High & Mighty Seating

- O N T H E T E C H N I C A L S I D E -

HIGH BACK & EXECUTIVE

BIG & TALL

STRETCH

TASK

SEATING

IN ASSOCIATION WITH

ergoGENESIS

FEATURING BODYBILT SEATING SOLUTIONS

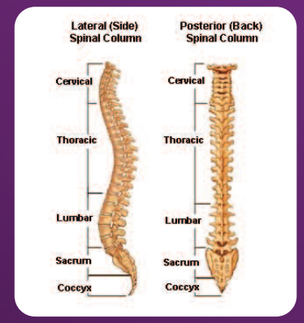
CONTENTS

ERGONOMICS OVERVIEW

Ergonomics addresses the interaction of people in their work environments integrating engineering, bio-mechanics and other disciplines to improve worker safety, productivity and general product quality. The ergonomic niche is expanding at a much higher rate of growth than the industry in general, primarily driven by the need for increased productivity and decreased worker compensation costs. Industry growth is being propelled by several factors, including increased reliance on computers in the workplace. Hundreds of millions of workers worldwide now utilise personal computers and are consequently seated for extended periods. This has led to a dramatic increase in repetitive stress injuries prompting companies to search for solutions. Also, issues such as aging populations, increased awareness of ergonomics at the corporate management level and a growing small/home office market are steadily expanding the ergonomic sector. This is independent of normal capital growth trends in the furniture industry at large.

COCCYX INJURIES AND THE TAILCUT

Imagine what it's like to not be able to sit down – any time that you sit, intense pain shoots through your bottom and back. That would be miserable, you say? So do many people who experience that on a daily basis, and unfortunately it doesn't take much to have something like that happen.



The tailbone, or coccyx, is a set of bones extending down from the sacrum. They may be fused, they may not. Believe it or not, some scientists will tell you that the coccyx is a remnant of a tail! At any rate, this set of bone is prime for damage when an individual sustains a fall flat on their bottom. Falling in winter as a result of slipping on ice is a common source of tailbone injuries. In the process of the injury, the tailbone may sustain a break and either fuse incorrectly with the bone, or become what is known as a "floating tailbone" that is no longer fused with the remainder of the coccyx, and gouges into scar tissue when pressure hits that area. The pain is typically sharp and debilitating.

Other sources of pain may be related to fibromyalgia, which bundles of angry muscle fibers and nerves bundle to form "trigger points" – again resulting in immediate sharp debilitating pain.

The method of pain reduction or elimination is therefore reducing or eliminating the source of pressure, therein lies the tailcut. The tailcut is typically an oval area cut out of the upper layers of foam on the seat pan approximately where the tailbone would come in contact with the seat – a couple of inches forward from the back border of the seat pan. The fabric of the seat pan is also cut away, and is layered into the resultant hole – actually looking somewhat it looks like it belongs on a golf course rather than in a chair. The pressure of sitting is then redistributed to the legs, the outside portion of the bottom, and the ischial tuberosities. For anyone who has experienced the pain of sitting, the pleasure of being able to sit without pain is indescribable.

The tailcut can be ordered as a custom option with the size specified if the individual needs a larger than standard cut.


ROHO CUSHION CELLS

You may wish to try the use of a ROHO prior to ordering a tailcut. Typically, you would inflate the ROHO fully then have the person deflate until they experience the comfort that they desire. In this case, the inflated ROHO may set off pain that will not subside for a period of time, so it would actually be better to start with a deflated ROHO then slowly add air to get to the desired point of comfort. The ROHO is wider than a tailcut, so the material around the ROHO may not provide sufficient support to prevent contact/pressure with/on sensitive portions of the person's body.

Providing comfort and support for someone who has not been able to experience that can be extremely gratifying – not only to you as the person who came up with the solution – but also to the person who now can return to productive work without pain.

So what are the best options to recommend with a herniated disc?

