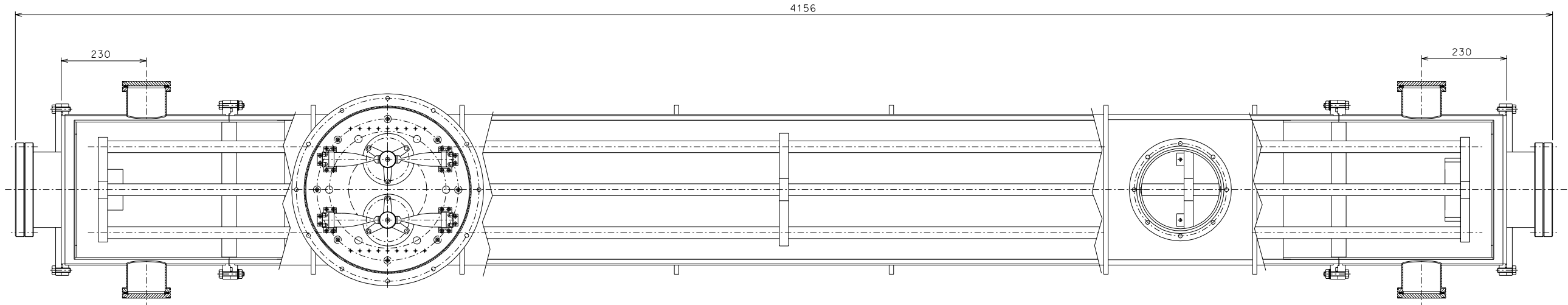
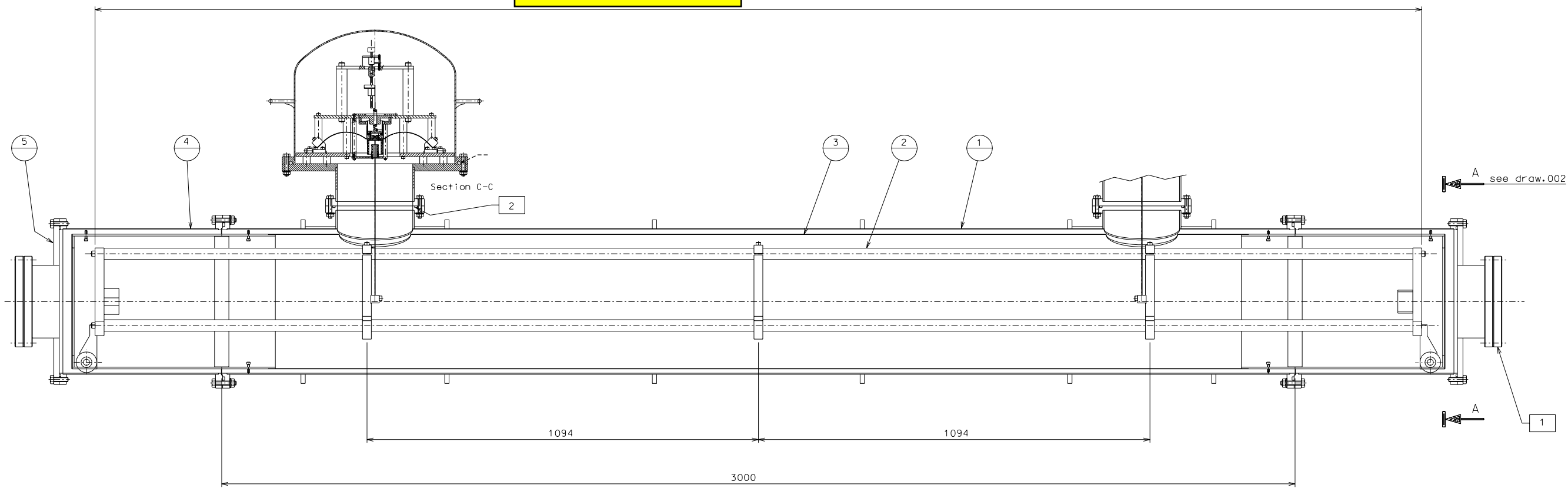


5 Modifications
LIGO-D050286-06

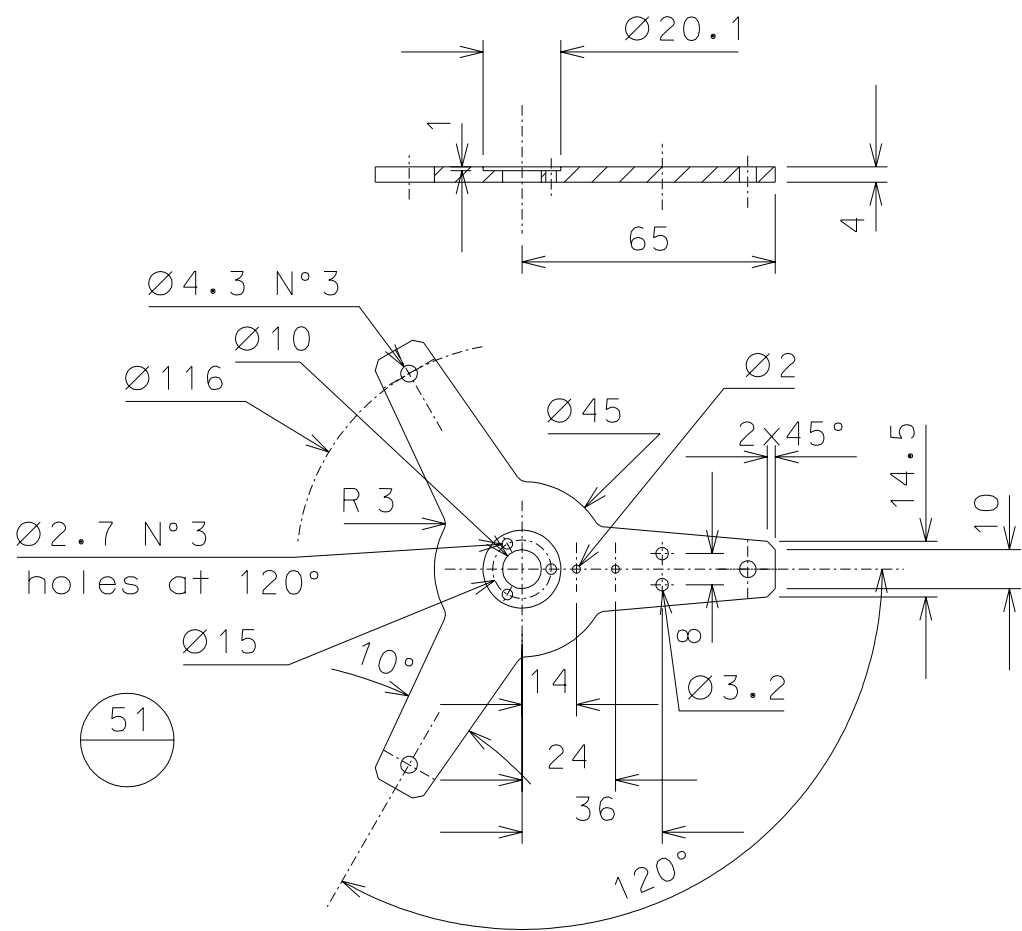


- By market
- 1 Flange DN 200 n°2 pc
 - 2 DR 6870 n°2

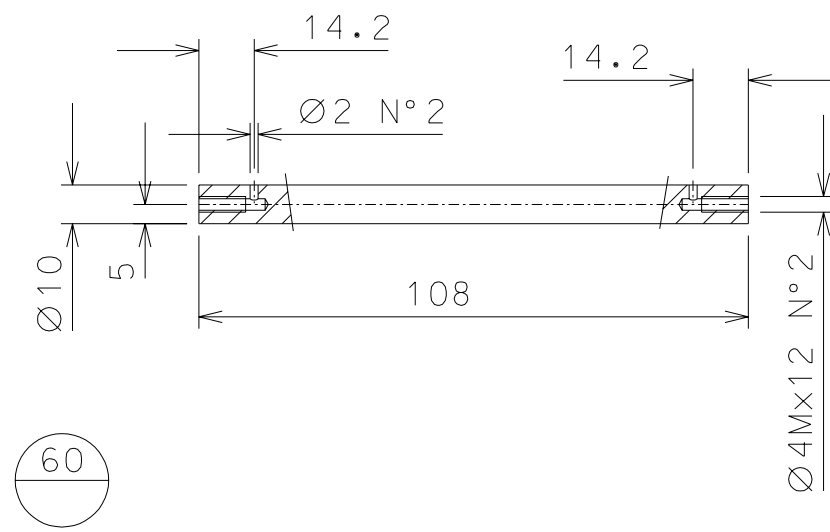
| | | | | |
|------|-------|-------------------|------|-------|
| 5 | 013 | Vacuum end flange | | |
| 4 | 012 | Vacuum spool | | |
| 3 | 012 | Main heat shield | | |
| 2 | 012 | Invar rod | | |
| 1 | 011 | Main vacuum pipe | | |
| ref. | draw. | added legend | ref. | draw. |

| | | | |
|---------------|------|------|-----------|
| | | | |
| | | | |
| ref. | note | date | signature |
| modifications | | | |

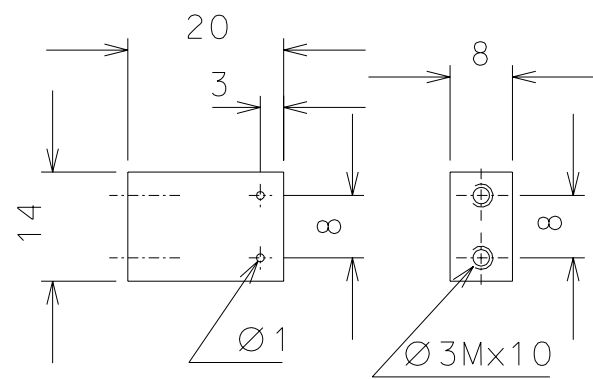
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|------------------------------------|--|---|
| | | designed for R. De Salvo draw. by PROMEC ass. num. LASER-000 date 12-02-04 scale 1:6 issue A replaces draw. n° A 1 |
| title LASER GENERAL ASSEMBLY | | |



51



60



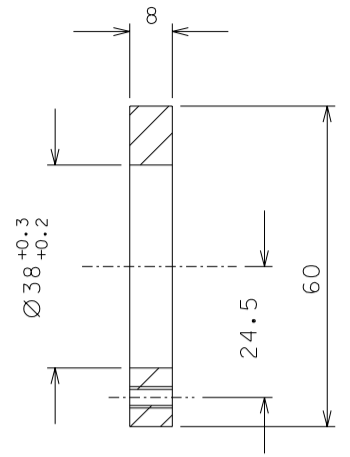
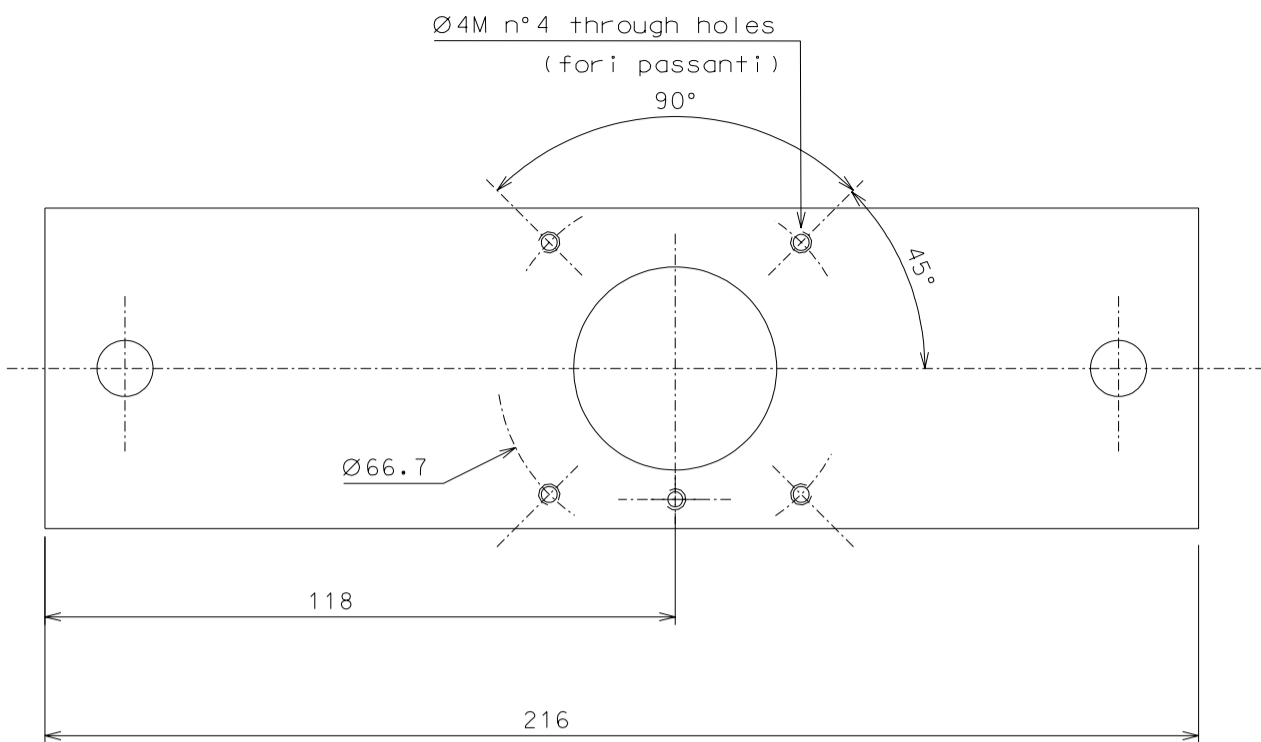
51
1

| | | | |
|---------------|------|------|-----------|
| ref. | note | date | signature |
| modifications | | | |

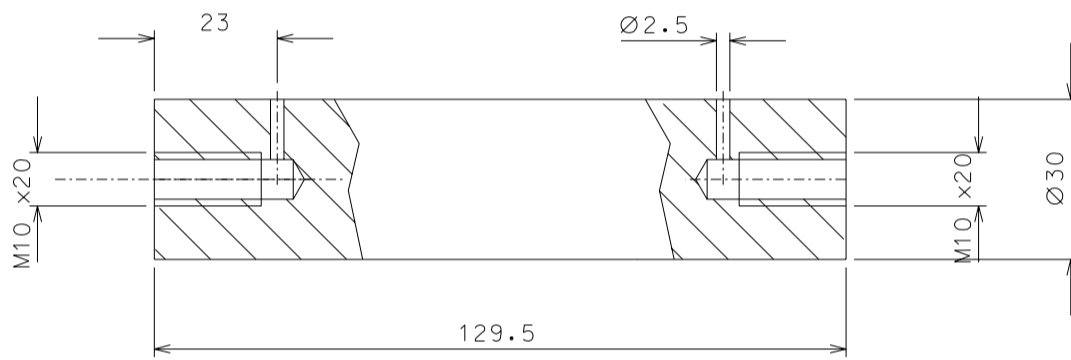
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|------|--------|---------------------|-------|------|--------|---------------------|-------|
| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |
| 60 | 12 | AISI 304 | 1:2 | | | | |
| 51.1 | 4 | AISI 304 | 1:2 | | | | |
| 51 | 4 | peek | 1:2 | | | | |

| General machining tolerances UNI 5307-63 | | | | | | | | |
|--|-------|--------|----------|-------------------------------------|------------|-------------|-------------|--------|
| Dimensions | < 6 | > 6-30 | > 30-120 | > 120-315 | > 315-1000 | > 1000-2000 | > 2000-4000 | > 4000 |
| linear Toll. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 | ± 3 |
| angular Toll. | ± 1 | ± 30' | ± 20' | ± 10' referred to the shortest side | | | | |

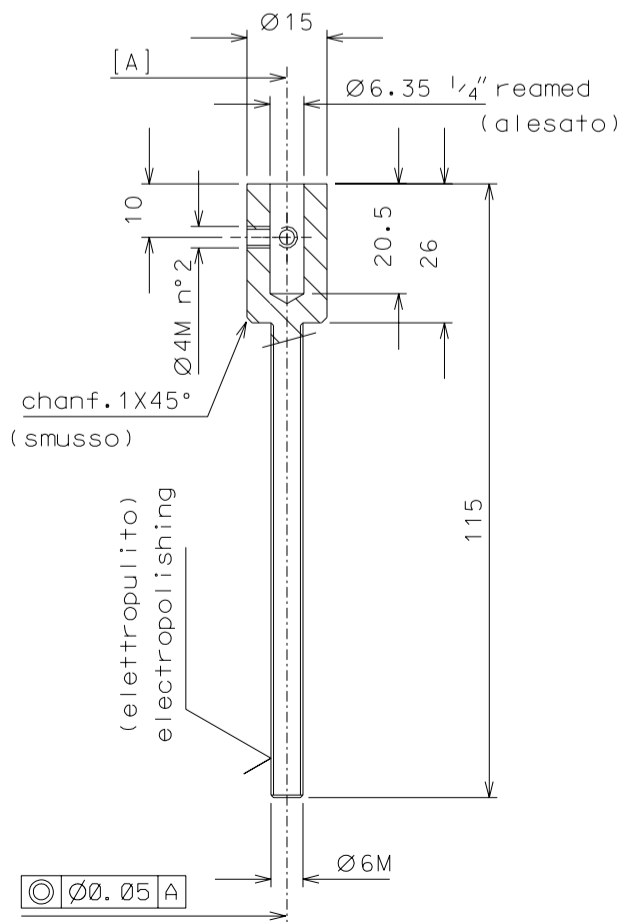
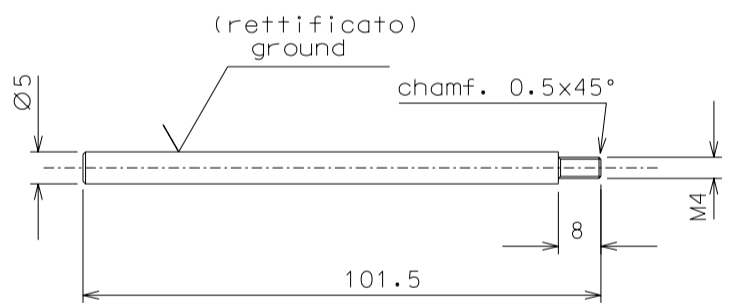
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|---|-----------------------|--------------------------|-----|
| | <h1>LIGO PROJECT</h1> | designed for R. De Salvo | |
| | | draw. by PROMEC | |
| title <h2>LASER DETAILS</h2> | n°draw. Laser.025 | | |
| | date 19-03-04 | scale 1:2 | |
| | detail from 001 | issue A | |
| | replaces draw. n° | | A 3 |



