

# Belastungsanalyse - Bericht



Analysierte Datei:	Block_470bar_FEM.ipt
Autodesk Inventor-Version:	2016 (Build 200138000, 138)
Erstellungsdatum:	23.01.2018, 11:50
Simulationsersteller:	MuellerS
Übersicht:	

## ☐ Projektinfo (iProperties)

### ☐ Übersicht

Titel	Block_470bar_FEM
Autor	muellers

### ☐ Projekt

Bauteilnummer	Block_470bar_FEM
Bezeichnung	Block
Revisionsnummer	00
Konstrukteur	muellers
Kosten	0,00 €

### ☐ Status

Konstruktionsstatus	InBearbeitung
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### ☐ Physische Eigenschaften

Material	C45E (1.1191)
Dichte	7,84 g/cm <sup>3</sup>
Masse	39,314 kg
Fläche	419310 mm <sup>2</sup>
Volumen	5014540 mm <sup>3</sup>
Schwerpunkt	x=-116,234 mm y=144,814 mm z=61,5469 mm

Anmerkung: Physikalische Werte können sich von den weiter unten berichteten, von FEM verwendeten physikalischen Werten unterscheiden.

## ☐ Simulation:1

### Allgemeines Ziel und Einstellungen:

Konstruktionsziel	Einzelner Punkt
Simulationstyp	Statische Analyse
Letztes Änderungsdatum	23.01.2018, 11:43
Modi für starres Bauteil suchen und entfernen	Nein

### Netzeinstellungen:

Durchschnittl. Elementgröße (als Teil des Modelldurchmessers)	0,1
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Min. Elementgröße (als Teil der durchschn. Größe)	0,2
Einteilungsfaktor	1,5
Max. Drehwinkel	60 grd
Kurvenförmige Netzelemente erstellen	Ja

### Material(ien)

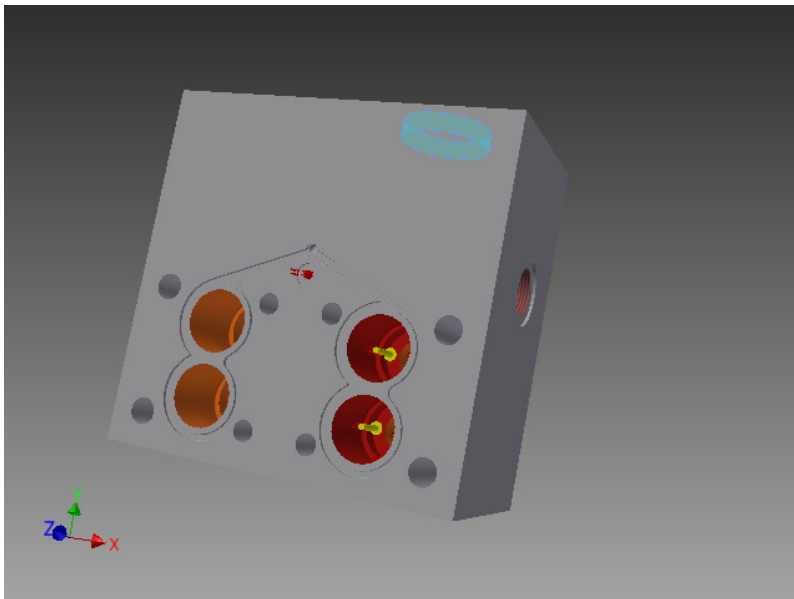
Name	C45E (1.1191)	
Allgemein	Massendichte	7,84 g/cm <sup>3</sup>
	Streckgrenze	500 MPa
	Zugfestigkeit	700 MPa
Spannung	Elastizitätsmodul	210 GPa
	Poissonsche Zahl	0,287 oE
	Schubmodul	81,5851 GPa
Bauteilname(n)	Block_470bar_FEM.ipt	

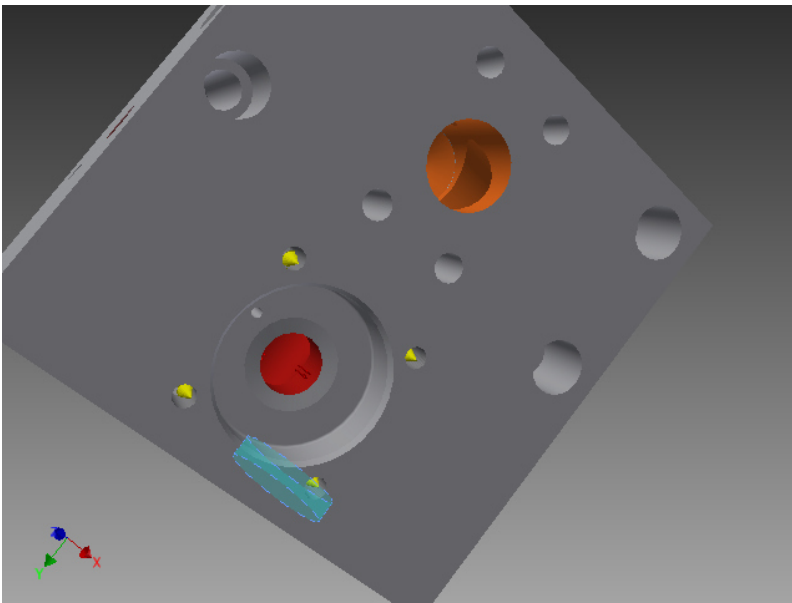
### Betriebsbedingungen

#### Kraft:1

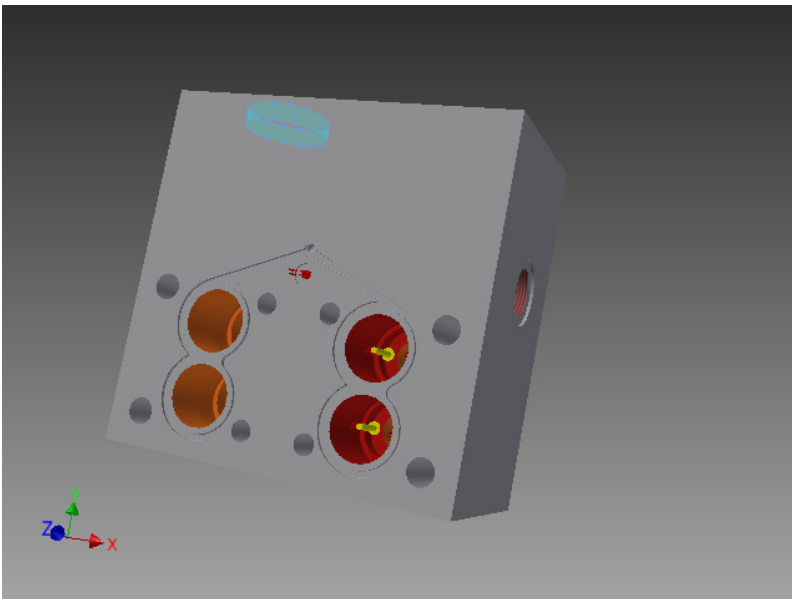
Belastungstyp	Kraft
Größe	5906.000 N
Vektor X	0.000 N
Vektor Y	5906.000 N
Vektor Z	0.000 N

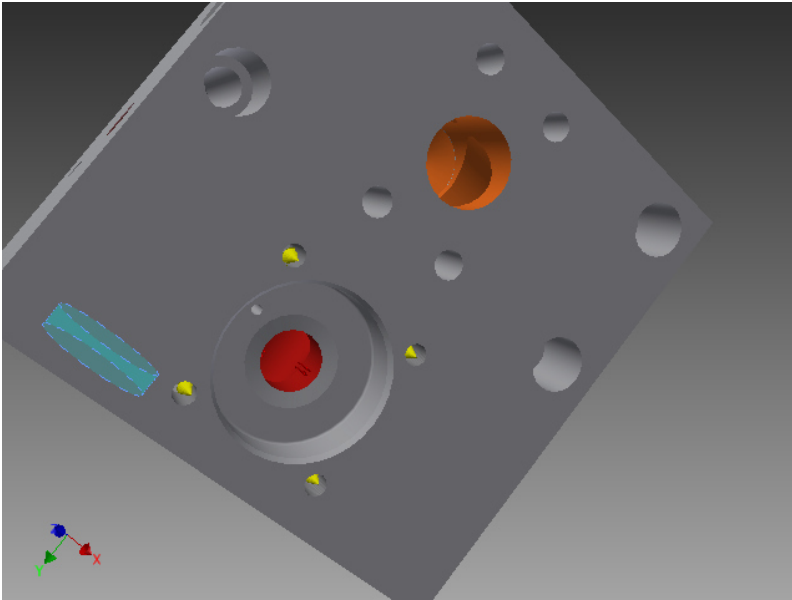
#### Ausgewählte Fläche(n)



**☐ Kraft:2**

Belastungstyp	Kraft
Größe	5906.000 N
Vektor X	0.000 N
Vektor Y	5906.000 N
Vektor Z	0.000 N

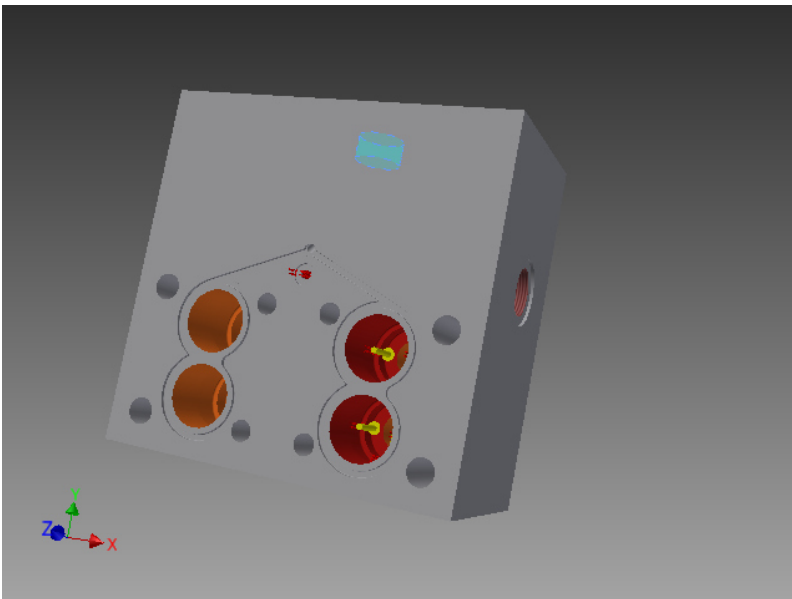
**☐ Ausgewählte Fläche(n)**



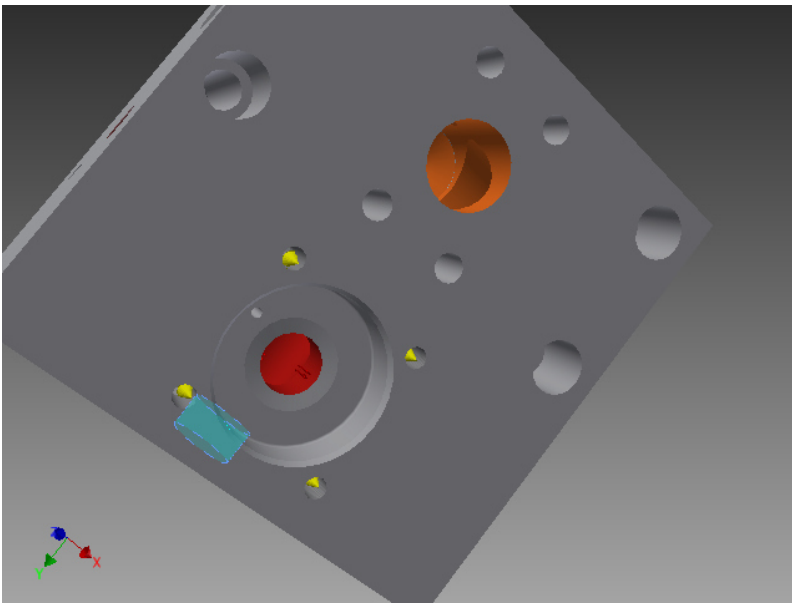
### ☐ Kraft:3

Belastungstyp	Kraft
Größe	3547.500 N
Vektor X	0.000 N
Vektor Y	3547.500 N
Vektor Z	0.000 N

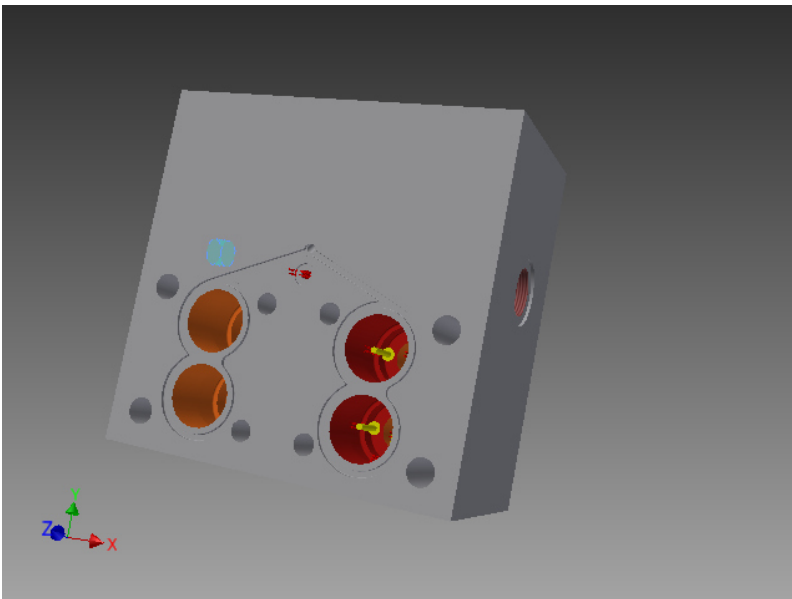
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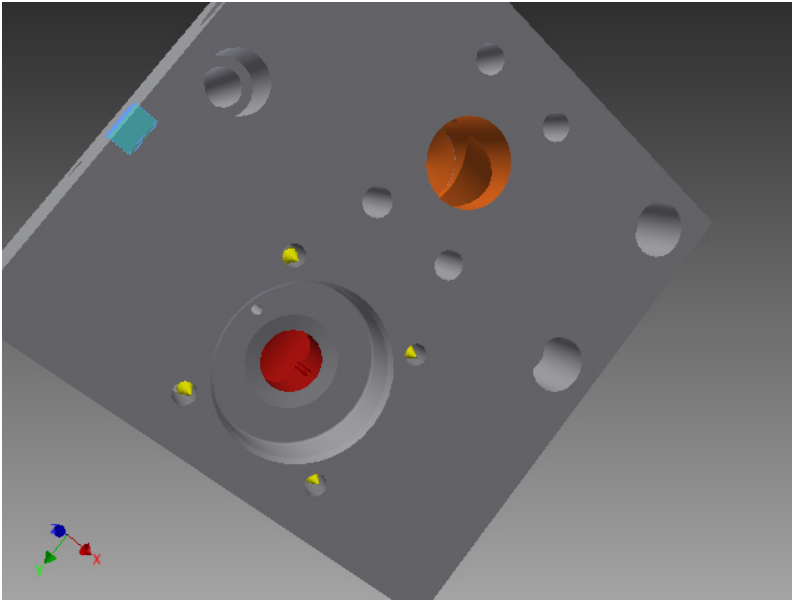