First of all, the s'port ridge is an excellent option to offer regardless where the herniation is, as the s'port ridge (option code SR) encourages preserving the curves of the spine while serving as a passive ergonomic feature encouraging the seated person to roll their shoulders back and open the chest cavity while reducing pressure where the brachial plexus nerve bundles pass through the shoulders.The s'port ridge option automatically includes s'port foam in the back of the chair, so the person has great comfort. The s'port ridge is ideally paired with comfortek fabric.

Depending upon where the herniation is, the person may benefit from an exaggerated lumbar support. In that case, the s'port lumbar (option code SL) combined with air lumbar (option code A) provide the best in lumbar support by partnering a passive ergonomic support (the s'port lumbar) with an active ergonomic support (the air lumbar) in providing the ultimate in adjustability.

There are certain situations where an exaggerated lumbar actually increases the person's pain. Minimizing the lumbar by having the air lumbar (option code A) with the air completely out of the bladder then slowly increasing the air one squeeze at a time with the air bulb gives the person an indication of where the optimal support would be for them.

As well, in certain situations the person may feel relief from the tailbone cut out option (option code tailcut). This is a section of foam and fabric strategically cut out of the seat pan where the person's base of spine (tailbone) would contact with the seat of the chair… for some, this contact is enough to create a pressure point at the base of the spine which affects the lumbar and sacral areas.

These scenarios point out the rationale that supports having the person try the chair prior to purchasing it. For some, the answer is immediately present, for others it takes a couple of days to determine whether the combination of options with the chair will work.

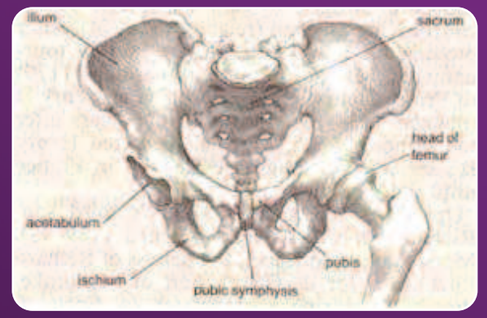
An important point to reinforce is that BodyBilt chairs have been assigned an FDA number – they are recognized as therapeutic devices – and as such may be prescribed by a physician, chiropractor, physical therapist, or other health care practitioner as a means of returning someone back to a productive work life.

Something to realize as well is that we may not be able to eliminate that person's pain – the chair may only be able to reduce it. It would be wonderful to be able to claim that our chairs do miracles and eliminate all pain regardless of its nature – but that reduces us to the ranks of snake oil salesmen. We have to be realistic and work within reasonable measures. Obviously, we're not going to be able to have every single chair combination available within our storage units … so work with your Regional Manager to determine what's best for that situation.

SEAT CONTOURS

Many people have asked about seat contours – why is it that we do a contoured seat, and what exactly are the benefits of a contoured seat?

To answer the question of why BodyBilt has a contoured seat, you have to go deep, deep, deep into the recesses of BodyBilt history… the short answer to that question (to keep us from getting lost in the catacombs) is that the original goal was to find a seat design that would provide comfort and support for long term seated posture to provide the user with not only the maximal comfort, but be able to maintain focus on their task for the long term concentration needed with intense tasking. That goal led to the development of the #2 seat.



ISCHIAL TUBEROSITIES

ISH DISH

If you've spent any time on a picnic bench, you understand all too well what part of the body gets sore – it's the sitting bones, the ischial tuberosities, which are on the bottom side of the ischium, shown on the diagram to the right.

The #2, #4 and #7 seat pans have what we refer to as the "ish dish," which can be seen when you look at the cross section of the seat. The ish dish is that spacing on the under side of the seat – it's not that someone cut the foam too short, nor is it that the glue isn't working – that spacing is designed to provide comfort and support without creating a pressure point for theischial tuberosities.

The contouring also provides the benefit of reducing seated pressure in that the contouring of the seat maximizes the contact area with the anatomy of the seated person, effectively distributing the seated pressure over a larger area.

