



ADJUSTMENT AND CARE OF SPECTACLES

THINK

A man comes to your clinic with the spectacles that you made for him. He tells you that although he sees well with his new spectacles, he cannot wear them because they hurt the backs of his ears too much.

A person may see well with spectacles, but if they do not fit comfortably they will not want to wear them.

AIM

This unit will show you how to adjust spectacle frames so that they fit a person comfortably, and what to tell people about caring for their spectacles.

LEARNING OUTCOMES

When you have worked through this unit you should be able to:

- name the different parts of a spectacle frame and describe what each part is for
- help a person choose a spectacle frame that fits them well
- adjust a new spectacle frame for a person
- re-adjust an old spectacle frame for a person
- tell people how to care for their spectacles.

OPTICAL SPECTACLES

- Optical spectacles (or simply, “spectacles” or “glasses”) are made by fitting optical lenses into a spectacle frame.
- Spectacle frames come in a variety of sizes, styles and frame materials.

SPECTACLE FRAME MATERIALS

Spectacle frames can be made from many different materials.

The most common spectacle frame materials are:

- metal
- plastic.

Metal Frames

Advantages:

- Light to wear.
- Easy to adjust the fit.
- Adjustable nose pads, so comfortable on the nose.

Disadvantages:

- Can corrode (turn green) or rust.
- Corroded surfaces can cause skin problems.

Plastic Frames

Advantages:

- Available in bright colours.
- Can be light to wear.

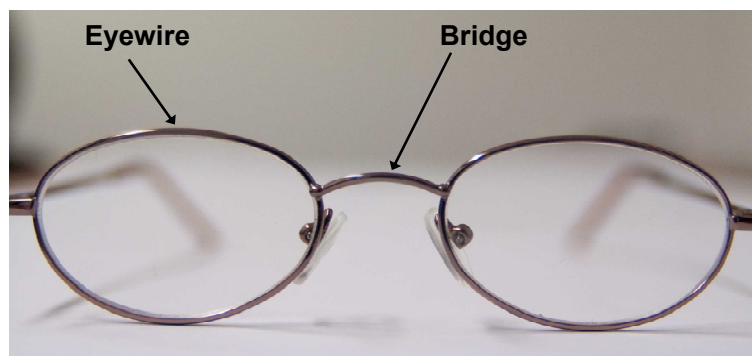
Disadvantages:

- Become brittle with age – can break easily when the frames become old.
- Require heat to adjust the fit.

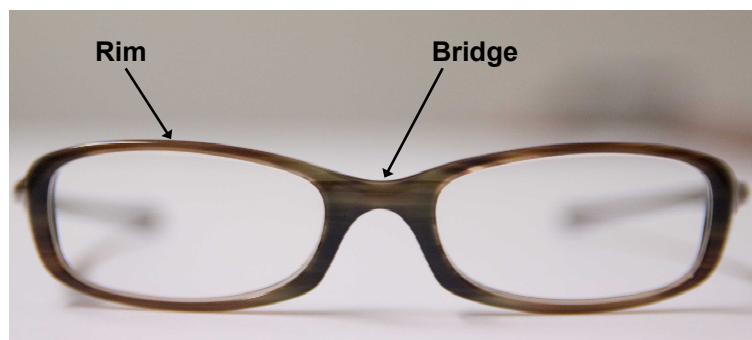
SPECTACLE FRAME PARTS

FRAME FRONT

- The frame front is the largest part of a spectacle frame.
- It is made up of the
 - eyewire or rim
 - bridge.



Metal spectacle frames



Plastic spectacle frames

Figure 27.1: The frame front of metal and plastic spectacles

EYEWIRE OR RIM


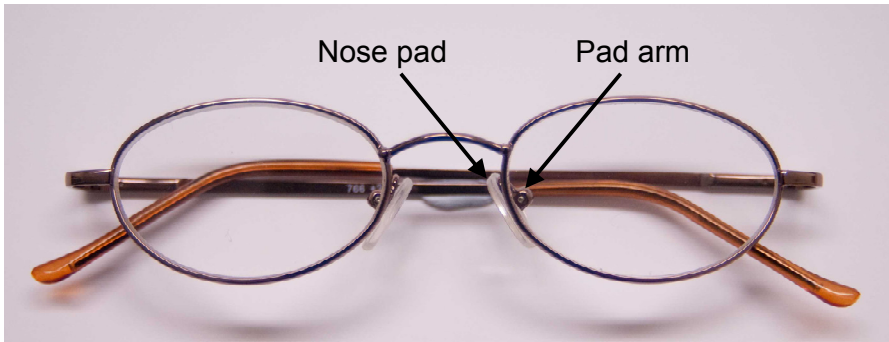
- This part of the frame has a different name depending on whether the frame is metal or plastic:
 - A metal frame has an eyewire
 - A plastic frame has a rim.
- Every spectacle frame has two eyewires or rims – one for each eye.
- The eyewires or rims hold the spectacle lenses in the spectacle frame.
- To fit a lens into a metal spectacle frame:
 - a screw is loosened on the side of the eyewire
 - the eyewire opens
 - the lens is fitted inside the eyewire
 - the screw is tightened to keep the lens in place.
- To fit a lens into a plastic spectacle frame:
 - the frame must be heated carefully to allow it to stretch
 - the lens is pushed into the rim
 - the frame is allowed to cool.



Some metal readymade spectacle frames do not have screws on the eyewires.

Readymade spectacle frames are not usually suitable for fitting new spectacle lenses into. They are only used with the lenses they come with.

SPECTACLE FRAME PARTS (cont.)

