

Samsonite

Escape the ordinary

Valentine Productions

Design®
WKV

| | |
|-------------|---|
| Client | Samsonite |
| Supervisor | J.H.Hesse (Academy for Technology, Innovation & Society, Ten Hague) |
| Departement | Industrial Product Design |
| Compartment | Ontwerpen 5b |
| Subject | Suitcase design for the future |
| Engineers | Sebastiaan Bouwmeester & Wilko Verboom |
| Motto | Escape the ordinary |



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For Samsonite, we have designed a suitcase, that can be used to comfortably sit on. We have tried to find a harmonic design solution between stability, comfort, luggage storage and easy to daily use. All of the features for the sit-function, are one hand operated. Because of the smart design, it will be almost effortless to transform the suitcase in to a comfortable temporary chair. This makes the long waiting time at the airport, trainstation, bus stop or other hold up's, just a little more comfortable.

There were no concessions made, designing this suitcase. Therefore we hope that you can enjoy suitcase, and we hope it makes your uncomfortable traveling moments a little more pleasant for you!

With kind regards,
S.F.V. Bouwmeester & W.K. Verboom

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presentation page 2
Male suitcase
Overall impression
section two

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Supervisor

Samsonite
J.H.Hesse (Academy for Technology,
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Departement
Compartment
Subject
Engineers
Motto

Industrial Product Design
Ontwerpen 5b
Suitcase design for the future
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When the suitcase top cover is opened, a comfortable chair is revealed. The back and bottom support have an ergonomic design and are provided with a cushioning foam for even more comfort. The wheels retract into the body of the suitcase, which give the suitcase a rock-solid ground support. The wheels are omnidirectional. This means that the wheels are locked into a solid position into the body, but they can move into any direction you please. The wheels have a low friction coefficient, which makes moving the suitcase a new pleasant experience!



Suppliers

Systematic
Moss
Skiffy
Onkelhout
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www.systematic.nl
www.kipp.com
www.skiffy.com
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www.kipp.com
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At this page you are able
to see most of the parts
that are being made by
the suppliers above.



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presentation page 4
Male suitcase
Back support
hydraulic's

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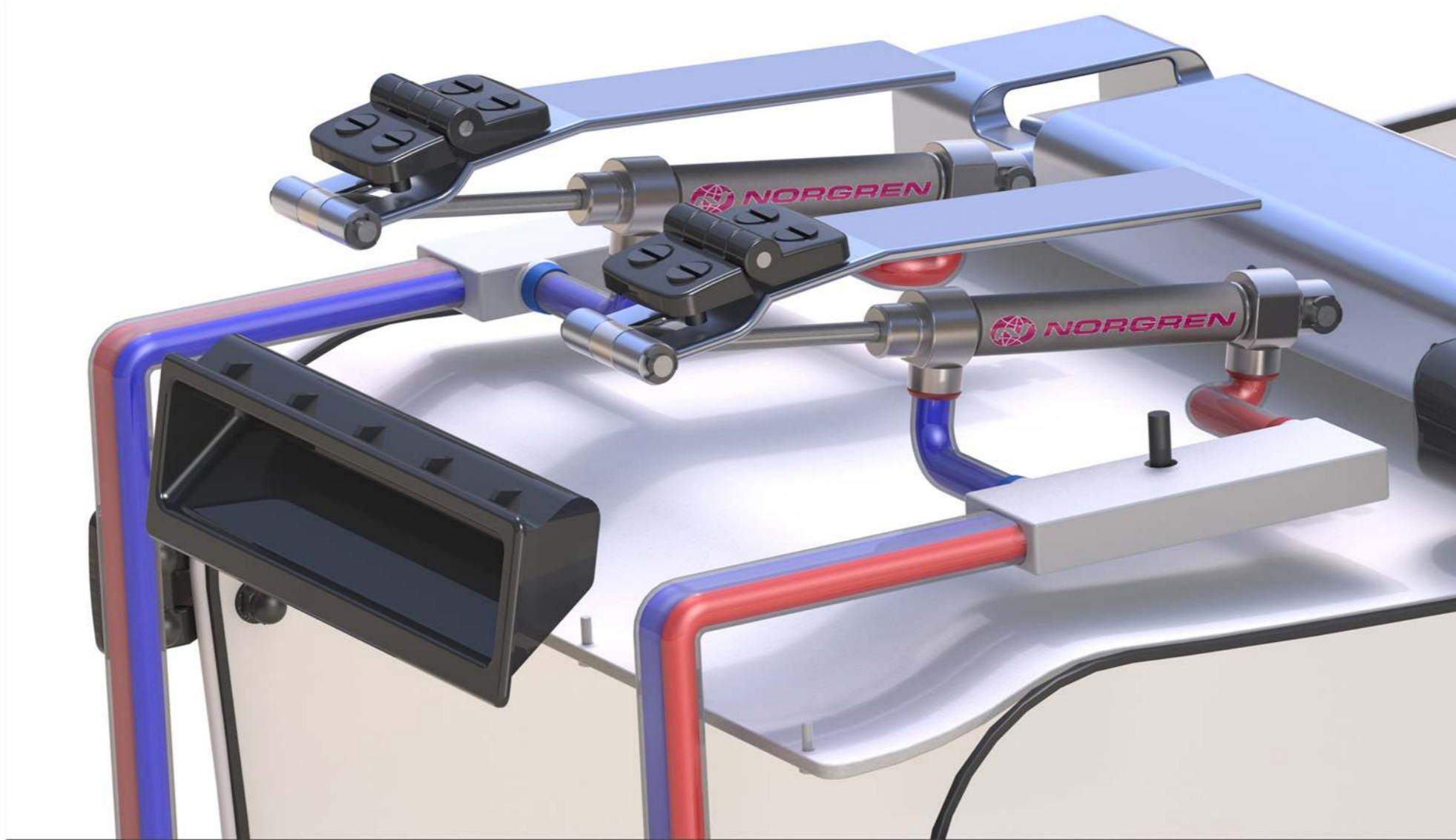