Contouring is a passive ergonomic feature, meaning that the person seated in the chair does not have to cognitively perform an adjustment in order to take advantage of the contouring.

The contouring also includes what some would refer to as a very controversial element of the seat found in the middle of the front of the chair – the pommel. This pommel is designed as another passive ergonomic feature in that it encourages the person to sit further back in the chair to take advantage of the lumbar and back support of the chair. One of our reps has called the pommel an "ergonomic speed bump" – when you reach the bump, it's time to move back!

You may ask why do we have more than one contour in our chairs – that would indeed be an appropriate question. The answer is human variability – people have many different ideas of what feels good to them. Here's a chart that gives you a quick idea of the amount of contour for each seat pan:

7 – MODERATE CONTOUR (MOST POPULAR)

6 – PETITE SEAT, NO CONTOUR

9 – STRETCH, MODERATE CONTOUR

2 – MAXIMUM CONTOUR

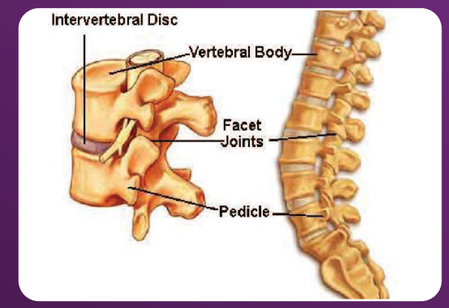
8 – MINIMAL CONTOUR

4 – BIG & TALL, MODERATE CONTOUR

3 – BARIATRIC, MINIMAL CONTOUR

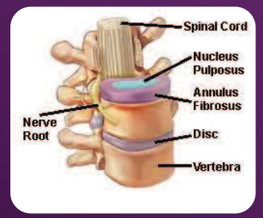
WHAT'S THE BEST CHAIR FOR HERNIATED DISCS?

That's the lead in to questions that we hear on practically a daily basis – hey, I've got this pain - hey, I've got this strain – hey, I'm recovering from… and inevitably the conversation turns right to "so what's the best chair for me and my situation?" while they look at us for Divinely guided wisdom to spew forth. Well, that's not a bad time to be praying for wisdom, but in most cases the answer should be "we need a little more information to answer your question intelligently."

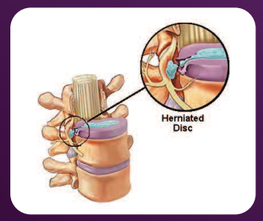


A good many of our conversations have to deal with herniated discs in the back. What's the best chair for a herniated disc? And the answer is… well, it may not be quite so obvious, as the answer could vary. Let's quickly review a little anatomy of the back:

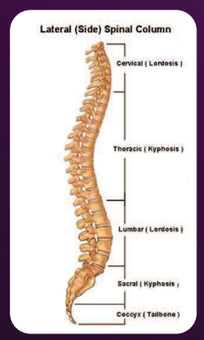
Our spines are made up of a stack of bony support structures called vertebrae. The places where vertebrae meet each other is considered joints – the points where the vertebrae articulate and move.



In between the vertebrae are intervertebral discs that are similar in consistency to jelly donuts – a little harder outer covering called the annulus fibrosis, and a pliable inner core called the nucleus pulposis.



The disc responds to pressure much the same way the jelly donut does – the disc gets thinner in areas where the pressure is, and fattens out in areas where the pressure is less – but a little too much pressure, or a little too much twist, and oops! The annulus fibrosis breaks (ruptures) and some of the nucleus pulposis (the jelly) leaks out. If that jelly leaks out at a point where a nerve is coming off of the spinal cord (a nerve root), then the jelly may put pressure on that nerve root and cause what we know as referred pain. Sciatica is an example – the problem isn't in the leg where the pain is, it's in the back where the pressure point is.