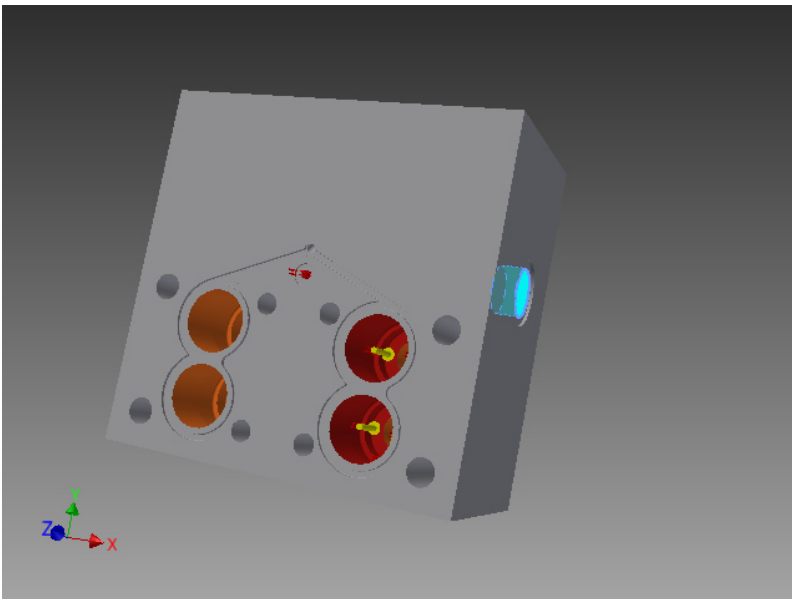
**☐ Kraft:4**

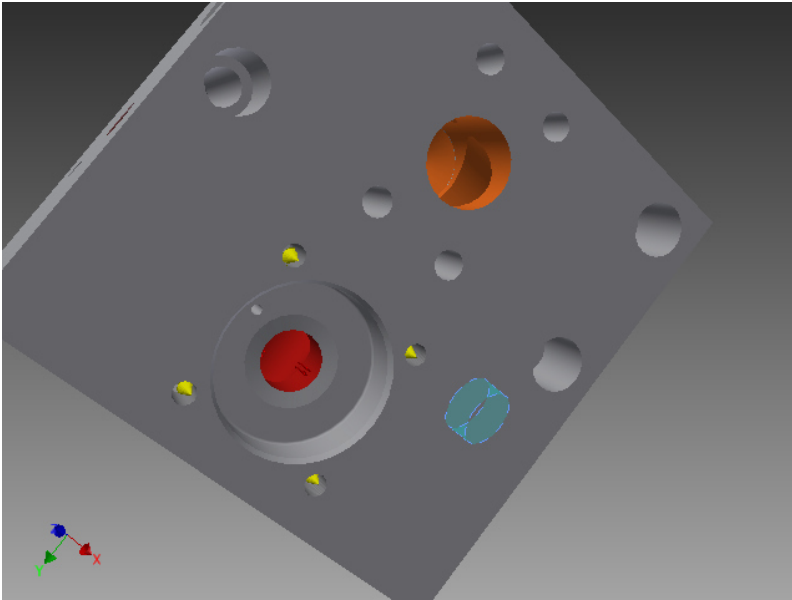
Belastungstyp	Kraft
Größe	1333.000 N
Vektor X	-1333.000 N
Vektor Y	0.000 N
Vektor Z	0.000 N

**☐ Ausgewählte Fläche(n)**

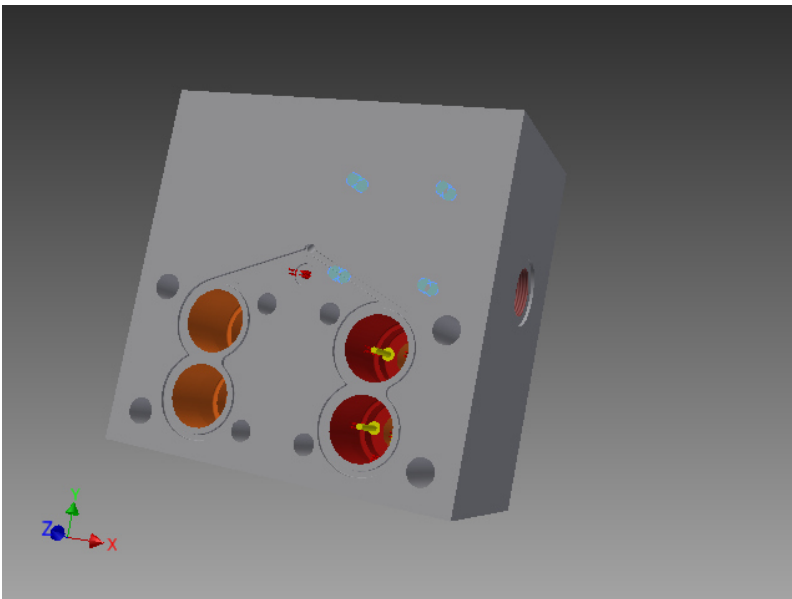
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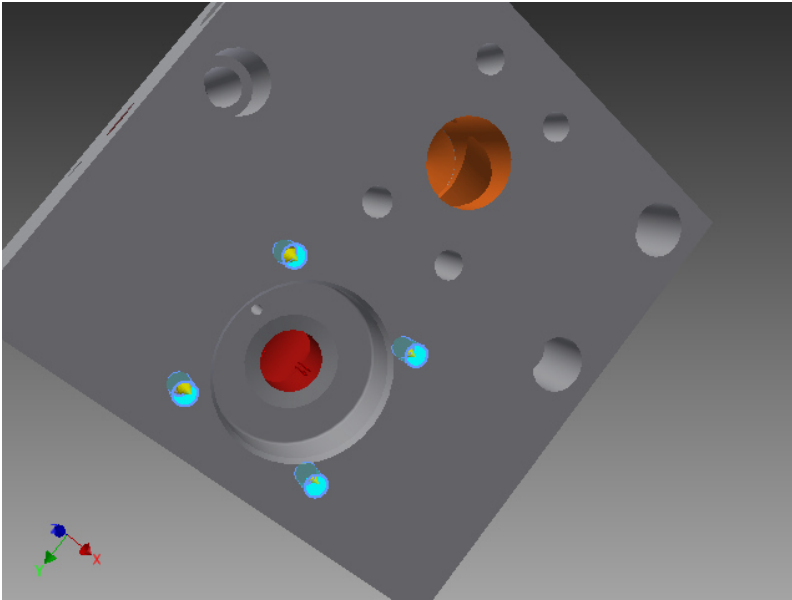
Belastungstyp	Kraft
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Vektor X	3547.500 N
Vektor Y	0.000 N
Vektor Z	0.000 N

**☐ Ausgewählte Fläche(n)**

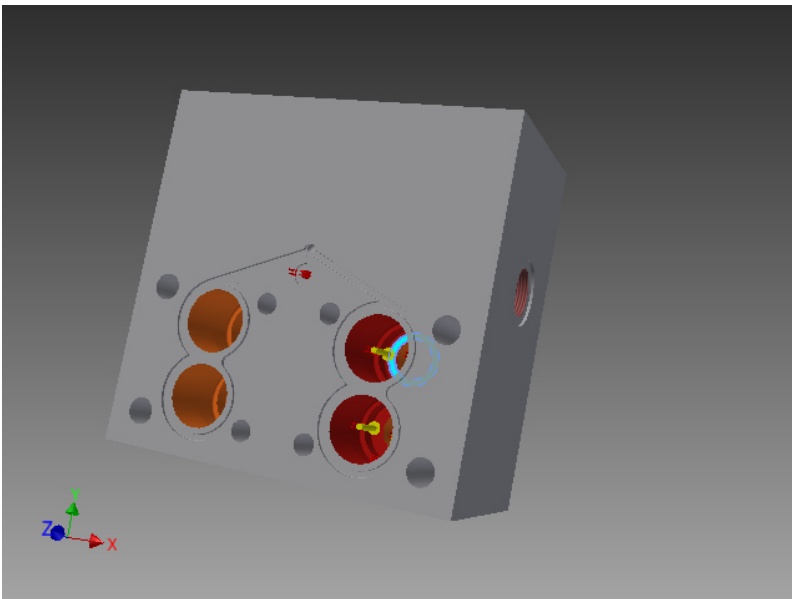
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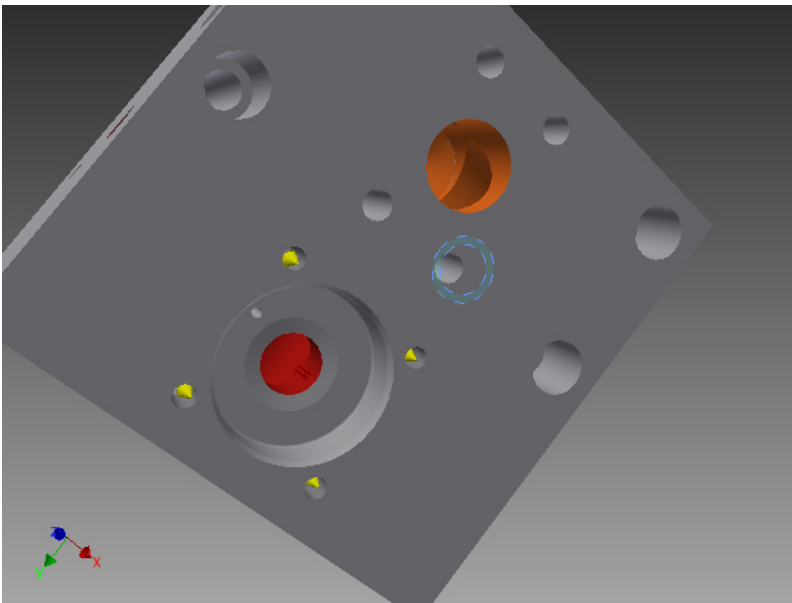
Belastungstyp	Kraft
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Vektor X	0.000 N
Vektor Y	0.000 N
Vektor Z	-2894.000 N

**Ausgewählte Fläche(n)**

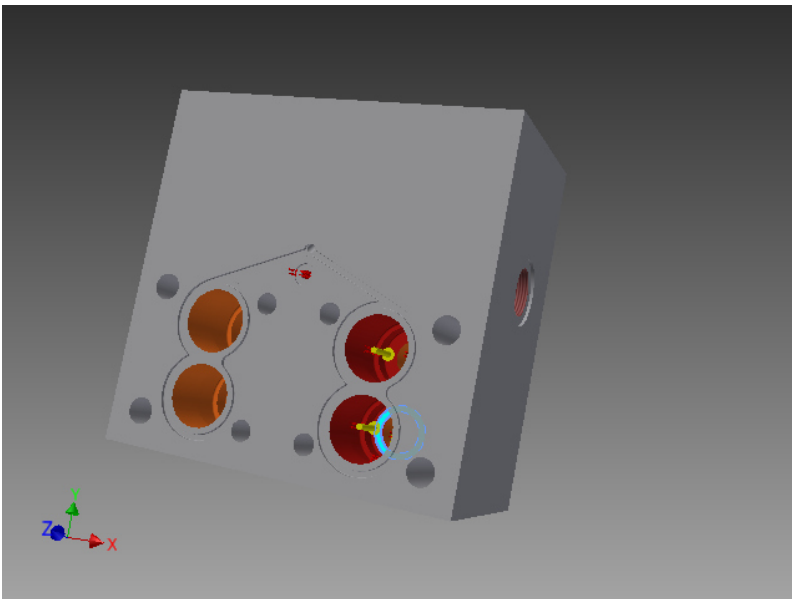
**Kraft:7**

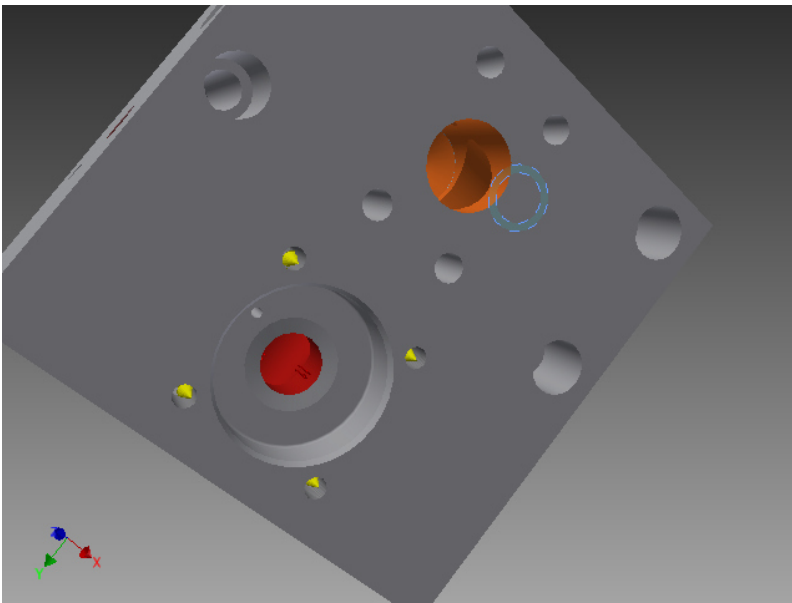
Belastungstyp	Kraft
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Vektor X	0.000 N
Vektor Y	0.000 N
Vektor Z	-1899.000 N

