Rocking airplane kids toy plan

The Rocking Airplane plan will allow you to create a very beautiful and lasting gift for your child of 3-4 years or a little older, which will allow him/her to exercise imagination and consume inexhaustible energy.

Rocking gives pleasure to people throughout life. The first baby's crib is a rocking baby cradle. Later, children love rocking toys and swings, and we all enjoy rocking chairs. The earliest known rocking toys that had a semi-circular base date from the 17th century. The most famous of these wooden toys is the rocking horse which King Charles the First of England owned when he was a child. Through the mid 19th century, Queen Victoria ordered a rocking horse for herself, and after that these toys were becoming increasingly popular, and began to appear in homes and nurseries more often.

On the other hand, boys, who are more inclined to technology than girls, almost always experience a period in their childhood when they dream of becoming pilots. A Rocking Airplane is an ideal combination of meeting children's needs for movement and fulfillment of a boyhood fantasy.

This Rocking Airplane kids' toy is designed in a retro style, like the biplanes of early 20th century. The spinning propeller increases the realistic aspect of the toy. The upper pair of wings has openings for a child to hold on to them firmly, while the child's legs will be supported by the lower pair of wings or the platform below the airplane, so that the child is comfortably and safely placed while he swings back and forth. The tail of the airplane also serves as a safety support for the child's back. The

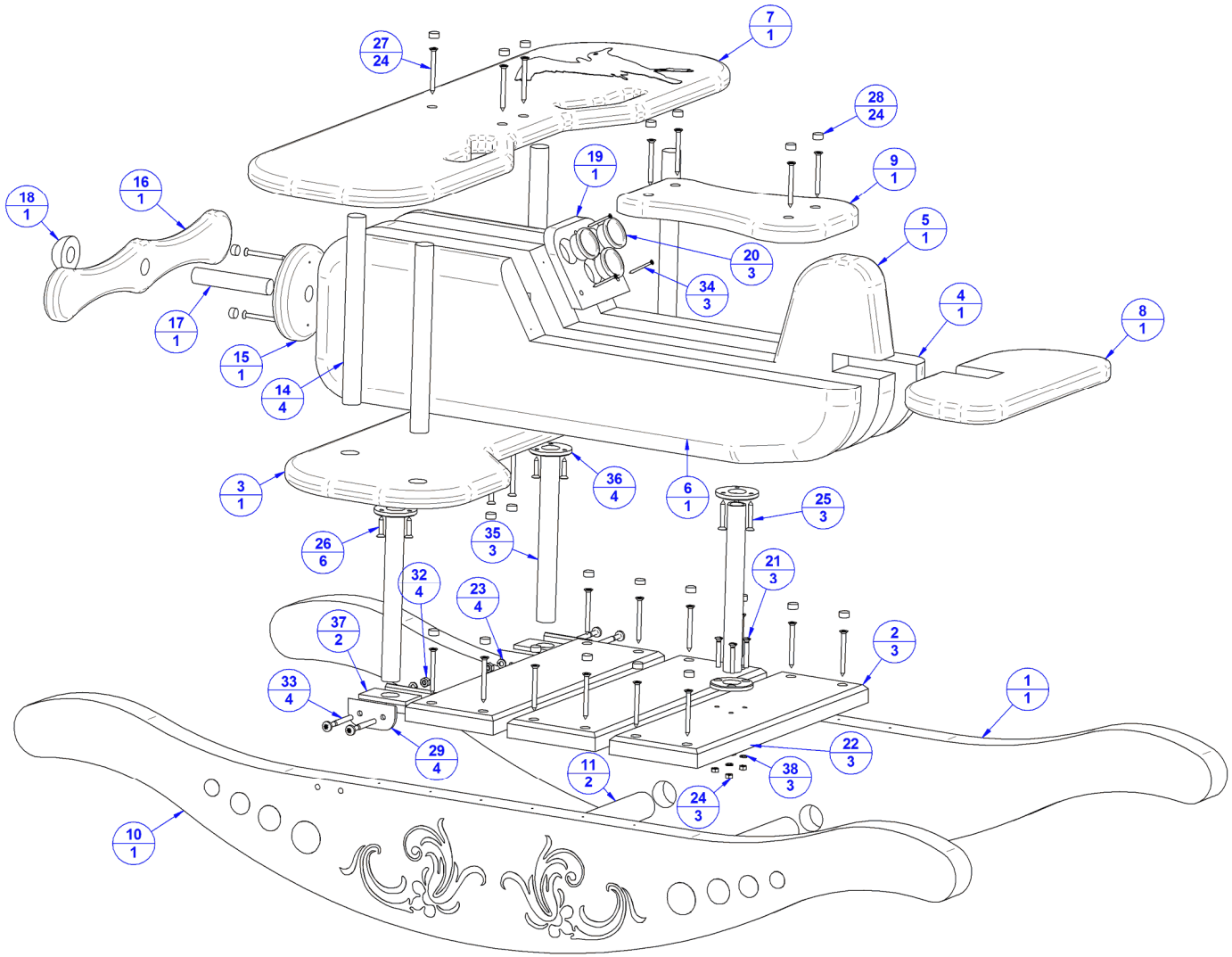
Rockers have a slight curve to ensure swinging at a safe angle, and at the ends, they have the stoppers which control the swinging angle.

During the construction of the wooden Rocking Airplane, all parts should be made of solid hardwood, except for the propeller. Since the propeller is movable, it should be made of the lightest possible wood. A great attention should be paid to fixing the propeller well, so that it would not fall off during the child's play. The metal pipes (connecting the airplane with the platform) should be made of lightweight metals such as aluminum or its alloys. For greater comfort, the seat can be covered with a cushion, which must be fixed to the underside of the seat, so that it would not slip while the child is sitting on it. To increase the child's safety, you can cover the platform with some slip-resistant material (rubber or cloth) to reduce the possibility of the child slipping. If your house space is limited, you can shorten the wings a little. It will not reduce the beauty of your wooden Rocking Airplane at all. As with all wooden toys, it is important to pay special attention to wood finishing, in order to make it completely smooth, and to prevent splinters in little fingers. You can paint the flat surfaces of the wings, while the rockers are an ideal place for chip carving. While playing, the child, as always, must be supervised by an adult, who have to help and hold the child during climbing up and down a Rocking Airplane.

When you make it well, this Rocking Airplane toy will last forever and it will be a family heirloom toy.

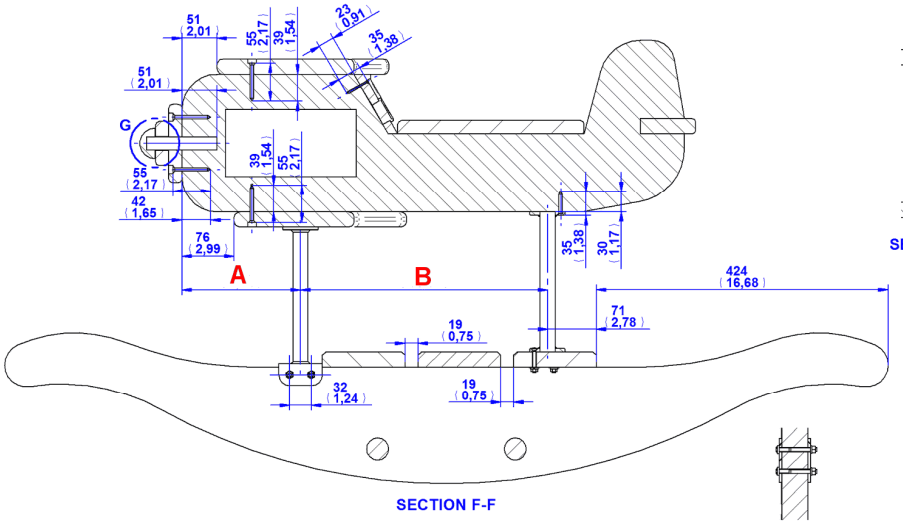
The measurements are given in millimeters, while the measurements given in inches are in brakes (1 inch = 25, 4 mm).

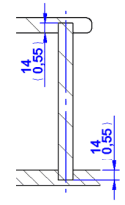
Rocking airplane parts list

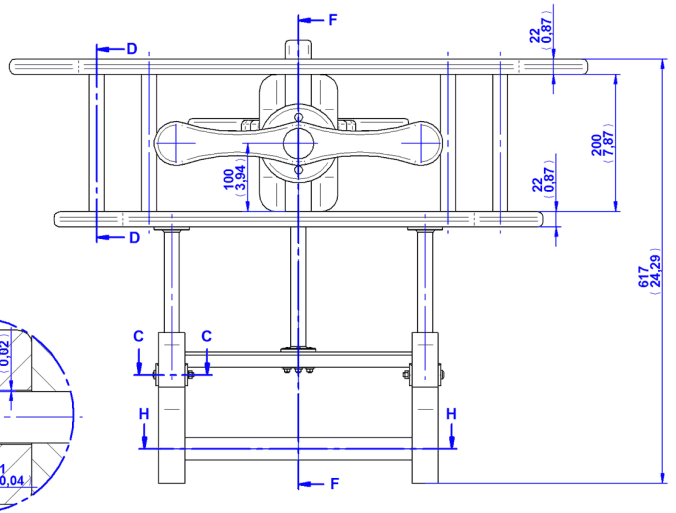


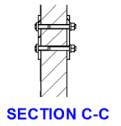
Item Number	Title	Material	Quantity
1	Rocker	Wood	1
2	Platform	Wood	3
3	Bottom wing	Wood	1
4	Fuselage side	Wood	1
5	Fuselage center	Wood	1
6	Fuselage side mirror	Wood	1
7	Top wing	Wood	1
8	Horizontal tail	Wood	1
9	Seat	Wood	1
10	Rocker mirror	Wood	1
11	Rocker crossbar	Wood	2
14	Wing connector	Wood	4
15	Propeller disk	Wood	1
16	Propeller	Wood	1
17	Propeller shaft	Wood	1
18	Propeller spinner	Wood	1
19	Control panel	Wood	1
20	Indicator	Wood	3
21	Countersunk screw M5x35mm	Steel	3
22	Washer D5,3mm	Steel	3
23	Spring lock washer D6mm	Steel	4
24	Hexagon nut M5	Steel	3
25	Wood screw D5 x 35mm	Steel	3
26	Wood screw D5 x 25mm	Steel	6
27	Wood screw D5 x 55mm	Steel	24
28	Plug	Wood	24
29	Lower support side	Steel	4
32	Hexagon nut M6	Steel	4
33	Pan head screw M6x55mm	Steel	4
34	Wood screw D3 x 35mm	Steel	3
35	Pipe D22mm	Steel	3
36	Flange	Steel	4
37	Lower support	Steel	2
38	Spring lock washer D5mm	Steel	3