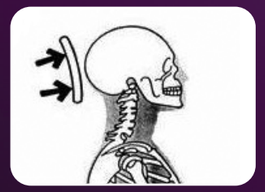


Our spines naturally have three curves in them… – an inner curve (the inner curve is called lordosis) in the cervical or neck, - an outer curve (the outer curve is called kyphosis) in the thoracic or mid-back, and - another inner curve in the lumbar, or low back.

Those curves are in place to allow us to have flexibility in motion, and play a role in stress absorption and distribution.We typically want to position a person in a chair so that we emphasize and support those three curves … preserving the curves, so to speak.

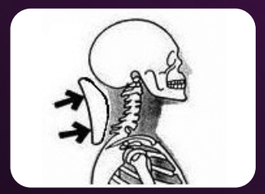
NECKROLLS

The term "neckroll" has been mistakenly identified with the concept of a headrest, but let me assure you that a neckroll is not a headrest, nor is a headrest a neckroll - there are some dramatic differences between the two.

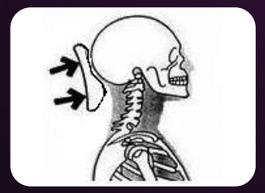


POSITIONING OF A HEADREST

The headrest is designed to do just that – allow the head to rest back against it to provide support for the head. Typically, the headrest contacts the head at approximately mid-skull, or about where the most prominent point of the skull points out in the back of the head. This usually doesn't happen when the person is seated normally in either the 90-90-90 or forward tilt/zero gravity postures in the seat – rather, it usually takes place when the person is leaning back and has a need for the additional support for the head to avoid fatiguing the neck muscles.



POSITIONING OF A NECKROLL



POSITIONING OF THE FORE-AFT NECKROLL

The neckroll, however, is designed to complement the cervical curve of the spine. The cervical curve is a lordotic curve in that it curves inward toward the body, as opposed to a kyphotic curve (such as the thoracic curve of the spine), which curves outward away from the body. The neckroll is designed to provide support for the neck at the 90-90-90 and forward tilt/zero gravity postures as well as the recline.

Unfortunately, even with the adjustability of the fore-aft neckroll there are times that the fore-aft neckroll just won't position at the right place for the person, whether they are shorter statured, or too tall, or they have a spinal deformity such as a dowager's hump that causes their necks to protrude forward. In that case, the fixed neckroll and neckroll post may be of benefit for the individual.

SEAT PANS AND CONTOURS

This Technical Side is devoted to explaining the contours in the seat pan. Let's start with the most contoured and work our way back to the least contoured… the #2 and #7 seats will be discussed in this Technical Side, the other seats will be discussed in following editions. Exact measurements of the seat pans can be found in the Product and Options Guide.

The most extreme contouring is found in the #2 seat. The U shaped contouring follows the curve around the back of the seat, then extends somewhat outward to create leg troughs to the front of the chair. Those leg troughs were designed into the chair to cradle the legs – and in that process, increases the surface area of contact with the legs. The greater amount of contact area you have with the legs and buttocks, the greater area bearing the weight of the body against the chair thus effectively lowering seated pressure on that part of the body. Lower seated pressure typically translates to greater comfort.

This contouring in the #2 seat is a passive ergonomic feature, dependent upon accurately adjusting two active ergonomic features: the seat height and the seat depth.

Who would usually want a #2 seat? Typically men of medium to large build prefer the #2 seat over the #7 – men with slight to medium build tend to lean toward the #7 as the contours are too deep for them. Many women who usually wear pants also tend to like the #2; women who wear moderate to tight skirts will not like the #2 seat. The #2 seat unfortunately puts women in a seated position that goes against everything they've always been taught about sitting lady-like, so there is an acclimation curve involved with the chair.

There are two contraindications for the #2 seat – one we've already discussed, that being for women who usually wear tighter skirts; the second being those who have had hip replacement surgery. I've had reports from several people who have said that the angle of the leg troughs is just enough to create a temporary dislocation of the hip replacement, so individuals with hip replacements should be seated in a #7 seat.

