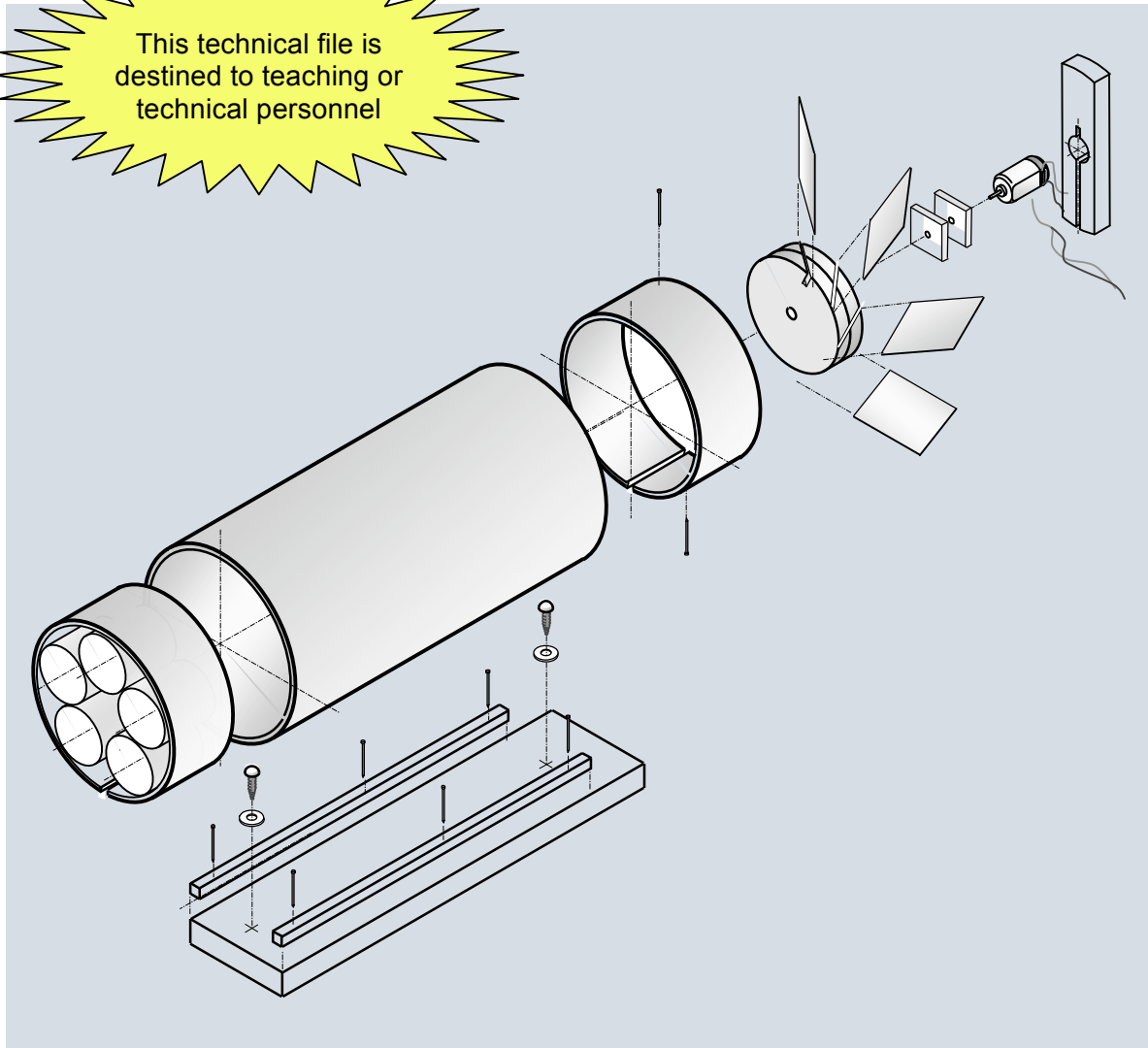


This technical file is
destined to teaching or
technical personnel



TECHNICAL FILE OF THE TESTING TUBE

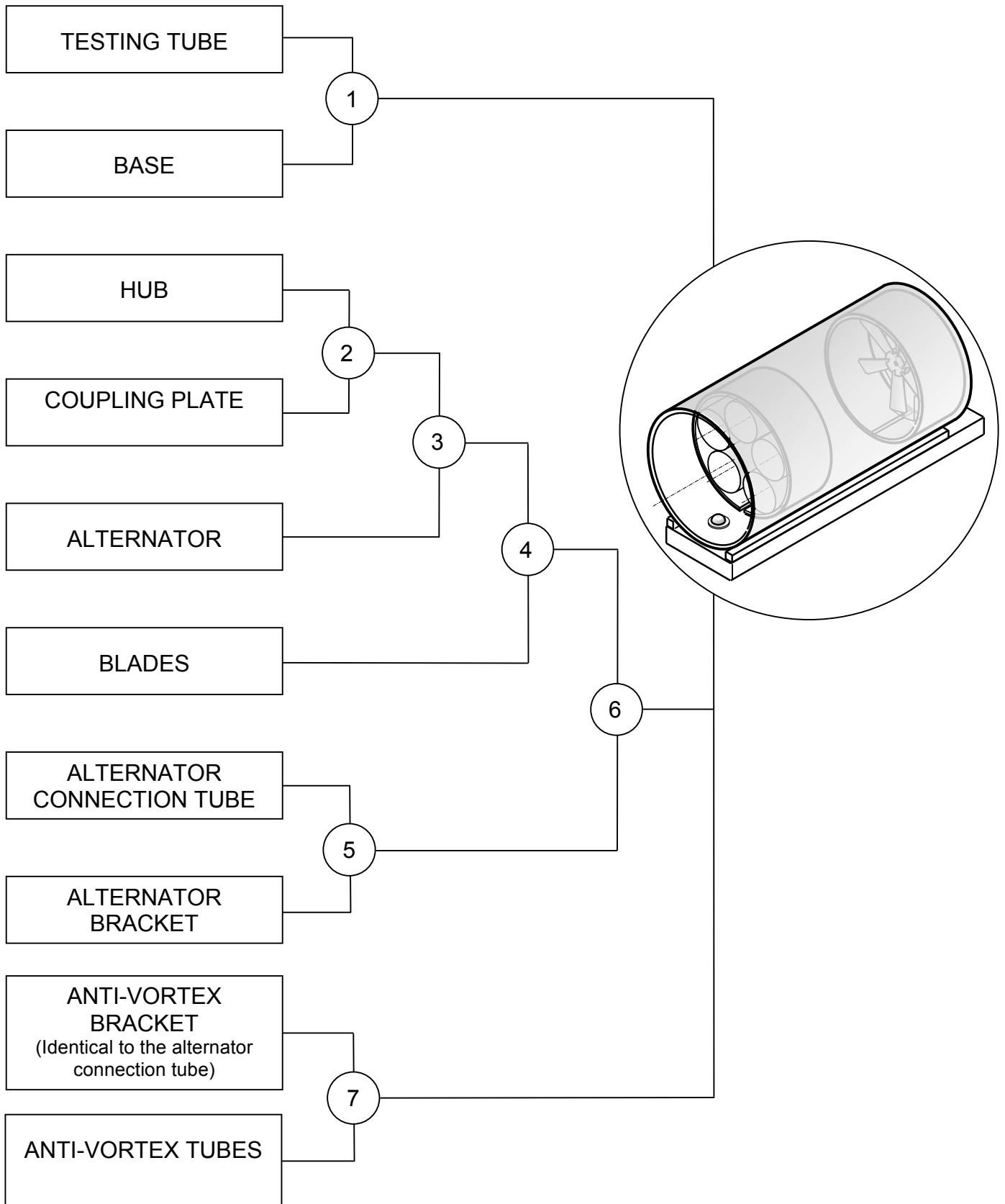


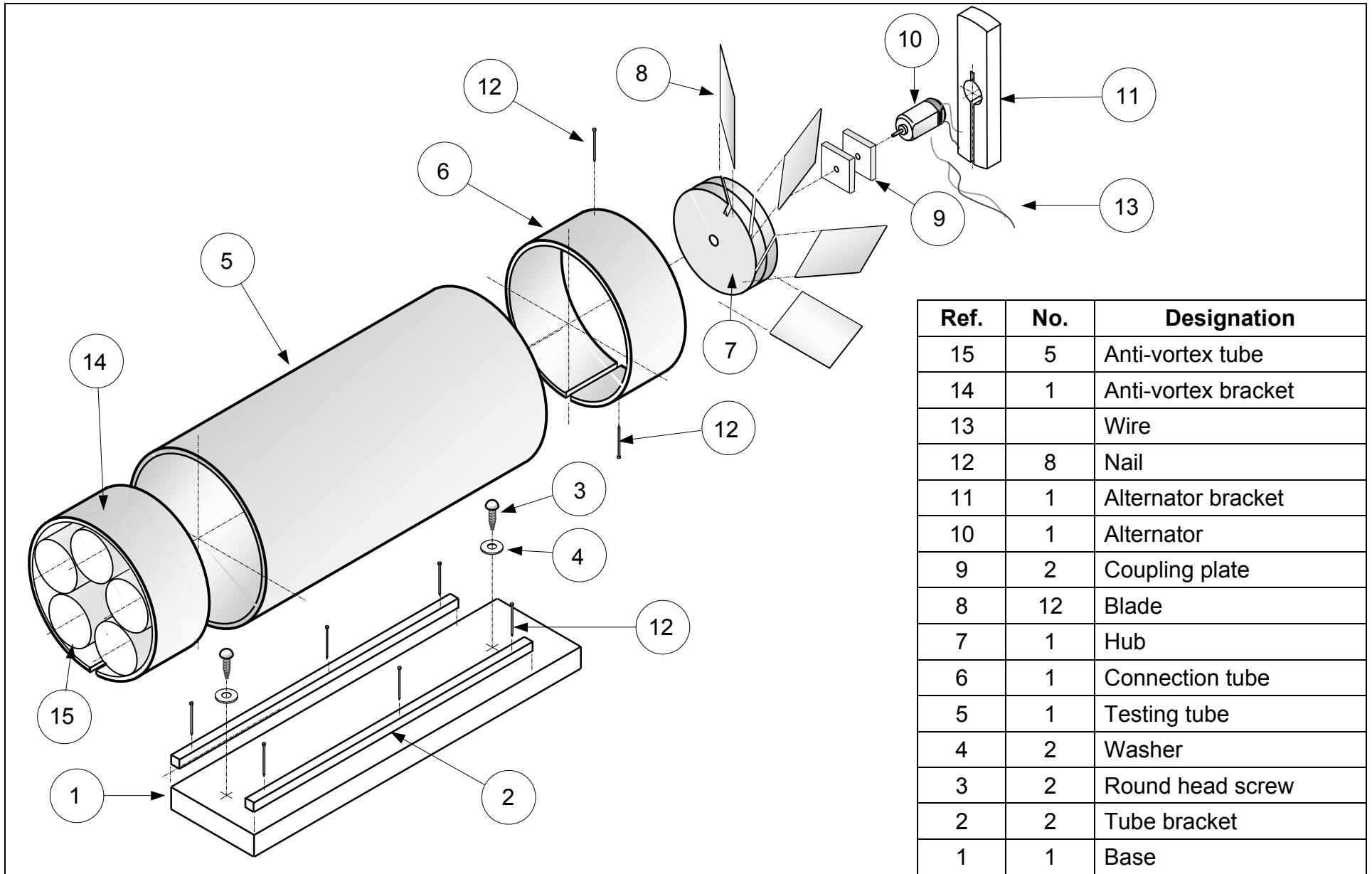
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*pour la formation générale
en science et technologie*