**Ausgewählte Fläche(n)**

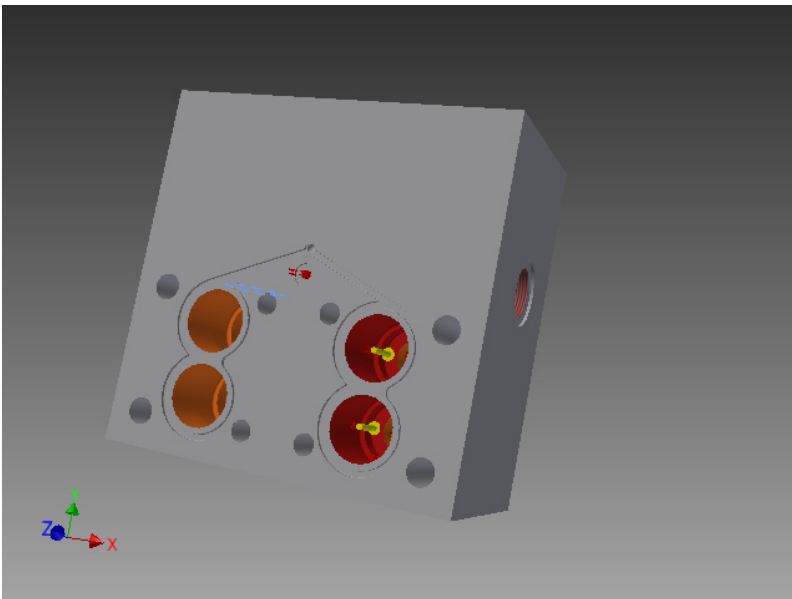
**Kraft:8**

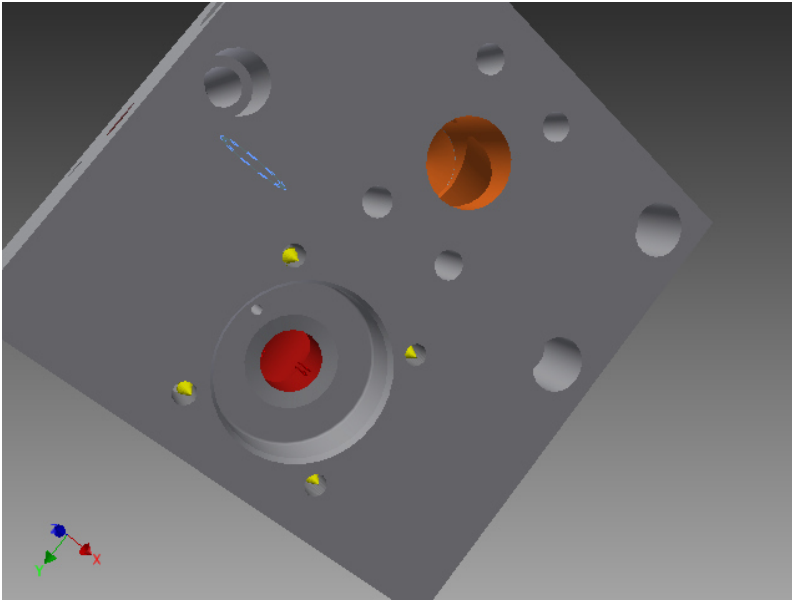
Belastungstyp	Kraft
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Vektor X	0.000 N
Vektor Y	0.000 N
Vektor Z	-1899.000 N

**Ausgewählte Fläche(n)**

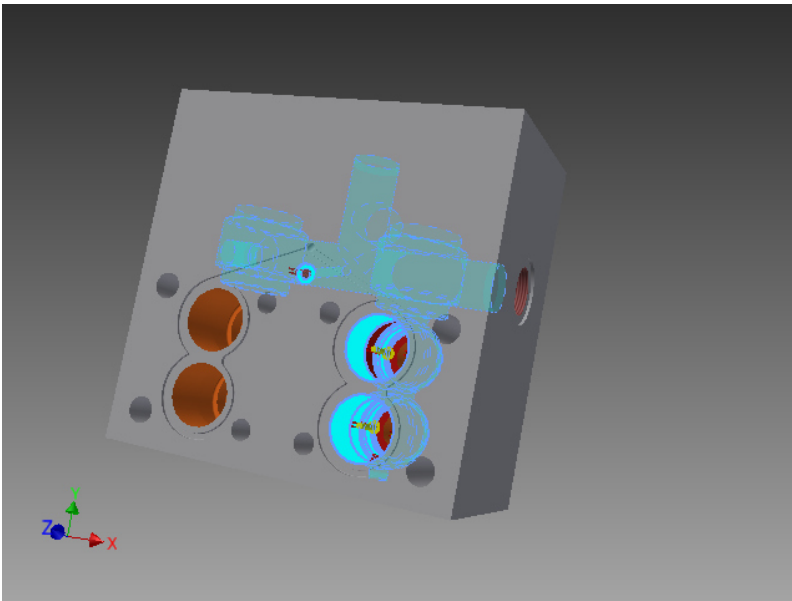
**Kraft:9**

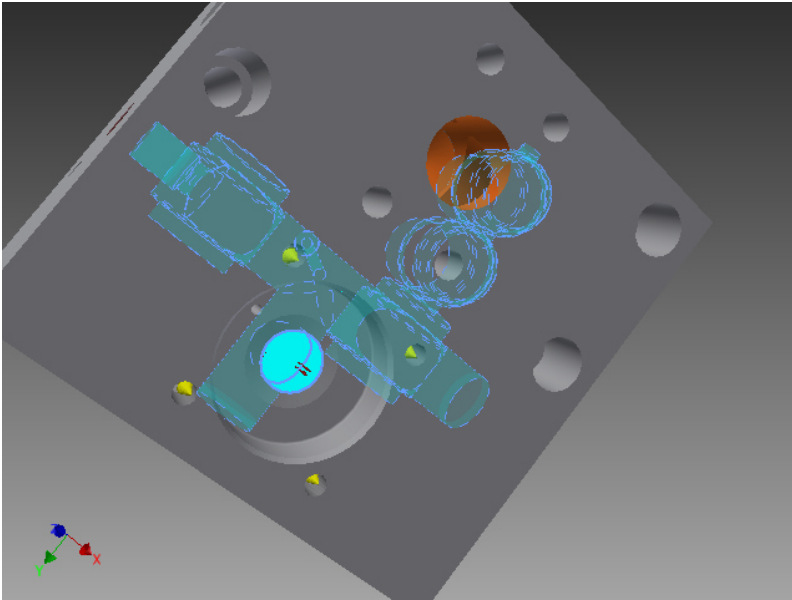
Belastungstyp	Kraft
Größe	1886.600 N
Vektor X	0.000 N
Vektor Y	-1886.600 N
Vektor Z	0.000 N

**Ausgewählte Fläche(n)**

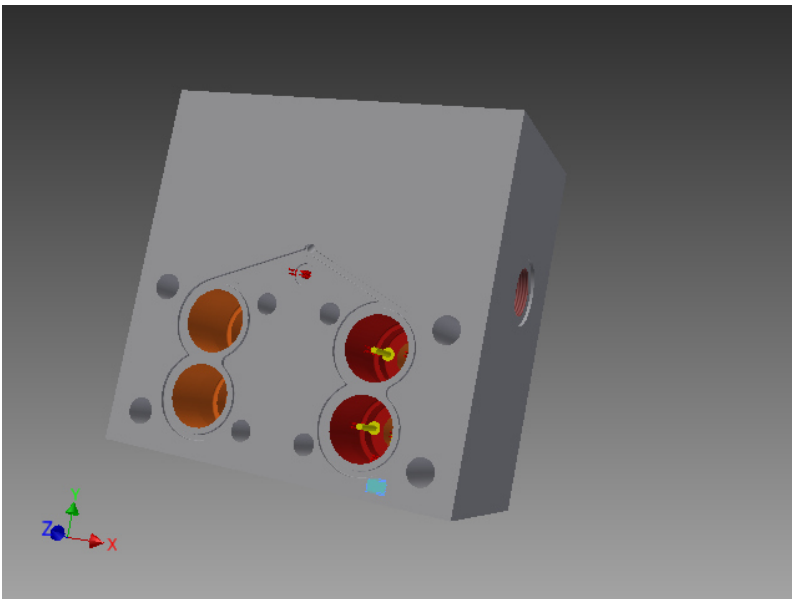
**Druck:1**

Belastungstyp	Druck
Größe	47.000 MPa

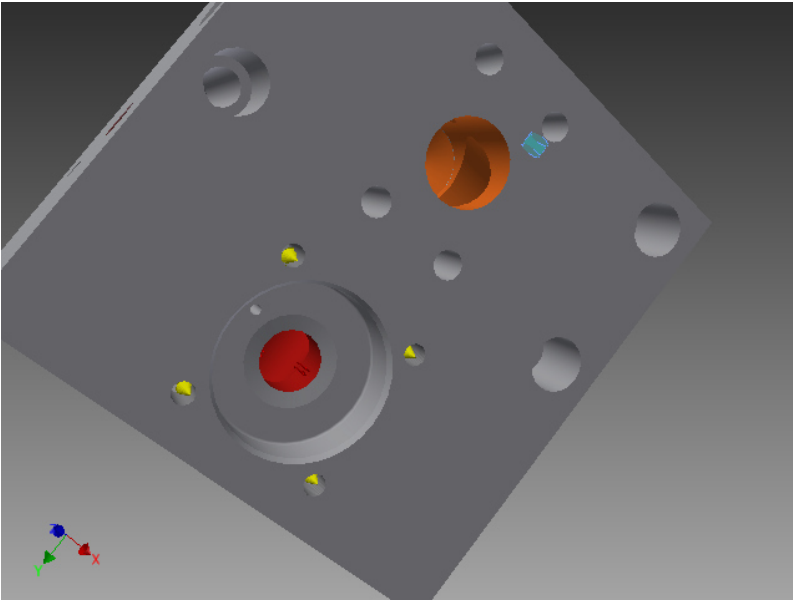
**Ausgewählte Fläche(n)**

**☐ Kraft:10**

Belastungstyp	Kraft
Größe	489.000 N
Vektor X	0.000 N
Vektor Y	-489.000 N
Vektor Z	0.000 N

**☐ Ausgewählte Fläche(n)**

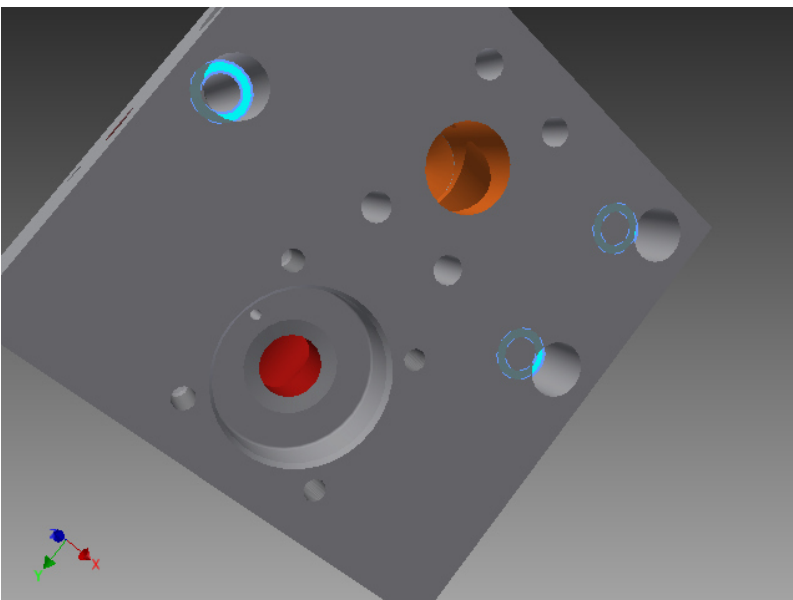
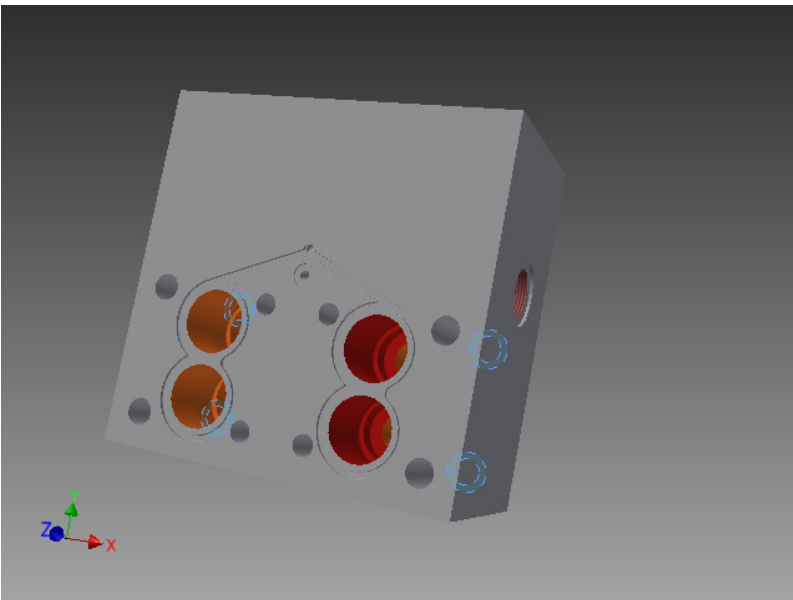




☐ **Festgelegte Abhängigkeit:1**

Abhängigkeitstyp Festgelegte Abhängigkeit

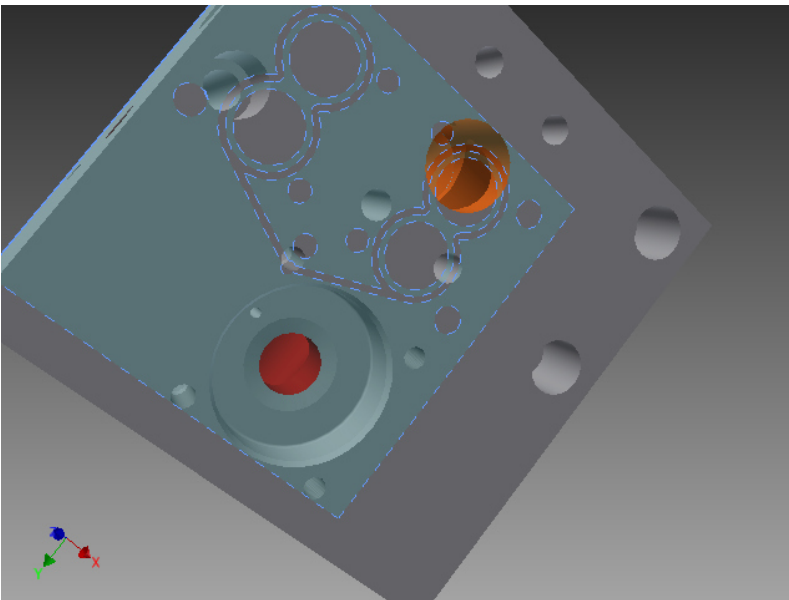
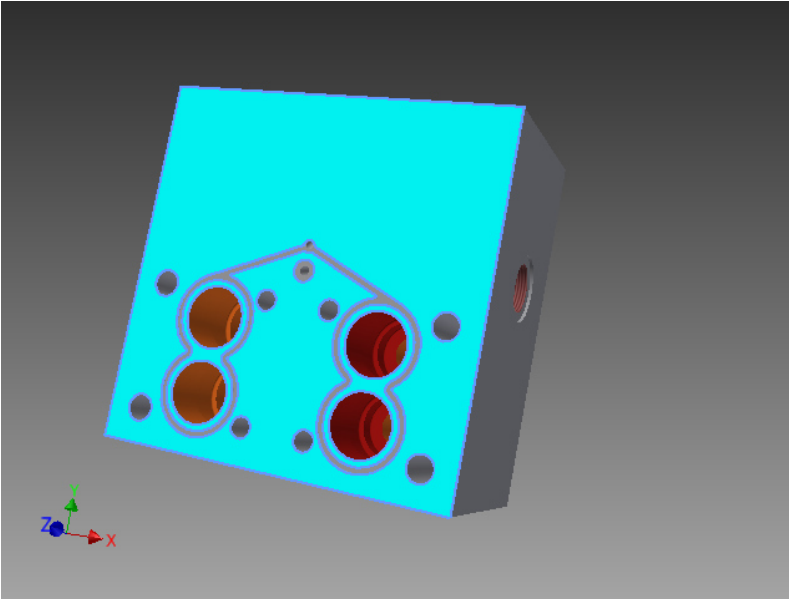
☐ **Ausgewählte Fläche(n)**



