

Forma 5

Lumbar supports and seat depth

TASK AND TECHNIQUES CHAIRS



TYPES OF LUMBAR SUPPORTS

ASYMETRIC LUMBAR ADJUSTMENT

The asymmetric lumbar adjustment system allows an easy and intuitive way to regulate the tension zone of the mesh, changing pressure points homogeneously. This system, till now, the best ergonomics results are harvesting in essays of ergonomics, helping the user to get necessary welfare in the workplace. Furthermore, the design and discreet size of regulatory parts make the aesthetic of chair emerge stronger.

[KNOW MORE P.04](#)



Detail of the lumbar regulation Sense



SENTIS MESH



SENSE



EBEN MESH



KINEO MESH

LUMBAR SUPPORT

This lumbar adjustment system allows regulate the height of the piece such that the wished position is chosen to help strengthen the lower back of de user. These parts generate a focused tension on the backrest of the chair that is transmitted to the user helping to keep a right position in the back.

[KNOW MORE P.06](#)



Detail of the lumbar regulation Eben



DOT.PRO

[KNOW MORE P.07](#)



UPHOLSTERED
SENTIS



UPHOLSTERED
EBEN



TOUCH



2K8 MESH

LUMBAR SUPPORT 2D

Following the previous system but going one step further, the lumbar support 2D regulation allows substantially improved ergonomics and comfort. This system is based on two essential regulating movements: the height of the strip and the depth of it. Thus, modifying these parameters, the regulation achieves an optimal control for a wide range of users according to their measurements. The user feels full support in the lumbar area and dividing pressure generated by the sitting posture and improving circulation in the back.

[KNOW MORE](#) P.08



Detail of lumbar regulation 3.60



3.60

HEIGHT ADJUSTMENT SYSTEM FOR BACKREST

This form of regulation, disuse completely, modifies the height of the support to adapt the curvature that presents the backrest to the user's lumbar ones. The regulation is not direct and simple as the rest of lumbar regulations described.



Detail of high adjustment Spot



SPOT



SENFOR

LUMBAR ASYMETRIC ADJUSTMENT

WHAT IS

The lumbar asymmetric adjustment for operative chairs provides with a series of **ergonomic and functional improvements** that enhance the **quality, comfort and aesthetics** of the programs of chairs of Form 5. The possibility of **regulating independently the height** of the pieces according to the **right or left side** give a plus of ergonomics to adjust the tension according to the user and its anatomical shape of the back, helping if users needing it with problems such as **scoliosis**.



Detail of the lumbar regulation Kineo

HOW IT WORKS

The **tension principle that the pieces apply on the mesh** backrest is what generates the “elastic stiffness” in certain points of the mesh and is transmitted to the user. Thus, there is no physical part that interacts with the backrest of the user and also prevents friction and wear not only of parts and the mesh, but also the clothes themselves. This regulation **can be easily disabled** if the user considers it opportune simply scrolling down both pieces, which will not generate tension to the mesh and thus the user.

TECHNICAL FEATURES

These independent polyamide parts have a **30% glass microspheres** adjustable vertically and the possibility of asymmetric regulation, ensuring a **permanent contact in the lumbar area**. The shape of the pieces, rounded by the face in touch with the mesh and a flat horizontal part in the back zone which allows an easy and ergonomic adjustment for the user.

BENEFITS PRESENTED

We highlight the following innovative features of this system:

- **Asymetric adjustment:** this new contribution adds the ability to adjust the backrest a fully personalized way, according to user needs.
- **Better fit and comfort:** the back is completely adapted to the backrest surface, ensuring healthy position ergonomically and greater comfort for the user.
- **Ease of access to the system:** how to regulate the lumbar area is more accessible and easier with the new system, operated very intuitively.
- **Increased resistance:** its design integrates more naturally to the mesh and the structure of the backrest, providing it with greater strength and fastness.
- **More functional aesthetics:** the final appearance of the backrest with the new integrated regulation is lighter and easier, benefiting this way the general design of the chair.

HOW TO TEST THIS EFFICACY?



INSTITUTO DE
BIOMECÁNICA
DE VALENCIA

To determinate the **high technical quality** and the **ergonomics benefits** of this new Lumbar Adjustment of the Sentis chair, Forma 5 has requested to the **Biomechanics Institute of Valencia (IBV)** a complete and extensive independent report, based on the current most efficient technical procedures.

IBV is a technological center with high prestige that realise **thorough tests and reports** about the interaction between the human body and the products and environments around him. Its evaluation has reinforced our guarantee of provide the customer with ergonomically **appropriate products** for a

daily use.

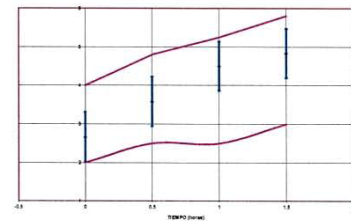
The **procedures** applied to evaluate the features of the chair with this new integrated adjustment have been:

- **CONFORT TEST:** Subjective tests realised to potential users, taking note of the appearance of pains while the time passes and focusing on the lumbar aspect.
- **BIOMECHANICAL TEST:** Objective tests which consider corporal parameters in relation with the comfort levels and accomplished in the IBV ergonomic laboratories.