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ORGANISATIONAL CHART FOR THE ASSEMBLY OF THE TESTING TUBE





Ref.	No.	Designation
15	5	Anti-vortex tube
14	1	Anti-vortex bracket
13		Wire
12	8	Nail
11	1	Alternator bracket
10	1	Alternator
9	2	Coupling plate
8	12	Blade
7	1	Hub
6	1	Connection tube
5	1	Testing tube
4	2	Washer
3	2	Round head screw
2	2	Tube bracket
1	1	Base

NOMENCLATURE

REF.	DESIGNATION	No.	OBSERVATIONS
25			
24			
23			
22			
21			
20			
19			
18			
17			
16			
15	Anti-vortex tube	5	Construction paper
14	Anti-vortex bracket	1	«Sonotube» 155 Ø mm x 55 mm (6 in. Ø x 2 1/8 in.)
13	Wire	2	Electric wire: 450 mm. length, 0.40 gage
12	Nail	8	3/4 in. finishing nail
11	Alternator bracket	1	19 mm x 62 mm x 160 mm (3/4 x 2 1/2 x 6 in.) pine board
10	Alternator	1	DC toy alternator 1.5 to 3 Volts
9	Coupling plate	2	15 mm x 15 mm x 3 mm Polystyrene
8	Blade	12	1/16 in. thick polystyrene or vinyl
7	Hub	2	50 mm Cardboard wheel (1 1/4 in. Ø and 1/4 in. thick)
6	Connection tube	1	«Sonotube» 155 Ø mm x 55 mm (6 in. Ø x 2 1/8 in.)
5	Testing tube	1	«Sonotube» 155 Ø mm x 300 mm (6 in. Ø x 11 7/8 in.)
4	Washer	2	N°10 washer
3	Round head screw	2	N°8 – 3/4 in. round head wood screw
2	Tube bracket	2	10 mm x 10 mm x 300 mm square dowel
1	Base	1	19 mm x 88 mm x 350 mm pine board



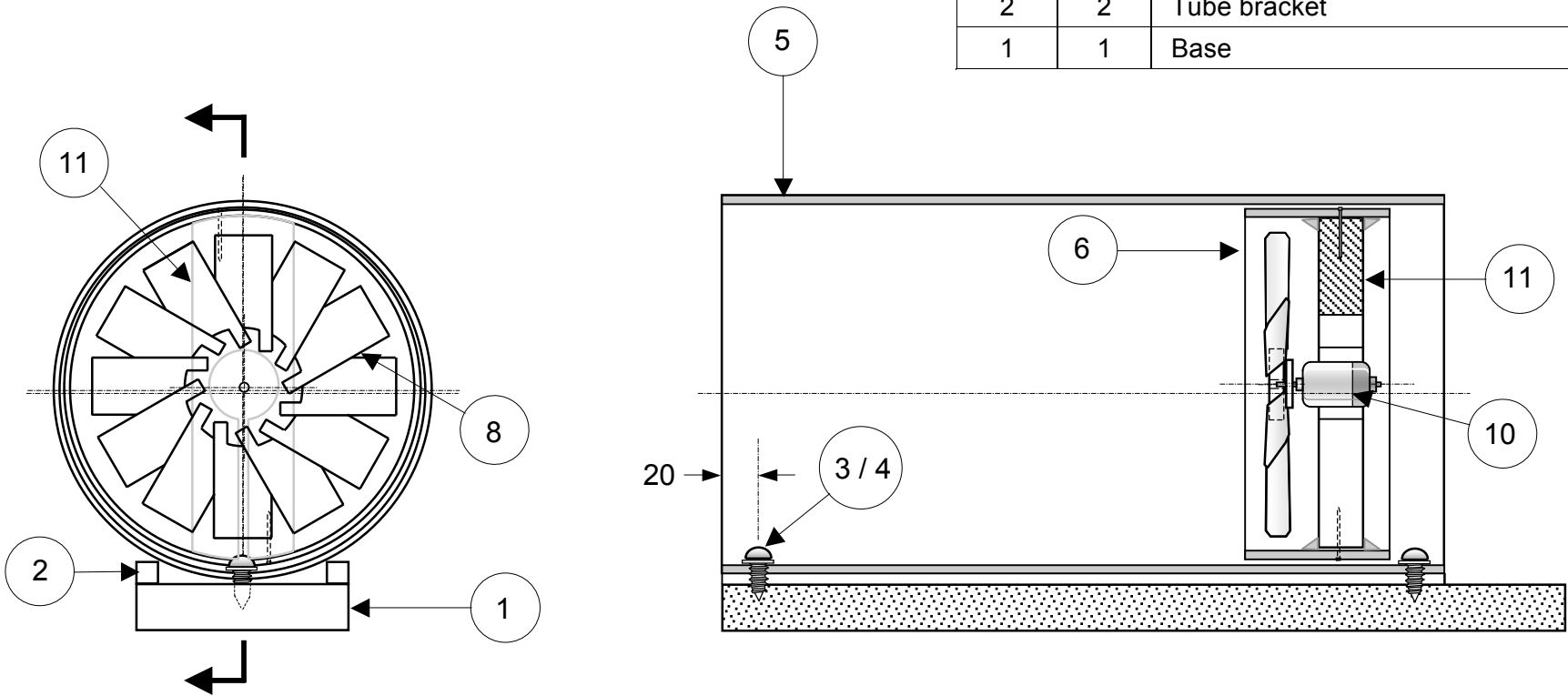
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ACTIVITY: **HYDROPLANE**

DATE: **06 OCT. 2010**

REFERENCE : **DRAWING
N° 1**

Ref.	No.	Designation
11	1	Alternator bracket
10	1	Alternator
8	12	Blade
6	1	Connection tube
5	1	Testing tube
4	2	Washer
3	2	Screw
2	2	Tube bracket
1	1	Base





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FABRICATION AND ASSEMBLY RANGE

ELEMENT: SUB-SET 1

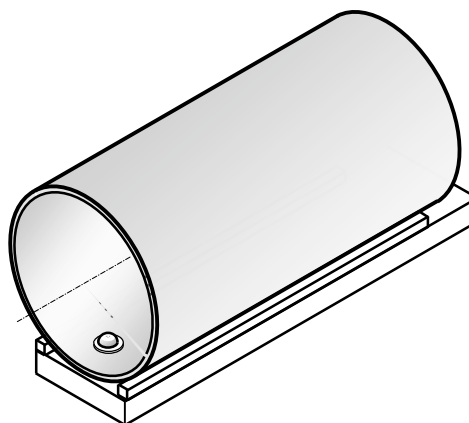
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RANGE: 1

SHEET : 1 of 2

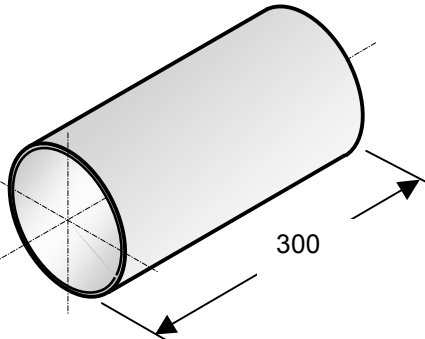

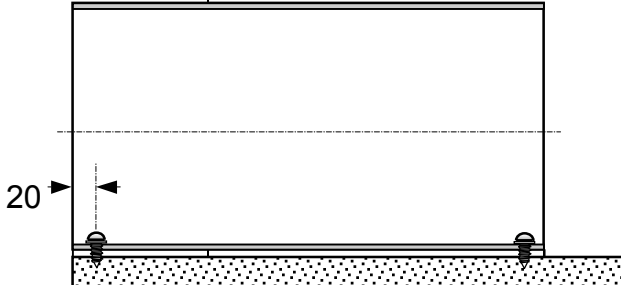
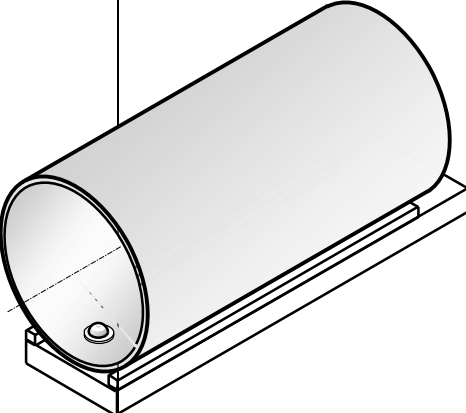
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Various

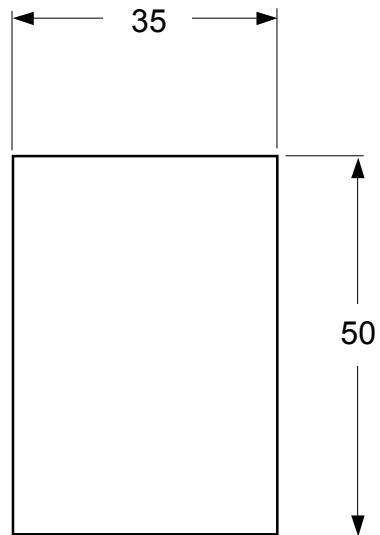
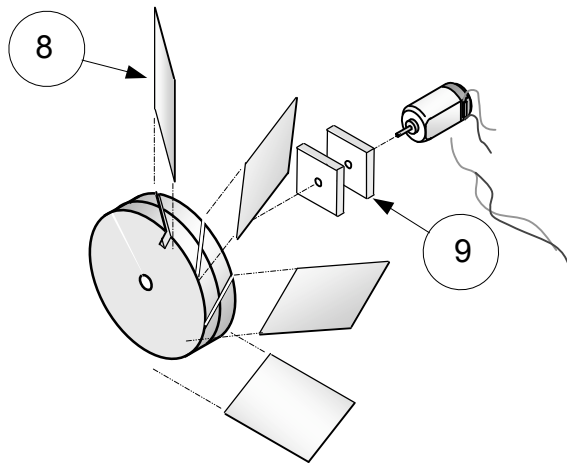
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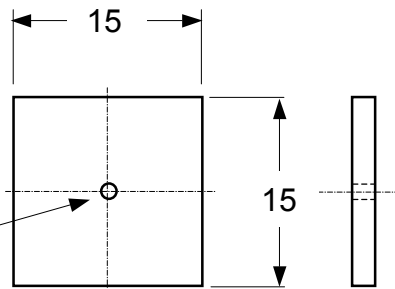
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
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N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
10	BASE		
11	Measure and trace a 350 mm. length in a 19 mm x 88 mm ($\frac{3}{4}$ in. x $3\frac{1}{2}$ in.) pine board.		<ul style="list-style-type: none">- Pencil- Ruler
12	Cut this piece using a hand saw and mitre box or a band saw.		<ul style="list-style-type: none">- Mitre box- Hand saw or band saw
13	Measure and cut two lengths of 300 mm. of a square 10 mm x 10 mm ($\frac{3}{8}$ x $\frac{3}{8}$ in.) dowel.		<ul style="list-style-type: none">- Pencil- Ruler- Mitre box- Hand saw
14	Using carpenter's glue and finishing nails, affix the two dowels on the edges of the board as shown.		<ul style="list-style-type: none">- Carpenter's glue- 6 - $\frac{3}{4}$ in. finishing nails- Hammer

FABRICATION AND ASSEMBLY RANGE FOR SUB-SET 1			SHEET: 2 of 2
Nº	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
20	TESTING TUBE	 	<ul style="list-style-type: none"> - Pencil - Ruler - Hand saw - Sandpaper
21	Measure and cut a length of 300 mm in a 6 in. Ø "Sonotube".		
22	Sand and scrape the edges. Note: Using two (8 ½ x 11) sheets allows you to easily make a 90° cut.		
30	ASSEMBLY OF THE TESTING TUBE TO THE BASE	 	<ul style="list-style-type: none"> - 2 - N° 8 – ¾ in. screws - 2 - N° 10 washers - Square head screws
31	Using N° 8 – ¾ in. screws and N° 10 washers, assemble the tube to the base.		



