

# Técnicas de Conformação Aplicações de estampagem

*Forming Technology  
Piercing Applications*

A inserção de furos adicionais, cavidades ou aparas é uma das nossas especialidades na tecnologia de conformação.

Como unidades de punção, utilizamos tanto sistemas de Forma em C como grampos do tipo de alavanca (consulte a próxima página).

Este "livro de imagens" oferece uma visão geral das aplicações típicas que realizamos nos últimos anos. Você também pode encontrar sugestões para sua necessidade atual aqui.

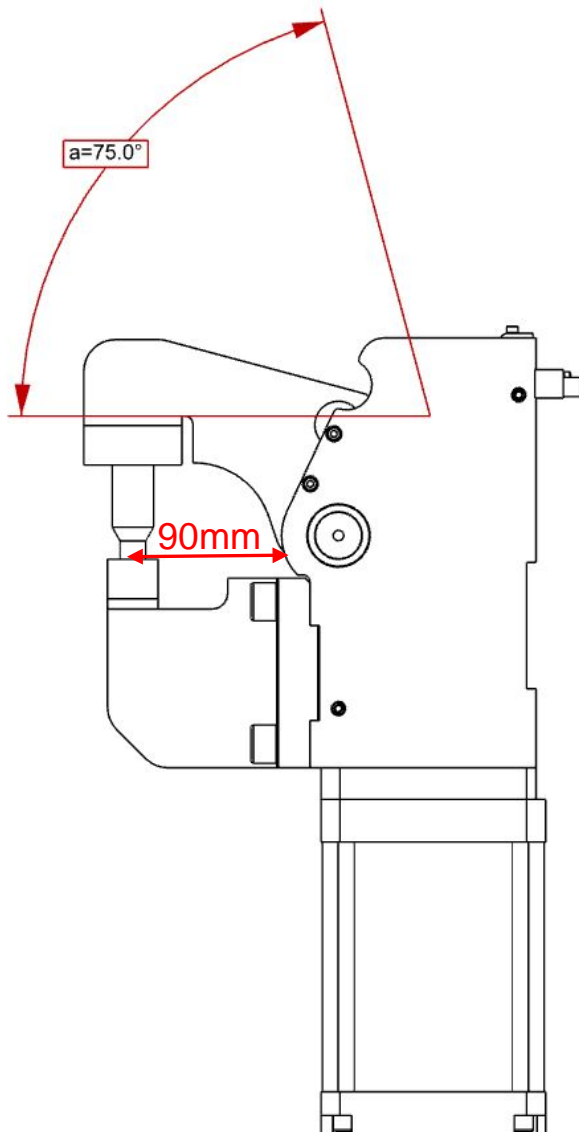
*The insertion of additional holes, recesses or trimming is one of our specialties in forming technology.*

*As punching units we use both C-frame systems and toggle-type tongs (see next page).*

*This "picture book" gives you an overview of typical applications that we have realized in recent years. You may also find suggestions for your current application here.*

# Exemplo de alavanca de alternância PFS

## Example toggle unit PFS



### PFS 400-90 S T12/3 75° 125mm

PFS: sistema de três pontos pneumático / *pneumatic toggle unit*

400: Dimensões / *Size*

90: Capacidade [in mm] / *Reach [in mm]*

S: Furação / *Corte / Piercing / Cutting*

T12/3: Sensorização / *Sensor*

75°: Ângulo de abertura / *opening angle*

125mm: Ø Cilindro / *cylinder Ø*

### Sistema de Sensorização / *Sensors*

T12: Sensor indutivo 24V, 1 visor com 3 LEDs integrados

*inductive Sensor 24 V, 1 outlet with 3 integrated LEDs*

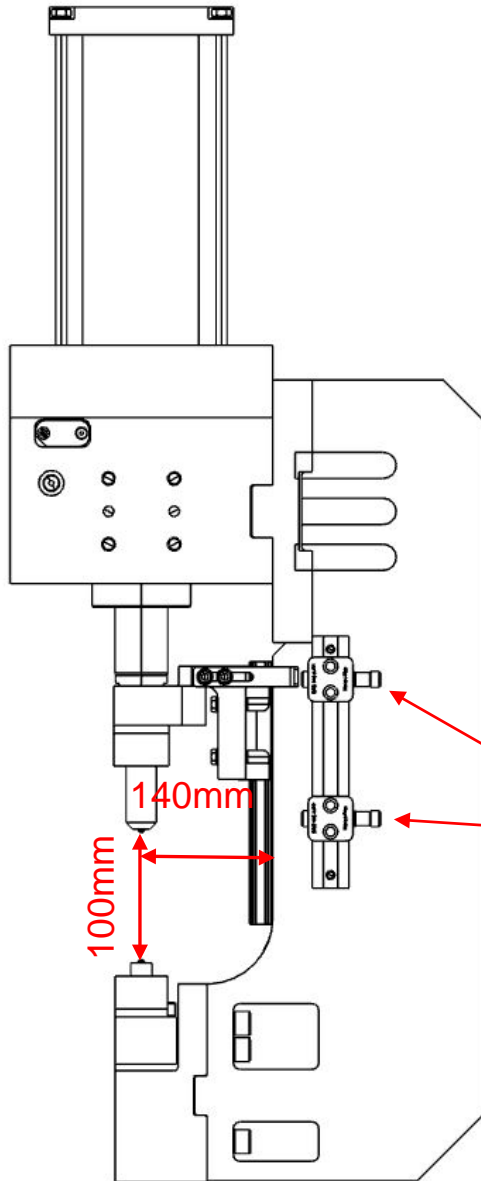
T08: sensor pneumático / *pneumatic sensor*

Ângulo de abertura max. 75° / *Opening angle max. 75°*

### Midia

Ar, max. 6 bar, sistema operado com ar limpo, sem lubrificantes

*Air, max. 6 bar, operation permitted with oil-free air*



### CBMZ 10-140 100 S T02

CB: Forma C / *C-frame unit*

MZ: Acionamento / *Drive*

MZ: Cilindro Multi-Força / *Mult-power cylinder*

HZ: Cilindro Hidráulico / *hydraulic cylinder*

HA: Cilindro Hidropneumático / *HydroAir cylinder*

10: Força de estampagem [in kN] / *Piercing force [in kN]*

140: Garganta [in mm] / *Reach [in mm]*

100: Curso do Cilindro [in mm] / *Cylinder stroke [in mm]*

S: Estampagem/Corte / *Piercing/Cutting*

T02: Sensorização/ *Sensor*

### Sistema de Sensorização / *Sensors*

T02: 2x sensores indutivos externos M12

*2x external inductive Sensor M12*

T08: 2x sensores pneumáticos externos / *2x external pneumatic sensor*

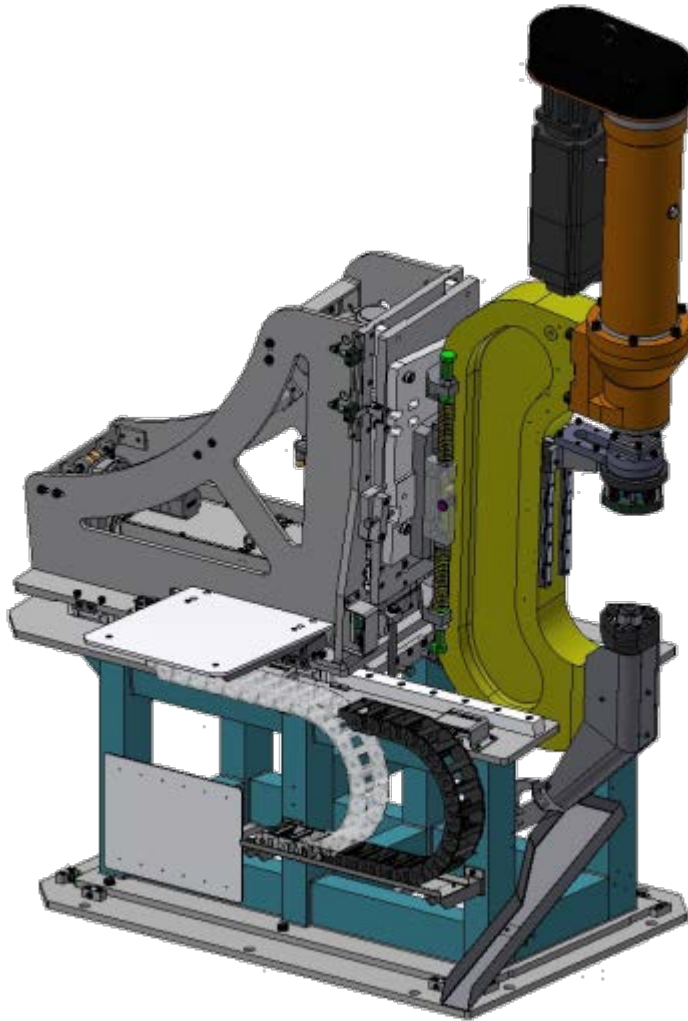
### Garganta / *Reach*

Padrão: 140mm, 200mm, 300mm \*

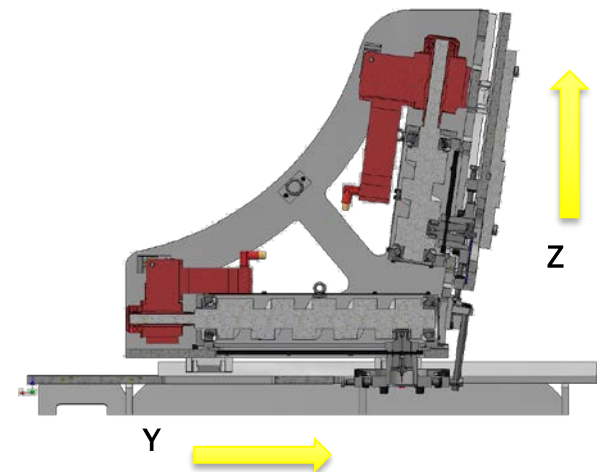
\* outras dimensões a pedido / *further measurements upon request*

# Furação do Suporte do Amortecedor totalmente elétrico

## *Electric shock tower piercing unit*



- Acionamento elétrico com acionamento por fuso planetário
- $F_{max} = 250 \text{ kN}$ , projeção 235 mm, curso 360 mm
- Tempo de ciclo <28 seg
- *Performance data*
- *E-Drive with planetary screw assemblies*
- $F_{max} = 250 \text{ kN}$ , reach 235 mm, stroke 360 mm
- Cycle Time < 28 sec



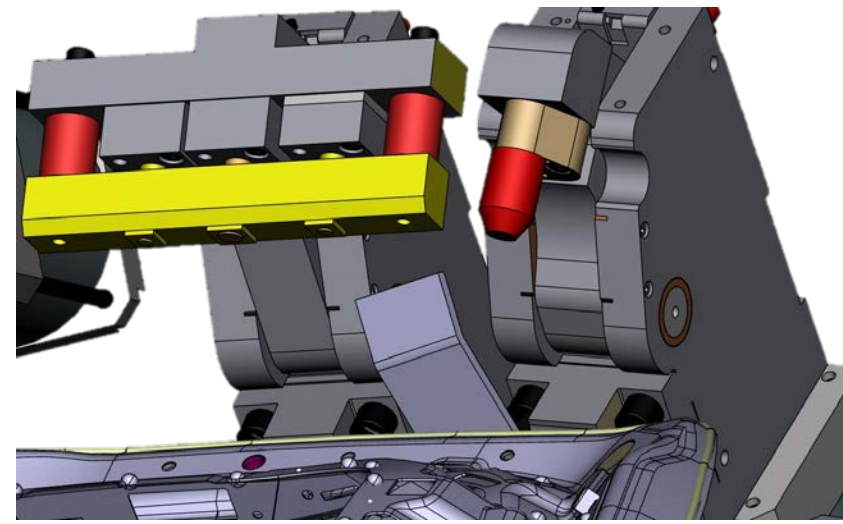
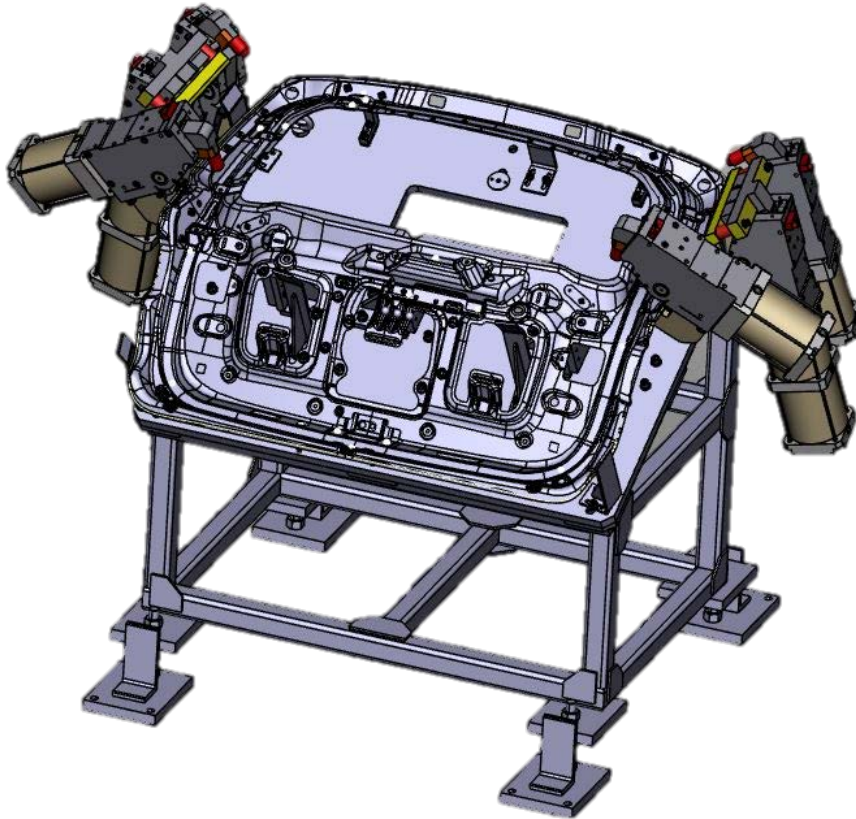
# Perfuração com PFS - Tampa Traseira

## *Piercing with PFS – Rear Door*

Cliente / *Customer*: SAIC (China)

- PFS 400-90 S 70° para furo 1x Ø 8,5mm
- PFS 900-90 S 70° para 2x furos Ø 8,5mm e 1x Ø14mm
- Matriz de contato conforme formato produto
- Chapa de aço 0,65mm espessura

- *PFS 400-90 S 70° for 1x Ø 8,5mm*
- *PFS 900-90 S 70° for 2x Ø 8,5mm and 1x Ø14mm*
- *Dies with 3D surface according to part contour*
- *Steel sheet 0,65mm thick*