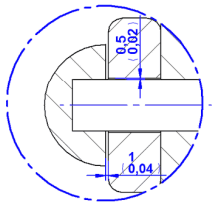
Rocking airplane assembly 2D drawing

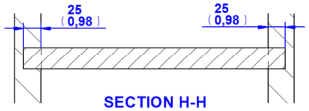


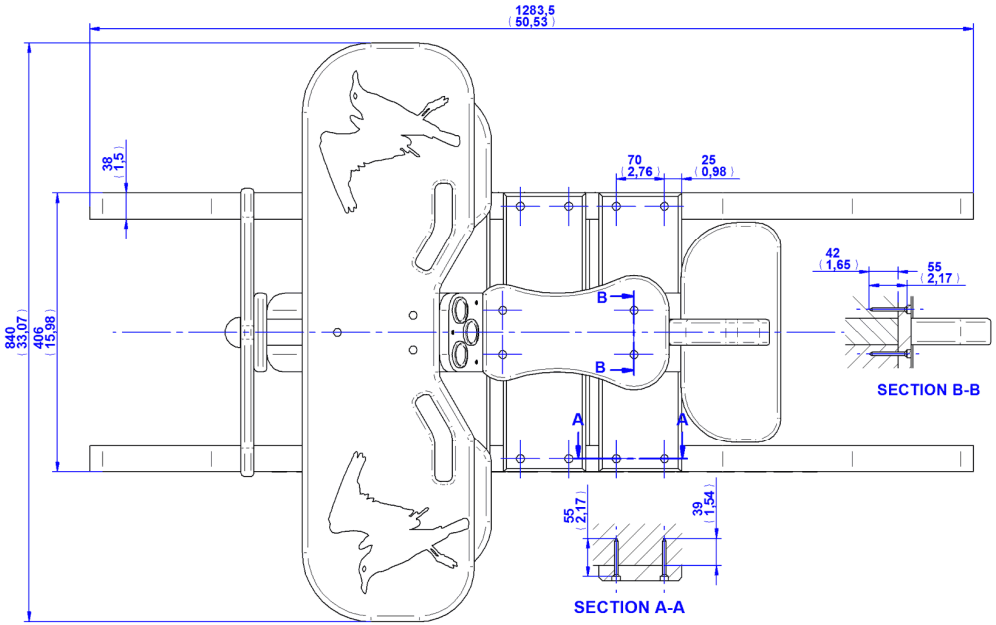


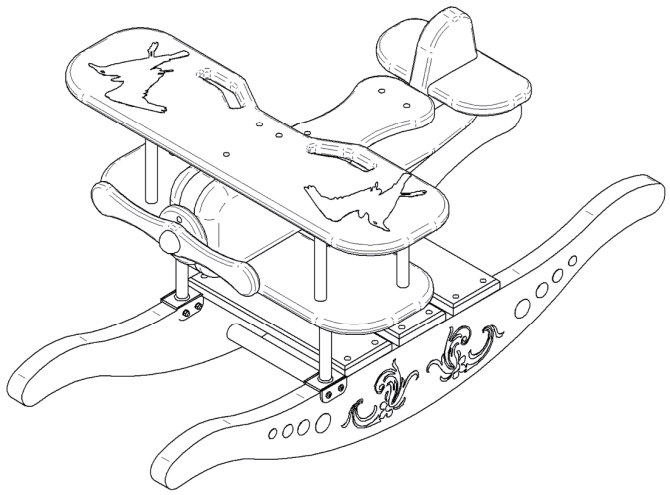


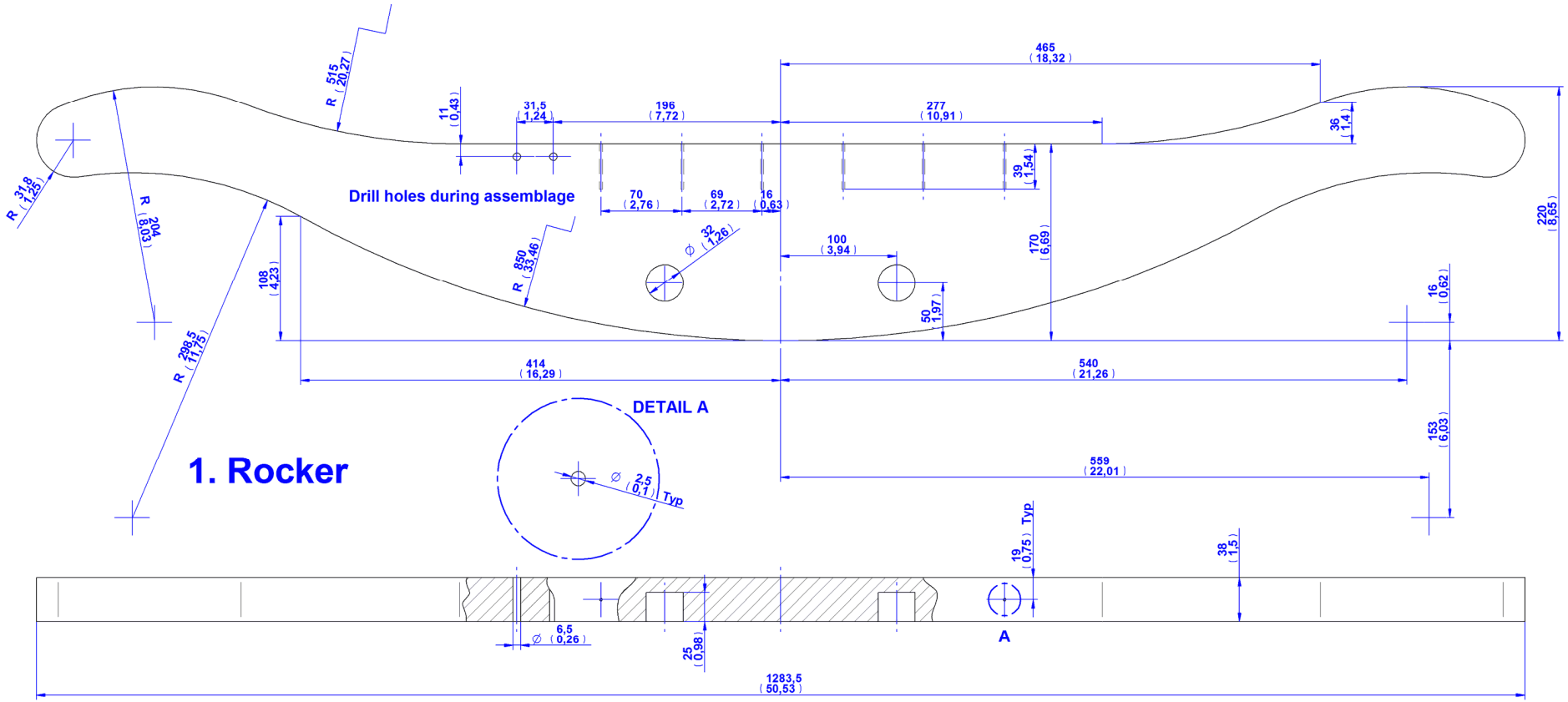


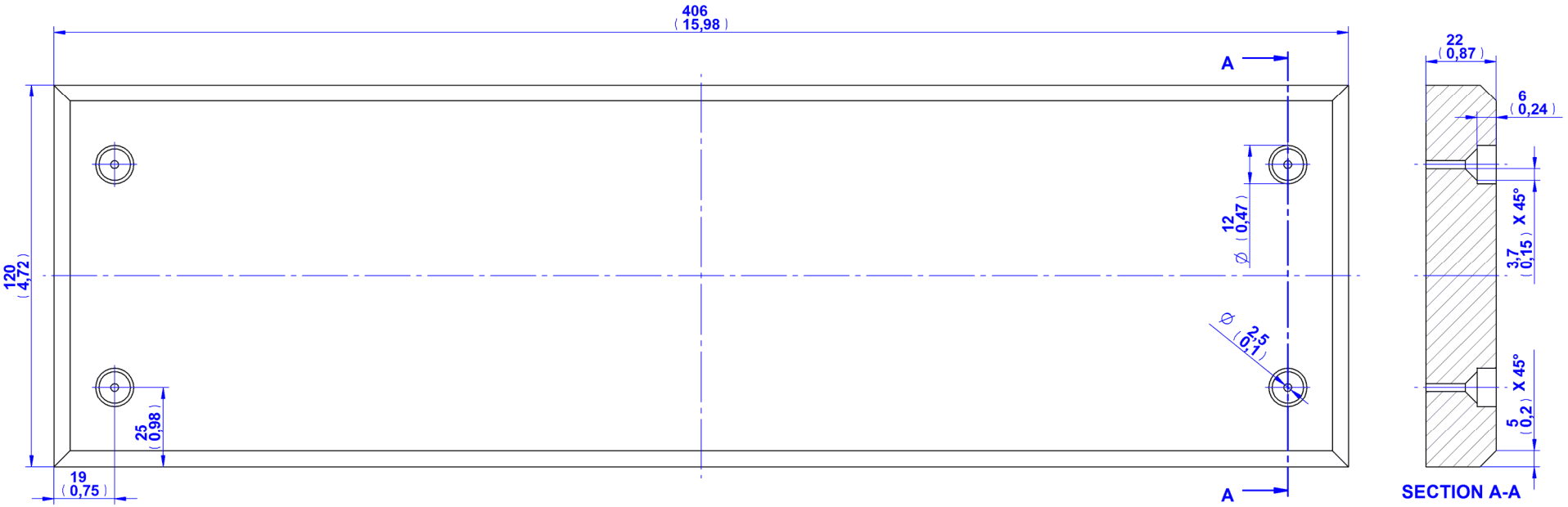




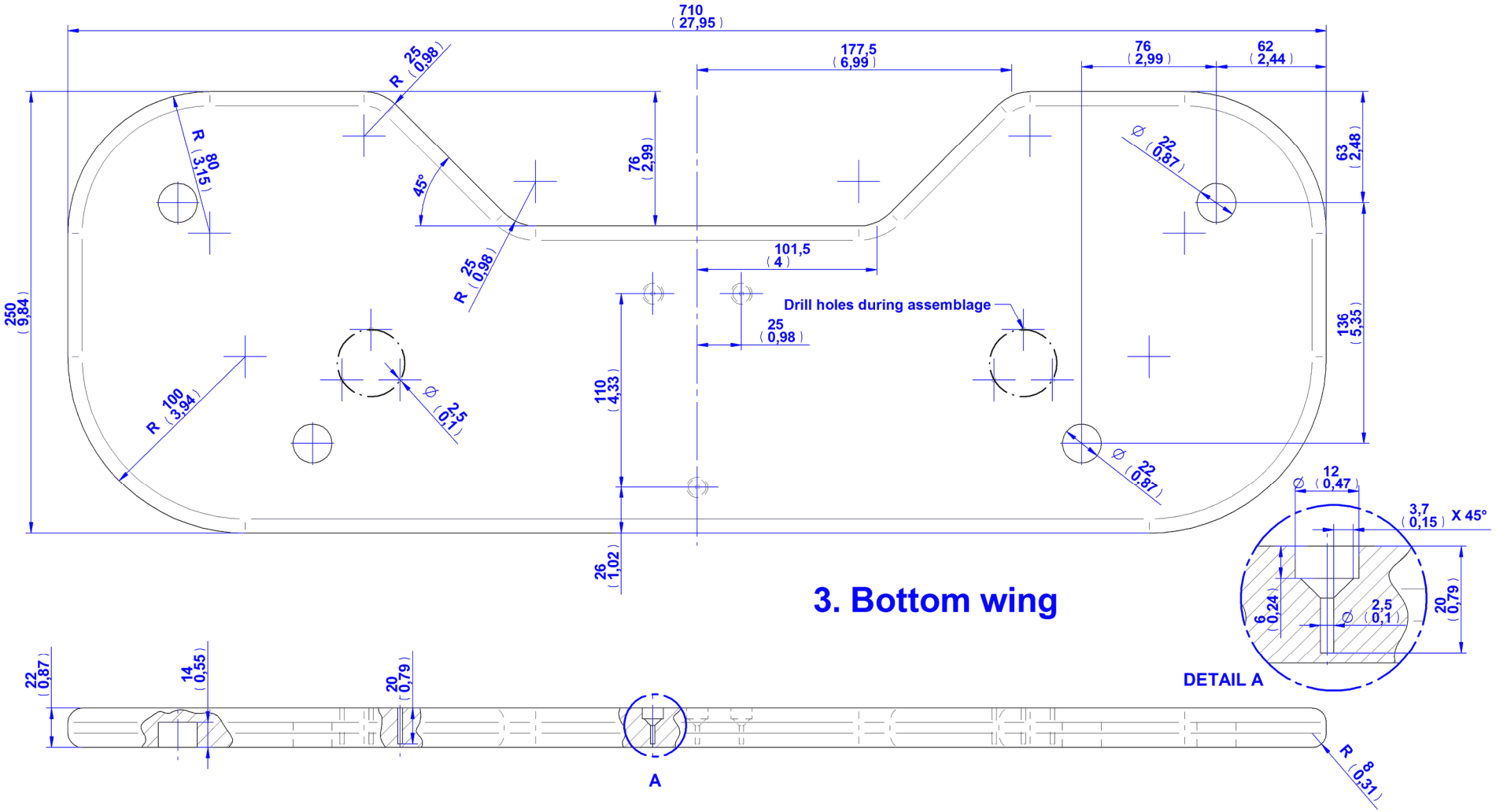


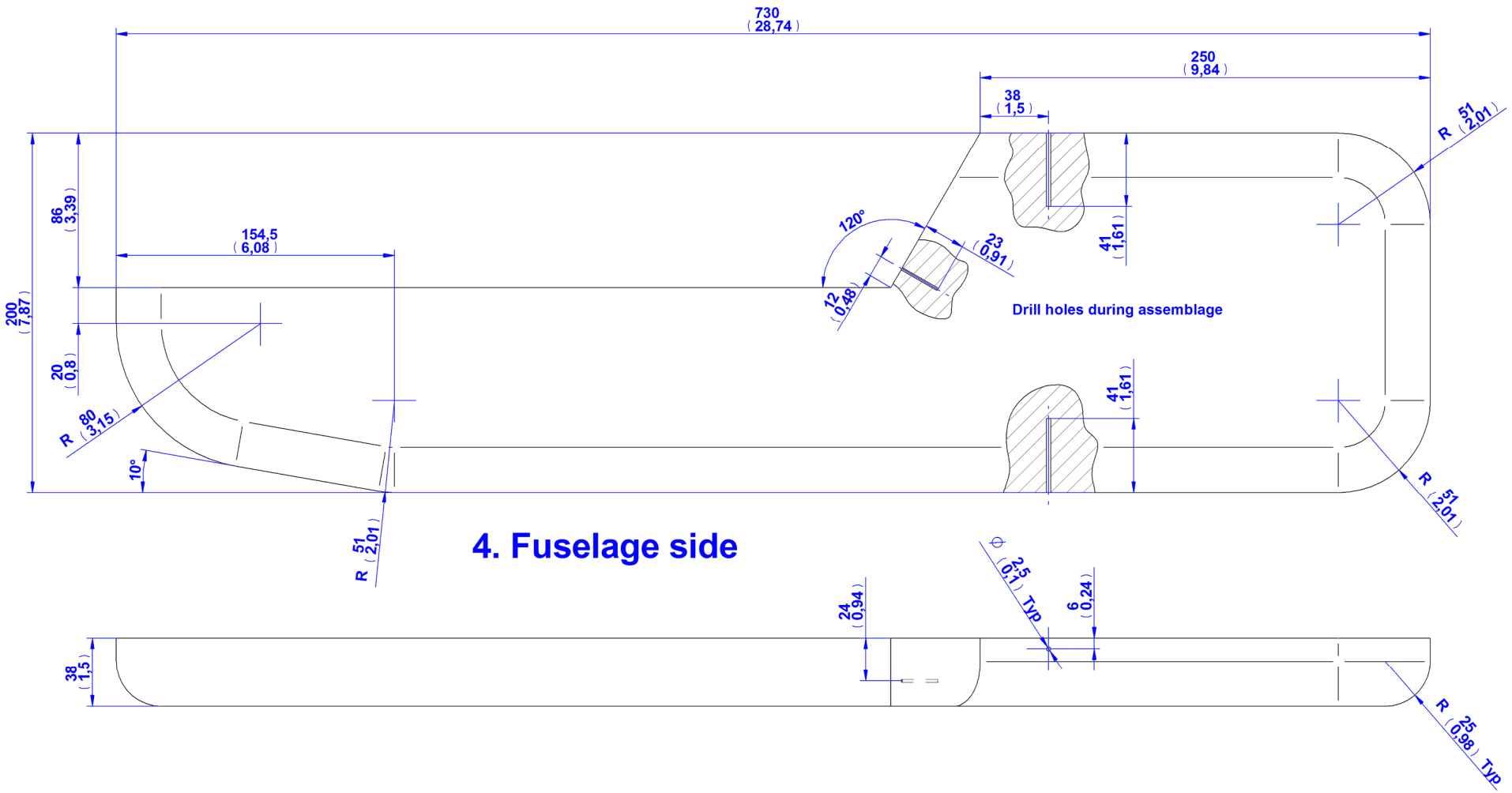


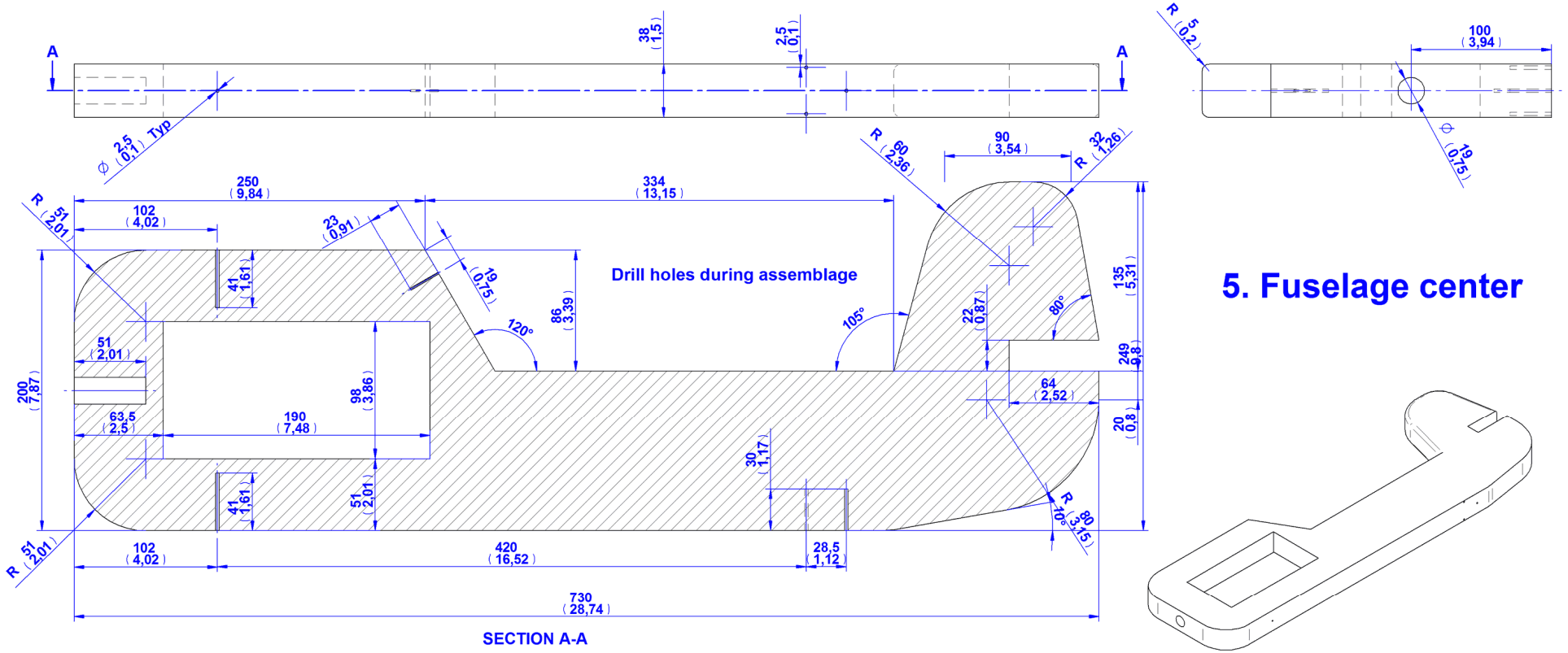

Drill holes during assemblage
1. Rocker
DETAIL A
A
465 (18,32)
277 (10,91)
196 (7,72)
31,5 (1,24)
11 (0,43)
R 515 (20,27)
R 31,8 (1,25)
R 204 (8,03)
R 298,5 (11,75)
R 850 (33,46)
108 (4,23)
70 (2,76)
69 (2,72)
16 (0,63)
39 (1,54)
36 (1,4)
220 (8,65)
170 (6,69)
100 (3,94)
50 (1,97)
16 (0,62)
414 (16,29)
540 (21,26)
559 (22,01)
153 (6,03)
Ø 32 (1,26)
Ø 2,5 (0,1) Typ
19 (0,75) Typ
38 (1,5)
Ø 6,5 (0,26)
25 (0,98)
1283,5 (50,53)


406
(15,98)
A
A
120
(4,72)
12
(0,47)
Ø
Ø 2,5
(0,1)
25
(0,98)
19
(0,75)
22
(0,87)
6
(0,24)
3,7
(0,15)
X 45°
X 45°
5
(0,2)
SECTION A-A