## Reibungslose Abhängigkeit:1

Abhängigkeitstyp Reibungslose Abhängigkeit

### Ausgewählte Fläche(n)



## Ergebnisse

### Rückstoßkraft und -moment an Abhängigkeiten

Name der Abhängigkeit	Rückstoßkraft		Rückstoßmoment	
	Größe	Komponente (X,Y,Z)	Größe	Komponente (X,Y,Z)
Festgelegte Abhängigkeit:1	128885 N	-23346,4 N	3559,42 N m	1622,5 N m
		100421 N		-1804,91 N m
		77343 N		2603,7 N m
Reibungslose Abhängigkeit:1	72472,6 N	0 N	3824,99 N m	-3616,71 N m
		0 N		-1244,97 N m
		-72472,6 N		0 N m

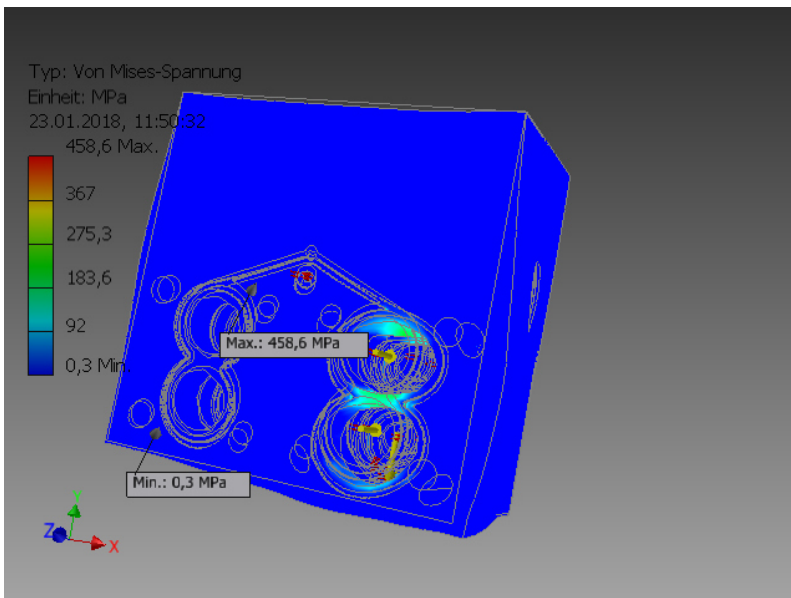
### Ergebniszusammenfassung

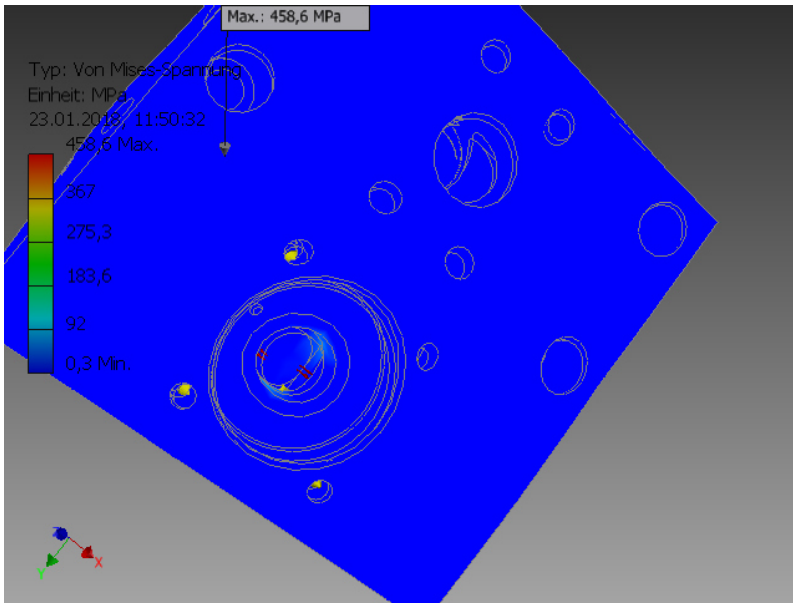
Name	Minimum	Maximum
Volumen	5014540 mm <sup>3</sup>	
Masse	39,314 kg	

Von Mises-Spannung	0,323077 MPa	458,622 MPa
1. Hauptspannung	-42,875 MPa	480,668 MPa
3. Hauptspannung	-264,338 MPa	60,7453 MPa
Verschiebung	0 mm	0,0270442 mm
Sicherheitsfaktor	1,09022 oE	15 oE
Spannung XX	-148,559 MPa	331,614 MPa
Spannung XY	-198,378 MPa	149,021 MPa
Spannung XZ	-143,866 MPa	181,514 MPa
Spannung YY	-176,378 MPa	202,191 MPa
Spannung YZ	-96,0281 MPa	124,489 MPa
Spannung ZZ	-145,268 MPa	199,348 MPa
X Verschiebung	-0,0127568 mm	0,0265382 mm
Y Verschiebung	-0,0182413 mm	0,00461079 mm
Z Verschiebung	-0,0130813 mm	0,0077641 mm
Vergleichsbelastung	0,0000013997 oE	0,00192877 oE
1. Hauptbelastung	-0,0000478457 oE	0,00218606 oE
3. Hauptbelastung	-0,0011471 oE	0,00000229713 oE
Belastung XX	-0,000592632 oE	0,00140141 oE
Belastung XY	-0,00121578 oE	0,000913283 oE
Belastung XZ	-0,000881694 oE	0,00111242 oE
Belastung YY	-0,000654918 oE	0,000853237 oE
Belastung YZ	-0,000588515 oE	0,000762938 oE
Belastung ZZ	-0,00056332 oE	0,00074876 oE

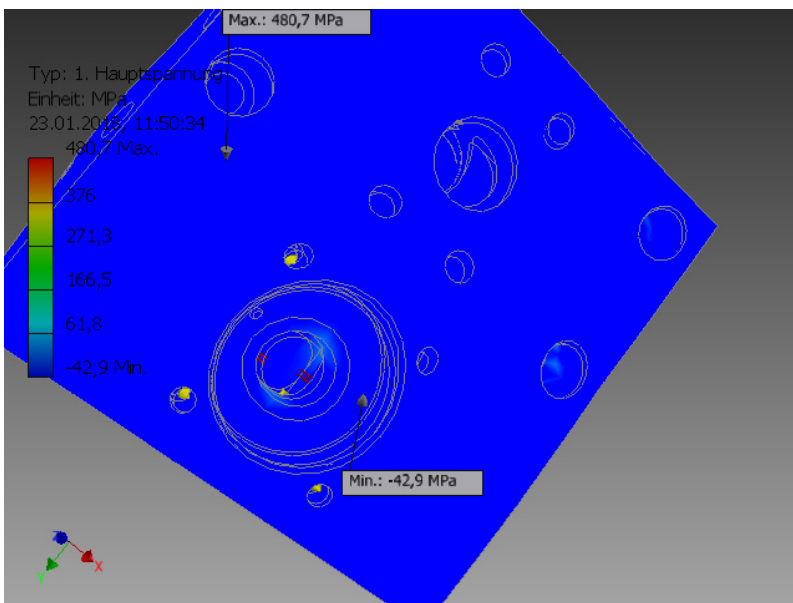
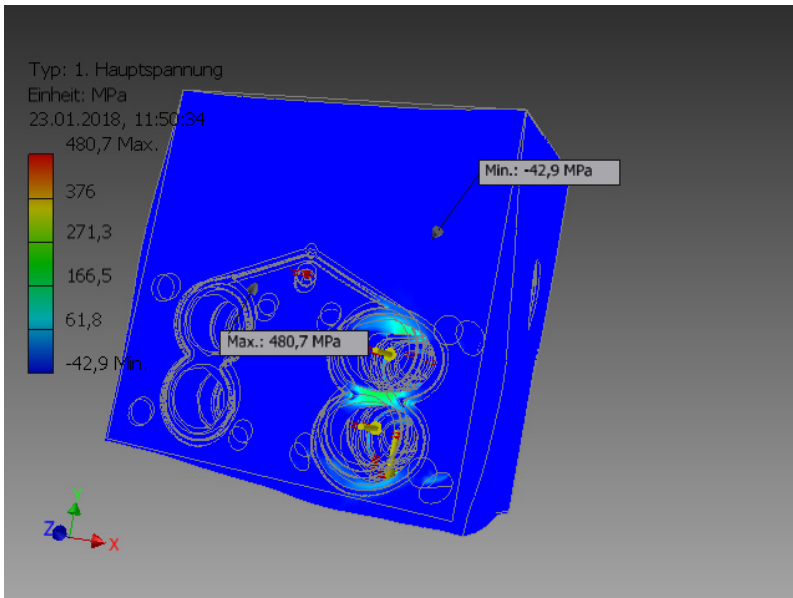
## ☐ Zahlen

### ☐ Von Mises-Spannung

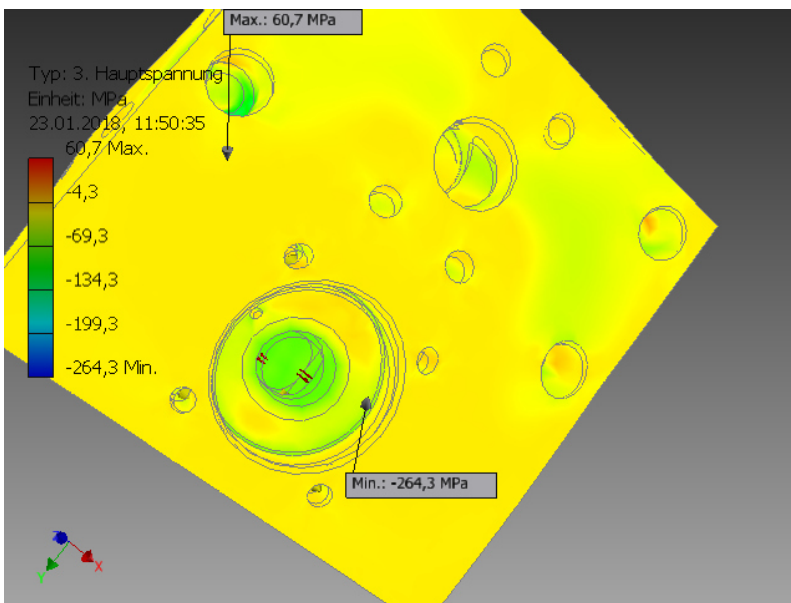
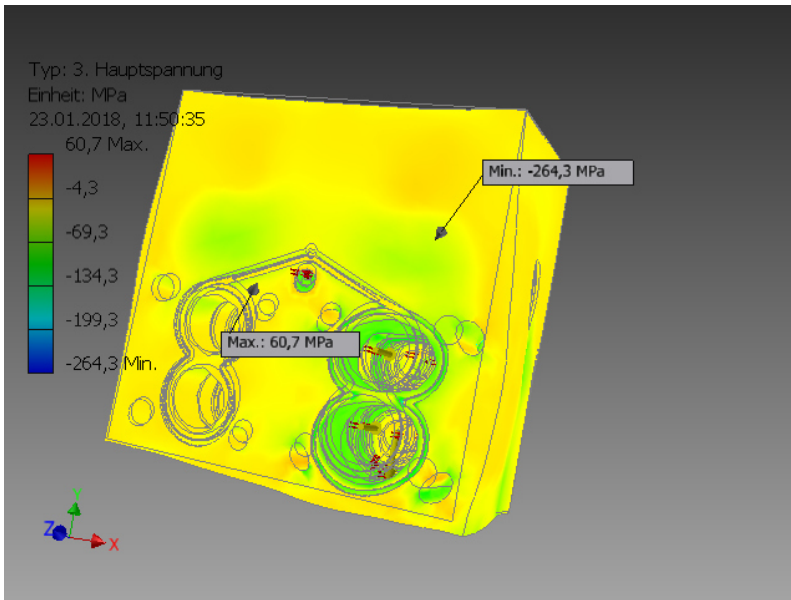