# Perfuração com CBPZ - Coluna A

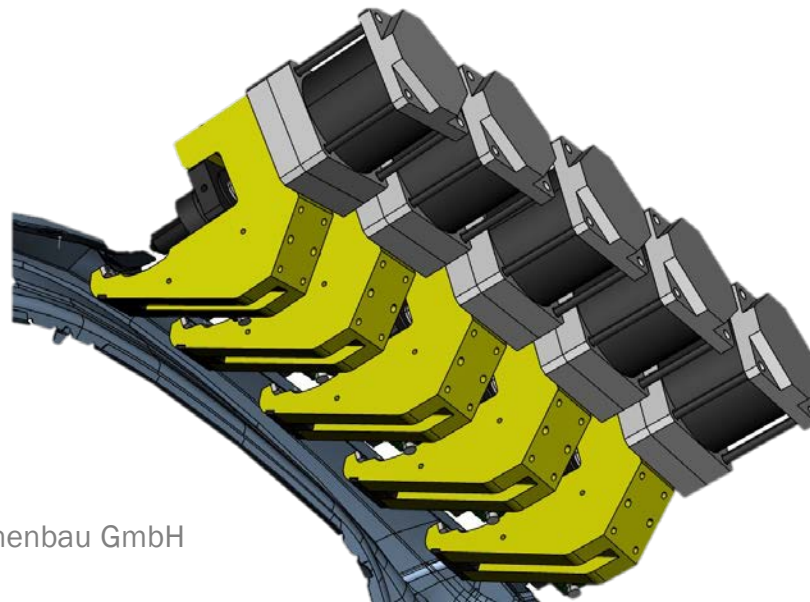
## *Piercing with CBPZ – A-pillar*

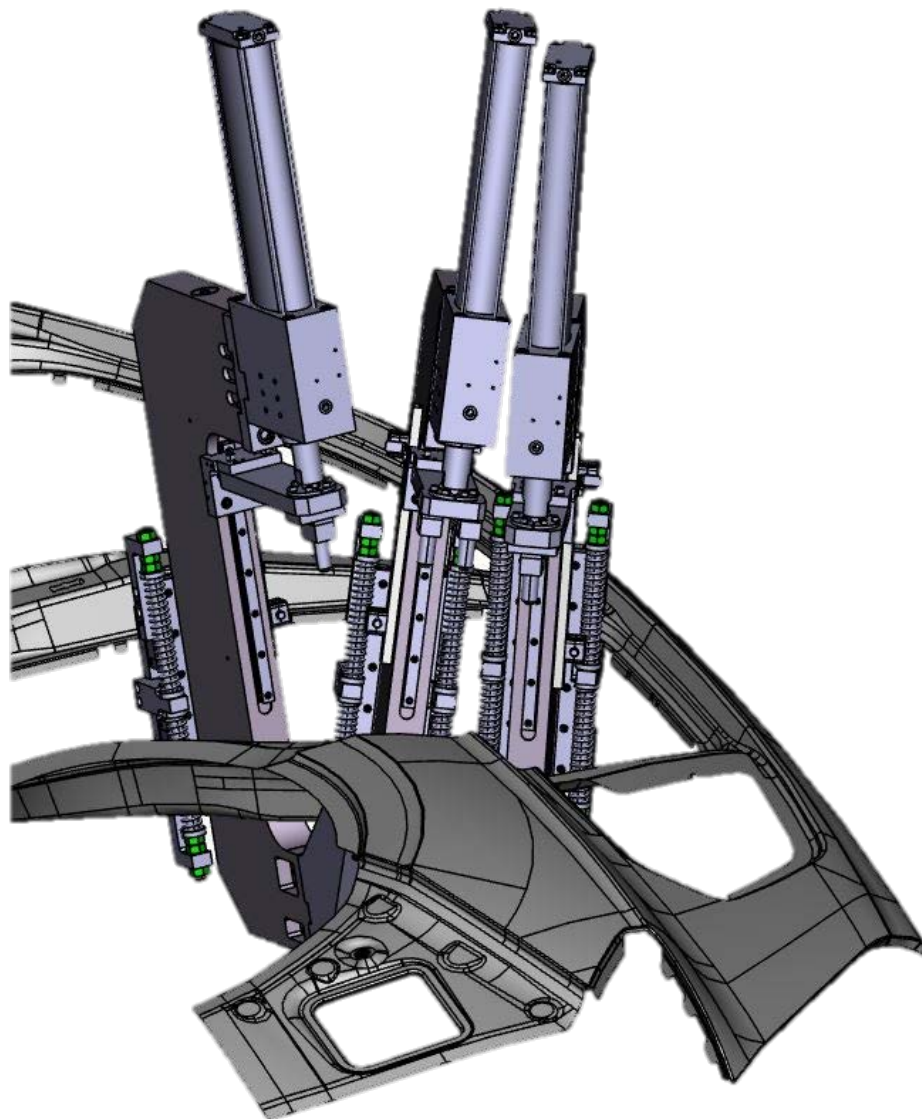


*Cliente / Customer:* AUDI (Bratislava)

- CBPZ 4-50 40 S para furo Ø 3,3mm
- Cilindro Pneumático com 40mm de curso
- 50mm garganta
- Remoção de cavaco por extração a vácuo
- Chapa de alumínio 1,15mm de espessura

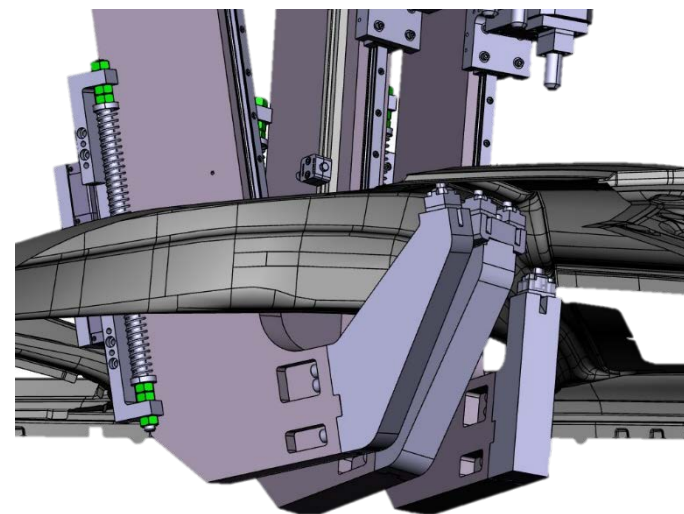
- *CBPZ 4-50 40 S for Ø 3,3mm*
- *Pneumatic cylinder with 40mm stroke*
- *50mm reach*
- *vacuum unit for slug disposal*
- *Aluminium sheet 1,15mm thick*



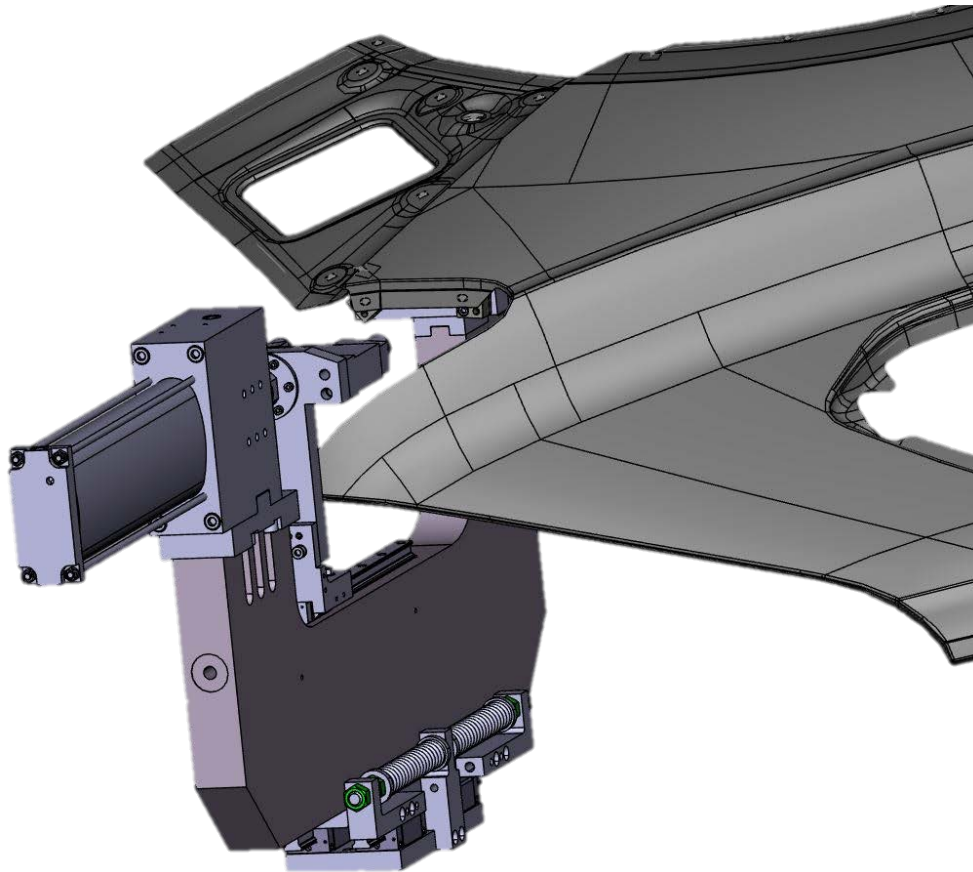


*Cliente / Customer:* AUDI (Bratislava)

- CBMZ 25-300 250 S para furo de Ø 5,5mm
  - MZ 80 (25kN) com 250mm de curso
  - 300mm garganta
  - Chapa de alumínio 1,15mm de espessura
- 
- *CBMZ 25-300 250 S for Ø 5,5mm holes*
  - *MZ 80 (25kN) with 250mm stroke*
  - *300mm reach*
  - *Aluminium sheet 1,15mm thick*

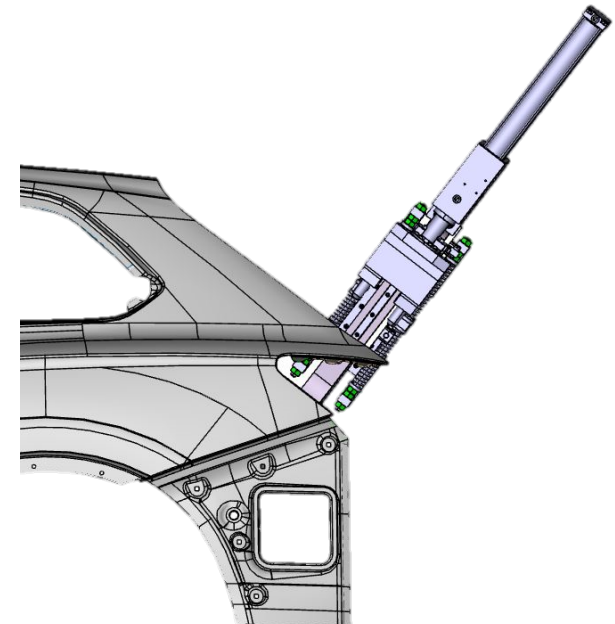






*Cliente / Customer: AUDI (Bratislava)*

- CBMZ 25-250 250 S para 2x oblongo de 11x7mm
- MZ 80 (25kN) com 250mm de curso
- 250mm garganta
- Chapa de alumínio 1,15mm de espessura
  
- *CBMZ 25-250 250 S for 2x 11x7mm oblong holes*
- *MZ 80 (25kN) with 250mm stroke*
- *250mm reach*
- *Aluminium sheet 1,15mm thick*

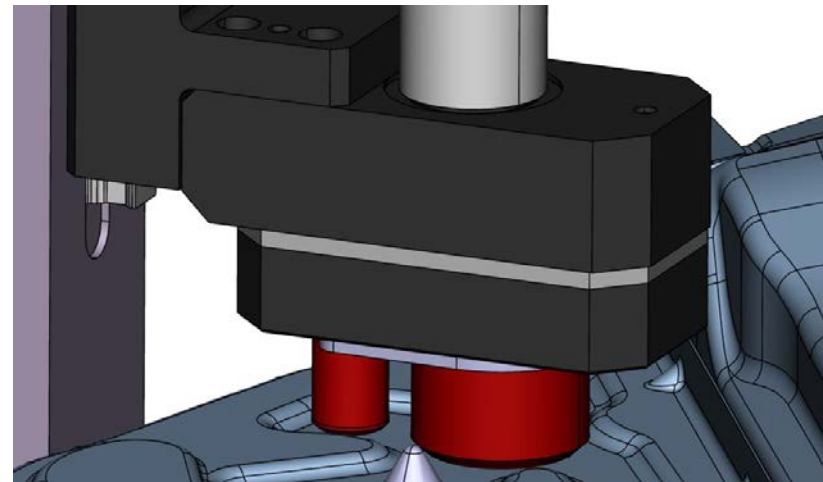
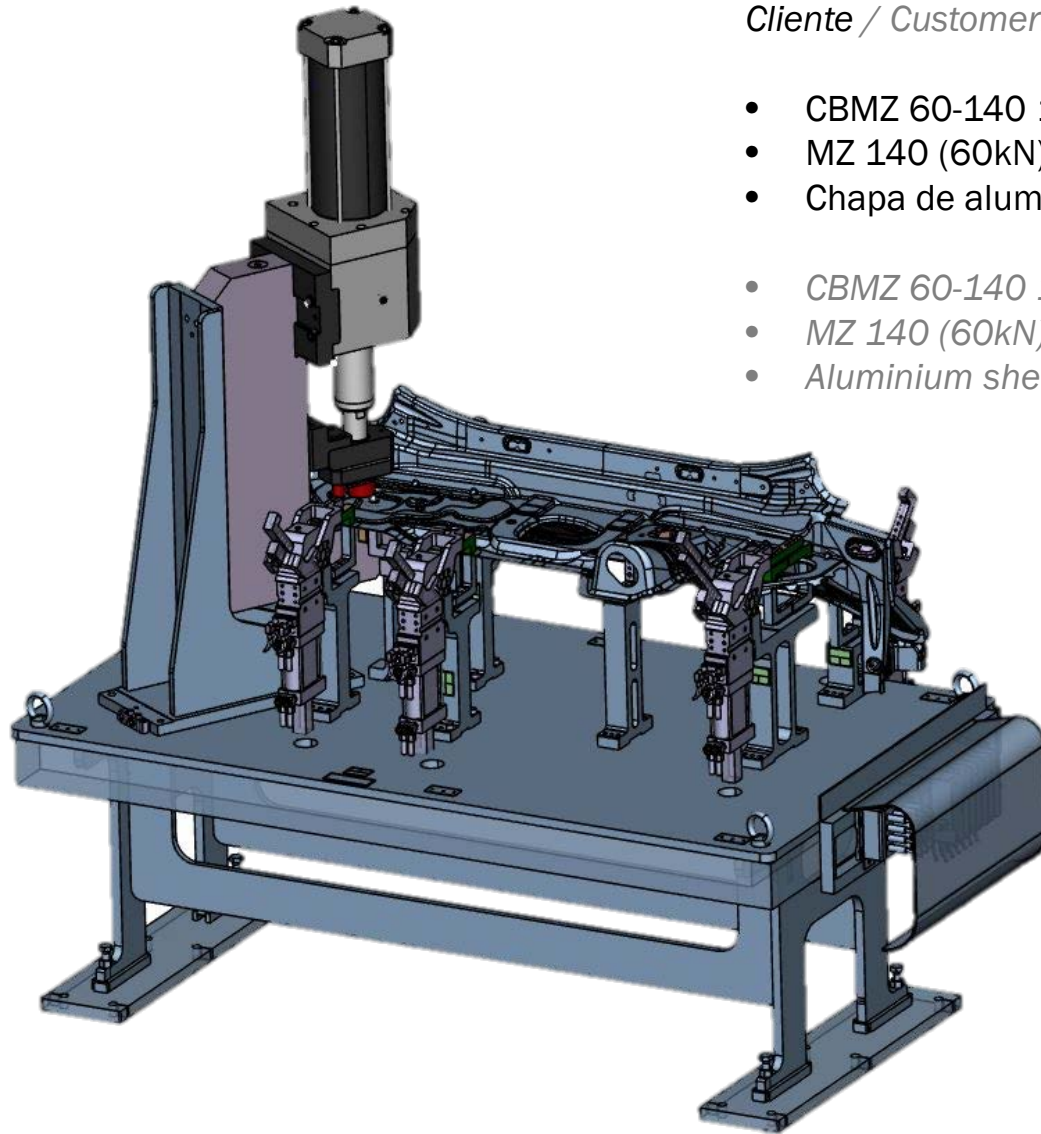