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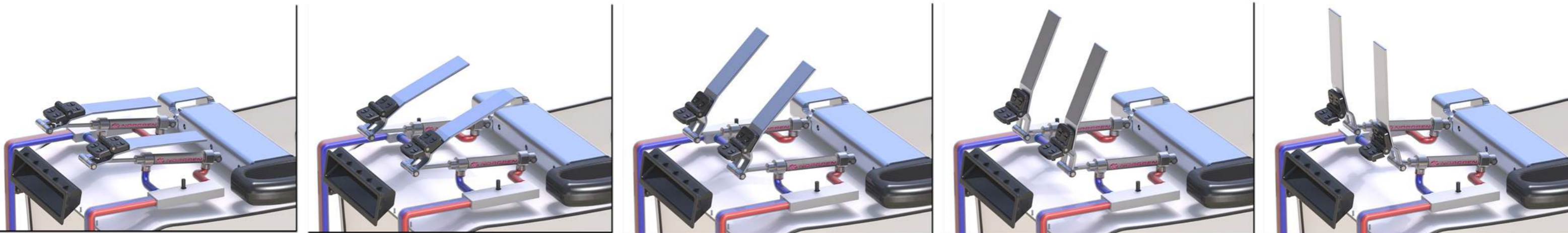


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The omnidirectional wheels are being withdrawn by using a hydraulic system. When you lift the top cover of the suitcase, the hydraulic cylinders are compressed. When they are compressed, the hydraulic fluid is being forced out, through the red coloured tube and being forced inward through the blue coloured tube.



The bracket for backsupport is being casted into the back-support itself. In the lower pictures you are able to see how this works. At the right side of the cylinders, you are able to see the telescopic handle. You can learn more about the handle later on in this description of this new designed Samsonite suitcase.



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presentation page 5
Male suitcase
Elevation views

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orthogonal projection of the Samsonite suitcase



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presentation page 6
Male suitcase
Hydraulic back-
support and omni-
directional wheels.
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Here is a close-up of the omnidirectional wheels, when the top cover of the suitcase is being pulled up. The wheels are being withdrawn into the suitcase. This gives a firm contact with the floor surface. Because the wheels are being withdrawn, you don't have to fear that the suitcase will roll away, when you attempt to sit down. Because the backsupport functions as a lever, makes the transformation of the suitcase, almost effortless.



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presentation page 7
Male suitcase
Hydraulic hoses and fittings

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A cross-cut section of the Samsonite suitcase. All the hydraulics are hidden in the body. The sit area has been cleverly reinforced by the housing of the telescopic handle.



A complete overview of all the hydraulic components of the Samsonite suitcase. The cylinders are double action. This is being shown by the red and blue colours.



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presentation page 8
Male suitcase
How to use the handle

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The telescopic handle has been designed to be hidden underneath the top cover of the suitcase. Because of this smart design, the suitcase can be opened from two directions. This ensures that the customer doesn't have to empty their suitcase to get their belongings, but simply can open the opposite door of the suitcase. When the handle isn't in use, it is nicely hidden into the body. By simply pressing on the handle, the handle will come out, and the customer can eject the handle further out. The handle then can be turned 90 degrees and will lock into position. By simply pulling the handle, it can be set for the appropriate height of the customer. The suitcase can either be used on two or four wheels to move around. When two wheels are used, the wheels with the widest ground surface are used, to get the greatest stability.



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presentation page 9
Male suitcase
Handle close-up

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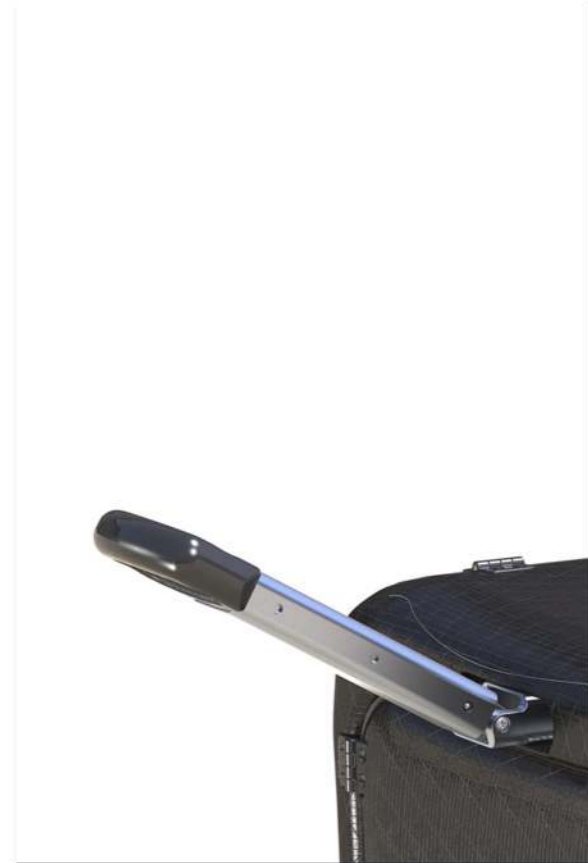
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Step 1 and 2,
push onto the
handle to eject.



