

GRADO EN INGENIERIA MECANICA
TRABAJO FIN DE GRADO

***DISEÑO DE TROQUEL PROGRESIVO
PARA SOPORTE DE ELEMENTOS DE
PARED***

DOCUMENTO 4- PLANOS

Alumno: Churruca Maguregui, Ekaitz

Director: Lobato Gonzalez, Roberto

Curso: 2020-2021

Fecha: 14/05/2021

ÍNDICE

P1: PIEZA

P2: CONJUNTO

P3: PUNZONES 1. ESTACIÓN

P4: PUNZÓN 2. ESTACIÓN

P5: PUNZÓN 3. ESTACIÓN

P6: PUNZÓN 4. ESTACIÓN

P7: PUNZÓN 3_4. ESTACIÓN

P8: PUNZÓN 5. ESTACIÓN

P9: PUNZONES 6 Y 7. ESTACIÓN

P10: MATRIZES 1 Y 2. ESTACIÓN

P11: MATRIZES 3 Y 4. ESTACIÓN

P12: MATRIZ 5. ESTACIÓN

P13: MATRIZES 6 Y 7. ESTACIÓN

P14: CONTENEDOR

P15: PLACA INFERIOR

P16: PLACA GUÍA

P17: PLACA SUPERIOR

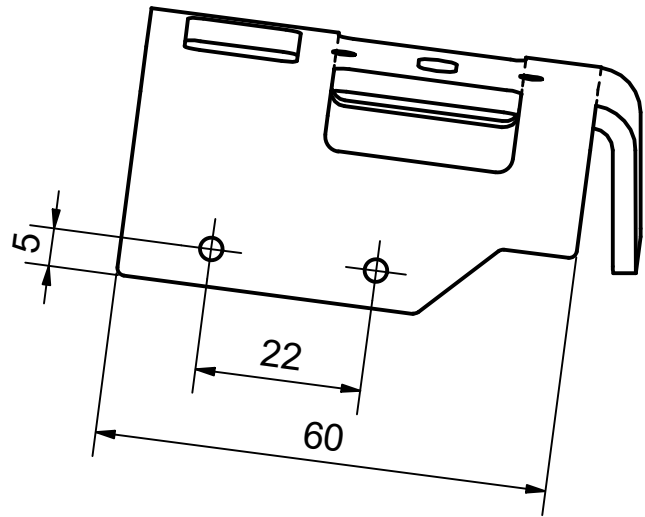
P18: PISADORES

P19: PLACA PORTA PUNZONES

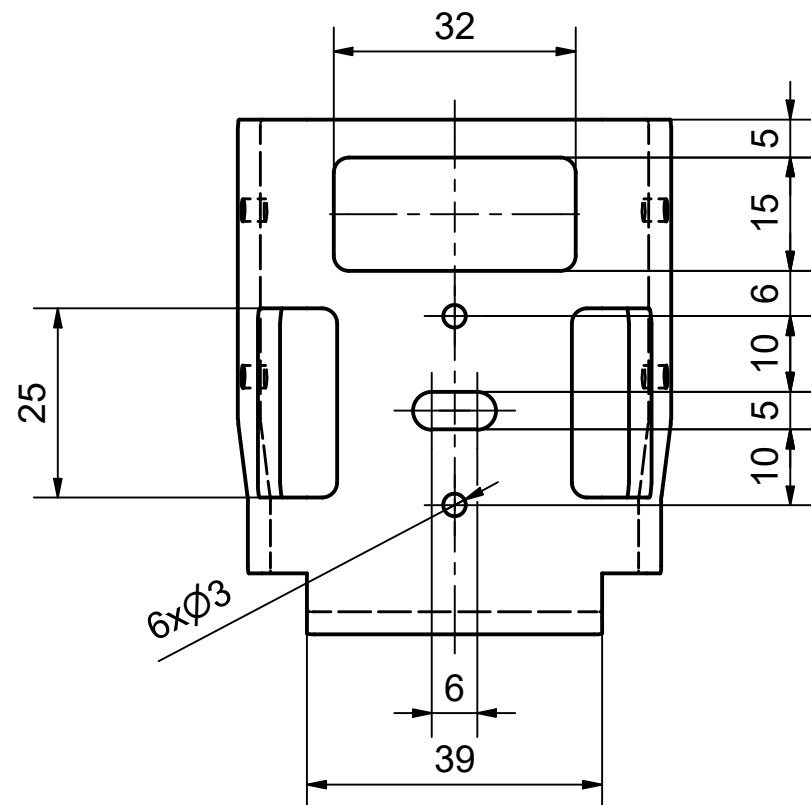
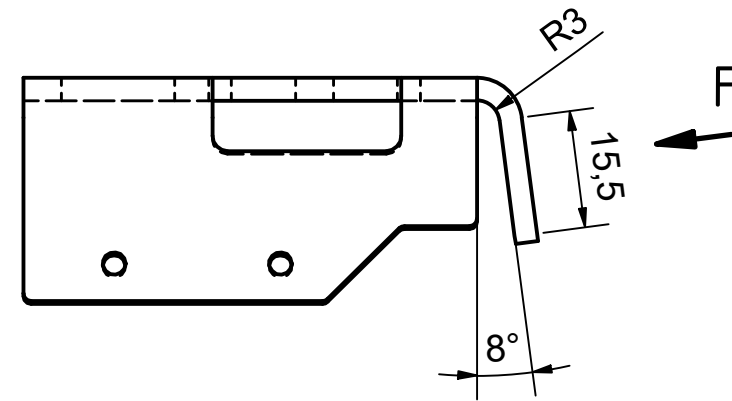
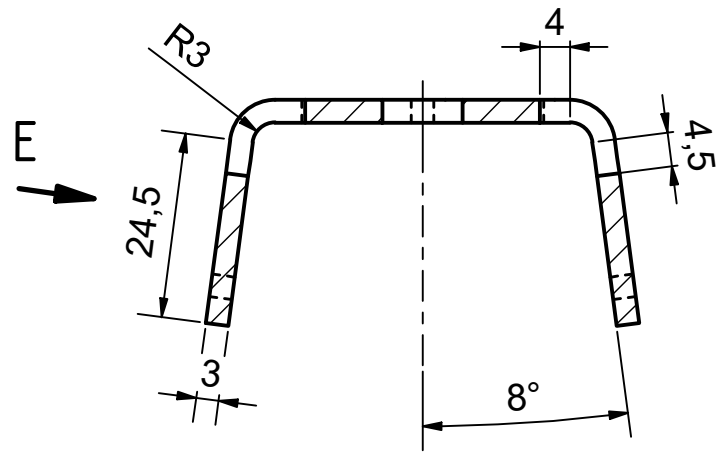
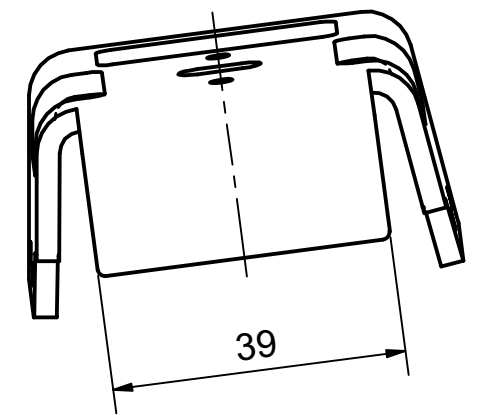
P20: SUFRIDERA

Radios no acotados r=1mm

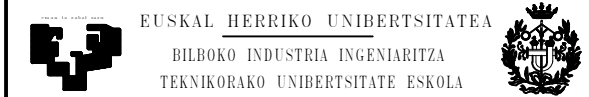
E (1 : 1)



F (1 : 1)



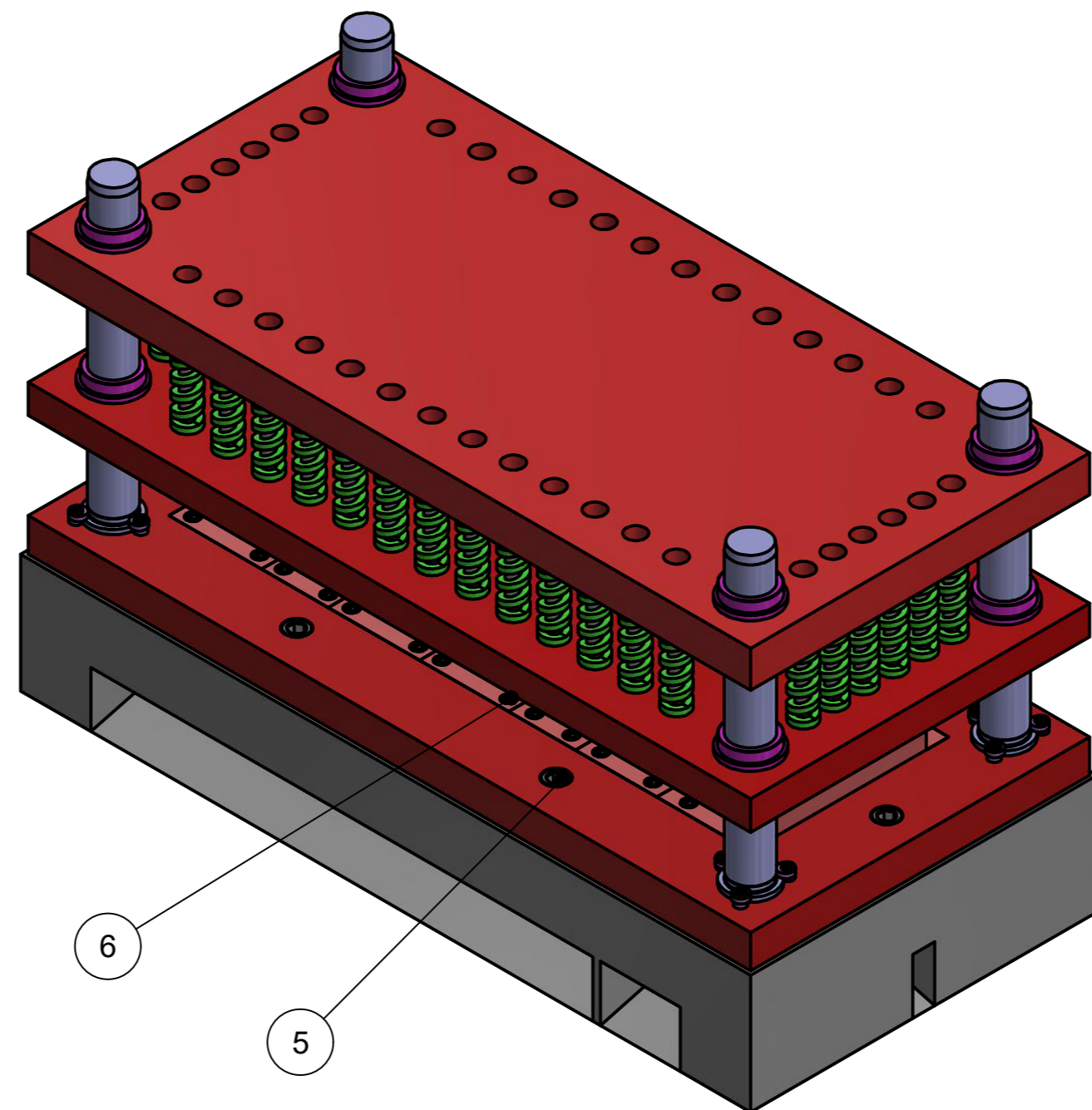
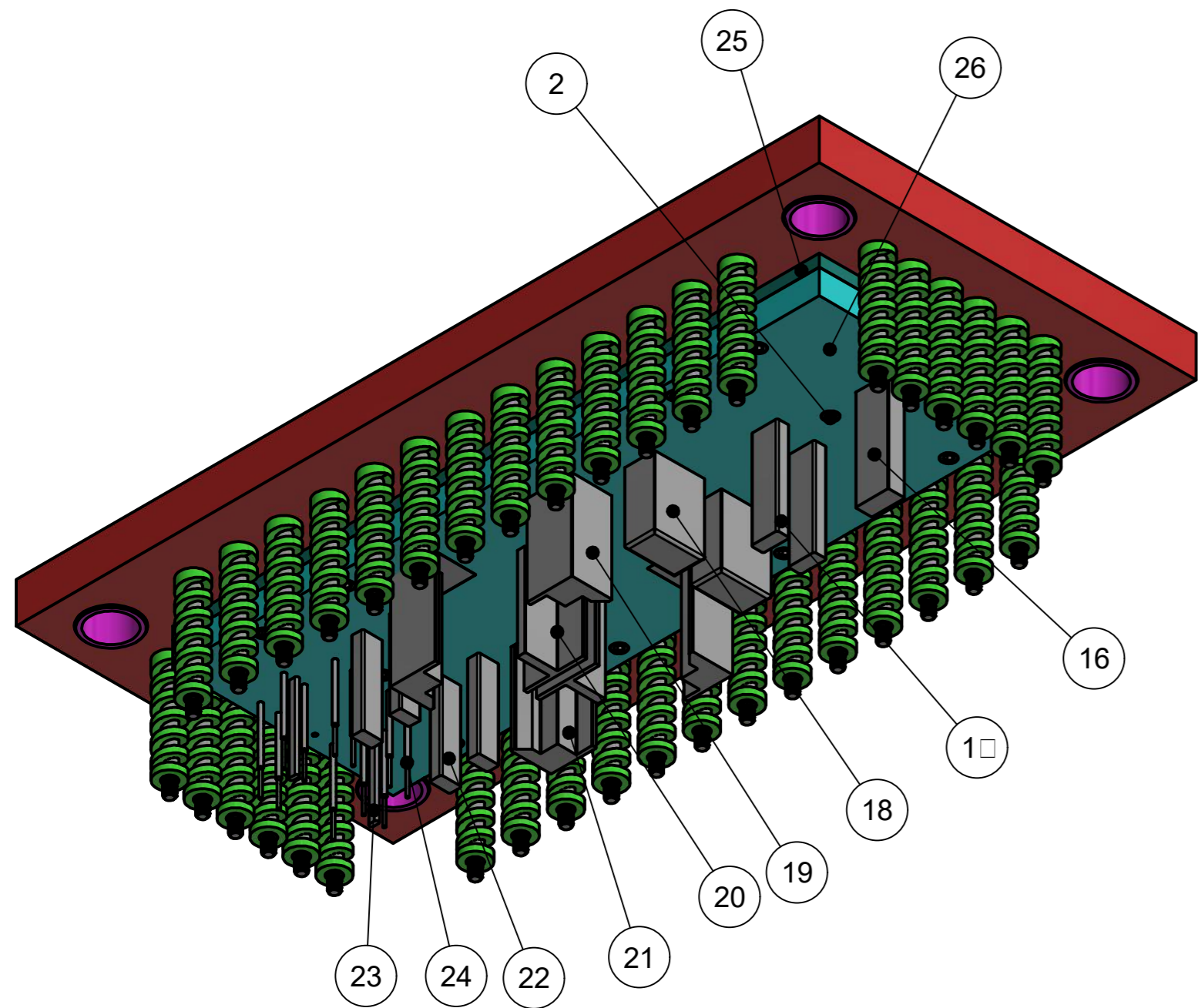
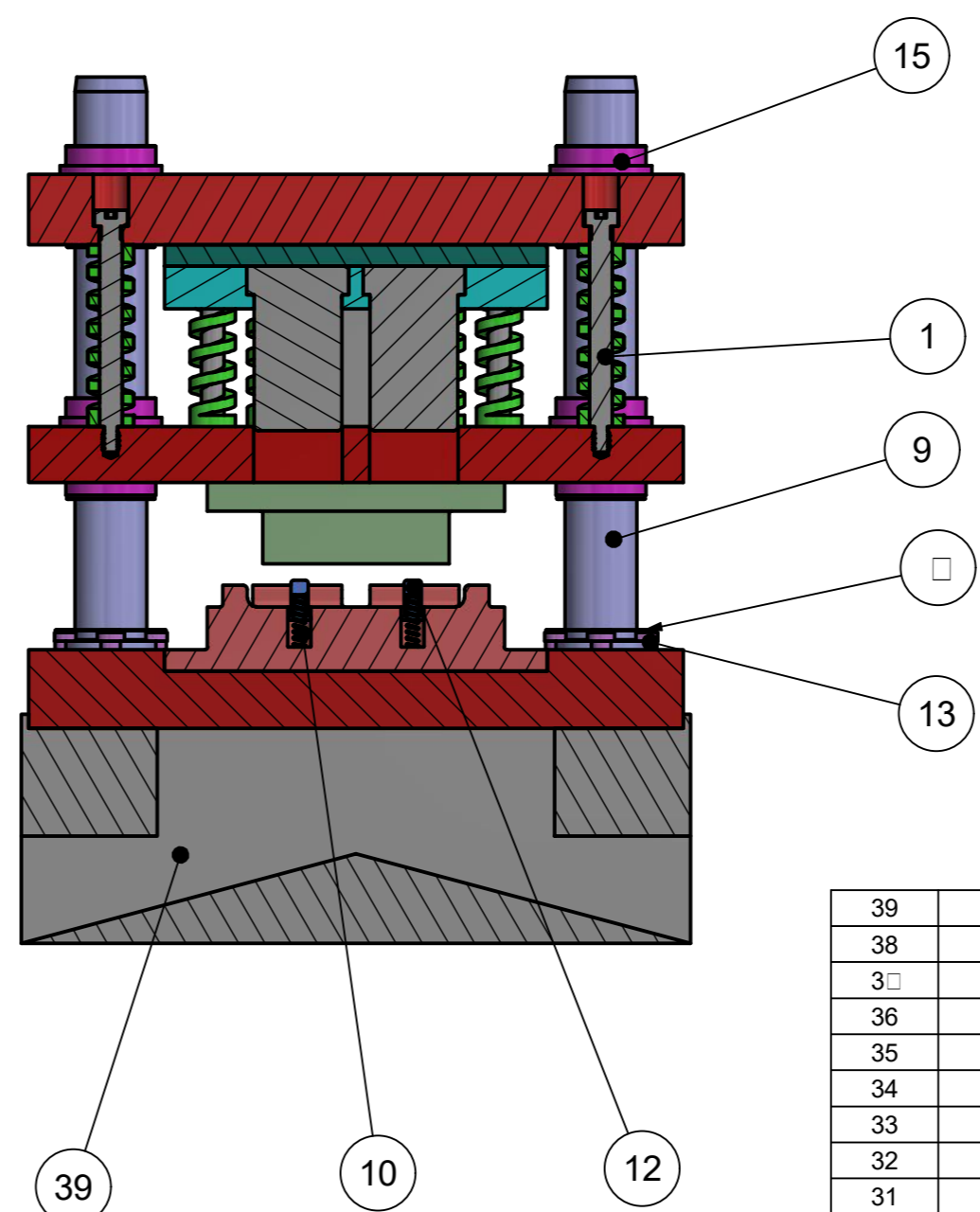
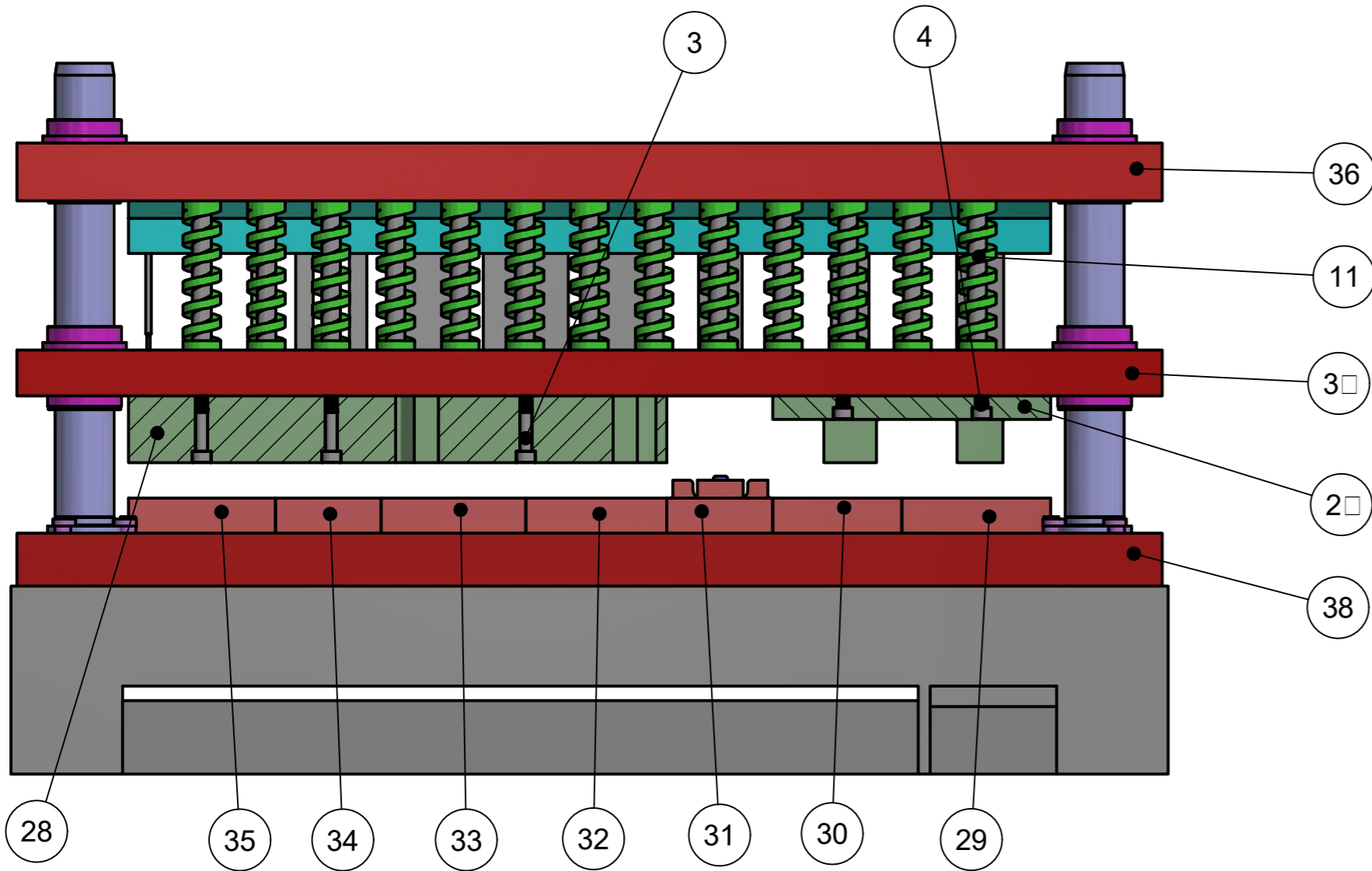
| | Data | Izen-Abizenak | Sinadurak |
|-----------------|------------|---------------------------|-----------|
| Marraztua : | 15/03/2021 | Ekaitz Churruga Maguregui | |
| Gainbegiratua : | 14/05/2021 | Roberto Lobato Gonzalez | |
| Homologatua : | | | |