38



35



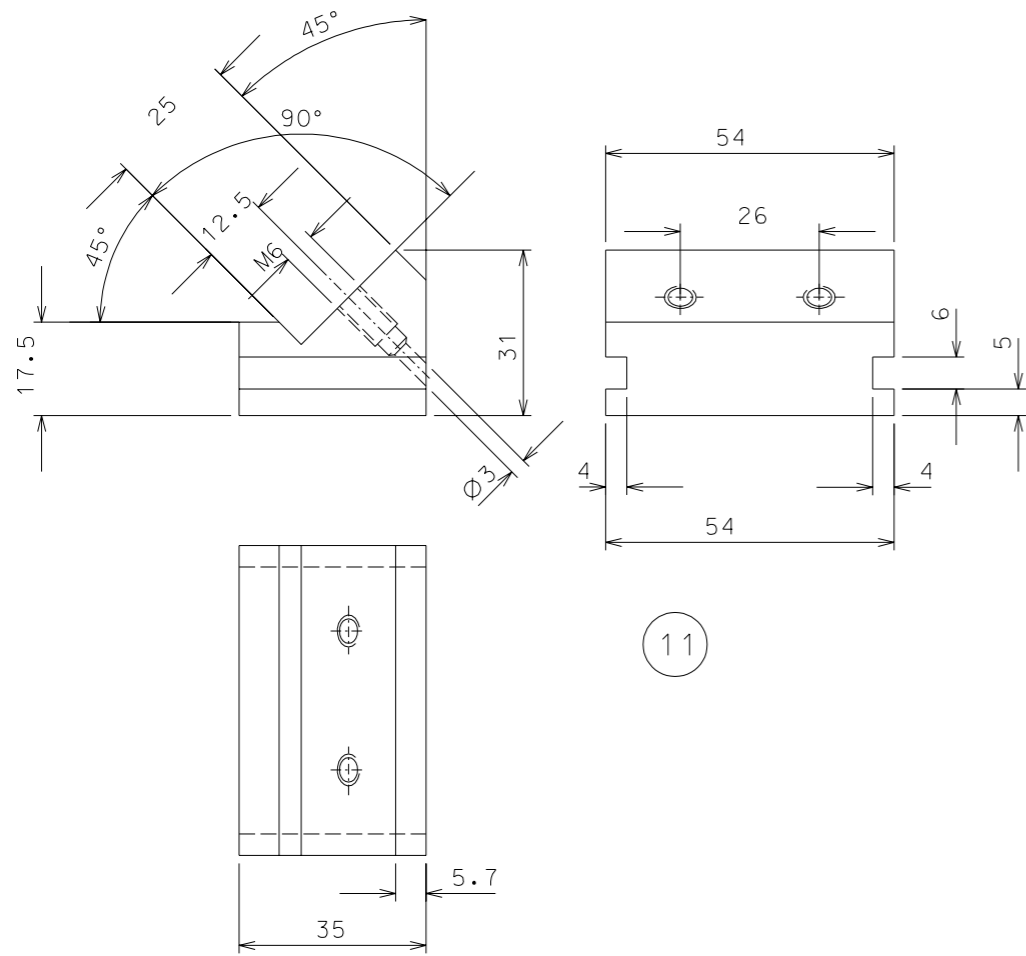
39

| ref. | note | date | signature |
|---------------|------|------|-----------|
| modifications | | | |

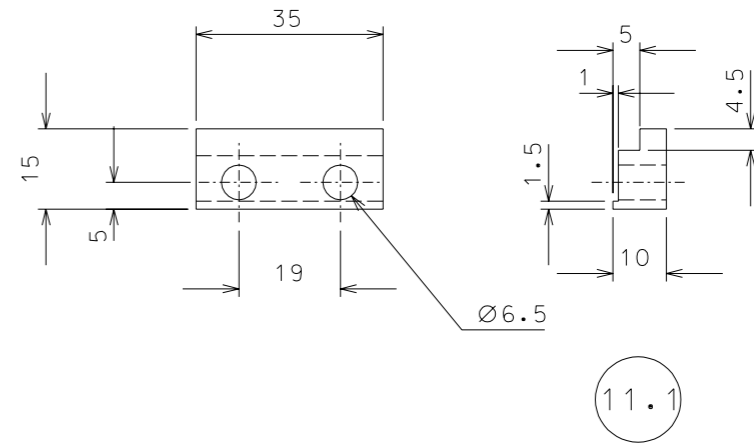
| ref. | pieces | mat. and treatments | scale |
|------|--------|---------------------|-------|
| 41 | 4 | AISI 304 | 1:1 |
| 39 | 4 | " | 1:1 |
| 38 | 4 | AISI 304 L | 1:1 |
| 35 | 8 | AISI 304 | 1:1 |

| General machining tolerances UNI 5307-63 | | | | | | | | |
|--|-----------|-----------|-----------|---|------------|-------------|-------------|---------|
| Dimensions | < 6 | > 6-30 | > 30-120 | > 120-315 | > 315-1000 | > 1000-2000 | > 2000-4000 | > 4000 |
| linear Toll. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 | ± 3 |
| angular Toll. | $\pm 1'$ | $\pm 30'$ | $\pm 20'$ | $\pm 10'$ referred to the shortest side | | | | |

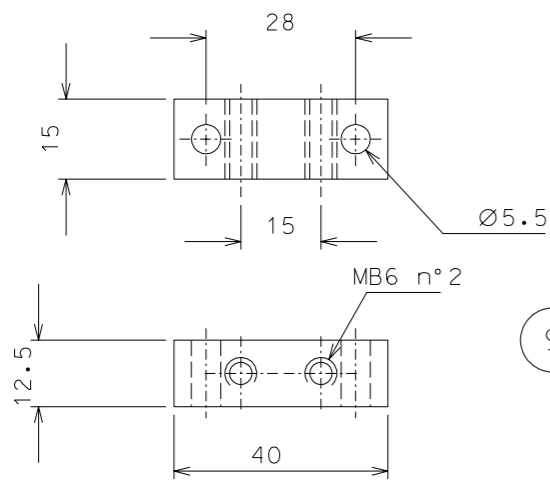
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|---------------------|--|--------------------------|-----------|
| draw. by PROMEC | | n° draw. Laser. 023 | |
| title LASER DETAILS | | date 19-03-04 | scale 1:1 |
| replaces draw. n° | | detail from 001 | issue A |
| | | A 2 | |



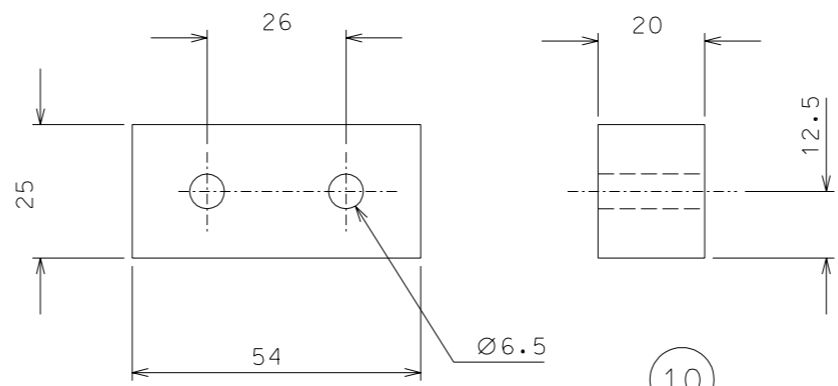
11



11.1



9



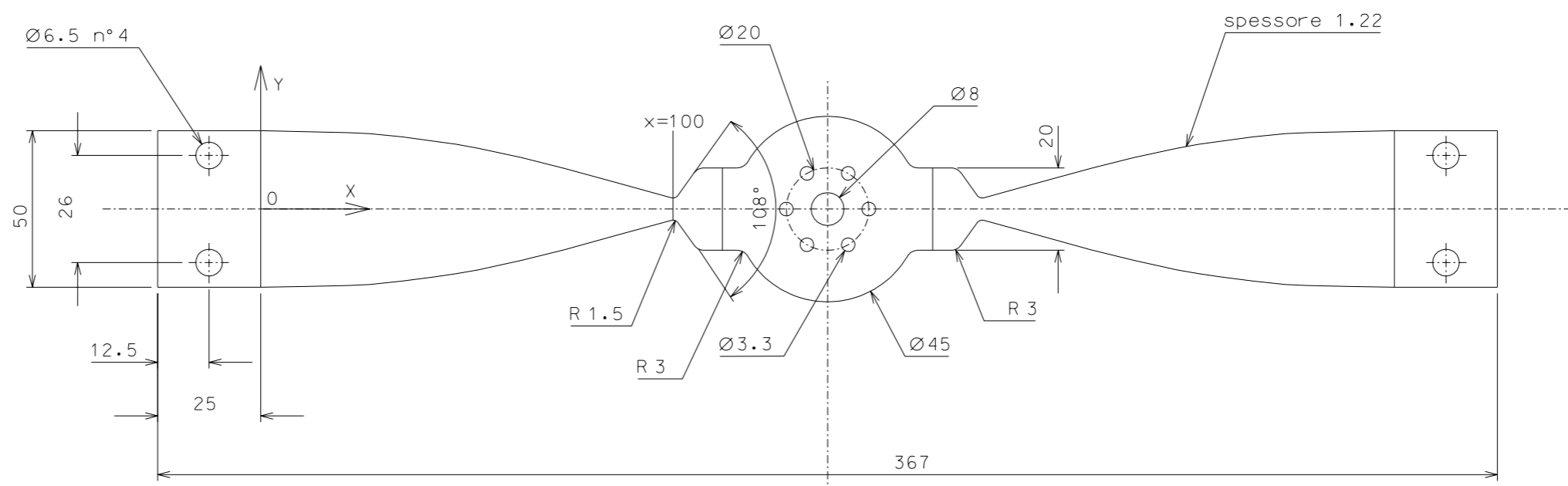
10

| ref. | note | date | signature |
|---------------|------|------|-----------|
| modifications | | | |

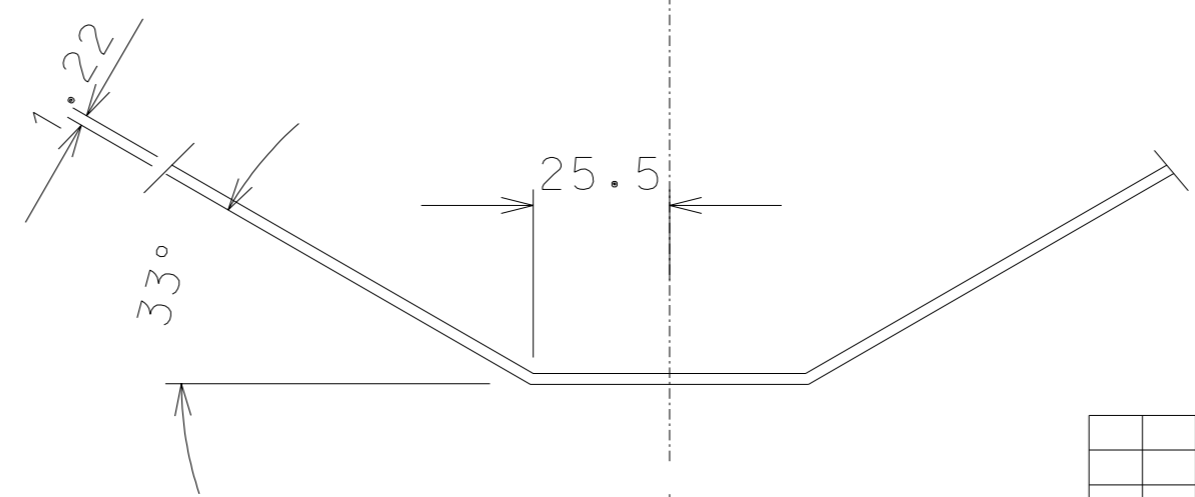
| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |
|------|--------|---------------------|-------|------|--------|---------------------|-------|
| 11.1 | 16 | Nickel plated steel | 1:1 | | | | |
| 11 | 8 | Nickel plated steel | 1:1 | | | | |
| 10 | 8 | Nickel plated steel | 1:1 | | | | |
| 9 | 8 | Nickel plated steel | 1:1 | | | | |

| General machining tolerances UNI 5307-63 | | | | | | | | |
|--|-------|--------|----------|-------------------------------------|------------|-------------|-------------|--------|
| Dimensions | < 6 | > 6-30 | > 30-120 | > 120-315 | > 315-1000 | > 1000-2000 | > 2000-4000 | > 4000 |
| linear Toll. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 | ± 3 |
| angular Toll. | ± 1 | ± 30' | ± 20' | ± 10' referred to the shortest side | | | | |

| | | | |
|--------------------------|---------------------|--------------------------|-----------|
| | LIGO PROJECT | designed for R. De Salvo | |
| | | draw. by PROMEC | |
| | | n°draw. Laser.018 | |
| LASER DETAILS | date | 5-02-04 | scale 1:1 |
| | detail from | 001 | issue A |
| | replaces draw. n° | | A 2 |



| X | Y |
|--------|-------|
| 0.00 | 25.00 |
| 24.55 | 24.40 |
| 28.94 | 21.67 |
| 61.13 | 19.41 |
| 85.53 | 13.00 |
| 116.00 | 3.55 |

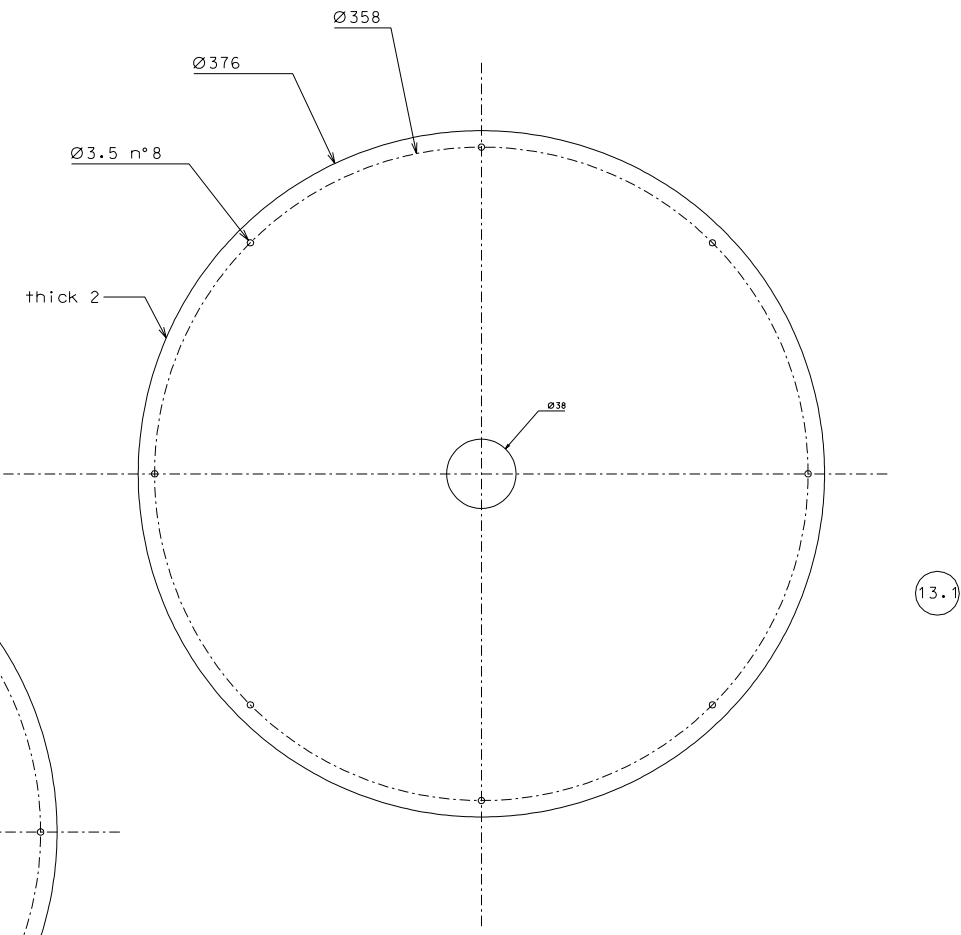
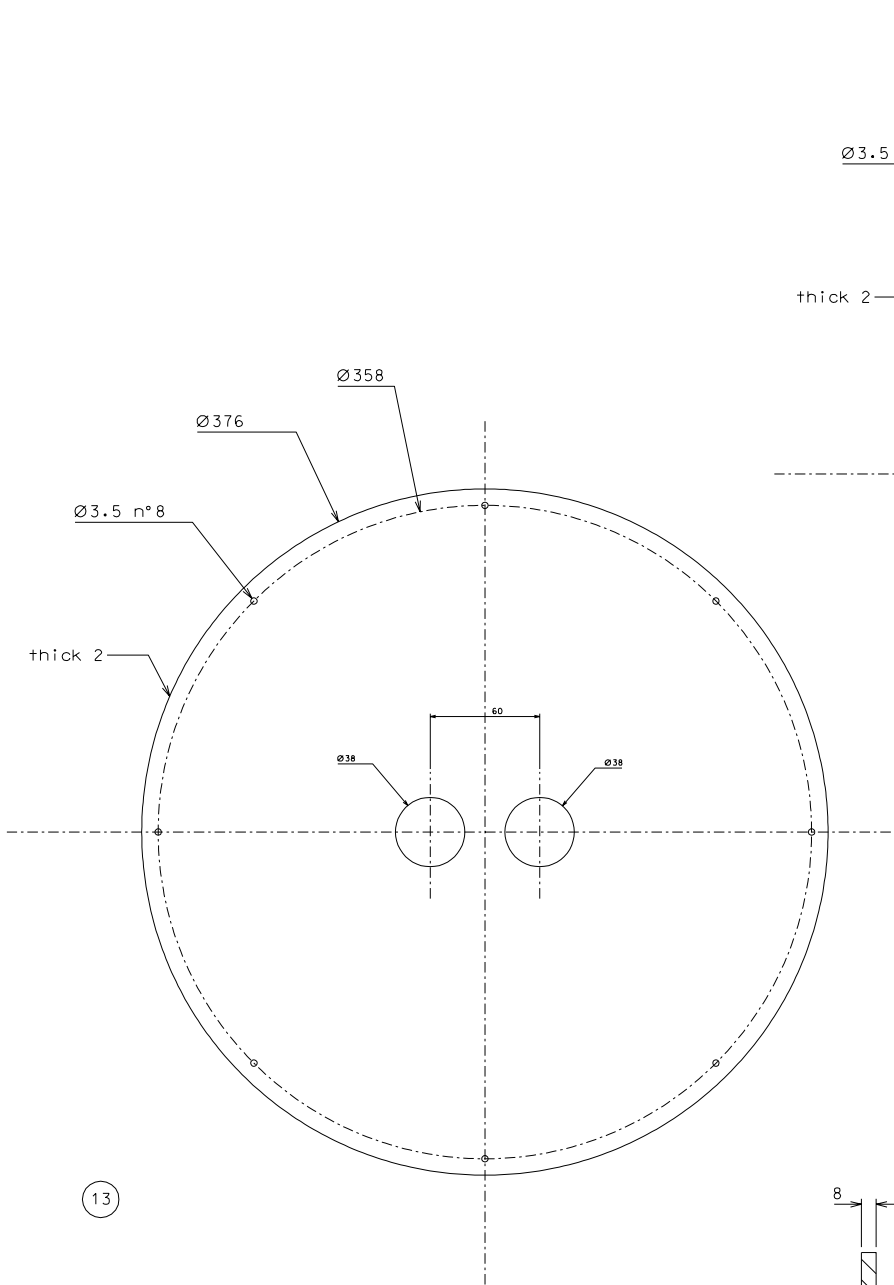