A benefit of the #2 seat is the ish dish, which is a set of strategically placed spacings (at the right and left ischial tuberosity of the pelvis, and at the coccyx or tailbone) to create comfort and support without creating a pressure point.

Another passive ergonomic feature of the #2 seat is the bump in the center of the front of the seat, more appropriately referred to as the "pommel." The pommel can be reduced (but not eliminated) by specifying the X option.

Yet another passive feature of the #2 seat is the waterfall front seat edge. This has not been designed so that if you spill your coffee in your seat that it rolls right off the front edge of the chair… it was designed to reduce the risk of creating pressure points on the back of the upper legs.

S'port foam is available in the #2 seat, but it is highly recommended that either the double stitching (S1) or ease stitching (S2) options be selected in conjunction with s'port foam in any fabric other than comfortek as there is an increased potential for creasing in the leg troughs with s'port foam.

The moderately contoured #7 seat, our most popular seat, is slightly smaller than the #2 seat and is available for use with the J, K, and R mechanisms.

The #7 seat also has the passive ergonomic features mentioned with the #2 seat: the ish dish, the pommel, and the waterfall front seat edge. Like the #2 seat, the pommelcan be reduced by specifying the X option.

The #7 seat fits the majority of the human population, so It is not usually a problem to lead with a #7 demo. The moderate contours are comfortable for most.

As with the #2 seat but not previously discussed, the #7 seat uses a multi-density layering of foam in the seat to create the comfortable support. On the bottom layer is the densest foam, called the heart foam. On top of that is a medium density layer, then if the s'port foam option is specified a layer of memory foam is added. The memory foam does not remember the butt print of the person seated in the chair – it remembers its original shape so it is crush-resistant.

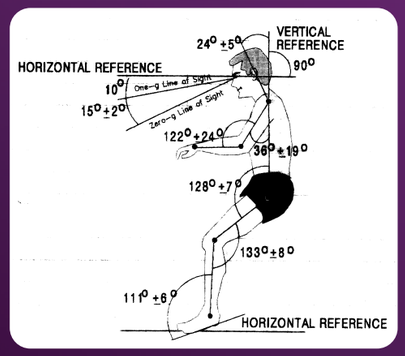
Special customization of both the 2 and 7 seats can be ordered with approval from Customer Service, such as the tailcut, double regular foam instead of s'port foam, and other options at request.

FORWARD TILT POSTURE

In a previous Technical Side, we discussed positioning in the seat. At that point, we emphasized the typical 90-90-90 positioning… but what about forward tilt? What is the origin of the forward tilt positioning? Are there any benefits to forward tilt positioning?

Forward tilt positioning, by definition, involves having the seat pan tilted forward of 90 degrees, i.e. the back of the chair is higher than the front of the chair with the resultant positioning of the worker such that the worker's hips are higher than their knees. (The pictures to the right are from OSHA's computer workstation e-tools website)

Where did the concept of this positioning come from? As man ventured into space and experienced the lack of gravity, an interesting piece of trivia was realized. In zero gravity, man's posture assumed a very characteristic positioning – not 90-90-90 as one might expect, and not a true standing position. On the contrary, the position assumed in zero gravity was that of about 128 degrees at the thigh-torso angle. That's why this is also known as the zero gravity posture.



Why is this positioning important? It is in this positioning that the ligaments and muscles are at their most relaxed position.

How do we position someone in this posture? As pictured above, start from the 90-90-90 posture. Slowly tilt the seat of the chair forward. As the chair tilts forward, the back of the chair will push the torso forward. Release the back tilt paddle and slowly adjust the back to a vertical position. Adjust the angle of the seat to the point where the person's knees are greater than 90 degrees. Because we deal with gravity, the 128 degree angle assumed in zero gravity is too great for the person to stay in the chair without significant effort from the leg muscles – for that reason, we typically compromise to a 100 to 110 degree angle at the thigh-torso angle and at the knee for a forward tilt posture. The majority of the person's weight should be borne by the butt, not at the knee and leg.