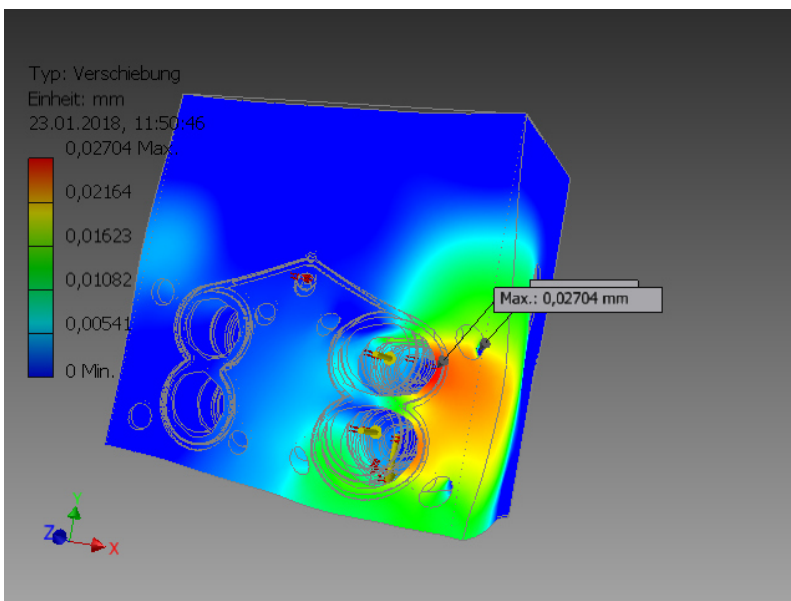
### 1. Hauptspannung

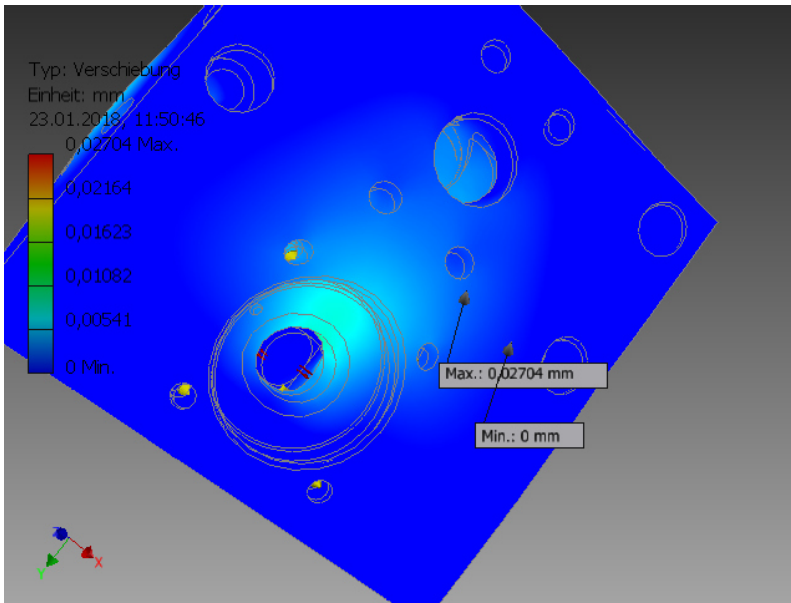


### 3. Hauptspannung

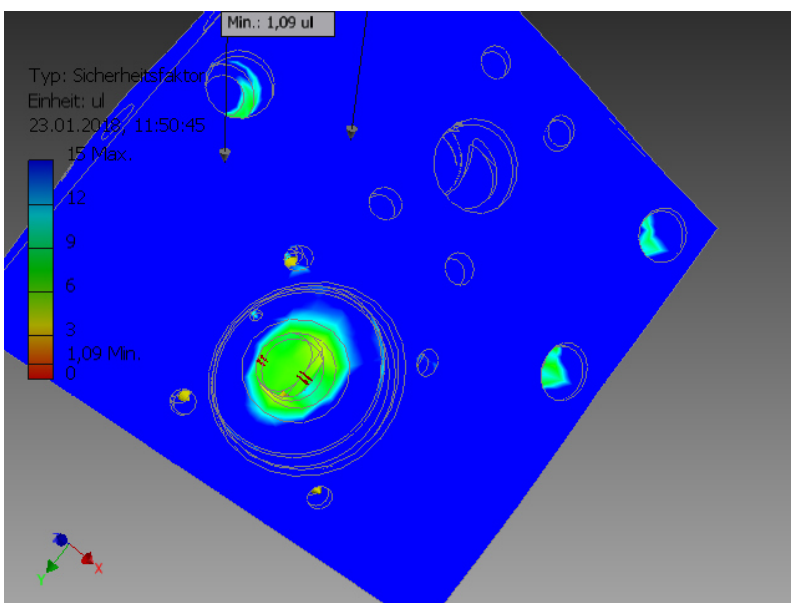
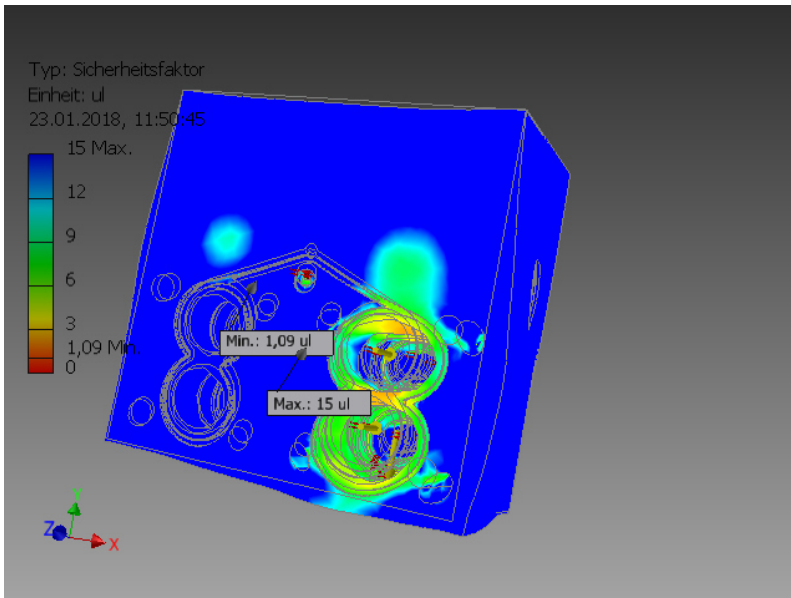


### ☐ Verschiebung

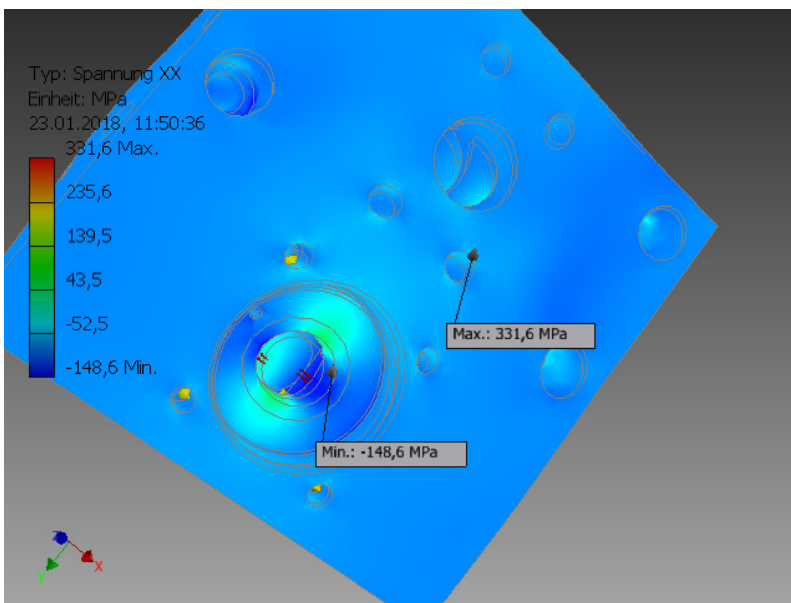
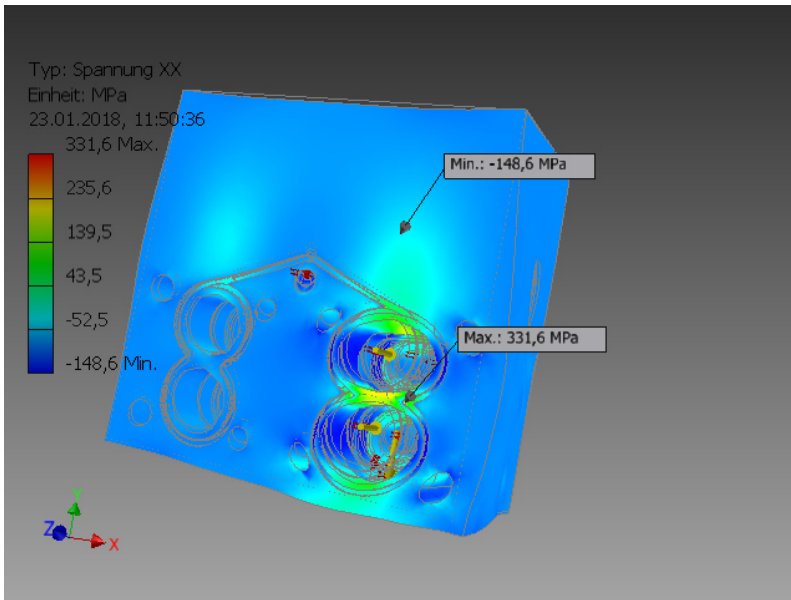




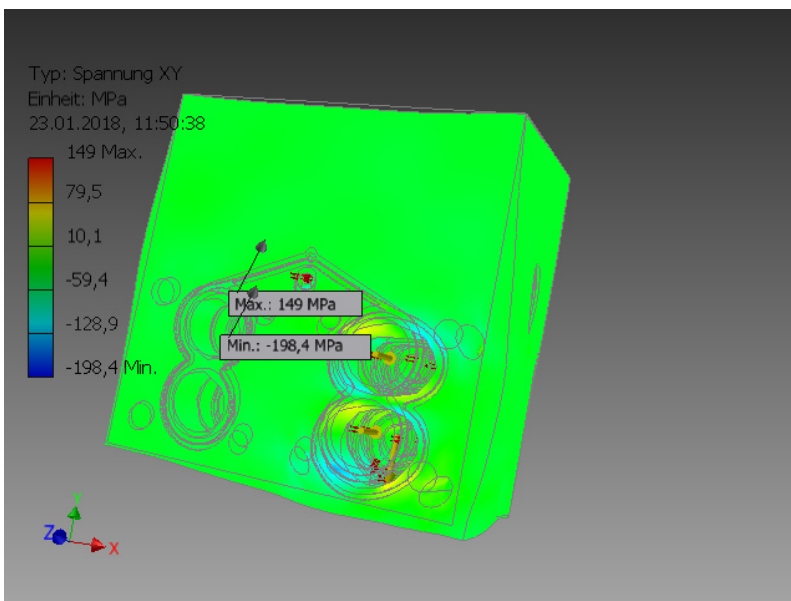
☐ **Sicherheitsfaktor**



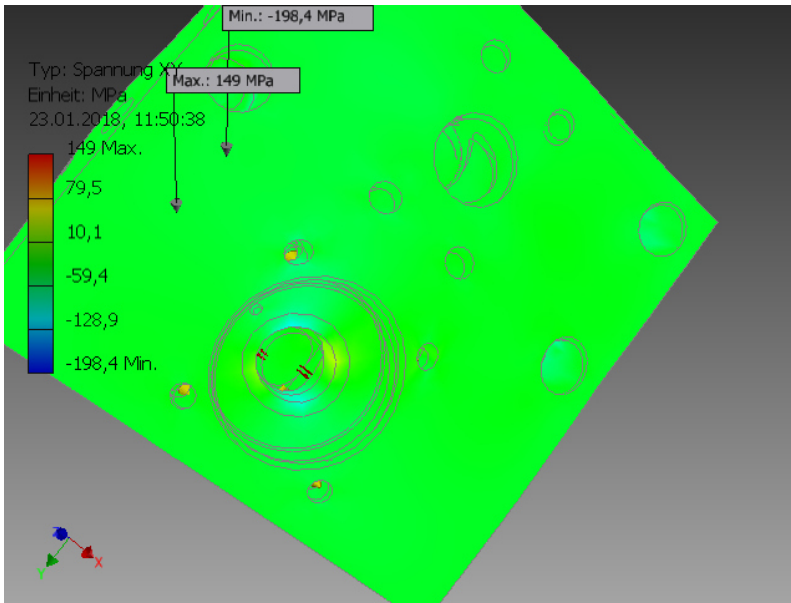
☐ **Spannung XX**



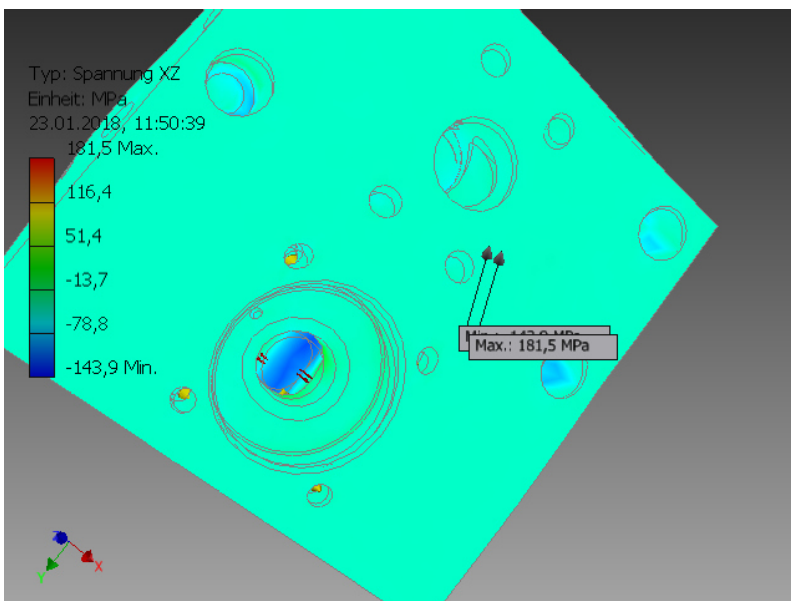
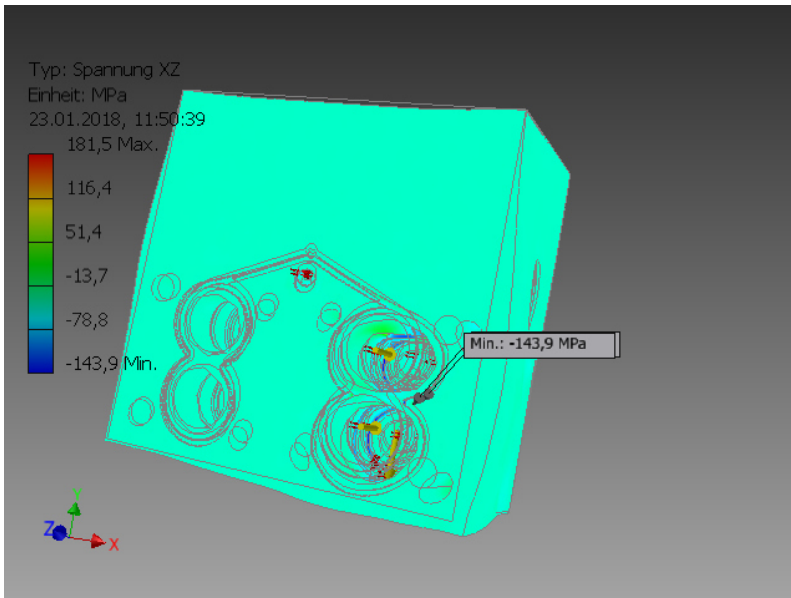
☐ **Spannung XY**





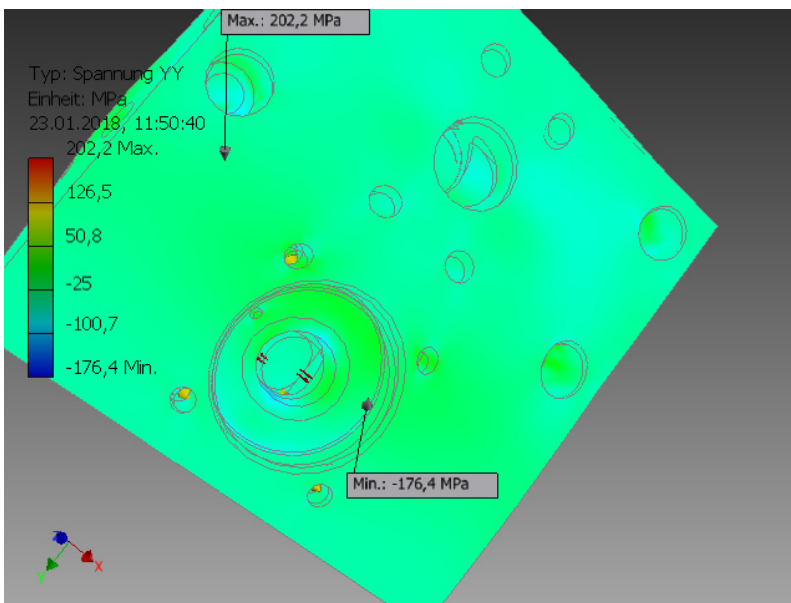
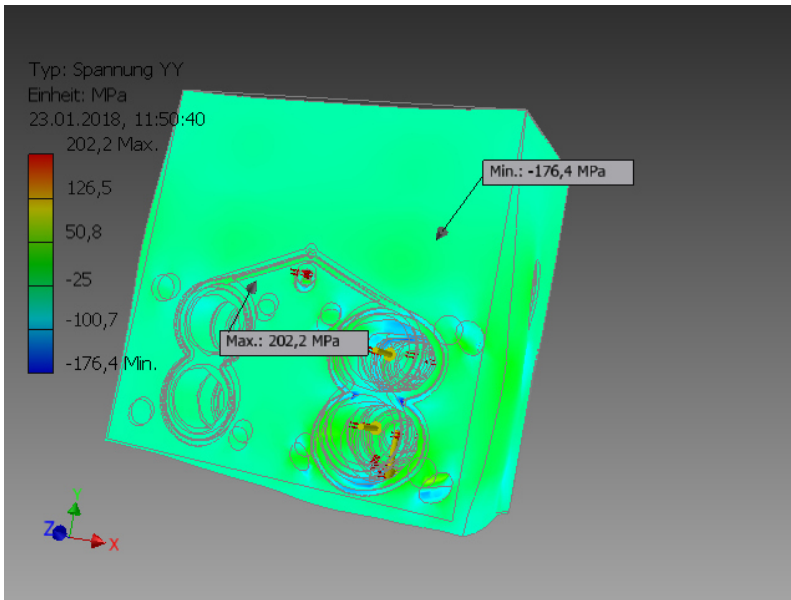