| | | | | | | | |
|------|--------|---------------------|-------|------|--------|---------------------|-------|
| | | | | | | | |
| 7 | 4 | maraging | 1:1 | | | | |
| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |

| General machining tolerances UNI 5307-63 | | | | | | | |
|--|-------|--------|----------|-------------------------------------|------------|-------------|-------------|
| Dimensions | < 6 | > 6-30 | > 30-120 | > 120-315 | > 315-1000 | > 1000-2000 | > 2000-4000 |
| linear Toll. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 |
| angular Toll. | ± 1 | ± 30' | ± 20' | ± 10' referred to the shortest side | | | |

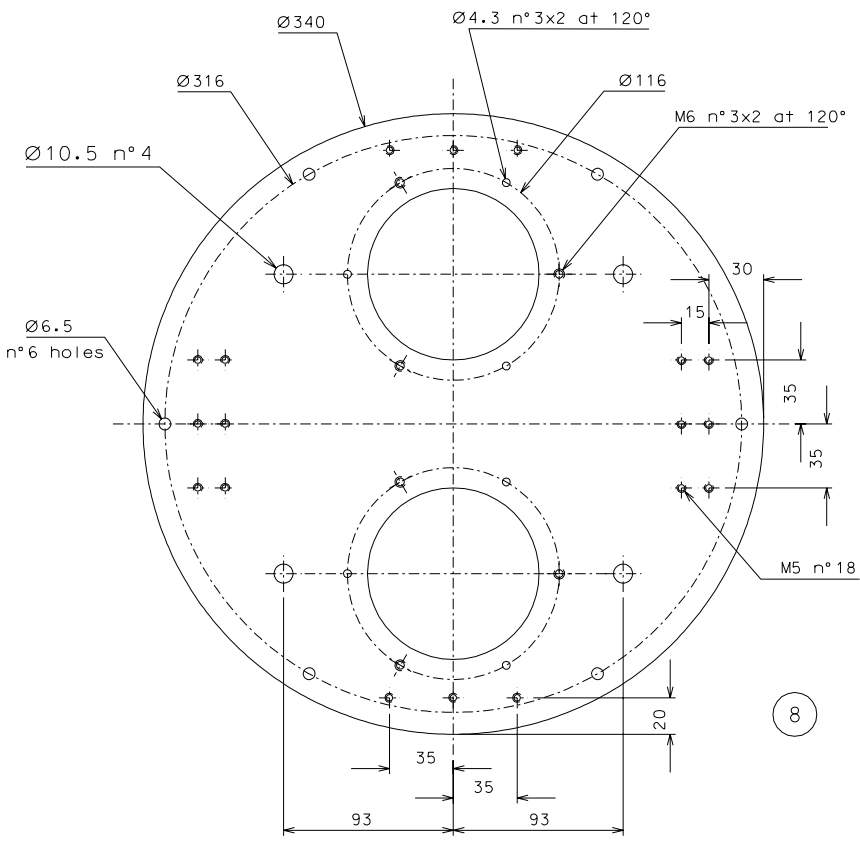
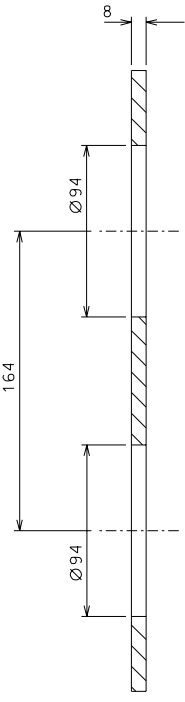
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|---------------|------|------|-----------|
| | | | |
| | | | |
| | | | |
| ref. | note | date | signature |
| modifications | | | |

| | | | |
|-------|----------------|--------------------------|-----------|
| | LIGO PROJECT | designed for R. De Salvo | |
| | | draw. by PROMEC | |
| | | n°draw. Laser.017 | |
| title | LASER BLADE | date 5-02-04 | scale 1:1 |
| | | detail from 001 | issue A |
| | | replaces draw. n° | A 2 |

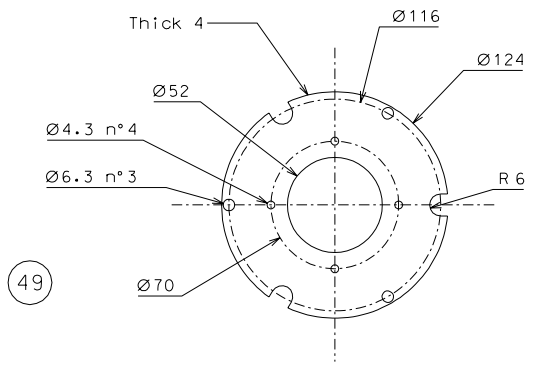


13

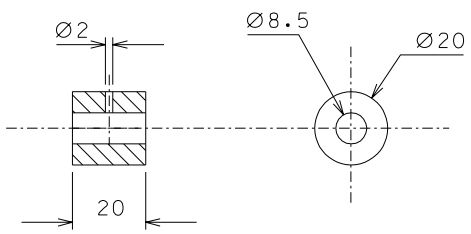
13.1



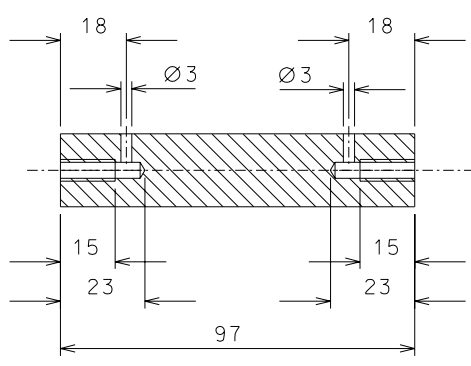
8



49



44

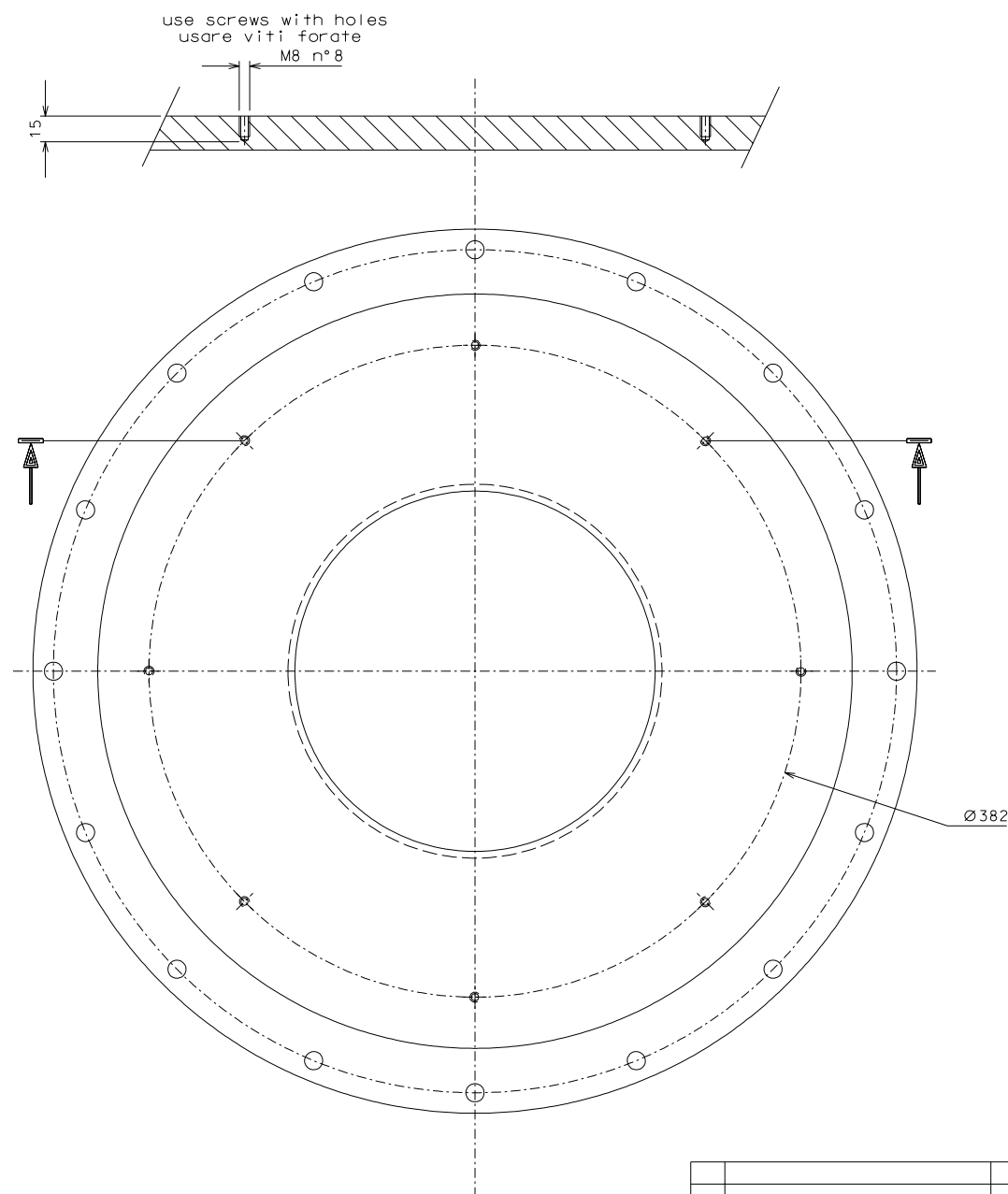
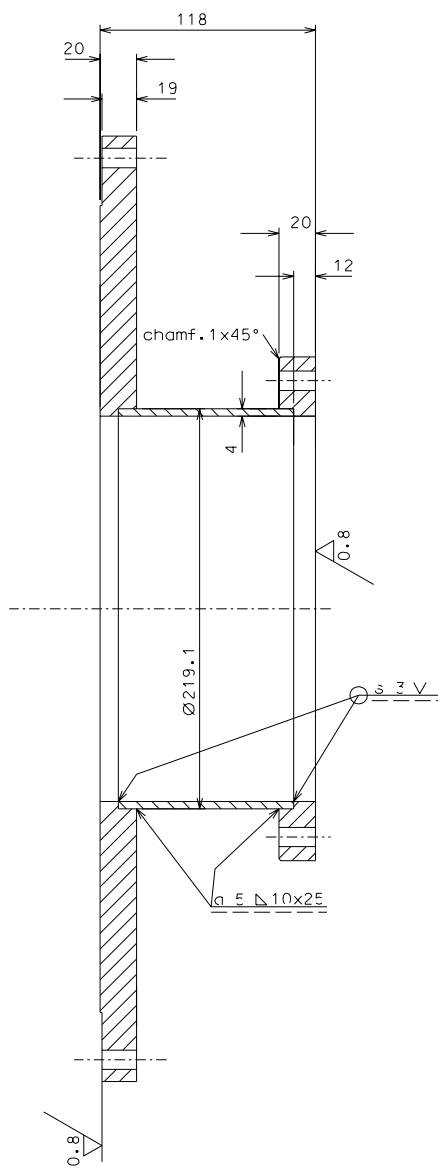
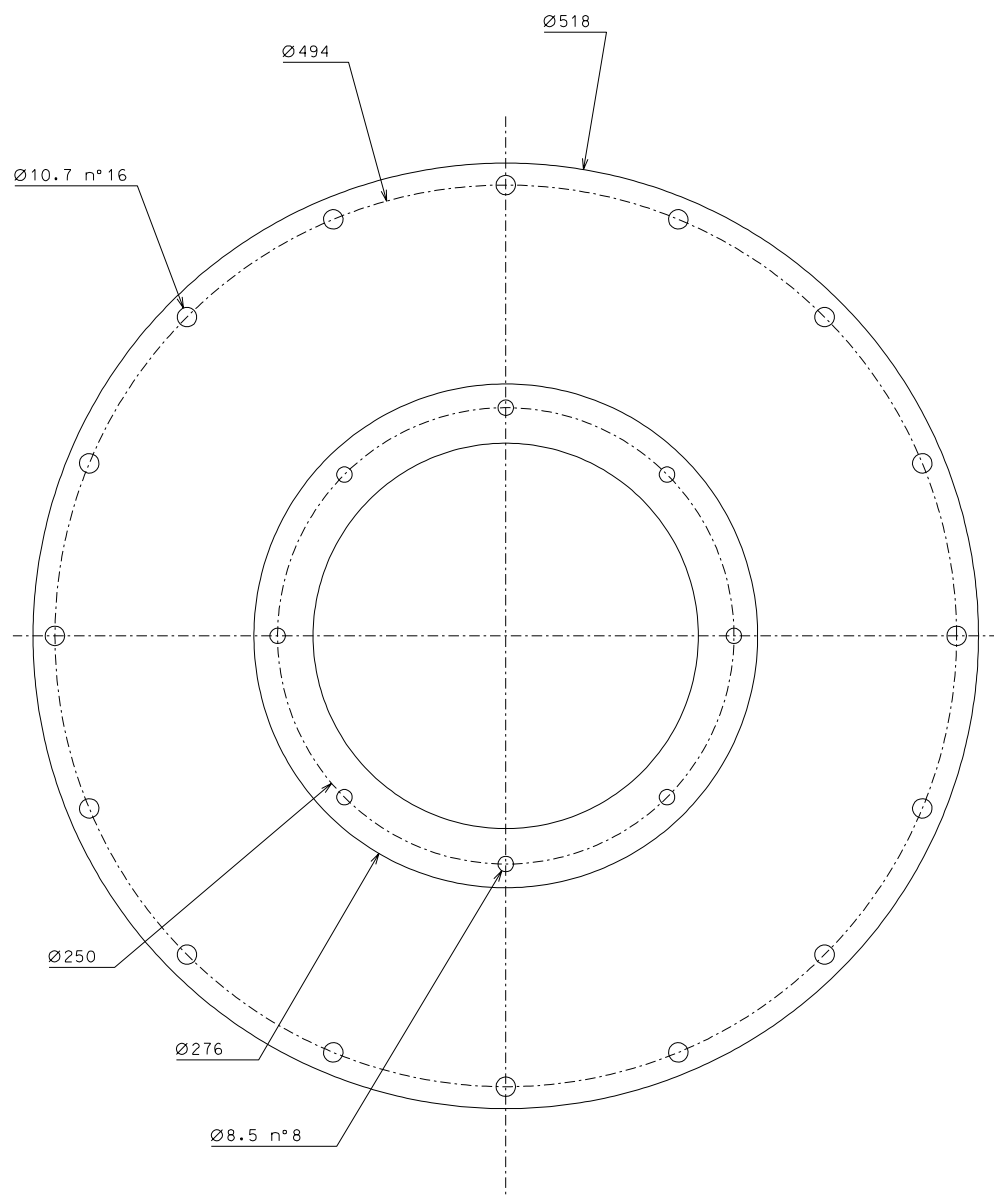