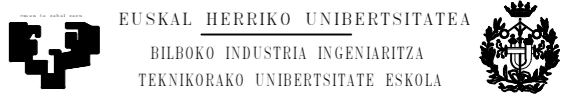
| | |
|--------------|--------|
| | Eskala |
| Perdoi Orok. | 1 : 1 |
| ISO 2768-m | |

| | |
|-------|--|
| PIEZA | |
|-------|--|

| | |
|--|--------|
| Diseño de troquel progresivo para soporte de elementos de pared | |
| Plano Zkia. : | P1 |
| Plano Kop. : | 1 / 20 |

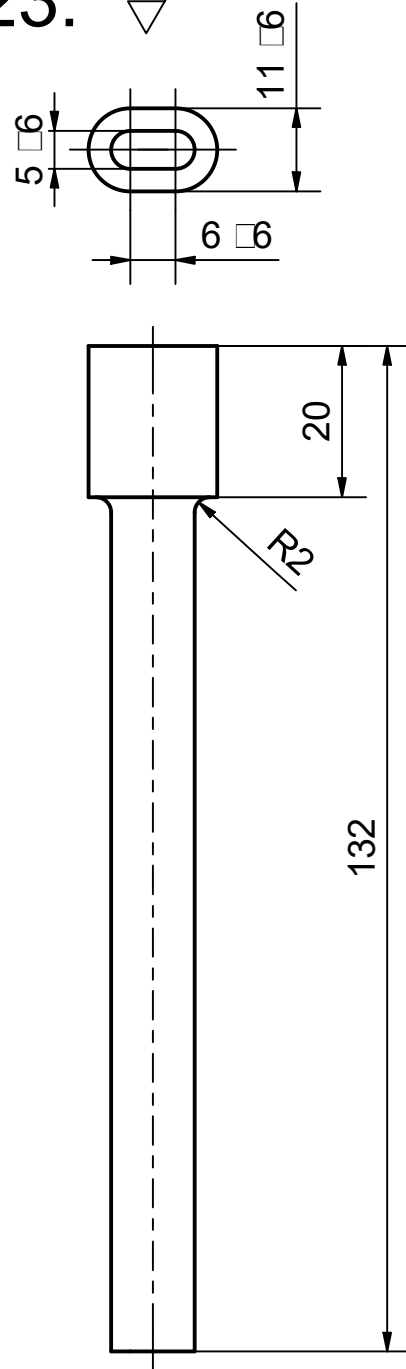
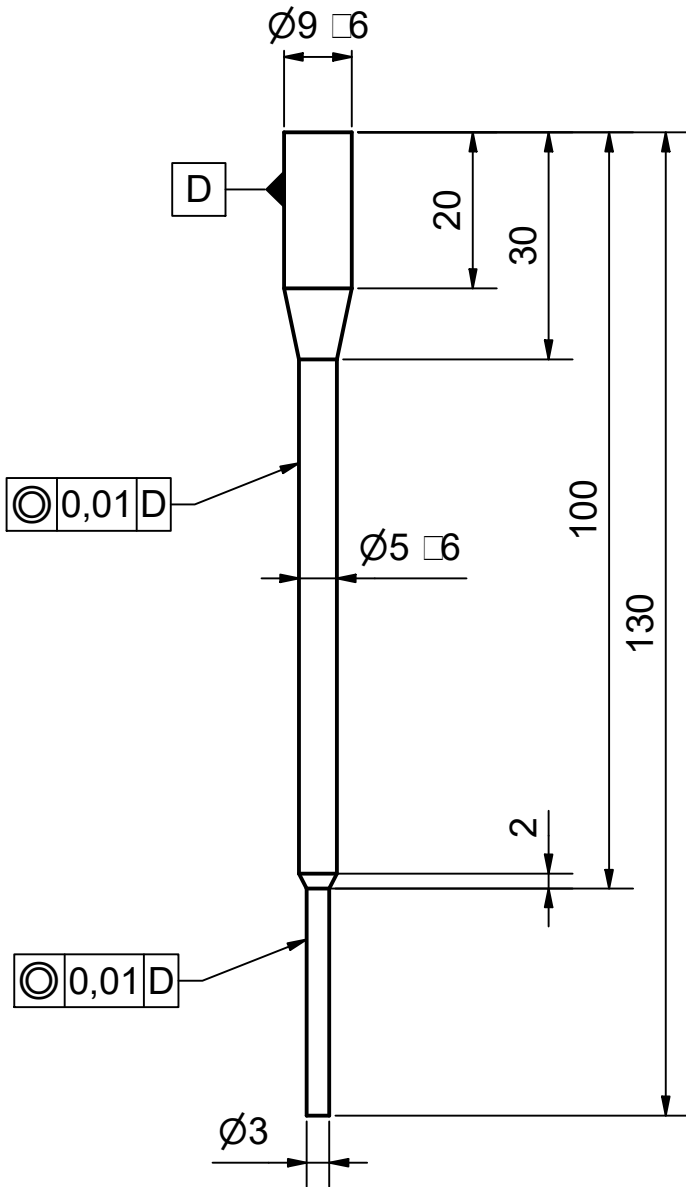




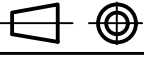
| | | | | | |
|-------|-------|---|-------------------|-----------|-----------|
| 39 | 1 | Contenedor | P14 | Undici n | 289.54 kg |
| 38 | 1 | Placa inferior | P15 | 314 | 126.16 kg |
| 3 | 1 | Placa guia | P16 | 314 | 314.03 kg |
| 36 | 1 | Placa superior | P1 | 314 | 29.19 kg |
| 35 | 1 | Matriz 1.estaci n | P10 | 514 | 9.92 kg |
| 34 | 1 | Matriz 2.estaci n | P10 | 514 | 6.61 kg |
| 33 | 1 | Matriz 3.estaci n | P11 | 514 | 8.52 kg |
| 32 | 1 | Matriz 4.estaci n | P11 | 514 | 8.26 kg |
| 31 | 1 | Matriz 5.estaci n | P12 | 514 | 8.44 kg |
| 30 | 1 | Matriz 6.estaci n | P13 | 514 | 6.25 kg |
| 29 | 1 | Matriz estaci n | P13 | 514 | 6.25 kg |
| 28 | 1 | Pisador 1.m dulo | P18 | 114 | 3.9 kg |
| 2 | 1 | Pisador 2.m dulo | P18 | 114 | 10.21 kg |
| 26 | 1 | Placa porta punzones | P19 | 314 | 42.28 kg |
| 25 | 1 | Suñidera | P20 | 115 | 24. kg |
| 24 | 12 | Punz n 1 | P3 | 514 | 0.026 kg |
| 23 | 2 | Punz n 2 | P3 | 514 | 0.0 kg |
| 22 | 4 | Punz n 3 | P4 | 514 | 0.464 kg |
| 21 | 2 | Punz n 4 | P5 | 514 | 1.9 kg |
| 20 | 2 | Punz n 5 | P6 | 514 | 1.9 kg |
| 19 | 2 | Punz n 6 | P | 514 | 1.04 kg |
| 18 | 2 | Punz n | P8 | 514 | 0.09 kg |
| 1 | 2 | Punz n 8 | P9 | 514 | 0.642kg |
| 16 | 1 | Punz n 9 | P9 | 514 | 1.06 kg |
| 15 | 8 | Casquillo gu a deslizante con valona lubricante s lido 50 | DI 9834/ ISO 9448 | 2.0598 | 0.680 kg |
| 14 | 4 | Disco de amarre 50x35 | | 1.130 | 0.168 kg |
| 13 | 12 | Brida de amarre exc ntrica 8/6 | | 1.2312 | 0.10 kg |
| 12 | 2 | Elevador de banda con valona por muelle 12x25 | | 1.2842 | 0.018 kg |
| 11 | 38 | Muelle a compresi n 32x12 | | | 0.288 kg |
| 10 | 2 | Muelle a compresi n 8x35 | | | 0.003 kg |
| 9 | 4 | Columna gu a con valona 50x450 | DI 9825/ ISO 9182 | 1.1213 | 6.88 kg |
| 8 | 4 | Tornillo cabeza avellanada "Allen" M8x35 | DI 991 | | 0.014 kg |
| | 12 | Tornillo Allen M8x22 | DI 912/ ISO 462 | | 0.014 kg |
| 6 | 28 | Tornillo Allen M10x20 | DI 912/ ISO 462 | | 0.023 kg |
| 5 | 6 | Tornillo Allen M20x80 | DI 912/ ISO 462 | | 0.24 kg |
| 4 | 4 | Tornillo Allen M10x25 | DI 912/ ISO 462 | | 0.026kg |
| 3 | 6 | Tornillo Allen M10x65 | DI 912/ ISO 462 | | 0.049 kg |
| 2 | 16 | Tornillo Allen M10x50 | DI 912/ ISO 462 | | 0.040 kg |
| 1 | 38 | Tornillo tope 16x140 | ISO 39 | | 0.264 kg |
| Marka | Kant. | Izendapena | Araudia/Planoa | Materiala | Pisua |

| | | | | | |
|-----------------|--|------------|---------------------------|-----------|--|
| Marraztua : | | Data | Izen-Abizenak | Sinadurak |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA |
| Gainbegiratua : | | 15/03/2021 | Ekaitz Churrucua Maguregu | | |
| Homologatua : | | 14/05/2021 | Roberto Lobato Gonzalez | | |
| Eskala | | CO | | | Diseño de troquel progresivo para soporte de elementos de pared |
| Perdoi Orok. | | 1 : 1 | | | Plano Zkia. : P2 |
| ISO 2768-m | | | | | Plano Kop. : 2 / 20 |

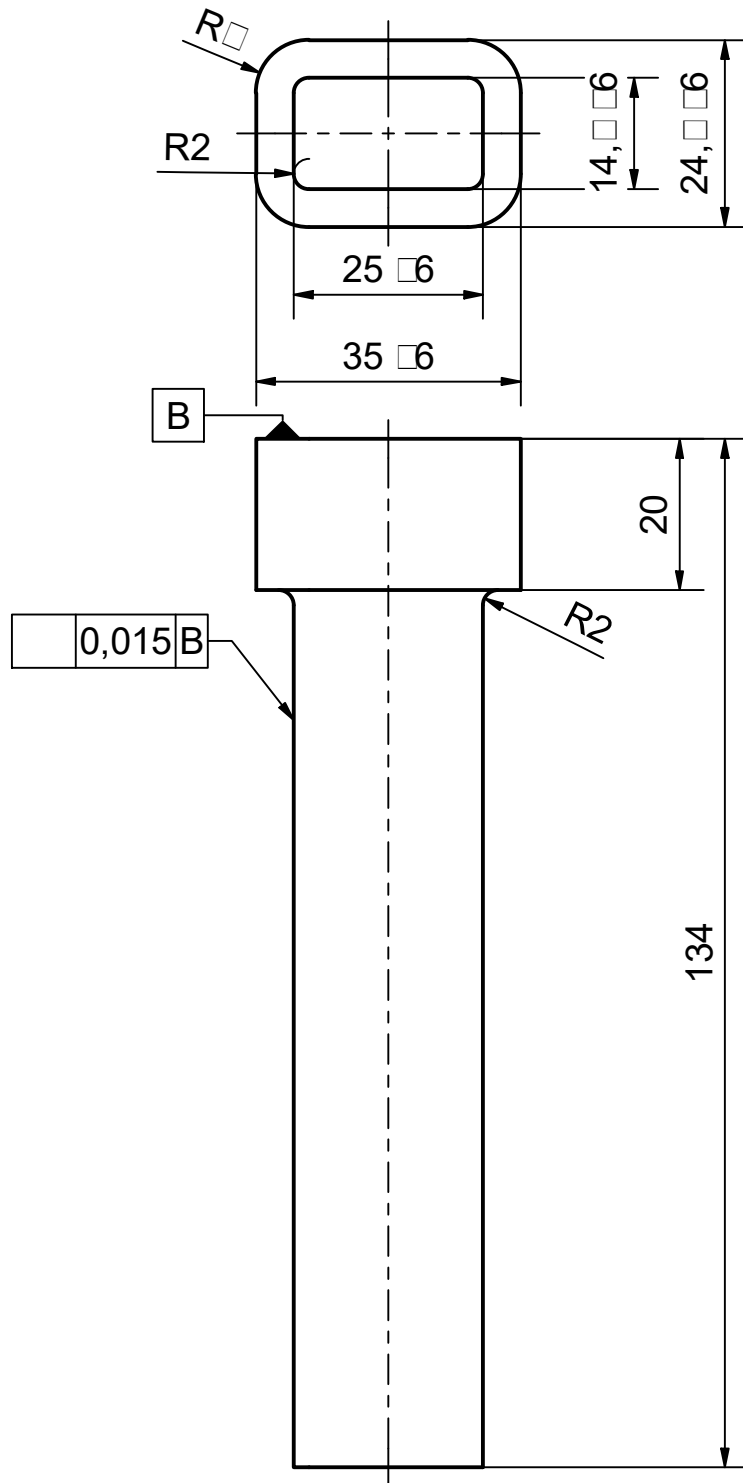
24. $\square 6 / \nabla$



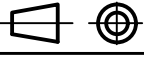
23. $\square 6 / \nabla$



| 24 | 12 | Punz n 1 | | $\square 514$ | 0.026 kg |
|--|-----------------|---|----------------|--|--|
| 23 | 2 | Punz n 2 | | $\square 514$ | 0.0 \square kg |
| Marka | Kant. | Izendapena | Araudia/Planoa | Materiala | Pisua |
| | | Data | Izen-Abizenak | Sinadurak | |
| Marraztua : | 15/03/2021 | Ekaitz Churruca Maguregui | |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA  | |
| Gainbegiratua : | 14/05/2021 | Roberto Lobato Gonzalez | | | |
| Homologatua : | | | | | |
|  Perdoi Orok. ISO 2768-m | Eskala 1 : 1 | P $\square \square$ ZO \square ES 1. ESTACI \square | | | Diseño de troquel progresivo para soporte de elementos de pared |
| | | | | | Plano Zkia. : P3 |
| | | | | | Plano Kop. : 3 / 20 |

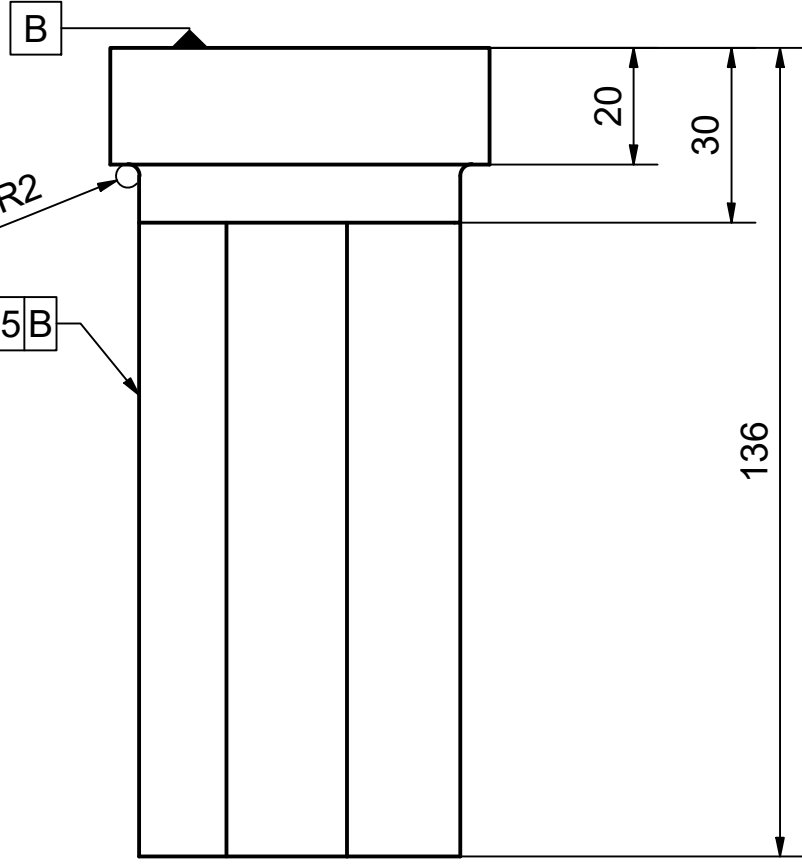
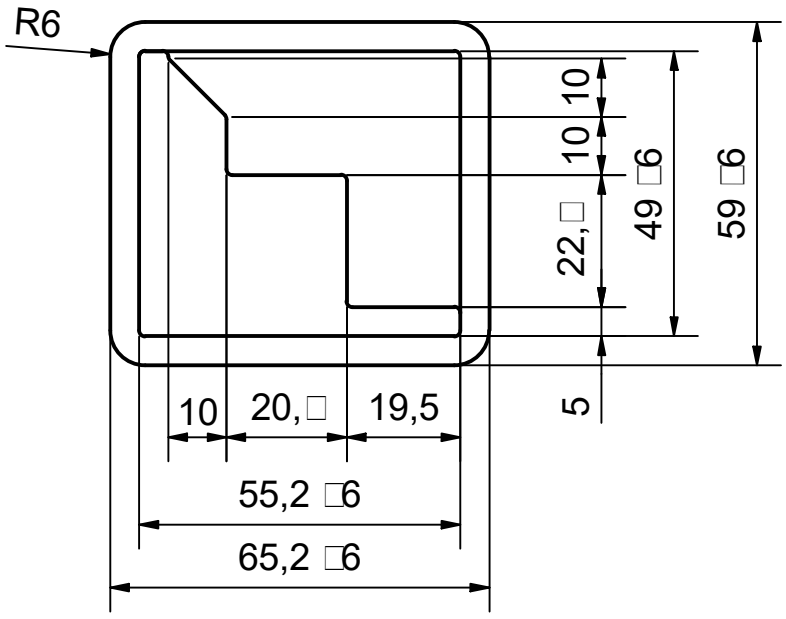
22.