# Perfuração com CBMZ – Parede Frontal (parede corta fogo)

## *Piercing with CBMZ – head wall RHD*

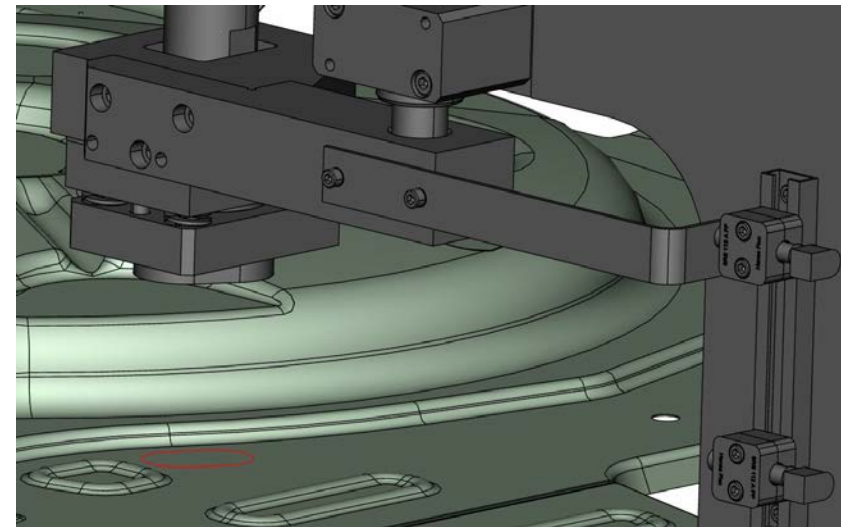
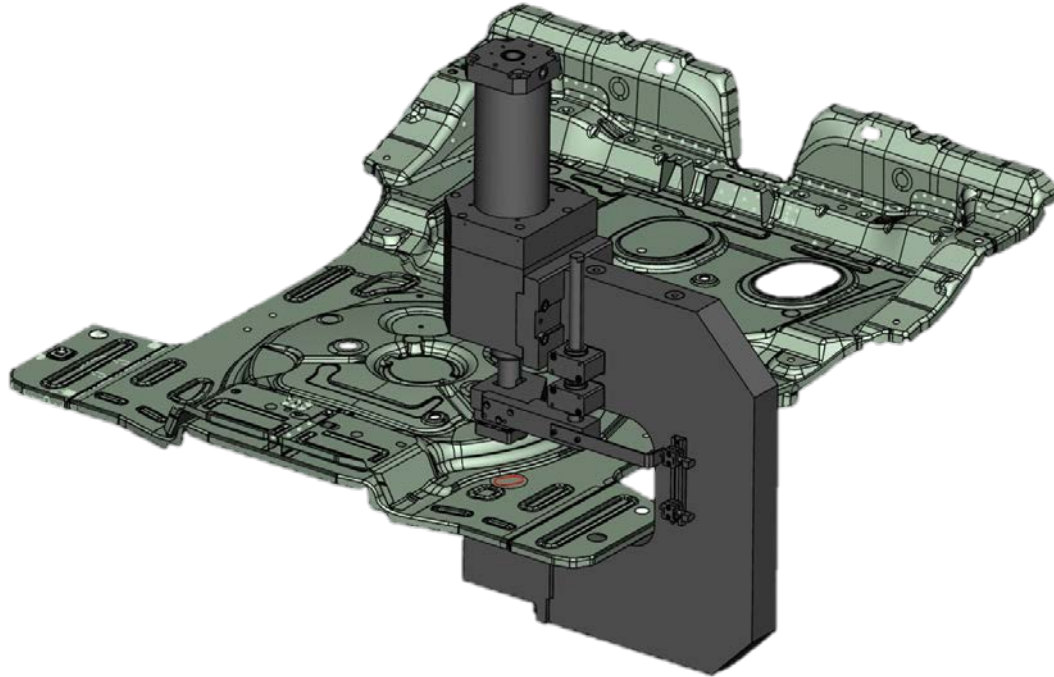
*Cliente / Customer: AUDI*

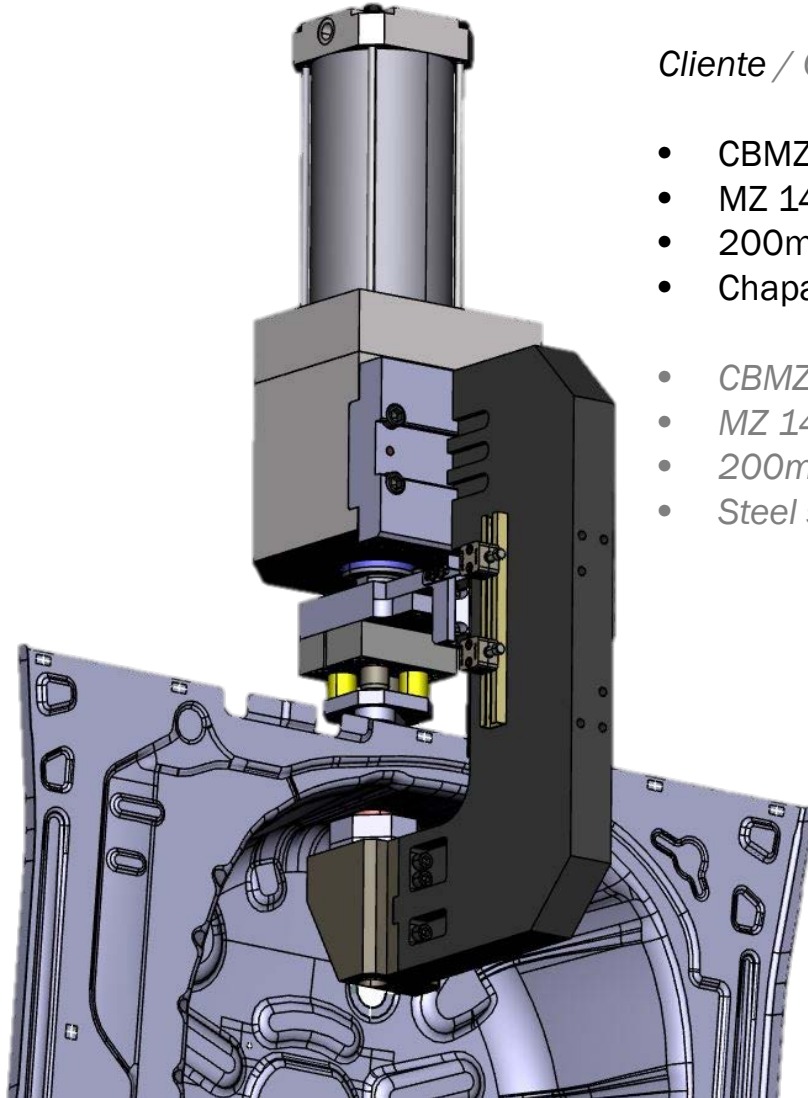
- CBMZ 60-140 100 S para 1x furo de Ø 40,2mm + 1x Ø 6,7mm
  - MZ 140 (60kN) com 100mm de curso
  - Chapa de aluminio 1mm de espessura
- 
- *CBMZ 60-140 100 S for 1x Ø 40,2mm + 1x Ø 6,7mm holes*
  - *MZ 140 (60kN) with 100mm stroke*
  - *Aluminium sheet 1mm thick*



Cliente / Customer: VW

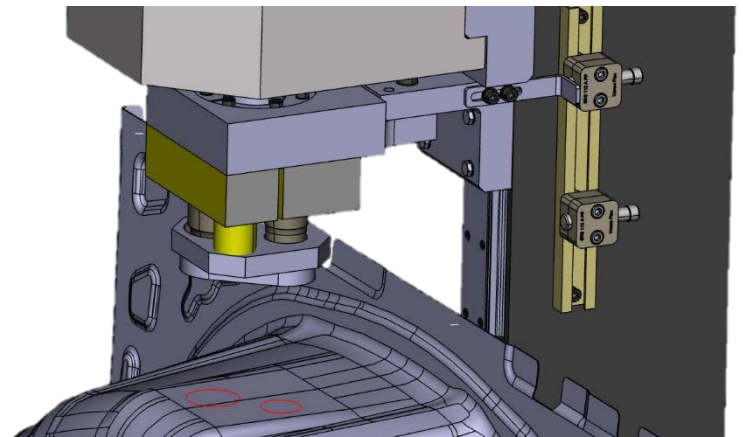
- CBMZ 60-400 100 S para oblongo 35x60mm
- MZ 140 (60kN) com 100mm de curso
- 400mm garganta
- Chapa de aço 0,7mm de espessura
- *CBMZ 60-400 100 S for oblong hole 35x60mm*
- *MZ 140 (60kN) with 100mm stroke*
- *400mm reach*
- *Steel sheet 0,7mm thick*





*Cliente / Customer: Seat*

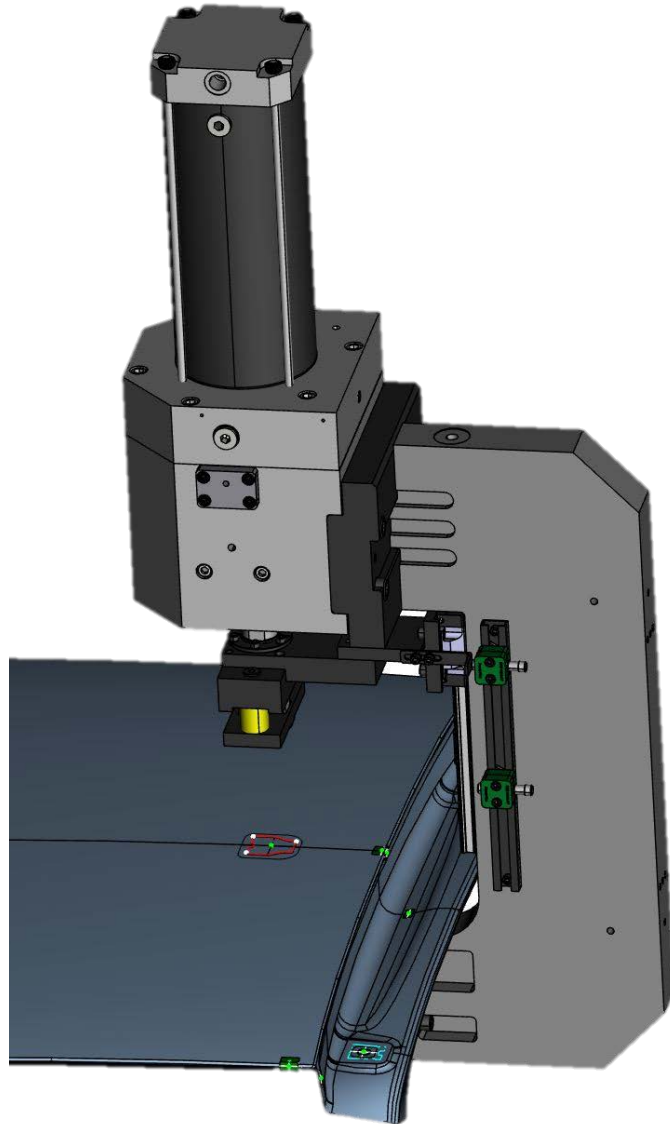
- CBMZ 60-200 100 S para furo de 1x Ø 40,2mm + 1x Ø 30,2mm
  - MZ 140 (60kN) com 100mm de curso
  - 200mm garganta
  - Chapa de aço 0,7mm de espessura
- 
- *CBMZ 60-200 100 S for 1x Ø 40,2mm + 1x Ø 30,2mm holes*
  - *MZ 140 (60kN) with 100mm stroke*
  - *200mm reach*
  - *Steel sheet 0,7mm thick*





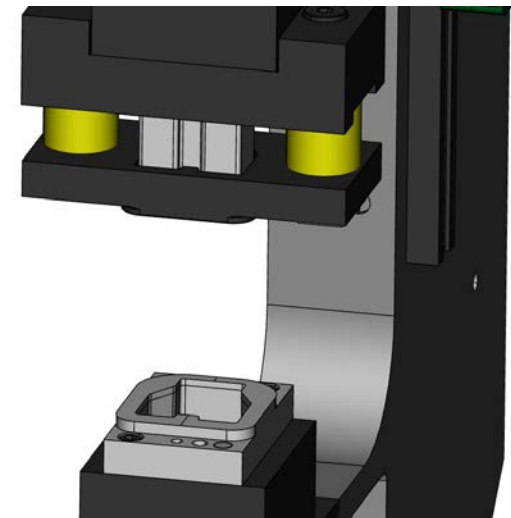
# Perfuração com CBMZ – Furo da Antena

## *Piercing with CBMZ – antenna hole*



*Cliente / Customer: Seat*

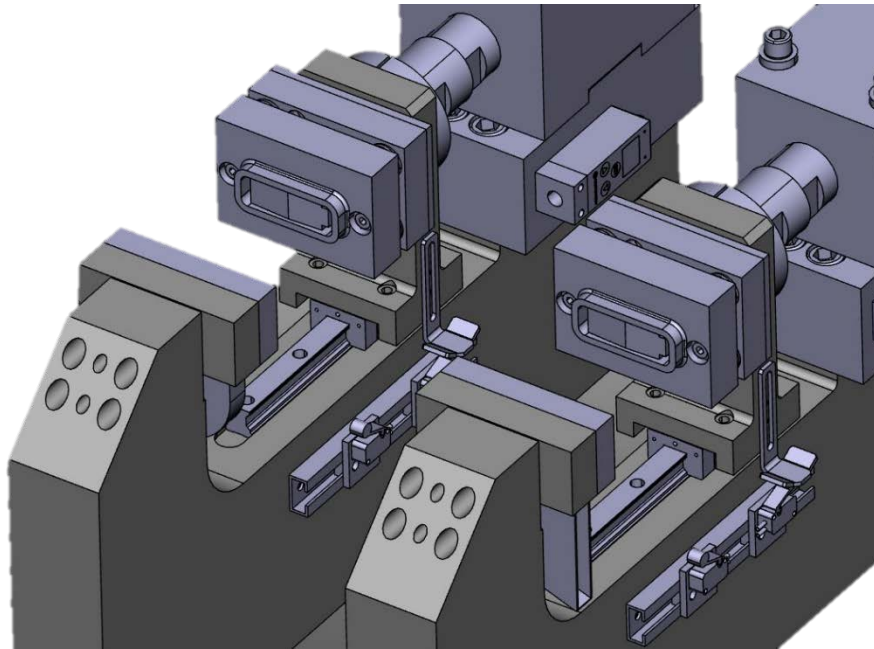
- CBMZ 60-235 150 S
  - MZ 140 (60kN) com 150mm curso
  - 235mm garganta
  - Chapa de aço 0,7mm de espessura
- 
- *CBMZ 60-235 150 S*
  - *MZ 140 (60kN) with 150mm stroke*
  - *235mm reach*
  - *Steel sheet 0,7mm thick*