### Spannung XZ

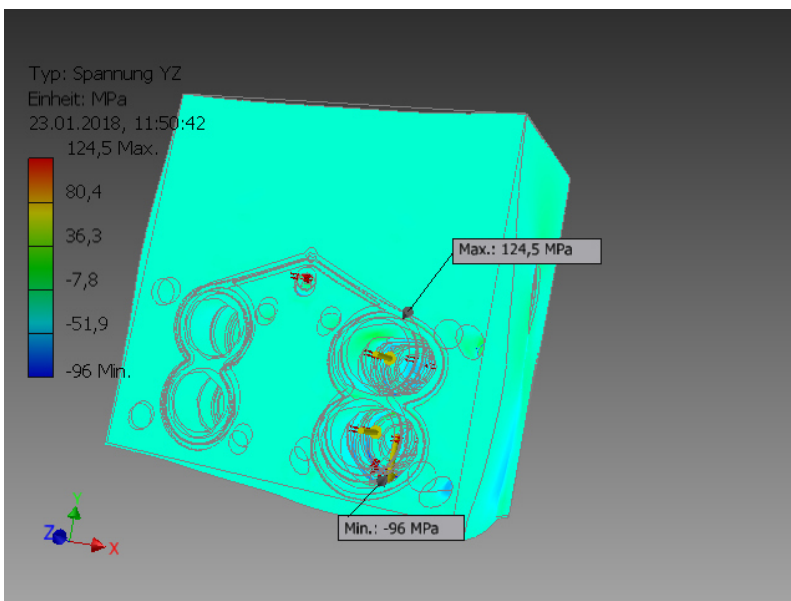


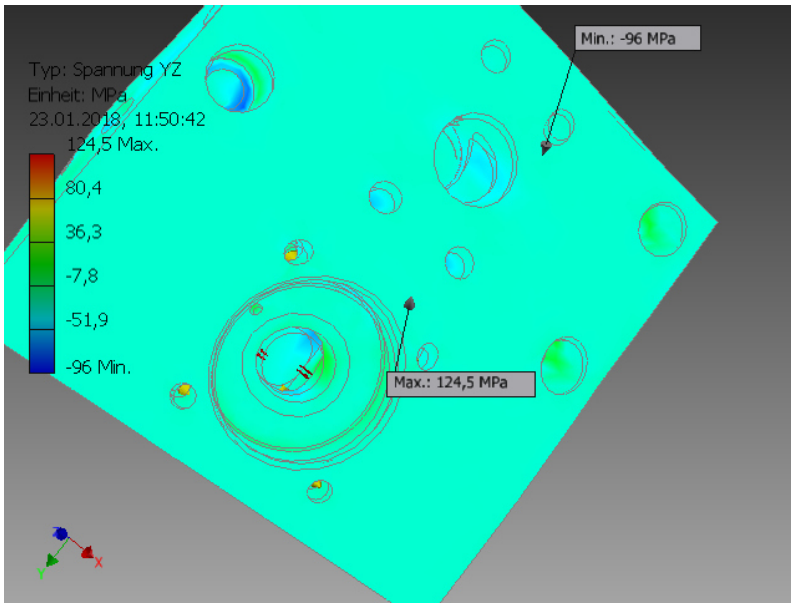
### Spannung YY



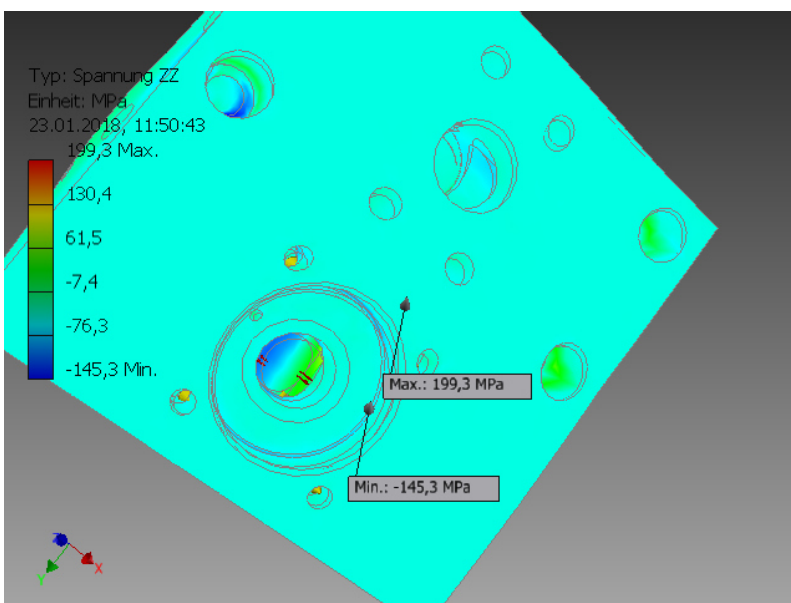
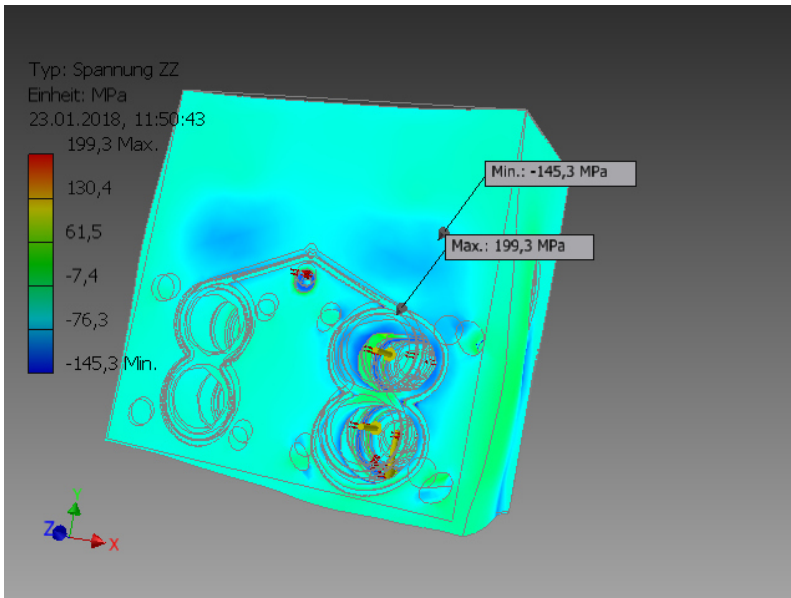


☐ **Spannung YZ**

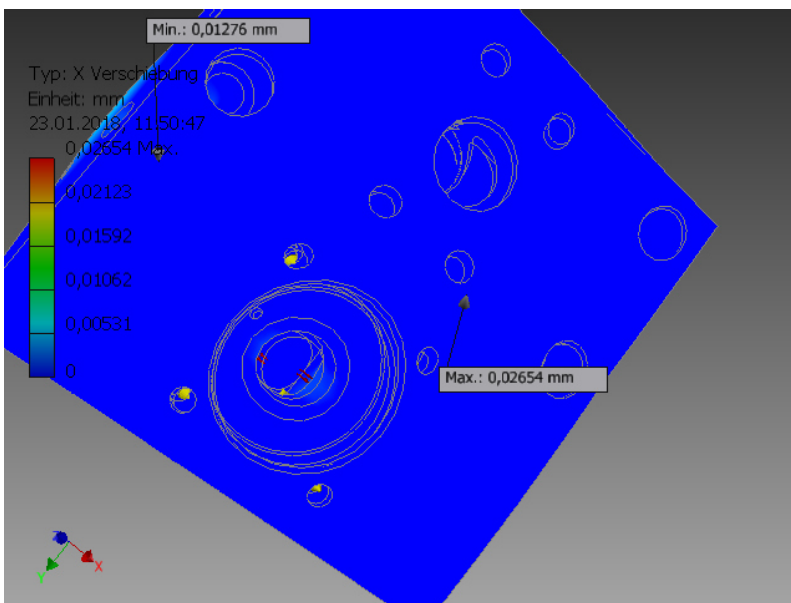
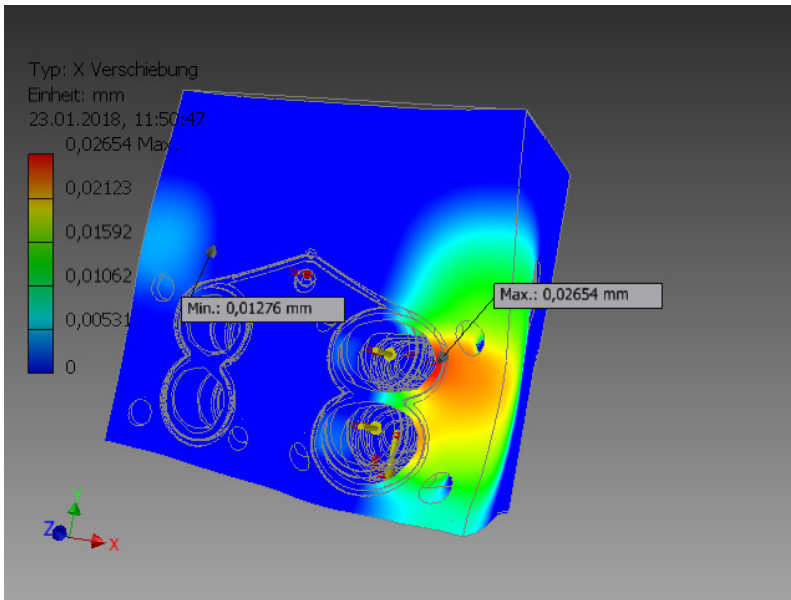




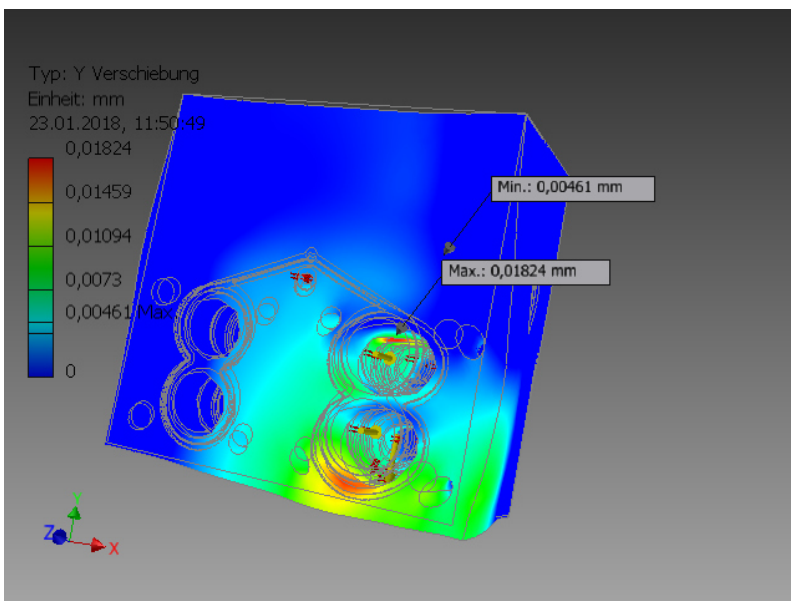
**Spannung ZZ**

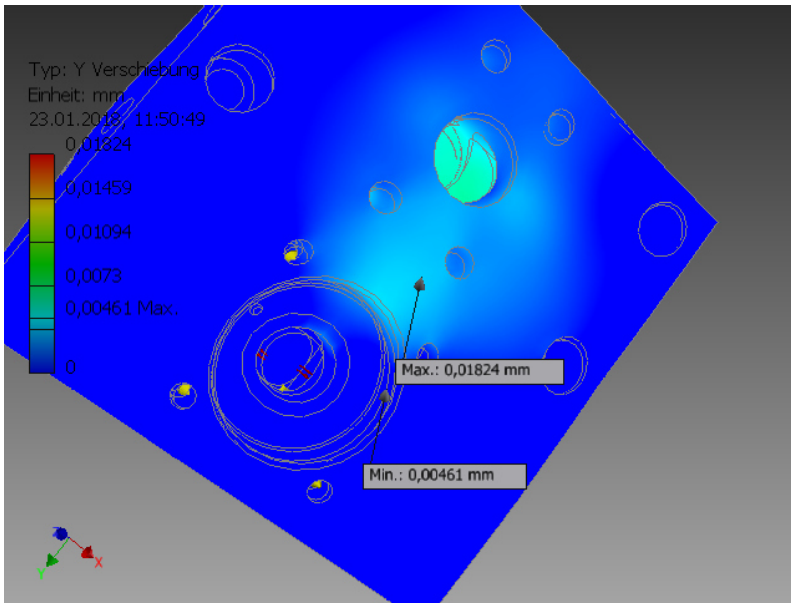


**X Verschiebung**

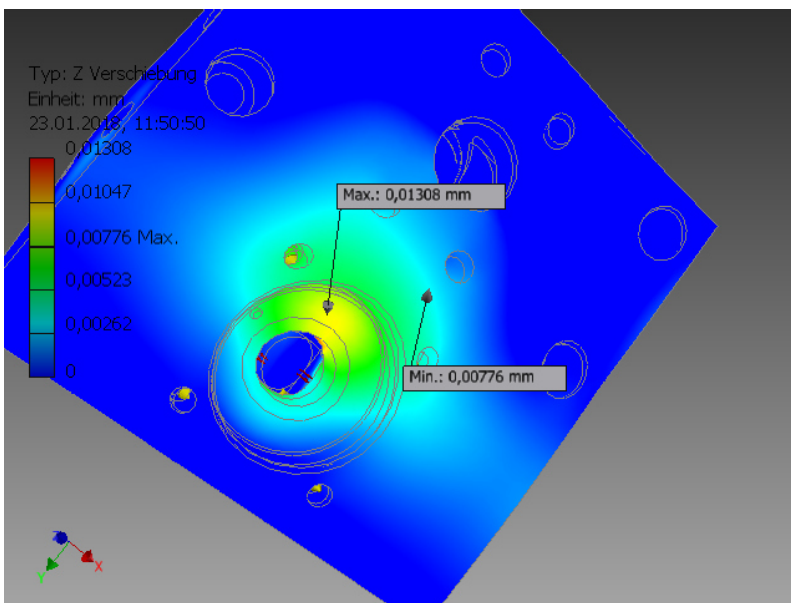
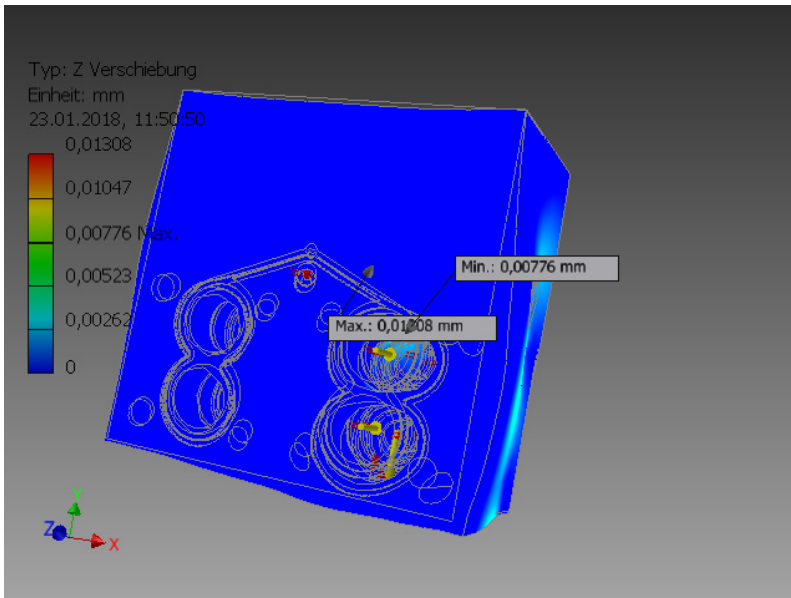