<p>BRIDGE</p>	<p>The bridge is the part of the frame that joins the two eyewires or rims together.</p> <div data-bbox="464 349 587 454">  </div> <p>The bridge of a pair of spectacles is the middle part of the frame that joins the two eyewires or rims together.</p> <p>The bridge of a person's nose is the top of their nose (between their eyes and below their forehead).</p>
<p>NOSE PADS</p>	<p>Nose pads are the only part of the spectacle frame that should touch a person's face.</p> <p>Metal Frames</p> <ul style="list-style-type: none"> - Two nose pads are attached to the front of metal frames below the bridge. Some nose pads are attached by screws, while other nose pads are simply pushed into position. - Each nose pad is attached to one of the eyewires by a small pad arm. The pad arm allows the angle of the nose pad to be adjusted to suit the shape of a person's nose. Each nose pad should lie flat against the side of the wearer's nose. - Nose pads are usually made of plastic or silicone and they come in different shapes and sizes. - Nose pads are translucent (clear) in colour when they are new. - Perspiration (sweat) and time will discolour the nose pads – usually they will become brown or green. - Nose pads can easily be replaced if necessary. <p>Plastic Frames</p> <ul style="list-style-type: none"> - Plastic frames do not have separate nose pads. - Plastic frames have the sides of their rims shaped so that they rest comfortably on the nose. - If the plastic frame does not rest comfortably on the person's nose, the nose pad area cannot be adjusted. - The person will need to choose a different spectacle frame. <div data-bbox="544 1458 1437 1798">  </div> <p>Figure 27.2: Metal spectacle frames with nose pads attached to the eyewires with pad arms</p>

SPECTACLE FRAME PARTS (cont.)

TEMPLES

- The temples are the side parts of the spectacle frame that hold the frame front to the sides of the person's head
 - They are sometimes called the "arms" of the frame.
- The temples extend from the frame front along the sides of the person's head and wrap around their ears.
 - The temples attach to the frame front with hinges.
 - The part of the temple that wraps around the ears is called the temple tip.
- Metal frames usually have metal temples, but the temple tip is typically coated in plastic.
- Plastic frames usually have plastic temples, but they typically have a metal wire inside them to make them stronger.

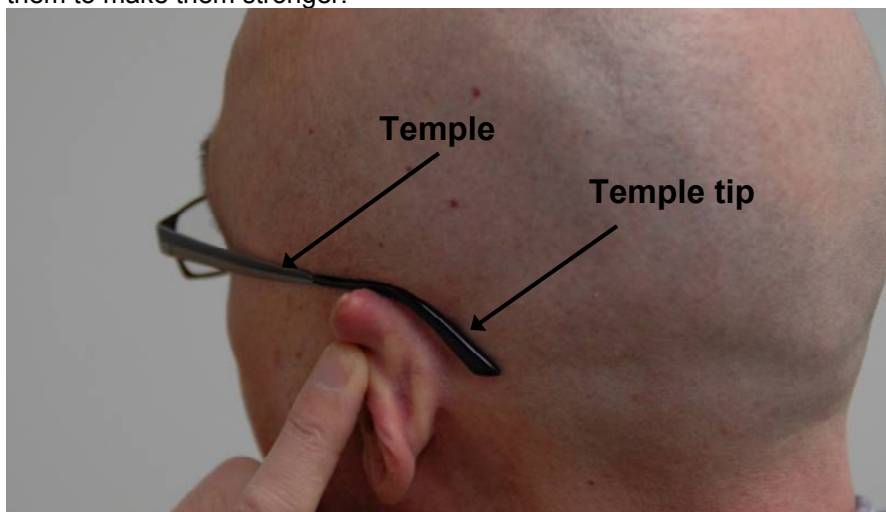


Figure 27.3: The left temple of a pair of spectacles

HINGES

- Each spectacle frame has two hinges that join the frame front to the temples
 - They are sometimes called the "joints" of the frame.
- The hinge allows the temples of the frame to fold in so that they rest against the frame front.
 - This allows the spectacles to be put in a spectacle case.
- Some hinges have springs in them while others only have a screw.
- Spectacles that have spring-loaded hinges:
 - are usually stronger than those that only have hinges with a screw.
 - allow the temples to bend out slightly, as well as letting them fold in.
- Spectacles that have a screw hinge only:
 - do not allow the temples to bend outwards – they can only fold inwards.
 - must have the screw tightened correctly
 - If the screw is too loose, it may fall out and the temples will fall off the frame.
 - If the screw is too tight, the temples will not fold inwards (if they are forced, the hinge can be damaged).



Spectacle screws come in many sizes (lengths and thicknesses). Spectacle screw sizes can vary between:

- different spectacle frames
- different parts of the same spectacle frame (hinges and nose pads).

SPECTACLE FRAME PARTS (cont.)

HINGES (cont.)

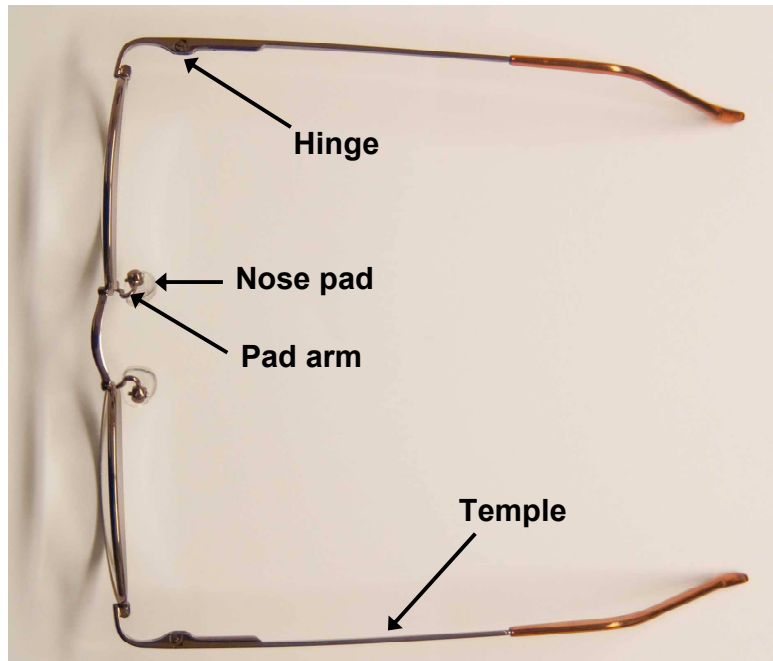


Figure 27.4: Looking at a pair of spectacles from above

CHOOSING A SPECTACLE FRAME

SPECTACLE FRAME SIZES AND STYLES

- Spectacle frame sizes and styles change with changing fashions, but there will always be a variety of frames to choose from. Not every frame is suitable for every person, or for every type of spectacle prescription.
- The size and shape of a person's head and face must be considered when choosing a frame size.
- If a frame is too small or too large for a person it will not be comfortable to wear and may affect the person's vision through the spectacle lenses.