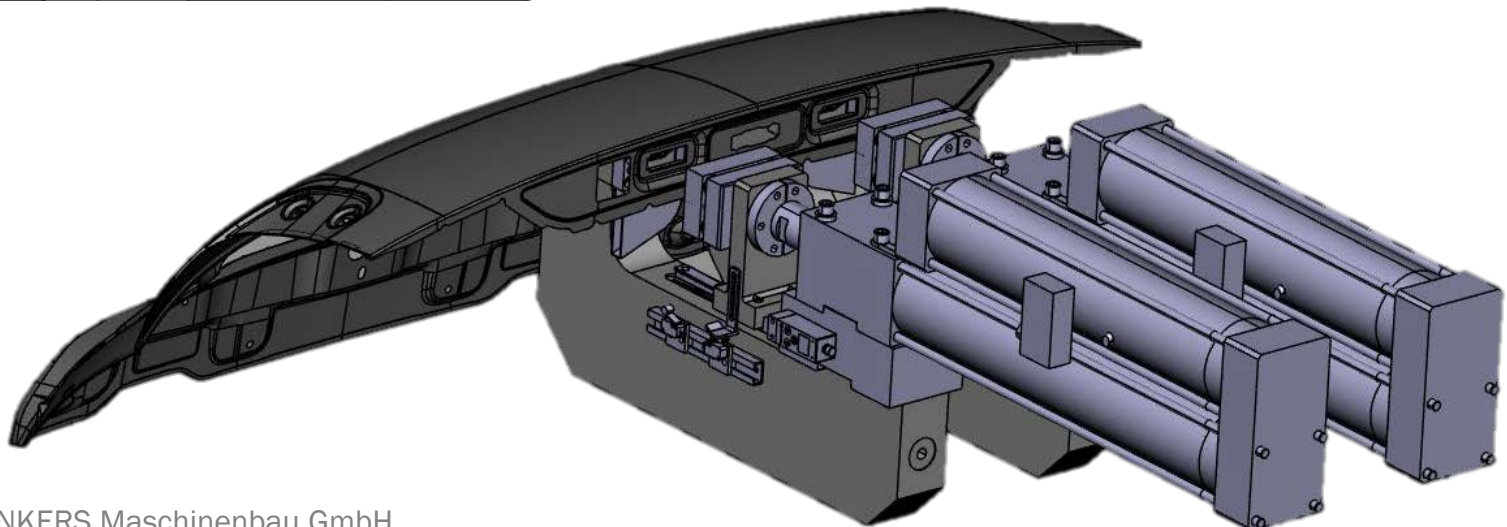
# Perfuração com CBHA – Tampa Traseira

## *Piercing with CBHA – rear door*



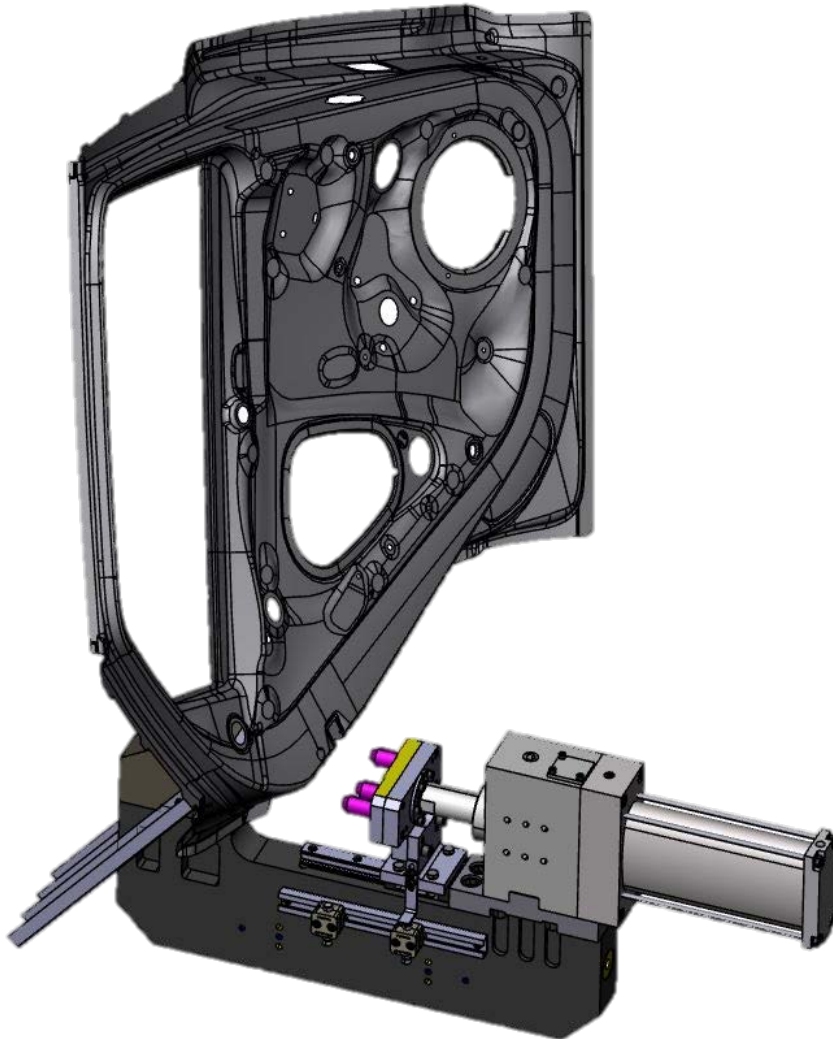
*Cliente / Customer: DPCA (China)*

- CBHA 60-140-100 S
- Pacote de Força U80 (60kN bei 5 bar) com 100mm curso
- 140mm garganta
- Chapa de aço 0,65mm de espessura
- *CBHA 60-140-100 S*
- *Powerpackage U80 (60kN) with 100mm stroke*
- *140mm reach*
- *Steel sheet 0,65mm thick*



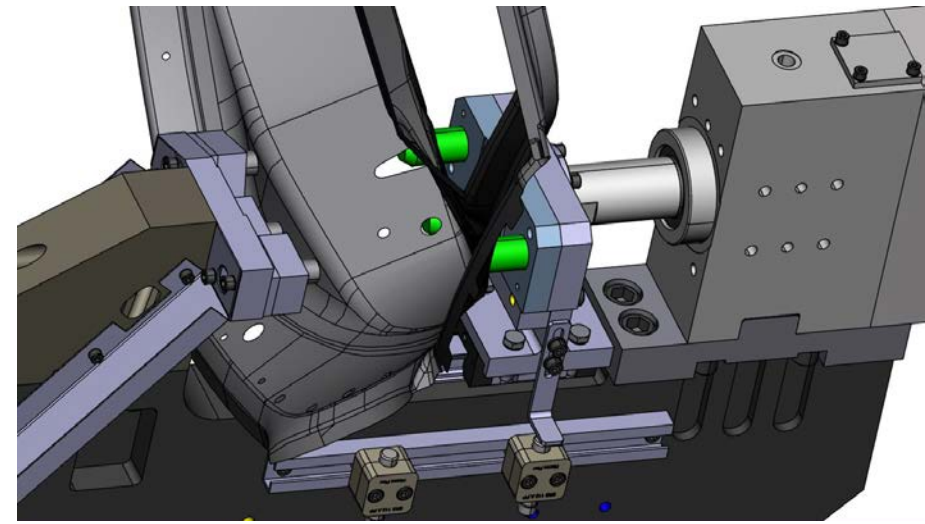
# Perfuração com CBMZ – Quadro da Porta

## *Piercing with CBMZ – door frame*



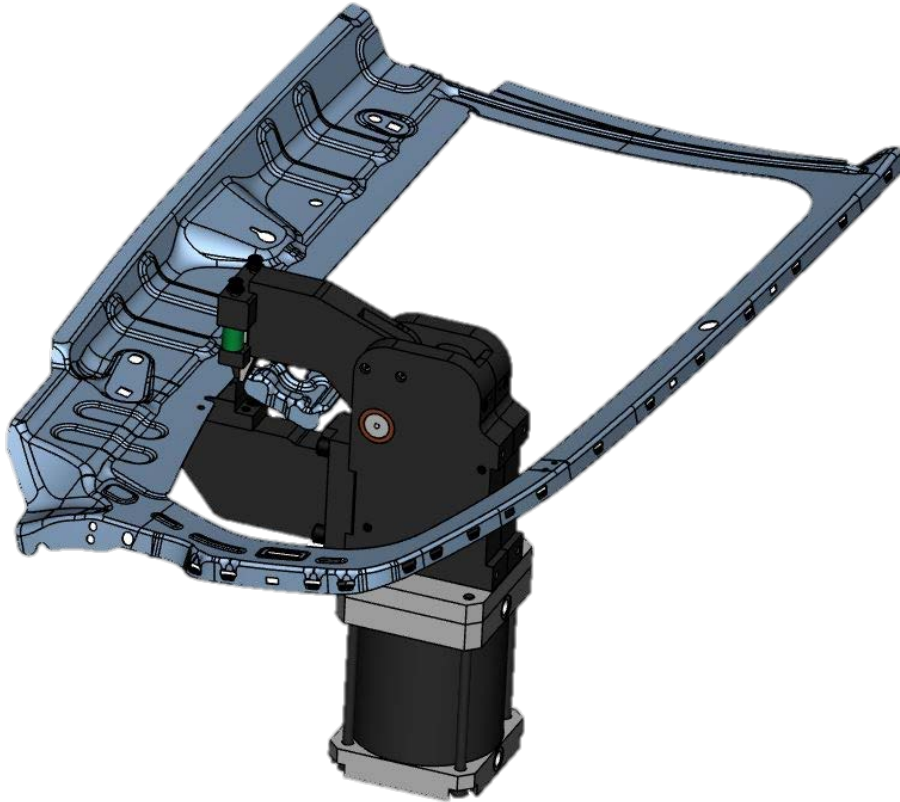
Cliente / *Customer*: AUDI

- CBMZ 25-140 100 S para furo 3x Ø 9mm
  - MZ 80 (25kN) com 100mm curso
  - Forma-C com 140mm garganta
  - Chapa de aço 0,7mm de espessura
- 
- *CBMZ 25-140 100 S for 3x Ø 9mm holes*
  - *MZ 80 (25kN) with 100mm stroke*
  - *C-Frame with 140mm reach*
  - *Steel sheet 0,7mm thick*



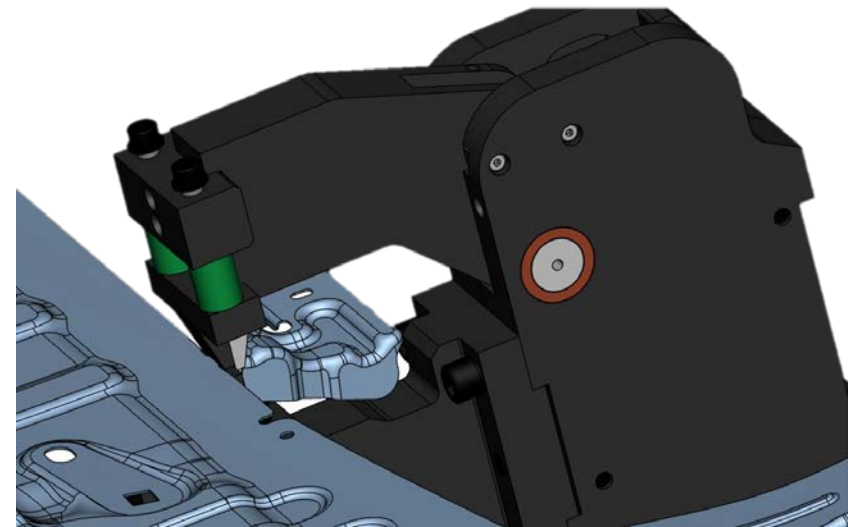
# Corte com PFS – Quadro Interno da Porta

## *Cutting with PFS – Door frame*



Cliente / Customer: PSA

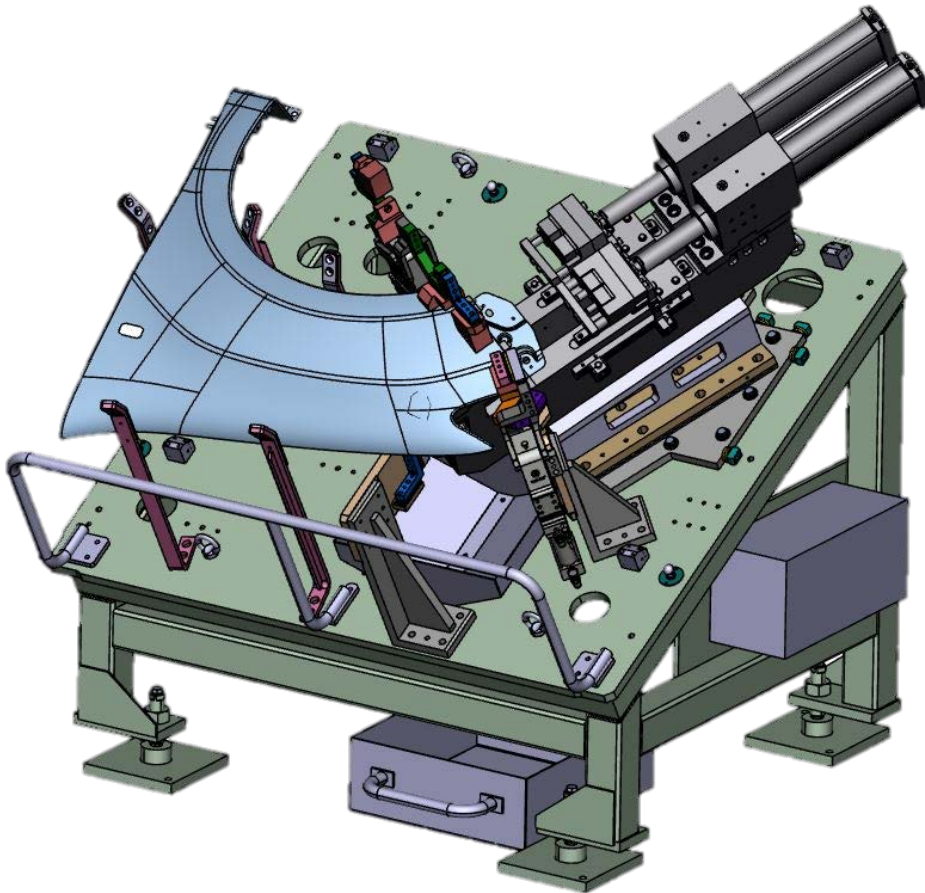
- PFS 200-120 S T12/2 70°
- Garganta 120mm; Ângulo de abertura 70°
- Dimensão do corte 10mm
- Chapa de aço 0,95mm de espessura
- *PFS 200-120 S T12/2 70°*
- *Reach 120mm; Opening angle 70°*
- *Cutting length 10mm*
- *Steel sheet 0,95mm thick*