2. Platform

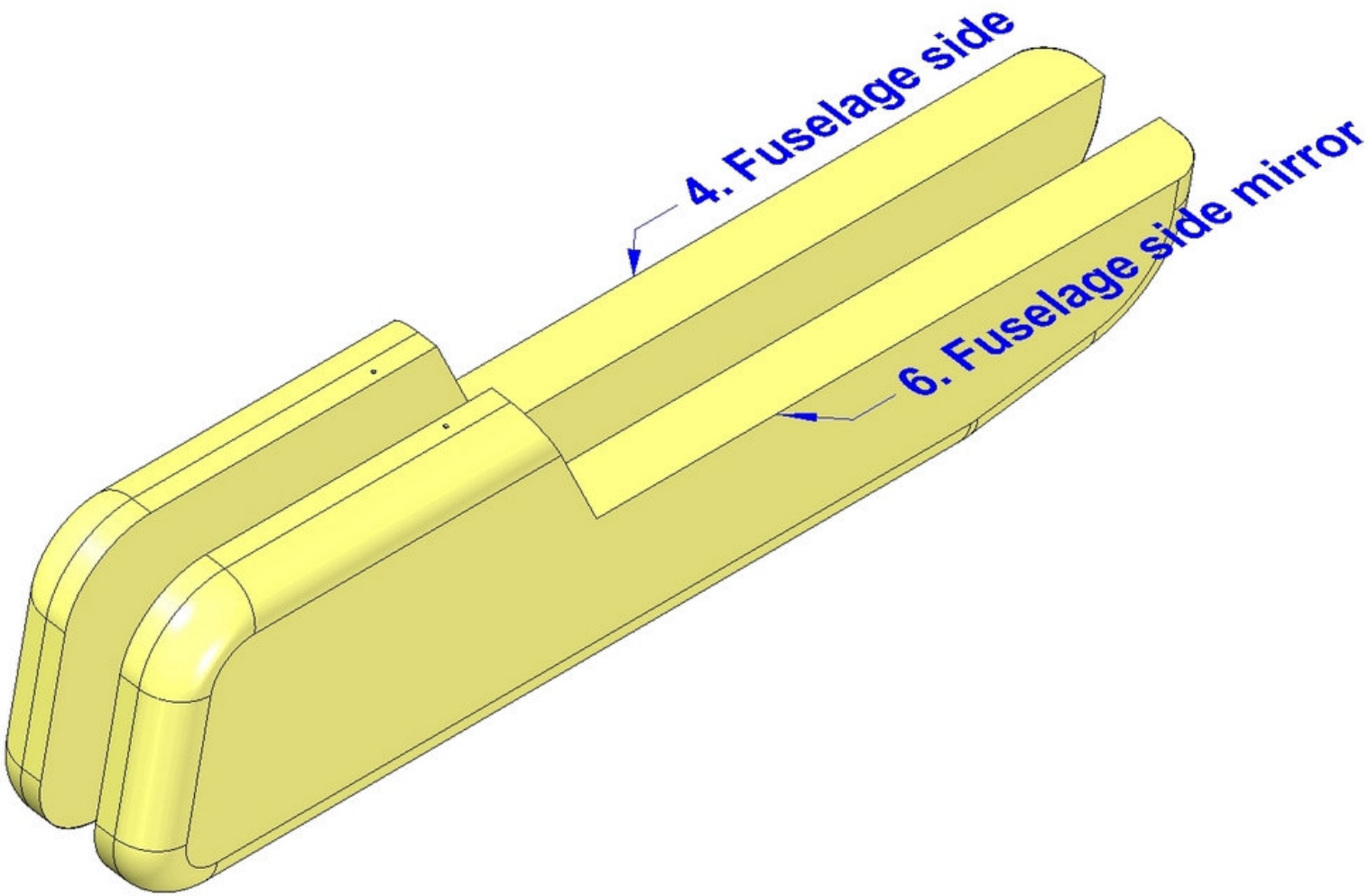

710
(27,95)
177,5
(6,99)
76
(2,99)
62
(2,44)
R 25
(0,98)
R 80
(3,15)
45°
76
(2,99)
63
(2,48)
Ø 22
(0,87)
101,5
(4)
R 25
(0,98)
Drill holes during assemblage
25
(0,98)
250
(9,84)
136
(5,35)
R 100
(3,94)
Ø 25
(0,1)
110
(4,33)
Ø 22
(0,87)
26
(1,02)
3. Bottom wing
12
(0,47)
3,7
(0,15) X 45°
6
(0,24)
2,5
(0,1)
20
(0,79)
DETAIL A
22
(0,87)
14
(0,55)
20
(0,79)
A
R 8
(0,31)

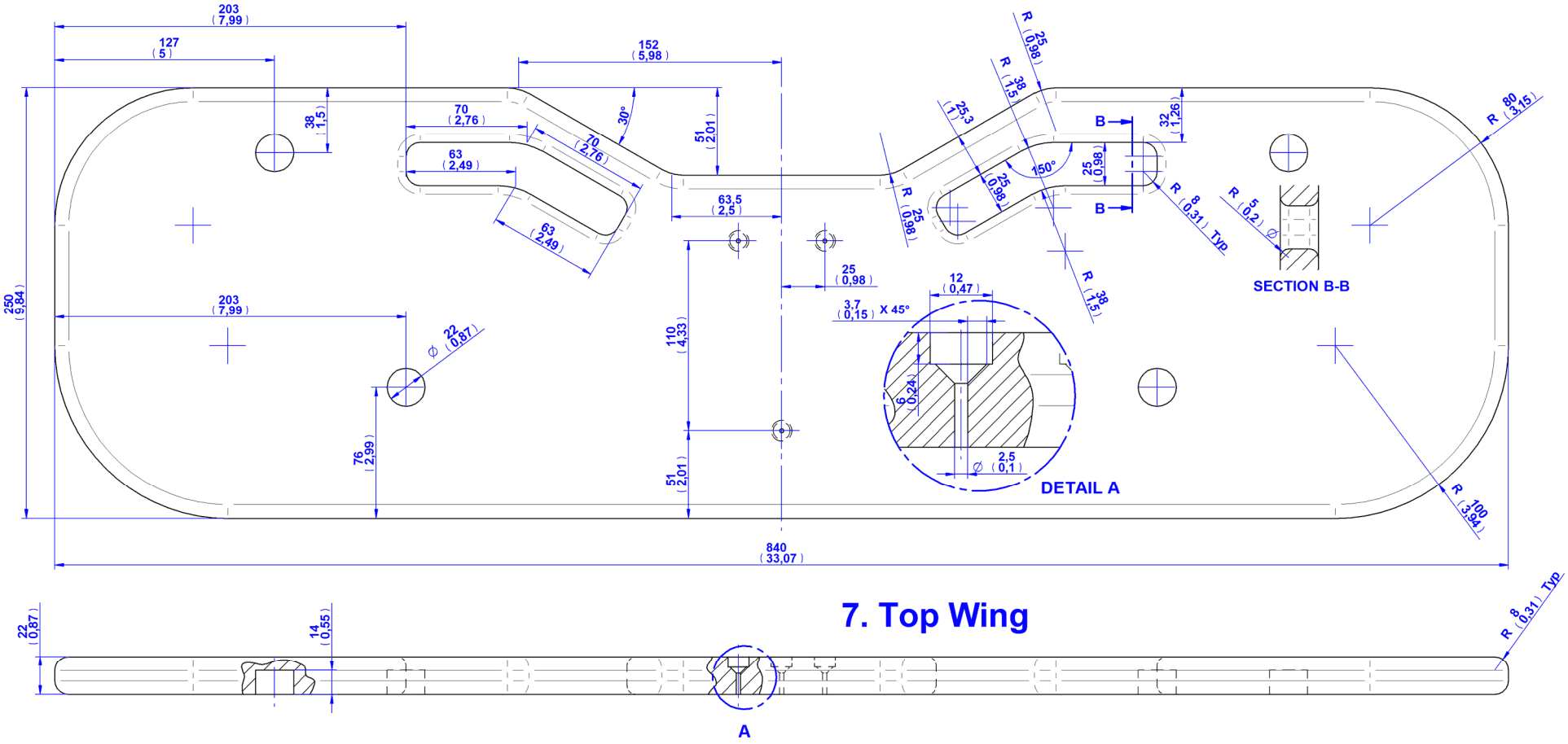

730
(28,74)
250
(9,84)
38
(1,5)
R 51
(2,01)
86
(3,39)
154,5
(6,08)
120°
Ø3
(0,91)
41
(1,61)
200
(7,87)
12
(0,48)
Drill holes during assemblage
20
(0,8)
R 80
(3,15)
41
(1,61)
10°
R 51
(2,01)
R 51
(2,01)
4. Fuselage side
Ø
(2,5
(0,1) Typ
24
(0,94)
6
(0,24)
38
(1,5)
R 25
(0,98) Typ