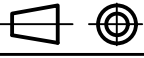


| | | | | | | | |
|--|-----------------|--------------------|---------------------------|-----------|--|-----------|-------|
| 22 | 4 | Punz n 3 | | | □514 | 0.464 kg | |
| Marka | Kant. | Izendapena | | | Araudia/Planoa | Materiala | Pisua |
| | | Data | Izen-Abizenak | Sinadurak |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA  | | |
| Marrastua : | | 15/03/2021 | Ekaitz Churruca Maguregui | | | | |
| Gainbegiratua : | | 14/05/2021 | Roberto Lobato Gonzalez | | | | |
| Homologatua : | | | | | | | |
|  Perdoi Orok. ISO 2768-m | Eskala 1 : 1 | P□□Z □ 2. ESTACI □ | | | Diseño de troquel progresivo para soporte de elementos de pared | | |
| | | | | | Plano Zkia. : P4 | | |
| | | | | | Plano Kop. : 4 / 20 | | |

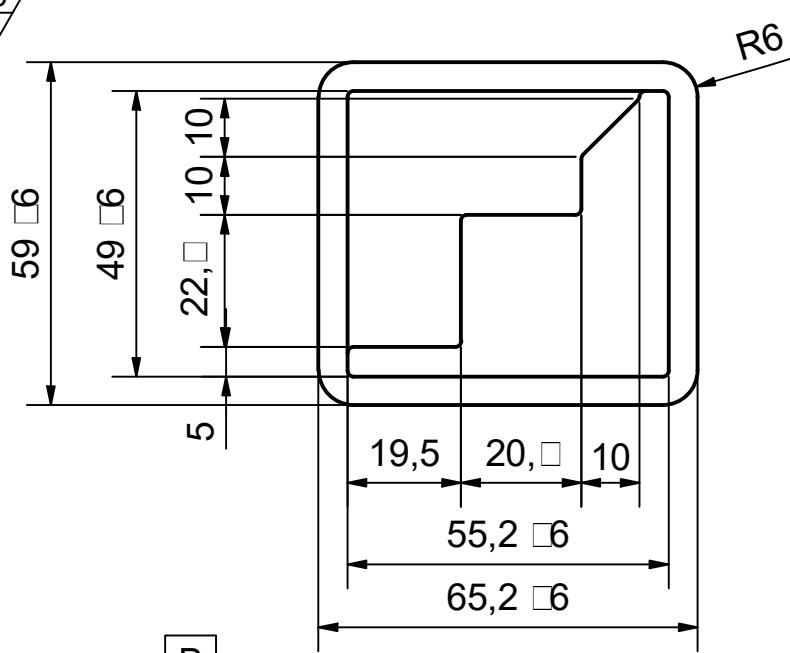
21. $\square 6$

Radios no acotados
R=1mm

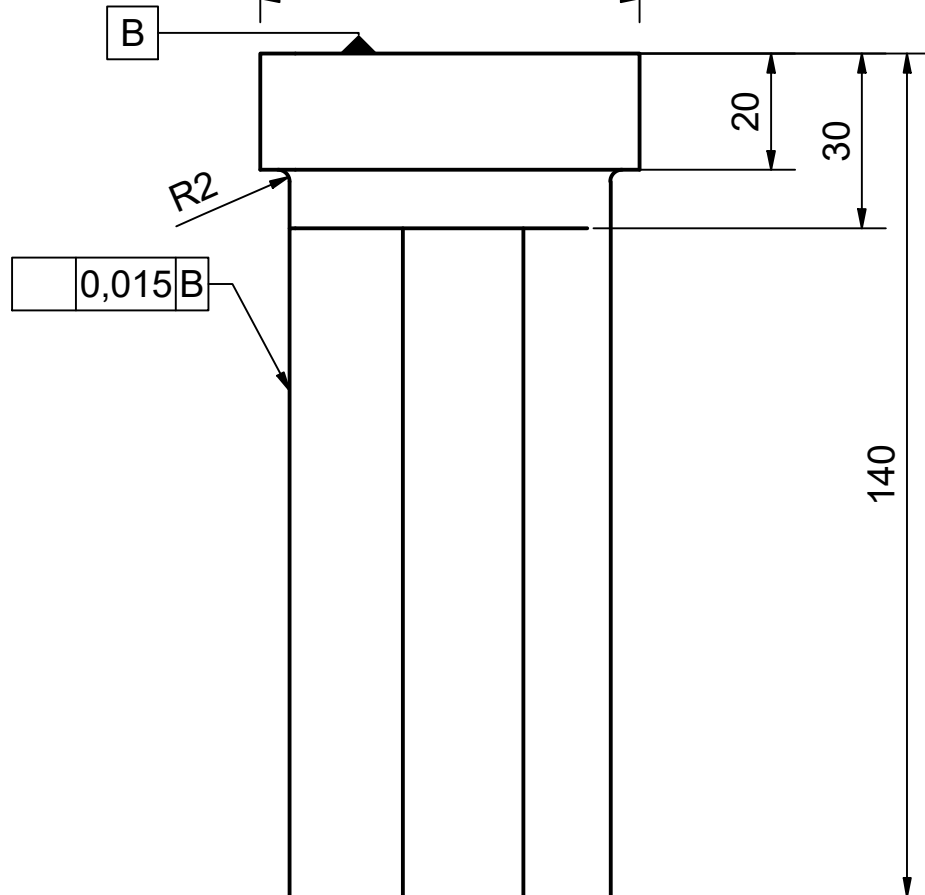




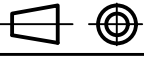
| | | | | | | |
|---|--------|---|---------------------------|-----------|--|--------------------|
| 21 | 2 | Punz n 4 | | | $\square 514$ | 1.9 \square kg |
| Marka | Kant. | Izendapena | | | Araudia/Planoa | Materiala Pisua |
| Marrastua : | | Data | Izen-Abizenak | Sinadurak |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA  | |
| Gainbegiratua : | | 15/03/2021 | Ekaitz Churruca Maguregui | | | |
| Homologatua : | | 14/05/2021 | Roberto Lobato Gonzalez | | | |
|  | Eskala | P $\square \square$ Z \square 3 \square 4. ESTACI \square | | | Diseño de troquel progresivo para soporte de elementos de pared | |
| Perdoi Orok. | 1 : 1 | | | | Plano Zkia. : P5 | |
| ISO 2768-m | | | | | Plano Kop. : 5 / 20 | |

20.

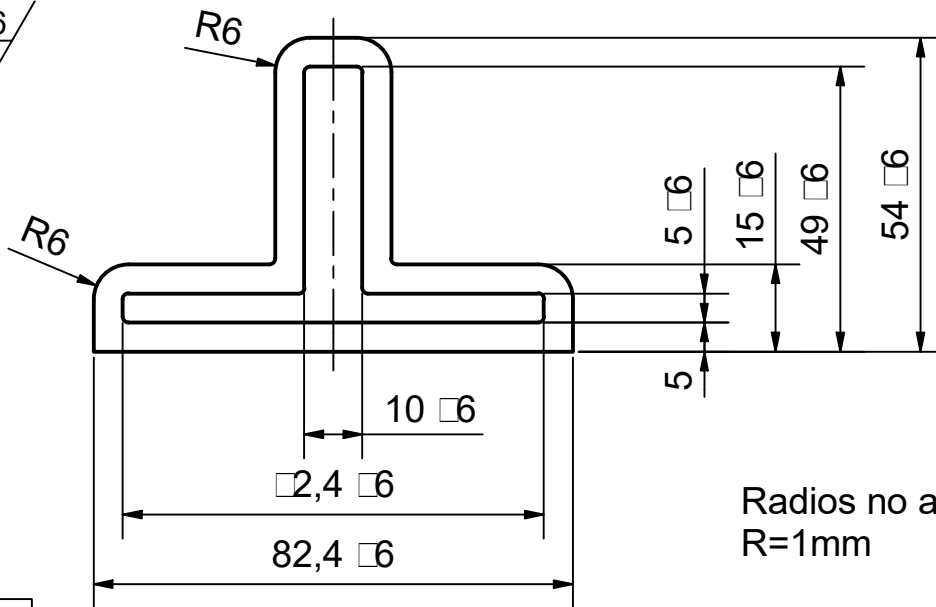


Radios no acotados
R=1mm



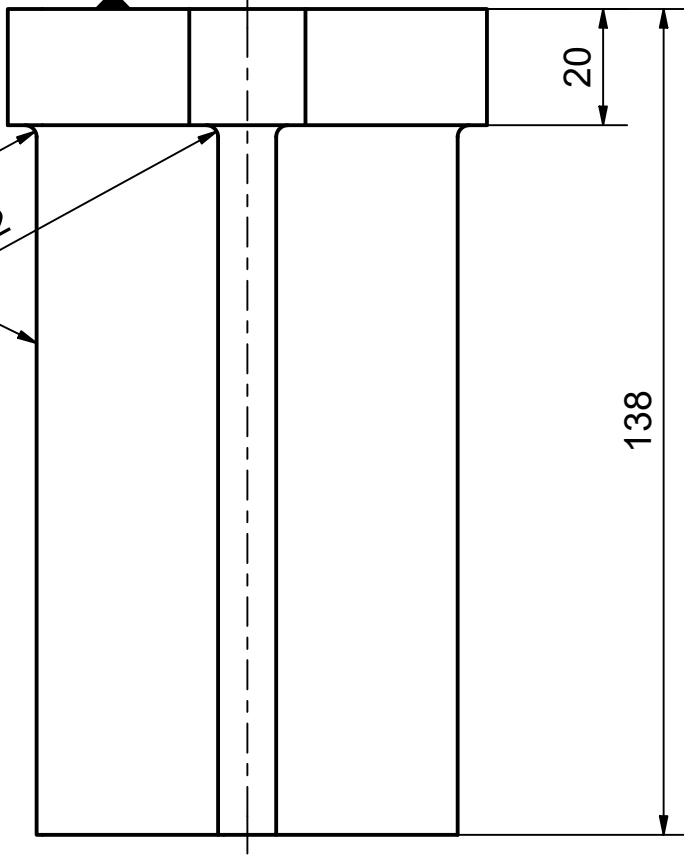
| | | | | | | | |
|---|--------|-------------------------|---------------------------|-----------|--|-----------|-------|
| 20 | 2 | Punz n 5 | | | 514 | 1.9 kg | |
| Marka | Kant. | Izendapena | | | Araudia/Planoa | Materiala | Pisua |
| Marrastua : | | Data | Izen-Abizenak | Sinadurak |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA  | | |
| Gainbegiratua : | | 15/03/2021 | Ekaitz Churruca Maguregui | | | | |
| Homologatua : | | 14/05/2021 | Roberto Lobato Gonzalez | | | | |
|  Perdoi Orok. ISO 2768-m | Eskala | P ± Z ± 3 ± 4. ESTACI ± | | | Diseño de troquel progresivo para soporte de elementos de pared | | |
| | 1 : 1 | | | | Plano Zkia. : P6 | | |
| | | | | | Plano Kop. : 6 / 20 | | |

19.



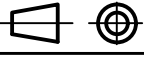


Radios no acotados
R=1mm

B



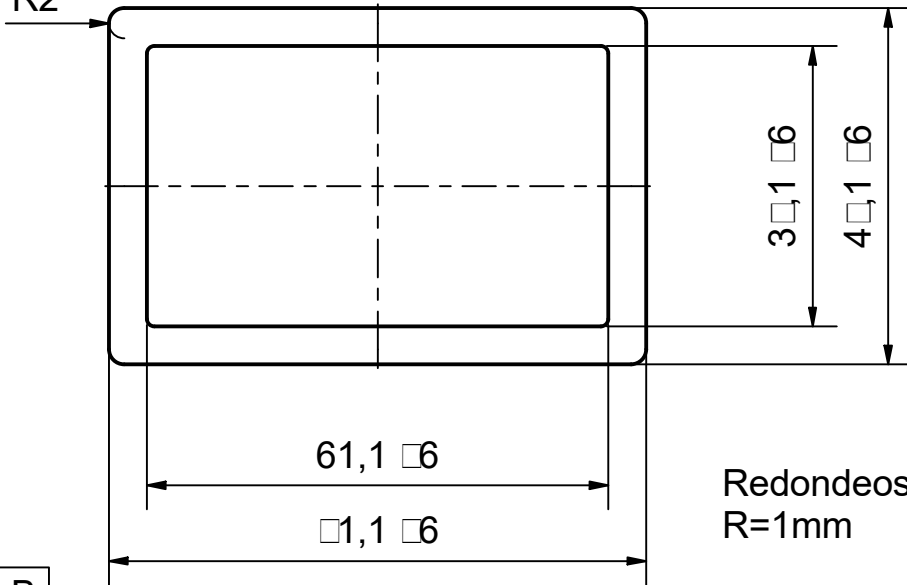
0,015B

| | | | | | | |
|---|---------------------|---------------------------|--|-----------|---|--|
| 19 | 2 | Punz n 6 | | 514 | 1.04 kg | |
| Marka | Kant. | Izendapena | Araudia/Planoa | Materiala | Pisua | |
| Marrastua : | 15/03/2021 | Ekaitz Churruca Maguregui |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA  | | | |
| Gainbegiratua : | 14/05/2021 | Roberto Lobato Gonzalez | | | | |
| Homologatua : | | | | | | |
|  Perdoi Orok. ISO 2768-m | Eskala 1 : 1 | P□□Z □ 3/4. ESTACI □ | | | Diseño de troquel progresivo para soporte de elementos de pared | |
| | | | | | Plano Zkia. : P□ | |
| | | | | | Plano Kop. : □ / 20 | |

18.

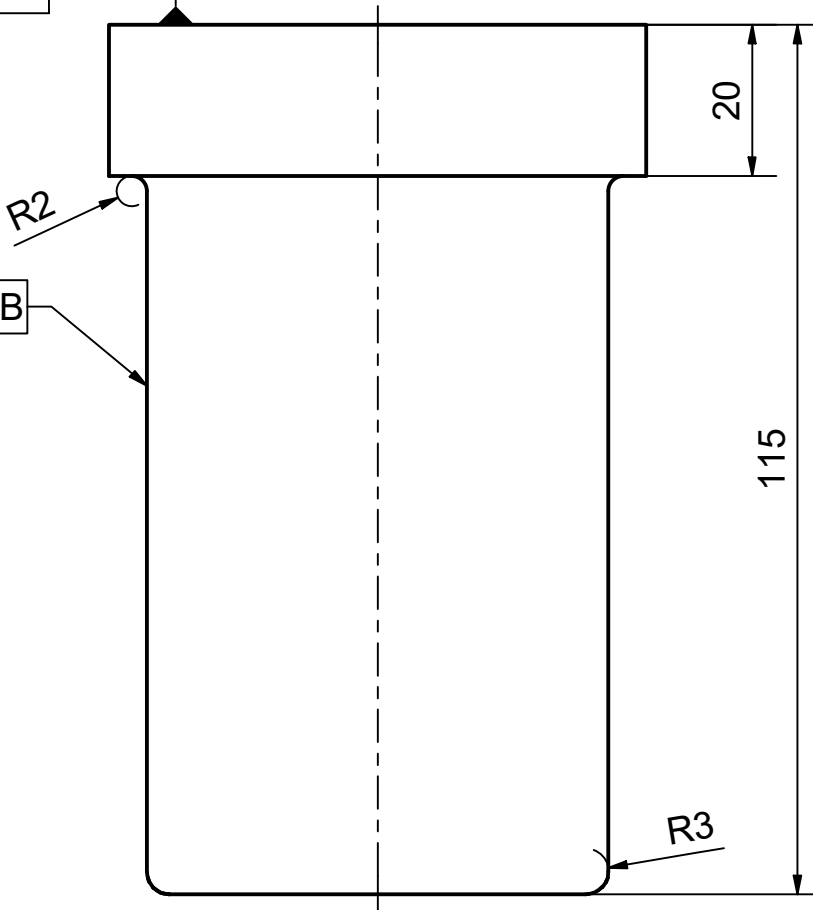


R2



Redondeos no acotados
R=1mm



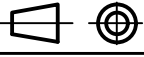
B



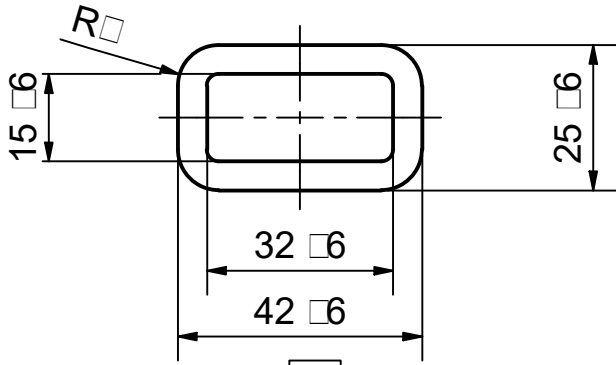
0,015 B

R2

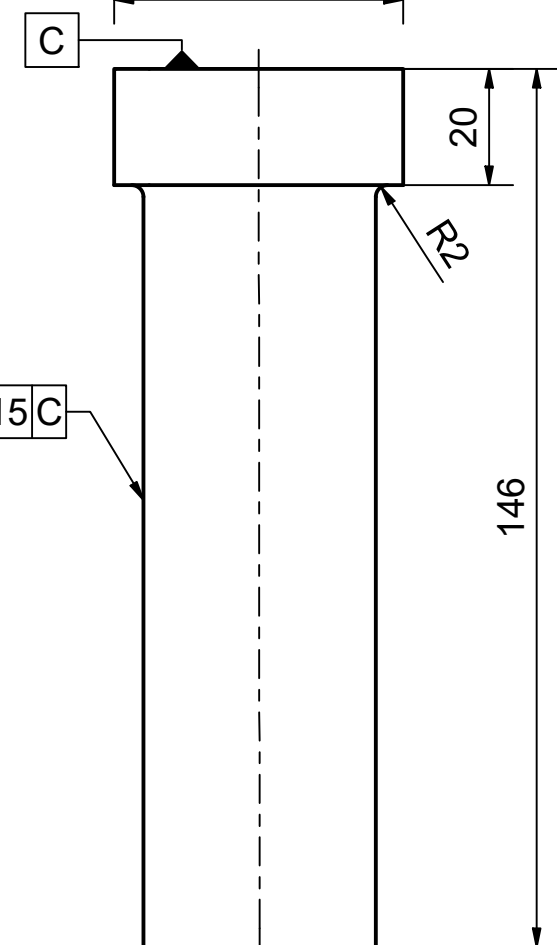
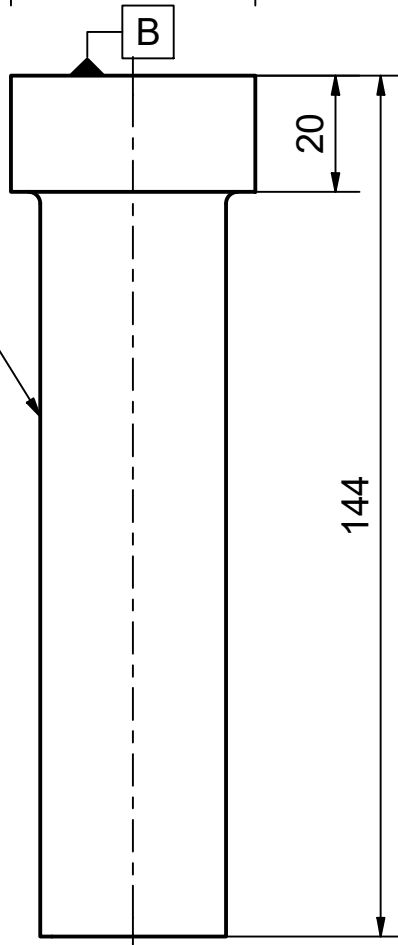
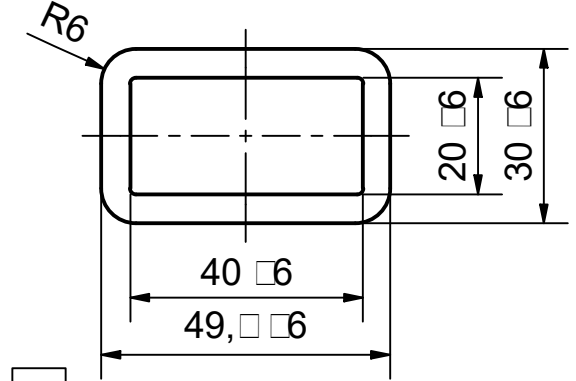
R3

| | | | | | | |
|---|--------|--------------------|---------------------------|--|---|--------|
| 18 | 2 | Punz n □ | | | □514 | □09 kg |
| Marka | Kant. | Izendapena | | Araudia/Planoa | Materiala | Pisua |
| | | Data | Izen-Abizenak | Sinadurak | | |
| Marrastua : | | 15/03/2021 | Ekaitz Churruga Maguregui |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA  | | |
| Gainbegiratua : | | 14/05/2021 | Roberto Lobato Gonzalez | | | |
| Homologatua : | | | | | | |
|  Perdoi Orok. ISO 2768-m | Eskala | P□□Z □ 5. ESTACI □ | | | Diseño de troquel progresivo para soporte de elementos de pared | |
| | 1 : 1 | | | | Plano Zkia. : P8 | |
| | | | | | Plano Kop. : 8 / 20 | |