Dean Saffron, courtesy of Brien Holden Vision Institute Foundation

Figure 27.5: A child playing with spectacles that are much too large for him



Just like we must choose shoes that fit our feet, we must also choose frames that fit our head and face.

Spectacle frames will only do their job properly if they are the correct size for a person.

The appearance of the spectacle frame and spectacle fashions should be a secondary consideration.

Important factors to consider when helping a person choose a spectacle frame are the:

- distance between the person's face and ears
→ think about the temple length needed.
- shape of the person's nose
→ think about the distance between the nose pads
→ think about the angle that the nose pads need to make.
- width of the person's face and distance between their eyes
→ think about the frame front width.

CHOOSING A SPECTACLE FRAME (cont.)

TEMPLE LENGTH	<ul style="list-style-type: none"> • If the temple is too short, it will not be long enough to wrap around the person's ear. • If the temple is too long, it will extend too far behind the person's ear.
NOSE PADS	<ul style="list-style-type: none"> • The distance between the nose pads affects how high the frame will be on the person's face: <ul style="list-style-type: none"> - If the distance between the nose pads is too wide, the frame will be too low on the person's face. - If the distance between the nose pads is too narrow, the frame will be too high on the person's face. • The nose pads must be angled so that they sit flat against the person's nose: <ul style="list-style-type: none"> - If the nose pads cannot be adjusted to do this, a different frame must be selected.
FRAME FRONT WIDTH	<ul style="list-style-type: none"> • An ideal frame width is one where the person's pupils are in the centre of the frame eyewires or rims. • The width of the frame front will affect how tightly the frame fits the person: <ul style="list-style-type: none"> - If the frame front is too wide, the frame will be too loose for the person. - If the frame front is too narrow, the frame will be too tight for the person.

TOOLS USED TO ADJUST SPECTACLES

Spectacles require special tools for fitting lenses and adjusting their fit.

A spectacle tool kit is shown below.

Each of these tools has a special purpose.

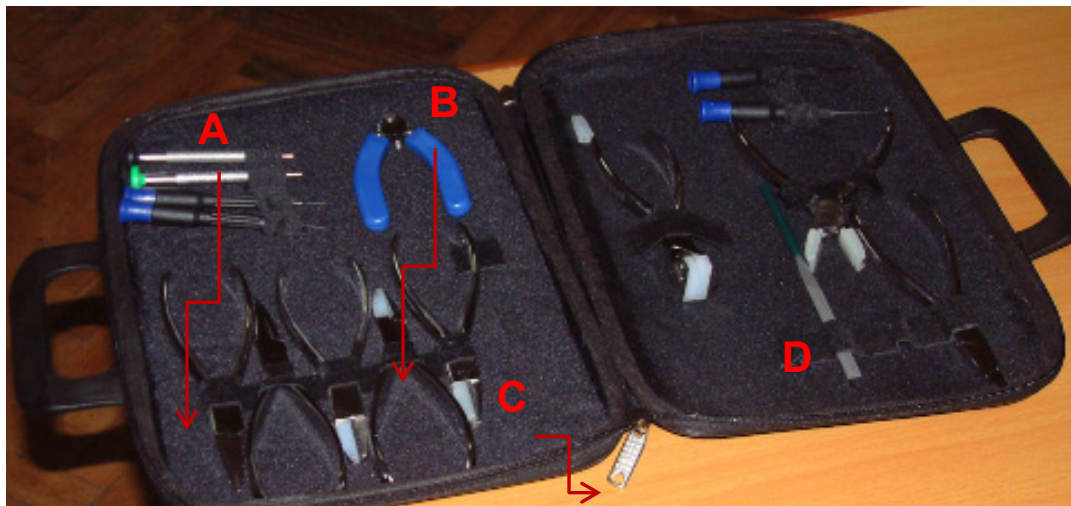


Figure 27.6: Tools used to adjust spectacles

<p>TOOLS</p>	<p>A. Screwdrivers</p> <ul style="list-style-type: none"> • Screwdrivers are used to tighten and loosen screws. • They can be flat-head or Phillips-head (cross-shaped) and come in a variety of sizes. <p>B. Wire cutters</p> <ul style="list-style-type: none"> • Wire cutters are used to cut metal parts of spectacle frames. • They are useful for cutting the ends off screws that are too long, and for cutting temple wires that need to be made shorter. <p>C. Pliers</p> <ul style="list-style-type: none"> • Pliers are used to change the shape of the spectacle frame. • They come in different shapes and sizes. Different types of pliers are used for different parts of the spectacle frame. • Pliers for spectacle frames often have a plastic or padded covering so that the frame does not get scratched or damaged when it is adjusted. <p>D. Nail File</p> <ul style="list-style-type: none"> • A nail file is used to smooth sharp edges or rough parts of a spectacle frame. • It is especially useful for shortening or blunting the ends of screws.
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TOOLS USED TO ADJUST SPECTACLES (cont.)

FRAME HEATER

- Frame heaters are used to heat both plastic and metal frames. This makes them easier to adjust.

Plastic Frames:

- The heater makes the plastic softer, allowing a smoother bend.
- If plastic frames are not heated before they are adjusted, the frame can break.

Metal Frames:

Plastic temple tips and other plastic parts of a metal frame should be heated before adjusting.



Figure 27.7: Using a frame heater to adjust a plastic spectacle frame

- When using a frame heater you must keep moving the frame. If the frame is overheated in one place it can burn or be damaged.
- Make sure that the frame is not too hot before putting it back on the person's face.
 - Warn the person that it might feel slightly warm.
- If you do not have a frame heater, a hairdryer can sometimes be a useful alternative.

TOOLS USED TO ADJUST SPECTACLES (cont.)

Spectacle frames need to be adjusted several times during their lifetime:

- New spectacle frames always need to be adjusted to fit each person individually.
- Spectacle frames change shape with time and use. A spectacle frame may need to be re-adjusted every few months.

GOALS OF SPECTACLE ADJUSTMENT

- The spectacles must be comfortable for the person to wear.
 - The pressure should be distributed between the three points of the fitting triangle.
- The spectacles should look good on the person.
 - They should be straight and aligned with the person's face and head shape.