SECTION A-A

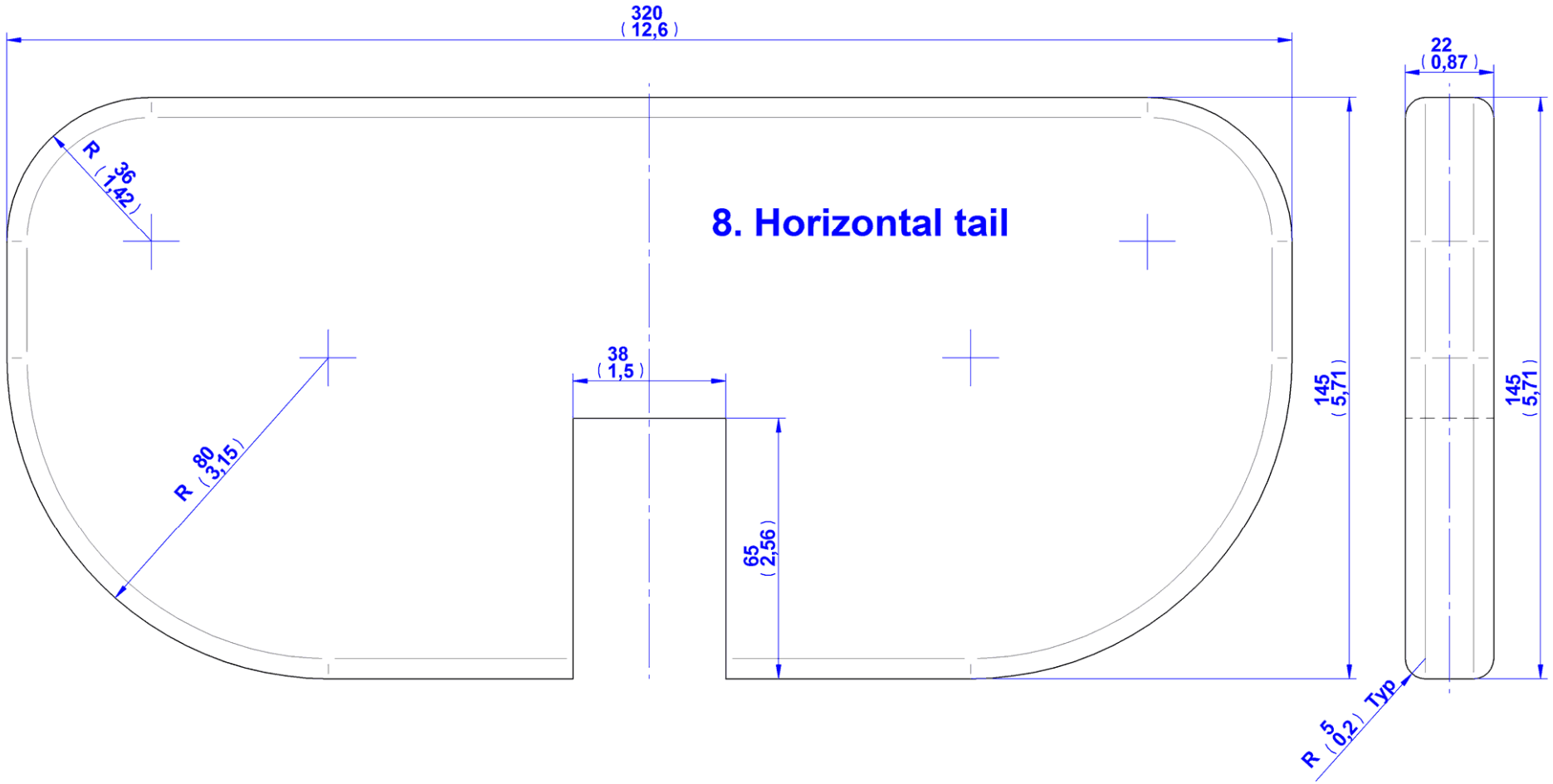
5. Fuselage center

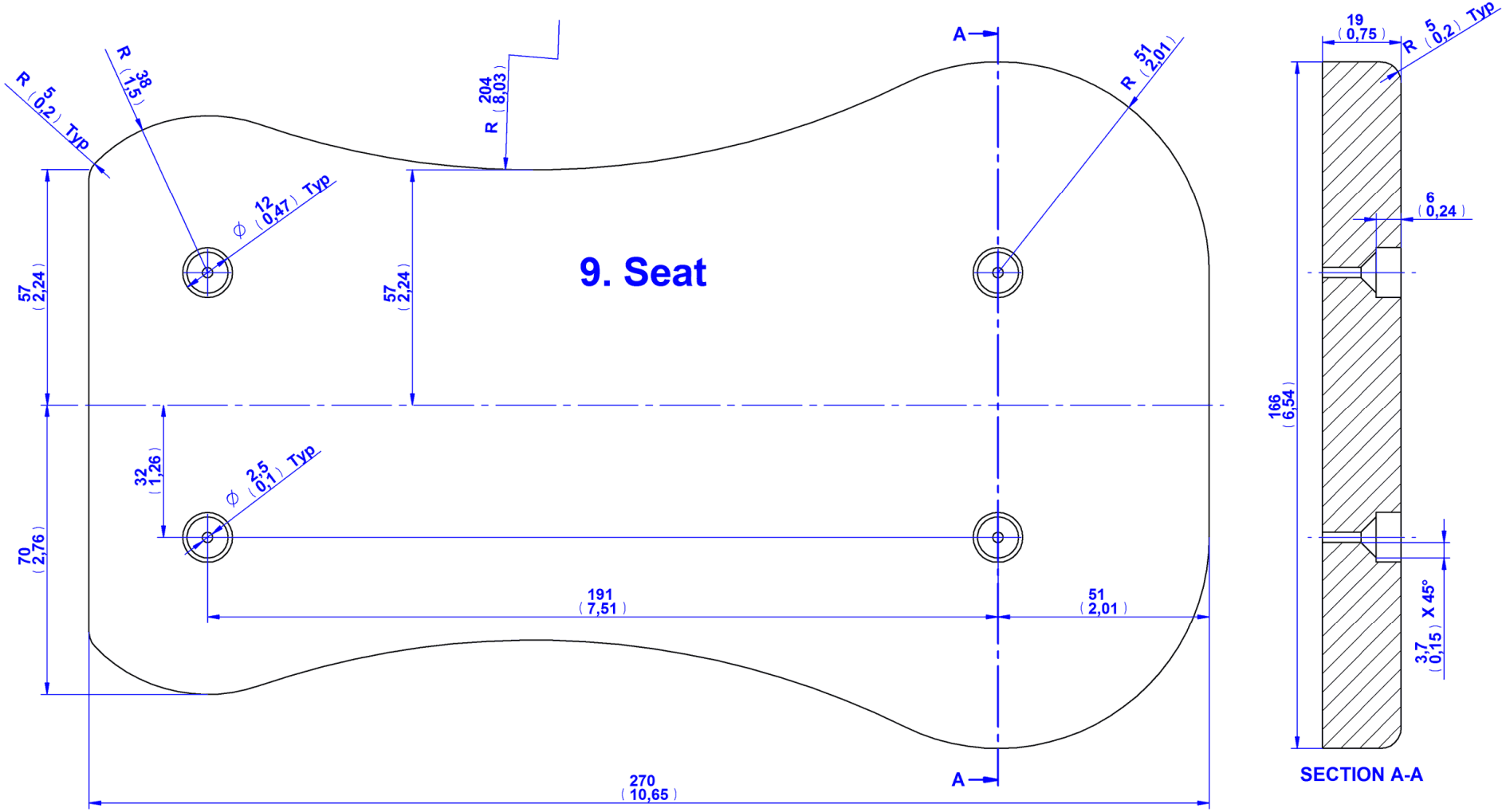

4. Fuselage side
6. Fuselage side mirror

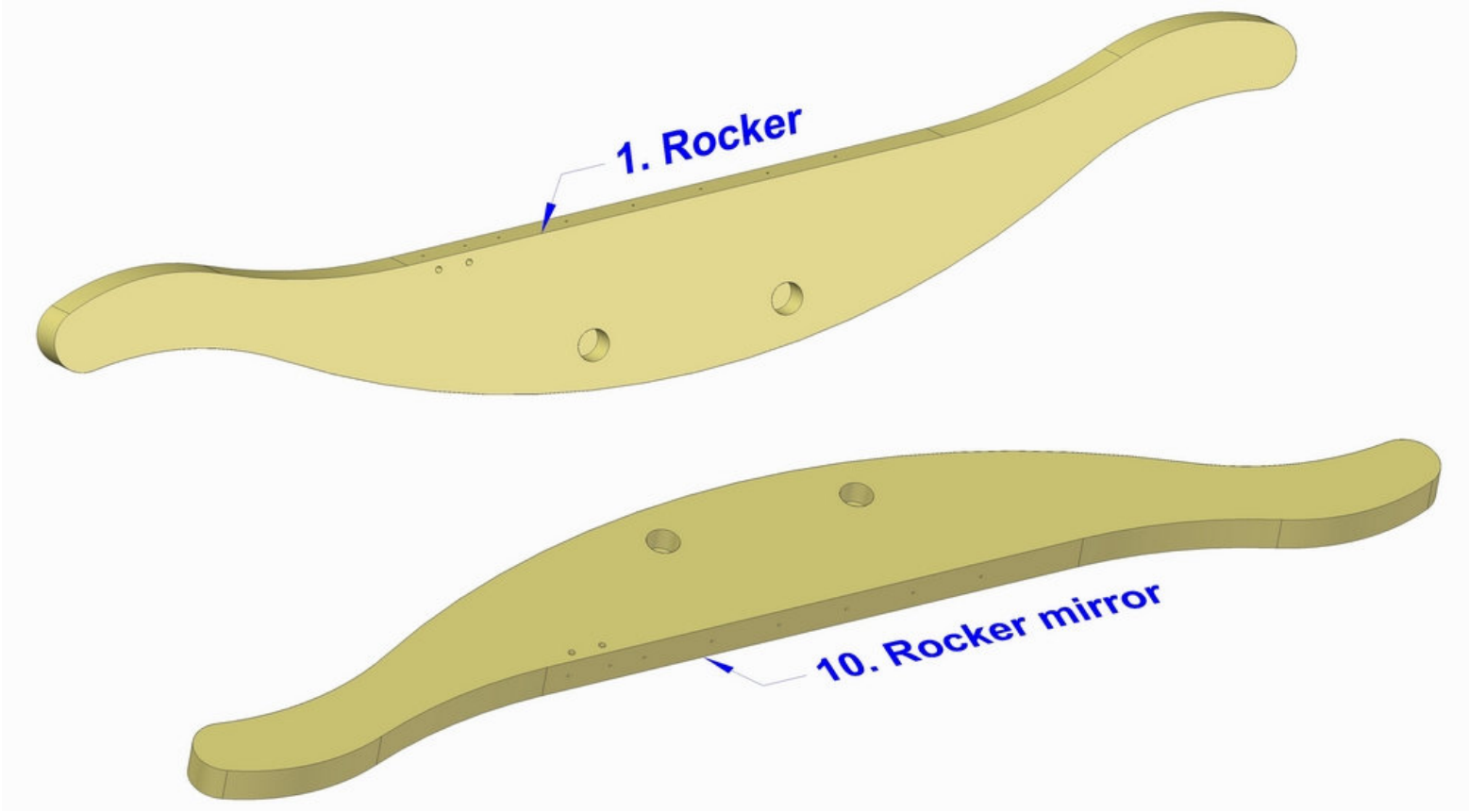

203 (7,99)
127 (5)
152 (5,98)
38 (1,5)
70 (2,76)
63 (2,49)
30°
51 (2,01)
63,5 (2,5)
25 (0,98)
R 25 (0,98)
R 38 (1,5)
25,3 (1)
B
32 (1,26)
150°
R 8 (0,31) Typ.
R 80 (3,15)
R 5 (0,2)
SECTION B-B
250 (9,84)
203 (7,99)
Ø 22 (0,87)
110 (4,33)
76 (2,99)
51 (2,01)
12 (0,47)
3,7 (0,15) X 45°
6 (0,24)
Ø 2,5 (0,1)
DETAIL A
R 100 (3,94)
840 (33,07)

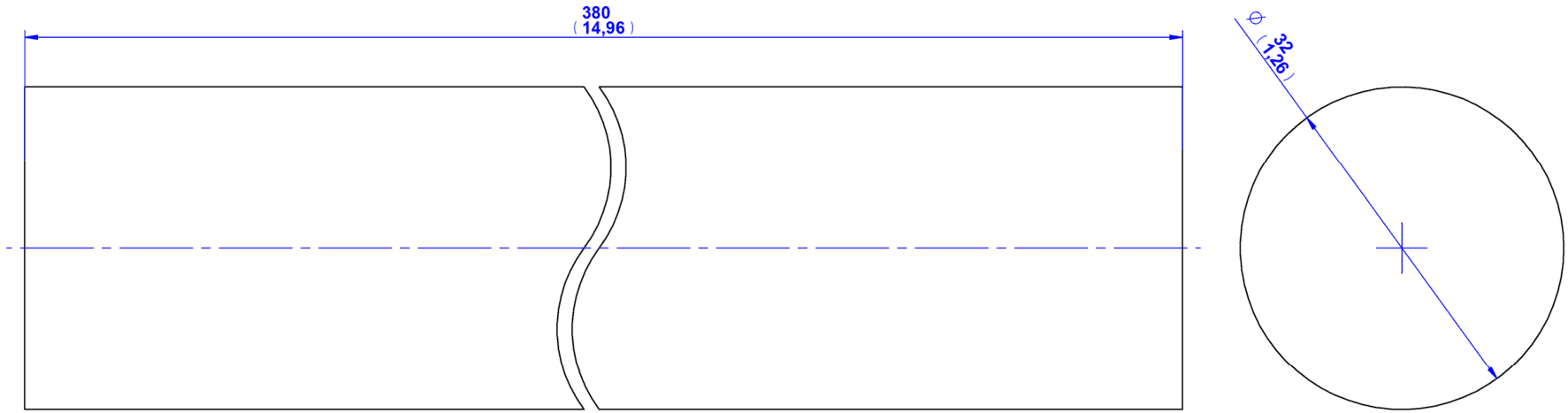
7. Top Wing

22 (0,87)
14 (0,55)
R 8 (0,31) Typ.
A

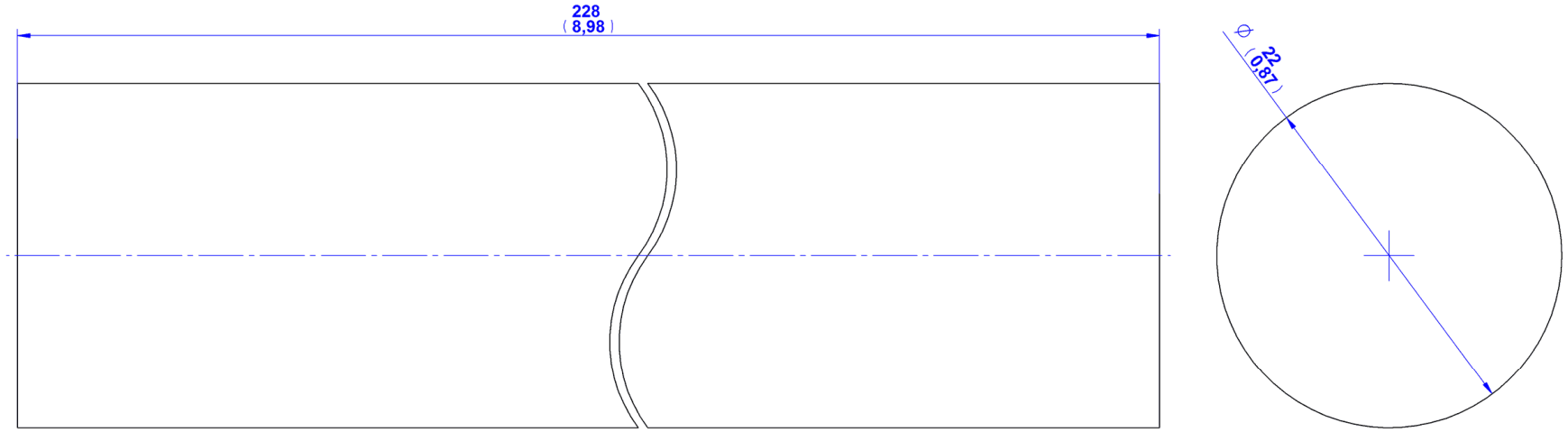

320
(12,6)
22
(0,87)
R 36
(1,42)
8. Horizontal tail
38
(1,5)
145
(5,71)
145
(5,71)
R 80
(3,15)
65
(2,56)
R 5
(0,2) Typ


9. Seat
R 5 (0,2) Typ
R 38 (1,5)
R 204 (8,03)
R 51 (2,01)
ϕ 12 (0,47) Typ
ϕ 2,5 (0,1) Typ
57 (2,24)
57 (2,24)
32 (1,26)
70 (2,76)
191 (7,51)
51 (2,01)
270 (10,65)
A
A
19 (0,75)
R 5 (0,2) Typ
6 (0,24)
166 (6,54)
3,7 (0,15) X 45°
SECTION A-A