1 □ 6



16. □ 6

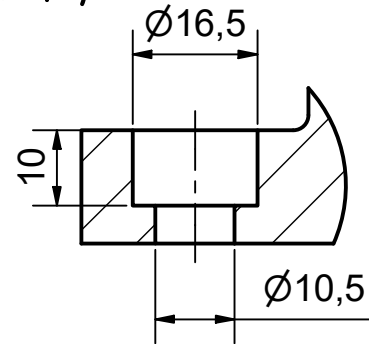


Redondeos no acotados
R=1mm

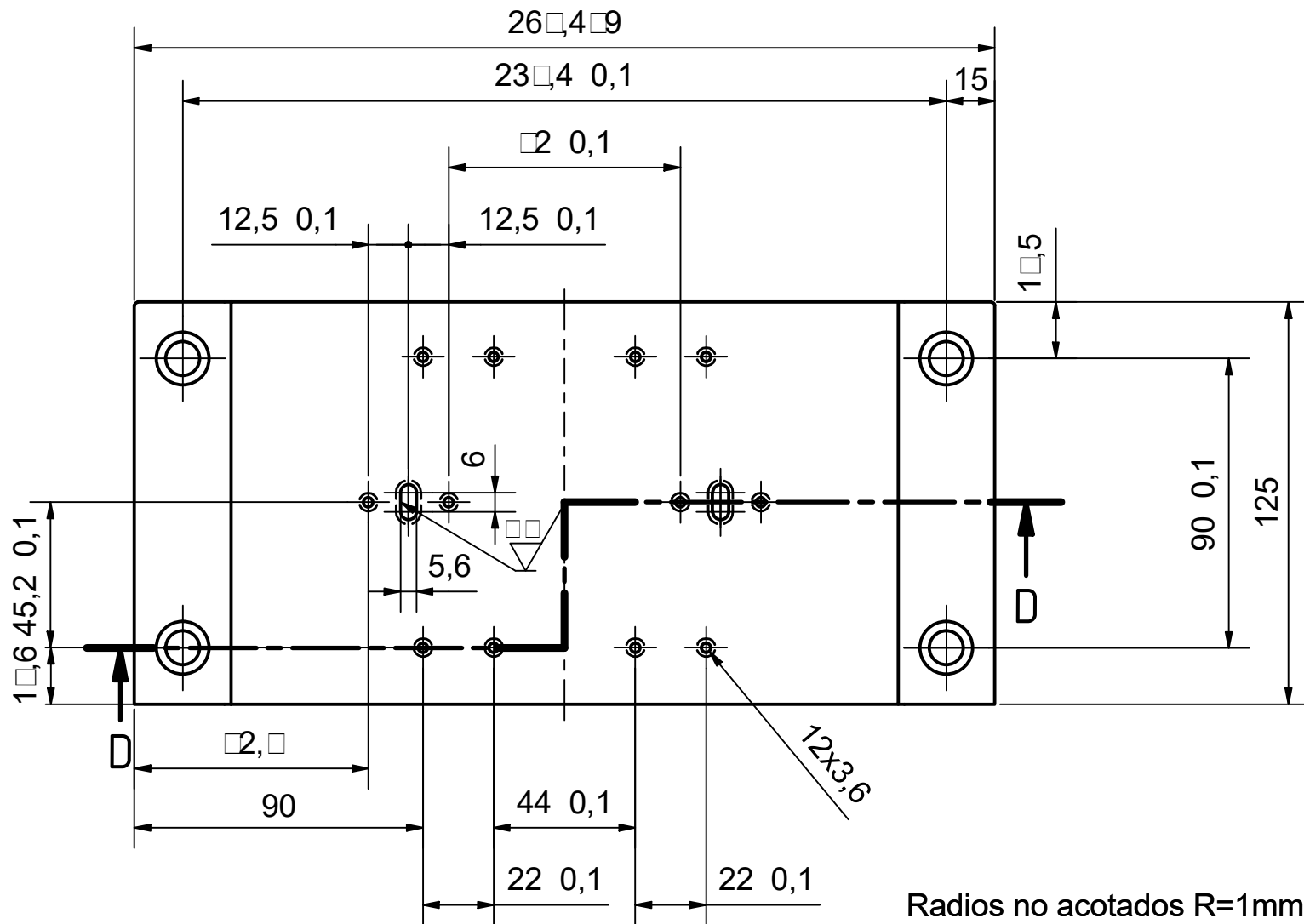
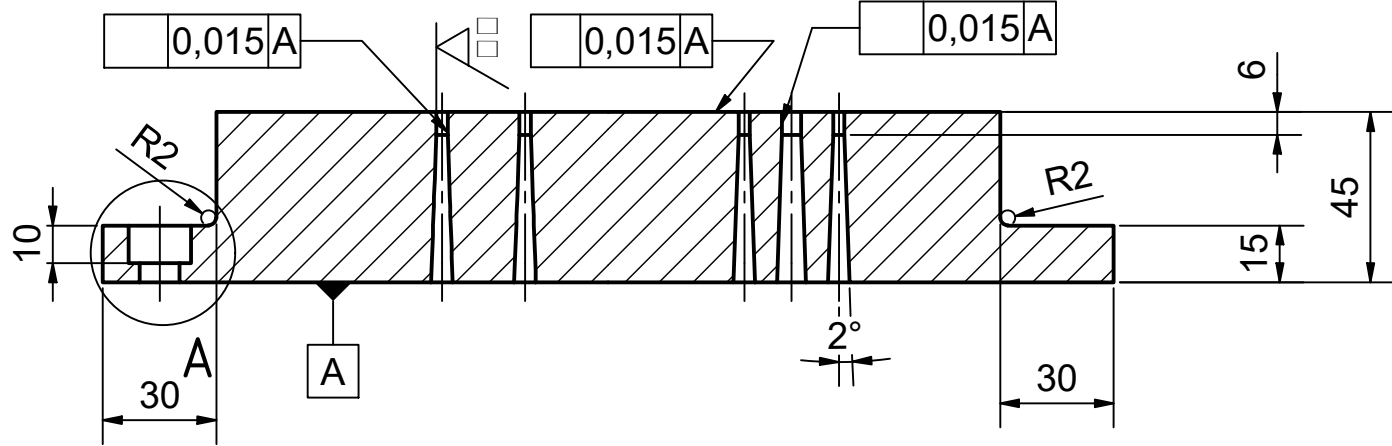
| 1 □ | 2 | Punz n 8 | | □514 | 0.642 kg |
|-----------------|-------|------------------------------|---------------------------|--|---|
| 16 | 1 | Punz n 9 | | □514 | 1.06 kg |
| Marka | Kant. | Izendapena | Araudia/Planoa | Materiala | Pisua |
| Marratzua : | | Data | Izen-Abizenak | Sinadurak | |
| Gainbegiratua : | | 15/03/2021 | Ekaitz Churruca Maguregui |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA  | |
| Homologatua : | | 14/05/2021 | Roberto Iobato Gonzalez | | |
| Eskala | | 1 : 1 | | | |
| Perdoi Orok. | | P □ □ ZO □ ES 6 □ □ ESTACI □ | | | Diseño de troquel progresivo para soporte de elementos de pared |
| ISO 2768-m | | | | | Plano Zkia. : P9 |
| | | | | | Plano Kop. : 9 / 20 |

35. 

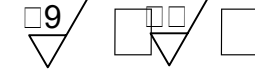
A (1:1)
4x



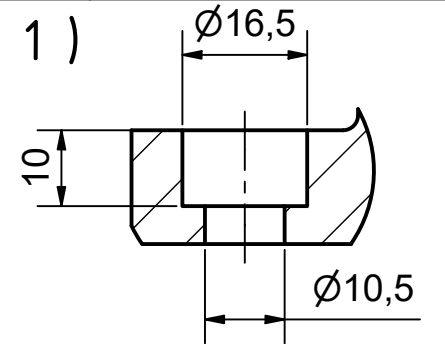
D-D (1:2)



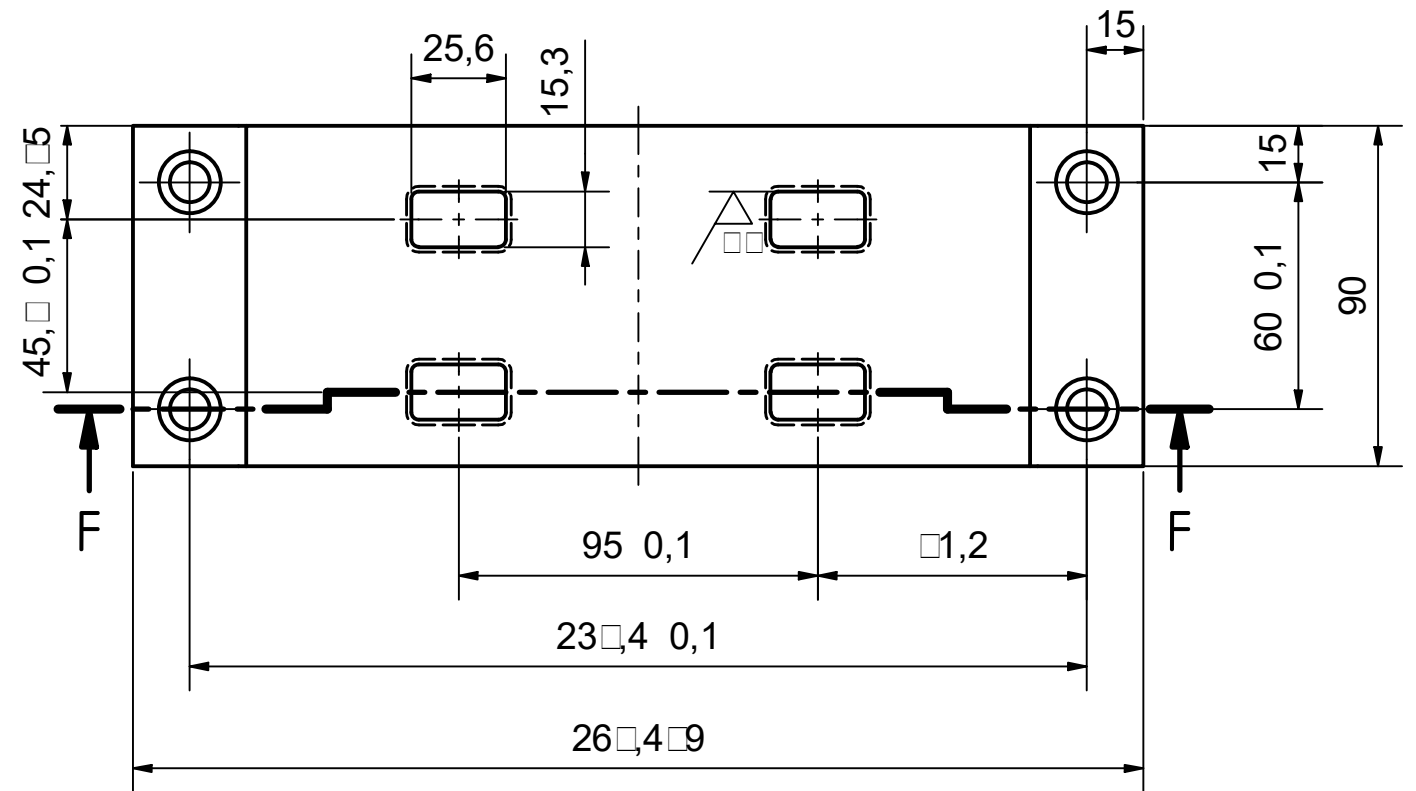
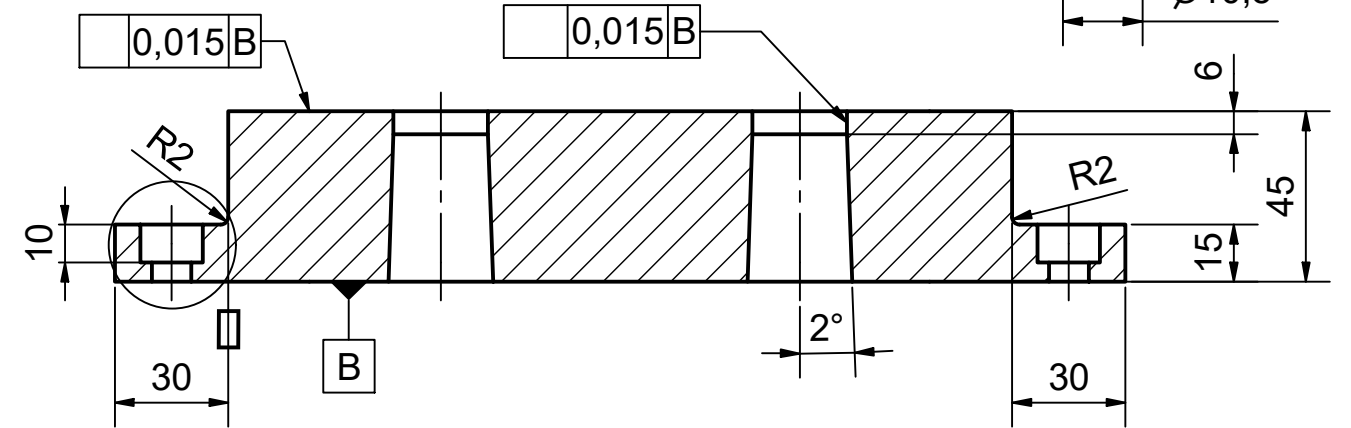
Radios no acotados R=1mm


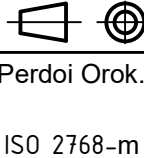
34. 

B (1:1)
4x



F-F (1:2)



| 35 | 1 | Matriz 1.estaci n | | 514 | 9.92 kg |
|--|-------|-------------------|----------------------------|--|---|
| 34 | 1 | Matriz 2.estaci n | | 514 | 6.61 kg |
| Marka | Kant. | Izendapena | Araudia/Planoa | Materiala | Pisua |
| Marraztua : | | 15/03/2021 | Ekaitz Churrucua Maguregui |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA | |
| Gainbegiratua : | | 14/05/2021 | Roberto Lobato Gonzalez | | |
| Homologatua : | | | | | |
|  Perdoi Orok. ISO 2768-m | | Eskala 1:2 | MATRIZ 1 2. ESTACI | | Diseño de troquel progresivo para soporte de elementos de pared Plano Zkia. : P10 Plano Kop. : 10 / 20 |