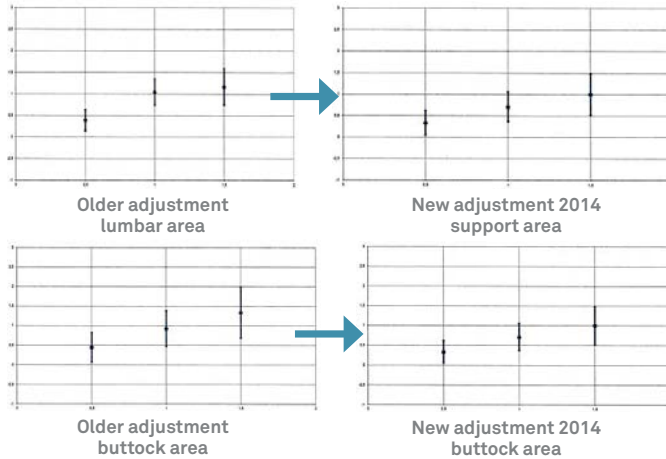
TESTS RESULTS

General comfort tests (1.5 hours): comfortable

As showed in the right table, the levels are placed in the comfort area at all times. It ensures the full comfort of the chair



Pain tests: pains reduced comparatively



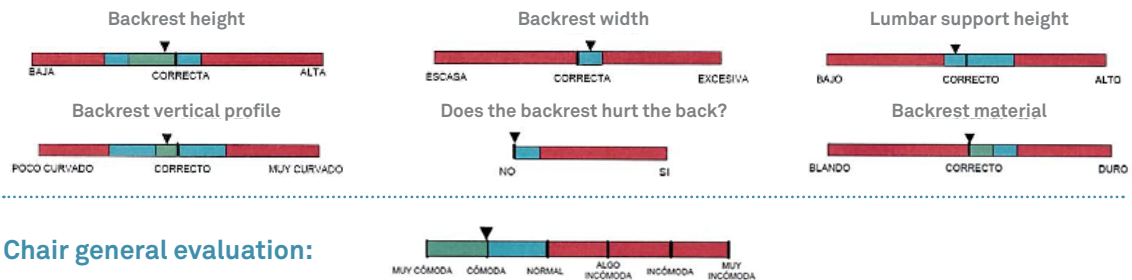
These tests has been realised to evaluate the pains in the **lumbar area** (upper tables) and in the **buttock area** (lower tables) and show the **positive evolution of the comfort** of the Sentis chair thanks to its new lumbar adjustment.

Comparing the right tables in relation with the left ones, we can see how the **pains interval** is placed in **lower levels** due to the new adjustment.

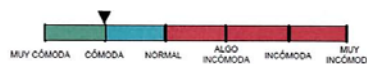
Backrest use: improved comparatively

The correct dorsal and lumbar support has improved from 88,75% to 90,27%, during the tests realised to different users. This reaffirm that the new improved lumbar adjustment invites the user to take an ergonomically correct position in the chair, adapting equally the lumbar and dorsal area to the seat.

Evaluations of the chair features according to the users:



Chair general evaluation:



STRIP LUMBAR

WHAT IS

The lumbar strip is a **strip** on the back of various operating chairs -usually with upholstered backrest - that **provides a support** for the lumbar area of the user **pushing the piece toward the back of the user**. This strip allows the user to **relieve the stress** on the lumbar zone thanks to the support that sustains him.



Detail of the lumbar regulation 2K8

HOW IT WORKS

This system of lumbar support incorporates a piece from **side to side in the backrest** that can be adjusted in height to accommodate different heights of the users. This piece **applies indirectly**, first applied to the foam and fabric or in other cases the mesh directly, the **pressure at the lumbar area**, which should be regulated in height to **coincide with the ideal point** user feels.

TECHNICAL FEATURES

Typically, the **lumbar strip is formed of polyamide** and has an **ergonomic curvature** to fit the user perfectly. The design of the piece, thin and aesthetic thickness, **allows some flexibility**. Note that sometimes the **piece is hidden** because it is placed between the outer shell and the foam (Touch, Eben upholstered version and Sentis upholstered version). It is also possible that this band was **upholstered with foam padding** to make it even softer. The drive is performed by **manipulating** a tongue or **through the band** up and down, on rails that allow the sliding smoothly.

BENEFITS PRESENTED

We highlight the following innovative features of this system:

- **Adaptation to the curvature of the backrest:** the ergonomic strip makes it fit the contour of the lumbar area of the user.
- **Resistance:** the material of polyamide provides an excellent resistance to continued use of the regulation. Sometimes the piece is stuffed by an upholstered foam in highly resistant to abrasion and rubbing tissue.
- **Aesthetics integrated:** usually, regulation by lumbar strip is hidden between the shell and foam. This physiognomy can clear the back cover without interfering with the rest of the design of the backrest.