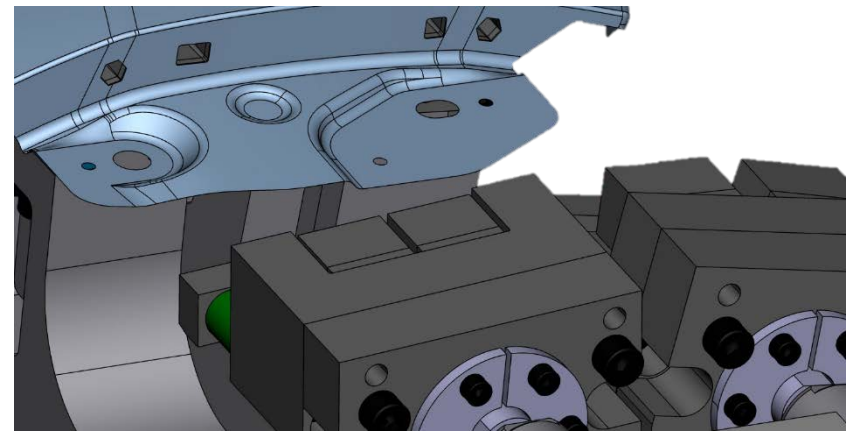
# Perfuração com CBMZ – Paralamas

## *Piercing with CBMZ – Fender*



Cliente / *Customer*: Dacia

- CBMZ 25-140 150 S para furo quadrado e sextavado
- MZ 80 (25kN) com 150mm curso
- Forma-C com 140mm garganta
- Chapa de aço 0,65mm de espessura
- *CBMZ 25-140 150 S for rectangular and hexagonal holes*
- *MZ 80 (25kN) with 150mm stroke*
- *C-Frame with 140mm reach*
- *Steel sheet 0,65mm thick*



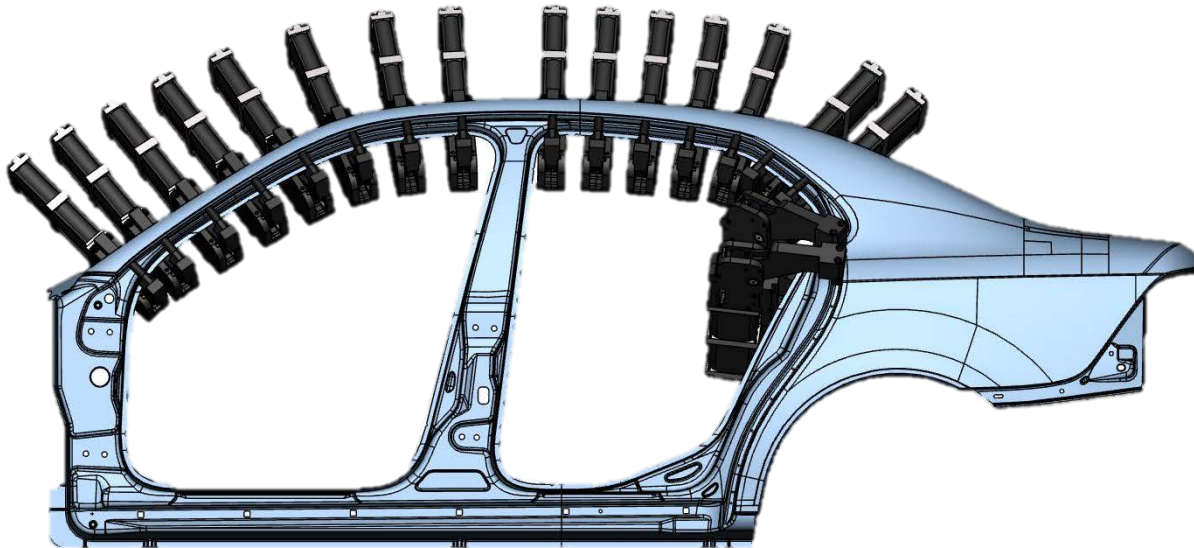
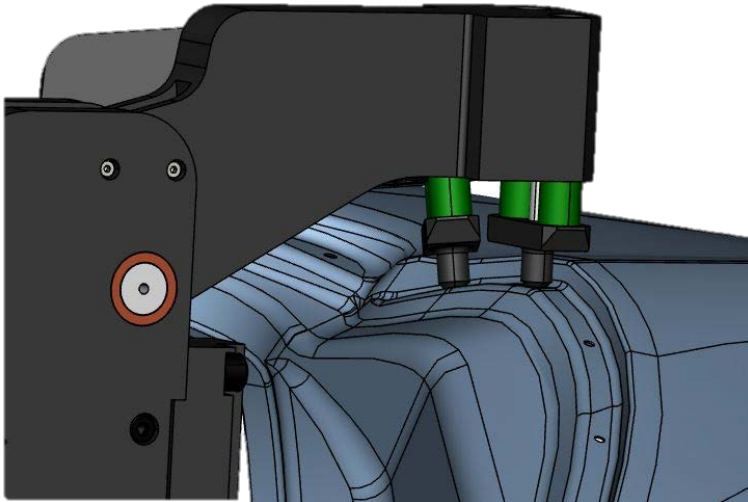
# Perfuração com PFS – Lateral

## *Piercing with PFS – Side panel*

*Cliente / Customer: Saab*

- PFS 200-100 S 75° para furo Ø 6,4mm
- Garganta 100mm; Ângulo de abertura 75°
- Cilindro: Versão oval plana em tandem
- Chapa de aço 0,8mm de espessura

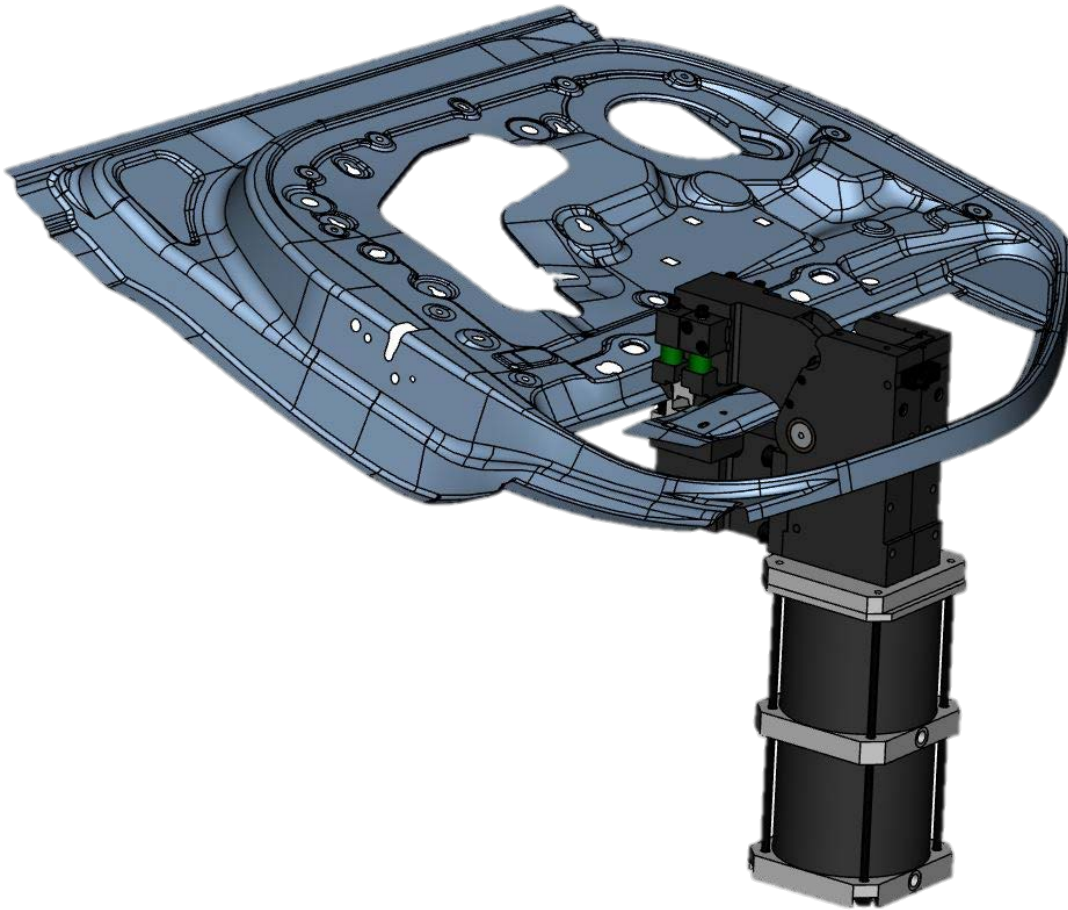
- *PFS 200-100 S 75° for Ø 6,4mm hole*
- *Reach 100mm; Opening angle 75°*
- *Cylinder: Tandem version flat oval*
- *Steel sheet 0,8mm thick*





# Corte com PFS – Quadro da Porta

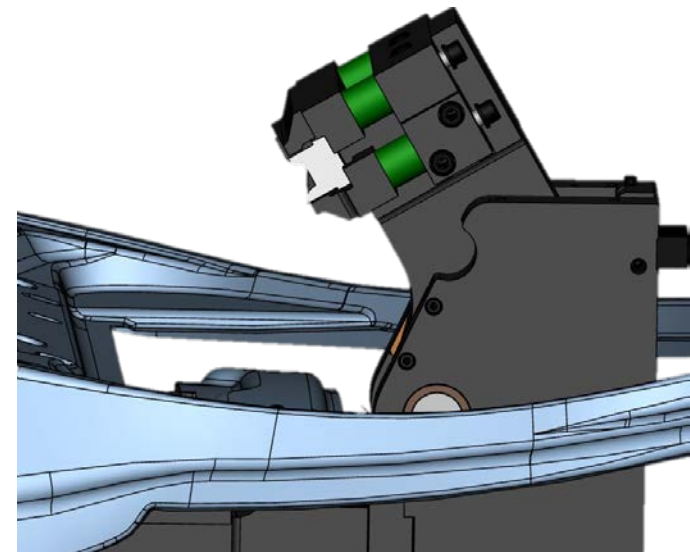
## *Cutting with PFS – Door frame*



*Cliente / Customer:* Peugeot

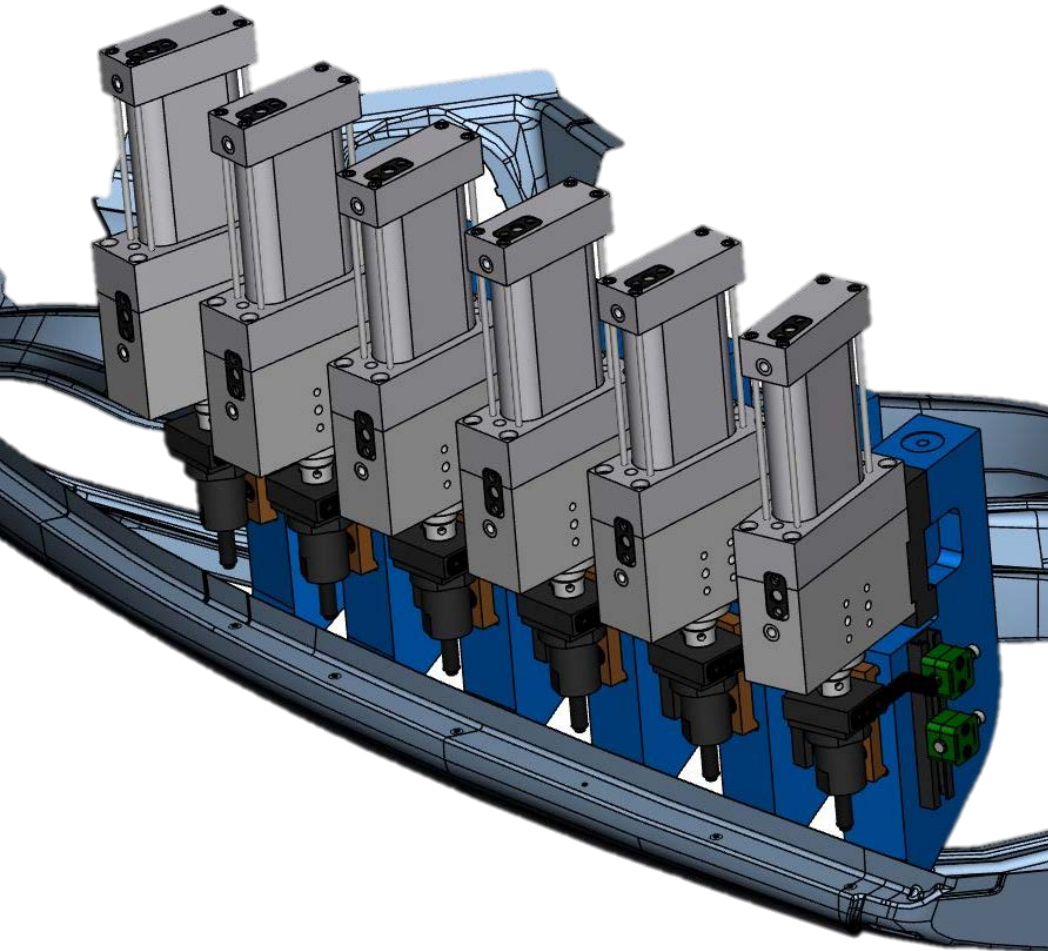
- PFS 900-120 S T12/2 60°
- Garganta 120mm, Ângulo de abertura 60°
- Dimensão do corte 2x 60mm
- Chapa de aço 0,65mm de espessura

- *PFS 900-120 S T12/2 60°*
- *Reach 120mm, opening angle 60°*
- *Cutting length 2x 60mm*
- *Steel sheet 0,65mm thick*