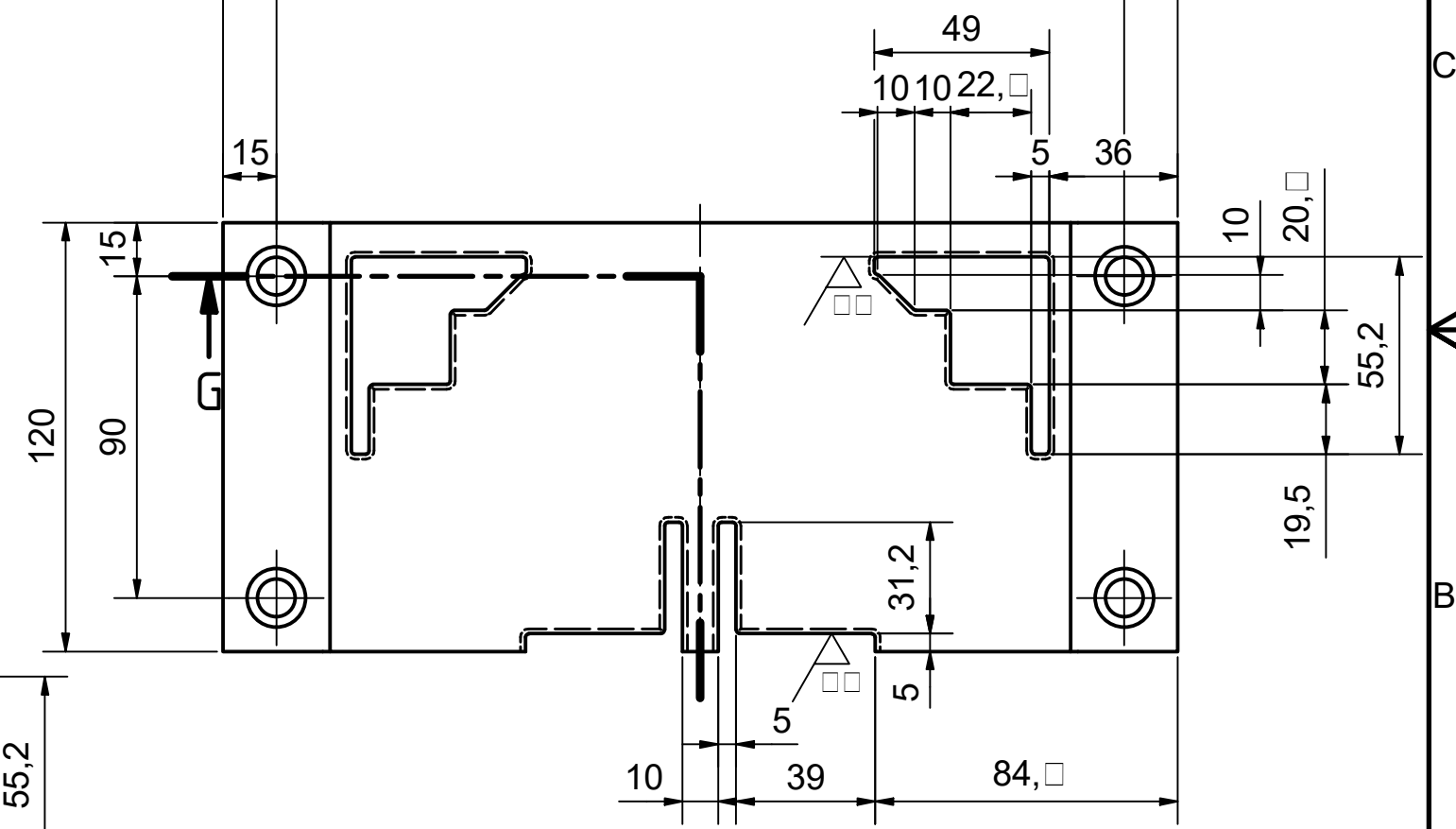
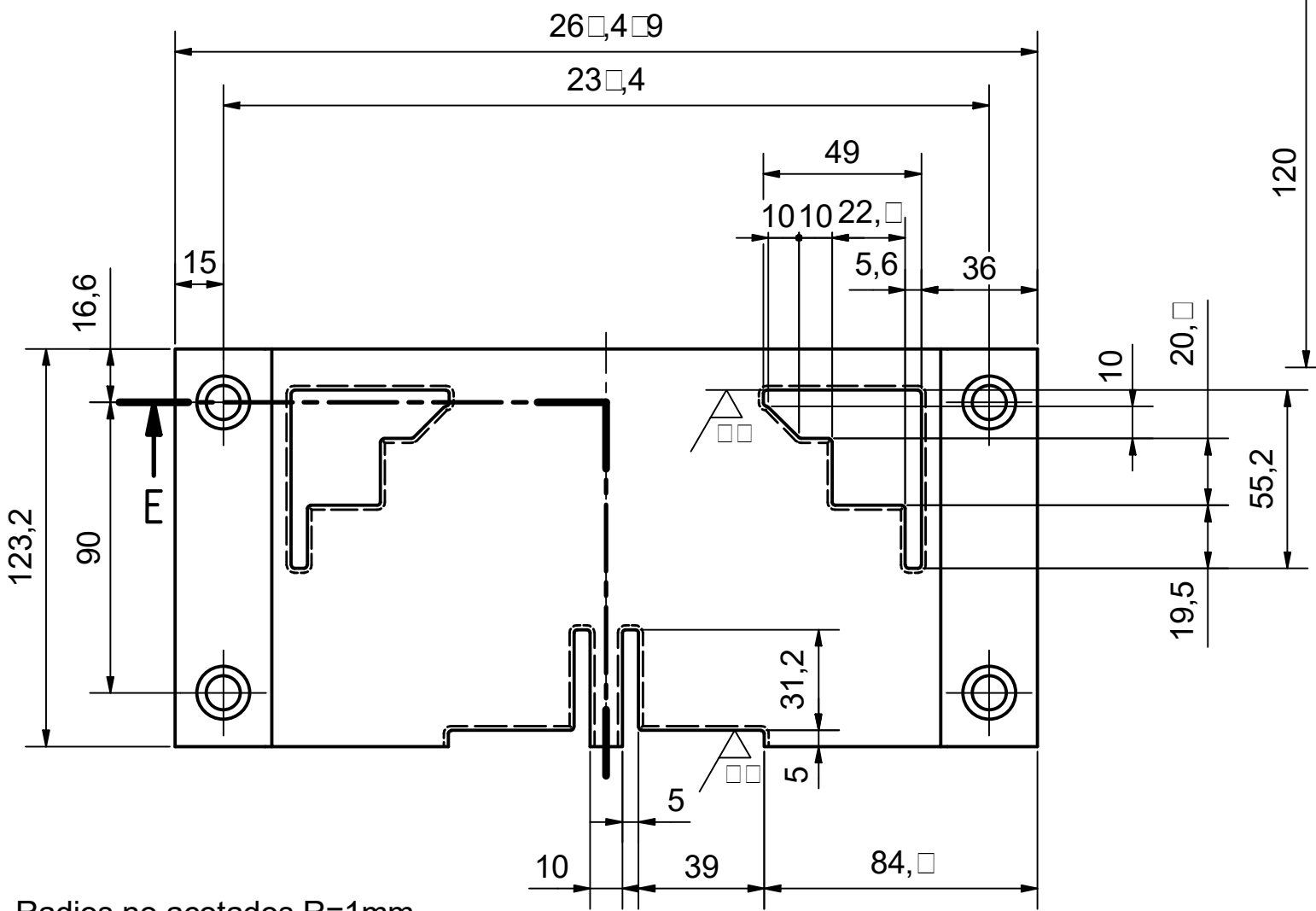
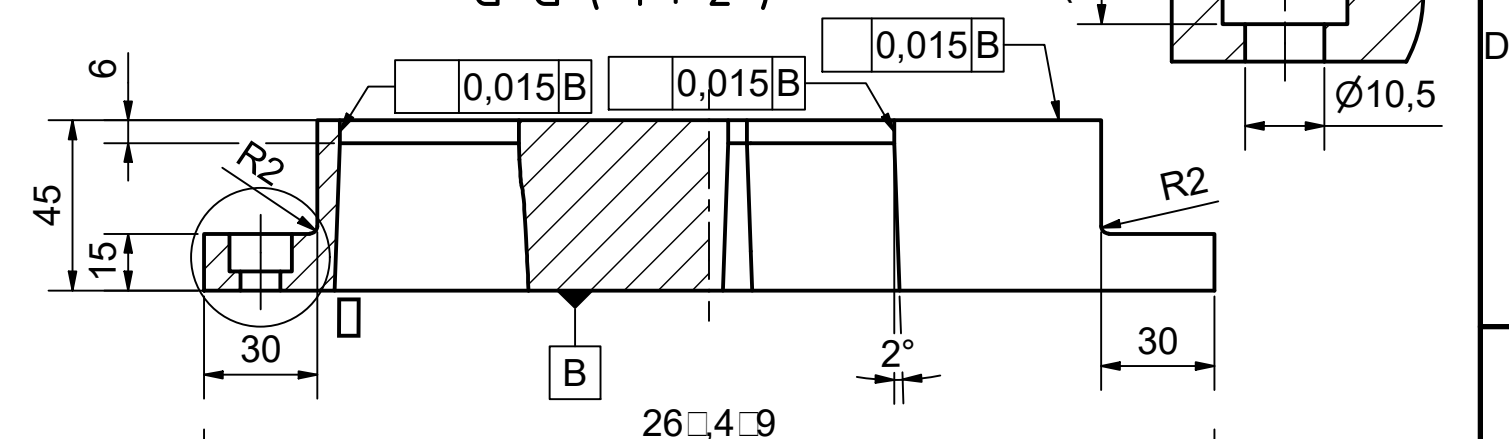
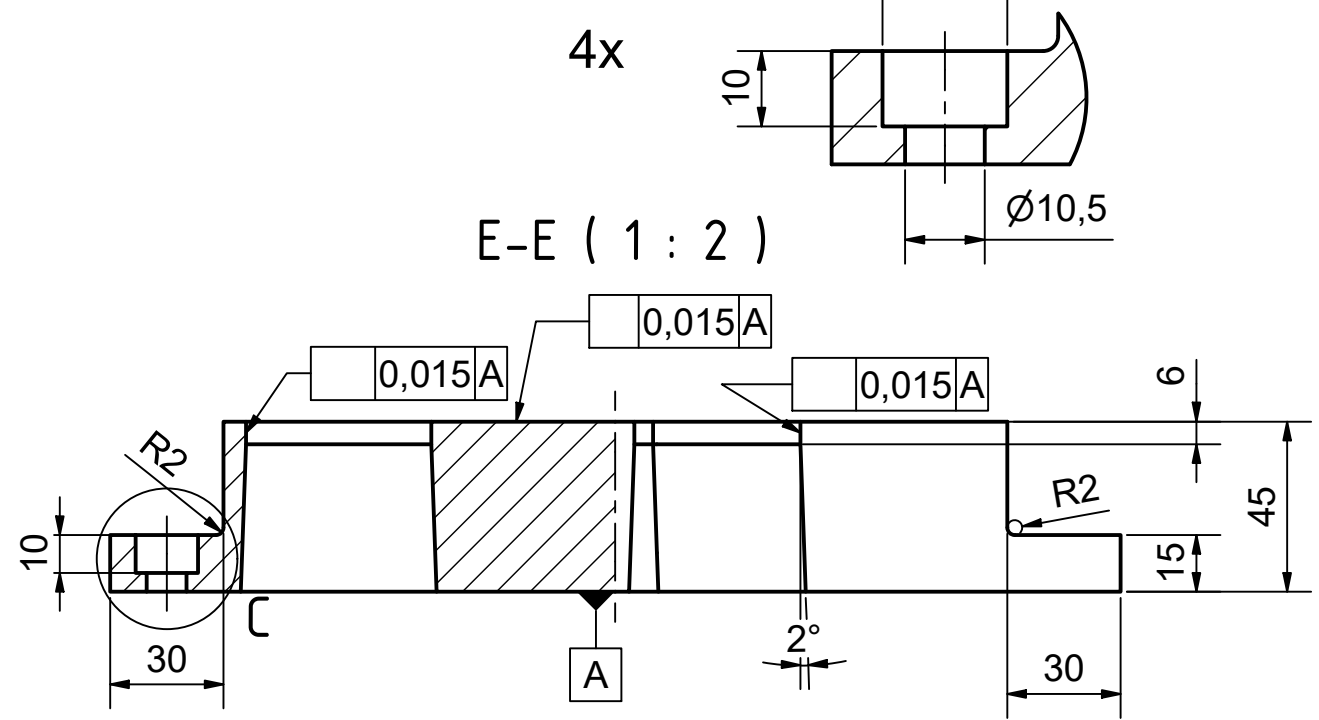
33.

32.

C (1:1)
4x

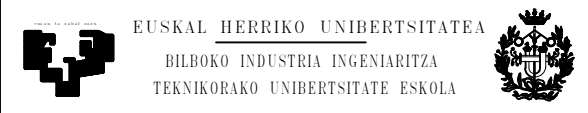
G-G (1:2)

(1:1)
4x



Radios no acotados R=1mm

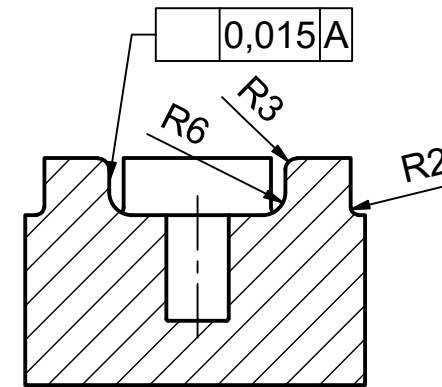
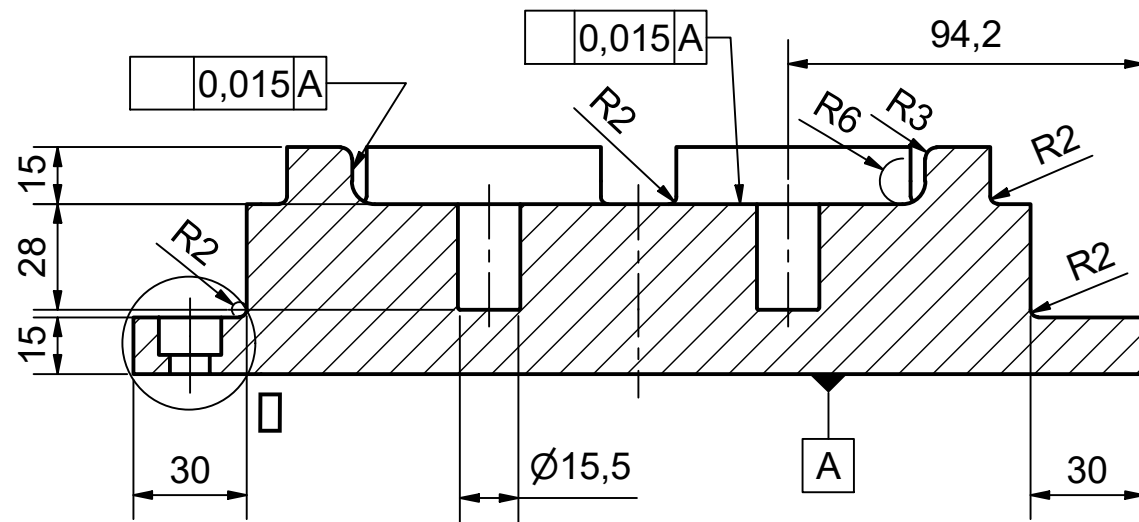
| 33 | 1 | Matriz 4.estaci n | | 514 | 8.26 kg |
|-----------------|------------|---------------------------|----------------|-----------|---|
| 32 | 1 | Matriz 3.estaci n | | 514 | 8.52 kg |
| Marka | Kant. | Izendapena | Araudia/Planoa | Materiala | Pisua |
| Marraztua : | 15/03/2021 | Ekaitz Churruca Maguregui | | | |
| Gainbegiratua : | 14/05/2021 | Roberto Lobato Gonzalez | | | |
| Homologatua : | | | | | |
| Perdoi Orok. | Eskala | MATRIZ 3 ± 0.04. ESTACI ± | | | Diseño de troquel progresivo para soporte de elementos de pared |
| ISO 2768-m | 1:2 | | | | Plano Zkia. : P11 |
| | | | | | Plano Kop. : 11 / 20 |



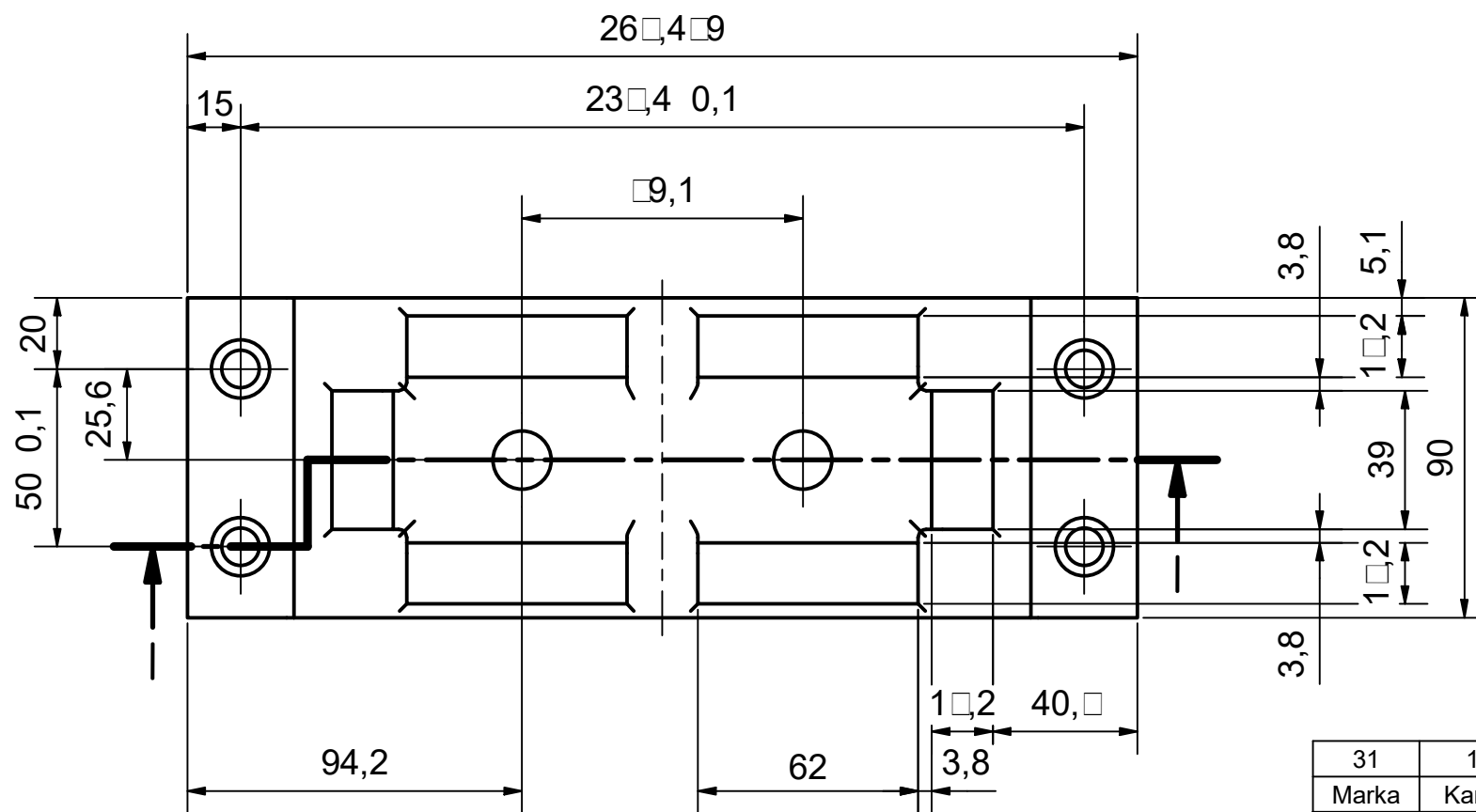
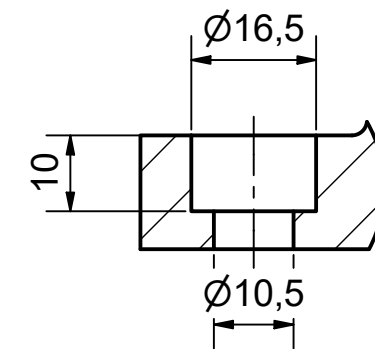
31.

I-I (1 : 2)

Radios no acotados
R=1mm



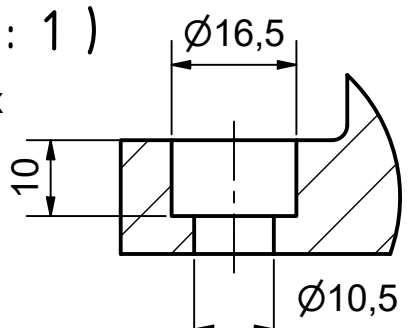
(1 : 1)
4x



| | | | | | |
|-----------------|------------|-------------------------|---------------|---|-------|
| 31 | 1 | Matriz 5. estaci n | | 514 | 8 kg |
| Marca | Kant. | Izendapena | Arudia/Planoa | Materiala | Pisua |
| Marraztua : | 15/03/2021 | Izen-Abizenak | Sinadurak | EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA | |
| Gainbegiratua : | 14/05/2021 | Roberto Lobato Gonzalez | | | |
| Homologatua : | | | | | |
| | Eskala | MATRIZ 5. ESTACI | | Diseño de troquel progresivo para soporte de elementos de pared | |
| Perdoi Orok. | 1 : 2 | | | Plano Zkia. : P12 | |
| ISO 2768-m | | | | Plano Kop. : 12 / 20 | |

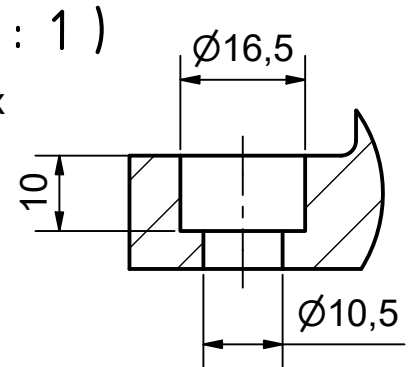
30.

$\square (1:1)$



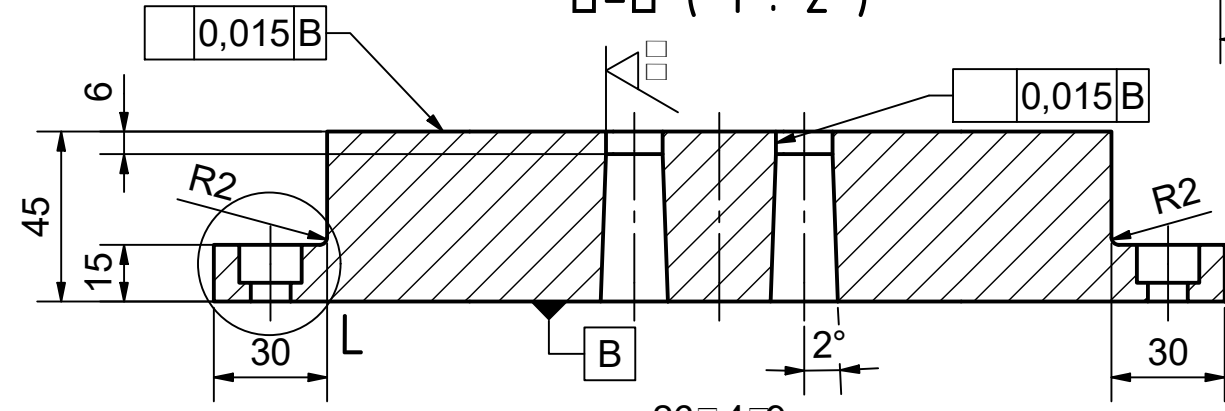
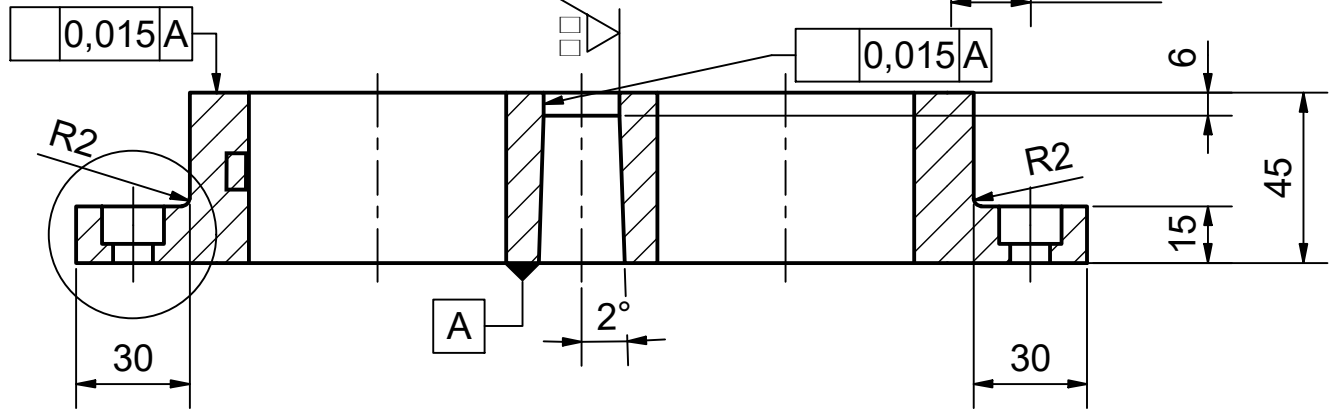
29.