What are the benefits of the forward tilt posture? The benefits are as follows:

1. Better circulation to the lower extremities – A greater than 90 degree angle at the hip and at the knee reduces the potential for occlusion of the blood vessels leading to the lower extremities.
2. Better digestion – with the open trunk/thigh posture, there is less pressure on the stomach and intestines.
3. Easier breathing – less pressure on the abdominal cavity also means easier breathing.
4. Easier to sit and stand – the forward tilt positioning means less effort to sit and to stand.
5. For shorter statured individuals, this positioning may place them at a better position at a standard height workstation.

The armrests should provide comfortable support encouraging relaxed muscles in the arms, shoulders, and neck. The person should not have to lean one side or the other, nor should they splay their elbows outward, nor should they feel like they have to shrug their shoulders up or forward to get support. Remember the ideal torso positioning – ear over shoulder over hip.


MINI S'PORT

What size pad is best for a person? That is up to their own personal preference –

- Some people really like the elbow pad sized mini s'port pad
- Others like the somewhat full support of the 12" flat s'port pad
- Some will enjoy the 16" super s'port pad (not pictured)
- While others enjoy the size and the curvature of the 4Arm
- Yet others would choose the 10" versitask pad.


S'PORT

Again, we offer 13 different arms for a reason, and it has to do with human variability – not only in size but personal preference.


4-ARM

Don't forget to offer the linear tracking arm – the cuff gently cradles the forearm while providing support for the upper extremity, taking very little effort to move from mouse/input device to keyboard.


VERSITASK

When showing the 4Arm and how it adjusts, don't forget to mention that it has been tested to withstand 750 pounds of outward force. The armpad sits in a cog lock to keep it from moving when pushing up out of the chair… to adjust in rotation, simply pull up on the pad from both ends of the pad and rotate. Demonstrate that there is a long end and a short end – the short end is designed to allow the person to get closer to the workstation.


LINEAR TRACKING

Happy adjusting!

BODYBILT BIG & TALL SERIES SEAT PANS

In this section, we will deal with the big and tall series – the XL seat (#4), the Stretch seat (#9), and the Bariatric seat (#3).

The XL seat (#4), formerly known as the Big & Tall, is the largest BodyBilt seat with moderate contour. It is available with the S mechanism (which has two paddles to adjust seat height and seat tilt but does not have back angle adjustment, and has a back depth adjuster standard), and the J mechanism (which has three paddles on the right to adjust seat height, seat tilt, and back angle, and has either the back depth adjuster or the seat slider options available).

The XL seat is weight rated to 500 pounds. Although it is typically used for people from 300 to 500 pounds, it can easily be used for persons between 250 pounds to 300 pounds with a larger hip size who don't feel comfortable in the #2 seat, or find that the #7 or #8 seat a little tight.

The Stretch seat (#9) is BodyBilt's minimally contoured seat for individuals with long upper legs. Although there is a tendency to use height as a qualifier for the stretch seat, the real key is the length of the leg between the hip and the knee. Surprisingly, many women who are tall waisted fit very well in the #9 seat, particularly when it is accompanied by a seat slider on a J mechanism. The stretch seat is also available with a K mechanism, but be aware that the K mechanism will have limited seat depth as it cannot have either a back depth adjuster or a seat slider.

Both the #4 seat and the #9 seat use the multi-layered multi-density foam system used in other BodyBilt seats.

The Bariatric seat (#3), is as of this writing the largest of the BodyBilt seats with a weight rating of 600 pounds. It exclusively uses the B (Bariatric) mechanism, which has height adjustment and limited seat pan tilt. The #3 seat uses a unique and exclusive set of layered multi-density foams, different from any other BodyBilt seat.

BodyBilt – seven seat pans, six seat backs, multiple arms – all add up to modularity and comfort in an ergonomic package.

BODYBILT GOT CONTOUR - THEN AGAIN...