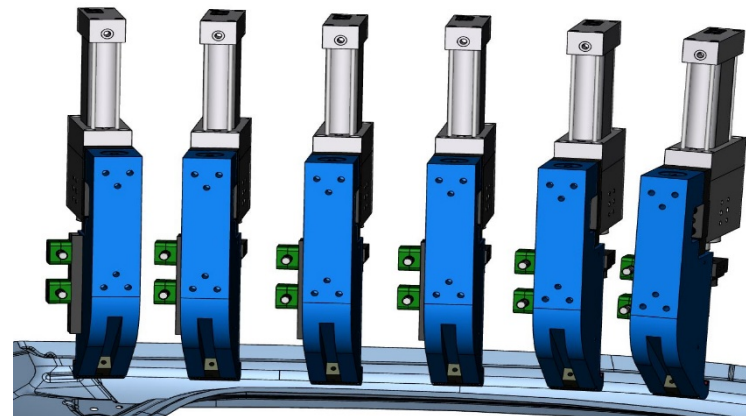
# Perfuração com CBMZ – Soleira/Caixa d'água

## *Piercing with CBMZ – A-Pillar*



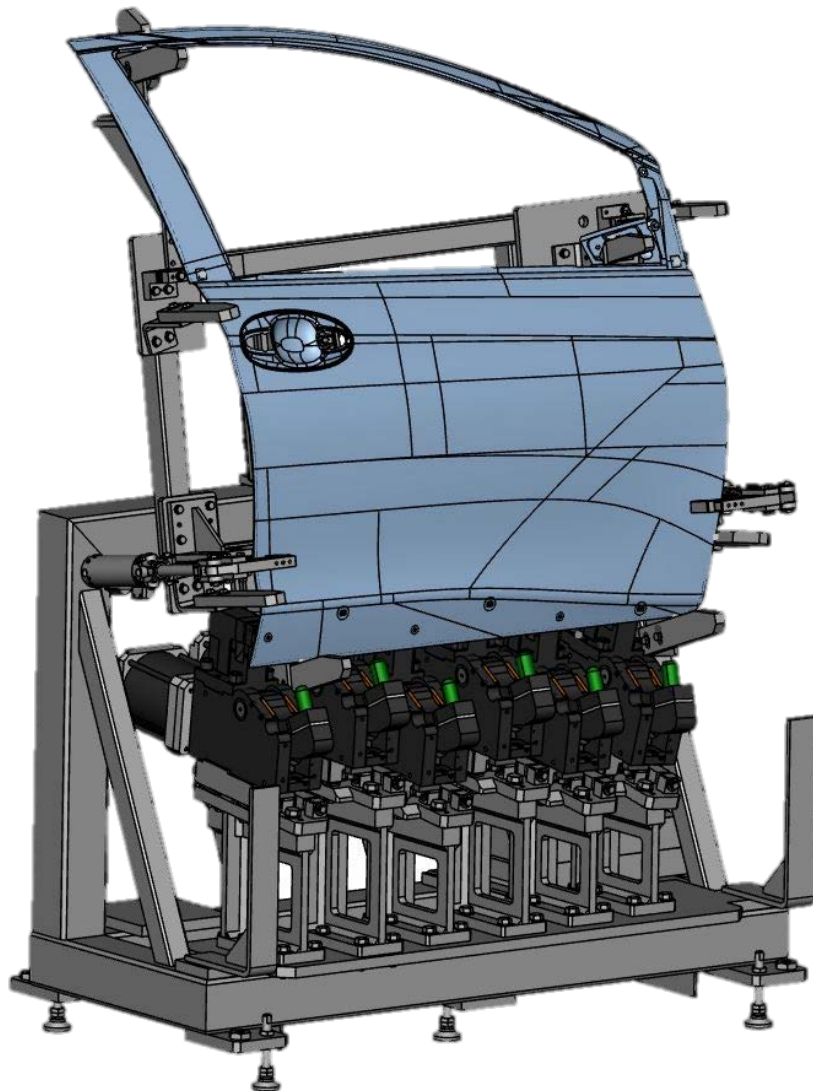
*Cliente / Customer: JAC Motors (China)*

- CBMZ 10-30 50 S para furo Ø4,5mm
  - MZ 63 (10kN) com 50mm curso
  - Forma-C com 30mm garganta
  - Remoção de cavaco por extração a vácuo
  - Chapa de aço 0,7mm de espessura
- 
- *CBMZ 10-30 50 S for Ø4,5mm holes*
  - *MZ 63 (10kN) with 50mm stroke*
  - *C-Frame with 30mm reach*
  - *vacuum unit for slug disposal*
  - *Steel sheet 0,7mm thick*



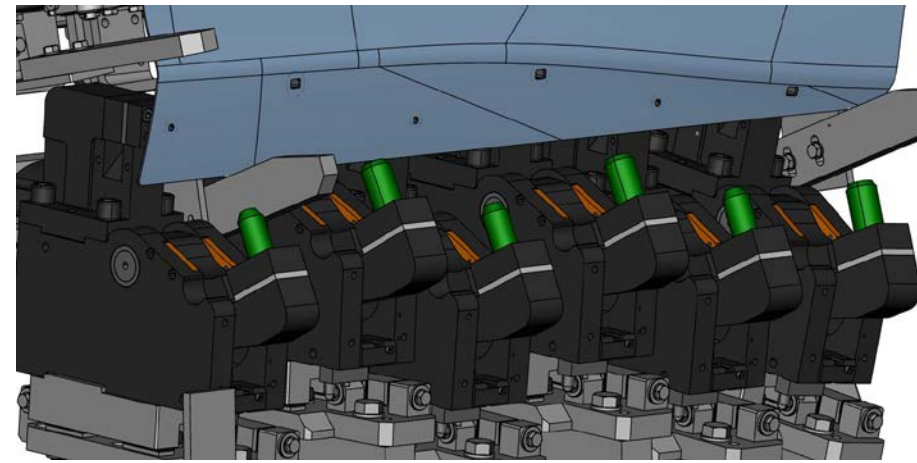
# Perfuração com PFS – Porta Dianteira

## *Piercing with PFS – Front door*

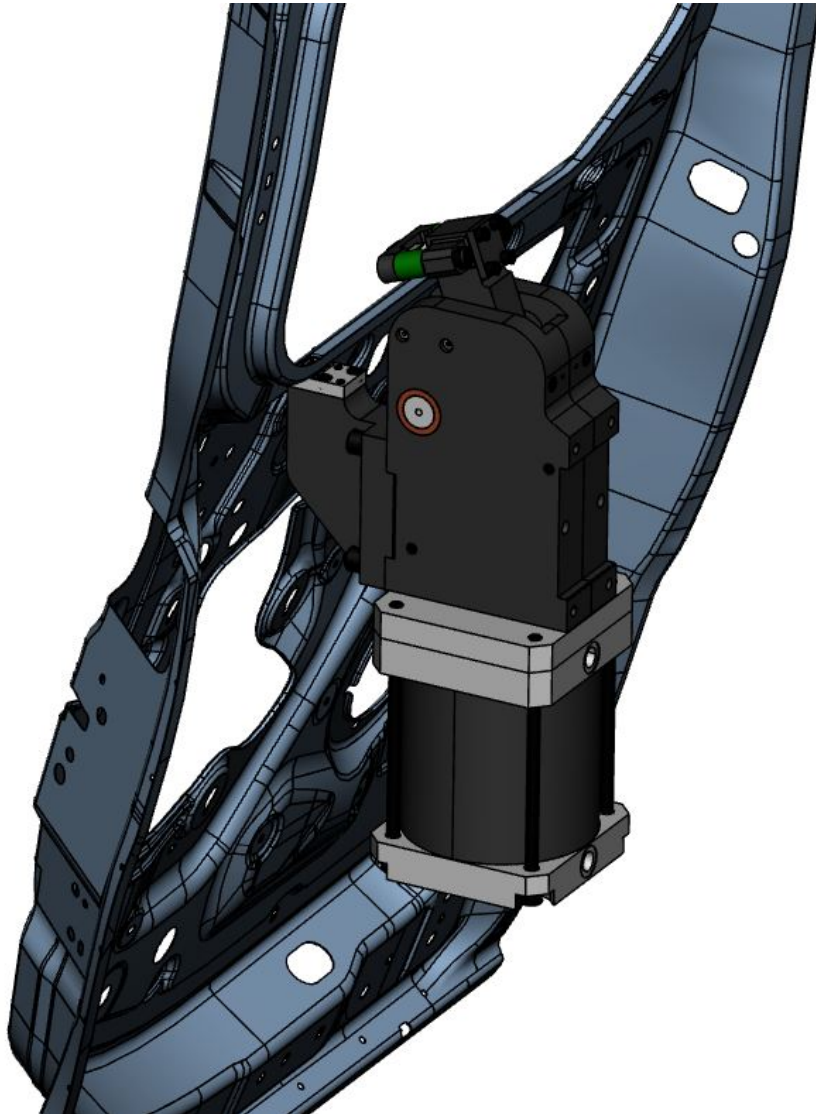


*Cliente / Customer:* Toyota France

- PFS 400-90 S T12/2 60° para furo Ø7mm
  - Garganta 90mm, Ângulo de abertura 60°
  - Remoção de cavaco por extração a vácuo
  - Chapa de aço 0,65mm de espessura
- 
- *PFS 400-90 S T12/2 60° for Ø7mm holes*
  - *Reach 90mm, Opening angle 60°*
  - *Slug disposal through side of the jaw via vacuum unit*
  - *Steel sheet 0,65mm thick*

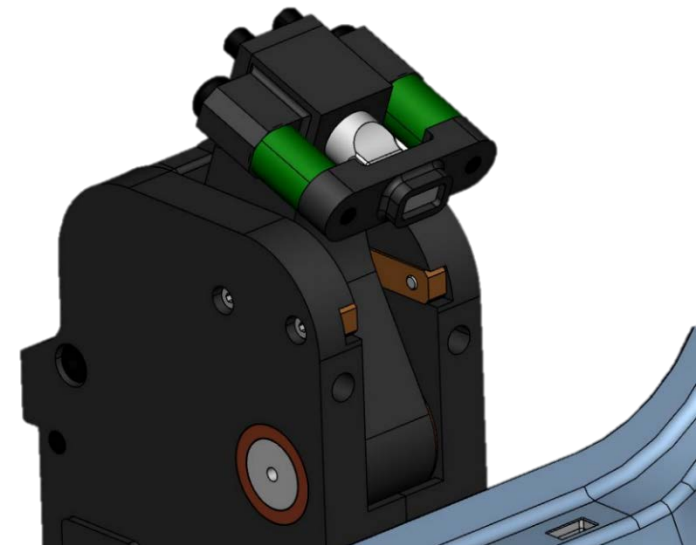






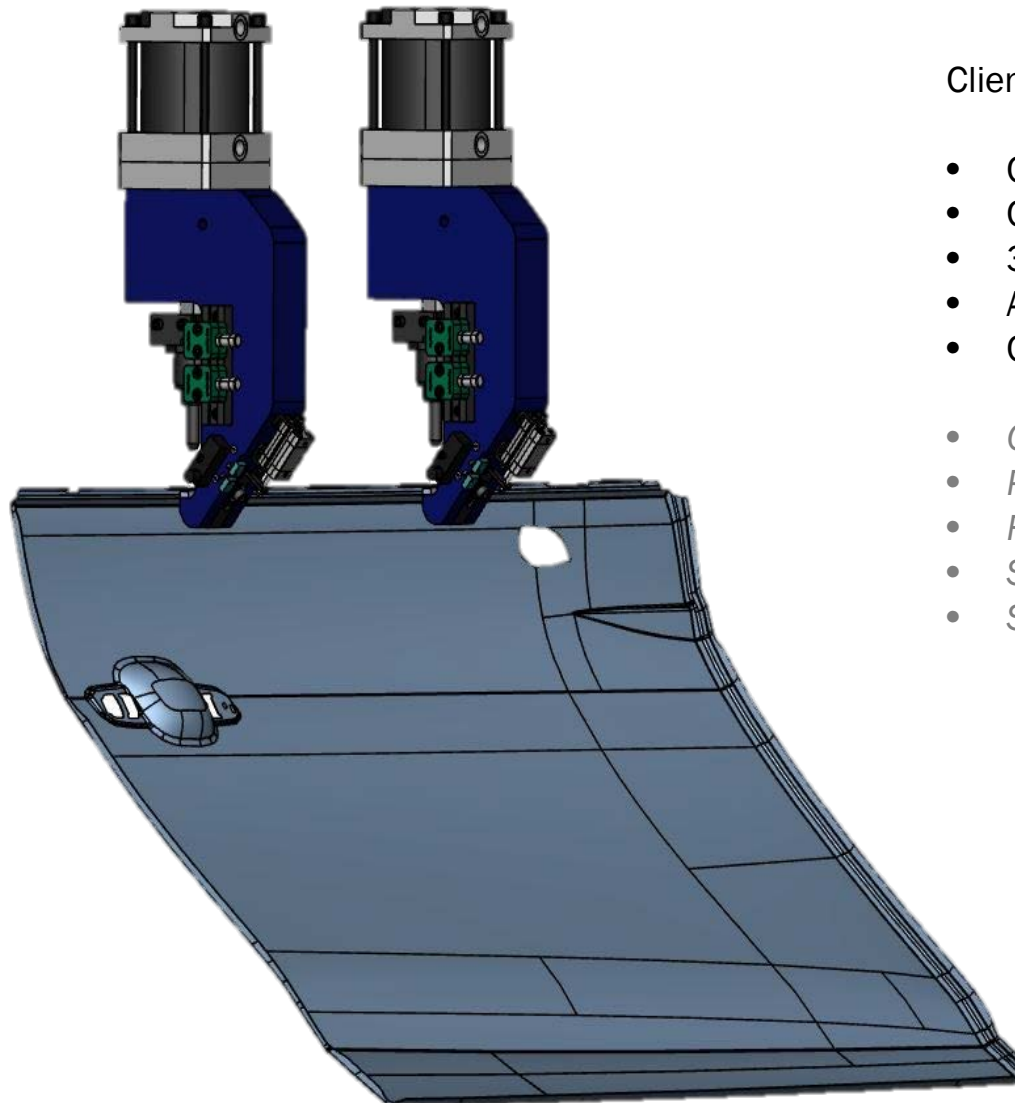
Cliente / Customer: PSA

- PFS 200-80 S T12/2 70° para furo 16,6 x 8,2mm
  - Garganta 80mm, Ângulo de abertura 70°
  - Raspadores de aço necessários por falta de espaço
  - Chapa de aço 0,65mm de espessura
- 
- *PFS 200-80 S T12/2 70° for 16,6 x 8,2mm hole*
  - *Reach 80mm, Opening angle 70°*
  - *Steel retainer used because of confined space*
  - *Steel sheet 0,65mm thick*