$L (1:1)$



M-M (1:2)

$\square-\square (1:2)$



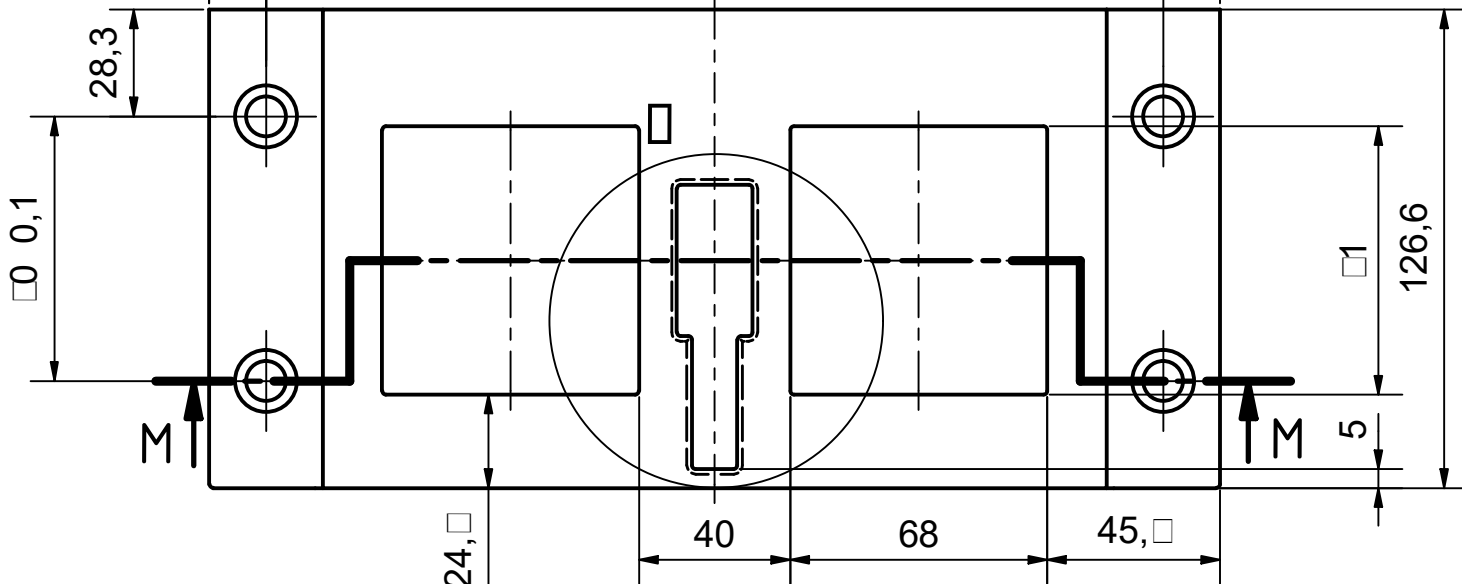
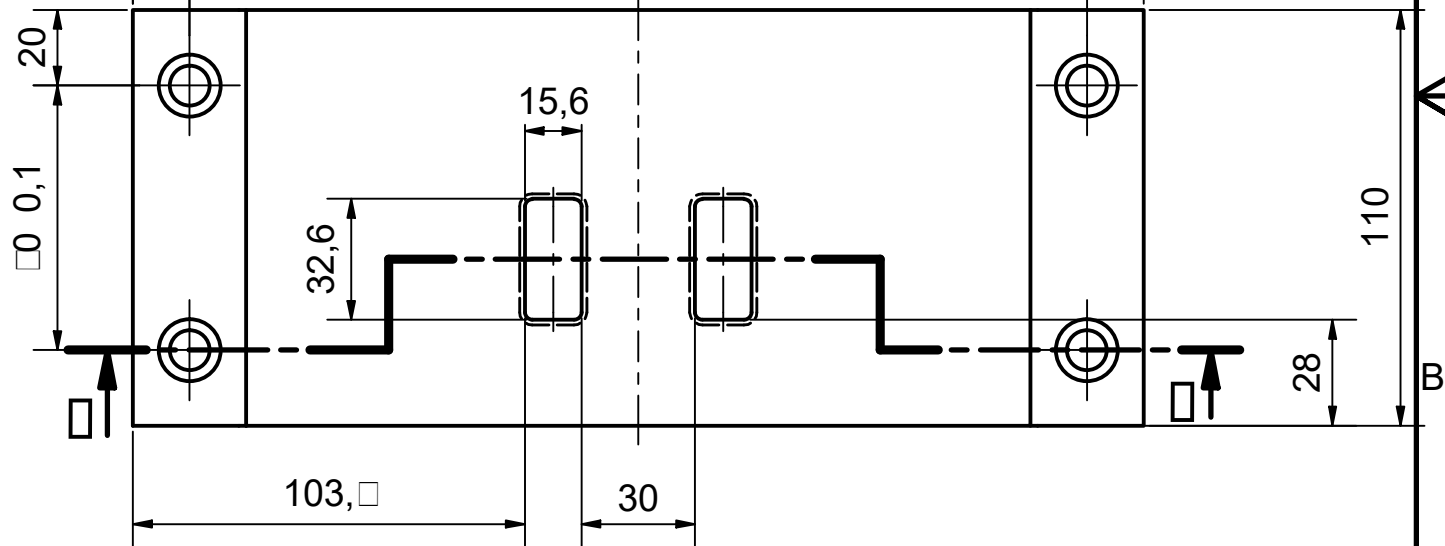
26 \square 4 \square 9

26 \square 4 \square 9

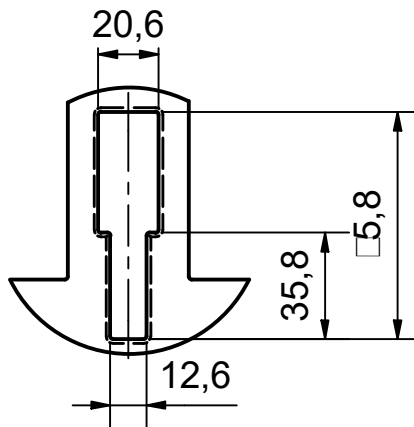
23 \square 4 0,1

23 \square 4 0,1

118, \square



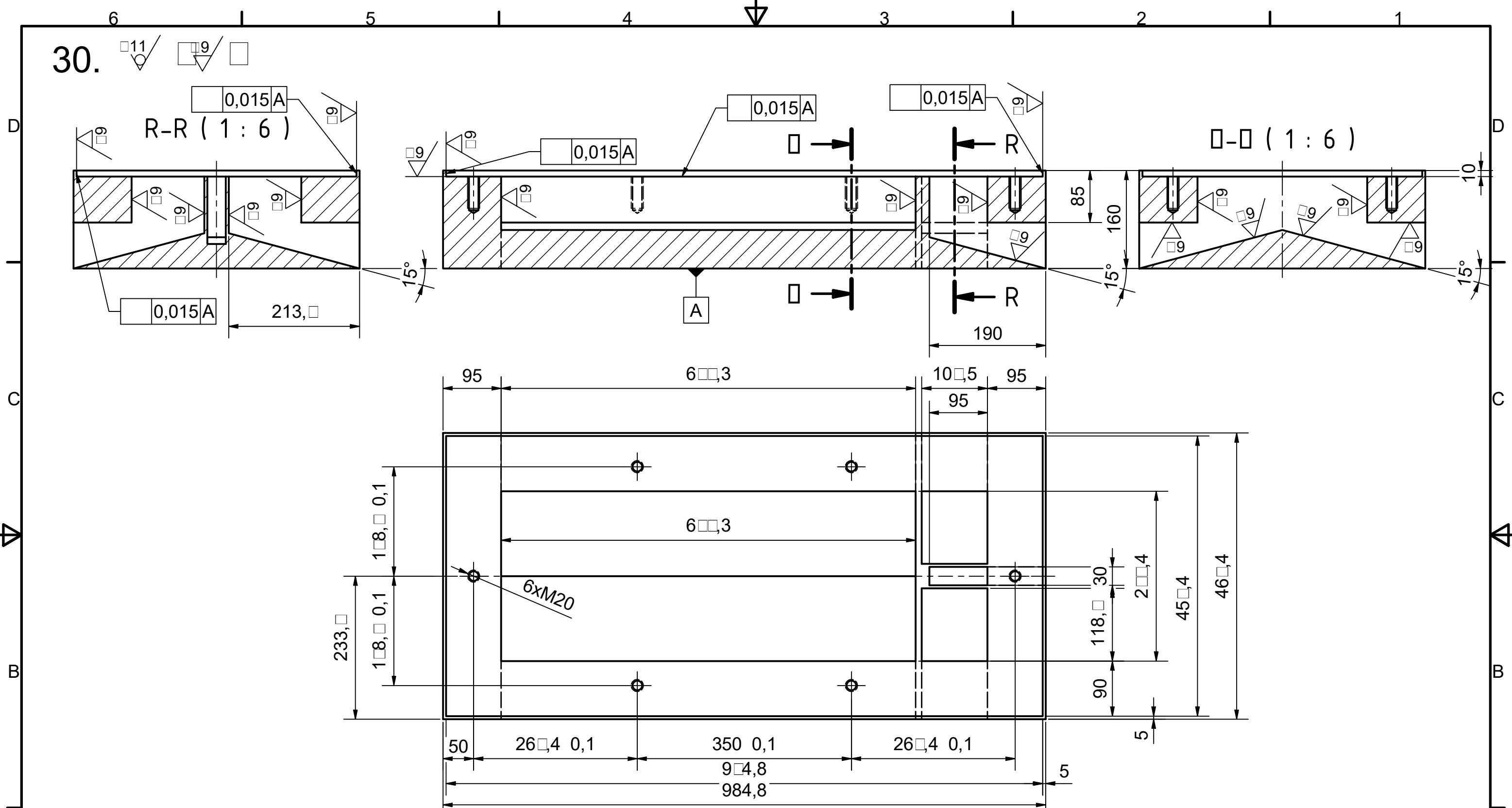
$\square (1:2\text{B})$




Radios no acotados R=1mm

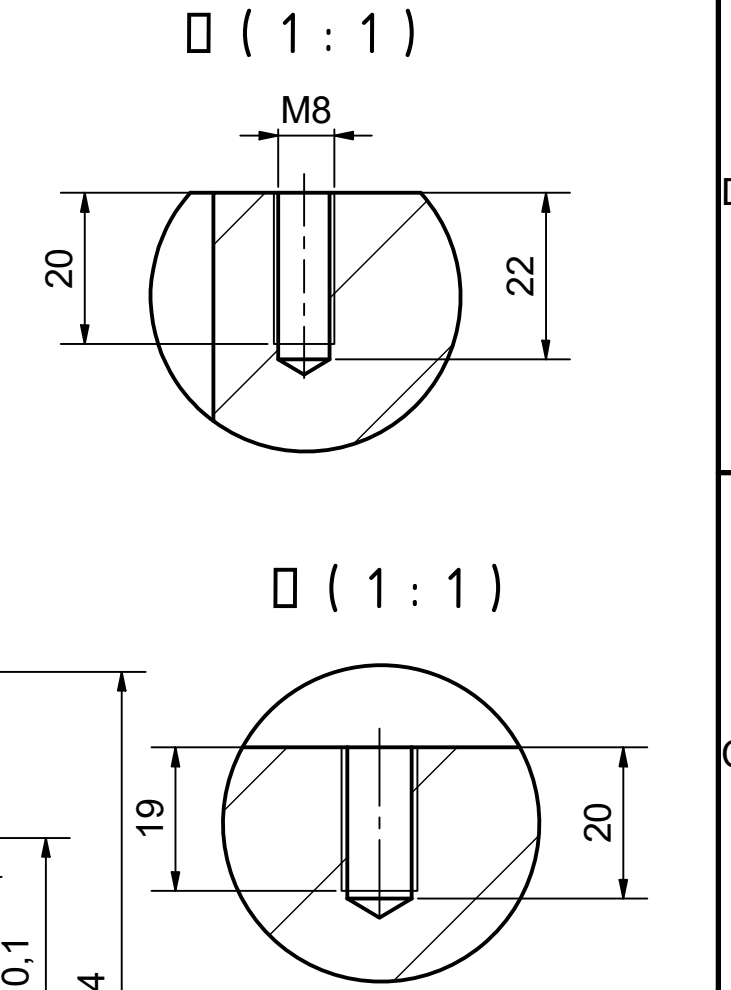
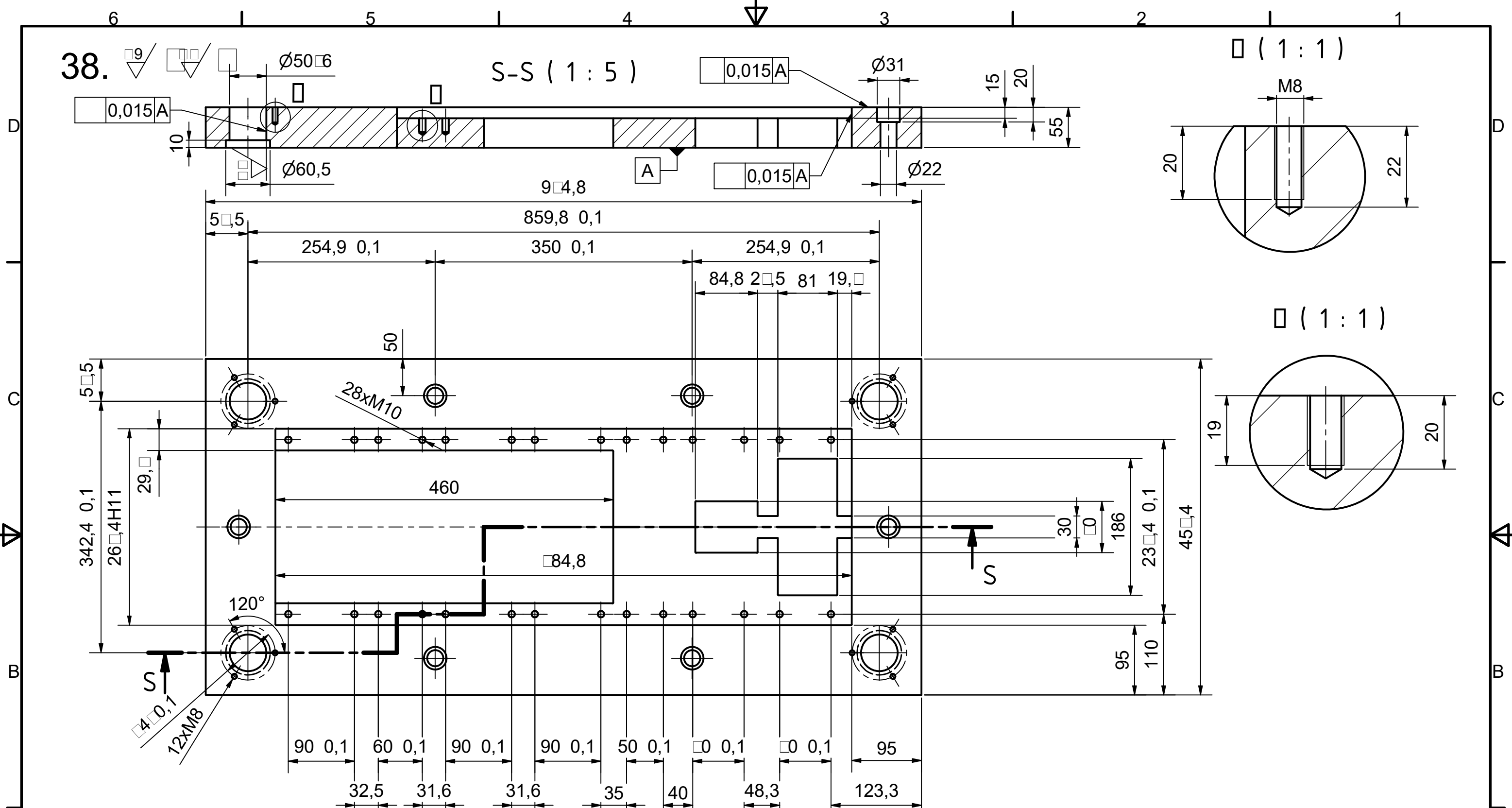
| 30 | 1 | Matriz 6.estaci n | | \square 514 | 6.25 kg |
|-----------------|--------|---|---------------------------|---------------|---|
| 29 | 1 | Matriz 6.estaci n | | \square 514 | 8.44 kg |
| Marka | Kant. | Izendapena | Araudia/Planoa | Materiala | Pisua |
| Marraztua : | | Data | Izen-Abizenak | Sinadurak | EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA |
| Gainbegiratua : | | 15/03/2021 | Ekaitz Churruca Maguregui | | |
| Homologatua : | | 14/05/2021 | Roberto Lobato Gonzalez | | |
| | Eskala | MATRIZ 6 \square \square ESTACI \square | | | Diseño de troquel progresivo para soporte de elementos de pared |
| Perdoi Orok. | 1:2 | | | | Plano Zkia. : P13 |
| ISO 2768-m | | | | | Plano Kop. : 13 / 20 |

30.



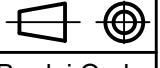


| | | | | | | |
|-----------------|------------|-------------------------|--|-----------|---|-----------|
| 39 | 1 | Contenedor | | | Undici n | 289.54 kg |
| Marka | Kant. | Izendapena | | | Arudia/Planoa | Materiala |
| Marraztua : | 15/03/2021 | Izen-Abizenak | | Sinadurak |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA | |
| Gainbegiratua : | 14/05/2021 | Roberto Lobato Gonzalez | | | | |
| Homologatua : | | | | | | |
| Perdoi Orok. | Eskala | CO□TE□EDOR | | | Diseño de troquel progresivo para soporte de elementos de pared | |
| ISO 2768-m | 1 : 6 | | | | Plano Zkia. : P14 | |
| | | | | | Plano Kop. : 14 / 20 | |

38.