A well adjusted spectacle frame will put pressure on the person's face and head in only three places:

- the bridge of the person's nose
- the sides of the person's head above their ears
- the top of each of the person's ears.

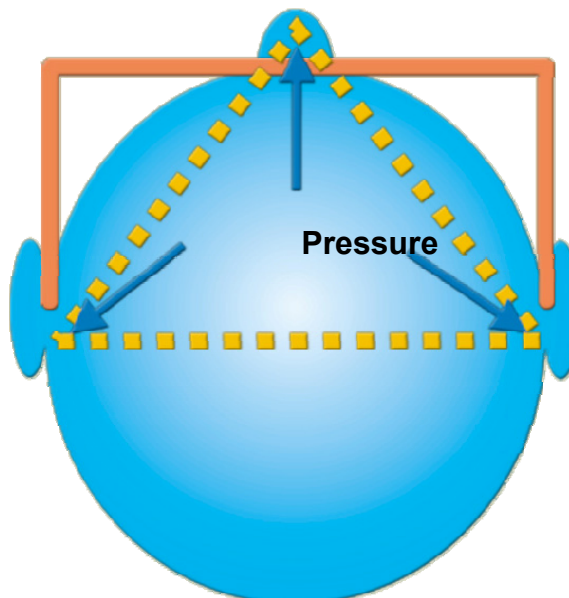


Figure 27.8: The fitting triangle

- If the frame puts pressure on other parts of the person's head or face, the frame is not fitted correctly and the person will be uncomfortable. In this case the frame will need to be adjusted again.

TOOLS USED TO ADJUST SPECTACLES (cont.)

The different parts of a spectacle frame must be adjusted in the correct order – from the front to the back:

- Adjust the front of the frame first
- Adjust the back of the frame last.

HORIZONTAL ALIGNMENT

- The frame must be perfectly horizontal on the person's face.
 - Look at how the top of the frame looks compared to the person's eyes and eyebrows.
- If the frame is not horizontally aligned the temples will need to be bent with pliers:
 - If the right side of the frame is too low
 - bend the right temple down.
 - If the left side of the frame is too low (*as seen in the photograph below*)
 - bend the left temple down.

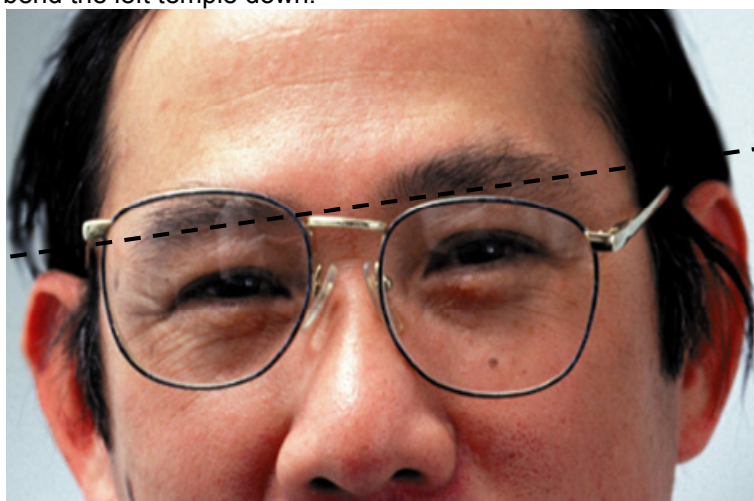


Figure 27.9: This frame needs its horizontal alignment adjusted

FACIAL WRAP

- The frame front should curve so that it follows the shape of the person's face.
 - The frame front should never be completely straight – it should always be less than 180°.
- To adjust facial wrap use your hands, put gentle pressure on the bridge until you get the shape you want.

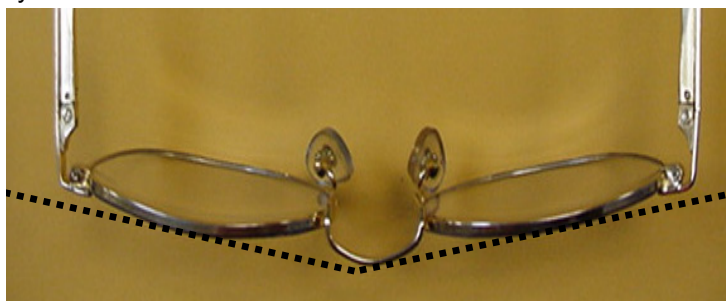


Figure 27.10: A spectacle frame with good facial wrap

TOOLS USED TO ADJUST SPECTACLES (cont.)

FACIAL WRAP (cont.)



Figure 27.11: A spectacle frame with bad facial wrap



You must adjust the horizontal alignment of the frame front and the facial wrap before you adjust the temples.

BRIDGE FITTING

- A person's nose supports most of the weight of their spectacles.
 - The nose pads rest on the nose and provide pressure on the nose (the first point of the fitting triangle).
 - The nose pads must be adjusted carefully to make sure that the frame fits the person well.
- Plastic frames do not have adjustable nose pads so these frames will need to be chosen very carefully.
 - A plastic frame will only fit the noses of some people, not everyone.
 - It is very difficult to find a plastic frame that will fit a person who has a wide and flat nose bridge. These people usually need to wear metal frames.
- Metal frames usually have nose pads on adjustable pad arms. These nose pads must be adjusted to the correct:
 - distance between the nose pads
 - frontal angle
 - splay angle.

DISTANCE BETWEEN NOSE PADS

- The distance between the nose pads affects how high the frame front will sit on a person's face.
- The closer together the nose pads are:
 - the higher the frame will sit.
 - The further apart the nose pads are:
 - the lower the frame will sit.

TOOLS USED TO ADJUST SPECTACLES (cont.)

FRONTAL ANGLE

- The frontal angle is the angle that the nose pads make when looked at from the front.
- The nose pads should follow the shape of the person's nose. They should be:
 - closer together at the top
 - further apart at the bottom.
- A person who has a nose that is very wide or very flat at the bridge will need a larger frontal angle than a person with a narrower nose.