### Y Verschiebung

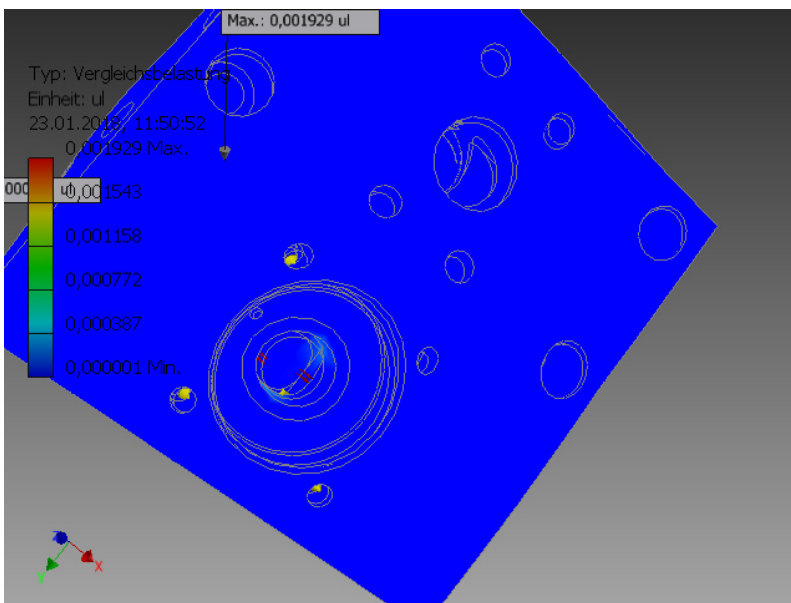
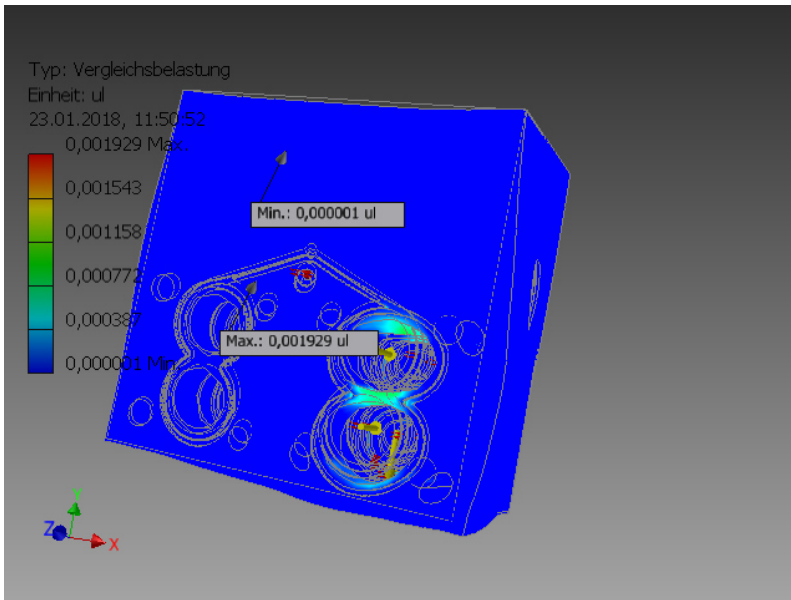




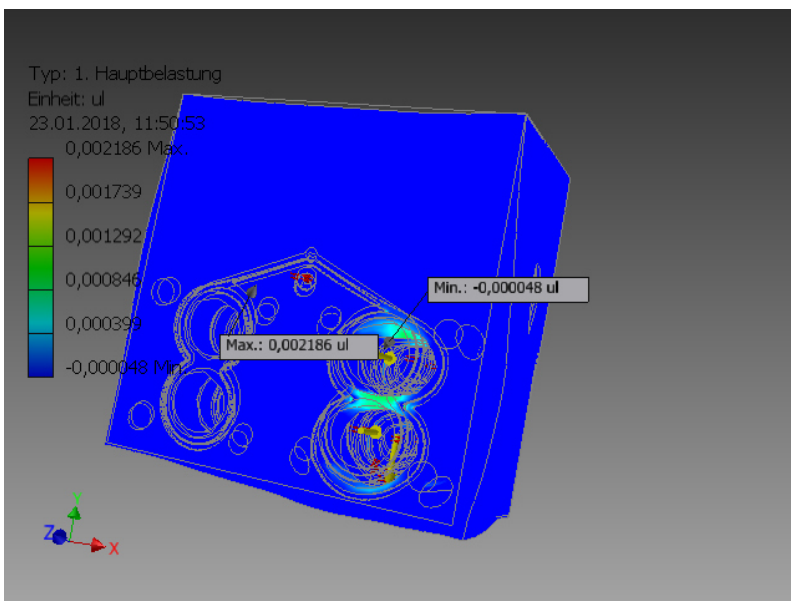
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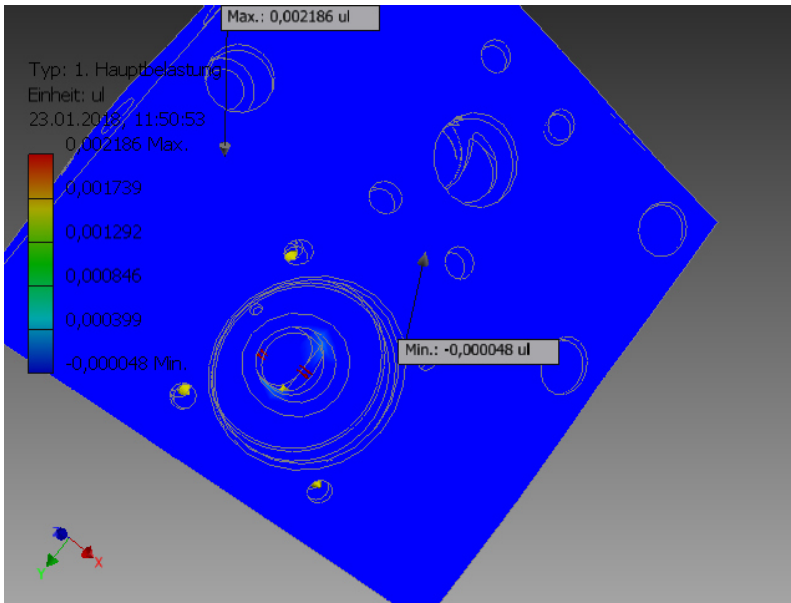


### Vergleichsbelastung

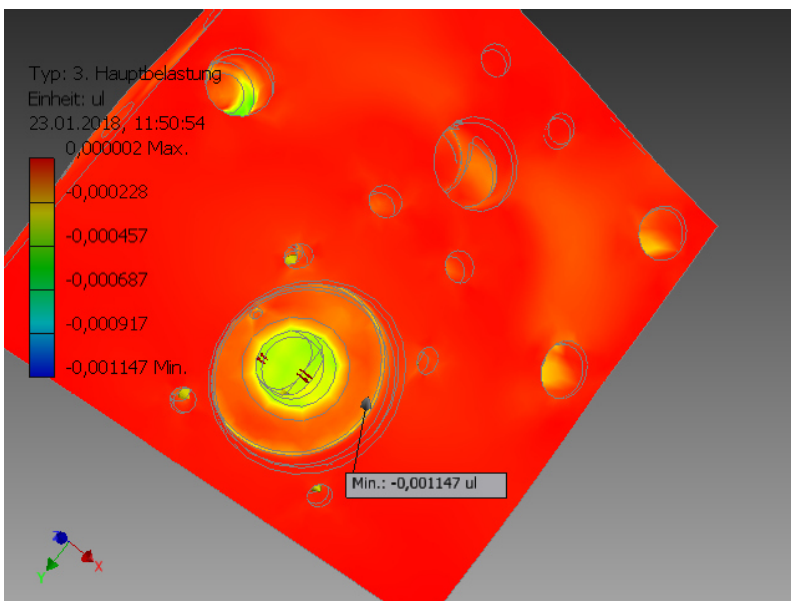
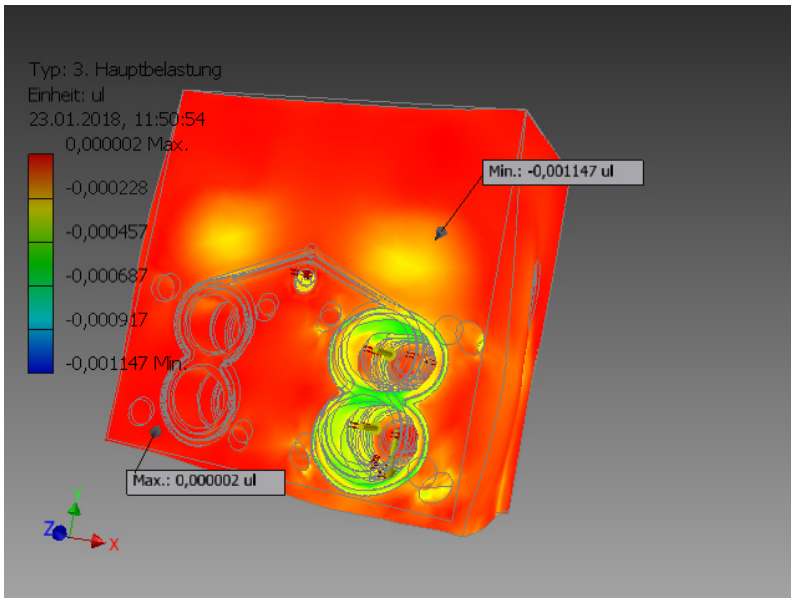


### 1. Hauptbelastung



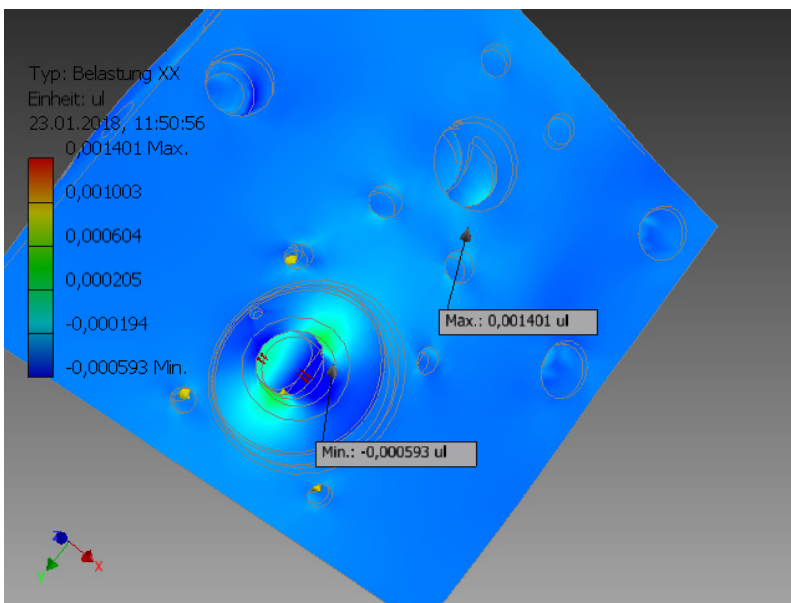
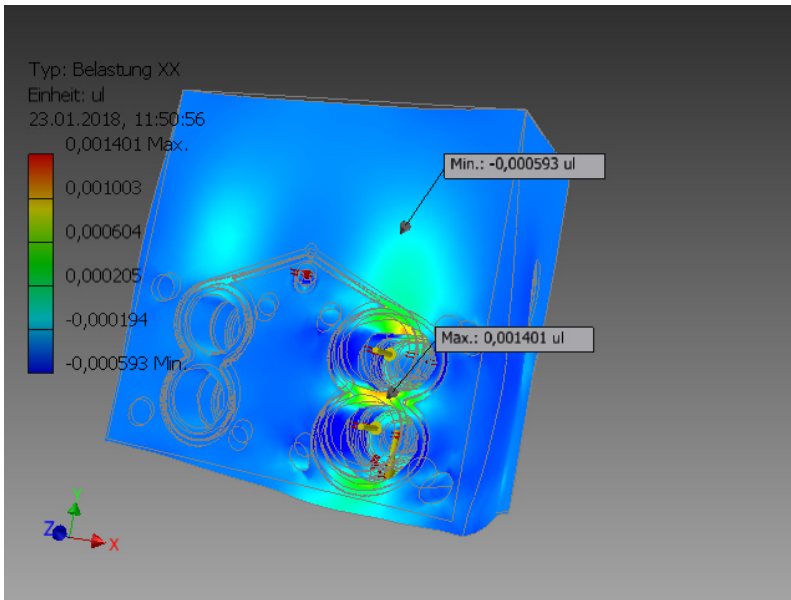