Step 3 and 4,
Eject the handle
and start rotation

Step 5 and 6,
Rotate the handle
untill it locks into
the 90 degree
position



Step 7 and 8,
Pull the handle
outward to the
desired customer
height

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presentation page 10
Male suitcase
Inside view and
door-locks

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The suitcase has been designed for easy luggage storage. There are no internal walls, which separate the suitcase luggage storage in two or more compartments. The housing of the wheels are visible, to ensure that there is as minimal luggage storage being lost as possible. The hydraulic pipes are also hidden into the body.



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presentation page 11
Male suitcase
complete overview
hydraulic system

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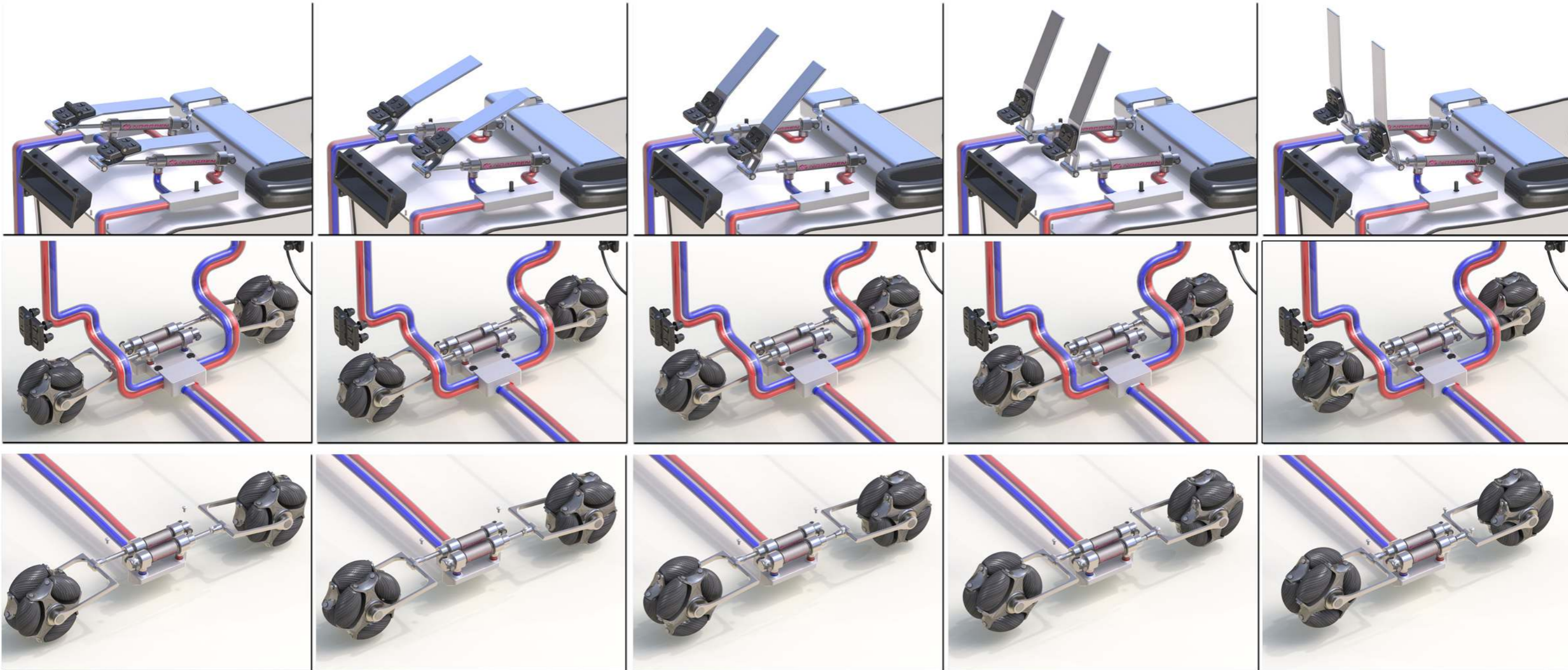
back support
in normal position

back support
lifted for 25 %

back support
lifted for 50%

back support
lifted for 75%

back support
entirely lifted



When the back-support is being lifted, the omnidirectional wheels are being withdrawn into the suitcase. There are two hydraulic cylinders connected to the back-support, which have a stroke of 40mm each. The two top cylinders drive the four lower cylinders, which drive the omnidirectional wheels. The four lower cylinders have a stroke of 20mm. The fluid content of the four lower cylinders is the same as the two top cylinders. The system is a closed hydraulic system. Because of the low pressure that is occurring during the everyday use, maintenance isn't necessary. The hydraulic cylinders have been designed for high stresses and pressure. Because of the low pressure for the suitcase use, there won't be significant wear and tear, and therefore could last a lifetime! The cylinders are double action. When the top cylinder is being compressed, it pushes the (red) fluid outward and sucks the (blue) fluid inward. Because the connections of the lower cylinder have been twisted, it will make the exact same motion at the bottom of the suitcase. We have designed a fluid separation center, which ensures a smooth working hydraulic system.