1. Rocker
10. Rocker mirror

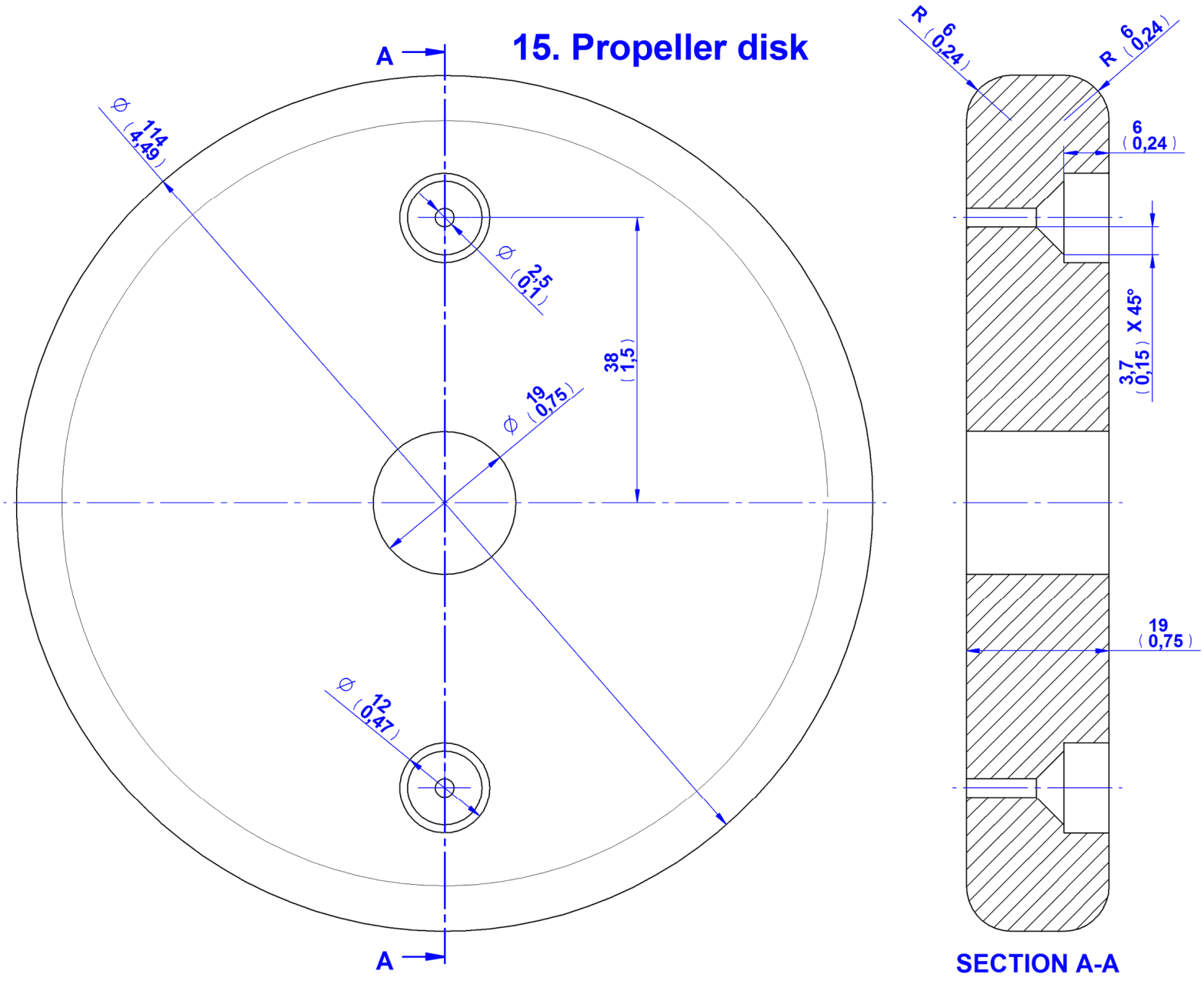


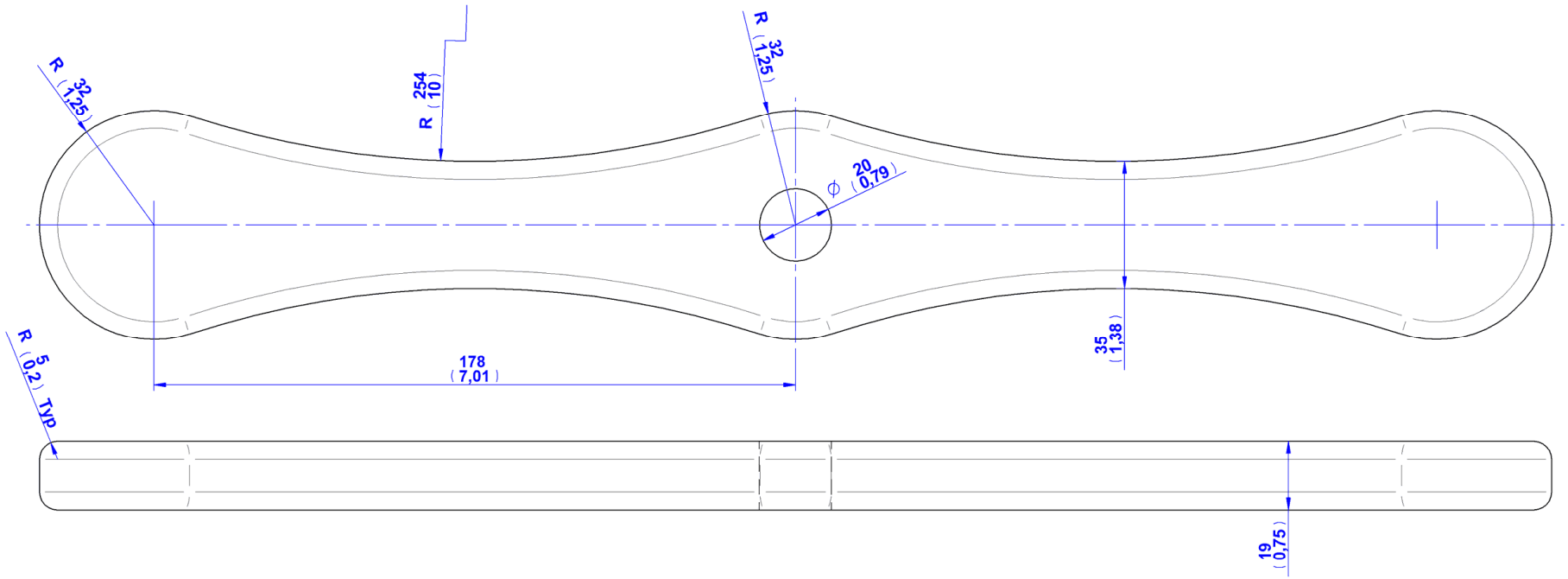
11. Rocker crossbar



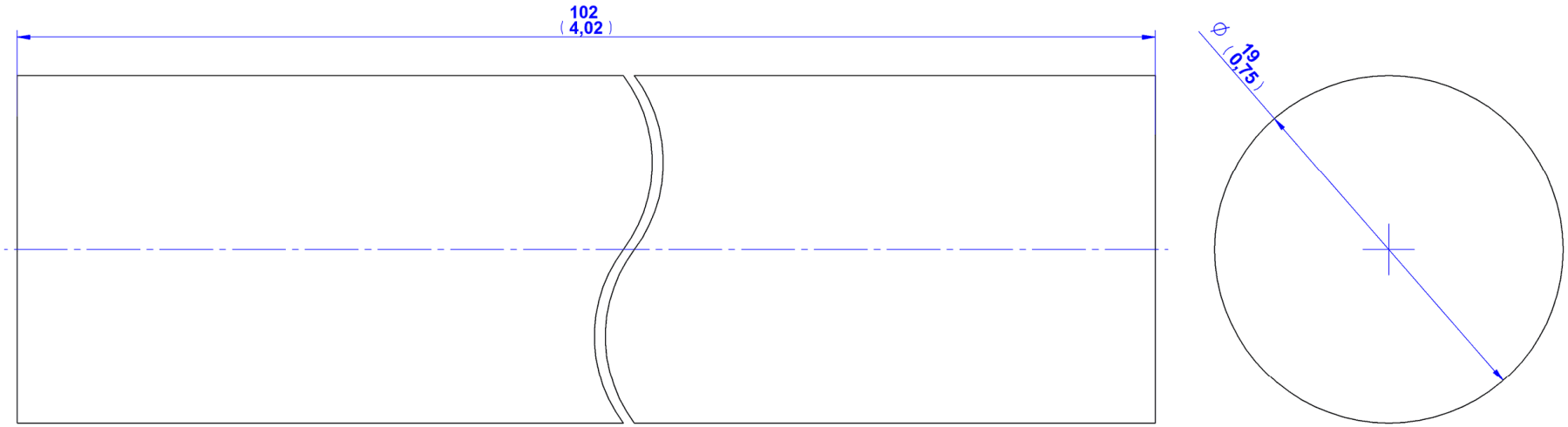
14. Wing connector

15. Propeller disk

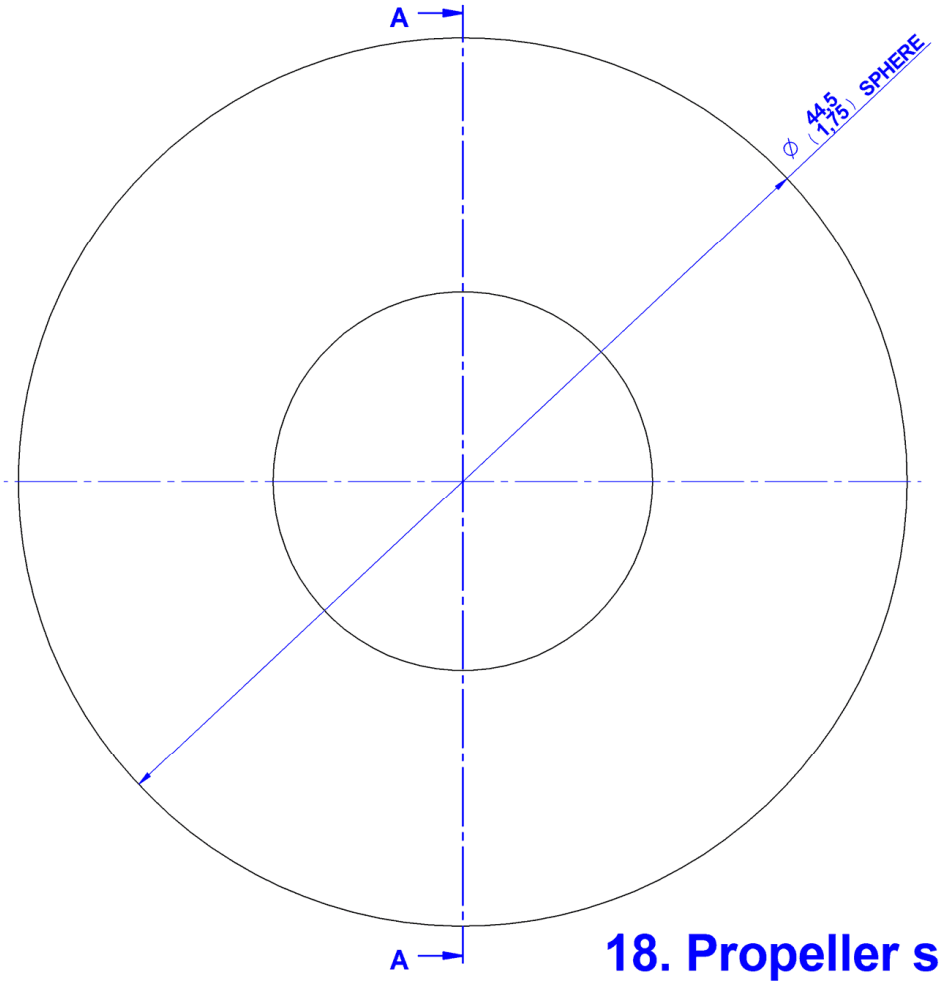


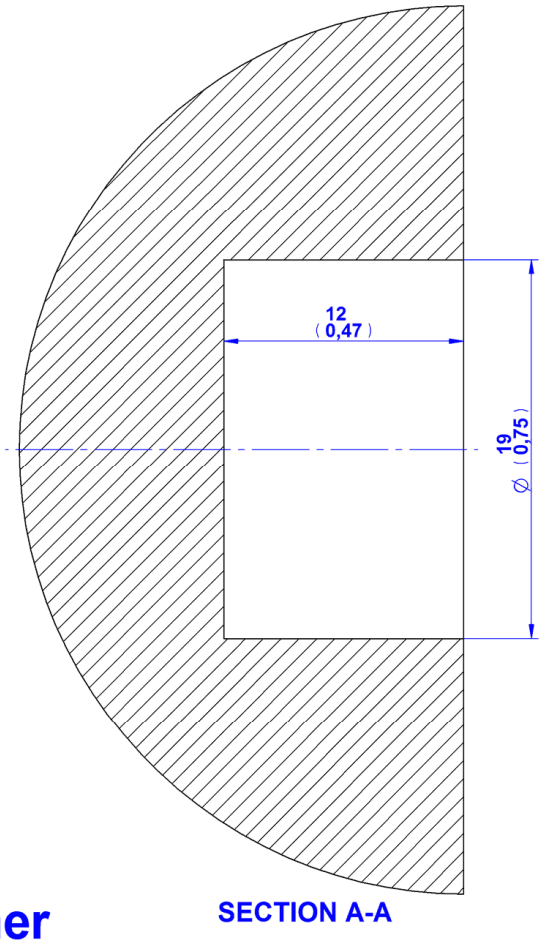


16. Propeller



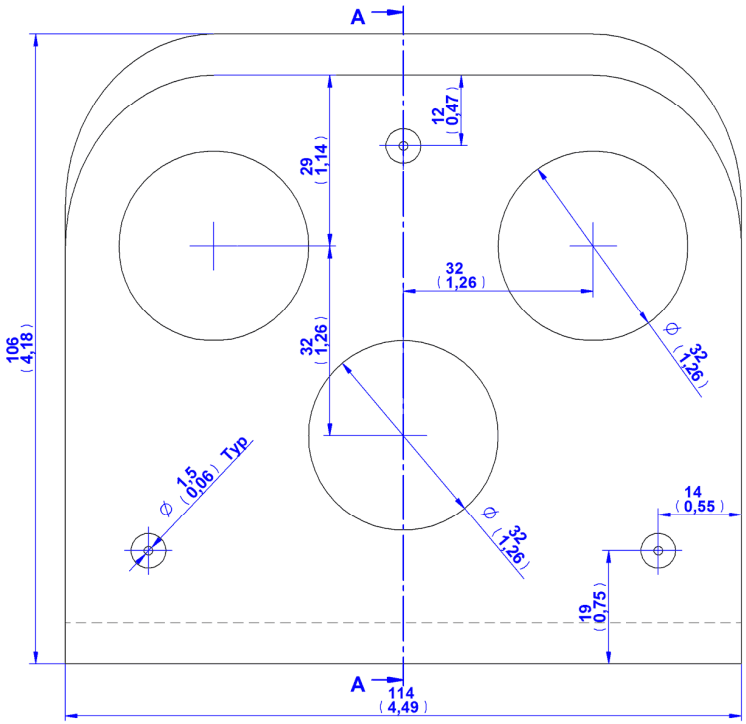
17. Propeller shaft

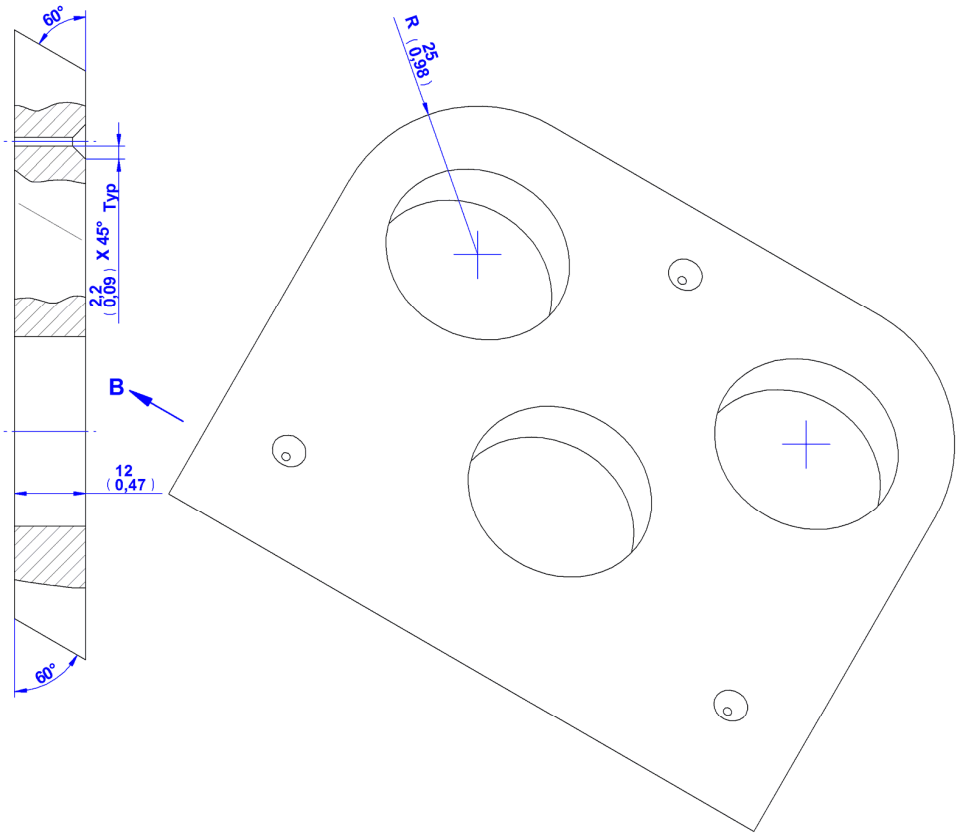




18. Propeller spinner