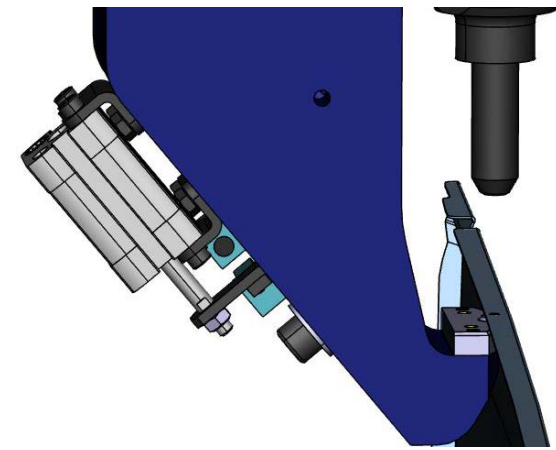
# Perfuração com CBPZ – Quadro da Porta

## *Piercing with CBPZ – Door frame*

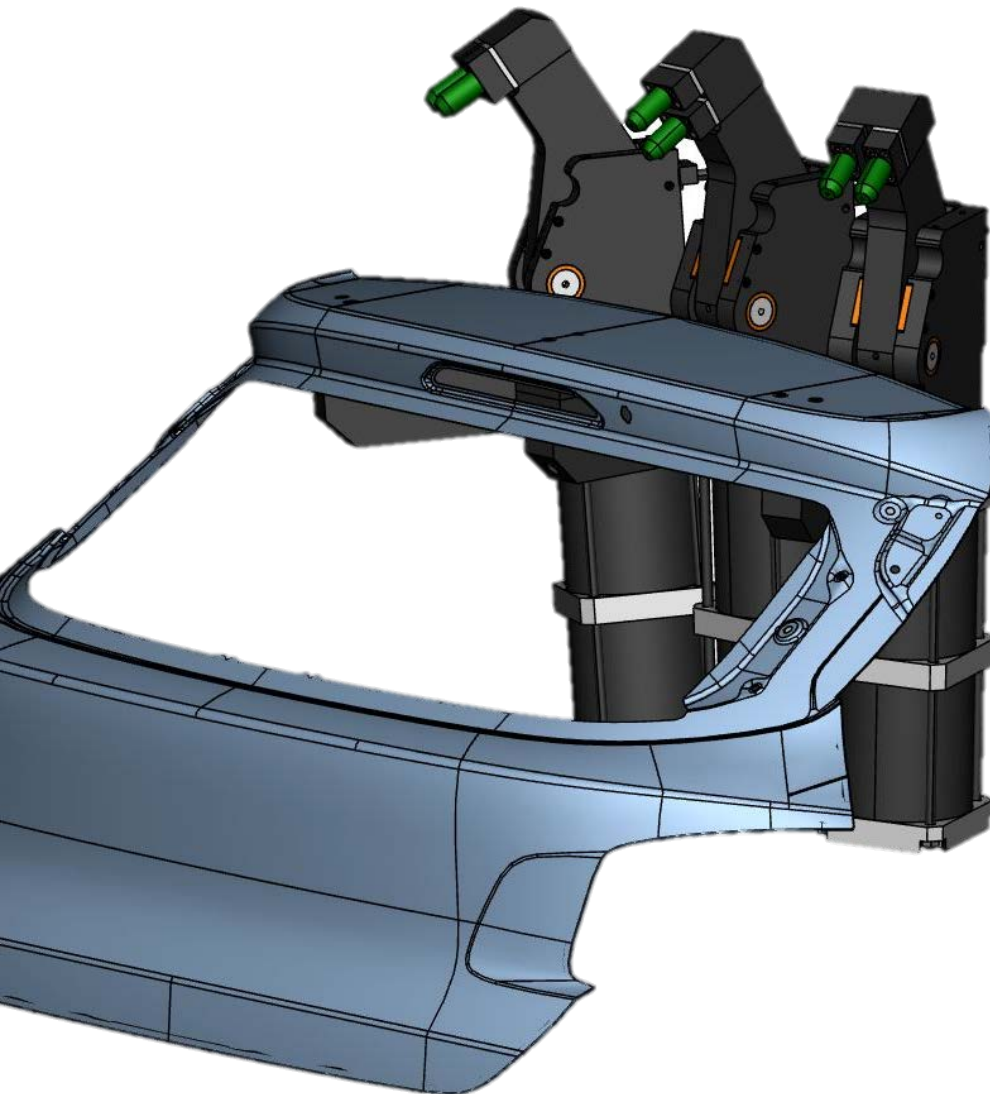


Cliente / *Customer:* AUDI

- CBPZ 4-30 40 S para furo Ø 3mm
  - Cilindro pneumático com 40mm de curso
  - 30mm garganta
  - Aba controlada por cilindro pneumático
  - Chapa de aço 0,65mm de espessura
- 
- *CBPZ 4-30 40 S for Ø 3mm holes*
  - *Pneumatic cylinder with 40mm stroke*
  - *Reach 30mm*
  - *Slug disposal flap operated by pneumatic cylinder*
  - *Steel sheet 0,65mm thick*

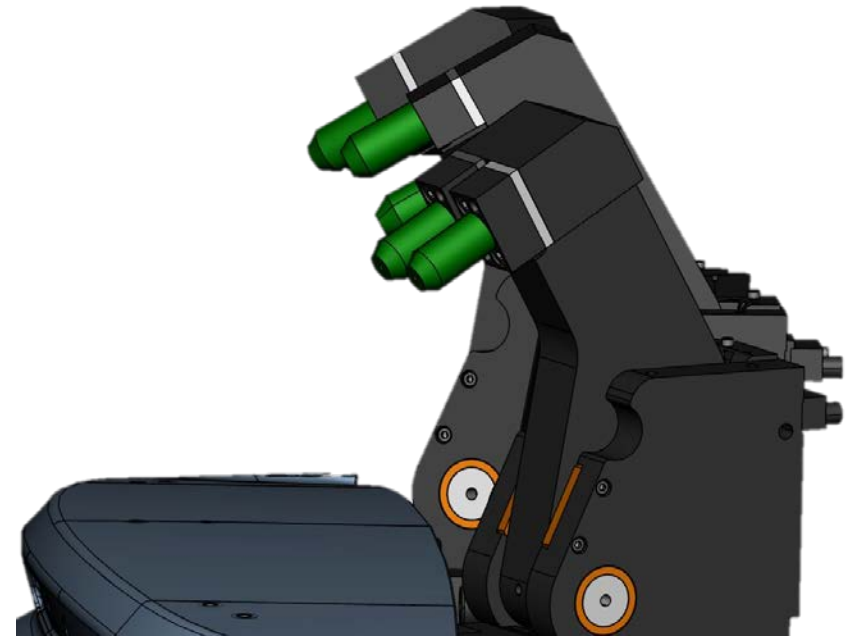






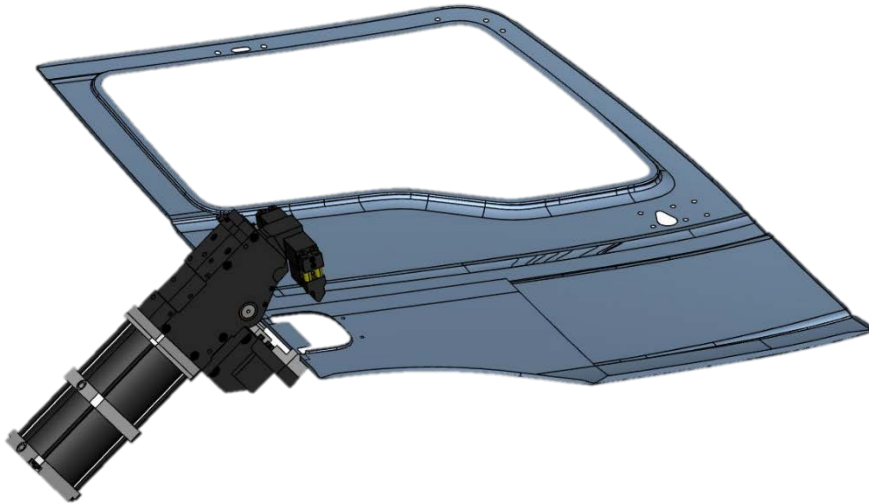
Cliente / Customer: GM

- PFS 900-180 S T12/3 60° para 2 furos
- Garganta 180mm, Ângulo de abertura 60°
- Chapa de aço 0,6mm de espessura
- *PFS 900-180 S T12/3 60° for 2 holes*
- *Reach 180mm, Opening angle 60°*
- *Steel sheet 0,6mm thick*



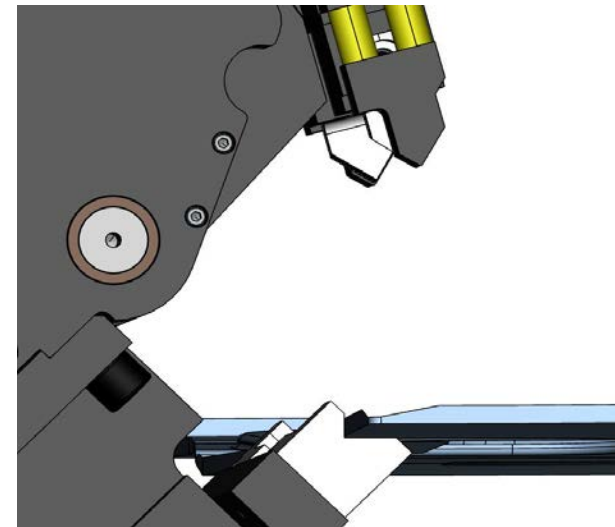
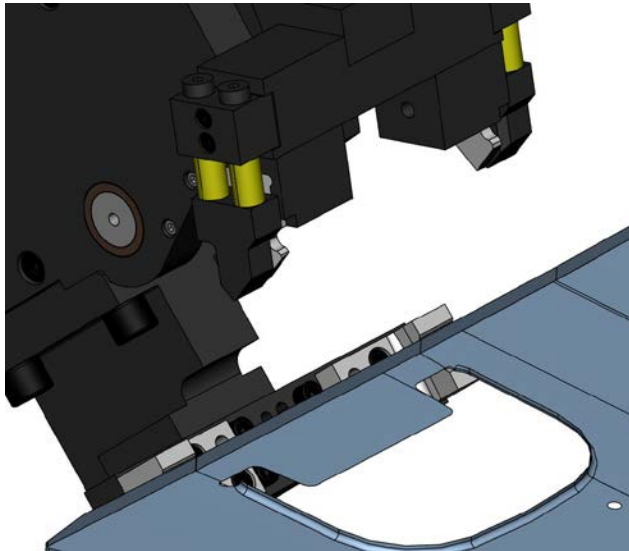
# Corte com PFS – Quadro da Porta

## *Cutting with PFS – Door frame*



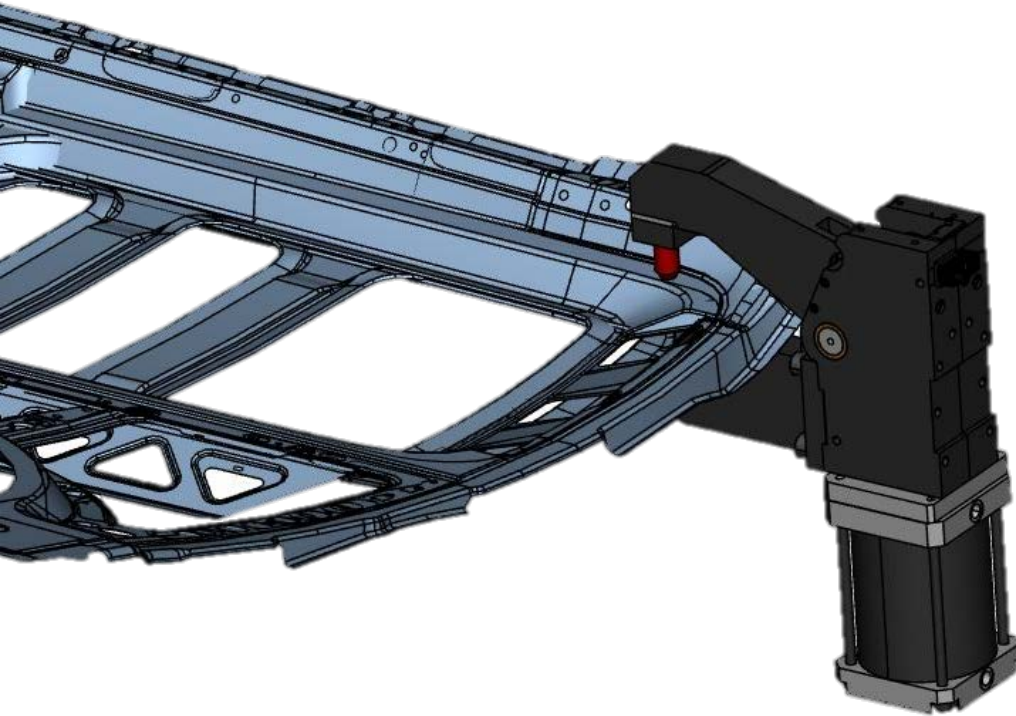
*Cliente / Customer: MAN*

- PFS 900-90 S T12/3 60° para 2 cortes
- Garganta 90mm, Ângulo de abertura 60°
- Dimensão do corte 2x ca. 26mm
- Chapa de aço 1,0mm de espessura
  
- *PFS 900-90 S T12/3 60° for 2 cuts*
- *Reach 90mm, opening angle 60°*
- *Cutting length 2x approx. 26mm*
- *Steel sheet 1,0mm thick*