42

| | | | |
|---------------|------|------|-----------|
| ref. | note | date | signature |
| modifications | | | |

| | | | | | | | |
|------|--------|---------------------|-------|------|--------|---------------------|-------|
| 44 | 16 | AISI304 | 1:1 | | | | |
| 42 | 12 | AISI304 | 1:1 | | | | |
| 13.1 | 1 | EN 6082 | 1:2 | | | | |
| 13 | 1 | EN 6082 | 1:2 | | | | |
| 8 | 2 | AISI 304 L | 1:2 | 49 | 2 | AISI304 | 1:2 |
| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |

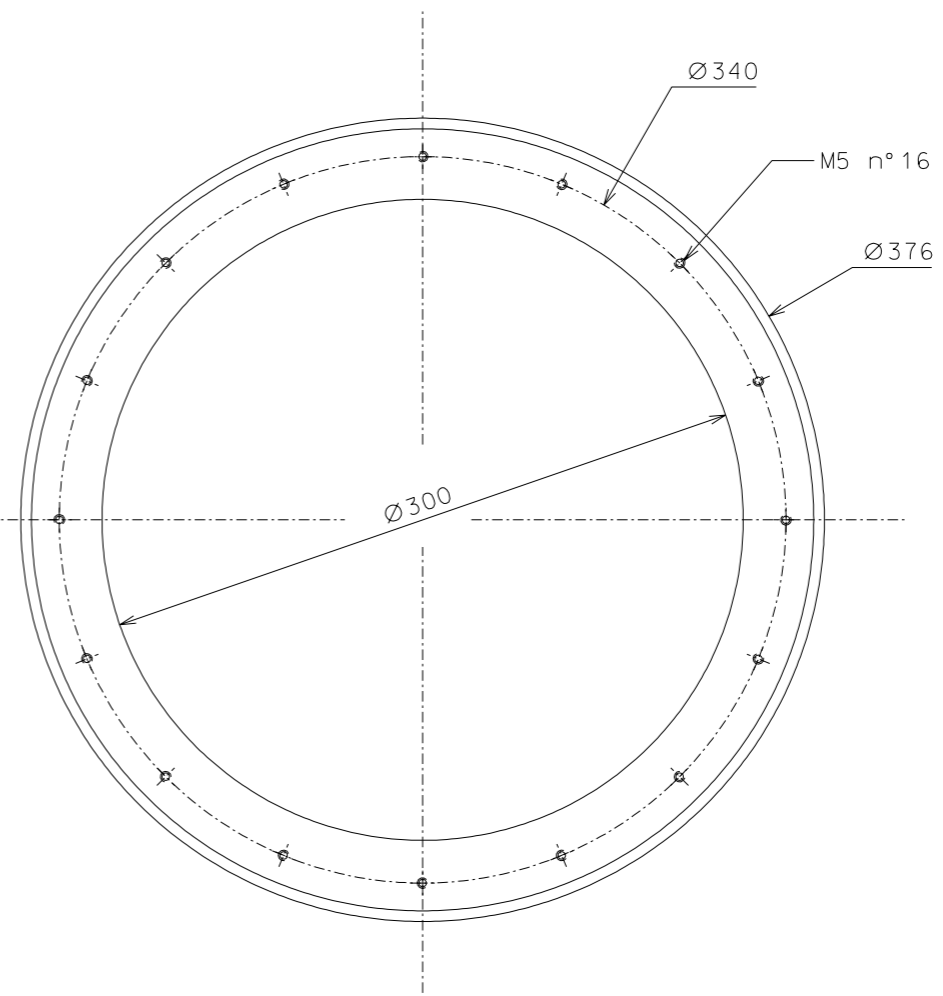
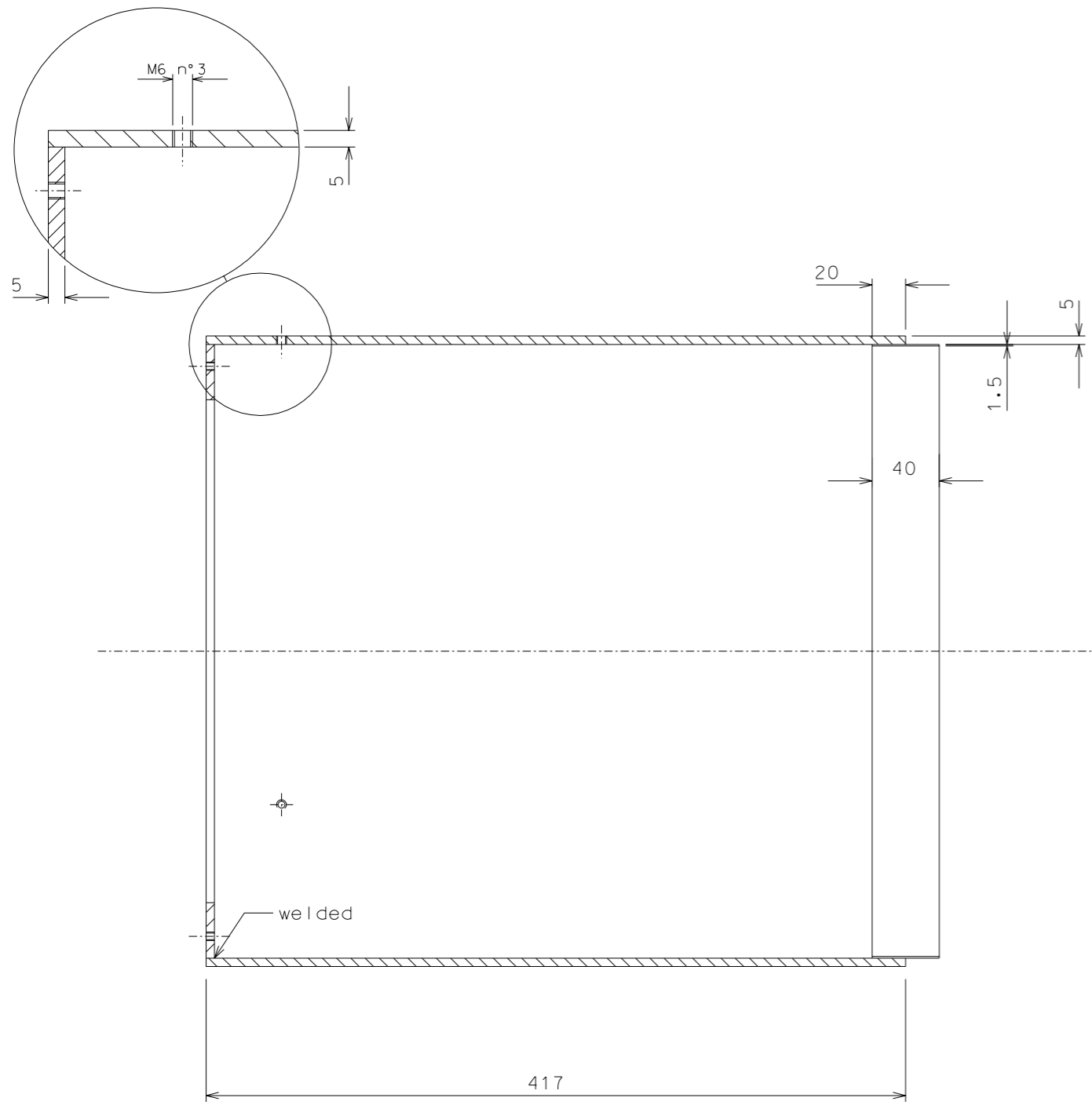
| | | | | | | | |
|--|-------|-------|--------|-------------------------------|----------|-----------|-------------|
| General machining tolerances UNI 5307-63 | | | | | | | |
| Dimensions | < 6 | 6-30 | 30-120 | 120-315 | 315-1000 | 1000-2000 | > 2000-4000 |
| Linear Toli. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 |
| Angular Toli. | ± 1' | ± 30' | ± 20' | referred to the shortest side | | | |
| designed for R. De Salvo | | | | draw. by PROMEC | | | |
| n° draw. LASER.016 | | | | date 19-03-04 scale 1:2 | | | |
| title LASER | | | | detail 001 issue A | | | |
| DETAILS | | | | replaces draw. n° A 1 | | | |



| | | | |
|---------------|------|------|-----------|
| ref. | note | date | signature |
| modifications | | | |

| | | | | | |
|------|--------|---------------------|-------|------|----------------------------------|
| 12 | 2 | AISI 304 L | 1:2 | | |
| ref. | pieces | mat. and treatments | scale | ref. | pieces mat. and treatments scale |

| | | | | | | |
|---|-------|---|--------|--|----------|--------------------------------|
| General machining tolerances UNI 5301-63 | | | | | | |
| Dimensions | < 6 | 6-30 | 30-120 | 120-315 | 315-1000 | > 1000-2000 > 2000-4000 > 4000 |
| linear Toli. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 ± 2 ± 3 |
| angular Toli. | ± 1' | ± 30' | ± 20' | ± 10' referred to the shortest side | | |
| | | LIGO PROJECT designed for R. De Salvo draw. by PROMEC n° draw. Laser. 015 | | title LASER DETAIL | | |
| date 9-02-04 from 001 replaces draw. n° | | scale 1:2 issue A | | A 1 | | |

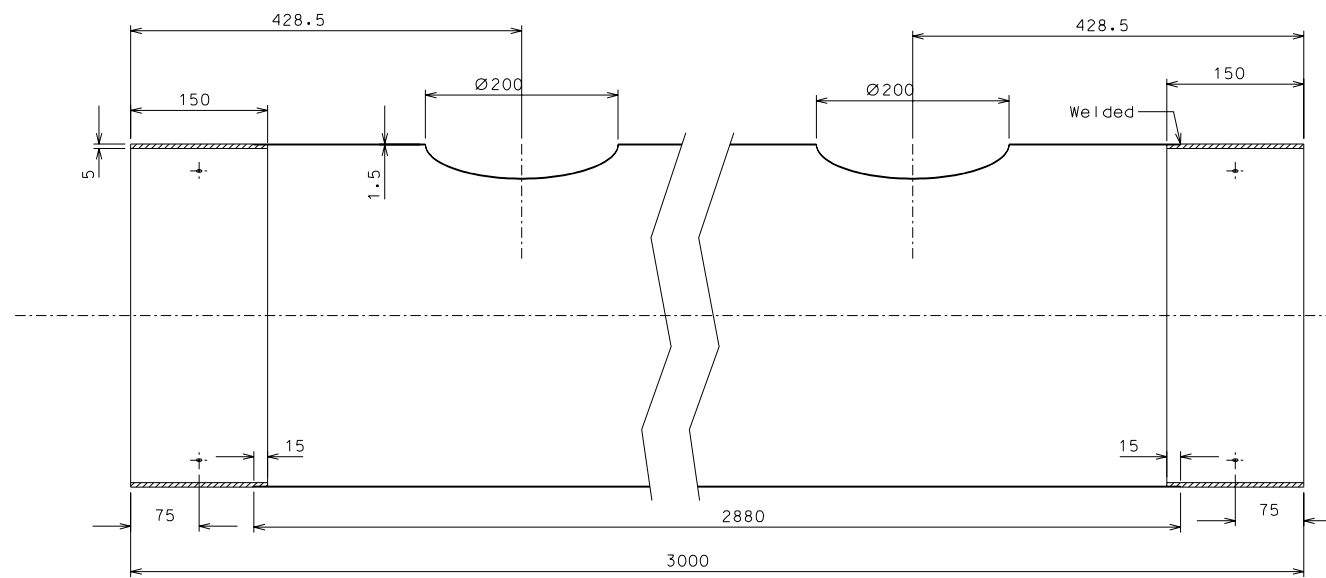
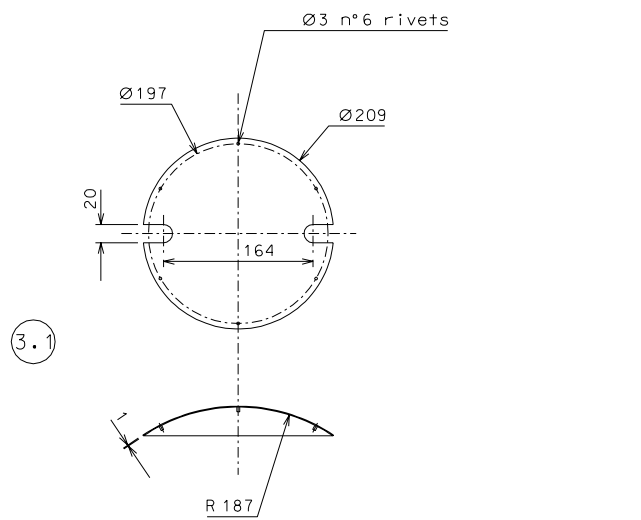


| | | | | | | | |
|------|--------|---------------------|-------|------|--------|---------------------|-------|
| | | | | | | | |
| 14 | 2 | EN 5083 | 1:2.5 | | | | |
| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |

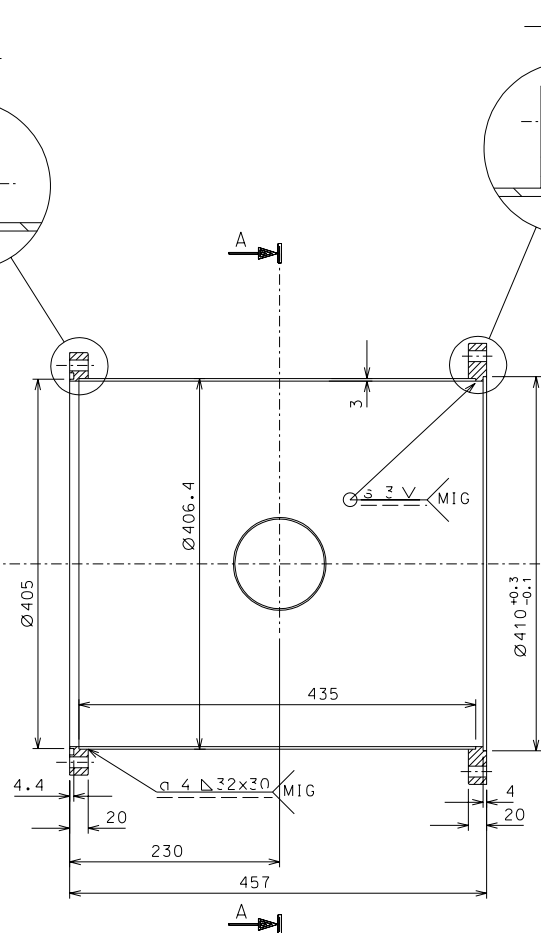
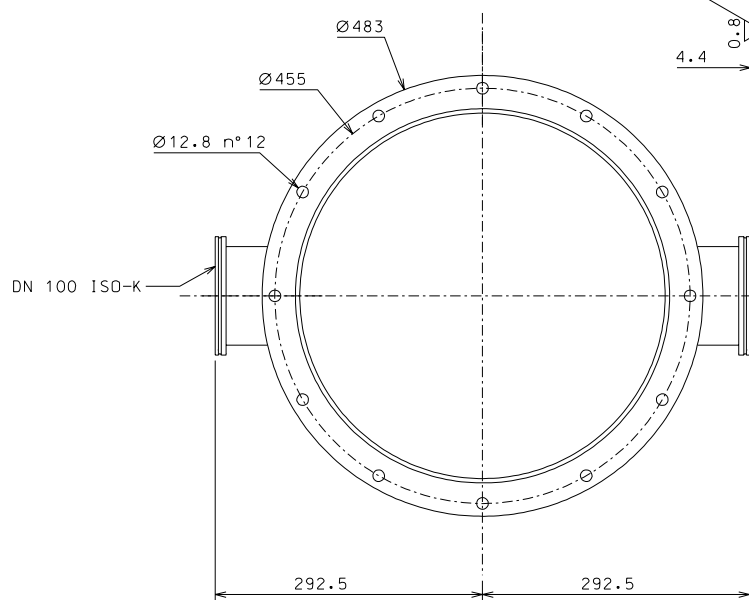
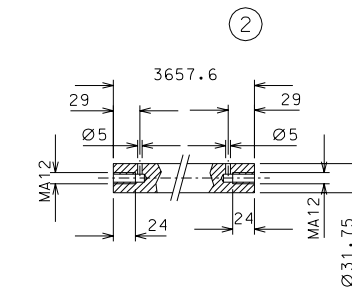
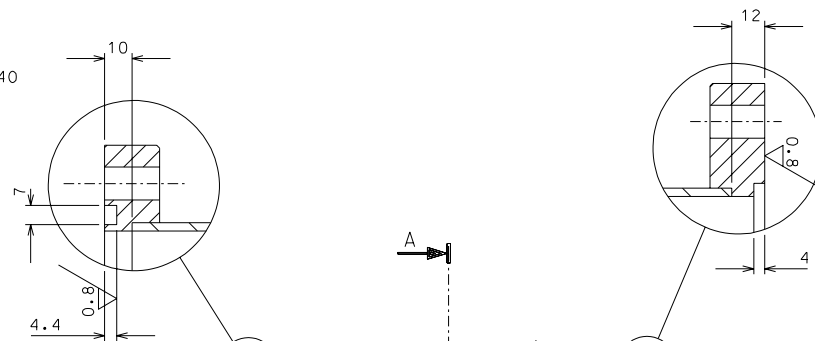
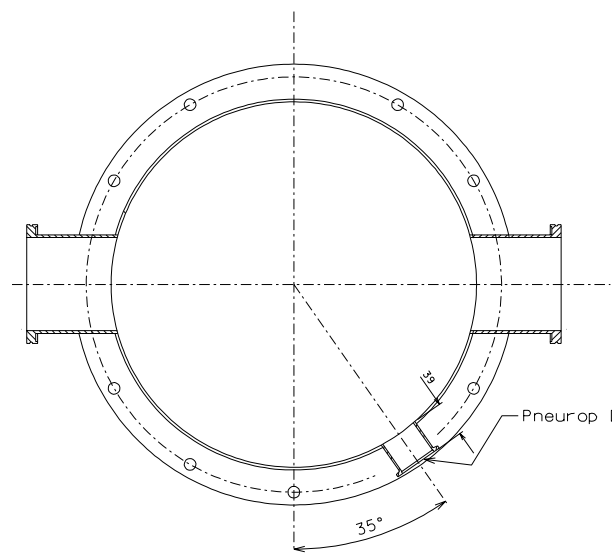
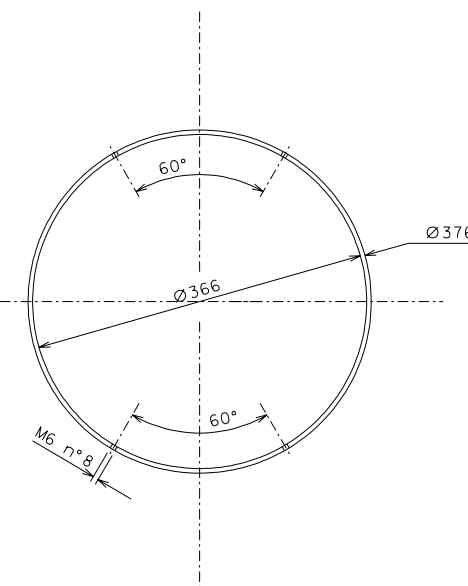
| General machining tolerances UNI 5307-63 | | | | | | | |
|--|-------|--------|----------|-------------------------------------|------------|-------------|-------------|
| Dimensions | < 6 | > 6-30 | > 30-120 | > 120-315 | > 315-1000 | > 1000-2000 | > 2000-4000 |
| linear Toll. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 |
| angular Toll. | ± 1 | ± 30' | ± 20' | ± 10' referred to the shortest side | | | |

| | | | |
|---------------|------|------|-----------|
| | | | |
| | | | |
| | | | |
| ref. | note | date | signature |
| modifications | | | |