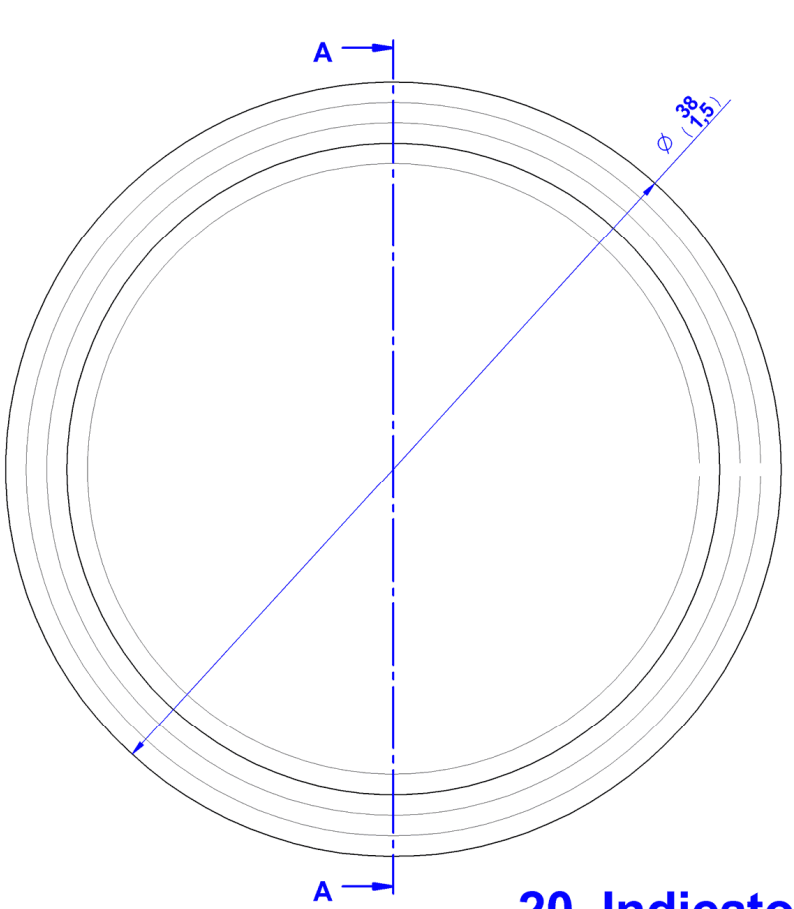
SECTION A-A

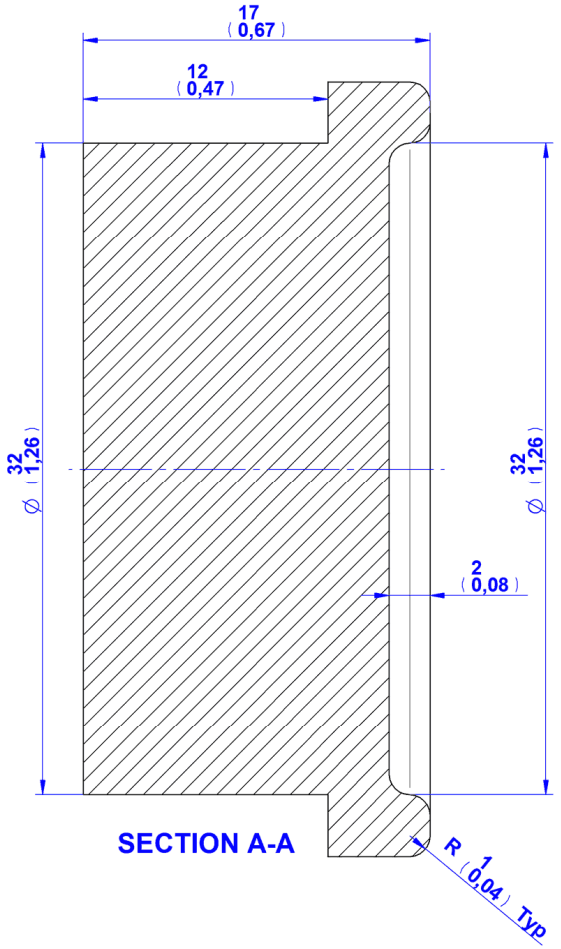




19. Constrol panel

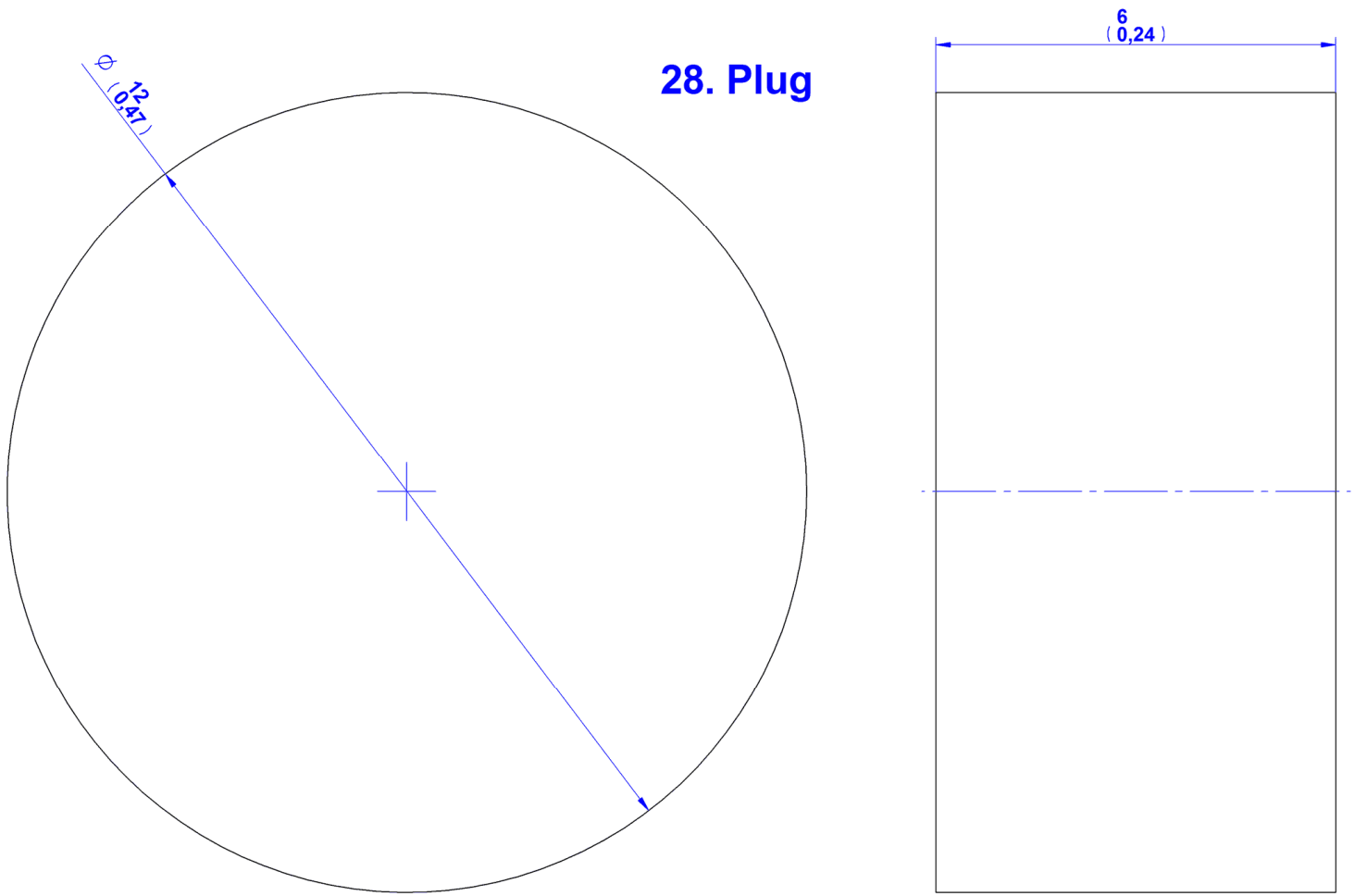
VIEW B

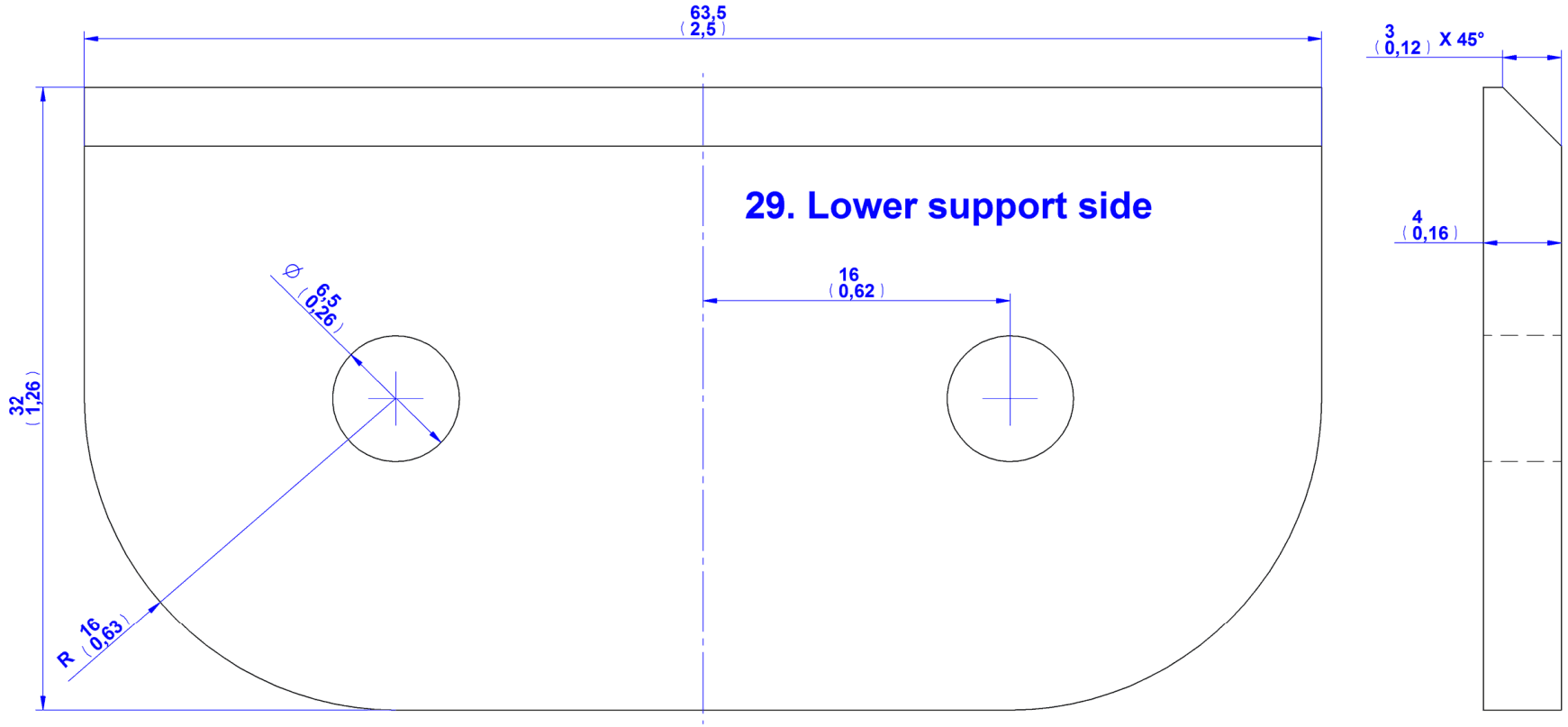


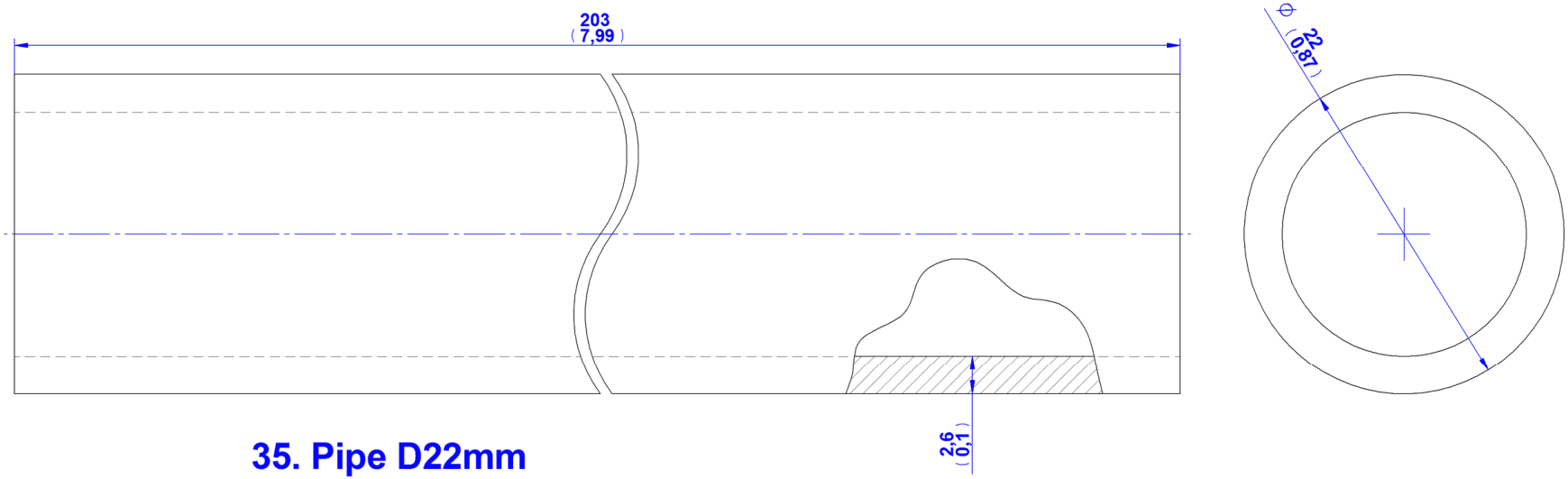


20. Indicator

28. Plug

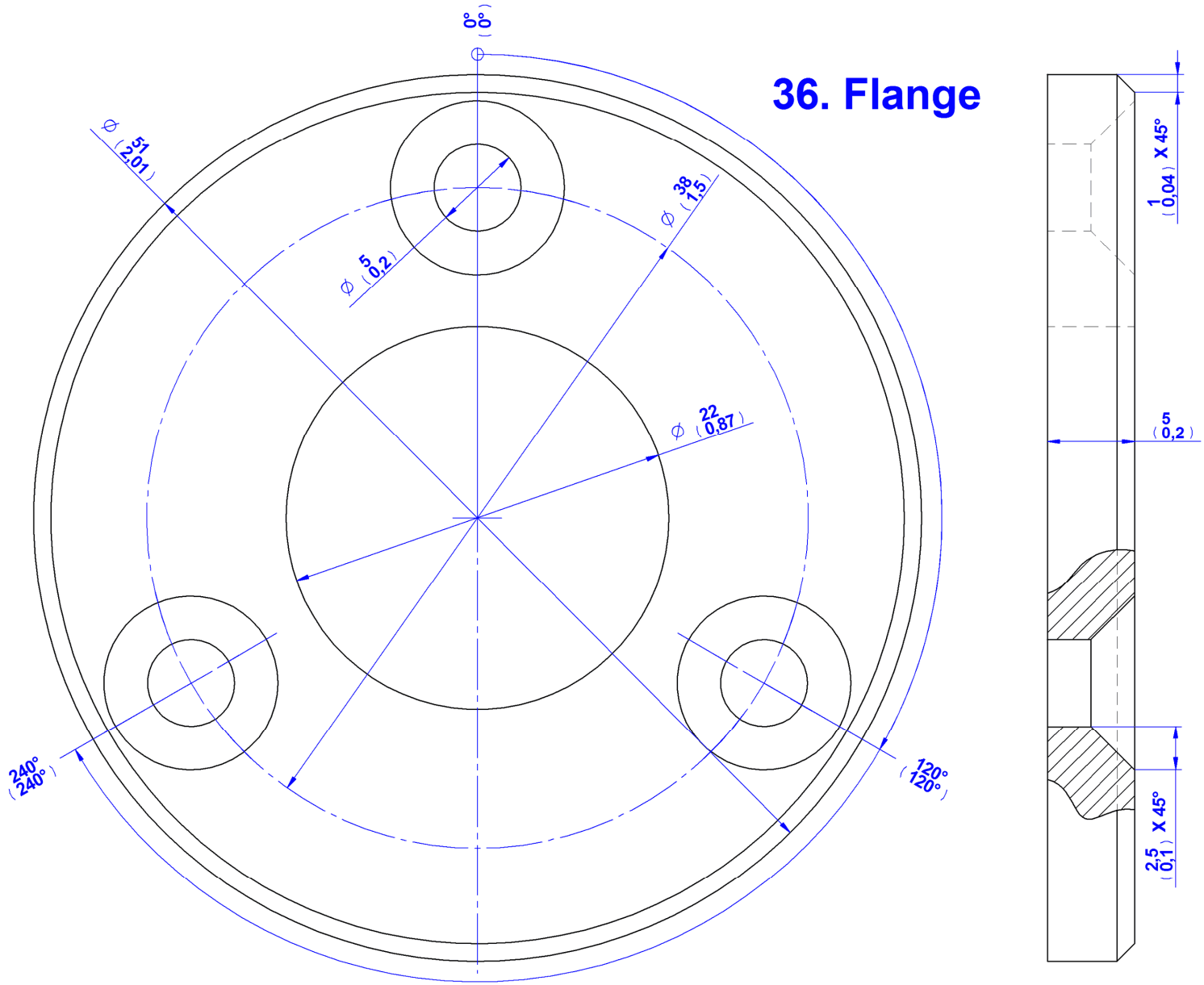


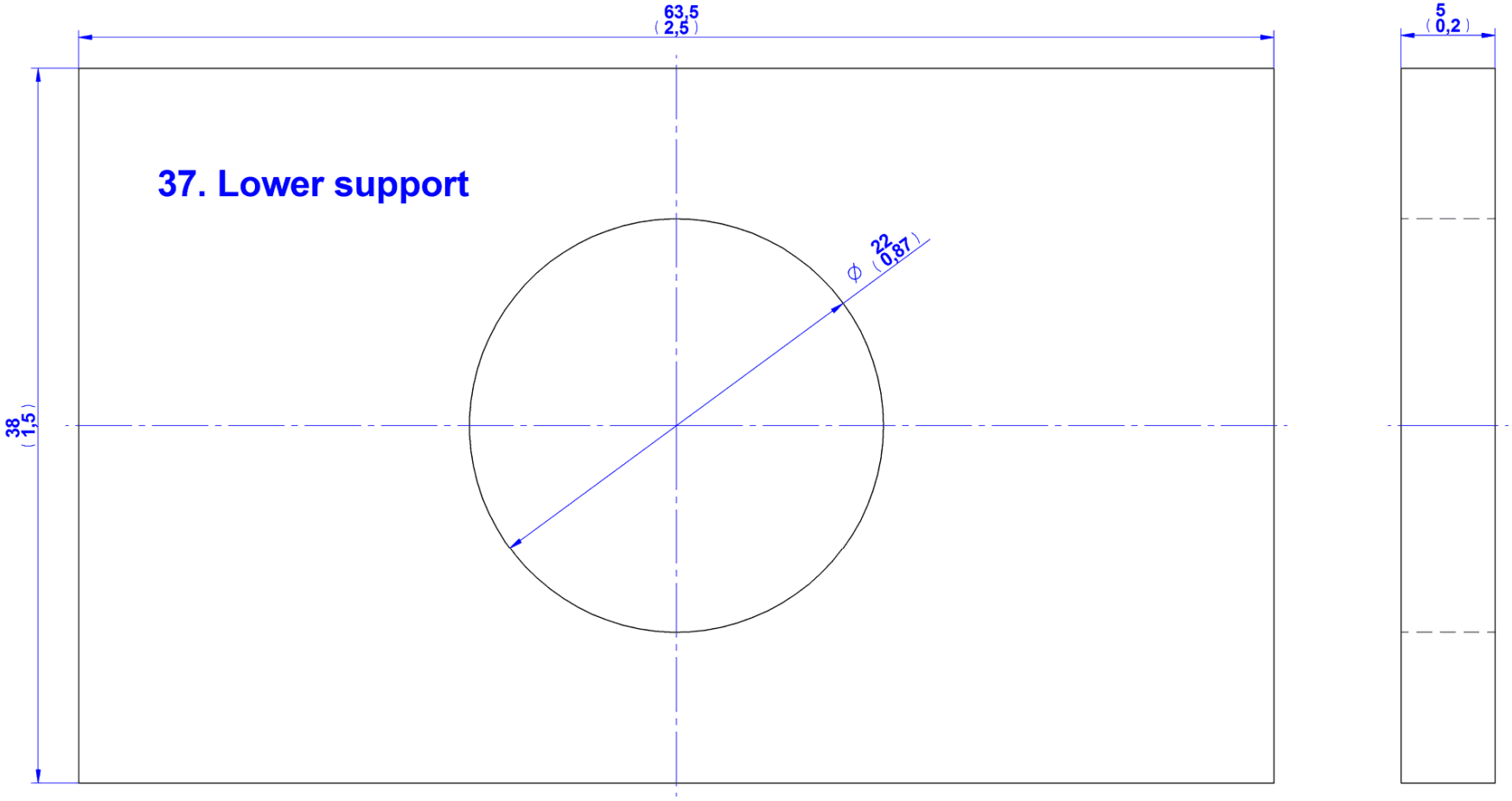

63,5
(2,5)
3
(0,12) X 45°
29. Lower support side
4
(0,16)
16
(0,62)
Ø
(0,26)
32
(1,26)
R
16
(0,63)