### 3. Hauptbelastung

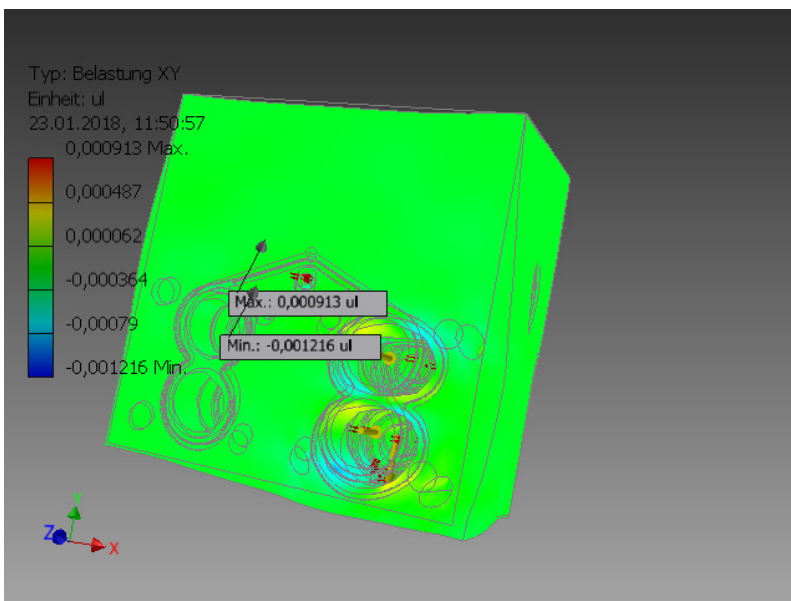


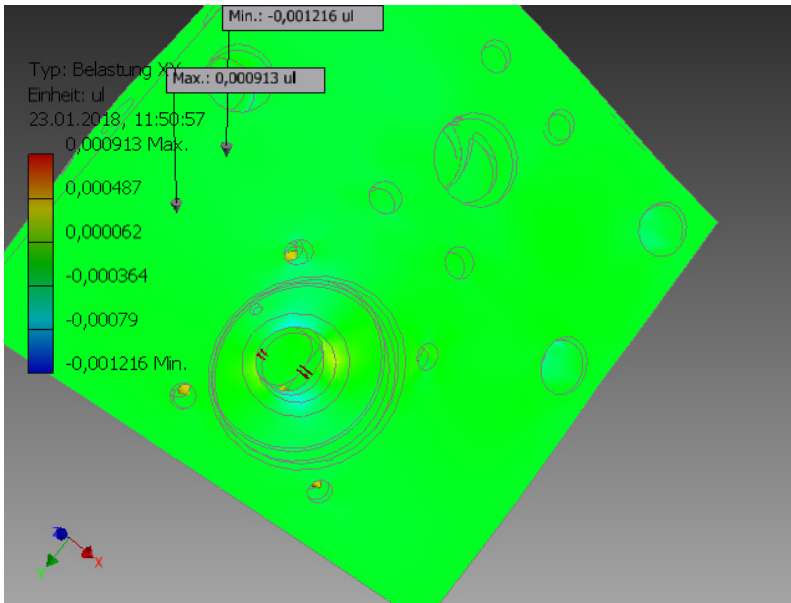
### Belastung XX



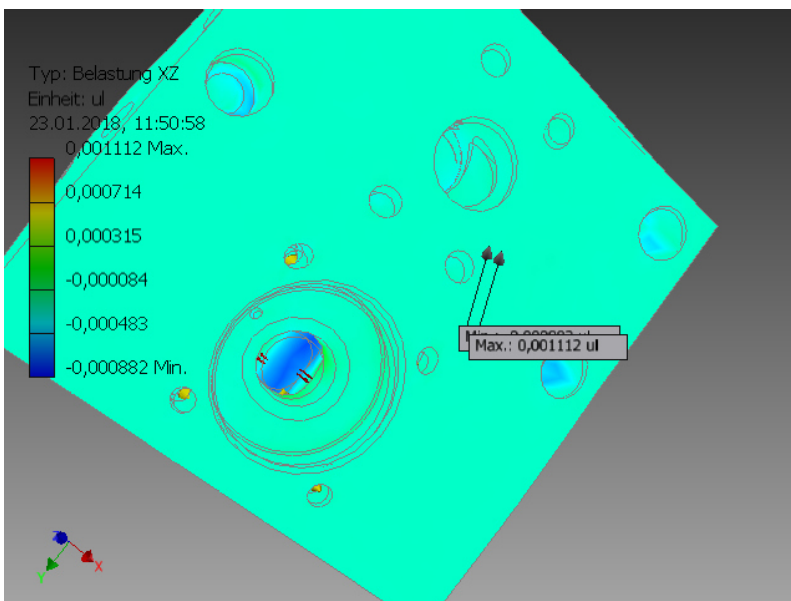
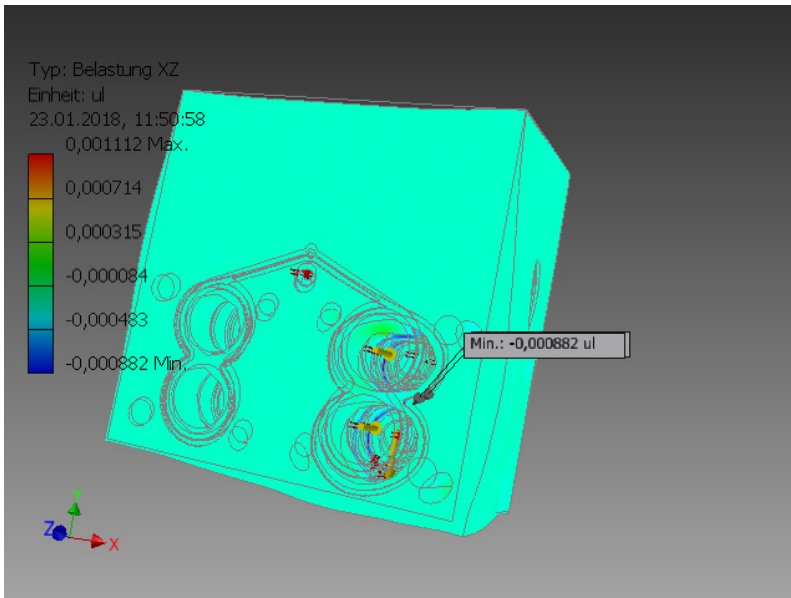


**Belastung XY**



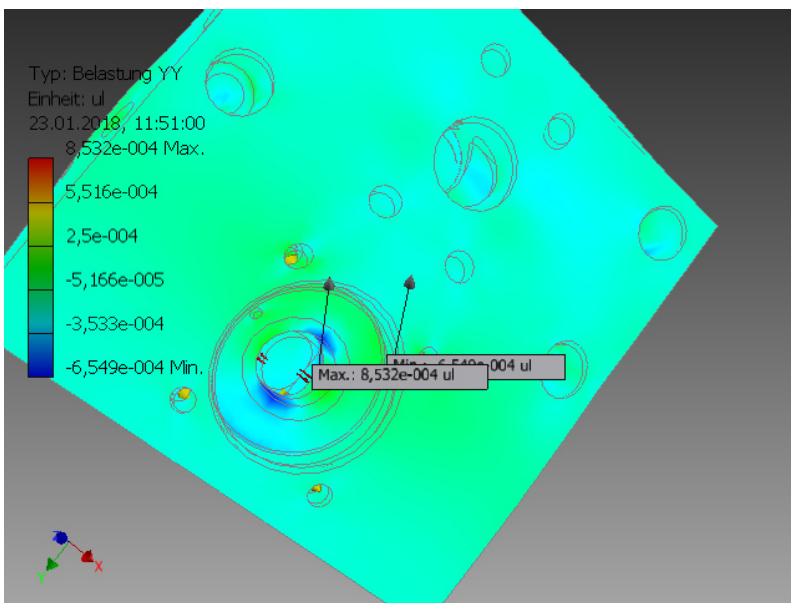
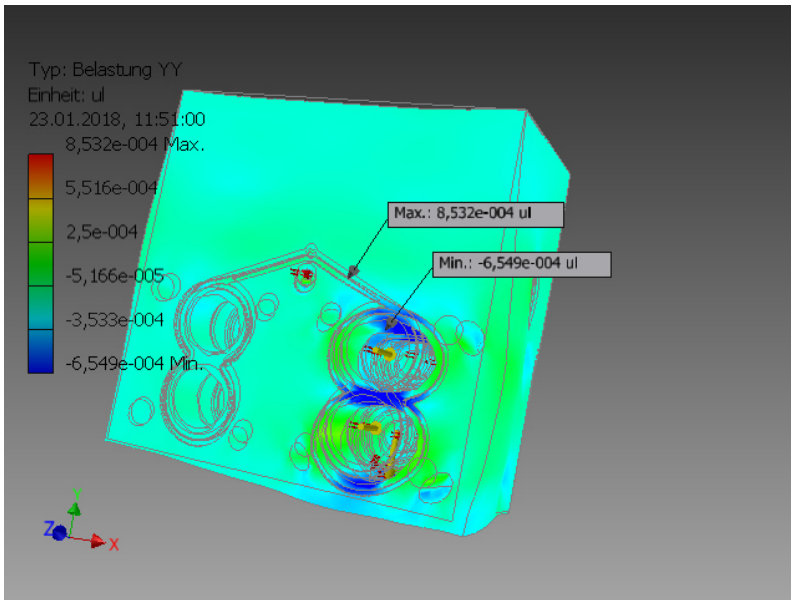


☐ **Belastung XZ**

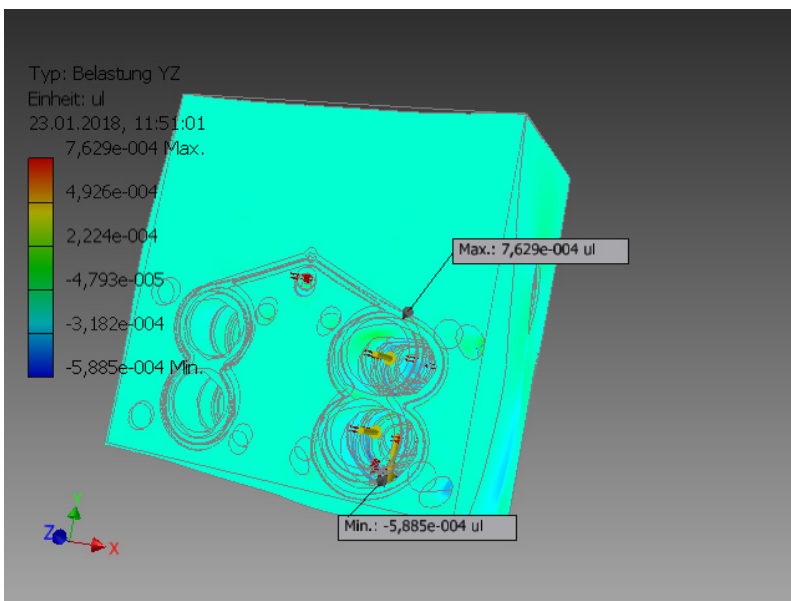


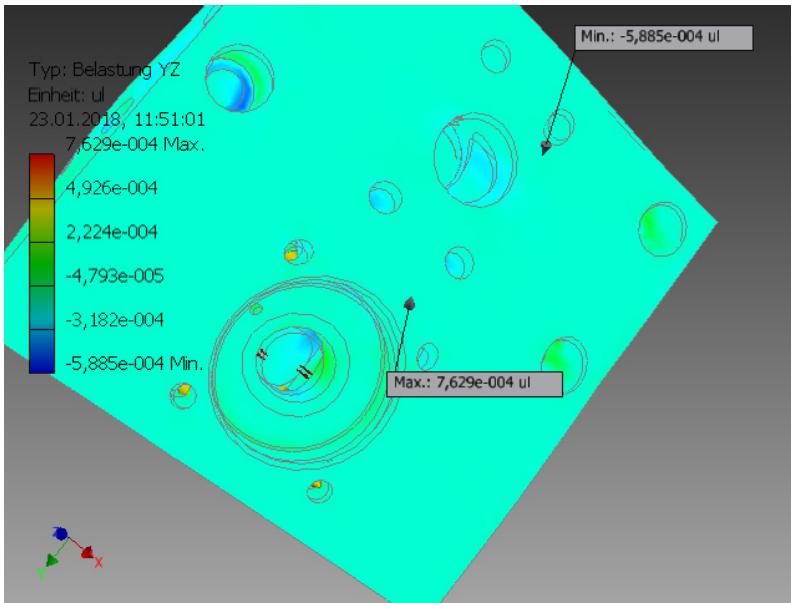
☐ **Belastung YY**



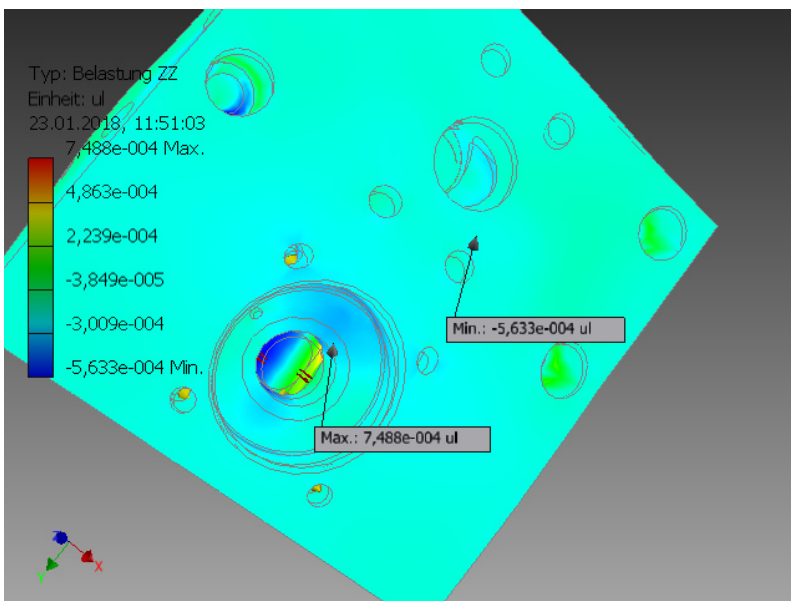
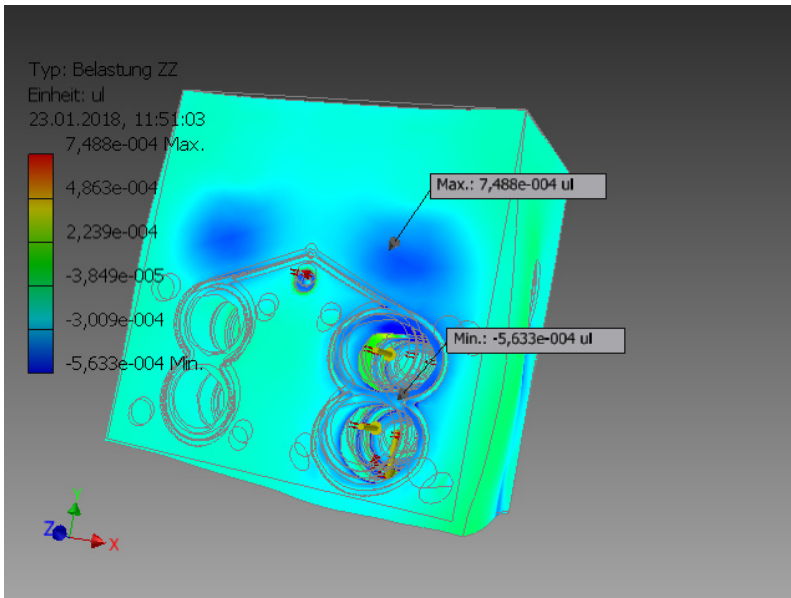


**Belastung YZ**





**Belastung ZZ**



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