8 - Blade



The drilling Ø must take into account the Ø of the alternator axle.

9- Coupling plate

REF.	No.	DESIGNATION	MATERIALS	OBSERVATIONS
9	2	Coupling plate	Polystyrene	15 mm x 15 mm x 3 mm
8	12	Blade	Polystyrene or vinyl	35 mm x 50 mm



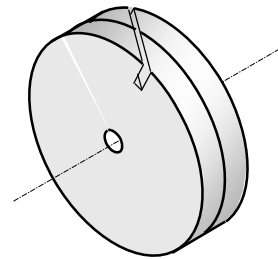
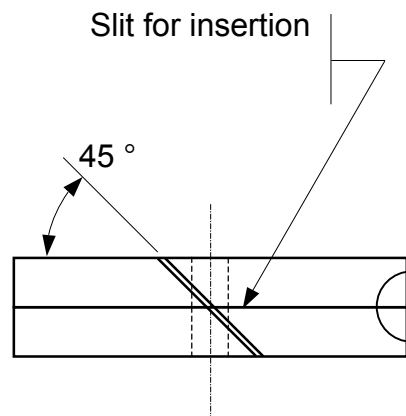
ACTIVITY: **HYDROPLANE**

TITLE: **TESTING TUBE**

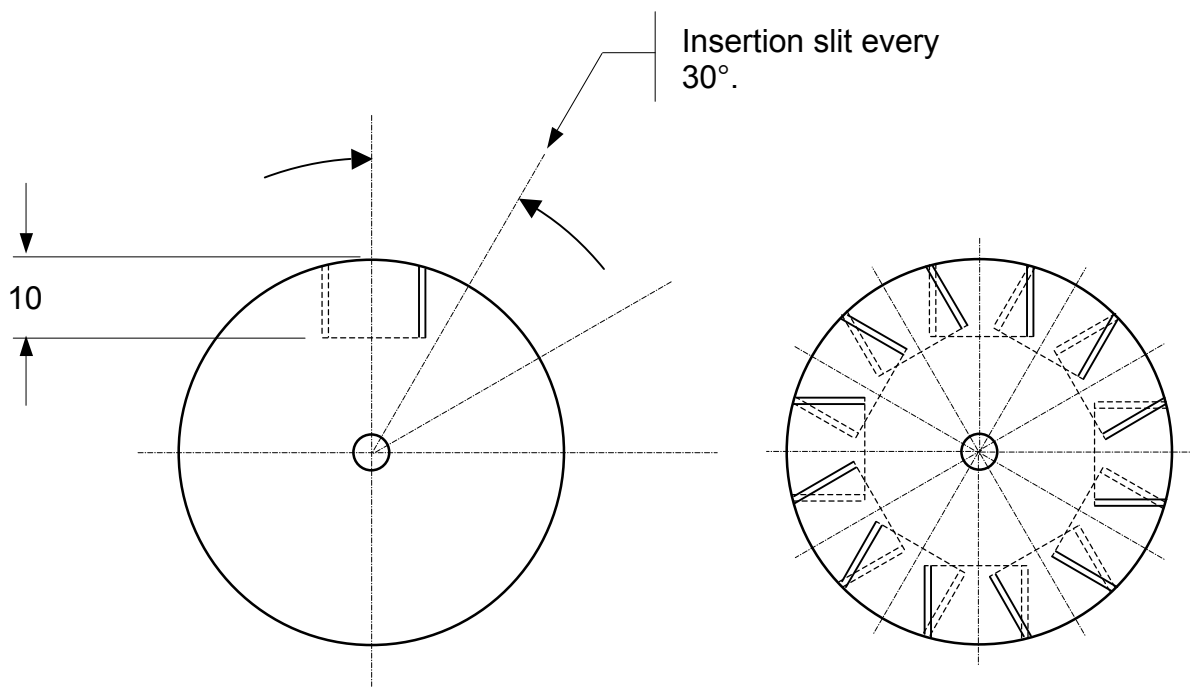
DATE: **06 OCT. 2010**

SCALE: **1 : 1**


DRAWING : **N°3**



Two 50 mm cardboard fibre wheels assembled by gluing



7- Hub

REF	No.	DESIGNATION	MATERIALS	OBSERVATIONS
7	1	Hub	Cardboard fibre wheels	50 mm
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		TITLE: TESTING TUBE		
		DATE: 06 OCT. 2010	SCALE: 1 : 1	DRAWING: N°4



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FABRICATION AND ASSEMBLY RANGE

ELEMENT: SUB-SET 2 & 3

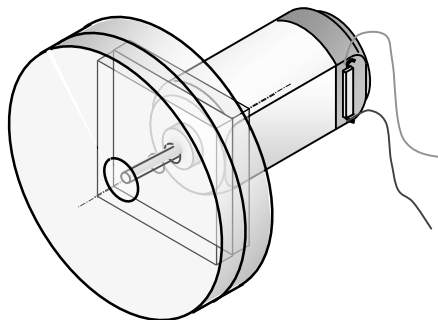
SET: HYDROPLANE

RANGE: 2

SHEET: 1 of 3

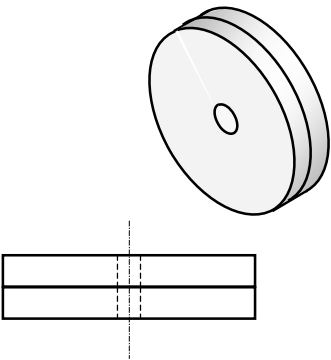
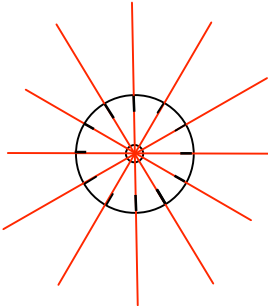
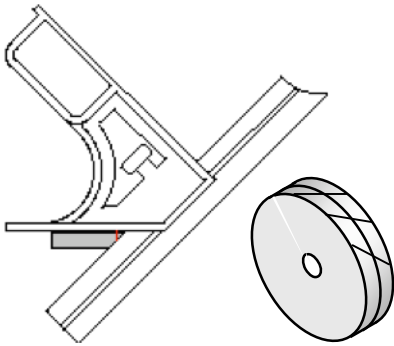

NUMBER: 1

MATERIALS: Various

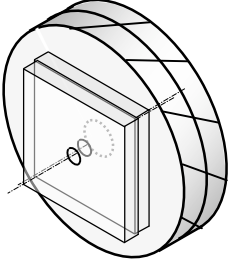
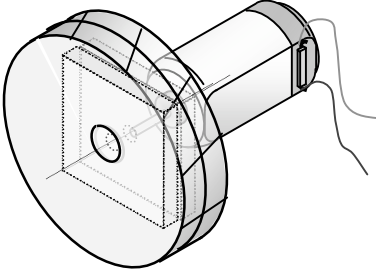


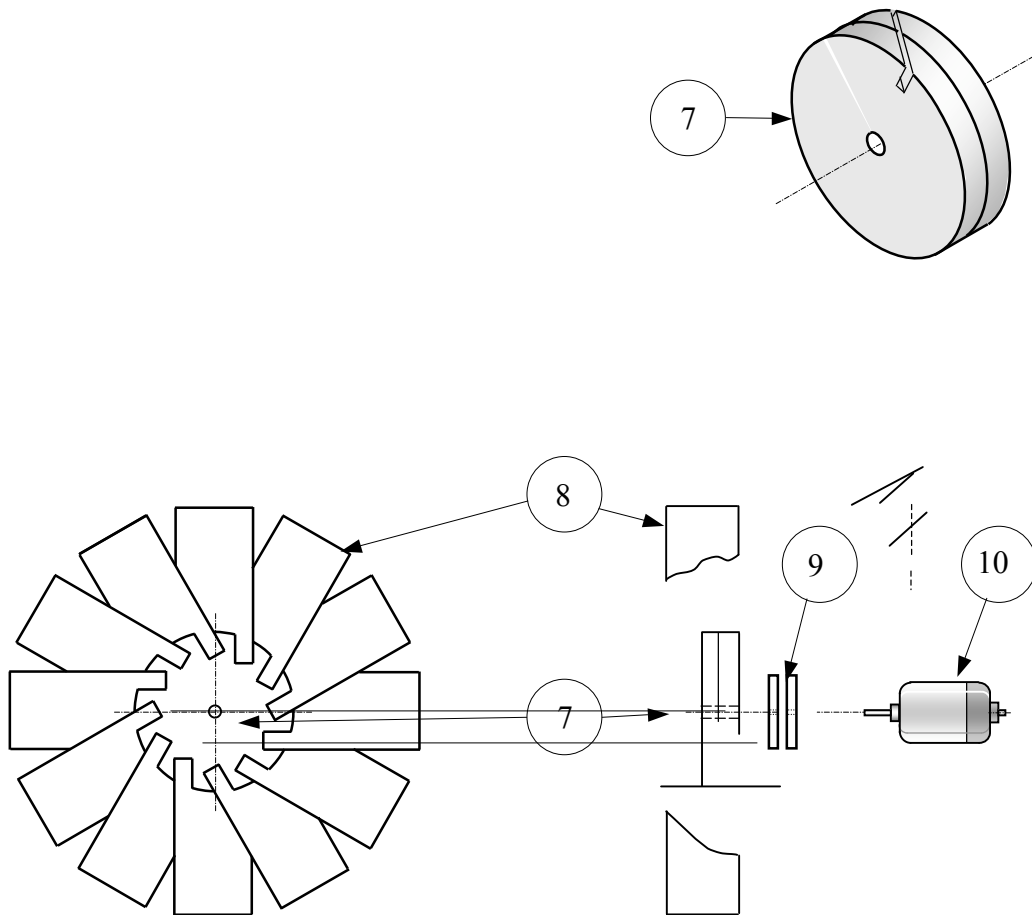
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
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10	COUPLING PLATE		
11	Measure and cut two 15 mm x 15 mm squares in a leftover piece of 3 mm thick polystyrene.		<ul style="list-style-type: none"> - Pencil - Ruler - Plastics knife - Safety ruler
12	Scrape the edges.		<ul style="list-style-type: none"> - Sandpaper or scraper
13	Find the center of the plate by tracing two diagonal lines.		<ul style="list-style-type: none"> - Pencil - Ruler
14	Punch the center of the part.		<ul style="list-style-type: none"> - Punch - Hammer
15	Measure the diameter of the alternator shaft. Find a slightly smaller \varnothing bit than this one (which will allow you to drill the plate at a slightly smaller diameter). Note: The alternator shaft must fit perfectly in the plate's drill hole.	<p>The \varnothing of the hole must take into account the alternator's axle.</p>	<ul style="list-style-type: none"> - Calliper
16	Affix the part in a drill vise and drill the hole.		<ul style="list-style-type: none"> - Press drill - Drill vise - Smaller \varnothing bit than that of the shaft

