic and metal are available that are lighter, stronger and more durable. For instance, Silhouette uses a high-grade titanium alloy for its metal eyewear frames. Alloys allow for ultra-thin, attenuated temples. They are not only lightweight but corrosion and chemical resistant, nickel-free and hypo-allergenic. In a three step finishing process, Silhouette frames are lacquered for UV, impact, scratch and allergy protection. The same is true for frames made of the company's proprietary synthetic called SPX (Silhouette Polyamid X) which has

twice the strength of acetate. This material is perfect for those who love the colors available with plastic eyewear frames.

Most important is that both types of materials have what is called “shape memory”. Shape memory is the ability of a material to keep its form even after being stretched out or bent multiple times. This is especially important for eyewear as it is put on and taken off repeatedly. Quality eyecare professionals are familiar with the term “shape memory” and can direct consumers to frames that have this important feature.



**Is your eyewear outdated? Older eyewear can be bulky, ill-fitting and uncomfortable.**

### **Weight and fit:**

Going the way of computers, cell phones, golf clubs and just about everything else, eyeglasses have become significantly lighter. Wearing comfort in the 20th century was hindered by the weight of the frames and lenses, sometimes close to one pound of pressure on the nose and ears. Headaches, indentations in the skin, hot spots (sore spots on the sides of the head from tight, heavy and inflexible temples) and slipping glasses were common. New materials and better designs have resulted in eyewear that is much more comfortable, with a weight that can be nearly imperceptible.



**Modern eyewear is lightweight, durable and unobtrusive. It allows the wearer's personality to shine through.**

The eyewear market today offers lighter lenses and featherweight frames that gently hold the face of the wearer and stay perfectly in place. This has led to an ameliorating health benefit for eyeglass wearers. Silhouette's titanium eyewear, for instance, weighs just 1.8 grams. This high quality eyewear has been credited by doctors and consumers alike for relieving sinus pain caused by pressure of frame weight on the nose as well as headaches from temple pressure weight behind the ears.

Ergonomic fit is also an important consideration. Balancing the

pressure of even lightweight frames can have discernible effect on comfort over time. New frame designs distribute weight between the nose pads and a slight hold of the temples to the side of the head reducing weight on the sensitive areas on the nose.

Additionally, for people who wear helmets, streamlined and ultra-thin temples will fit gently underneath and not create the pressure and sore spots associated with bulkier frames. James Wetherbee, a veteran of six NASA space missions, credits his Silhouettes with saving his hearing as the thin temples didn't interfere with his protective headphones during take-offs and landings. Regular glasses would have pushed out the padded foam and let in high decibel noise which can lead to permanent hearing damage.



**Former NASA astronaut James Wetherbee prepares for his launch wearing his Silhouette Titan Minimal Art rimless eyewear. He credits Silhouette eyewear for its performance and durability during space missions.**

### **Rimless versus Full Frame:**



Choosing a rimless eyewear frame over a full frame is more than just a stylistic choice. A full frame can have a significant impact on peripheral vision. A good analogy for comparison is the difference between riding a motorcycle and driving a car. Like a car, a full frame encloses



a view and limits the visual field. Depending on the size and thickness of the frame front and temples, visibility can be limited as much as 20%. While this type of restriction is not a hindrance for sedentary activities such as working on a computer, it can be for activities that require a full range of sight, such as required in driving, active professions and most sports.

By contrast, rimless eyewear, particularly styles with thin, attenuated temples, open up the range of vision. They allow the eye to see the full 180 degrees of the visual field without turning the head as is the case with a full frame. Early design and material flaws gave rimless eyewear a bad reputation fifteen years ago, but today's models offer unsurpassed durability. Rimless eyewear is simply a much better style choice for anyone with an active job or lifestyle. Silhouette products offer nearly limitless choices of rimless styles and colors to fit any age.



**Active professions whether it is fire-fighting or surgery need comfortable eyewear that stays in place. Rimless designs are preferable due to their enhanced field of vision.**

### **Where to Buy Quality Eyewear:**

Does your eyewear have the “right stuff”? Good quality eyewear with the right design can vastly improve your quality of life. There are thousands of quality eyecare professionals nationwide who can help you to find the eyewear that best suits you and your lifestyle. So use the latest technology to get your eyewear up-to-date. Grab your new iPhone or use Google on your computer and find the local eyecare professionals in your neighborhood that carry Silhouette and other quality eyewear designs. You’ll be glad you did.

1. Jobson International/Vision Council of America, Visionwatch Survey, September 2006