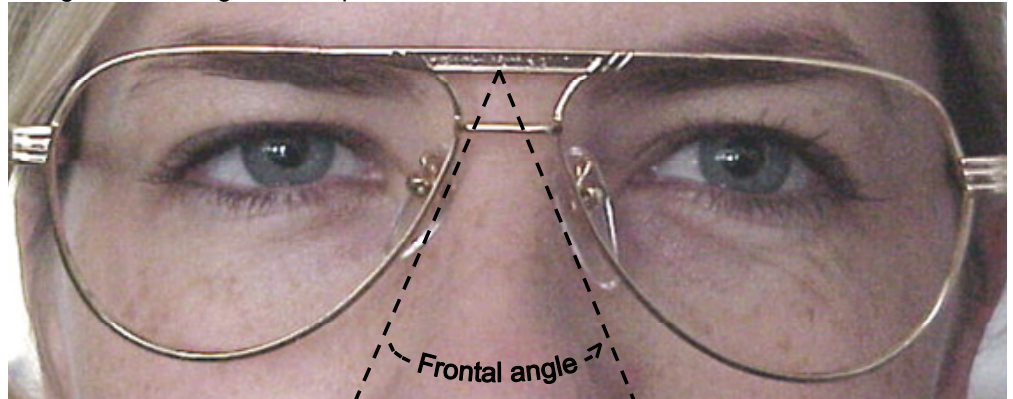


Figure 27.12: Frontal angle of nose pads on a metal spectacle frame

SPLAY ANGLE

- The splay angle is the angle that the nose pads make when looked at from above.
- The nose pads should follow the shape of the person's nose. They should be:
 - closer together at the front
 - further apart at the back.
- A person who has a nose that is very wide or very flat at the bridge will need a larger splay angle than a person with a narrower nose.

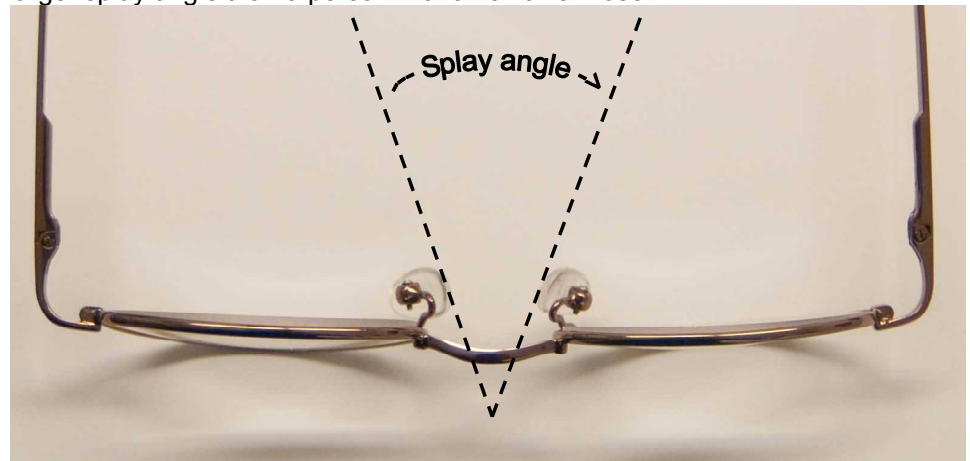


Figure 27.13: Splay angle of nose pads on a metal spectacle frame



If the bridge of a person's nose is very wide or flat they may not be able to wear plastic frames, because the nose pads of plastic frames cannot be adjusted.

If they wear metal frames the nose pads will need to be adjusted carefully. They will need a larger:

- frontal angle
- splay angle.

TOOLS USED TO ADJUST SPECTACLES (cont.)

PANTOSCOPIC TILT

- The pantoscopic tilt is the forward vertical tilt of the lenses in the spectacle frame. It is needed to give the person good vision through their spectacle lenses.
- The pantoscopic tilt should never be completely vertical – it should always be less than 90°.

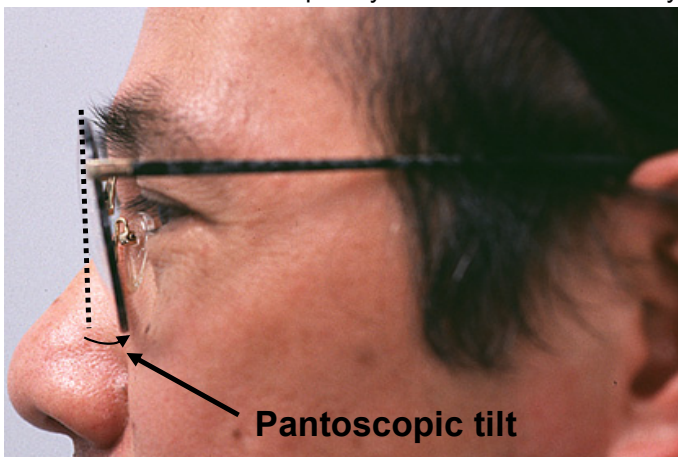


Figure 27.14: Good pantoscopic tilt

- You may have to reduce the pantoscopic tilt if the frame touches the person's cheeks. However, you cannot reduce it too much – you may have to choose a different frame.
- To adjust the pantoscopic tilt, use angling pliers to bend the temples near the hinge.
 - To increase the pantoscopic tilt → bend the temples down.
 - To decrease the pantoscopic tilt → bend the temples up.

TEMPLE WIDTH

- The sides of the temples should not touch the sides of the person's head – except at the ears.
- There are two ways to increase the temple width:
 - use a file to remove a small amount of the temple edge near the hinge
 - bend the temples out slightly (approximately 1 cm) with pliers
 - this is usually easier to do for a metal frame
 - plastic frames usually need to be heated before bending the temples.
- To decrease the temple width:
 - bend the temples in slightly (approximately 1 cm) with pliers.
- Be careful not to bend the frame at the hinge itself. If you do this the hinge may be damaged or become loose.
- Make sure that both temples are symmetrical (the same on both sides). If the temples are not symmetrical, one temple may cause pressure on one side of the person's head and make them feel uncomfortable.