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presentation page 12

Male suitcase
close-up of the
hydraulic system

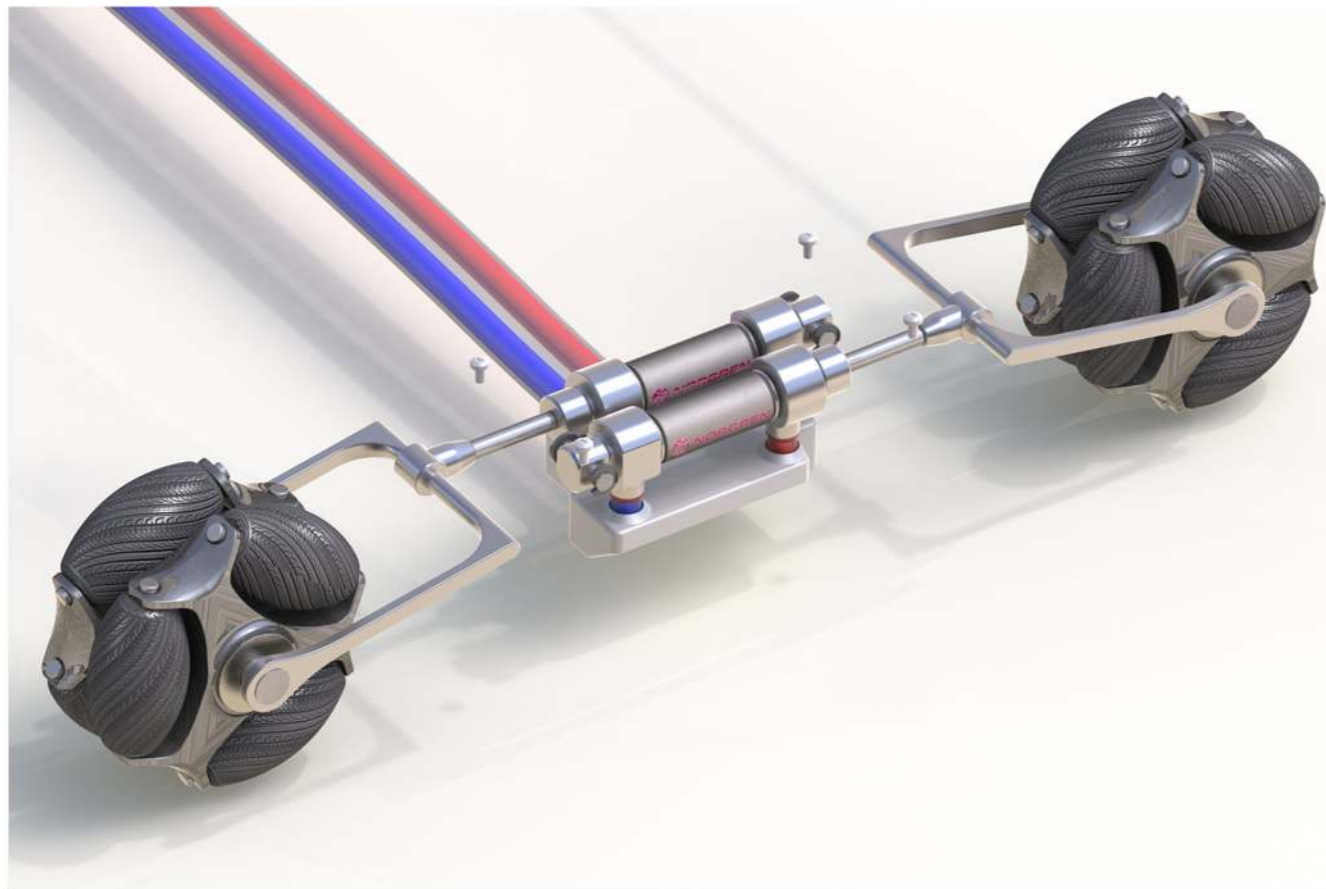
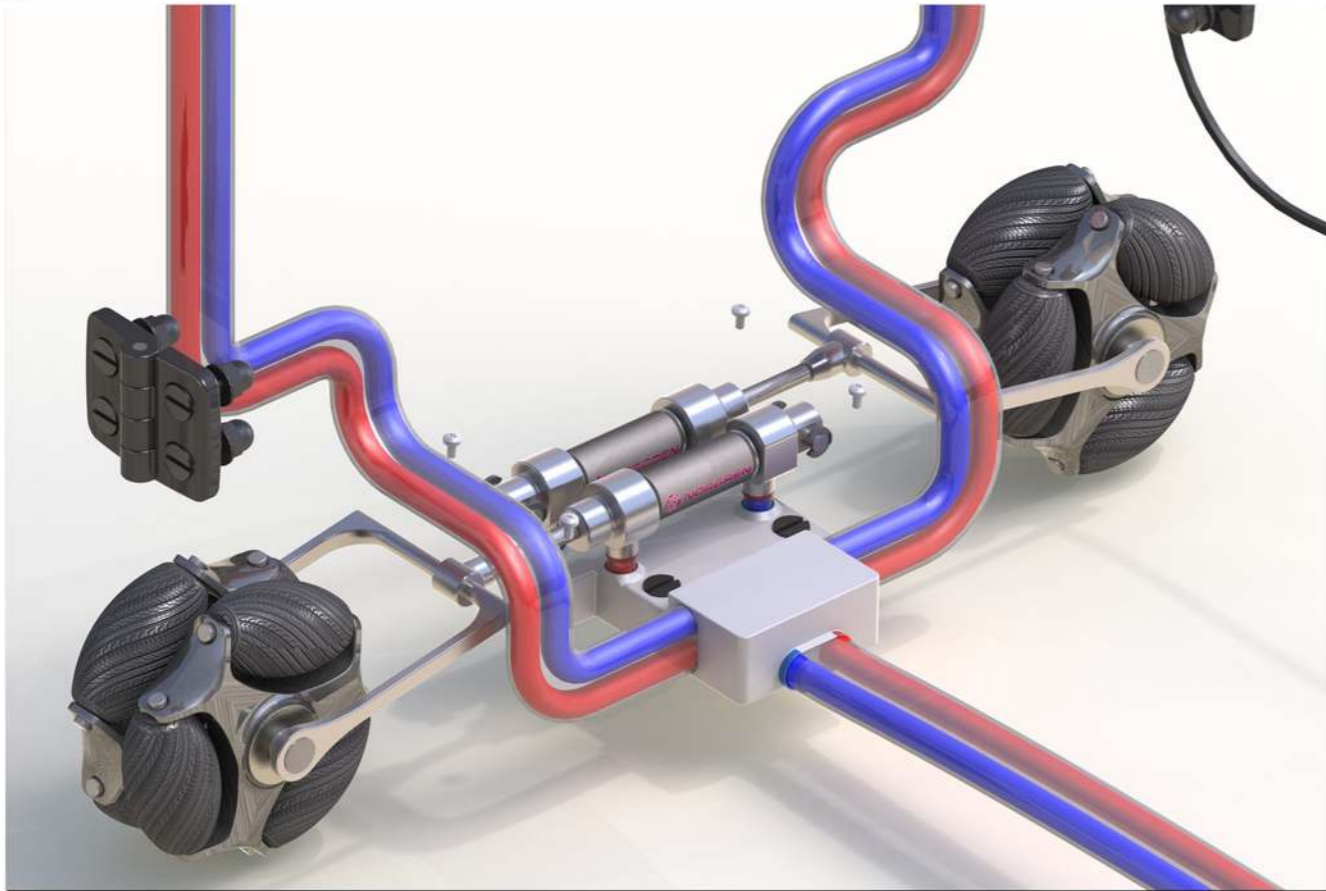
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In this picture you are able to see how the bracket of the back-support, sit's into the the top cover. The bracket also pushes the cilinder inward, when the top-cover is being converted into a back-support. The space between the telescopic handle and the hydraulic cilinders is being covered. This gives a nice clean look at the inside of the suitcase. This cover can be removed, in case of an event of damage or maintenance. There is also a removable bottom cover, to ensure that the lower cilinders can be revisied or replaced, in case of damage. The cylinders don't need lubrication.