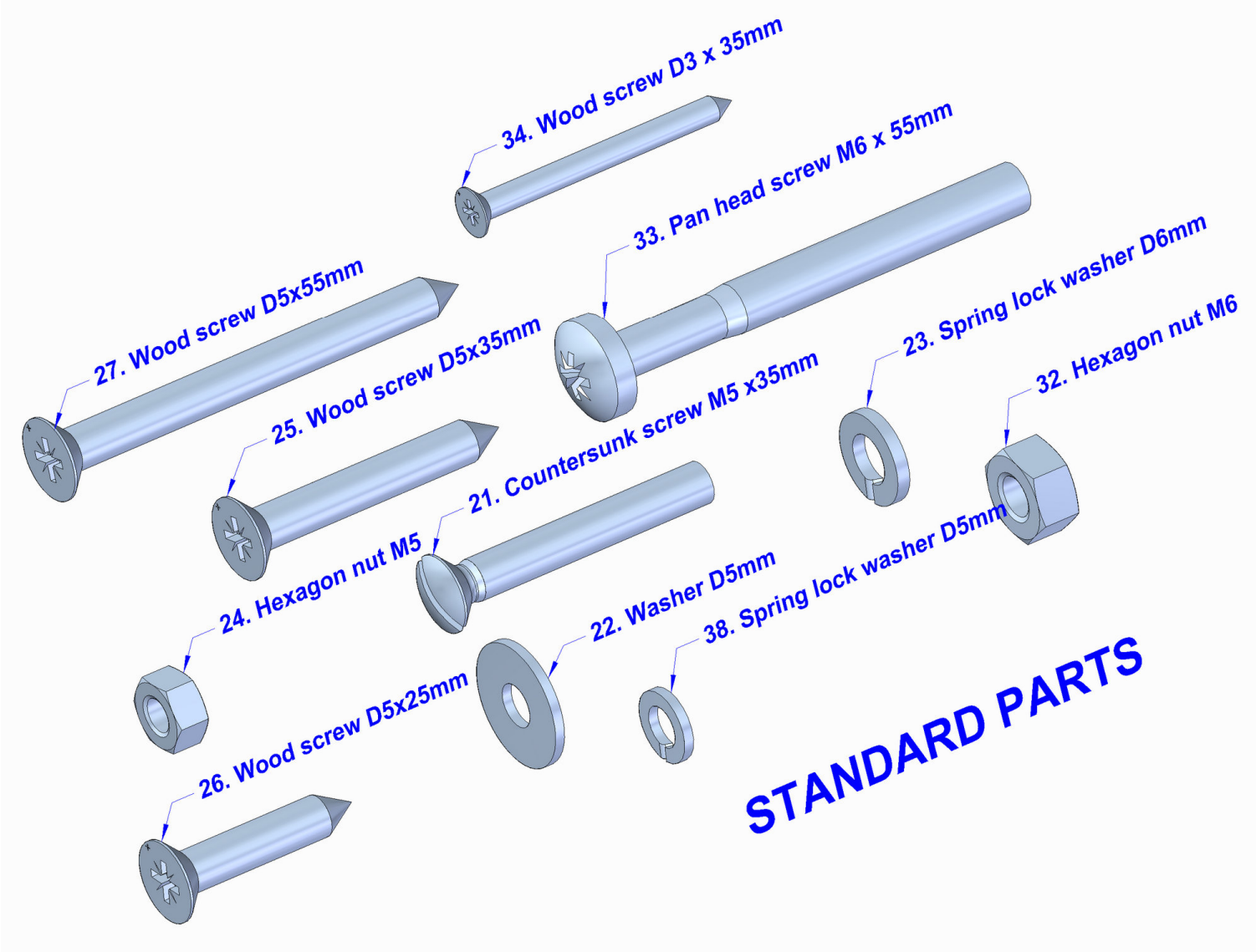


35. Pipe D22mm

36. Flange


0° (0°)
Ø 51 (2,01)
Ø 38 (1,5)
Ø 5 (0,2)
Ø 22 (0,87)
240° (240°)
120° (120°)
1 (0,04) X 45°
5 (0,2)
2,5 (0,1) X 45°

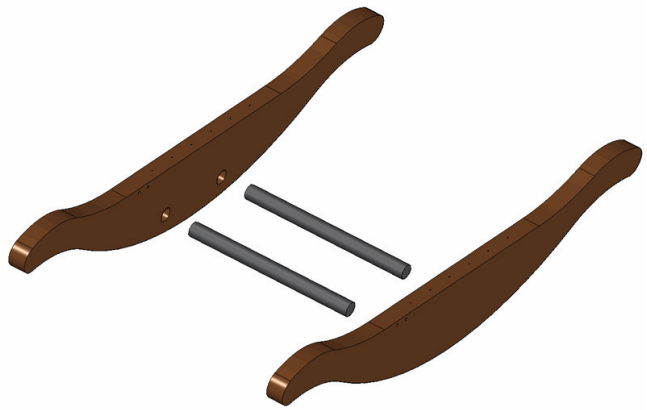

63,5
(2,5)
5
(0,2)
37. Lower support
ϕ 22 (0,87)
38
(1,5)

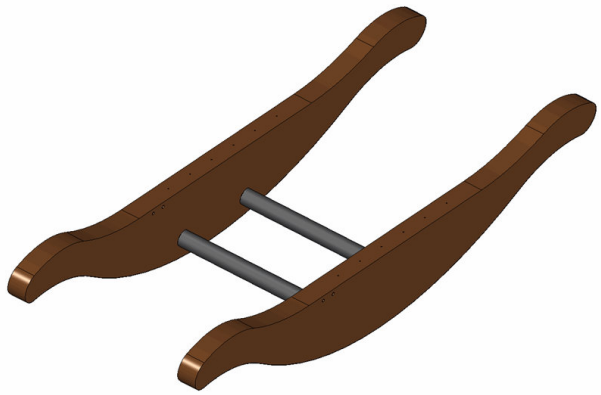

34. Wood screw D3 x 35mm
33. Pan head screw M6 x 55mm
27. Wood screw D5x55mm
25. Wood screw D5x35mm
21. Countersunk screw M5 x35mm
23. Spring lock washer D6mm
32. Hexagon nut M6
24. Hexagon nut M5
22. Washer D5mm
38. Spring lock washer D5mm
26. Wood screw D5x25mm
STANDARD PARTS

Assemblage instructions

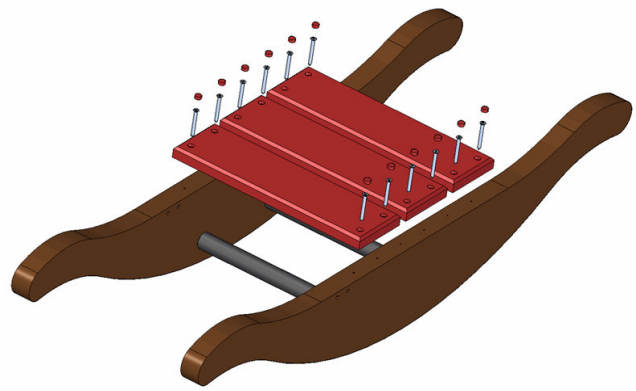
In this project, you should drill pilot hole, before screwing each Wood screw.

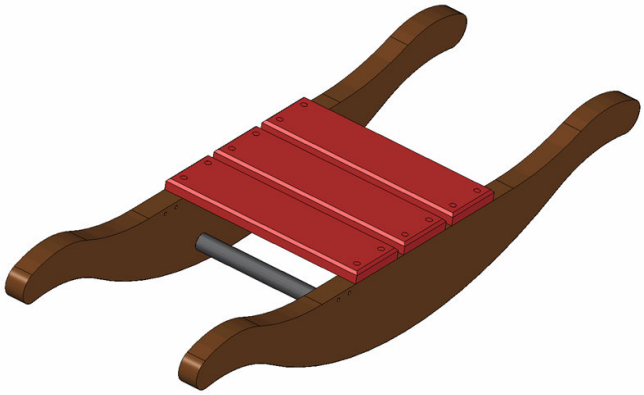
1. Join the Rocker (part 1), Rocker mirror (part 10) and the Rocker crossbars (part 11) together with glue.



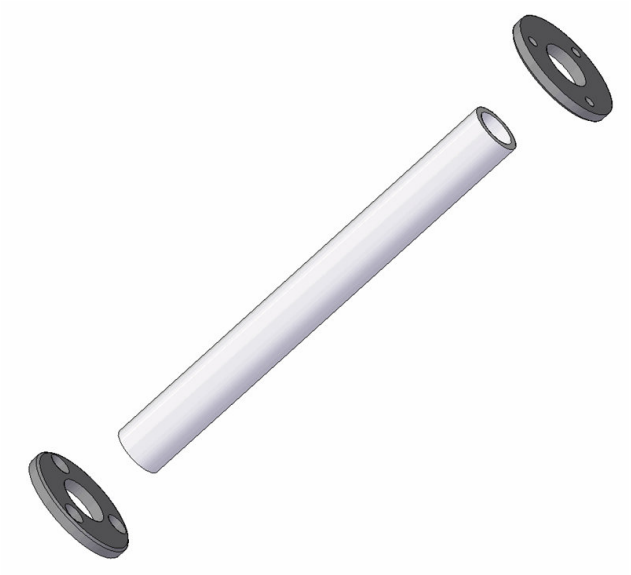


2. Attach the Platforms (part 2) to the subassembly made in previous step with Woodscrews D5 x 55mm (part 27). Glue the Plugs (part 28) on top of each Woodscrews head.

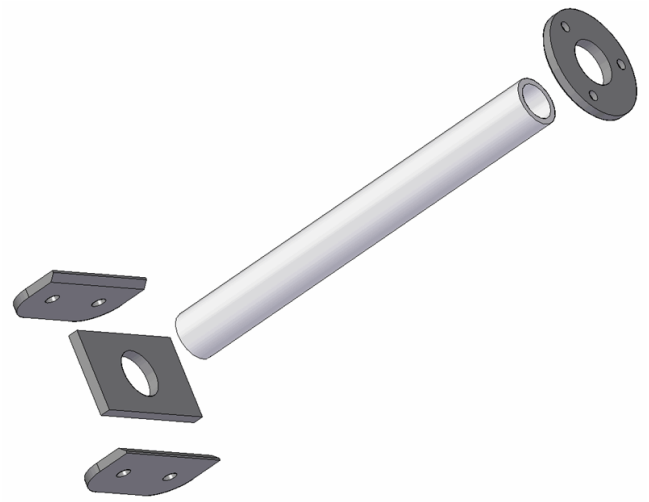


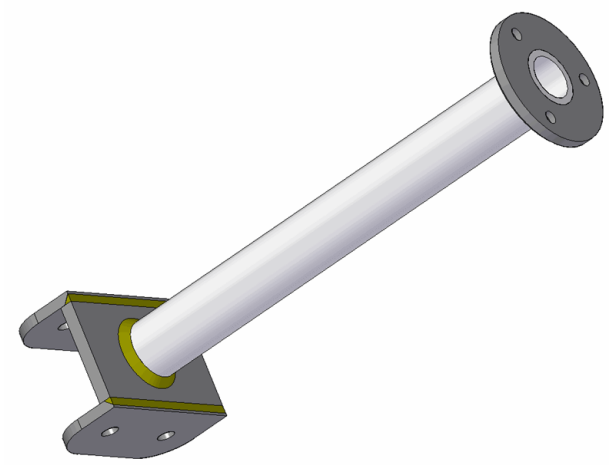


3. Weld the Pipe D22mm (part 35) and Flanges (part 36) together.

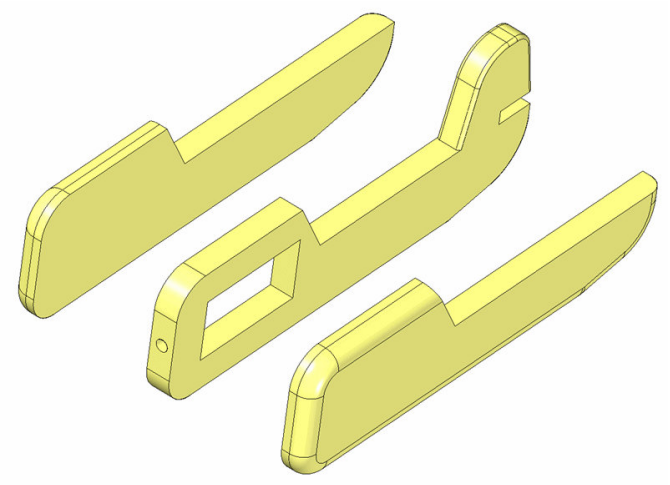


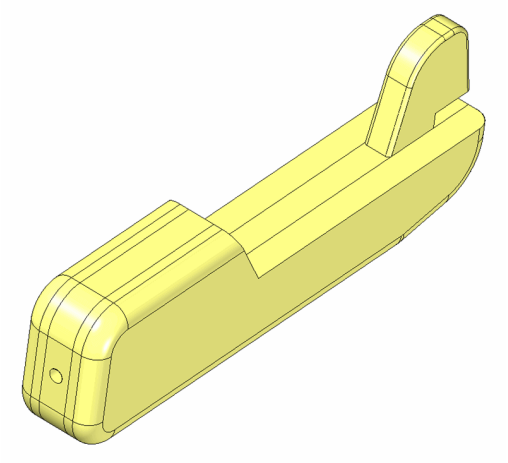
4. Weld together the Pipe D22mm (part 35), Flanges (part 36), Lover support sides (part 29) and the Lower support (part 37). Make two of these subassemblies.



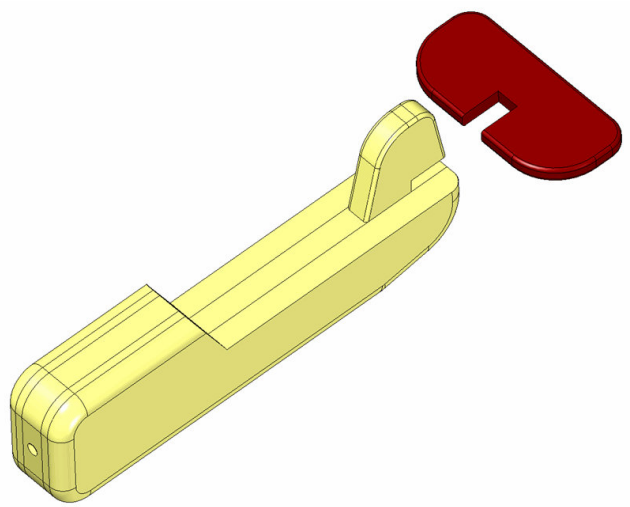


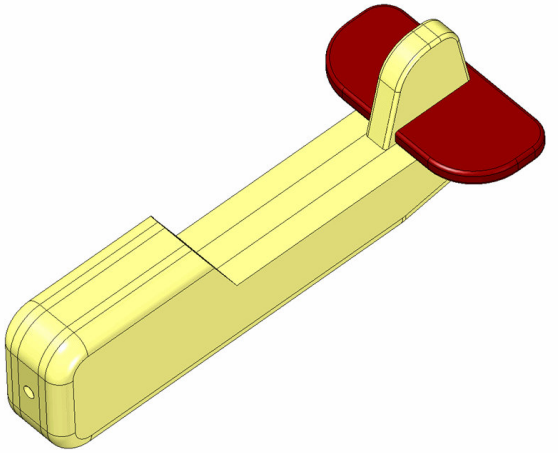
5. Join the Fuselage side (part 4), Fuselage center (part 5) and the Fuselage side mirror (part 6) together with glue.