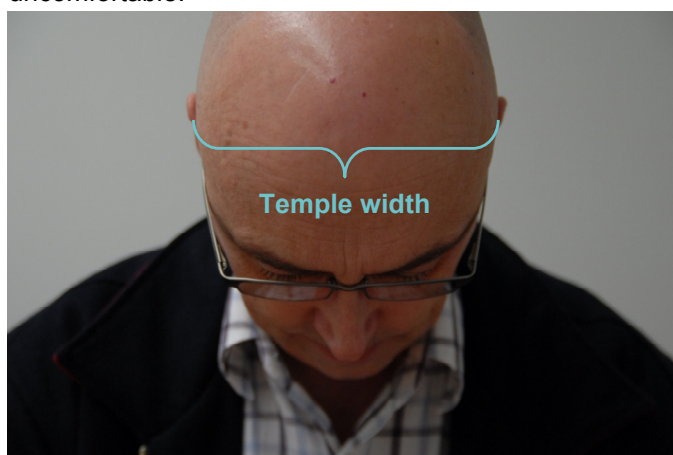
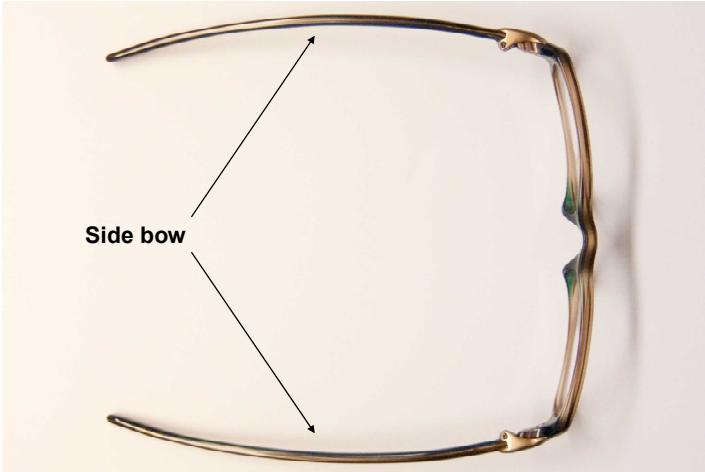
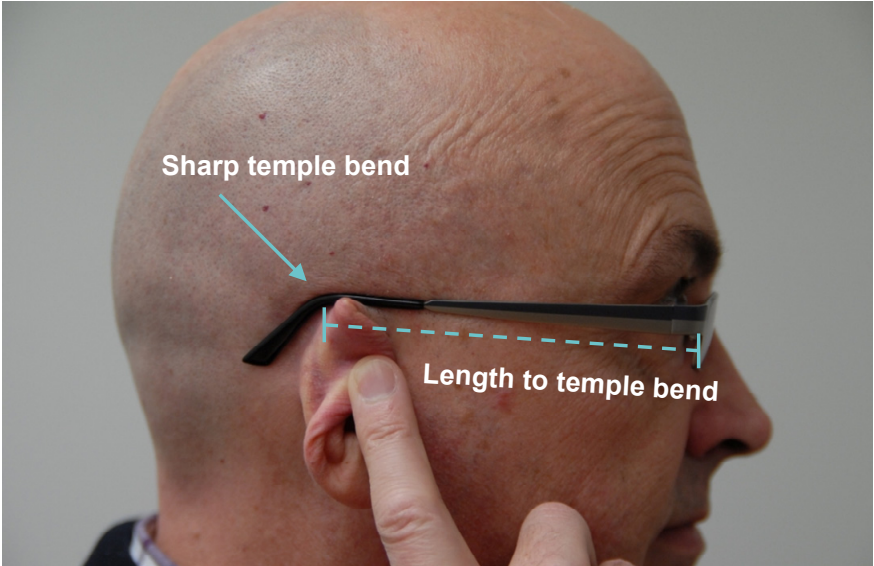


Figure 27.15: Temple width

TOOLS USED TO ADJUST SPECTACLES (cont.)

<p>SIDE BOW</p>	<ul style="list-style-type: none"> After the temple width has been adjusted correctly, the ends of the temples must be bent inwards slightly. This is to create pressure at the ears (two points of the fitting triangle) and keep the spectacles firmly positioned on the person's head. To adjust the side bow: <ul style="list-style-type: none"> use your hand to put gentle pressure along the temple length until you get the shape you want. a plastic frame will need to be heated before the side bow can be adjusted.  <p><i>Figure 27.16: This plastic spectacle frame has a lot of side bow</i></p>
<p>LENGTH TO TEMPLE BEND</p>	<ul style="list-style-type: none"> The length to the temple bend (or simply, the "length to bend") is the distance between the frame front and the place where the temple starts to bend down around the person's ear. The bend should start 2 mm behind the place where the ear joins the head. This lets the frame move slightly, and makes it more comfortable for the person when they smile or make other facial expressions. <ul style="list-style-type: none"> If the bend starts in front of the ear, or more than 2 mm behind the ear, the spectacles will slide forwards. The person will need to keep pushing them back onto their face with their finger.
<p>TEMPLE BEND</p>	<ul style="list-style-type: none"> The bend on the temple tip should be a sharp bend (like the bend that the temple has when it comes from the manufacturer), not a gradually curving round bend.  <p><i>Figure 27.17: A correctly adjusted spectacle temple</i></p>

TOOLS USED TO ADJUST SPECTACLES (cont.)

TEMPLE BEND (cont.)

- To make the temple bend, use your hands:
 - Heat the temple tip so that it is easier to bend.
 - Straighten the temple to remove the manufacturer's bend.
 - Put the spectacles on the person and ask their permission to look behind their ear to see where the temple bend should begin.
 - Remove the spectacles and make a sharp bend at this place.
 - use one of your fingers to support the temple under the bend.
 - Put the spectacles back on the person and check that the temple bend is in the correct place.
- The bent part of the temple tip should follow the shape of the back of the ear (where the ear joins the head) for at least half its length.
- Once the temple has been bent at the correct angle downwards, it then needs to be bent at the correct angle inwards or outwards.
 - The bent part of the temple should follow the shape of the bone at the side of the person's head (behind the ear).
 - This part of the temple needs to press very gently into the sides of the person's head.
 - It should not be angled in towards, or away from, the person's head.