FABRICATION AND ASSEMBLY RANGE FOR SUBSET 2 &3			SHEET: 2 of 3
Nº	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
20	HUB		
21	Using hot glue, glue the two cardboard wheels together. Note: In order to align the two wheels properly, insert a dowel into the axle while gluing.		<ul style="list-style-type: none"> - Hot glue gun
22	Using the tracing template (Annex 1), trace the location of each blade on the hub.		<ul style="list-style-type: none"> - Pencil - Ruler - Tracing template (Annex 1)
23	Using a combination square, trace the location of the slits.		<ul style="list-style-type: none"> - Pencil - Combination square
24	Place the hub in a vise and using a hand saw, saw the slits to a depth of 10 mm. (See detail drawing N° 4).		<ul style="list-style-type: none"> - Detail drawing N° 4 - Vise - Hand saw

FABRICATION AND ASSEMBLY RANGE FOR SUBSET 2 &3			SHEET: 3 of 3
N ^o	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS

30	ASSEMBLY HUB – PLATE (SUB-SET 2)		
31	Center the plates on the hub and glue it with hot glue.		- Hot glue gun
40	ASSEMBLY HUB/ PLATE - ALTERNATOR (SUB-SET 3)		
41	Forcing slightly, insert the alternator shaft into the hole of the plates and hub.		



REF	No.	DESIGNATION	MATERIALS	OBSERVATIONS
10	1	Alternator	Toy alternator	1.5 to 3 Volts DC
9	2	Coupling plate	Polystyrene	15 mm x 15 mm x 3 mm
8	12	Blade	Polystyrene or vinyl	1/16 thick
7	1	Hub	Cardboard fibre wheel	50 mm



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ACTIVITY: **HYDROPLANE**

TITLE: **TESTING TUBE**

DATE: **06 OCT. 2010**

SCALE: **1 : 1**

DRAWING: **N°5**



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FABRICATION AND ASSEMBLY RANGE

ELEMENT: SUB-SET 4

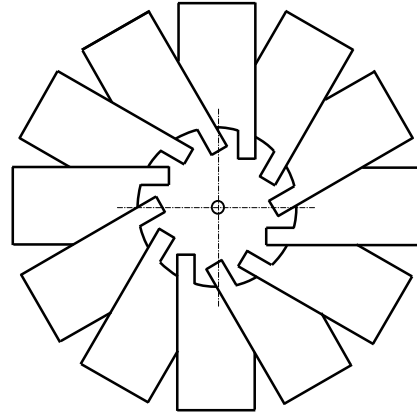
SET: HYDROPLANE

RANGE: 3

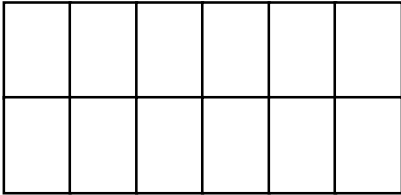

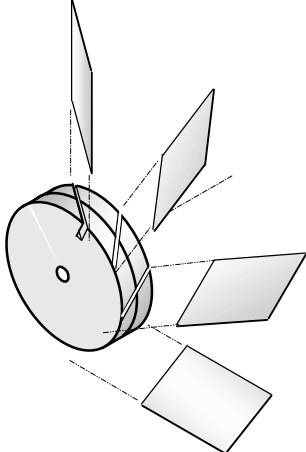
SHEET: 1 of 1

NUMBER: 1

MATERIALS: **Various**



N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
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10	BLADES		
11	In a 1/16" thick piece of polystyrene or vinyl, trace 12 blades, respecting the measurements in detail drawing N°3 .		<ul style="list-style-type: none"> - Pencil - Ruler - Detail drawing N°3
12	Using a retractable blade knife, cut out the twelve blades.		<ul style="list-style-type: none"> - Retractable blade knife - Safety ruler
20	ASSEMBLING THE BLADES		
21	Insert the blades into the slits in the hub. Note: The blades must fit perfectly into the slits. You may have to sand the end of each blade in slightly.		



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FABRICATION AND ASSEMBLY RANGE

ELEMENT: CONNECTION TUBE

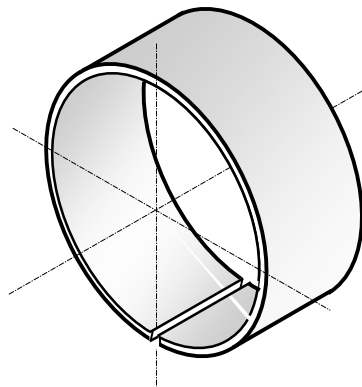
SET: HYDROPLANE

RANGE: 4

SHEET: 1 of 1

MATERIAL:
Cardboard

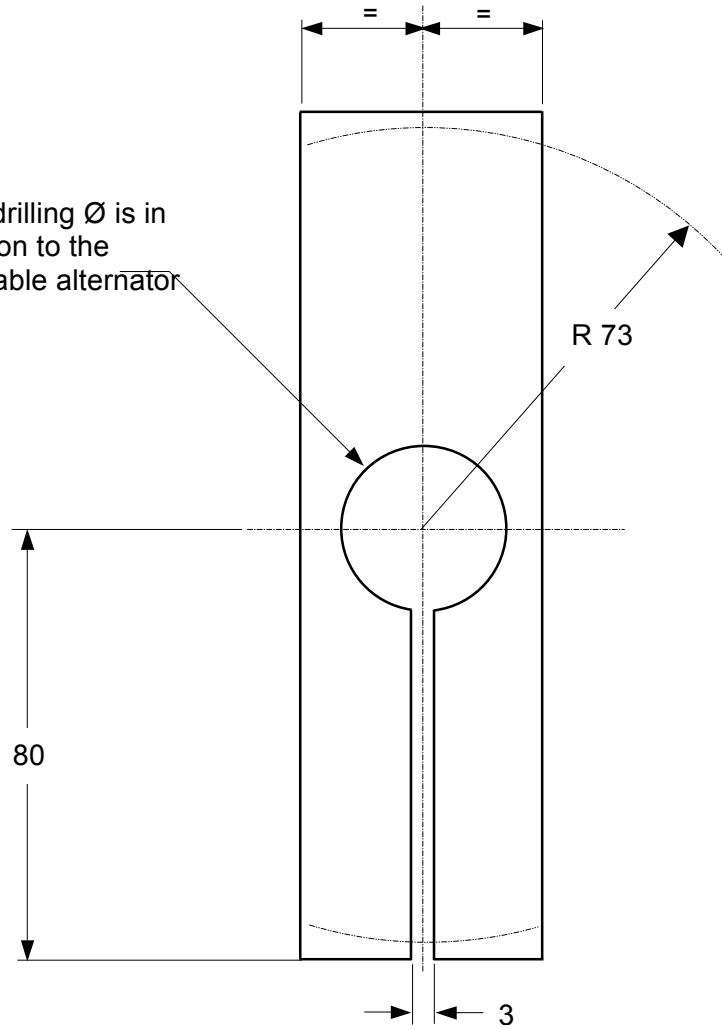
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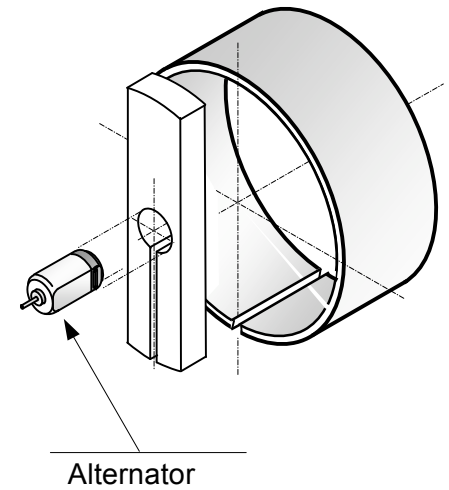
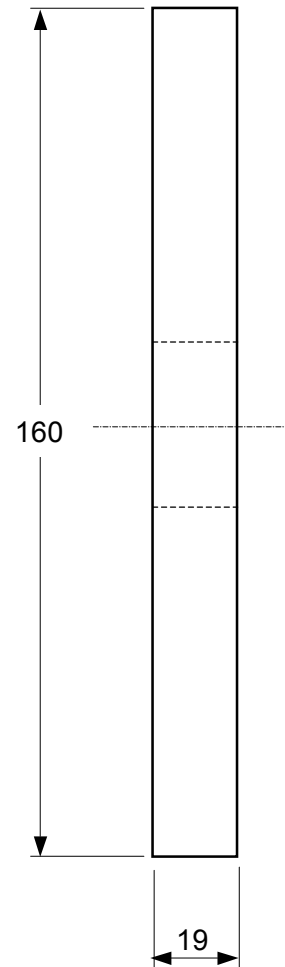
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
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10	CUTTING		
11	In a 6 in. Ø "Sonotube", measure and cut two 55 mm. lengths.		<ul style="list-style-type: none"> - Pencil - Ruler - Hand saw
12	Sand and scrape the edges. Note: Using two (8 ½ x 11) sheets allows you to easily make a 90° cut .		<ul style="list-style-type: none"> - Sandpaper
13	Using a retractable blade knife, cut a 20 to 25 mm strip from each section.		<ul style="list-style-type: none"> - Pencil - Ruler - Retractable blade knife - Safety ruler
14	Ensure that the connection tubes fit properly into the tube. Cut again as needed. Note: The other connection tube will be used later as the "bracket for the anti-vortex".		<ul style="list-style-type: none"> - Retractable blade knife

The drilling \varnothing is in relation to the available alternator



11- Alternator bracket



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TITLE: **HYDROPLANE**

NAME: **ALTERNATOR BRACKET**

DATE: **06 OCTOBER 2010**

SCALE: **NOT TO SCALE**

DRAWING: **N° 6**



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FABRICATION AND ASSEMBLY RANGE