The pictures on the left side, show a more detailed view of the lower hydraulic system. The fluid divider and the dual action connections are clearly visible. The lowest hydraulic hoses are not visible and run in the bottom of the suitcase. The other hydraulic hoses can sighted, by the shape of their housing at the inside of the body.

Date of presentation: 27 jan '11



| <u>Materiaal kosten</u> | | | <u>Ontwerp kosten</u> | | uurloon | uren totaal | Prijs totaal |
|---|--------------------------------|-------------------------|--|--|-------------------|---------------------|--------------------|
| materiaal soort: | prijs p/s | prijs totaal | | | | | |
| Pu hardschuim | € 3,50 | € 7,00 | Analyse | | 80,00 | € 100,00 | € 8.000,00 |
| Epoxy (hechtend aan PU) | € 11,00 | € 11,00 | Ontwerp | | 90,00 | € 200,00 | € 18.000,00 |
| Carbon fiber doek | € 8,32 | € 33,28 | Technisch tekenen | | 90,00 | € 280,00 | € 25.200,00 |
| | | | Product ontwerp/advies | | 110,00 | € 100,00 | € 11.000,00 |
| | | | Modelbouw | | 50,00 | € 30,00 | € 1.500,00 |
| | | | Reiskosten | | 70,00 | € 20,00 | € 1.400,00 |
| Onderdeel | | | | | | totaal prijs | € 65.100,00 |
| Hydraulische cilinder slag 40mm | € 6,35 | € 12,70 | | | | | |
| Hydraulische cilinder slag 20mm | € 4,25 | € 8,50 | <u>Matrijskosten spuitgieten</u> | | | | |
| Omnidirectioneel wiel | € 12,25 | € 49,00 | helft 1 | | 50.000,00 | | |
| Hydraulische leidingen | € 0,70 | € 4,20 | helft 2 | | 50.000,00 | | |
| Hydraulische verbindingen | | | losse componenten | | 20.000,00 | | |
| Totaal prijs kleine losse inkoop onderdelen | € 25,00 | € 25,00 | | | | | |
| Verpakking | € 2,00 | € 2,00 | <u>Matrijskosten Vacuum vormen t.b.v. carbon</u> | | | | |
| | | | 2 matrijshelften van de body | | 5.000,00 | | |
| totaal prijs | | € 152,68 | totale matrijskosten | | 125.000,00 | | |
| | | | | | | | |
| <u>Totale kostprijs koffer</u> | <u>prijs per 35000 koffers</u> | <u>prijs per koffer</u> | | | | | |
| Matrijskosten | € 125.000,00 | € 3,57 | <u>Advies verkoop prijs koffer</u> | | <u>1.921,00</u> | | |
| Ontwerpkosten | € 65.100,00 | € 1,86 | | | | | |
| Bewerkingskosten (uurloon) | € 16.625.000,00 | € 475,00 | | | | | |
| Materiaal kosten | € 5.343.800,00 | € 152,68 | | | | | |
| Totaalprijs koffer | € 22.158.900,00 | € 633,11 | | | | | |

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presentation page 14
Male suitcase
technical drawing
Body

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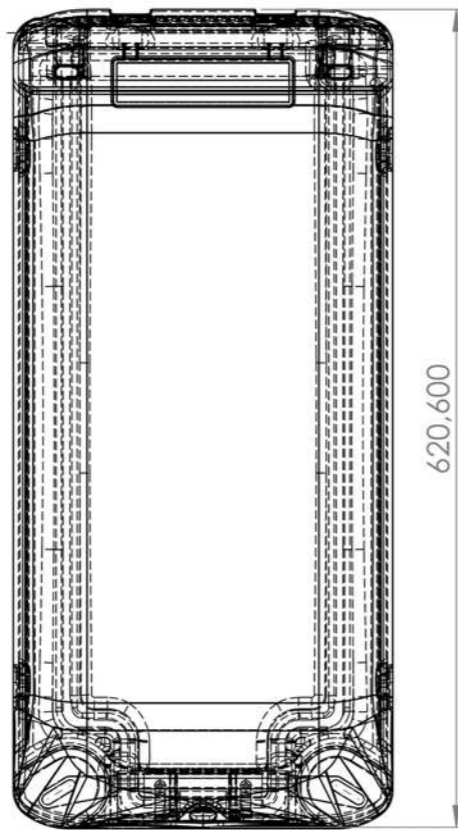


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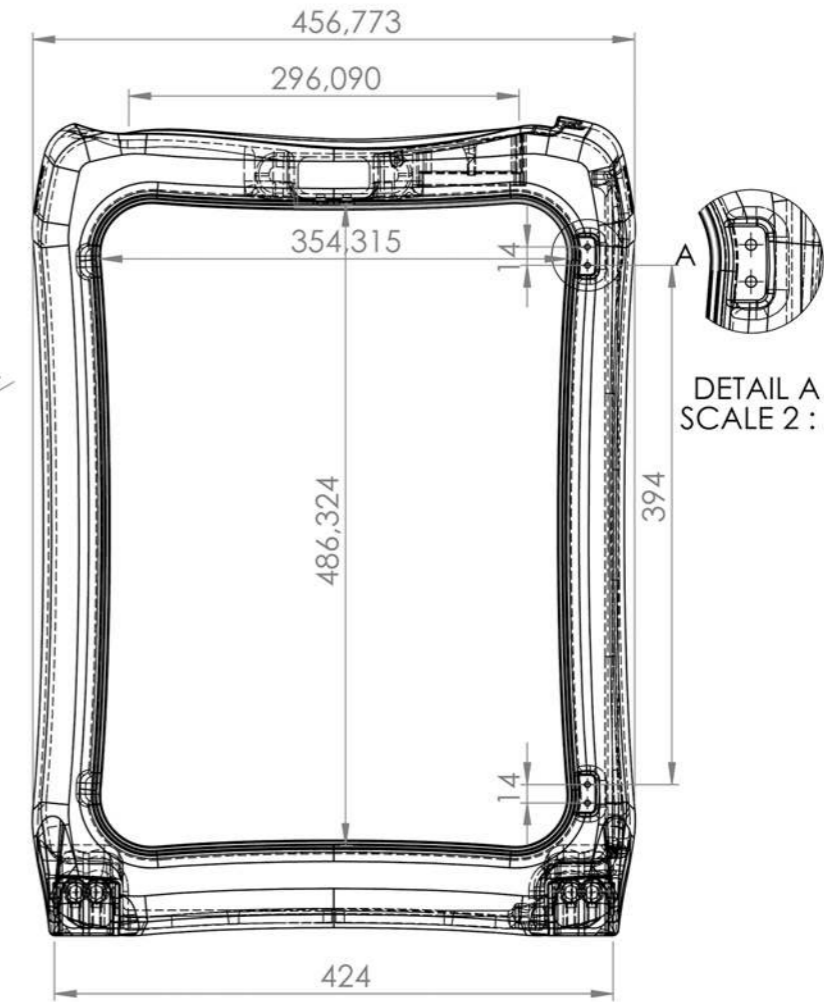
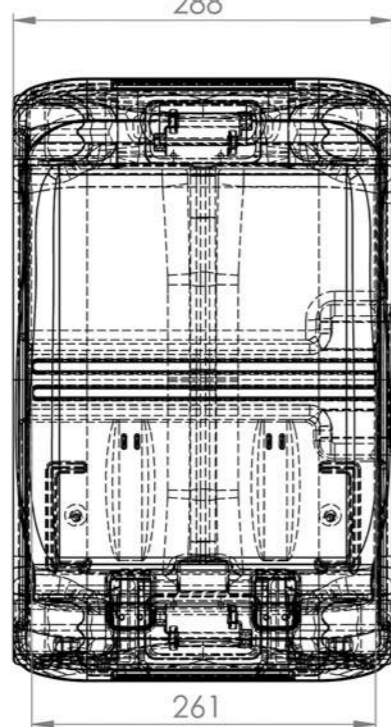