LUMBAR SUPPORT - FLEXIBLE BACKREST

WHAT IS

In the case of **Dot.Pro** and **Dot.Basic** task chairs, the **lumbar support is integrated within the flexible backrest**. The sash provides support to the user's lower back. Combined with the flexible backrest of the chair which allows torsion of the back at the top while maintaining a firm support at the waist, allows a healthy freedom of movement..

HOW IT WORKS

The lumbar sash mentioned on the previous page, **goes across the backrest and can be adjusted in height**. This provides support in the lumbar area and its position is set uniquely by every user for maximum comfort.

The backrest offers an innovative system based on a combination of highly resistant and flexible materials, attached to the seat through a single anchor point. Overall giving freedom of movement in the upper back whilst providing firm support in the waist area.

TECHNICAL FEATURES

Formed from a single piece of polypropylene crossing the backrest, and with adjustment in height achieves sustained support. The band can be manipulated up and down, via a rail. This facilitates fluid sliding.

The backrest is made of polypropylene with fiberglass support. A highly flexible and resistant material. **It joins the backrest at a single point this facilitates increased movement for the upper body at all times.**

BENEFITS PRESENTED

We highlight the following innovative features of this system:

- Adaptation to the curvature of the backrest: **the ergonomic shape of the band fits the contour of the lumbar area of the user.**
- Resistance: **the polypropylene material provides excellent resistance and support continuously .**
- Ergonomics and health: **the combination of both elements** (lumbar regulation and support) are complemented by **providing extra comfort to the back area, and thus ,improving the user's health.**
- Integrated aesthetics: usually, the lumbar belt adjustment is hidden between the shell and the foam. This **physiognomy allows the rear shell to be released without interfering with the support of the backrest design.**



Detail of the lumbar regulation Dot.Pro

2D LUMBAR STRIP

■ WHAT IS

The 2D lumbar strip **improves substantially the standard lumbar strip** because it controls **two types** of parameters of regulation: **height and depth**. This depth is presented as a **new system** allowing adaptation for the lumbar adjustment to a wide range of user.

■ HOW IT WORKS

This mechanism has a simple use: through a **strip** located in the **rear of the backrest, between rails made in seat frames**, this adjustment moves vertically to find the correct point according to the user it feels. To **adjust the depth**, the **two pieces inserted in the central rail** move horizontally generating this way a greater push towards the inside of the strip. This **depth adjustment is in depth**, it can regulate the depth of **one side more than the other**.



Detail of the lumbar regulation 3.60

■ TECHNICAL FEATURES

Both the band and the rails and control pieces of regulation are made of **high-strength polyamide**. The central strip has a **curvature which reflects the lumbar lateral zones and leaves a gap in the central area** of the piece to **release the pressure column**. **Smoked finish** of the piece gives an aesthetic to match the finish of the back rest frame. The depth adjustment parts present an ideal anatomic shape for **actuation from a sitting posture**.

■ BENEFITS PRESENTED

We highlight the following innovative features of this system:

- **Depth adjustment:** This innovation allows the user to adapt the regulation to the specific need, so it isn't the user who adapts to the adjustment. The comfort to the service of the user.
- **Ergonomics and health:** The 2D lumbar adjustment complets other regulations present in the chair that helps the user forget that he is sitting in a chair and not cause discomfort.
- **Ease of access to the system:** the way to regulate the lumbar area is more accessible and easier with the new system.
- **More functional aesthetics:** the final appearance of the backrest with the new integrated regulation is lighter and easier, benefiting the overall design of the chair.

SEAT DEPTH

The sliding seat or depth adjustment of the seat is a basic requirement of the task chair to get the correct ergonomics for users.

This depth adjustment of the seat is designed to give an optimum support to users with small, medium or large size. Any of these people can be comfortable in the sitting position.

The European Standard EN-1335:2001 requires a minimum adjustment of 50 mm depth, and the Spanish National Institute of Workplace Safety and Hygiene (INSHT) says that “the seat depth must be adjustable, in such a way as to allow to use the backrest in a correct way, without pressure on the legs because of the edge of the seat”.

For Forma 5, the sliding seat mechanism or depth adjustment of the seat is an basic option in all of our task chairs. As a general rule, our sliding seat is 50 mm, but we have task chairs with 100 mm adjustment, to cover a wider range of user sizes. In this way, we obtain the NPR Dutch certification, one of the most demanding in the World for task chair adjustments.



KINEO

3.60



DOT.PRO

SENTIS

SENSE

EBEN



TOUCH

2K8

SPOT

SENFOR

CONCLUSIONS

- A correct lumbar support is vital for the **ideal rest of the user** in the office.
- Choose an appropriate lumbar support affects directly in **health benefits** on the one hand and in benefits on **motivation** and **efficiency at work** for the other one.
- Ideally, the user can test each type of regulation and **choose the one** that suits him because you have to test what type of **regulation is more suited to personal physiognomy**.
- **Asymmetric lumbar adjustment** is an important **advance** that is getting the best results in **tests and trials on ergonomics**. In addition, the discreet design of this type of regulation **improves the aesthetics** of the chair.
- Choose a **mechanism of easy managing** performs also of great importance. It is essential that the user can regulate sitting in the chair for its **effect immediately**.