PROBLEM SOLVING GUIDE

WHAT IS THE PROBLEM?	WHAT CAN YOU DO?
Sore nose	<ul style="list-style-type: none"> Adjust nose pads so they sit flat against the sides of the nose <ul style="list-style-type: none"> distance between the nose pads frontal angle splay angle. Adjust temples. Check: <ul style="list-style-type: none"> temple width side bow length to temple bend.
Red marks on the nose (one side or both sides)	<ul style="list-style-type: none"> Adjust nose pad(s) so they sit flat against the sides of the nose <ul style="list-style-type: none"> distance between the nose pads frontal angle splay angle. Adjust temple(s). Check: <ul style="list-style-type: none"> temple width (make sure it is even on both sides) side bow length to temple bend.
Sore behind ear(s)	<ul style="list-style-type: none"> Adjust temple(s). Check: <ul style="list-style-type: none"> temple width side bow length to temple bend temple bend.
Sore on top of ear(s)	<ul style="list-style-type: none"> Adjust temple(s). Check: <ul style="list-style-type: none"> temple width side bow length to temple bend temple bend.
Spectacle frame touches cheek	<ul style="list-style-type: none"> Decrease pantoscopic tilt Decrease distance between nose pads.
Eyelashes touch spectacle lenses	<ul style="list-style-type: none"> Adjust pantoscopic tilt Decrease distance between nose pads.
Spectacles slip down nose (and the frame is loose)	<ul style="list-style-type: none"> Decrease temple width Tighten hinge screws Adjust temple(s). Check: <ul style="list-style-type: none"> temple width side bow length to temple bend temple bend.
Spectacles slip down nose (and the frame is tight)	<ul style="list-style-type: none"> Increase temple width Increase side bow
Frame is not straight	<ul style="list-style-type: none"> Adjust horizontal alignment.

ADJUSTING OLD SPECTACLE FRAMES

- Older spectacle frames are more fragile than newer spectacle frames.
 - This is especially the case for plastic frames which become brittle with age.
- A spectacle frame that has been bent out of shape and fixed several times, will be more fragile than a frame that has never been damaged.
 - Take care when fixing damaged frames.
 - Warn the person that the frame may break when you try to fix it.



When you adjust an old or damaged frame, warn the person that the frame might break during the adjustment.

Tell the person that you will be very careful, but if the frame breaks you cannot take responsibility for the damage.

CASE STUDY EXAMPLES

CASE 1

A woman tells you that when she wears her spectacles both sides of her head (near her ears) get sore.

- This usually happens because the temple width is too narrow.
- To make the temple width wider you can either:
 - use a file to remove a small amount of the temple edge
 - use pliers to change the angle between the frame front and the temples.

CASE 2

An artist tells you that when he wears his spectacles they keep slipping down his nose.

- This can happen if:
 - the temples do not give enough pressure on the sides of the head, or
 - the temple bend is incorrect.
- To correct the pressure on the sides of the head:
 - make the temple width narrower
 - use pliers to change the angle between a metal frame front and its temples
 - heat a plastic frame before changing the angle between the frame front and its temples.
 - increase the side bow
 - use your hands to make the temples curve in towards the head more
 - plastic temples may need to be heated slightly.



After a person has been wearing their spectacles for some time, the temple width often needs to be re-adjusted.

This is because the bends between the frame front and the temples get stretched each time the person puts their spectacles on or takes them off.

Tell the person that it is better to use two hands when putting their spectacles on or taking them off.

CASE STUDY EXAMPLES (cont.)

<p>CASE 2 (cont.)</p>	<ul style="list-style-type: none"> To correct the temple bend: <ul style="list-style-type: none"> – heat the temple tip – straighten the temple – put the spectacles on the person and see where the temple bend should start (ask their permission to look behind their ear) <ul style="list-style-type: none"> → 2 mm behind where the ear joins the head is best – Remove the spectacles and make a sharp bend – Put the spectacles back on the person's face to see if your bend is correct. <div data-bbox="469 629 592 734"> </div> <p>If the temple bend is adjusted properly in the beginning, it usually does not need to be re-adjusted in the future.</p>
<p>CASE 3</p>	<p>You notice that there are lines on the side of a young man's head after he has been wearing his spectacles. He tells you that they sometimes slip forward when he leans forward.</p> <ul style="list-style-type: none"> This usually happens because the temples are pressing too hard on the side of the head in front of the ears. To correct this: <ul style="list-style-type: none"> – increase the temple width – increase the side bow.
<p>CASE 4</p>	<p>You notice that an old man's spectacle frame is not sitting straight on his face.</p> <ul style="list-style-type: none"> This happens if: <ul style="list-style-type: none"> – one ear is higher than the other – one temple is bent down further than the other (this often happens when spectacles are sat on or squashed). To correct the horizontal alignment: <ul style="list-style-type: none"> – If the right side of the frame is too low <ul style="list-style-type: none"> → bend the right temple down, or the left temple up. – If the left side of the frame is too low <ul style="list-style-type: none"> → bend the left temple down, or the right temple up. <div data-bbox="469 1659 592 1765"> </div> <p>If the spectacles have been bent out of shape by accident, don't forget to warn the person that they may break when you try to fix them.</p>

CARING FOR SPECTACLES

Spectacle frames and lenses must be cared for if the person wants them to last for several years.

You must teach people the correct way to look after their spectacles.

WHAT TO TELL PEOPLE ABOUT CARING FOR THEIR SPECTACLES

- If the spectacles are not being worn (if they are not on the person's face) they should always be kept in their case.
 - A hard case is best.
 - A soft case or a piece of soft fabric is also good
 - Material from an old T-shirt is useful
 - it can be sewn into a small bag to keep spectacles safe.



Figure 27.18: Spectacles should always be stored in their case

- Never put spectacles on a table (or other surface) with the lenses facing down
 - This will scratch the lenses.
- To clean spectacles:
 - Use clean water and soap (or dishwashing detergent)
 - Use cold water; never use hot water
 - Rinse with clean water
 - Dry with a clean, soft cloth.



Figure 27.19: Wash spectacles with cold water and soap

CARING FOR SPECTACLES (cont.)

WHAT TO TELL PEOPLE ABOUT CARING FOR THEIR SPECTACLES (cont.)



Figure 27.20: Dry spectacles with a soft cloth

- Never leave spectacles where they can get hot
 - Heat can damage the lenses and the frame
 - Never leave spectacles in the hot sun or inside a hot car.
- Tell the person to come back to see you if their spectacles need to be re-adjusted, or if they have any questions.