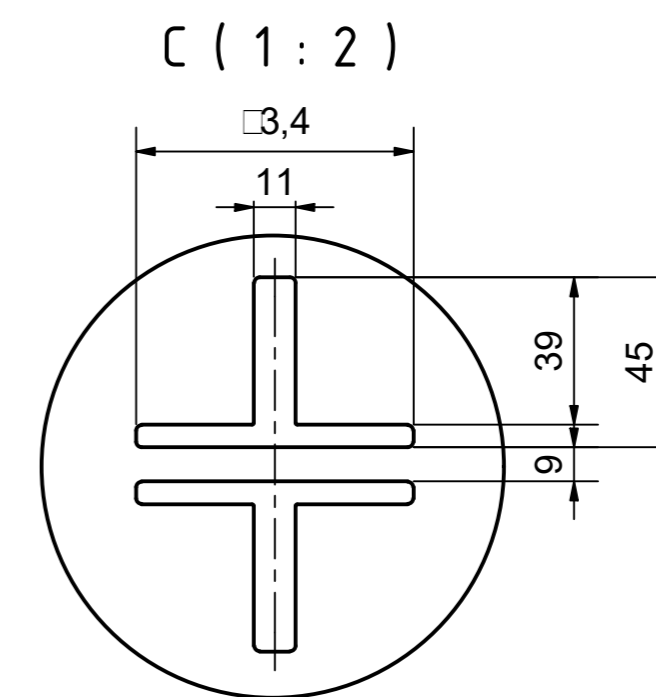
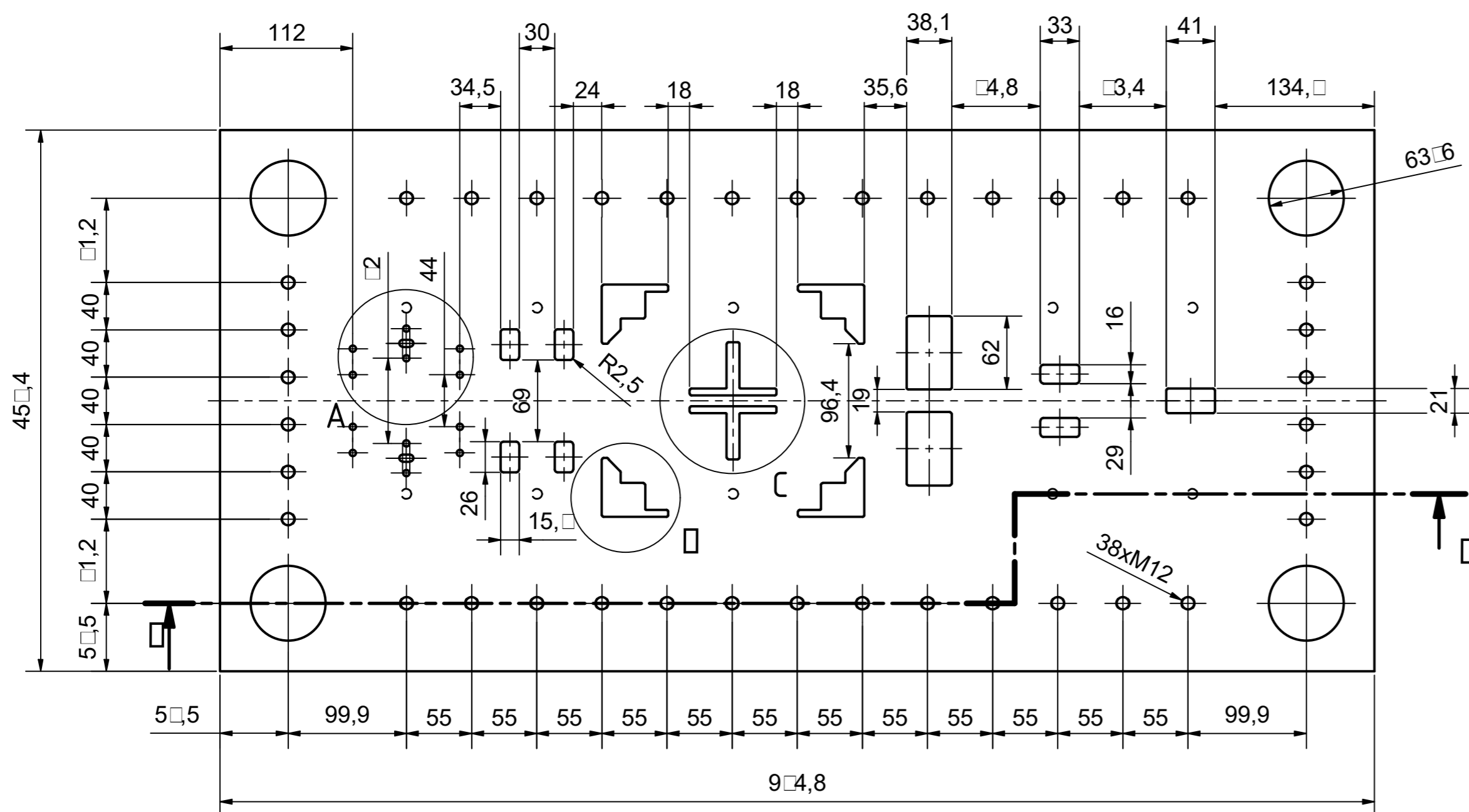
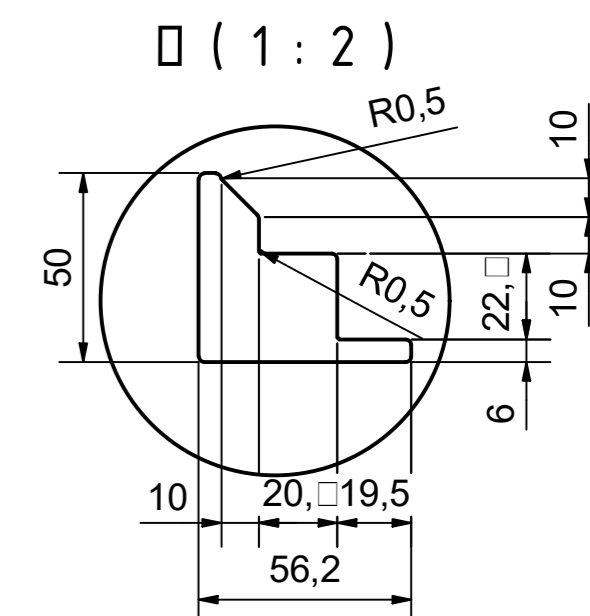
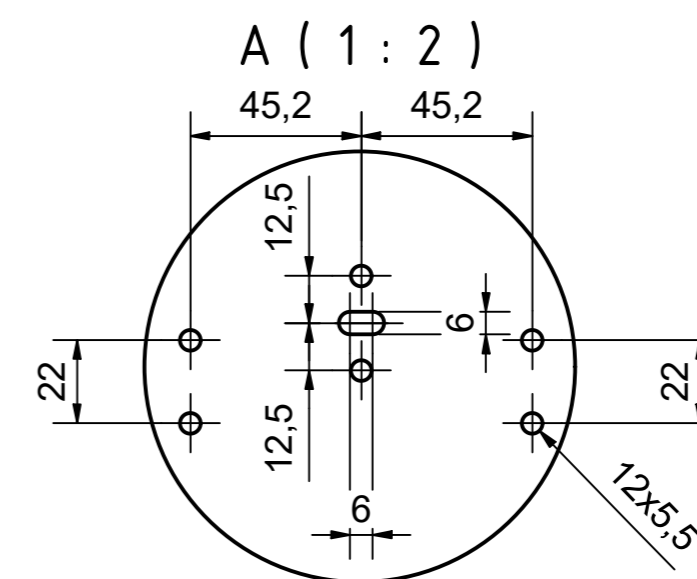
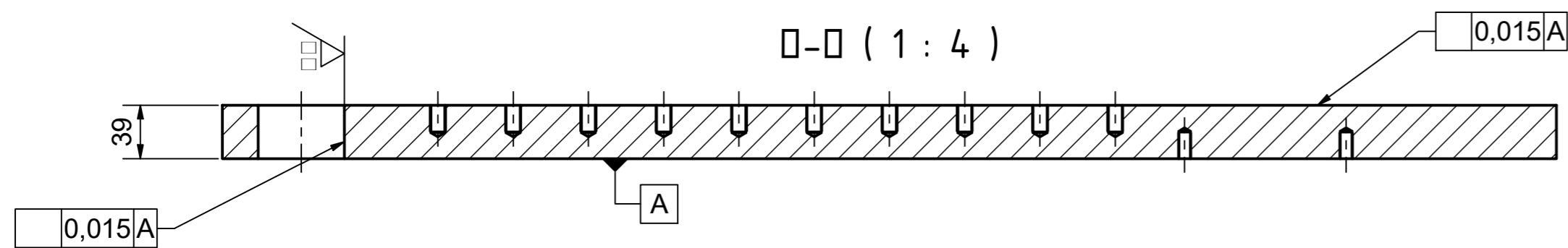
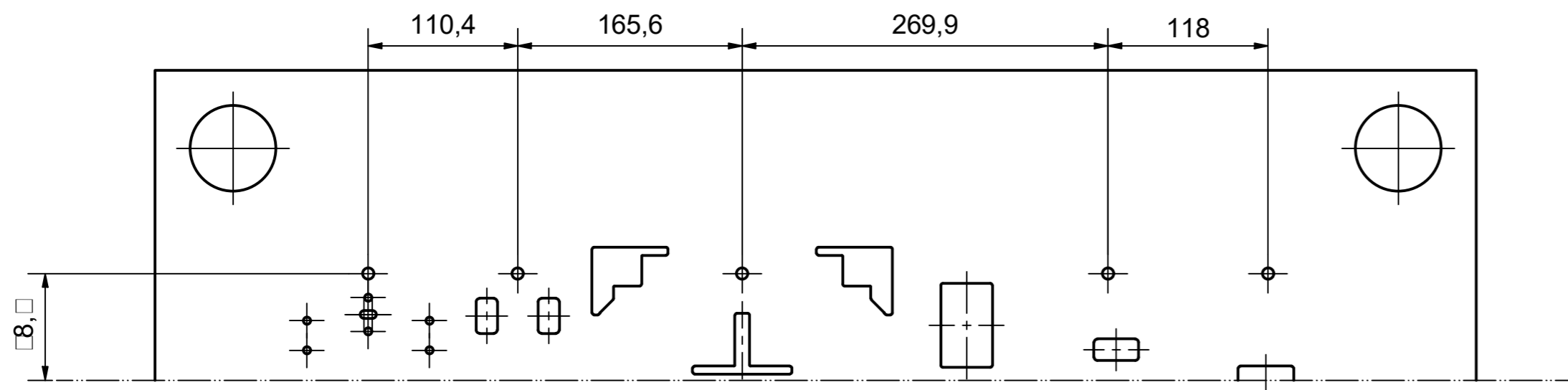


Radios no acotados r=1mm

| 38 | 1 | Placa interior | 314 | 126.16 kg | |
|--|---------------|---------------------------|---|--|---|
| Marca | Kant. | Izendapena | Arudia/Planoa | Materiala | Pisua |
| Marraztua : | 15/03/2021 | Ekaitz Churruca Maguregui |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA | |  |
| Gainbegiratua : | 14/05/2021 | Roberto Lobato Gonzalez | | | |
| Homologatua : | | | | | |
|  Perdoi Orok. ISO 2768-m | Eskala 1:5 | PLACA INTERIOR | | Diseño de troquel progresivo para soporte de elementos de pared | |
| | | | | Plano Zkia. : P15 | |

3

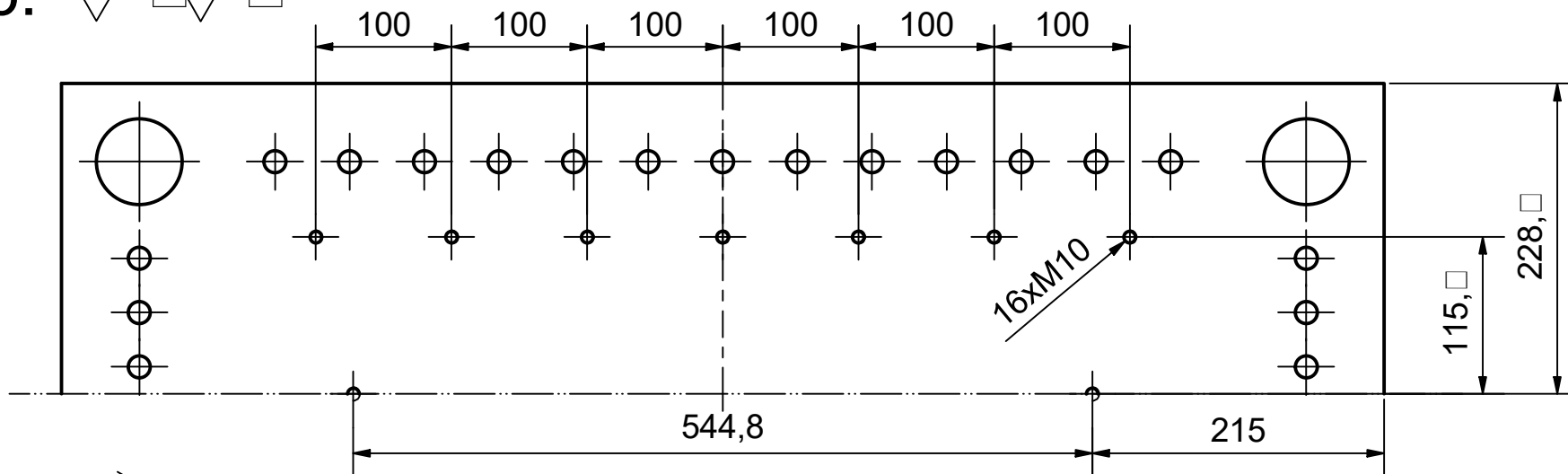
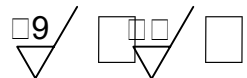
- Radios no acotados r=1,5mm
- Tolerancia entre los ejes de los orificios roscados son de 0,1



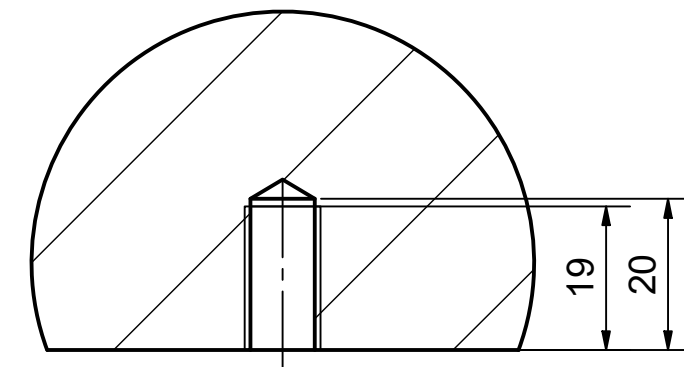
| | | | | | | |
|-----------------|-------|------------|----------------------------|----------------|---|-----------|
| 3 | 1 | Placa guia | | | 314 | 314.03 kg |
| Marca | Kant. | Izendapena | | Araudia/Planoa | Materiala | Pisua |
| Marraztua : | | Data | Izen-Abizenak | Sinadurak | | |
| Gainbegiratua : | | 15/03/2021 | Ekaitz Churrucua Maguregui | | | |
| Homologatua : | | 14/05/2021 | Roberto Lobato Gonzalez | | | |
| Eskala | | PLACA G A | | | Diseño de troquel progresivo para soporte de elementos de pared | |
| Perdoi Orok. | | | | | Plano Zkia. : P16 | |
| ISO 2768-m | | | | | Plano Kop. : 16 / 20 | |



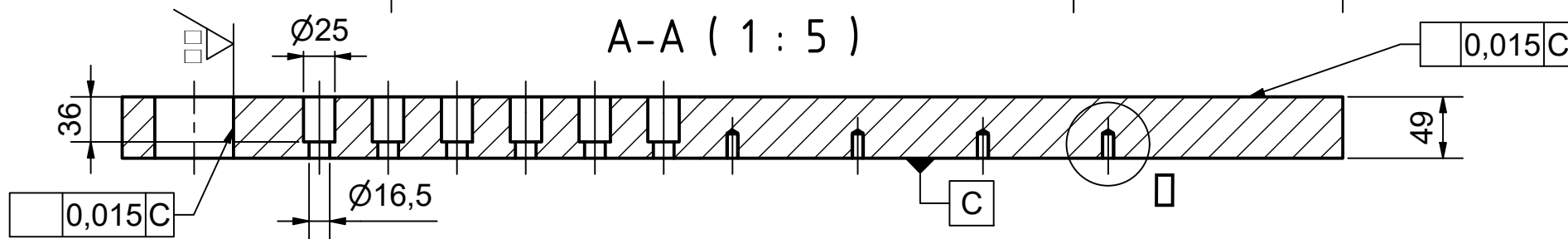
36.



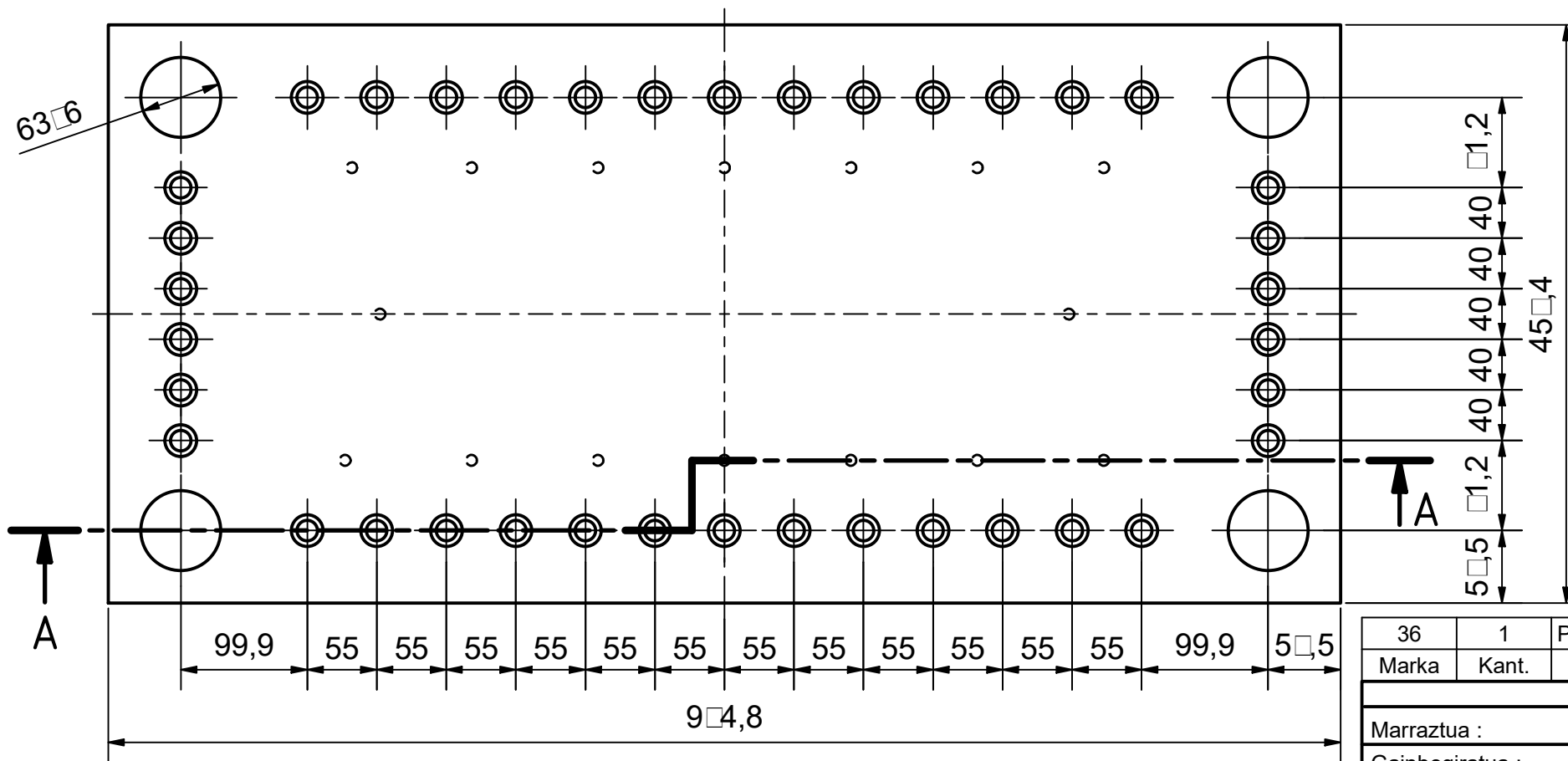
(1 : 1)



A-A (1 : 5)



Tolerancia entre los ejes de los orificios son de 0,1



| | | | | | | |
|-----------------|-------|----------------|----------------------------|-----------|---|---|
| 36 | 1 | Placa superior | | | 314 | 29,19 kg |
| Marca | Kant. | Izendapena | | | Arudia/Planoa | Materiala |
| Marraztua : | | Data | Izen-Abizenak | Sinadurak | EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA | |
| Gainbegiratua : | | 15/03/2021 | Elaitz Churrucua Maguregui | | | |
| Homologatua : | | 14/03/2021 | Roberto Lobato Gonzalez | | | |
| Perdoi Orok. | | Eskala | PLACA SUPERIOR | | | Diseño de troquel progresivo para soporte de elementos de pared |
| ISO 2768-m | | 1 : 5 | | | | Plano Zkia. : P1 |
| | | | | | | Plano Kop. : 1 / 20 |

28.