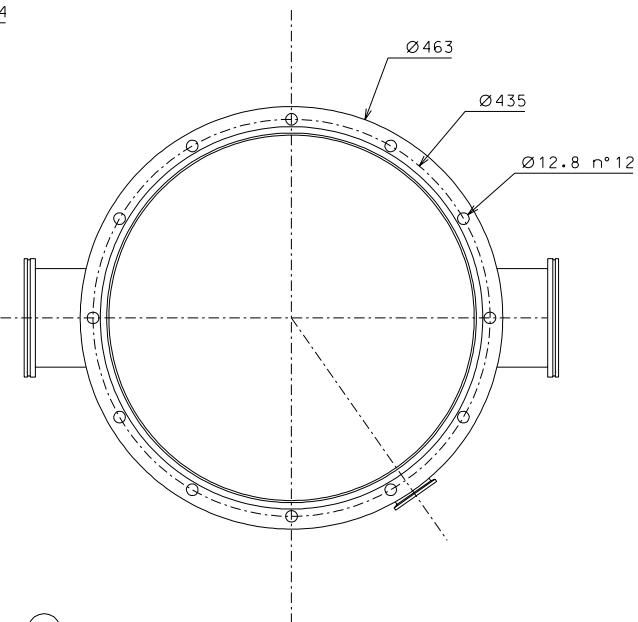
| | | | |
|-------------------|--|--------------------------|--|
| | LIGO PROJECT LASER DETTAGLI | designed for R. De Salvo | |
| | | draw. by PROMEC | |
| title | n° draw. Laser.014 | | |
| | date 12-02-04 | scale 1:2.5 | |
| | detail from 001 | issue A | |
| replaces draw. n° | | A 2 | |



3



4



| ref. | note | date | signature |
|---------------|------|------|-----------|
| modifications | | | |

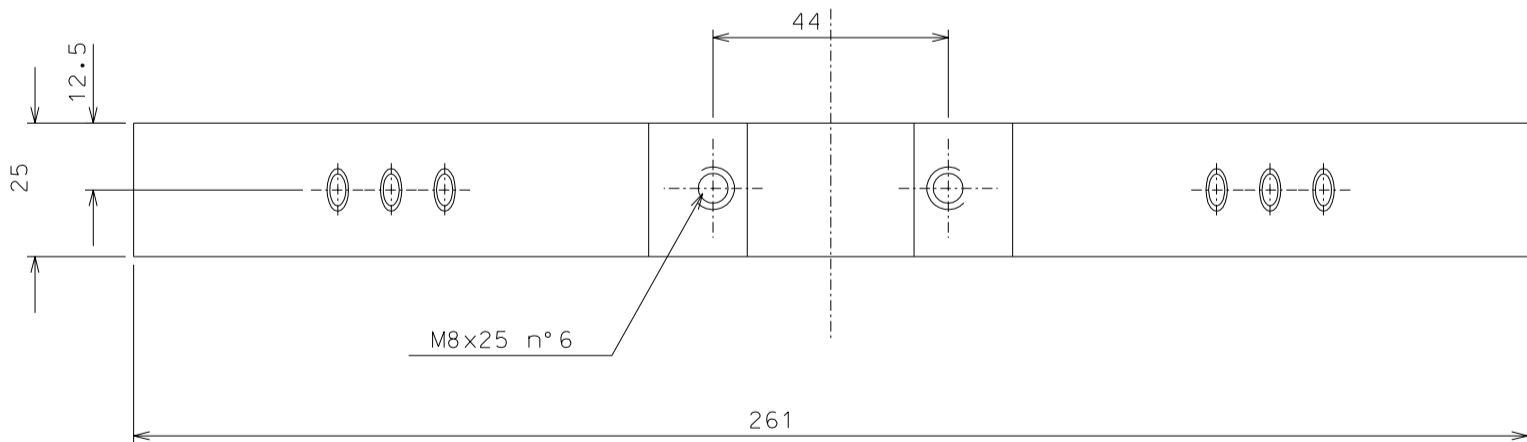
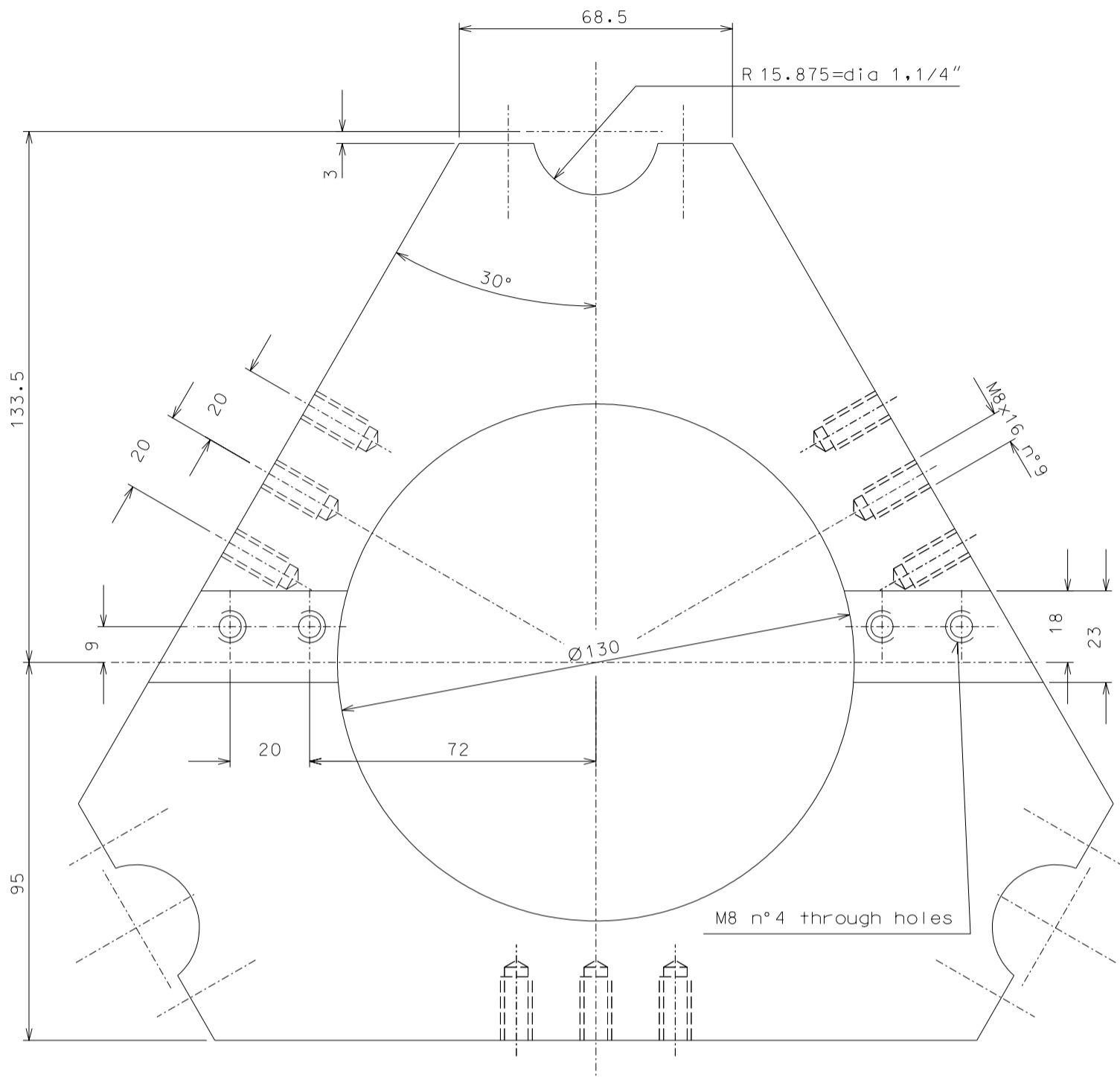
| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |
|------|--------|---------------------|-------|------|--------|---------------------|-------|
| 4 | 2 | AISI 304 L | 1:4 | | | | |
| 3.1 | 2 | EN 5083 | 1:4 | | | | |
| 3 | 1 | EN 5083 | 1:4 | | | | |
| 2 | 3 | Invar | 1:4 | | | | |

| Dimensions | < 6 | 6-30 | 30-120 | 120-315 | 315-1000 | 1000-2000 | 2000-4000 | > 4000 |
|---------------|------|------|--------|------------------------------------|----------|-----------|-----------|--------|
| Linear Toli. | ±0.1 | ±0.2 | ±0.3 | ±0.5 | ±0.8 | ±1.2 | ±2 | ±3 |
| angular Toli. | ±1 | ±30' | ±20' | ±10' referred to the shortest side | | | | |

General machining tolerances UNI 5301-63

designed for R. De Salvo
 draw. by PROMEC
 n°draw. LASER-012

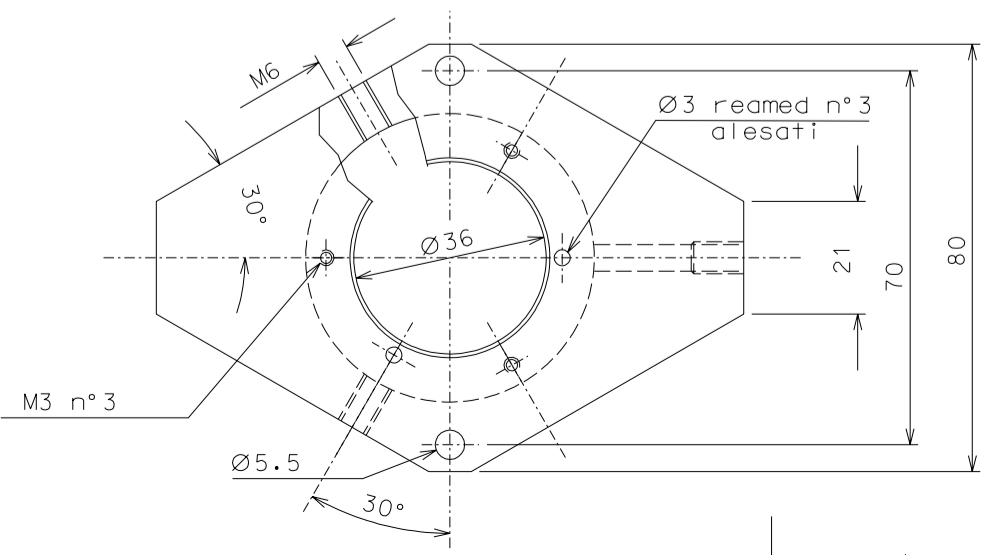
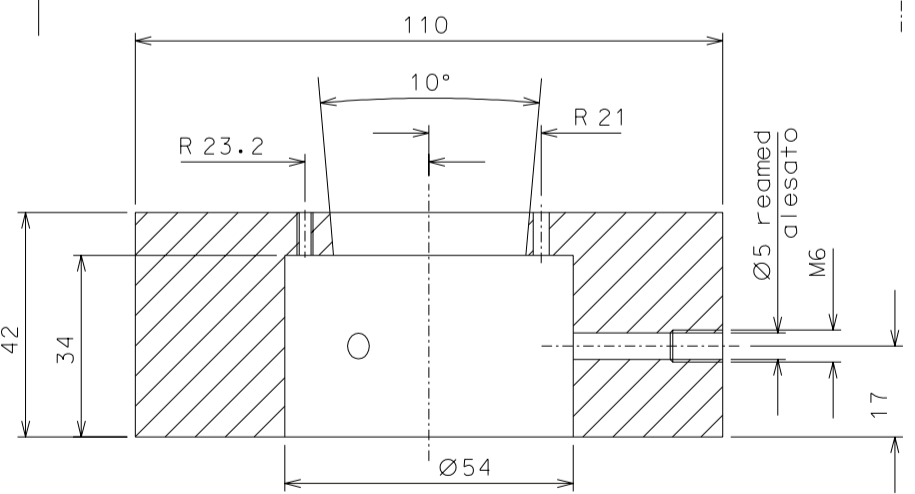
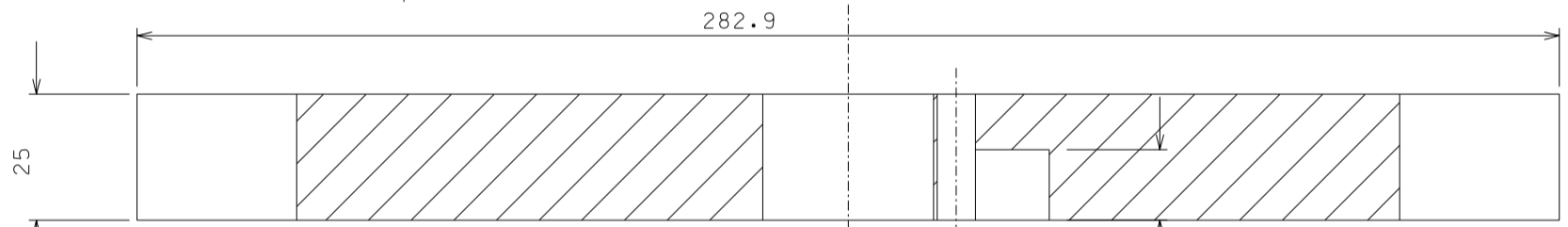
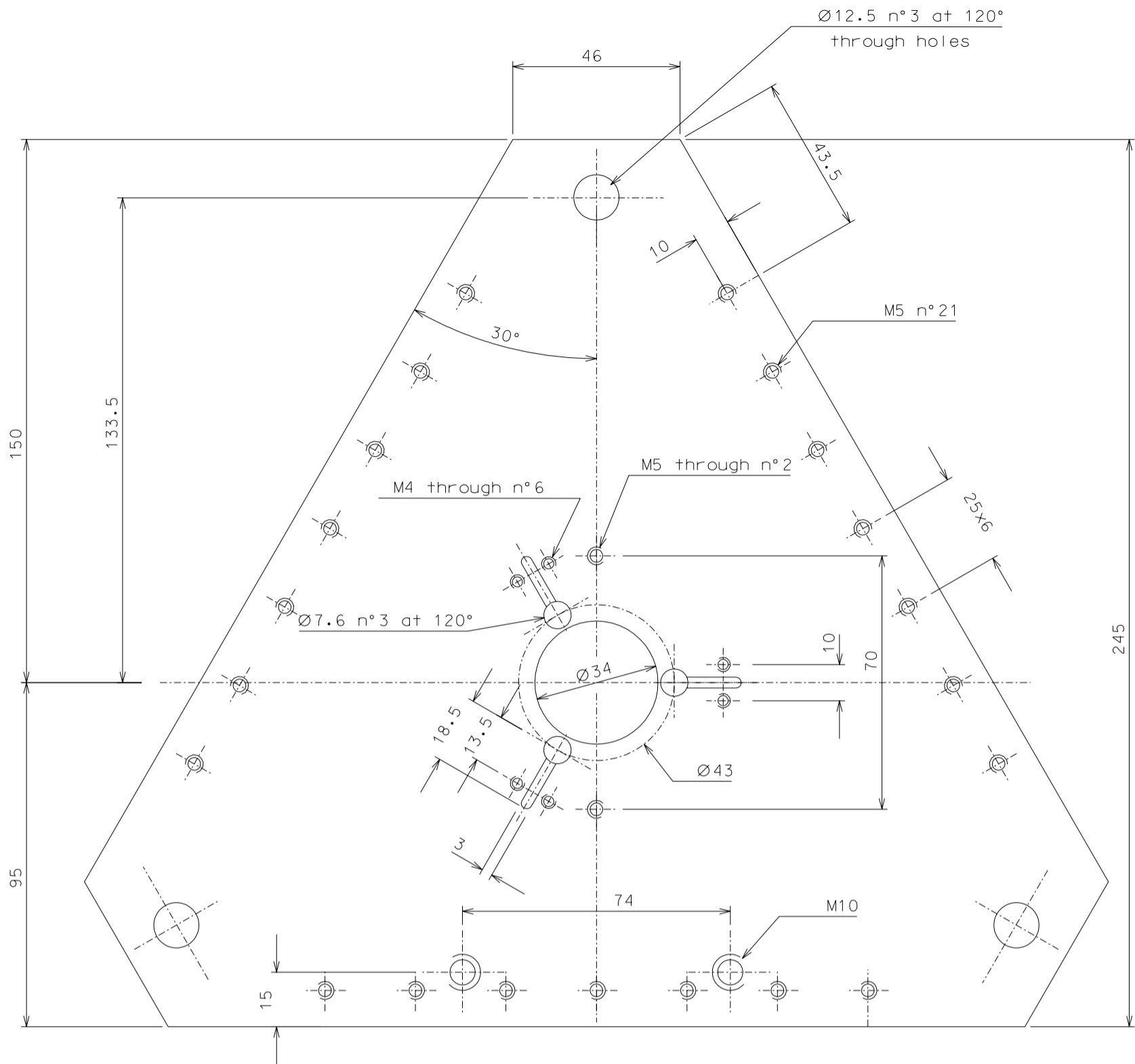
title: LASER DETAILS
 scale: 1:4
 date: 12-02-04
 from: 000 issue: A
 replaces: draw. n° A 1



| | | | | | | | |
|------|--------|---------------------|-------|------|--------|---------------------|-------|
| | | | | | | | |
| 31 | 3 | EN-6082 | 1:1 | | | | |
| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |

| General machining tolerances UNI 5307-63 | | | | | | | | | |
|--|-------|--------|----------|-----------|------------|-------------|-------------|--------|-------------------------------|
| Dimensions | < 6 | > 6-30 | > 30-120 | > 120-315 | > 315-1000 | > 1000-2000 | > 2000-4000 | > 4000 | |
| linear Toll. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 | ± 3 | |
| angular Toll. | ± 1 | ± 30' | ± 20' | ± 10' | | | | | referred to the shortest side |

| | | |
|---|-----------------------------|-----------|
| PROMEC sr l <i>Bientina (Pisa)-Italia</i> | R. De Salvo designed for | |
| | draftsman G. Gennaro | |
| | n° draw. Laser.009 | |
| | date 2-02-04 | scale 1:1 |
| | detail from 005 | issue A |
| replaces draw. n° | | A 2 |