ELEMENT: ALTERNATOR BRACKET

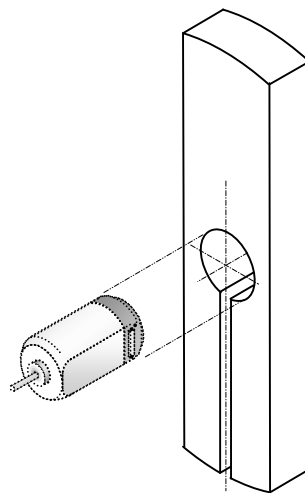
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RANGE: 5


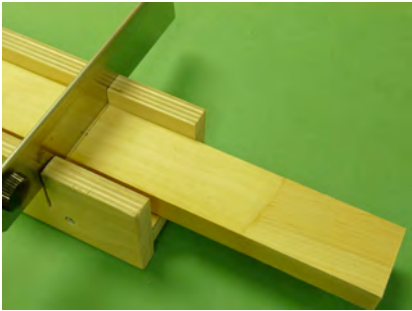
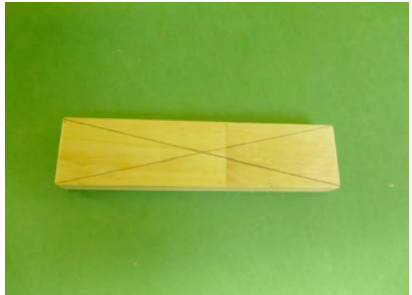
SHEET: 1 of 3



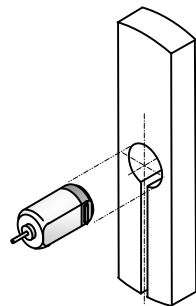
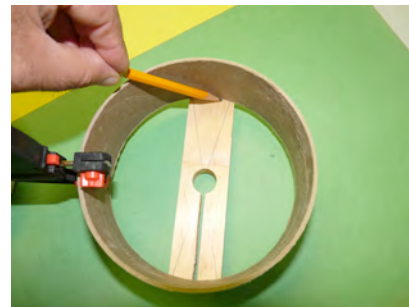
MATERIAL: Pine


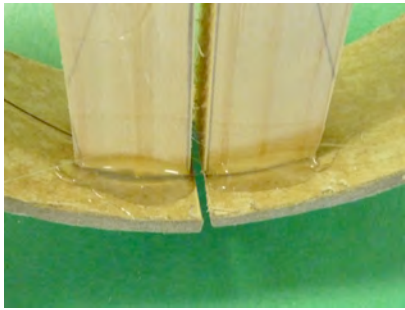
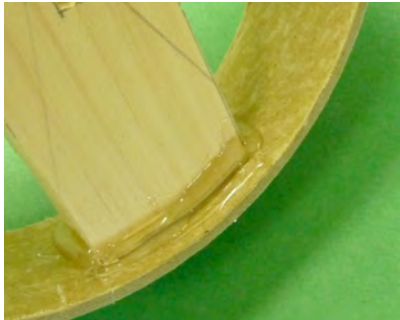
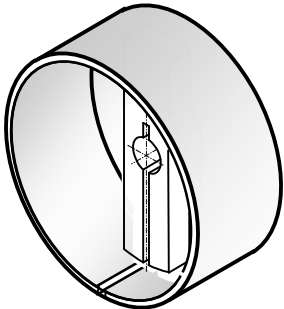
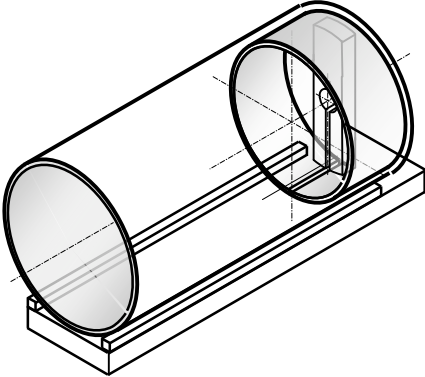
NUMBER: 1



N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
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10	MEASUREMENT		
11	In a 19 x 62 mm (¾ x 1 ½ in.) board, trace a length of 160 mm (6 in.).		<ul style="list-style-type: none"> - Pencil - Ruler
20	CUTTING		
21	Using a mitre box and a hand saw, cut this part.		<ul style="list-style-type: none"> - Mitre box - Hand saw
30	DRILLING		
31	Find the center of this part by drawing diagonal lines.		<ul style="list-style-type: none"> - Pencil - Ruler

FABRICATION AND ASSEMBLY RANGE FOR THE ALTERNATOR BRACKET			SHEET: 2 of 3
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
32	<p>Punch and drill the hole to a diameter of the outside diameter of the motor -1 mm.</p> <p>Note: The alternator must fit perfectly into the drill hole in the bracket.</p>		<ul style="list-style-type: none"> - Punch - Hammer - Press drill - Bit Ø smaller than that of the alternator. - Drill vise
40	CUTTING		
41	<p>Saw the central slot.</p> <p>Note: Refer to detail drawing N° 6.</p>		<ul style="list-style-type: none"> - Hand saw or band saw - Drawing N° 6
42	<p>Insert the alternator into the hole, adjusting the hole as necessary.</p>		<ul style="list-style-type: none"> - Alternator - Half moon file (if necessary)
50	ASSEMBLY CONNECTION TUBE - BRACKET (SUB-SET 5)		
51	<p>Using a clamp, link the two extremities of the connection tube.</p> <p>Place the connection tube on the alternator bracket and trace the curves that will be needed for the bracket.</p>		<ul style="list-style-type: none"> - Pencil - Clamp

FABRICATION AND ASSEMBLY RANGE FOR THE ALTERNATOR BRACKET			SHEET: 3 of 3
N ^o	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
52	Saw the curves you just drew.		<ul style="list-style-type: none"> - Band saw or hand saw
53	<p>At the center of the connection tube, using hot glue, glue the side of the bracket with the slot.</p> <p>This may be solidified using small nails.</p> <p>Note: Be careful not to glue the two sides of the slot.</p>		<ul style="list-style-type: none"> - Hot glue gun - 3/4 in. finishing nails (if necessary)
54	<p>Glue the other end of the bracket.</p> <p>This may be solidified using small nails.</p>		<ul style="list-style-type: none"> - Hot glue gun - 3/4 in. finishing nails (if necessary)
55	<p>Insert the connection tube into the testing tube to try it.</p>  		



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FABRICATION AND ASSEMBLY RANGE

ELEMENT: SUB-SET 7

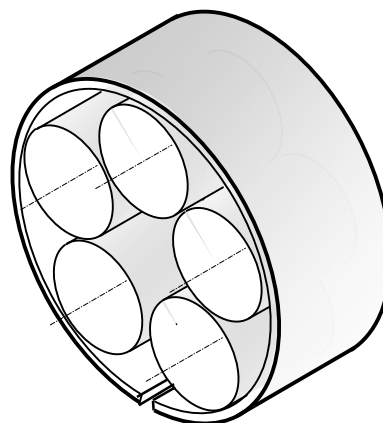
SET: HYDROPLANE

RANGE: 6

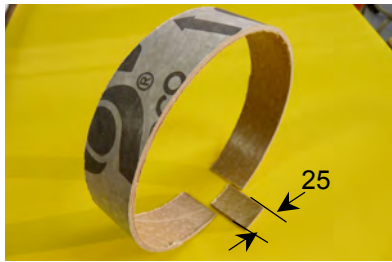
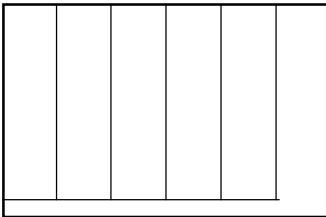
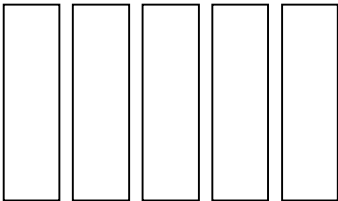