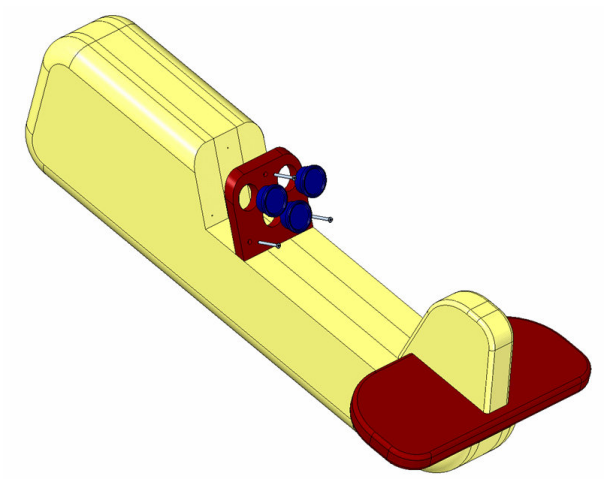


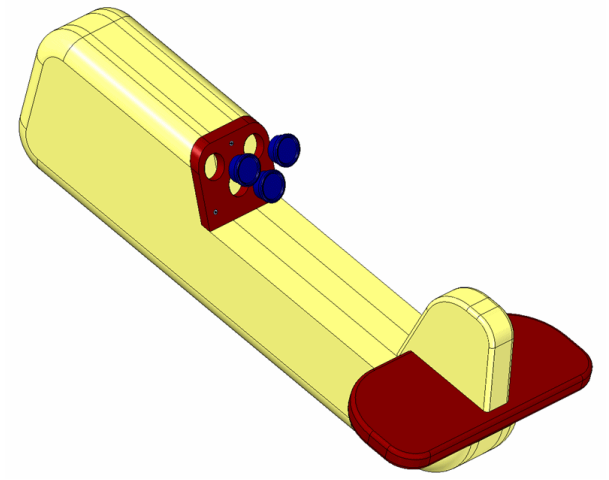
6. Attach the Horizontal tail (part 8) with glue to the subassembly made in previous step.

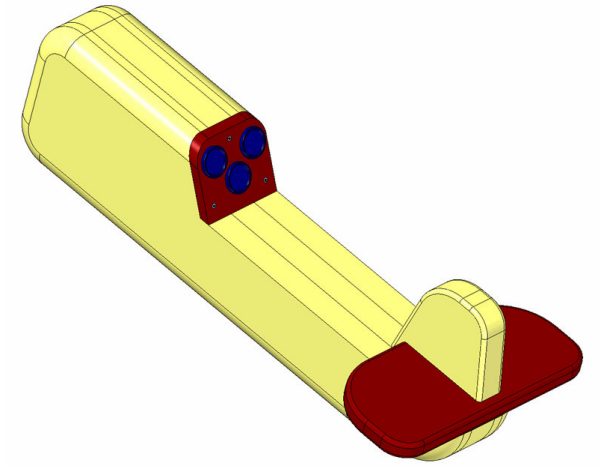




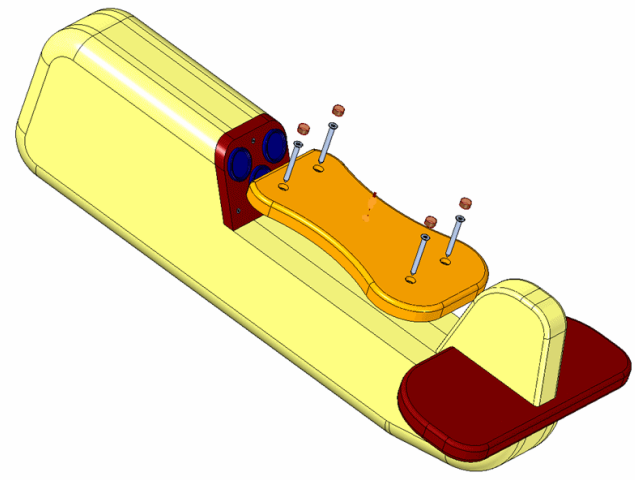
7. Fasten the Control panel (part 19) to the subassembly made in the previous step using Woodscrews D3 x 35mm (part 34), and then attach the Indicators (part 20) with glue into the holes on the Control panel (part 19).

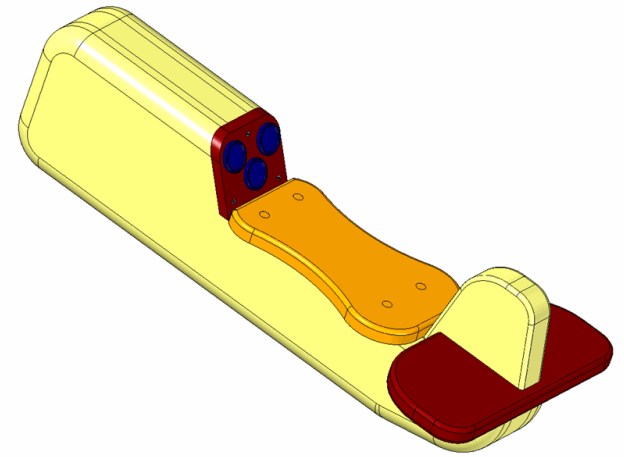




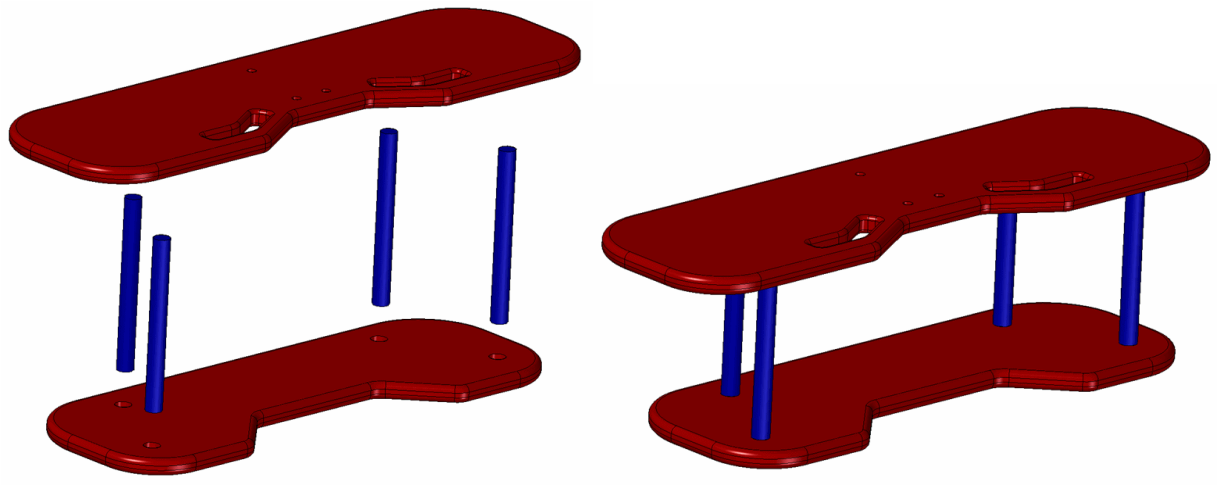


8. Fasten the Seat (part 9) with Woodscrews D5 x 55mm (part 27) to the subassembly made in the previous step. Glue the Plugs (part 28) on top of each Woodscrews head.

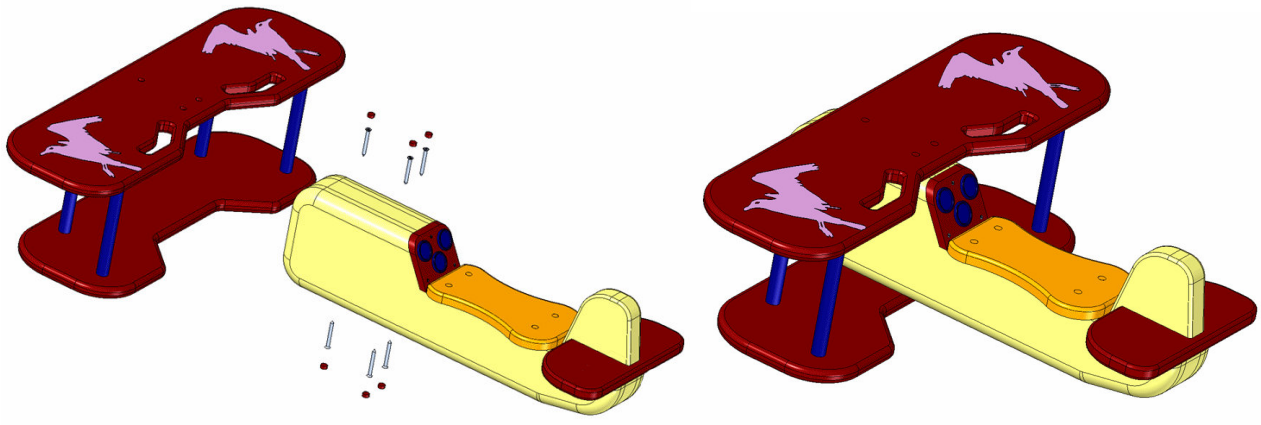




9. Join together with glue Bottom wing (part 3), the Top wing (part 7) and Wing connectors (part 14).

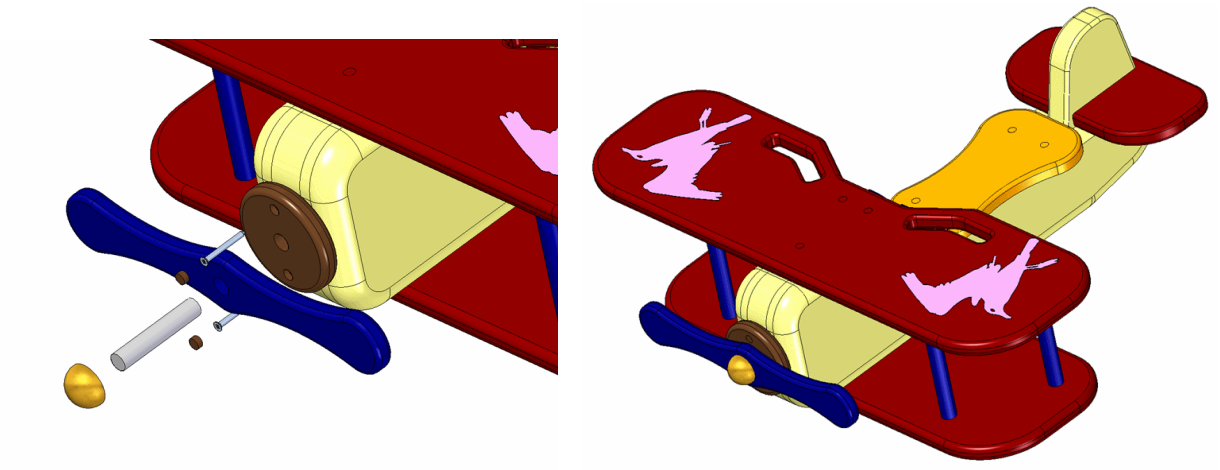


10. Following the dimensions from 2D documentation, fasten the subassembly from the previous step to the subassembly made in step 8 using Woodscrews D5 x 55mm (part 27), and then glue the Plugs (part 28) on top of each Woodscrews head.

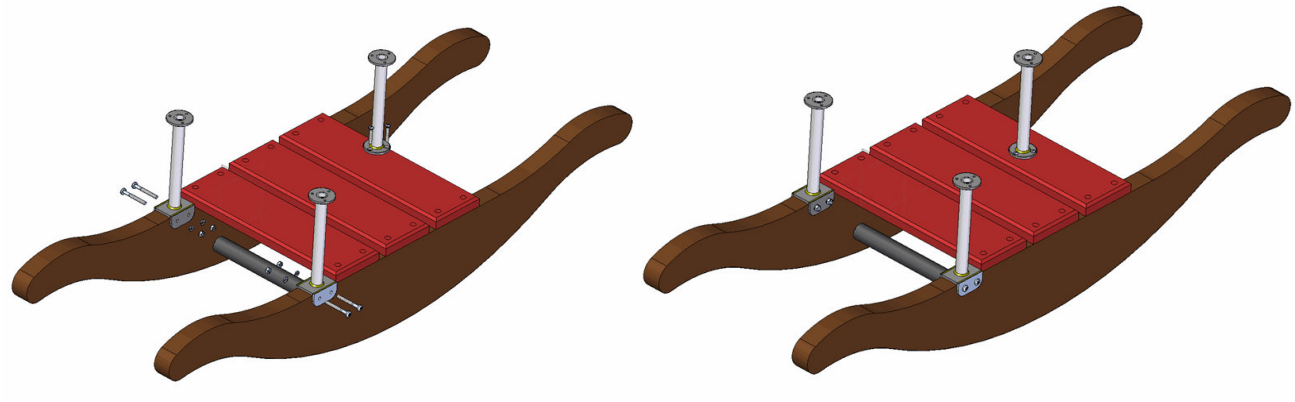


11. Glue the Propeller shaft (part 17) into the hole with 19mm (0,75in) diameter, that's on the Fuselage center (part 5). Put the Propeller disk (part 15) on the Propeller shaft and fasten it with Woodscrews D5 x 55mm (part 27). Glue the Plugs (part 28) on top of each Woodscrews head.

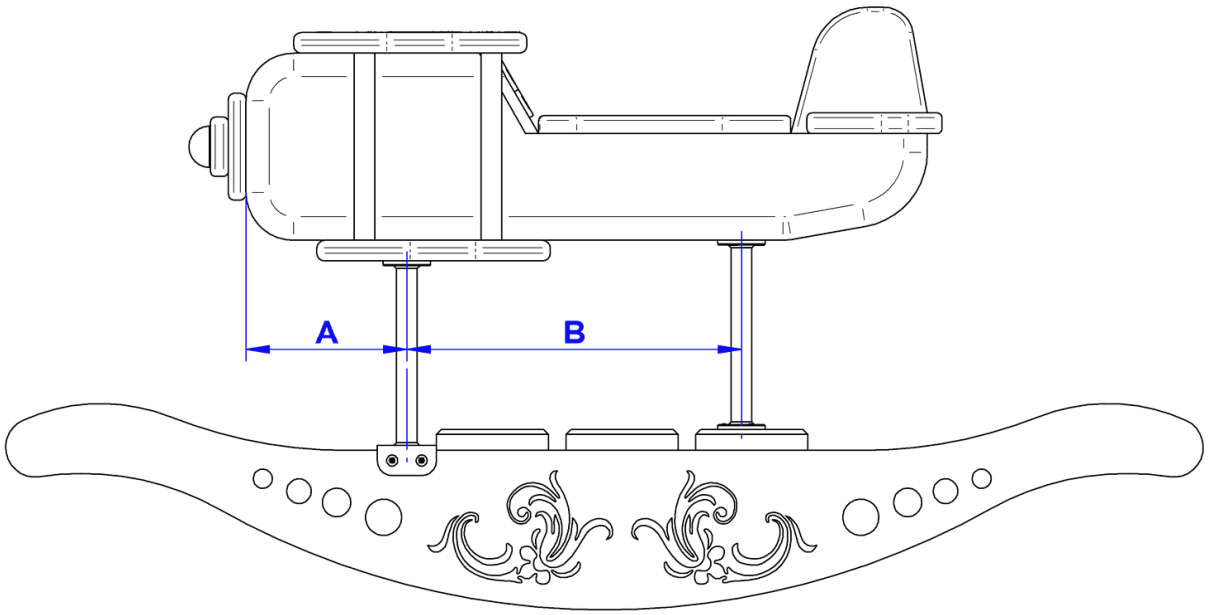
    Put the Propeller (part 16) onto the Propeller shaft (part 17) and glue the Propeller spinner (part 18).



12. Fasten the subassembly made in step 3 to the subassembly made in step 2 using Countersunk screws M5 x 35mm (part 21), Washers D5,3mm (part 22), Spring lock washers D5mm (part 38) and Hexagon nuts M5 (part 24). Then fasten the 2 subassemblies made in step 4 to the subassembly made in step 2 using Pan head screws M6 x 55mm (part 33), Spring lock washers D6mm (part 23) and Hexagon nuts M6 (part 32). You can use the Pan head screw M5 x 55mm instead of standard Pan head screw M6 x 55mm and decrease the number of standard parts in your construction.



13. All that you need to do now is to fasten the subassembly made in step 11 to the subassembly from the previous step. To make rocking as good as can be, you need to make this fastening on determined distance A (see the picture below).



The A distance depends mostly on:

- the type of wood you used (its density and mass),
- the child's weight,
- accuracy in making and joining the parts,
- the mass of metal parts (for example, the aluminium is almost 3 times lighter then steel).

The standard parts like the Pipe D22mm (part 35), Flanges (part 36), Lover support sides (part 29) and the Lower support (part 37) does not have to be out of steel – you can easily use some other metals, or they alloys.

This distance is best to establish by trying the certain distance variety. You can do this by fastening the subassemblies with the woodworking clamps on some A distance and ask your child to try to rock the toy. For the best result, repeat this procedure with a different A distances and choose the best one for your child. Then mark holes, drill the pilot holes and attach the subassemblies one on other with the Woodscrews D 5 x 25 (part 26) and Wood screws D5 x 35 (part 25).