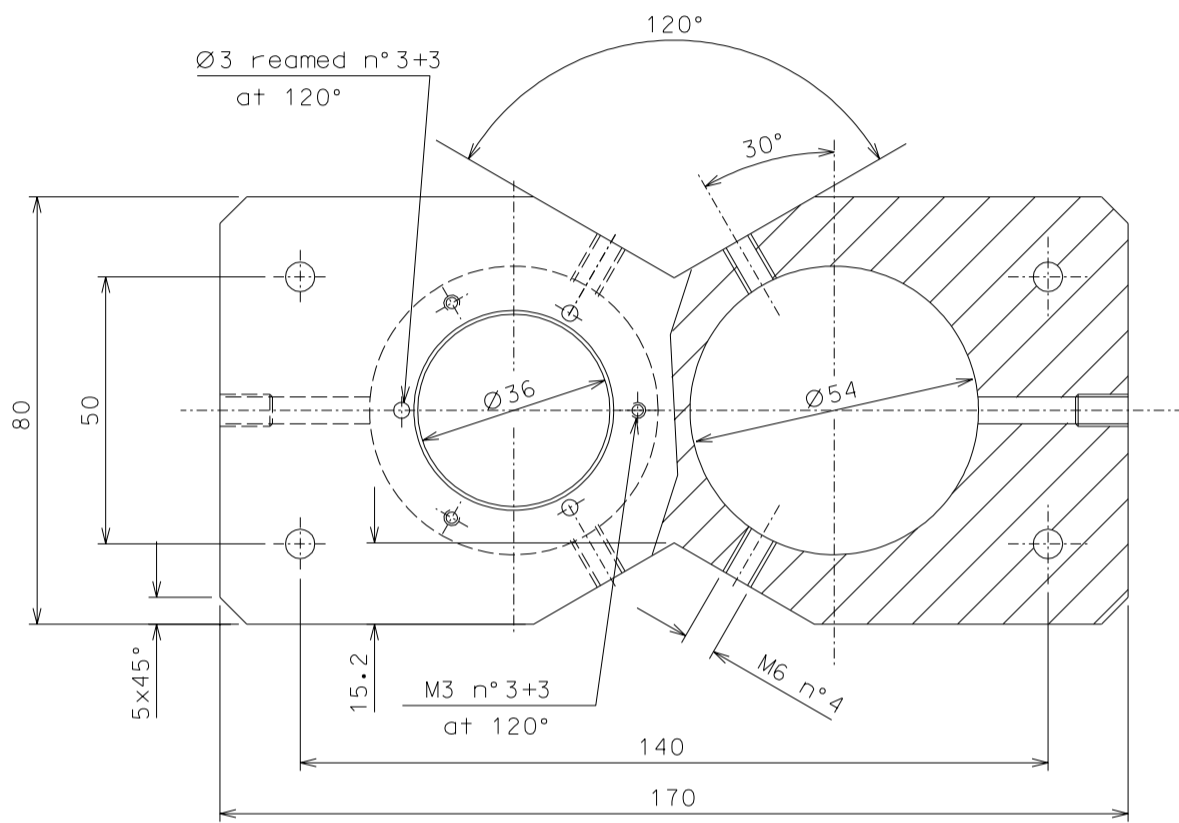
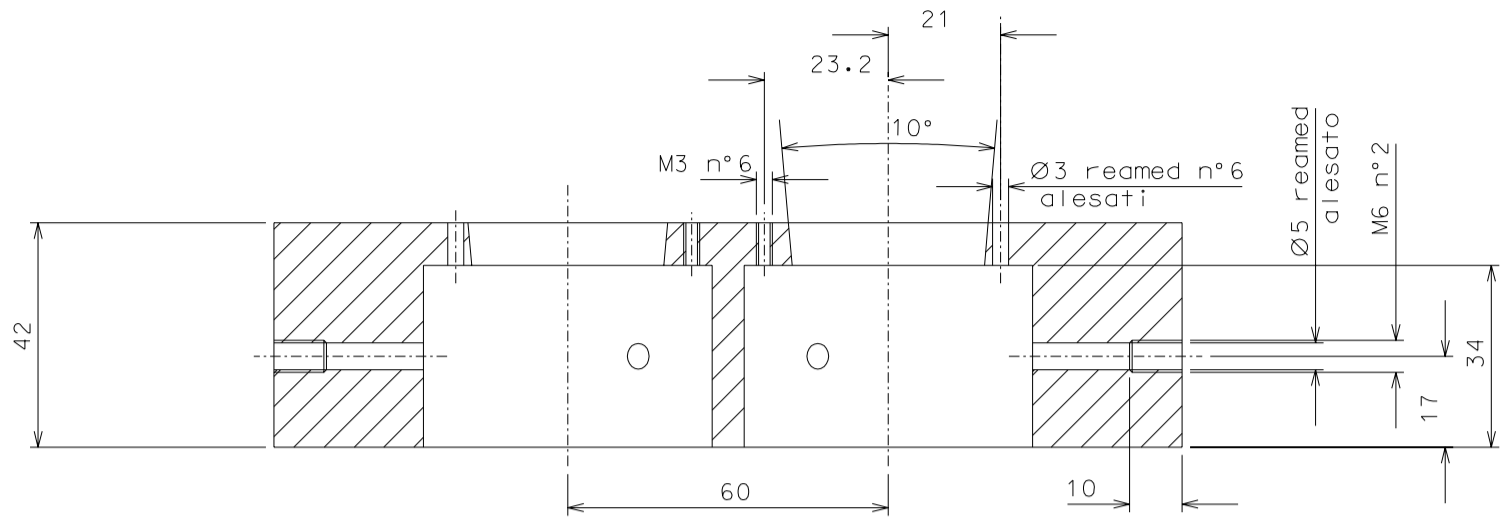
27

28

| | | | | | | | |
|------|--------|---------------------|-------|------|--------|---------------------|-------|
| 28 | 1 | EN-6082 | 1:1 | | | | |
| 27 | 1 | EN-6082 | 1:1 | | | | |
| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |

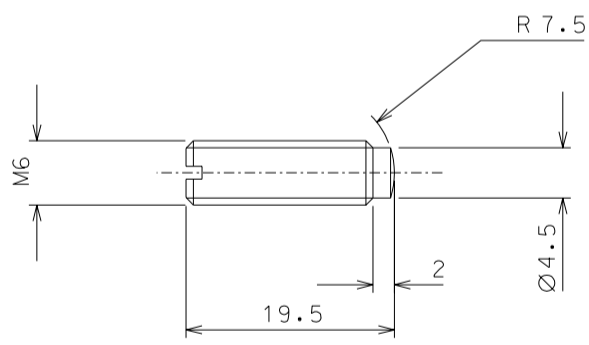
| General machining tolerances UNI 5307-63 | | | | | | | |
|--|-------|--------|----------|-------------------------------------|------------|-------------|-------------|
| Dimensions | < 6 | > 6-30 | > 30-120 | > 120-315 | > 315-1000 | > 1000-2000 | > 2000-4000 |
| linear Toll. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 |
| angular Toll. | ± 1' | ± 30' | ± 20' | ± 10' referred to the shortest side | | | |

| | | |
|---|------------------------------------|------------------------|
| PROMEC sr l <i>Bientina (Pisa)-Italia</i> | R. De Salvo designed for | |
| | draftsman G. Gennaro | |
| | n° draw. Laser.008 | |
| | date 2-02-04 | scale 1:1 |
| title LASER DETAILS | | detail from 004 |
| replaces draw. n° | | issue A |
| | | A 2 |

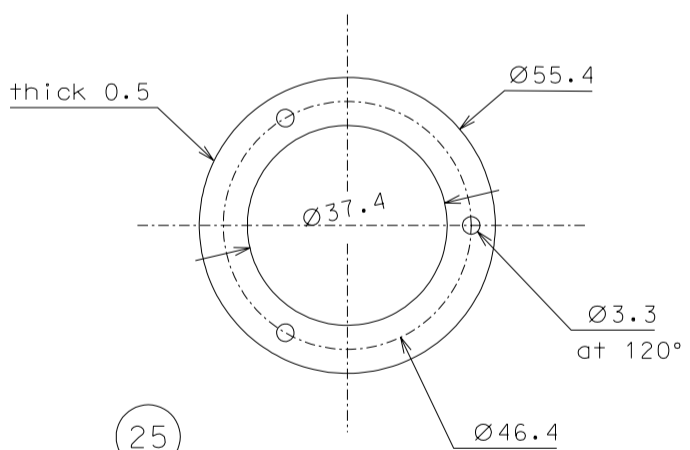


24

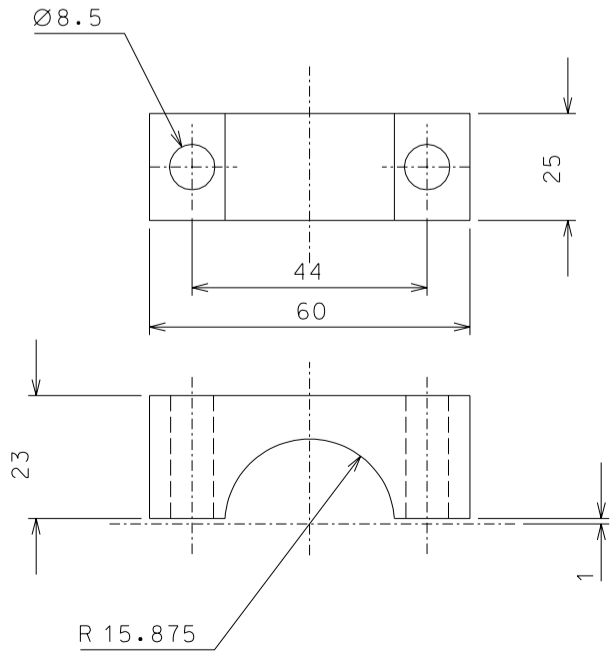
26



25



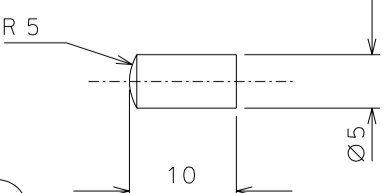
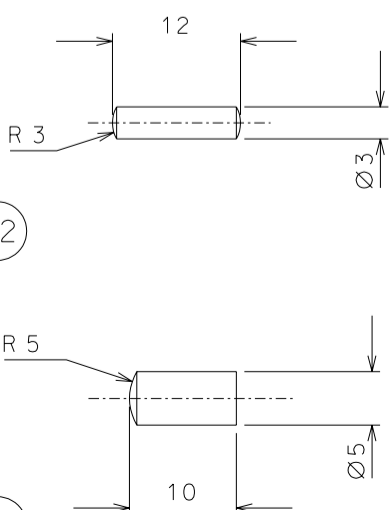
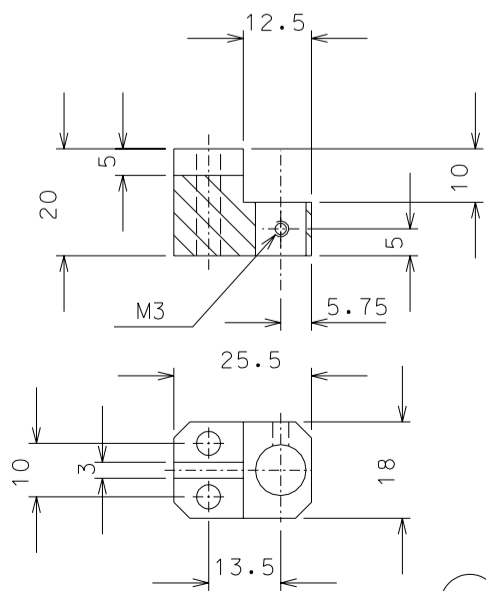
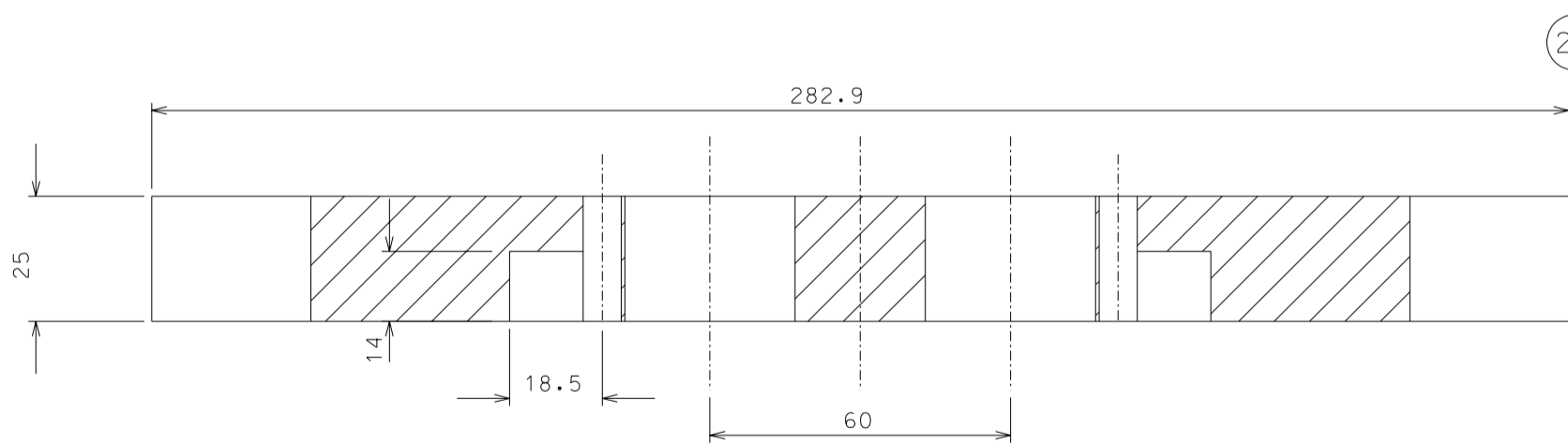
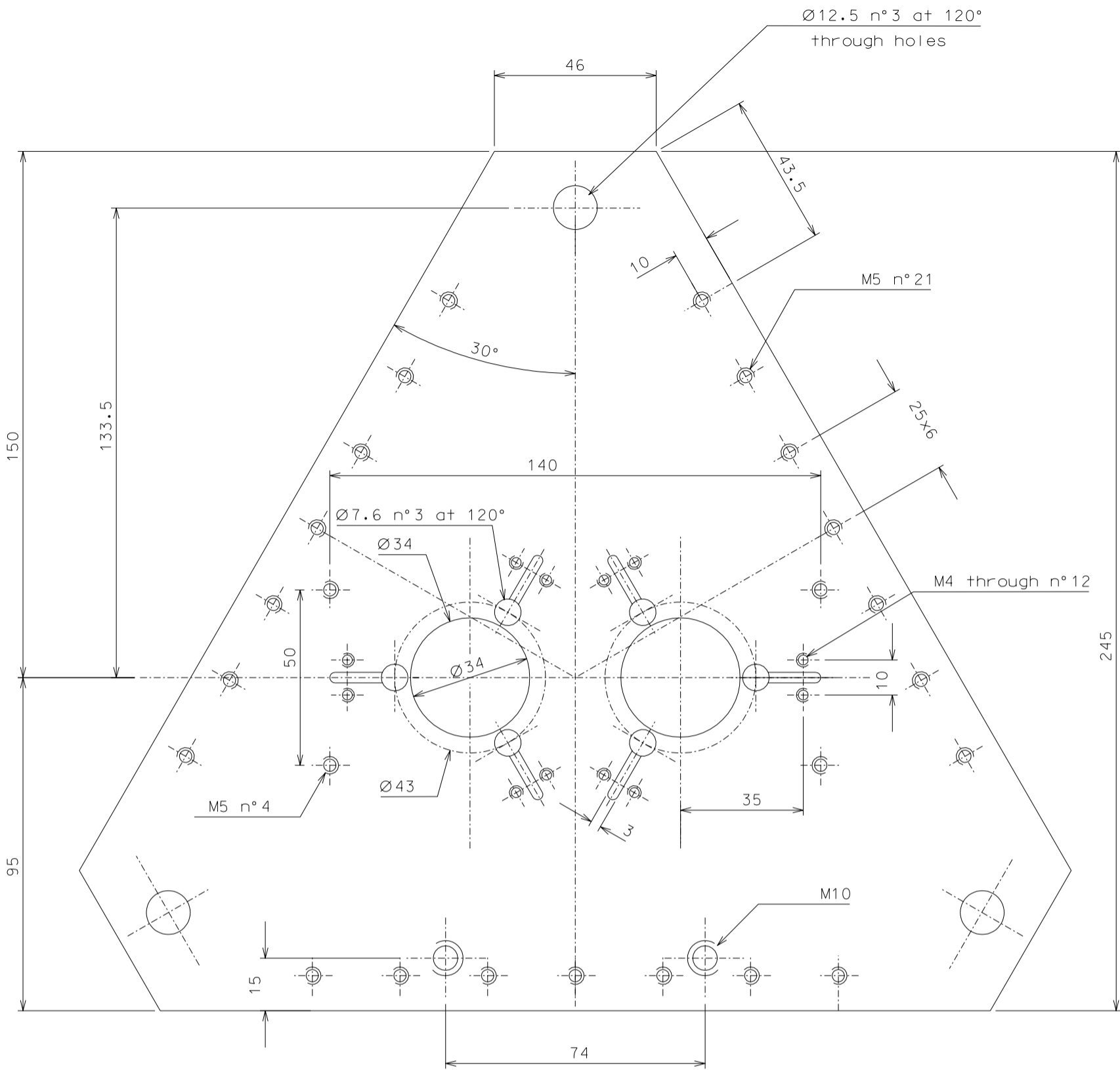
30



| | | | | | | | |
|------|--------|---------------------|-------|------|--------|---------------------|-------|
| 30 | 9 | EN-6082 | 1:1 | | | | |
| 26 | 6 | peek | 2:1 | | | | |
| 25 | 3 | copper-beryll. | 1:1 | | | | |
| 24 | 1 | EN-6082 | 1:1 | | | | |
| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |

| General machining tolerances UNI 5307-63 | | | | | | | | |
|--|-------|--------|----------|-------------------------------------|------------|-------------|-------------|--------|
| Dimensions | < 6 | > 6-30 | > 30-120 | > 120-315 | > 315-1000 | > 1000-2000 | > 2000-4000 | > 4000 |
| linear Toll. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 | ± 3 |
| angular Toll. | ± 1 | ± 30' | ± 20' | ± 10' referred to the shortest side | | | | |