SHEET: 1 of 2






NUMBER: 1

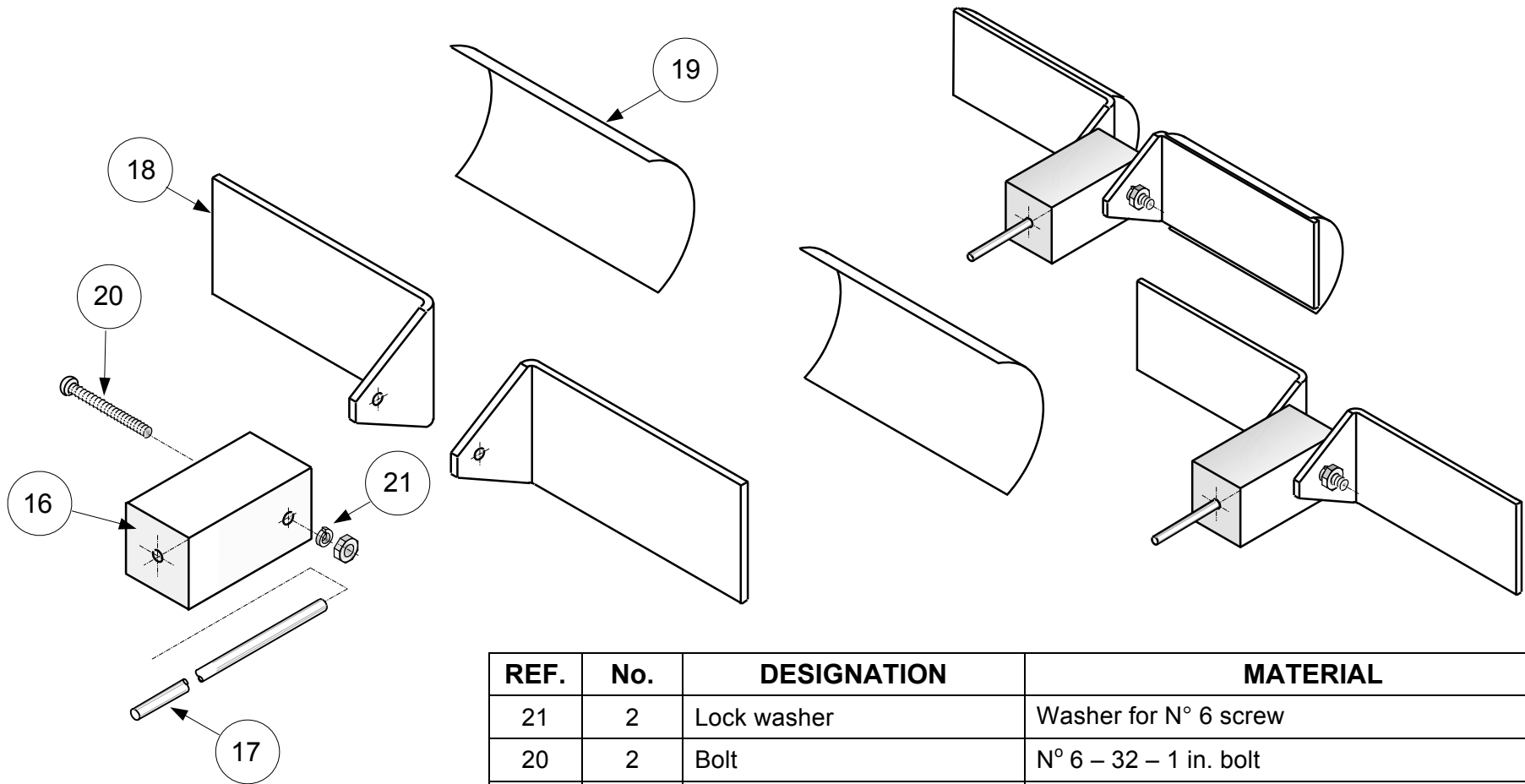
MATERIALS: Various



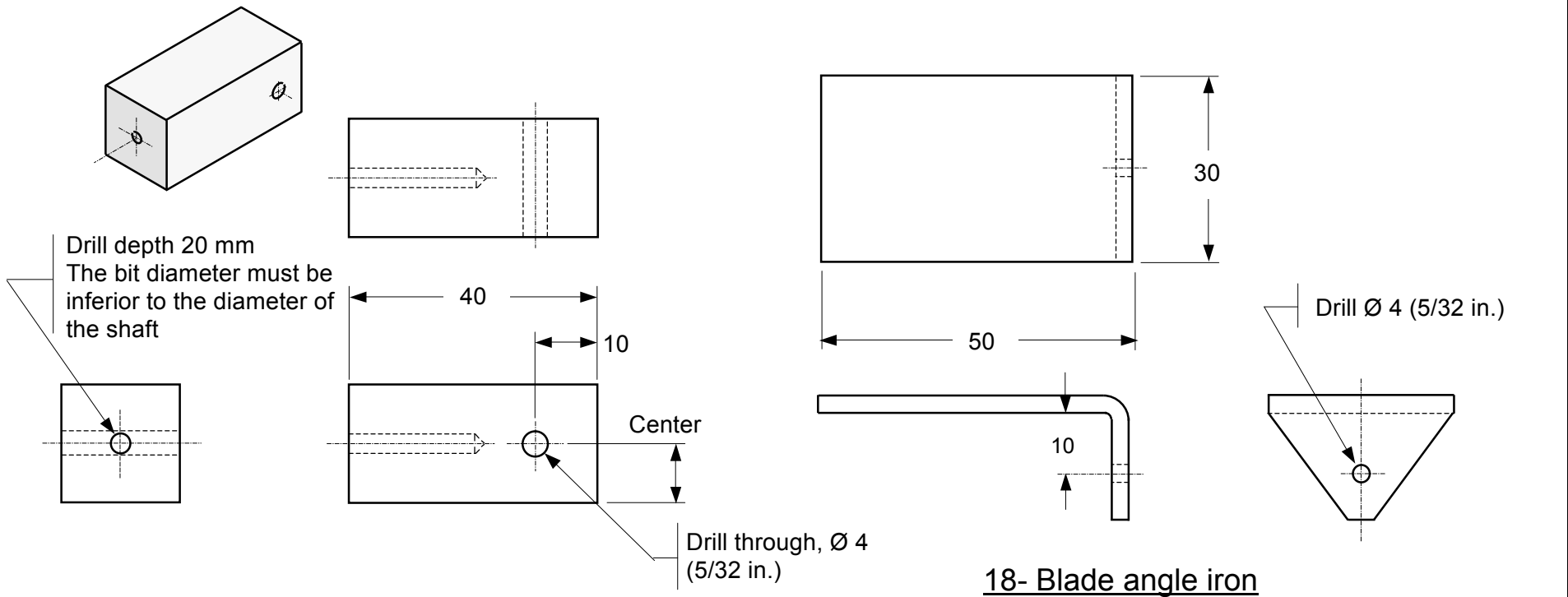
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
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10	ANTI-VORTEX BRACKET		
11	Use a section of tube prepared in range N°4.		<ul style="list-style-type: none"> - Pencil - Ruler <ul style="list-style-type: none"> - Retractable blade knife - Safety ruler <ul style="list-style-type: none"> - Pencil - Ruler
20	ANTI-VORTEX TUBES	 	
21	In a sheet of construction paper, trace 5 strips of 177 mm x 55 mm.		
22	Cut out the five strips.		
23	At the extremity of each strip trace a line, 10 mm. from the end, that will be used for overlap.		

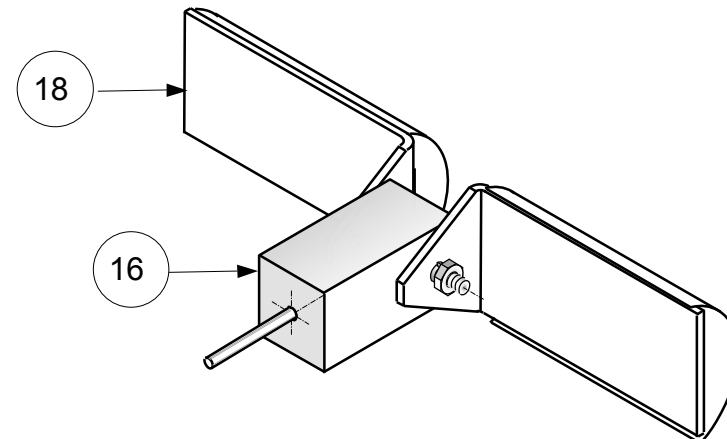
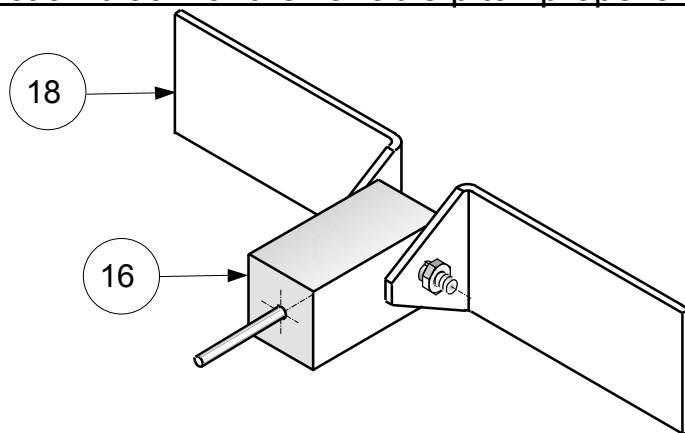
FABRICATION AND ASSEMBLY RANGE FOR SUB-SET 7			SHEET: 2 of 2
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
24	Form and tape the five cylinders.		- Adhesive tape
30	ASSEMBLING THE ANTI-VORTEX		
31	Close the bracket using a clamp and place the five cylinders inside.		- Clamp
32	Staple each of the cylinders to the tube.		- Paper stapler
33	Remove the clamp.		
34	Insert the set into the testing tube and ensure it fits perfectly.		



REF.	No.	DESIGNATION	MATERIAL
21	2	Lock washer	Washer for N° 6 screw
20	2	Bolt	N° 6 – 32 – 1 in. bolt
19	1	Deflector coating	Plastic tube for shower curtain rod
18	4	Blade angle iron	3 mm polystyrene
17	2	Variable propeller shaft	3 (1/8 in.) Ø x 60 mm steel rod
16	2	Connection block	19 mm x 19 mm x 40 mm square dowel



16 - Connection block for the variable pitch propeller





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FABRICATION AND ASSEMBLY RANGE

ELEMENT: CONNECTION BLOCK

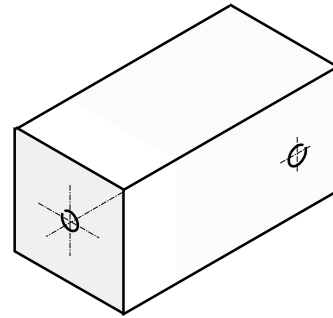
SET: HYDROPLANE

RANGE: 7



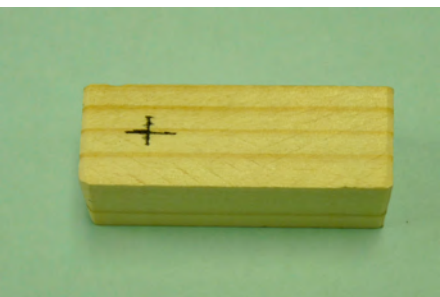
SHEET: 1 of 2




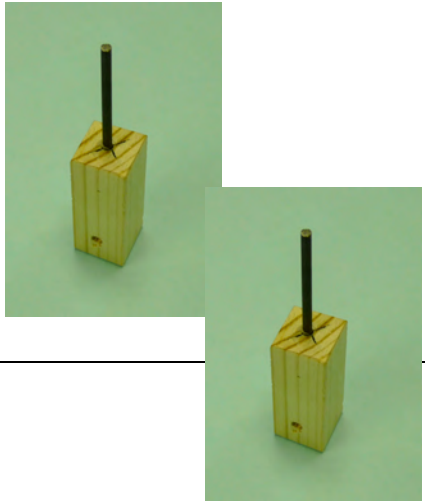
NUMBER: 2

MATERIAL: Pine



N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
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10	MEASUREMENT & SAWING		
11	Measure and trace 40 mm. in a 19 mm x 19 mm moulding.		<ul style="list-style-type: none"> - Pencil - Ruler
12	Using a mitre box, cut the connection block.		<ul style="list-style-type: none"> - Mitre box - Hand saw
20	TRACING AND PUNCHING		
21	Find the center of the hole that will receive the shaft by tracing two diagonal lines.		<ul style="list-style-type: none"> - Pencil - Ruler
22	Punch the center.		<ul style="list-style-type: none"> - Punch - Hammer
23	Using detail drawing N°8 mark the placement of the hole to affix the angle irons.		<ul style="list-style-type: none"> - Pencil - Ruler - Detail drawing N°8
24	Punch the center.		<ul style="list-style-type: none"> - Punch - Hammer

FABRICATION AND ASSEMBLY RANGE FOR THE CONNECTION BLOCK			SHEET: 2 of 2
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
30	DRILLING		
31	<p>Preset the drilling depth to 20 mm.</p> <p>Drill the hole, which will receive the propeller shaft, slightly smaller than 1/8 in.</p> <p>Note: The shaft must fit perfectly in the drilled hole.</p>		<ul style="list-style-type: none"> - Press drill - 7/64 in. Ø bit - Drill vise
32	<p>Drill the hole 4 mm (5/32 in.) diameter all the way through to affix the angle irons.</p>		<ul style="list-style-type: none"> - Drill vise - Press drill - 4 mm (5/32 in.) Ø bit
40	PROPELLER SHAFT		
41	<p>In a 3 mm (1/8 in.) Ø steel rod, measure and cut a 60 mm. length.</p>		<ul style="list-style-type: none"> - Pencil - Ruler - Vise - Metal saw
50	ASSEMBLING THE CONNECTION BLOCK TO THE PROPELLER SHAFT		
51	<p>Using a hammer, insert the propeller shaft into the connection block.</p> <p>Note: The shaft must be carefully inserted in order not to split the connection block.</p>		<ul style="list-style-type: none"> - Hammer
60	<p>Repeat operations 10 to 50 to obtain a second connection block.</p>		