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Front view



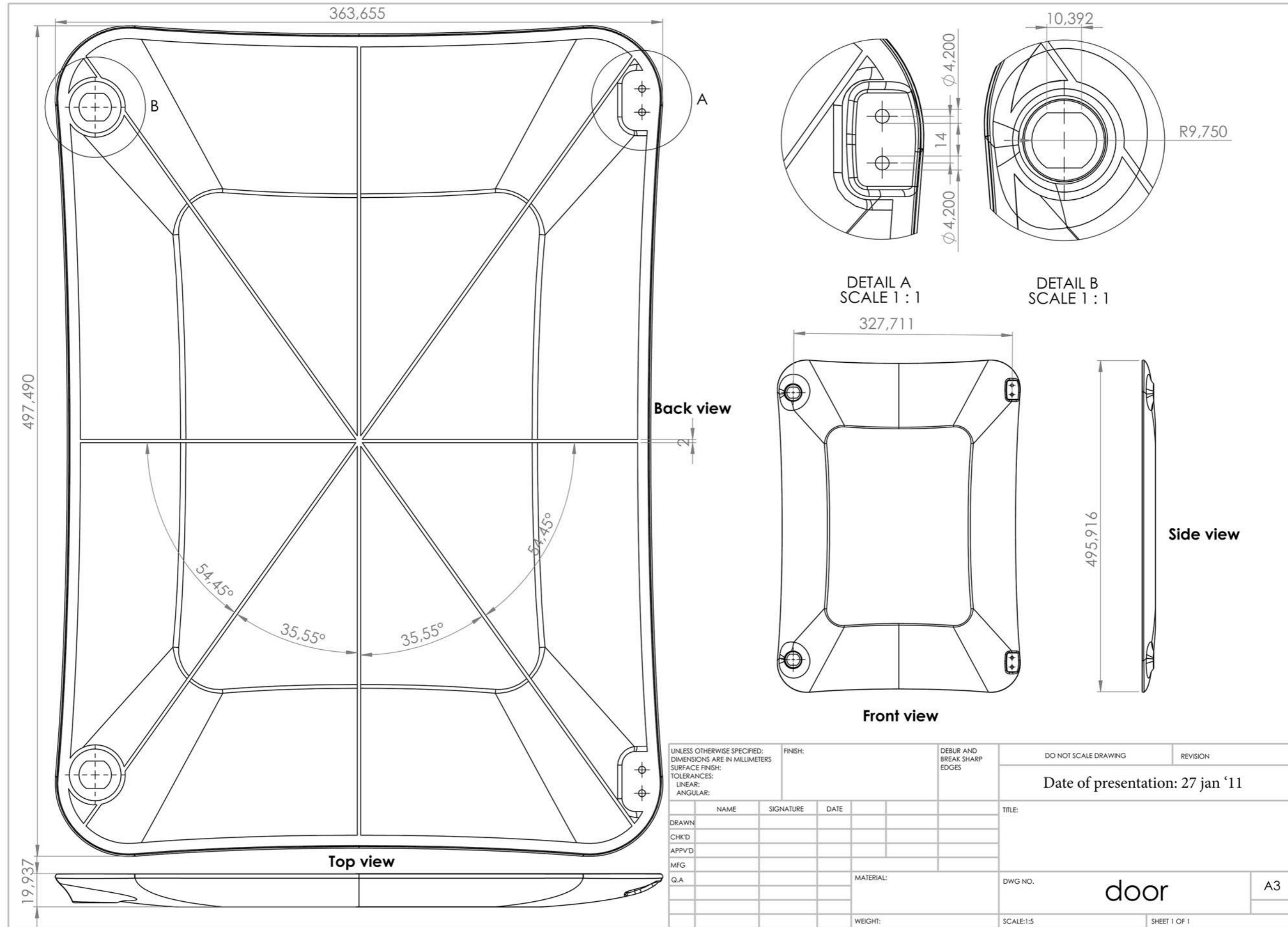
top view

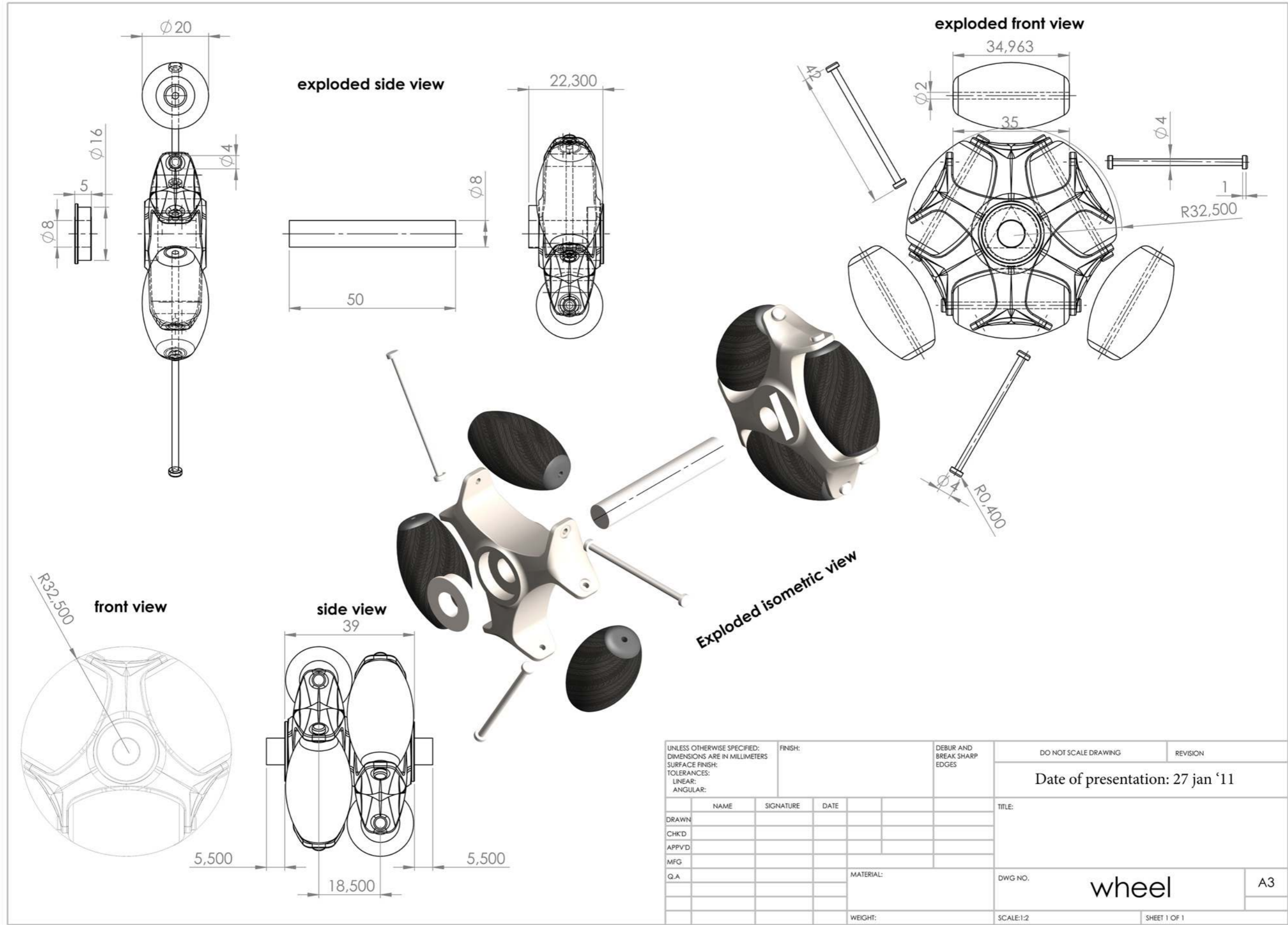


side view

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| | | | | | | | | Date of presentation: 27 jan '11 | | | | | |
| | | | | | | | | TITLE: | | | | | |
| | | | | | | | | DWG NO. | | body | | A3 | |
| | | | | | | | | WEIGHT: | | SCALE: 1:10 | | SHEET 1 OF 1 | |







| | | | | | | | | | | | |
|---|--|--|--|-----------|--|-----------------------------------|--|----------------------------------|--|----------|--|
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| | | | | | | | | TITLE: | | | |
| DRAWN | | | | NAME | | | | SIGNATURE | | | |
| CHK'D | | | | DATE | | | | | | | |
| APPV'D | | | | | | | | | | | |
| MFG | | | | | | | | | | | |
| Q.A | | | | MATERIAL: | | | | DWG NO. | | | |
| | | | | | | | | wheel | | | |
| | | | | WEIGHT: | | | | SCALE:1:2 | | | |
| | | | | | | | | SHEET 1 OF 1 | | | |
| | | | | | | | | A3 | | | |