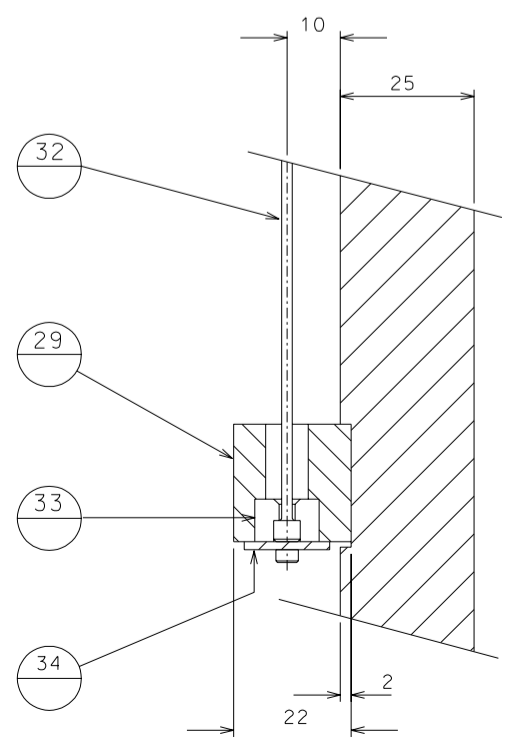
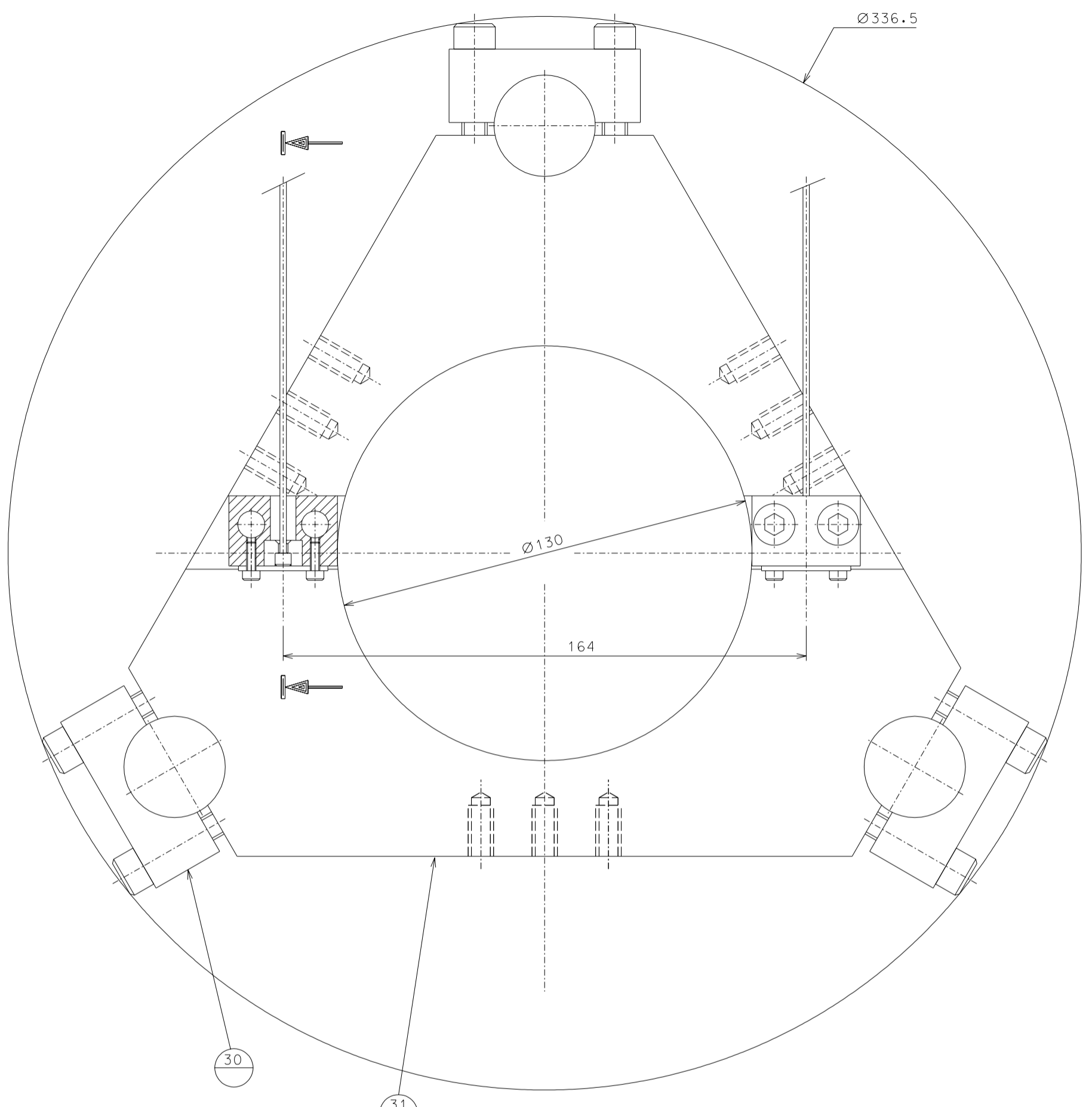
| | | |
|---|------------------------------------|----------------------------|
| PROMEC sr l <i>Bientina (Pisa)-Italia</i> | R. De Salvo designed for | |
| | draftsman G. Gennaro | |
| | n° draw. Laser .007 | |
| | date 31-12-03 | scale 1:1 |
| title LASER DETAILS | | detail from 003-005 |
| replaces draw. n° | | issue A |
| | | A 2 |



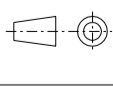
| | | | | | | | |
|------|--------|---------------------|-------|------|--------|---------------------|-------|
| 23 | 3 | brass | 2:1 | | | | |
| 22 | 9 | brass | 2:1 | | | | |
| 21 | 9 | Nickel plated steel | 1:1 | | | | |
| 20 | 1 | EN-6082 | 1:1 | | | | |
| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |

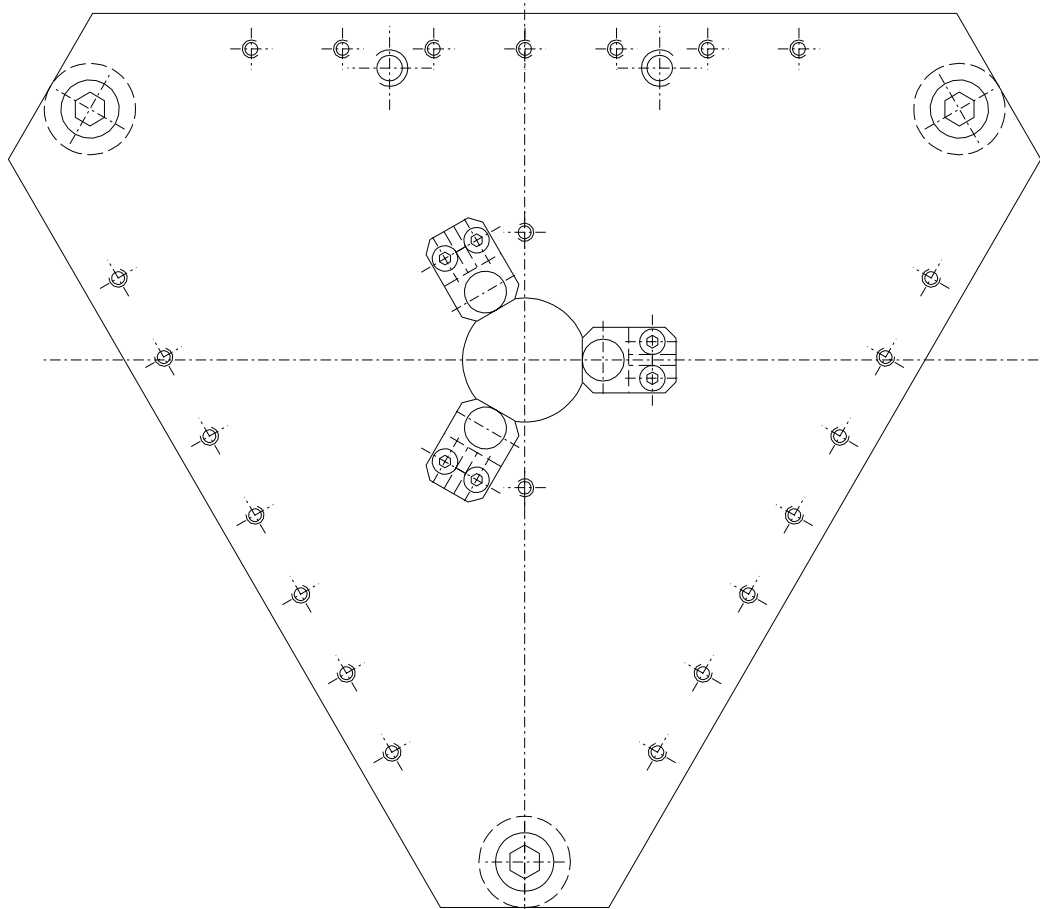
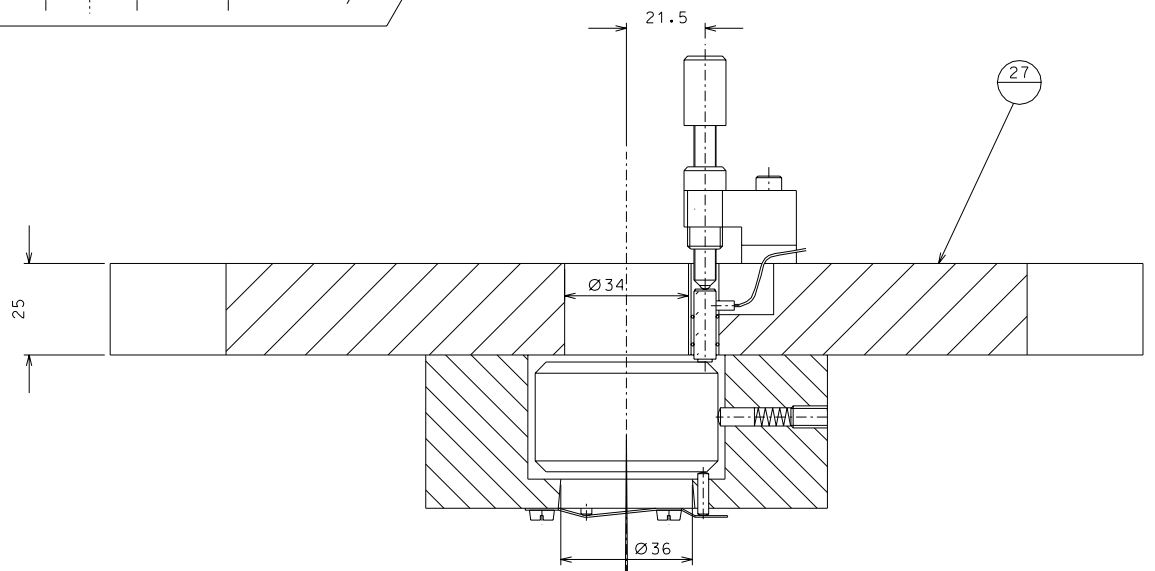
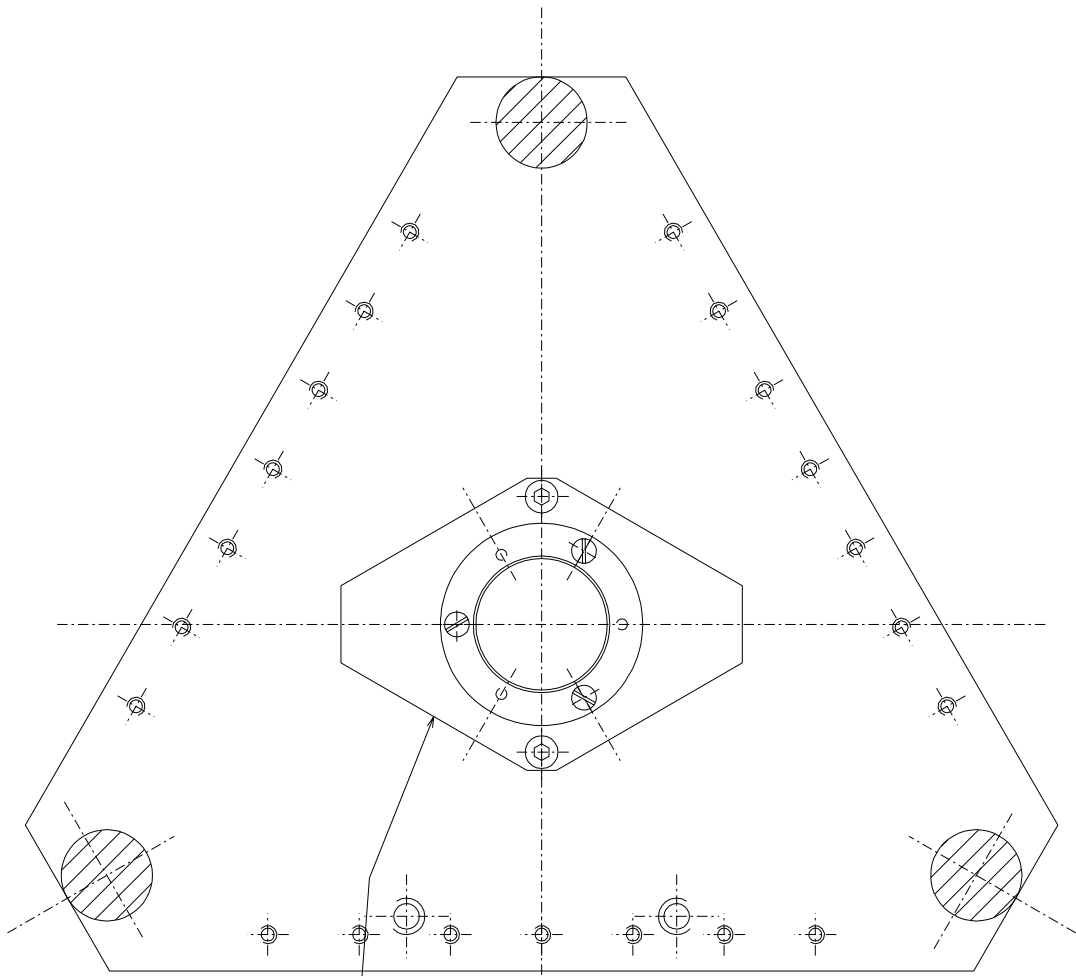
| General machining tolerances UNI 5307-63 | | | | | | | |
|--|-------|--------|----------|-------------------------------------|------------|-------------|-------------|
| Dimensions | < 6 | > 6-30 | > 30-120 | > 120-315 | > 315-1000 | > 1000-2000 | > 2000-4000 |
| linear Toll. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 |
| angular Toll. | ± 1 | ± 30' | ± 20' | ± 10' referred to the shortest side | | | |

| | | |
|---|-----------------------------|-----------------|
| PROMEC sr l <i>Bientina (Pisa)-Italia</i> | R. De Salvo designed for | |
| | draftsman G. Gennaro | |
| | n° draw. Laser.006 | |
| | date 2-02-04 | scale 1:1 |
| title LASER DETAILS | | detail from 003 |
| replaces draw. n° | | issue A |
| | | A 2 |