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FABRICATION RANGE

ELEMENT: **BLADE ANGLE IRON**

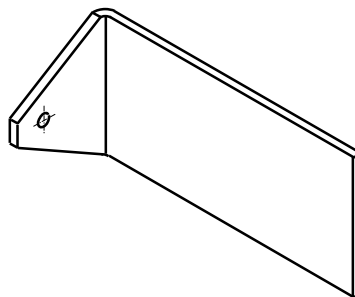
SET: **HYDROPLANE**

RANGE: **8**


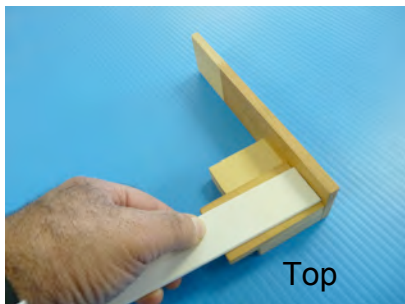

SHEET: **1 of 3**

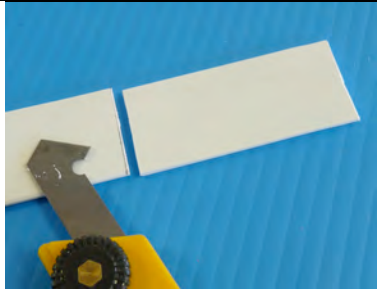


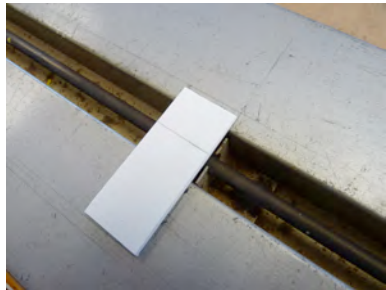

MATERIAL:
Polystyrene





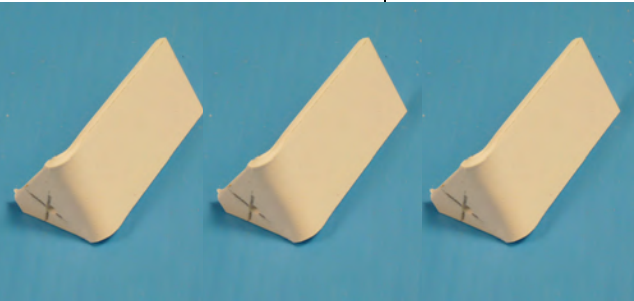
NUMBER : **4**



N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWNG	MACHINE-TOOL, TOOLS
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10	TRACING, CUTTING AND FOLDING OF ANGLE IRONS		
11	On a 3 mm thick piece of polystyrene, trace a 25 mm. wide strip and cut it using a plastics knife.		<ul style="list-style-type: none"> - Pencil - Ruler - Angle iron - Plastics knife - Safety ruler
12	Using the folding template, (annex 2 & 3) trace the length of the angle iron.	 	<ul style="list-style-type: none"> - Pencil - Folding template (Annex 2 & 3)

FABRICATION RANGE FOR THE ANGLE IRONS FOR THE BLADES			SHEET: 2 of 3
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
13	Cut out the piece that will become the angle iron.		<ul style="list-style-type: none"> - Safety ruler - Plastics knife
14	Using the folding template, (annex 2 & 3), trace the location where the part will be folded to become the angle iron.	 	<ul style="list-style-type: none"> - Pencil - Folding template (annex 2 & 3)
15	Heat the part using a linear heating element.		<ul style="list-style-type: none"> - Linear heating element
16	Use the folding template, (annex 2 & 3) to form the angle iron.		<ul style="list-style-type: none"> - Folding template (Annex 2 & 3)

FABRICATION RANGE FOR THE ANGLE IRONS FOR THE BLADES		SHEET: 3 of 3	
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
17	Referring to detail drawing N° 8 , mark the location of the hole.		<ul style="list-style-type: none"> - Pencil - Ruler - Detail drawing N° 8
18	Drill the hole at a diameter of 4 mm.		<ul style="list-style-type: none"> - 4 Ø bit - Martyr
19	Using a pair of cutting pliers, cut the corners as shown. Note: This cut is approximate.	 	<ul style="list-style-type: none"> - Cutting pliers
20	MAKING THE ANGLE IRONS		
21	Repeat operations 10 to 19 to make three other angle irons.		



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FABRICATION AND ASSEMBLY RANGE

ELEMENT: **BLADE DEFLECTOR**

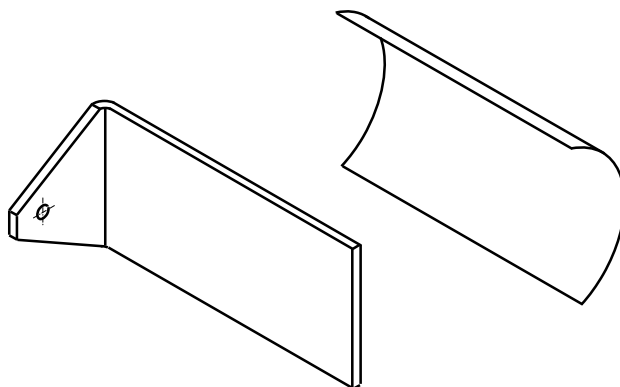
SET: **HYDROPLANE**

RANGE: **9**


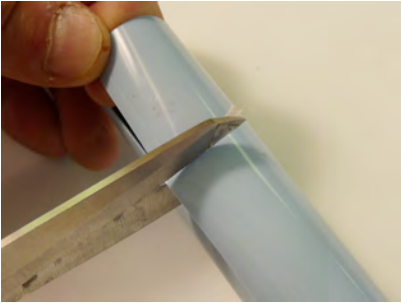
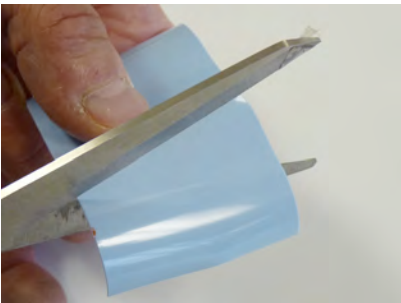
SHEET: **1 of 3**




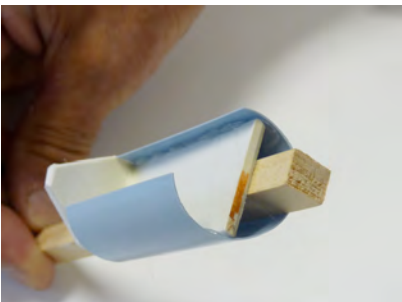
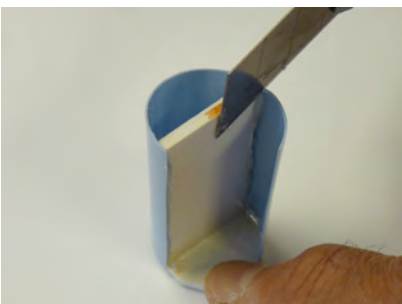
MATERIAL: **Plastic**

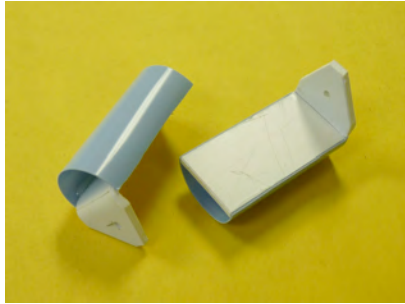
NUMBER: **2**



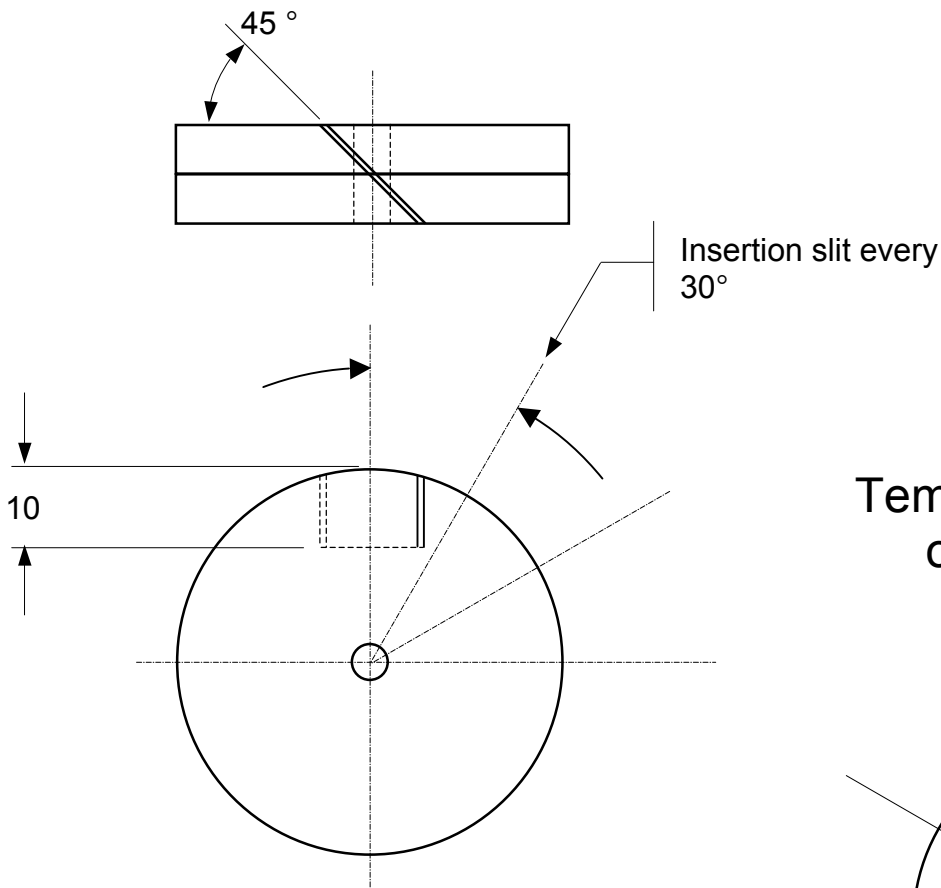
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
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10	FABRICATION OF THE DEFLECTOR		
11	On a shower curtain rod protector, measure a length of 50 mm.		<ul style="list-style-type: none"> - Pencil - Ruler
12	Using a pair of scissors, cut this section.		<ul style="list-style-type: none"> - Scissors
13	Unroll the piece and cut about 1/3 of the length.		<ul style="list-style-type: none"> - Scissors

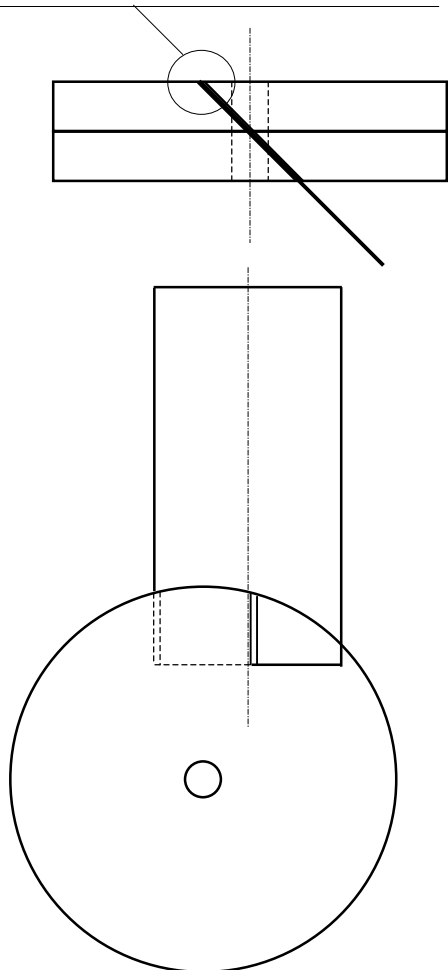
FABRICATION AND ASSEMBLY RANGE FOR THE BLADE DEFLECTORS			SHEET: 2 of 3
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
14	Put a line of glue on one side of the angle iron as shown.		– Hot glue gun
15	As shown, glue the angle iron inside the casing, letting it extend over a little. Be sure to hold it until the glue sets.		
16	Put another line of hot glue on the other side of the angle iron.		– Hot glue gun
17	Use a 10 mm high strip of wood as a spacer while the glue sets.		– Wood strip
18	Cut the excess casing using a retractable blade knife and finish it using a file or sandpaper.		– Retractable blade knife – Soft file – Sand paper

FABRICATION AND ASSEMBLY RANGE FOR THE BLADE DEFLECTORS			SHEET: 3 of 3
N°	PHASE, SUB-PHASE OR OPERATION	PHOTO OR DRAWING	MACHINE-TOOL, TOOLS
19	Repeat operations 10 to 18 in order to make and assemble a second deflector.		