Radios no acotados r=1,5mm

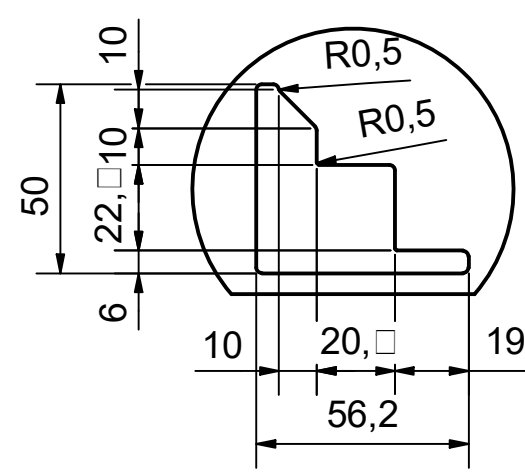
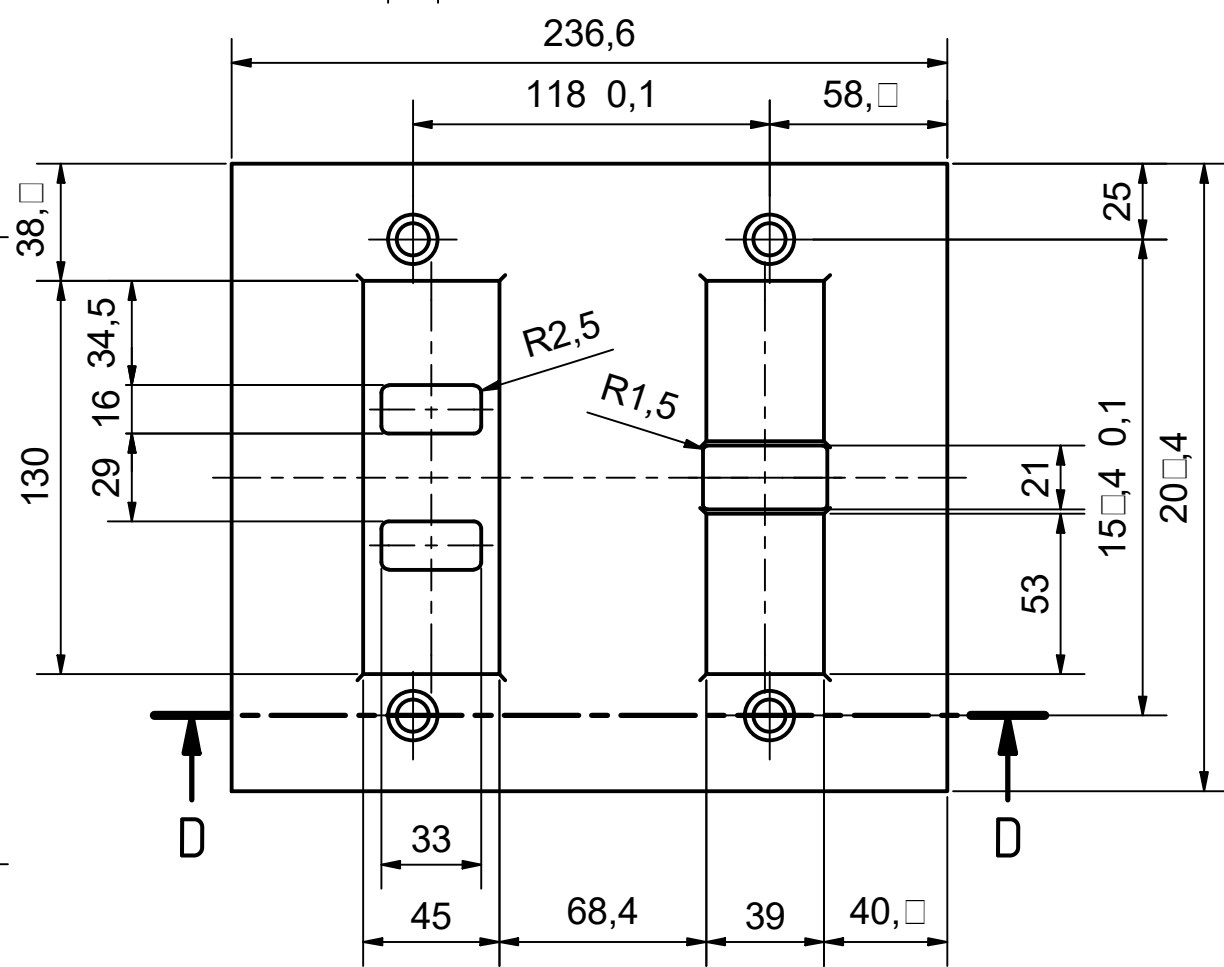
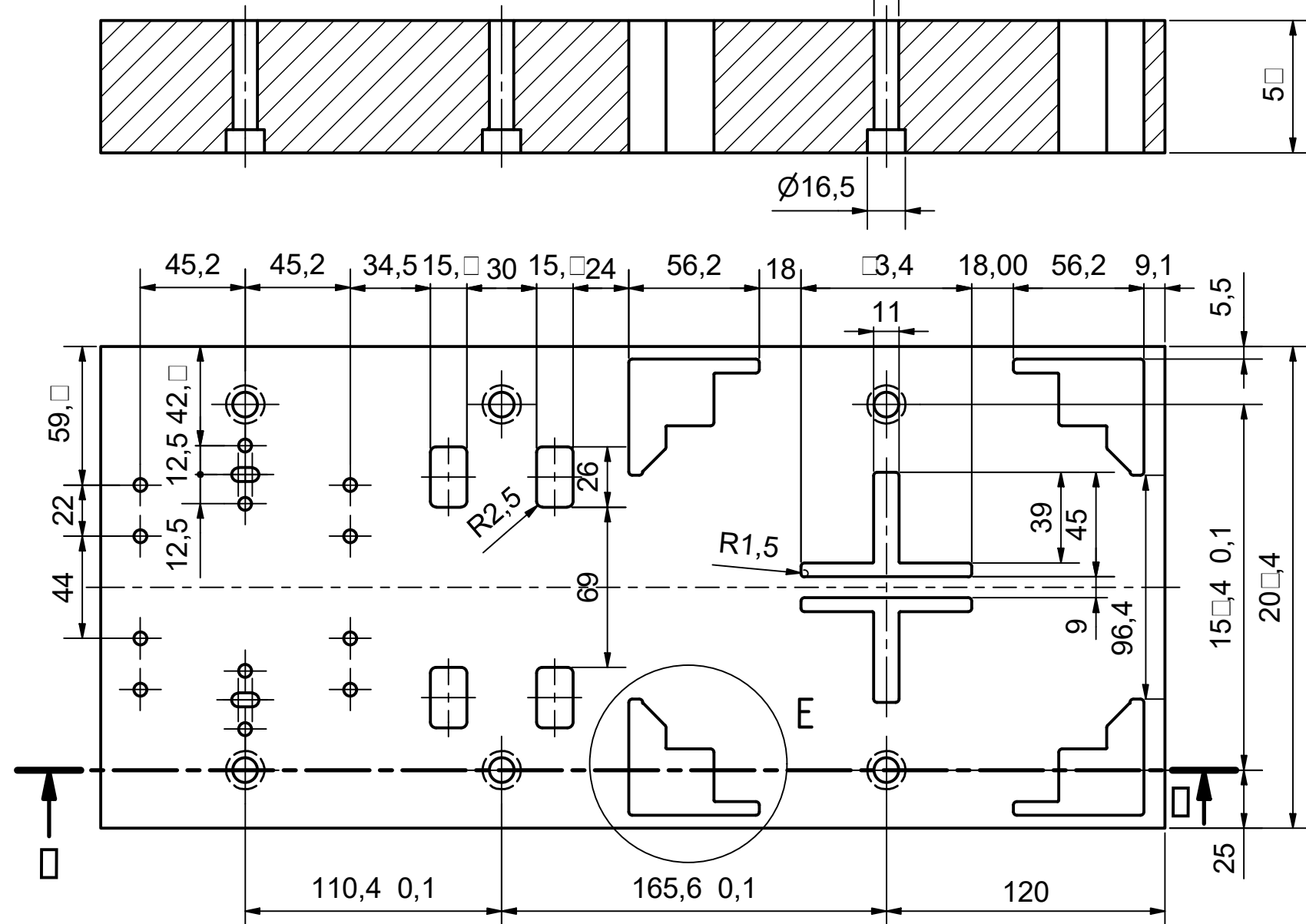
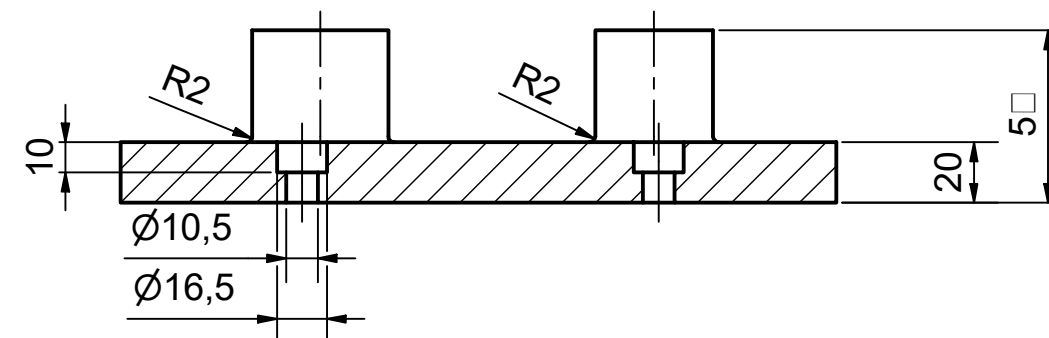
2

D-D (1 : 2)


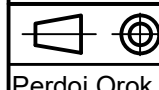
□-□ (1 : 2)

∅10,5

∅16,5



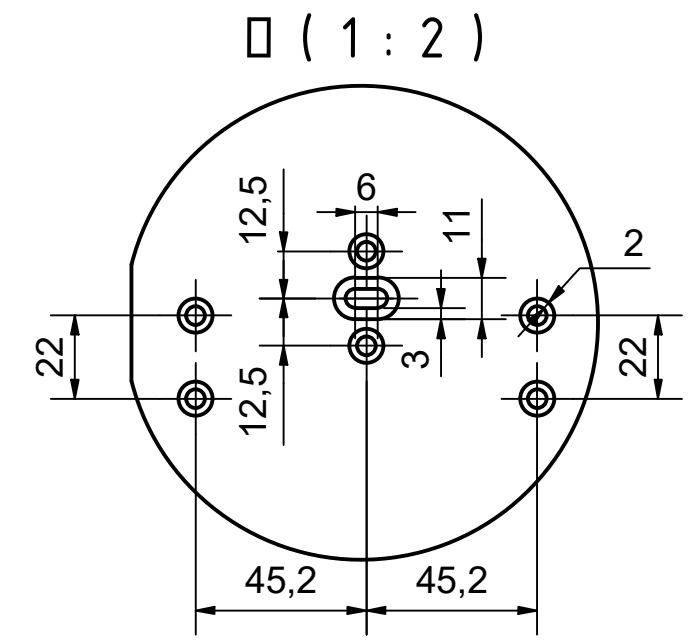
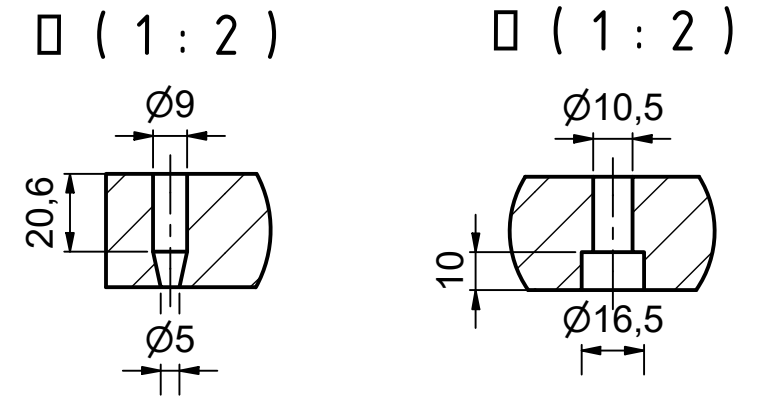
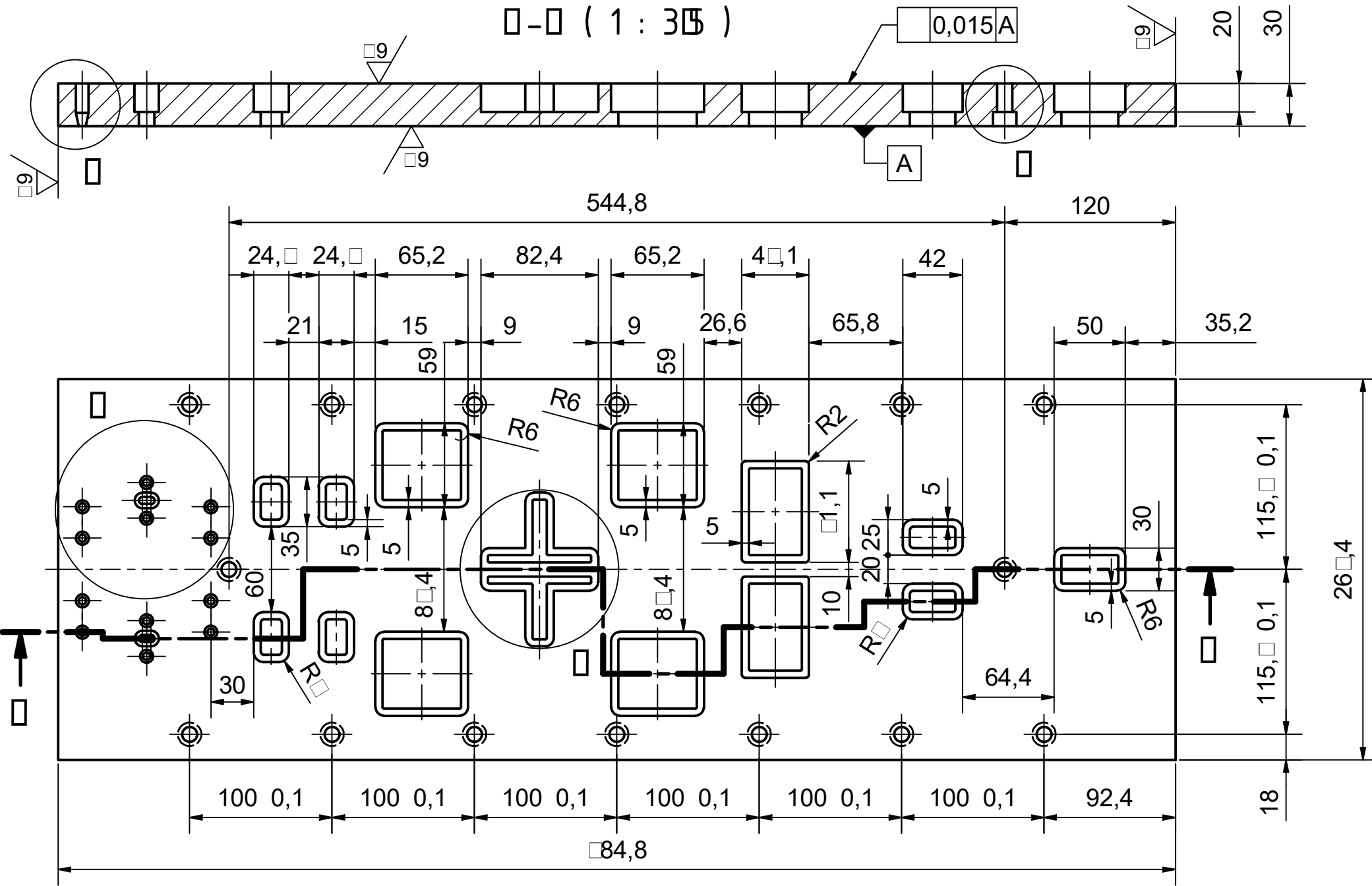
E (1 : 2)

| 28 | 1 | Pisador 1.modulo | | □114 | 3□9□ kg |
|--|-------|------------------|---------------------------|---|--|
| 2□ | 1 | Pisador 2.modulo | | □114 | 10.21 kg |
| Marka | Kant. | Izendapena | Araudia/Planoa | Materiala | Pisua |
| Marrastua : | | 15/03/2021 | Ekaitz Churruca Maguregui |  EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA | |
| Gainbegiratua : | | 14/05/2021 | Roberto Lobato Gonzalez | | |
| Homologatua : | | | | | |
|  Perdoi Orok. ISO 2768-m | | Eskala 1 : 1 | PISADORES | | Diseño de troquel progresivo para soporte de elementos de pared |
| | | | | | Plano Zkia. : P18 Plano Kop. : 18 / 20 |

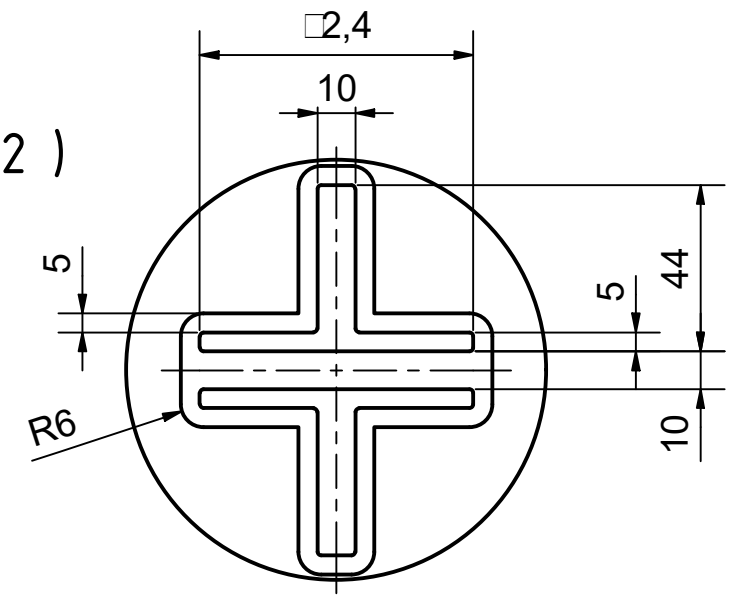
26.

□-□ (1 : 3)

- Radios no acotados r=1mm
- Todos los orificios 0,005A
- El ajuste de todos los orificios son de



□ (1 : 2)



| | | | | | | | |
|-----------------|-------|----------------------|---------------------------|-----------|---|---|--|
| 26 | 1 | Placa porta punzones | | | □314 | 42.28 kg | |
| Marca | Kant. | Izendapena | | | Arudia/Planoa | Materiala | |
| Marraztua : | | Data | Izen-Abizenak | Sinadurak | EUSKAL HERRIKO UNIBERTSITATEA BILBOKO INDUSTRIA INGENIARITZA TEKNIKORAKO UNIBERTSITATE ESKOLA | | |
| Gainbegiratua : | | 15/03/2021 | Ekaitz ChurrUCA Maguregui | | | | |
| Homologatua : | | 14/05/2021 | Roberto Lobato Gonzalez | | | | |
| | | Eskala | PLACA PORTA P□□ZO□ES | | | Diseño de troquel progresivo para soporte de elementos de pared | |
| Perdoi Orok. | 1 : 4 | | | | | Plano Zkia. : P19 | |
| ISO 2768-m | | | | | | Plano Kop. : 19 / 20 | |

