If there is one item you can buy to improve your dentistry virtually overnight, it is a pair of high quality loupes. Even routine procedures such as examinations and simple restorations can be improved by doing them under magnification. It's just common sense—if you can see better, you'll work better. The advanced magnification systems available today have brought dentistry into a new world. They allow you to achieve a degree of perfection that is impossible with the unaided eye. And the ability to see what you are doing more clearly makes clinical practice less stressful and more enjoyable.
The amount of magnification will vary, based on personal preference. Some clinicians are very comfortable at only 2x (this usually means the image through the magnification lenses is twice as large compared to unaided vision), while other practitioners extol the virtues of the higher ranges. The 2x lenses are a good place to start if you are not currently using any form of magnification. They normally give you a relatively wide field of vision and require less break-in time than the higher powers.

Be aware that, as the power of magnification increases, the field and depth of vision typically decreases. This means you will see a fewer number of teeth through the higher power lenses and small movements of your head will interfere with focusing as compared to lower power ones. It may take you some time to get used to this smaller field of vision. You may find yourself bumping into noses, cheeks, lips, etc. until you get oriented to the smaller vision field. This problem can be largely overcome by using an expanded field prism loupes.

The higher powers, starting at 3.5x, take you to another level that is hard to believe until you experience it. Even though we feel 2x–2.5x is helpful, the real benefits of magnification start to become evident at 3.5x. This doesn’t mean you will be wasting your money purchasing a lower power system - it can be used by an assistant or hygienist assuming you have non-customized flip-ups. These staff members also need vision enhancement for their clinical procedures. Hygienists will marvel at how well they can see during root smoothing procedures while assistants will be able to precisely refine the margins of provisionals under magnification.

### Types of Loupes

#### Through-The-Lens (TTL)

The actual telescopes are mounted through holes drilled into the lenses of the eyeglasses hosting them. These are available in standard field (usually called Galilean) or wide field (usually called Prisms).

#### ADVANTAGES

- No possibility of getting out of adjustment since they are custom designed for the individual clinician concerning working distance, interpupillary distance, etc. However, a bent frame can distort even this type.
- Usually lighter in weight than flip-ups.
- Optics are closer to the eye, typically resulting in larger field of view.

#### DISADVANTAGES

- Cannot be shared with other staff members since they are custom-made for one person.
- Must be removed when you talk to patients during consults, for example, since the telescopes get in the way of eye-to-eye communication. If you wear corrective lenses, that means you must have two pairs of glasses with you at all times so you can switch back and forth.
- Due to the location of the telescopes, it is difficult to take clinical photographs while wearing them. This means that, if you are documenting a procedure step-by-step through photography, you must be constantly removing the telescopes to shoot the image. This changing of lenses during a procedure becomes very cumbersome, is a nuisance, and challenges even the most devout practitioners of asepsis.
- More difficult to clean, compared to flip-ups.
- Must return to manufacturer if your eyeglass prescription changes.
- Prescription changes for corrective lenses are more expensive.
- Declination angle is limited, which may force you to bend your neck more than what is comfortable.
- May not meet ANSI’s safety requirements.

---

© 2006 Reality Publishing Co. Vol. 20
Flip-Ups
Telescopes are mounted on a bracket attached to the bridge of the frame of the eyeglasses. This bracket, which may be a simple hinge or a hinge with a vertical adjustment, allows the telescopes to be flipped up when they’re not needed. Can be regular field (Galilean) or wide field (Prisms).

ADVANTAGES
+ Can be worn at all times during the day since they do flip up out of the field of vision and don’t interfere with communication with patients.
+ Will be less likely to interfere with photography when they are flipped up and out of the way.
+ Easier to clean than TTLs.
+ Can sometimes be shared with other staff members if eyeglass lenses are not corrective.
+ Prescription changes for corrective lenses can be done at any optician.
+ Declination angle may be more adjustable for proper ergonomics.

DISADVANTAGES
– Tend to be heavier and not as comfortable as regular corrective lenses or through-the-lens loupes. This extra weight becomes even more evident when they are flipped up because all the weight is now concentrated on the top of the lenses.
– Since they are adjustable, they can get out of adjustment if one of their tightening screws becomes loose. This means you are constantly readjusting them. The flip-up mechanism can also become loose and cause the telescopes to fall down over your glasses at inopportune times.

Working Distance
Measured from your eyes to the patient at the position where you are most comfortable working. This is one reason that it is better to be measured in your own office rather than in a convention booth at a dental meeting.

Field of View
How many teeth you can see when looking through the loupes. Usually, a wider field of view is better.

Depth of Field
How far you can move before the teeth get out of focus, similar to focusing a camera when taking clinical photos at a fixed magnification.

Declination Viewing and Viewing Angle
Determines how much you have to bend your neck and/or back to see the teeth through the loupes. A steep declination angle usually allows you to keep your neck relatively straight as you look downward toward the patient, but if it is too steep, you won’t be able to see through the loupes. This factor is one of the most important ones in preventing or minimizing musculoskeletal problems.

Cleaning and Disinfection
As mentioned above, flip-ups are much easier to clean. But all of these products require special care. None of the magnification systems should be immersed in cold sterilization solutions. Consult with each company on their specific recommendations for disinfection.

Staff
You may choose to buy one system for yourself and another one to be shared by your staff. But don’t be surprised if you end up purchasing several loupes for your staff, since enlightened auxiliaries also get excited about magnification’s virtues.

Choosing the System for You
The final decision as to which design will best suit you is a personal one. No system is perfect and you should list your objectives prior to buying. If you don’t plan on sharing your telescopes with other staff members, don’t mind having to remove your lenses for patient communication, and want the lightest in weight option (for prisms), then the through-the-lens will be your better purchase. However, if you want increased flexibility, much easier cleaning, and possibly more options in declination/viewing angles, then you should buy the flip-ups.

Since all of the products are available via a free trial period in your office, we advise all dentists and auxiliaries to take advantage of this valuable opportunity. Try one or more and pick the one which “feels right” for you. These companies are very accommodating and have received high marks from our evaluators for their excellent customer service.

Weight Measurements
The weight measurements were done on a digital scale without the retainer straps. These weights may vary based on the type of frame you select. However, you can use them for comparison.