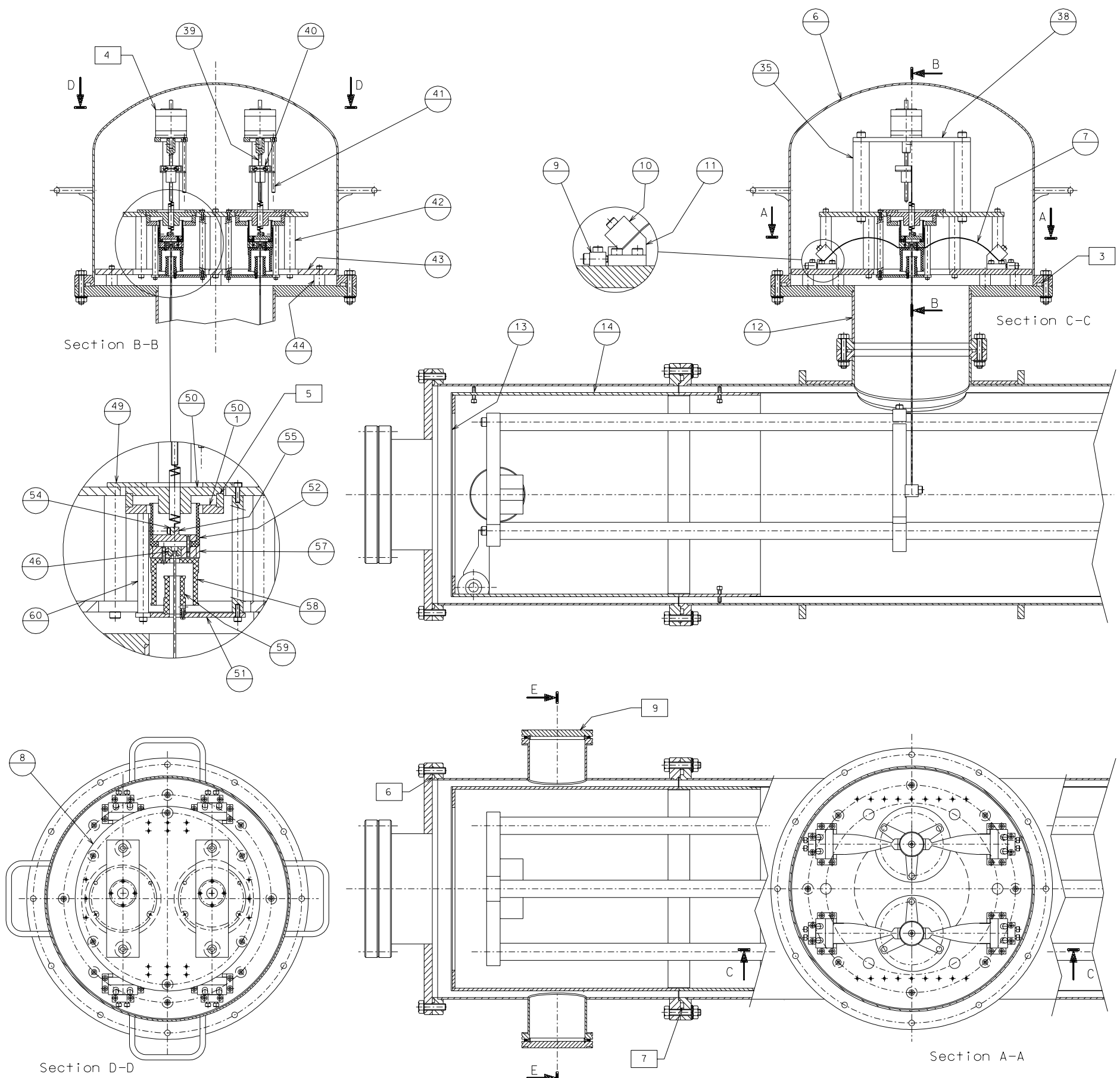
| | | | | | |
|------|-------|-----------------|------|-------|--------------|
| 34 | 010 | wire retainer | | | |
| 33 | 010 | wire 1/2 cups | | | |
| 32 | 010 | suspension wire | | | |
| 31 | 009 | middle spacer | | | |
| 30 | 007 | spacer clamp | | | |
| 29 | 010 | wire block | | | |
| ref. | draw. | added legend | ref. | draw. | added legend |

| | | |
|---|-----------------------------|---------|
|  PROMEC sr l <i>Bientina (Pisa)-Italia</i> | R. De Salvo designed for | |
| | draftsman G. Gennaro | |
| title LASER INTERNAL PLATE | ass. numb. Laser.005 | |
| | date 2-02-04 | |
| | scale 1:1 | issue A |
| | replaces draw. n° A 2 | |



| | | | | | |
|------|-------|--------------------|------|-------|--------------|
| | | | | | |
| | | | | | |
| | | | | | |
| 28 | 008 | 1 mirror holder | | | |
| 27 | 008 | 1 Mirror end plate | | | |
| ref. | draw. | added legend | ref. | draw. | added legend |

| | | |
|---|-----------------------------|--------------------------|
| PROMEC s.r.l. <i>Bientina (Pisa)-Italia</i> | R. De Salvo designed for | |
| | G. Gennaro draftsman | |
| title LASER | | |
| BACK PLATE | | |
| ass. num. Laser.004 | | date 2-02-04 |
| scale 1:1 | issue A | replaces draw. n° A 1 |



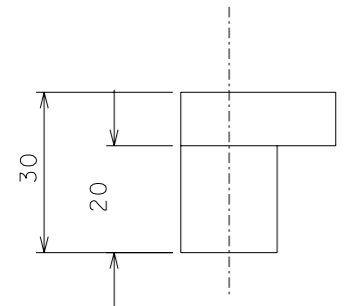
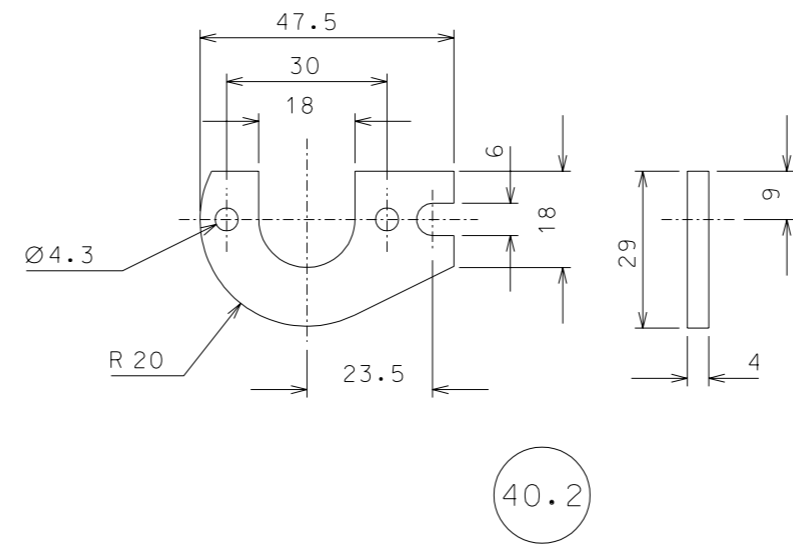
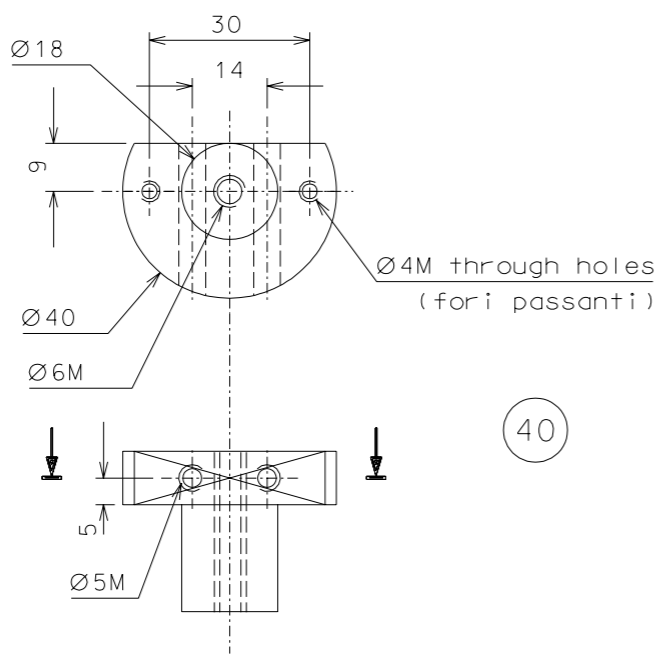
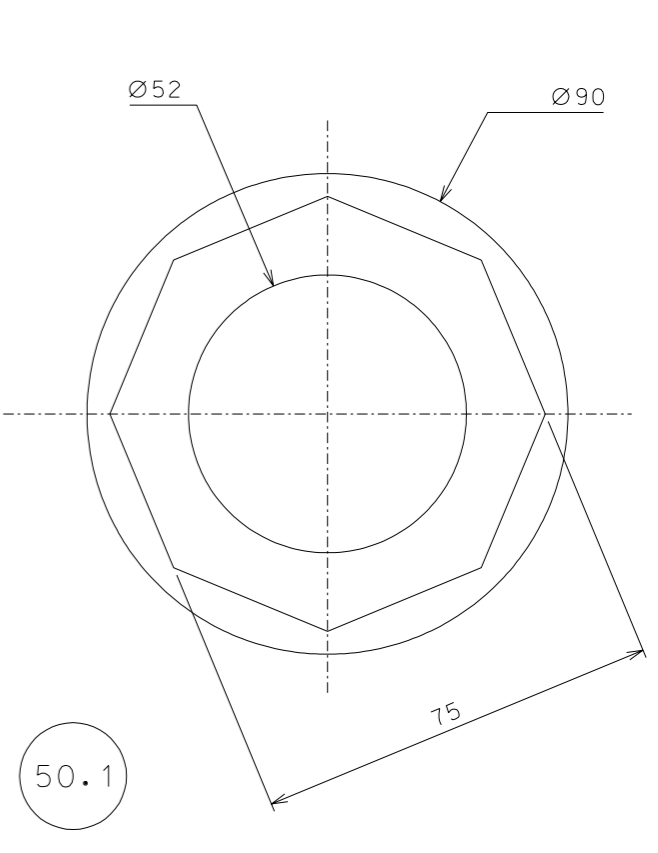
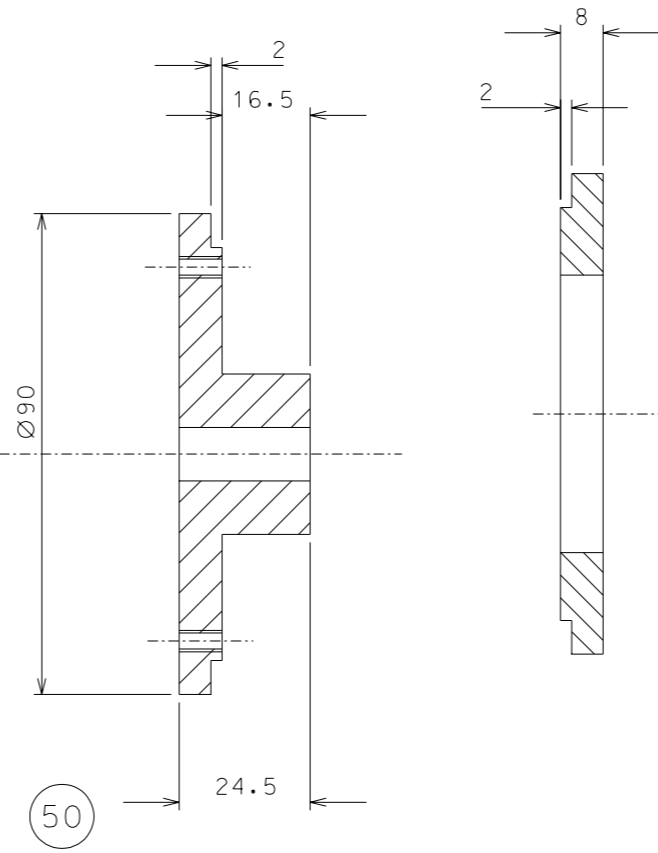
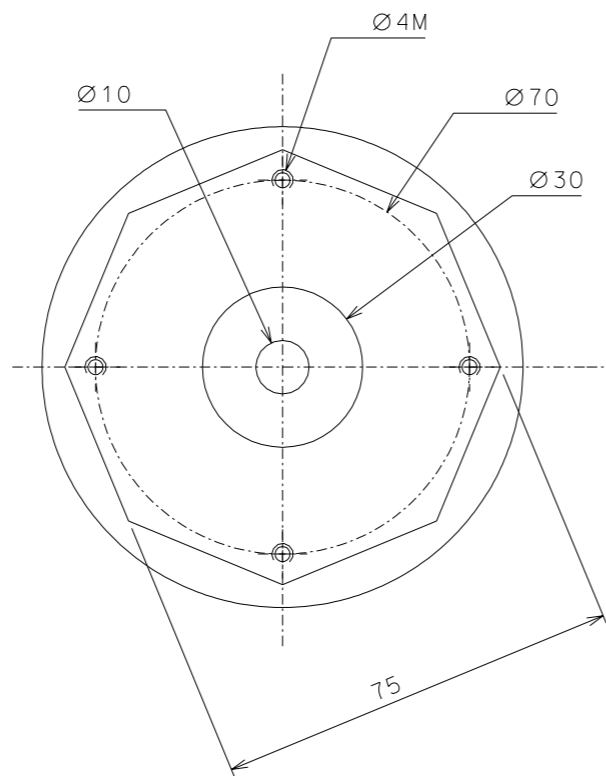
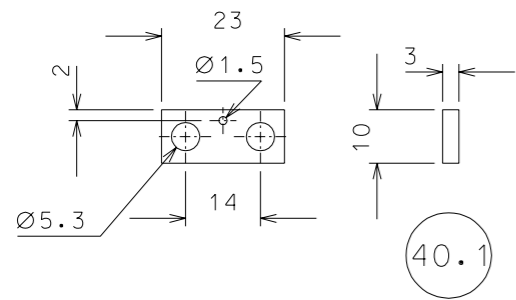
By market

- 3 OR 81800 n°2 pc
- 4 Stepping motor Type Vexta PK 264-01B
- 5 Bunting NEB 3590 n°16 pc
- 6 OR 61600 n°2 pc
- 7 OR 81650 n°2 pc
- 8 Pneurop DN 40 KF n°2 pc
- 9 DN 100 ISO-K n°4 pc

| ref. | note | date | signature |
|---------------|------|------|-----------|
| modifications | | | |

| | | | | | |
|------|-------|-------------------------|------|-------|----------------------|
| 42 | 016 | Spacer | | | |
| 41 | 023 | Torque rod | | | |
| 40 | 026 | Nut | 60 | 025 | column's LVDT |
| 39 | 023 | Screw | 59 | 022 | LVDT primary |
| 38 | 023 | Motor flange | 58 | 022 | LVDT secondary |
| 35 | 023 | Column support | 57 | 022 | 1/2 cup retainer |
| 14 | 014 | Thermal shield end pipe | 55 | 022 | Spring holder |
| 13.1 | 016 | Thermal cap | 54 | 022 | Spring clamp |
| 13 | 016 | Thermal cap | 52 | 022 | Coil spool |
| 12 | 015 | Vacuum collar | 51 | 025 | Safety ring |
| 11 | 018 | Sliding clamp | 50.1 | 026 | Magnet |
| 10 | 018 | Clamp cover | 50 | 026 | Magnet |
| 9 | 018 | Compression block | 49 | 016 | Support plate magnet |
| 8 | 016 | Load disk | 46 | 010 | 1/2 cup |
| 7 | 017 | Suspension blade | 44 | 016 | Spacer |
| 6 | 020 | Vacuum bell | 43 | 021 | Inner big plate |
| ref. | draw. | added legend | ref. | draw. | added legend |

| | | |
|------------------|---------------------|--------------------------|
| | LIGO PROJECT | designed for R. De Salvo |
| | LASER | draw. by PROMEC |
| PARTIAL ASSEMBLY | | ass. numb. Laser.001 |
| | | date 17-03-04 |
| | | scale 1:4 Issue A |
| | | replaces draw. n° A 1 |



| ref. | note | date | signature |
|---------------|------|------|-----------|
| modifications | | | |

| ref. | pieces | mat. and treatments | scale | ref. | pieces | mat. and treatments | scale |
|------|--------|---------------------|-------|------|--------|---------------------|-------|
| 50.1 | 4 | ARMCO steel | 1:1 | | | | |
| 50 | 4 | ARMCO steel | 1:1 | | | | |
| 40.2 | 4 | bronze | 1:1 | | | | |
| 40.1 | 4 | AISI 304 | 1:1 | | | | |
| 40 | 4 | peek | 1:1 | | | | |

| General machining tolerances UNI 5307-63 | | | | | | | | |
|--|-------|--------|----------|-------------------------------------|------------|-------------|-------------|--------|
| Dimensions | < 6 | > 6-30 | > 30-120 | > 120-315 | > 315-1000 | > 1000-2000 | > 2000-4000 | > 4000 |
| linear Toll. | ± 0.1 | ± 0.2 | ± 0.3 | ± 0.5 | ± 0.8 | ± 1.2 | ± 2 | ± 3 |
| angular Toll. | ± 1 | ± 30' | ± 20' | ± 10' referred to the shortest side | | | | |

| | | | | |
|--|---------------------|-------------------|--------------------------|-----------|
| | LIGO PROJECT | | designed for R. De Salvo | |
| | LASER DETAILS | | draw. by PROMEC | |
| | | | n°draw. Laser.026 | |
| | | | date 19-03-04 | scale 1:1 |
| | | detail from 001 | issue A | |
| | | replaces draw. n° | | A 2 |