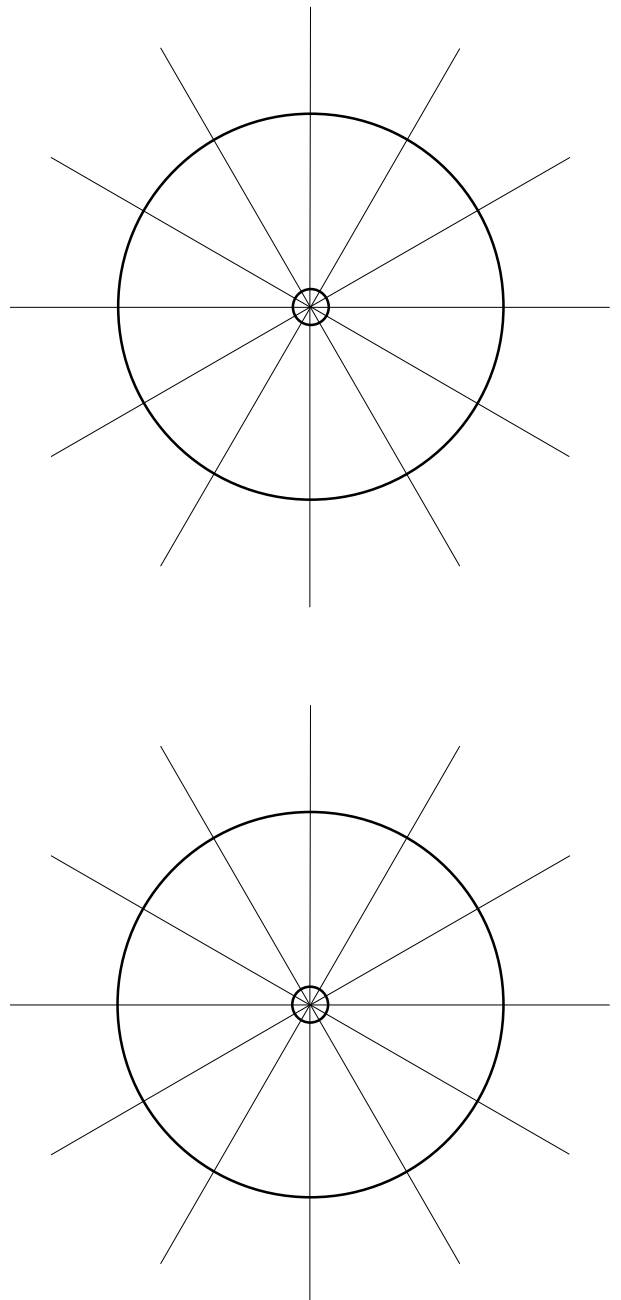
ANNEX 1



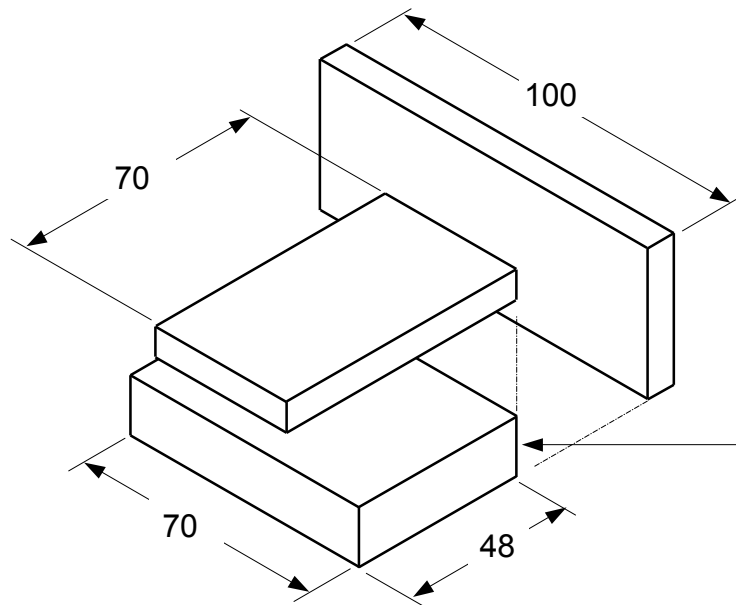
The blade extends beyond the hub on one side only to avoid any contact with the alternator.



Template for locations of insertion slits

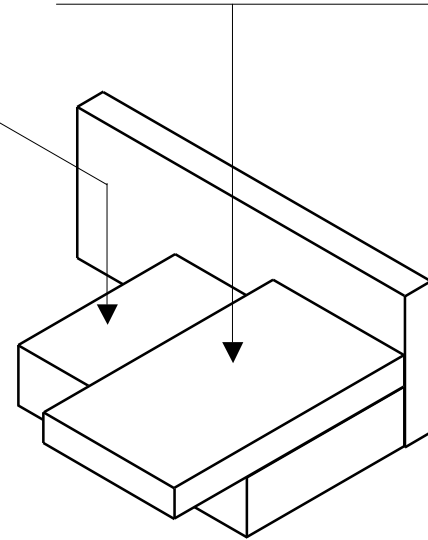


ANNEX 2

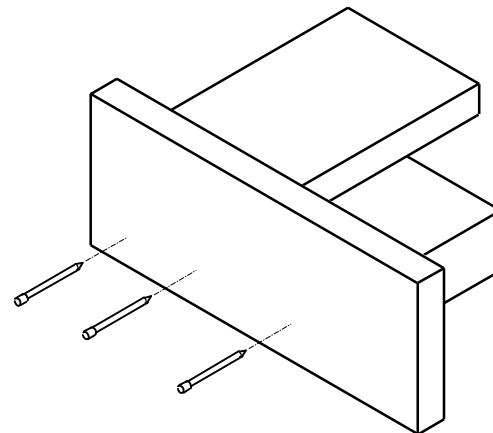


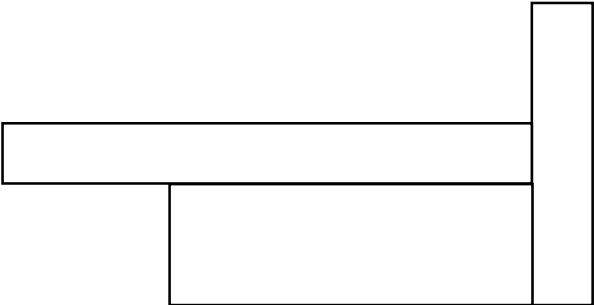
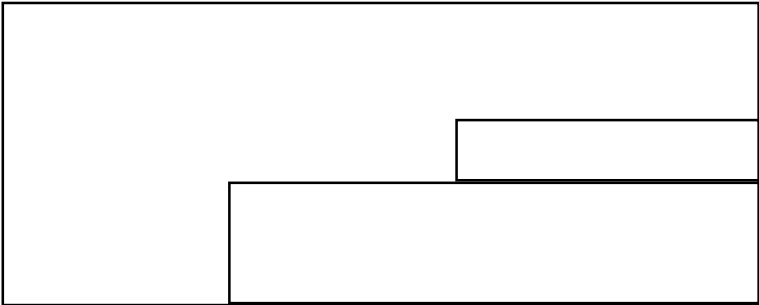
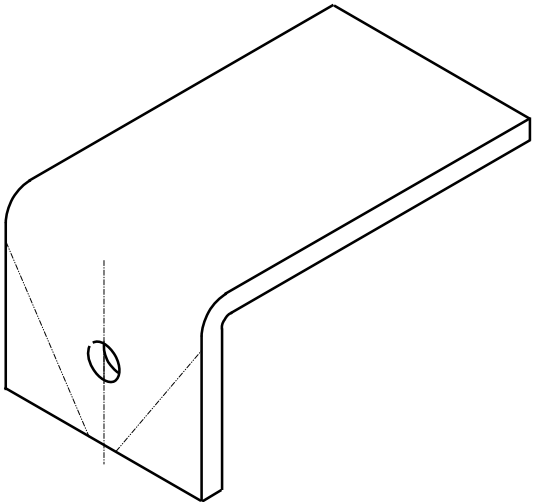
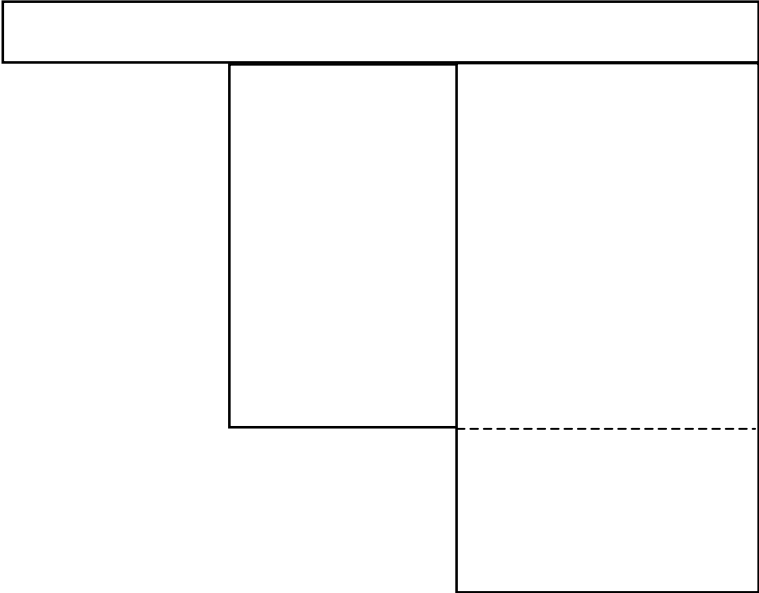
Folding template

Tracing template for the length of the polystyrene strip.



5/8 thick board





Projection of the tracing and folding templates for the blades of the variable propeller