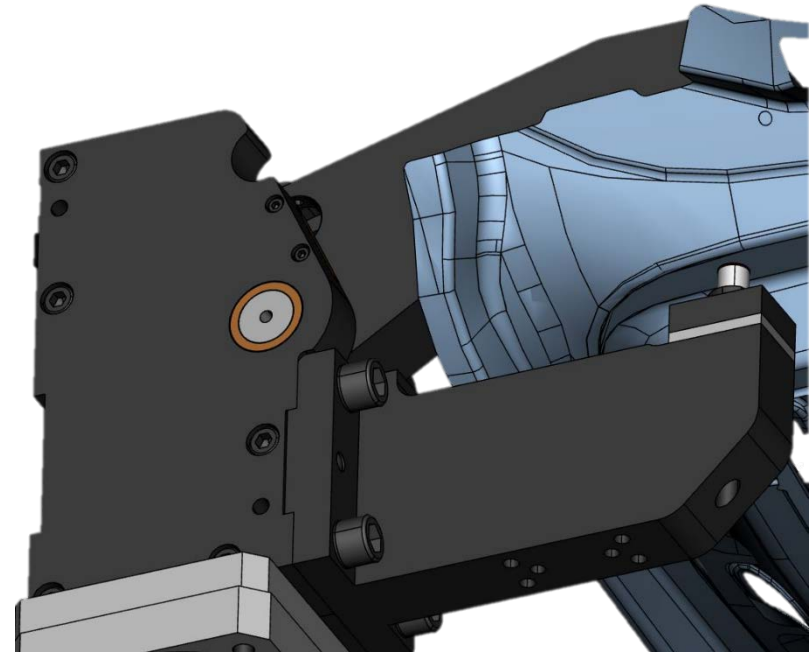
# Perfuração com PFS – Lateral

## *Piercing with PFS – Side panel*

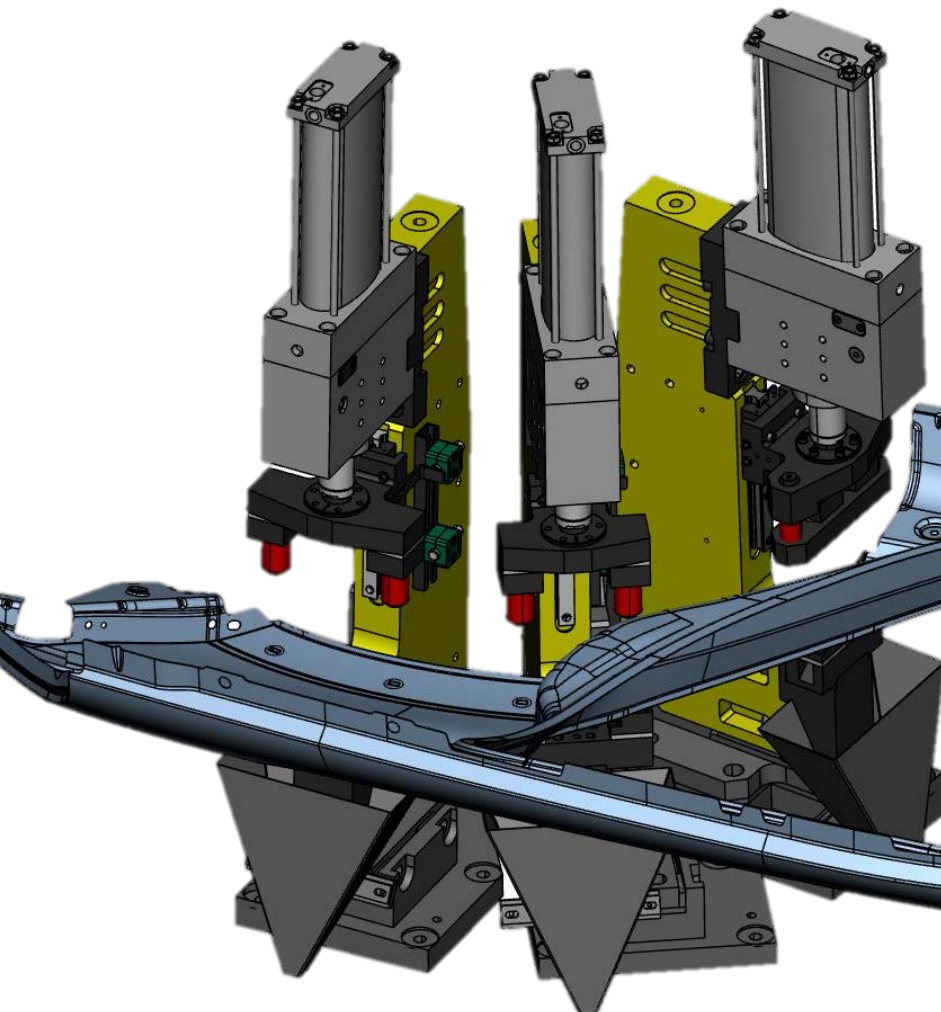


Cliente / Customer: VW

- PFS 400-190 S T12/3 75° para furo Ø 6,5mm
  - Garganta 190mm, Ângulo de abertura 75°
  - Chapa de aço 1,0mm de espessura
- 
- *PFS 400-190 S T12/3 75° for Ø 6,5mm hole*
  - *Reach 190mm, opening angle 75°*
  - *Steel sheet 1,0mm thick*

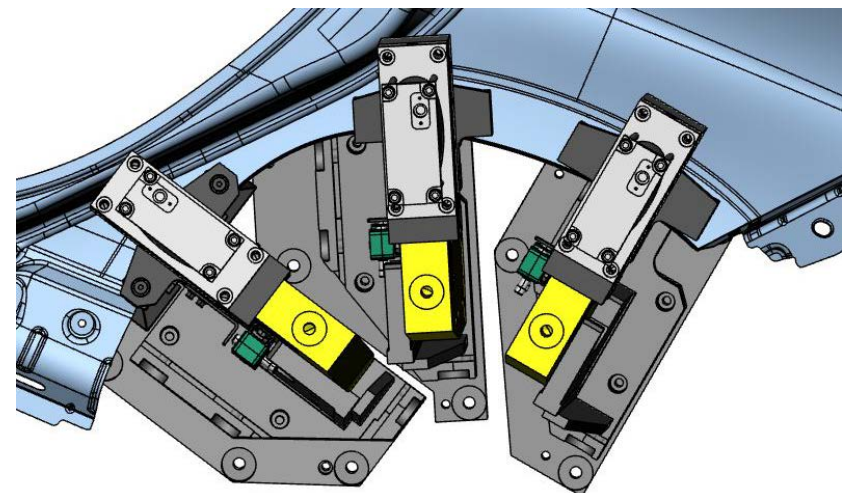






Cliente / Customer: TAM

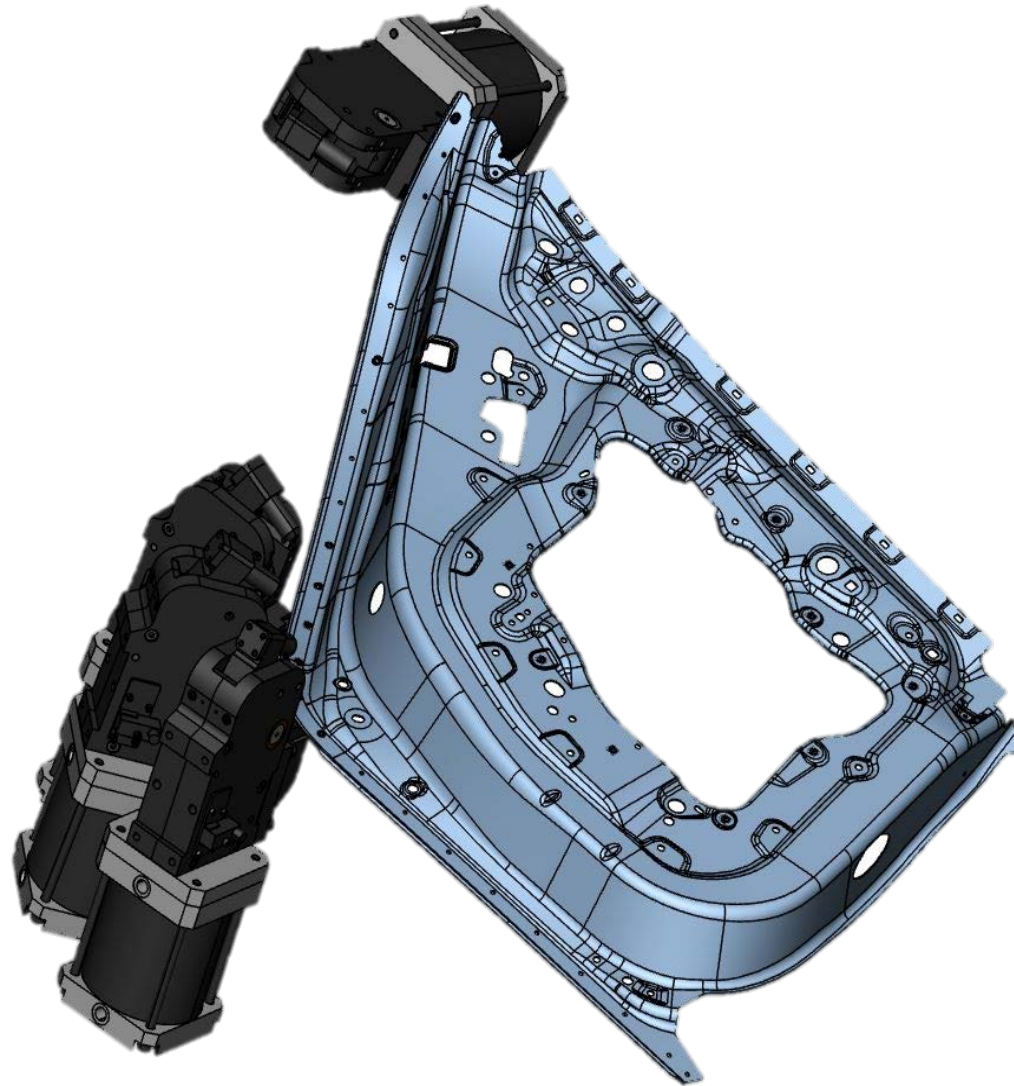
- CBMZ 25-100 100 S para 2 furos
  - MZ 80 (25kN) com 100mm curso
  - Forma-C com 100mm garganta
  - Chapa de aço 0,6mm de espessura
- 
- *CBMZ 25-100 100 S for 2 holes*
  - *MZ 80 (25kN) with 100mm stroke*
  - *C-Frame with 100mm reach*
  - *Steel sheet 0,6mm thick*





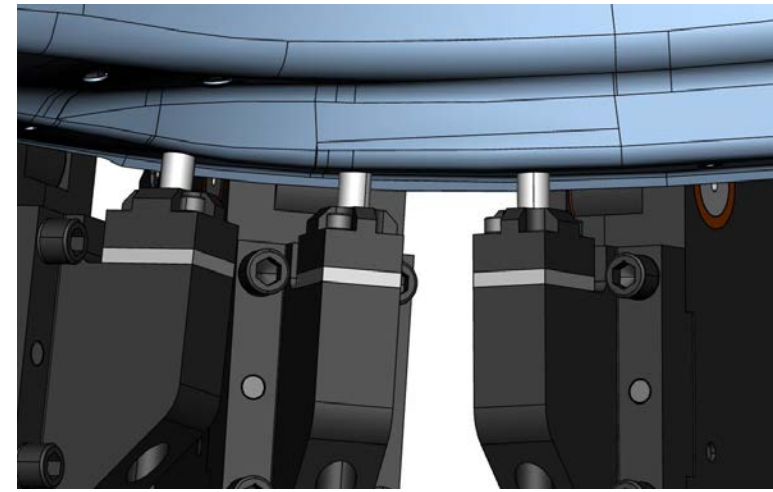
# Perfuração com PFS – Quadro da Porta

## *Piercing with PFS – Door frame*



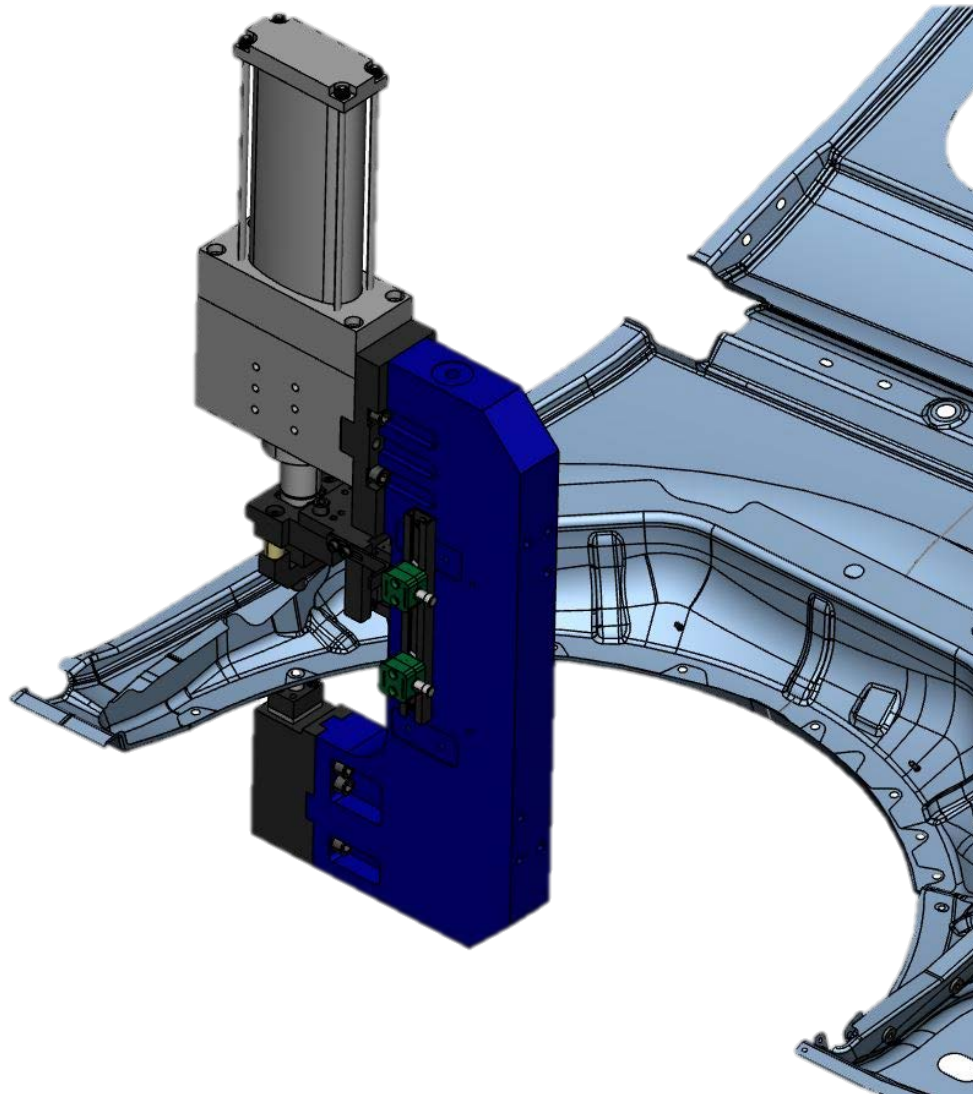
*Cliente / Customer:* BMW

- PFS 200-60 S T12/3 70° para furo Ø 5,1mm
  - Garganta 60mm, Ângulo de abertura 70°
  - Matriz de contato conforme formaato produto
  - Chapa de aluminio 1,2mm de espessura
- 
- *PFS 200-60 S T12/3 70° Ø 5,1mm hole*
  - *Reach 60mm, opening angle 70°*
  - *Die with 3D surface according to part contour*
  - *Aluminium sheet 1,2mm thick*



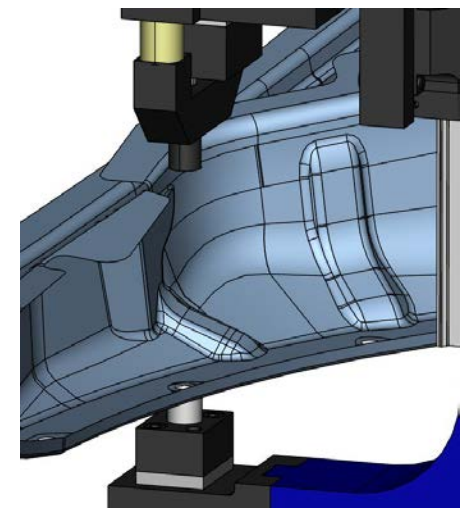
# Perfuração com CBMZ – Caixa de Rodas

## *Piercing with CBMZ – Wheel house*



Cliente / *Customer*: Ford

- CBMZ 25-140 150 S para furo Ø8,7mm
  - MZ 80 (25kN) com 150mm curso
  - Forma-C com 140mm garganta
  - Chapa de aço 0,8mm de espessura
- 
- *CBMZ 25-140 150 S for Ø8,7mm holes*
  - *MZ 80 (25kN) with 150mm stroke*
  - *C-Frame with 140mm reach*
  - *Steel sheet 0,8mm thick*



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