SUMMARY: ADJUSTMENT AND CARE OF SPECTACLES

OPTICAL SPECTACLES

- Also called “spectacles” or “glasses”.
- Are made by fitting optical lenses into a spectacle frame.

Spectacle Frame Materials:

- Most common materials are metal and plastic.

Metal Frames:

- Advantages:
 - Light to wear
 - Easy to adjust the fit
 - Adjustable nose pads.
- Disadvantages:
 - Can corrode or rust
 - Corroded surfaces can cause skin problems.

Plastic Frames:

- Advantages:
 - Available in bright colours
 - Can be light to wear.
- Disadvantages:
 - Become brittle with age
 - Require heat to adjust the fit.

SPECTACLE FRAME PARTS

Frame Front:

- Front of the spectacle frame.
- The bridge connects the two eyewires or rims.

Eyewire or Rim:

- Optical lenses are fitted into the eyewires or rims.
- Metal frames have eyewires, and plastic frames have rims.

Bridge:

- Joins the two eyewires or rims together.

Nose pads:

- Only part of the spectacle frame that should touch a person's face.
- Metal frames have nose pads attached to the eyewires by pad arms.
 - These can be adjusted to match the shape of the person's nose.
- Plastic frames do not have separate nose pads.
 - The sides of the rims are shaped to sit comfortably on the person's nose.
 - If the frame does not fit the person's nose, they will have to choose a different frame.

Temples:

- Also called the “arms” of the frame.
- Attach to the frame front and wrap behind the ears.
- Metal frames have metal temples, but the temple tips are coated in plastic.
- Plastic frames have plastic temples, but metal wires inside them give them strength.

SUMMARY: ADJUSTMENT AND CARE OF SPECTACLES (cont.)

Hinges:

- Also called the “joints” of the frame.
- Allow the temples to fold against the frame front for storage.
- Hinges can be spring-loaded or may only have a screw.

CHOOSING A SPECTACLE FRAME

Spectacle Frame Sizes and Styles:

- Not every frame is suitable for every person.
- A comfortable frame that gives good spectacle vision is a frame that fits the size and shape of a person's head and face.
- You must consider:
 - distance between the person's face and ears (temple length).
 - shape of the person's nose (distance between the nose pads).
 - width of the person's face (frame front width).

Temple Length:

- If the temple length is too short it will not wrap around the person's ear.
- If the temple length is too long it will extend too far behind the person's ear.

Nose Pads:

- If the distance between the nose pads is too wide, the frame will be too low on the person's face.
- If the distance between the nose pads is too narrow, the frame will be too high on the person's face.
- The nose pads must sit flat against the person's nose.

Frame Front Width:

- An ideal frame front is one where the person's pupils are in the centre of the eyewires or rims.

TOOLS USED TO ADJUST SPECTACLES

Screwdrivers:

- For tightening or loosening screws.
- Can be flat-headed or Phillips-head and come in many sizes.

Wirecutters:

- For cutting metal parts of spectacle frames.
- Useful for cutting the ends of screws or temple wires that are too long.

Pliers:

- For changing the shape of spectacle frames.
- Different types of pliers are used for different parts of the spectacle frame.

Nail File:

- For smoothing sharp edges or rough parts.
- Useful for shortening or blunting the edge of screws.

Frame Heater:

- For heating spectacle frames to make them easier to adjust.
- Must be careful not to burn or damage the frame.
- You must keep the frame moving when heating it.

SUMMARY: ADJUSTMENT AND CARE OF SPECTACLES (cont.)

ADJUSTING SPECTACLES

- Spectacles need to be adjusted when:
 - they are new.
 - they have changed shape (after time and use).

Goals of Spectacle Adjustment:

- Should be comfortable to wear.
- Should look good on the person.

The Fitting Triangle:

A well-adjusted frame applies pressure in only three places:

- bridge of the person's nose.
- sides of the person's head above their ears.
- top of the person's ears.

METHOD

- The parts of a spectacle frame must be adjusted in the correct order – from front to back:
 1. Horizontal alignment
 2. Facial wrap
 3. Bridge fitting: distance between nose pads, frontal angle, splay angle
 4. Pantoscopic tilt
 5. Temple width
 6. Side bow
 7. Length to temple bend
 8. Temple bend.

PROBLEM SOLVING GUIDE

- The Problem Solving Guide will help you to know what part of the frame needs to be adjusted.

ADJUSTING OLD SPECTACLE FRAMES

- Older spectacle frames are more fragile.
 - Plastic frames especially become brittle with age.
- If a spectacle frame is repeatedly bent out of shape and then re-adjusted, it is much more fragile
 - and much more likely to break.
- Always warn people of the possibility of breakage before you adjust their old spectacle frame.

CARING FOR SPECTACLES

- You must teach people how to look after their spectacles.

What to tell people about caring for their spectacles:

- If spectacles are not being worn, they should be kept in their case.
- Never put spectacles with their lenses face down – this will scratch the lenses.
- To clean spectacles:
 - use clean water and soap (or washing detergent)
 - only use cold water
 - rinse with clean water
 - dry with a clean, soft cloth.
- Never leave spectacles where they can get hot.
- Tell the person to come back to see you if they need their spectacles re-adjusted or if they have any questions.

TEST YOURSELF QUESTIONS

1. What is the part of a spectacle frame that holds the lens called?
_____ or _____
2. What are the parts of a frame that are attached to the frame front by the joints and curl down behind the ears called?

3. Why should frames not press against the person's temples?

4. Give two reasons why spectacles may slip down a person's nose.

5. A well adjusted frame applies pressure in only three places, namely:

6. What should you tell people about cleaning their spectacles?

7. Name some advantages and disadvantages of metal spectacle frames:

ADVANTAGES OF METAL FRAMES	DISADVANTAGES OF METAL FRAMES

8. Name some advantages and disadvantages of plastic spectacle frames:

ADVANTAGES OF PLASTIC FRAMES	DISADVANTAGES OF PLASTIC FRAMES
<ul style="list-style-type: none"> Bright colours available Can be light to wear 	<ul style="list-style-type: none"> Become brittle with age Require heat to adjust the fit

9. Name one function for each of the following tools for adjusting spectacles:

Screwdrivers: _____

Wirecutters: _____

Pliers: _____

Nail file: _____

Frame heater: _____