In this section, we will deal with two seat pans that have the least amount of contour – the 6 and the 8.

The #6 seat pan, typically termed the petite, is the smallest of the BodyBilt repertoire, but can hardly be called the runt of the litter. The #6 seat pan features the passive ergonomic feature of the water-fall front edge, and provides exceptional support through multi-density layering of foam.

The #6 has found its niche in other places beside the obvious, that being for individuals of smaller stature. This seat pan has been successfully used to fit individuals well under five feet in height, but has also found a great position for use as a laboratory seat and as a scooter (sit/stand application). The J206-F1 has become the chair of choice in many research laboratories (the University of Michigan, for example), and has been the center of attention at several conferences. The right sized seat pan makes it a favorite in tighter places, such as dental and medical office exam rooms.

The #6 seat pan does not have the ish dish spacing under the foam as the #7 and #2 seats, but as mentioned the multi-density layered foam provides good support without creating pressure points.

Items to remember about the #6 seat – at the writing of this Technical Side, the #6 seat pan cannot be used on the J mechanism with the seat slider, nor can it be used on the K or R mechanisms.

You may wish to advise customers using the #6 seat to loosen the tilt tension on the mechanism. The tilt tends to be rather emphatic when releasing the tilt paddle, so it would be prudent to warn lighter weight people.

Another minimally contoured seat pan in the BodyBilt line is the #8. The #8 seat pan is the same size front to back and side to side as the #7 seat, but the #8 seat has a larger effective seating area because it does not have the bolsters on the side to limit seating area. The #8 seat does not have the ish dish spacing under the foam like the #7 and #2, but as with the #6 seatthe #8 seat provides good comfort and support because of the multi-density layered foam. It is highly suggested to get s'port foam in the #8 seat for additional comfort.

The #8 seat is available with the J mechanism and the K mechanism, but not the R. It is a good seat for someone who doesn't want contour, or is coming from using a chair with a flat seat and the contour is a little too intimidating for them. Having said that, the 8 seat in general is not as comfortable as the 7 or 2, so you really should not lead with a #8, nor would I advise getting more than one or two #8 seats as demo chairs.

There you have it – BodyBilt's got contour, and then again it doesn't. Just as we have an incredible variety of sizes and shapes of people, so we need a variety of sizes and shapes of seat pans. One size does not fit all – and for that, we have BodyBilt and the modularity factor. Stay tuned for part 3 for more seat pans – in the interim, happy selling!

ARM POSITIONING

When performing a chair fitting, we're often left to wonder how to deal with a person's arms – where should they put them, where should the armrests be positioned.

A key to proper arm placement is getting the person you're fitting into a relaxed position. You must first position the height of their chair so that their knees are at least 90 degrees (but they should not feel like they're going to slide out of the chair – that in itself will cause them to become tense!), and position the back of the chair so that you're encouraging the person's posture to preserve the curves of the spine (review: inward curve at the neck [cervical], outward curve at the mid-back [thoracic], and inward curve at the low back [lumbar]) – the lumbar support should be positioned on the opposite side of the body from the belly button. Now that the torso is positioned correctly, we now move to the arms.

The arms should be relaxed by the person's side, so take the armrests down to the lowest position. Have the person let their arms drop by their sides if possible – have them shake out their arms to get the muscles to relax. Have the person slowly bring their forearms up until the arm creates a 90 degree angle at the elbow. Watch them closely to make sure that they don't shrug their shoulders up when they bring the forearms up – it's a natural reaction if they're used to having their armrests too high. Turn the person to the side and look at where their arms fall – you want to slowly adjust the armrest up to be equal to relaxed seated elbow height… the person should not
feel like they are shrugging, nor should they feel that they have to lean to one side or the other to get support.

Once you have the height in mind, turn to the front of the person and look at where the armrests are – if the person looks like they have to splay their elbows outward to get support, then the armrests are too wide – they need to either bring the armrests inward or use a pivot arm to bring the arm closer to the body.