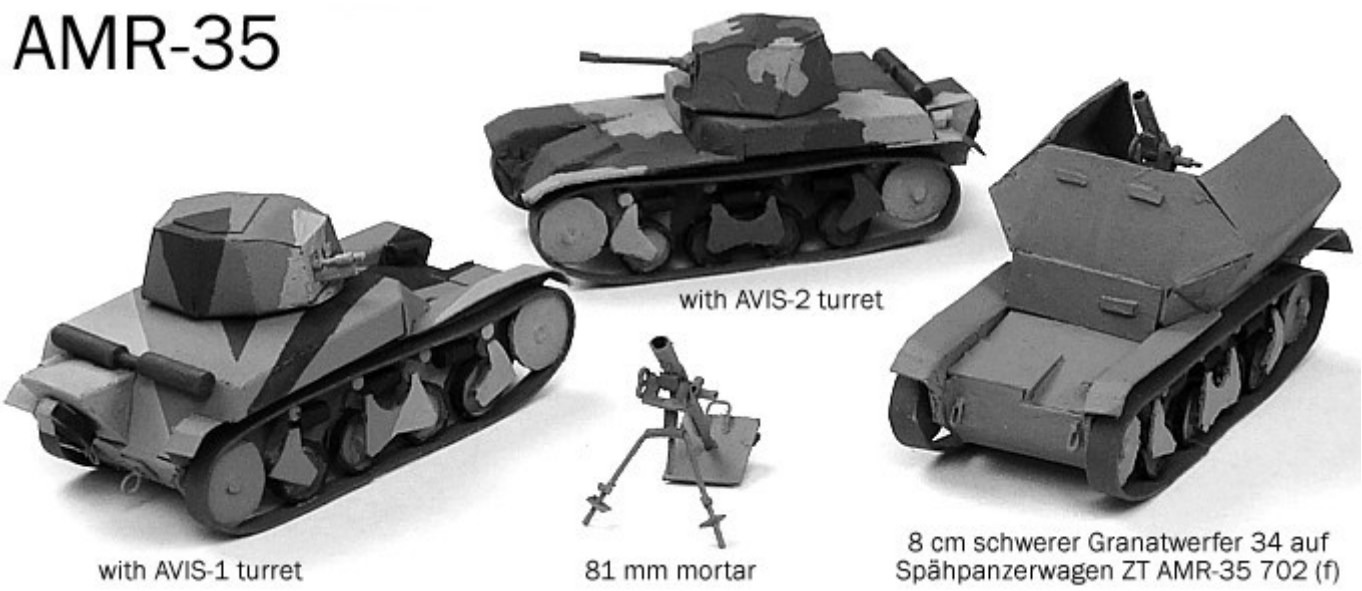
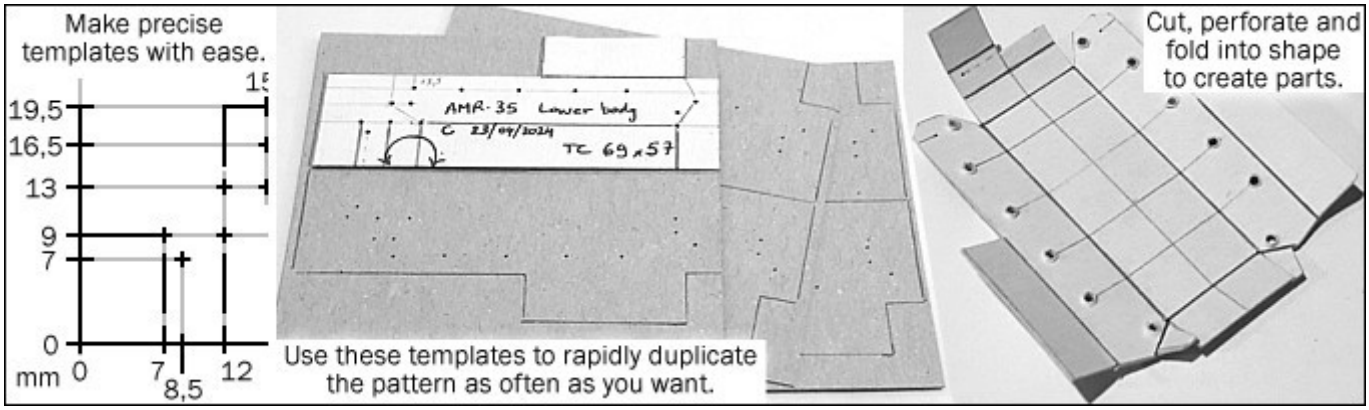
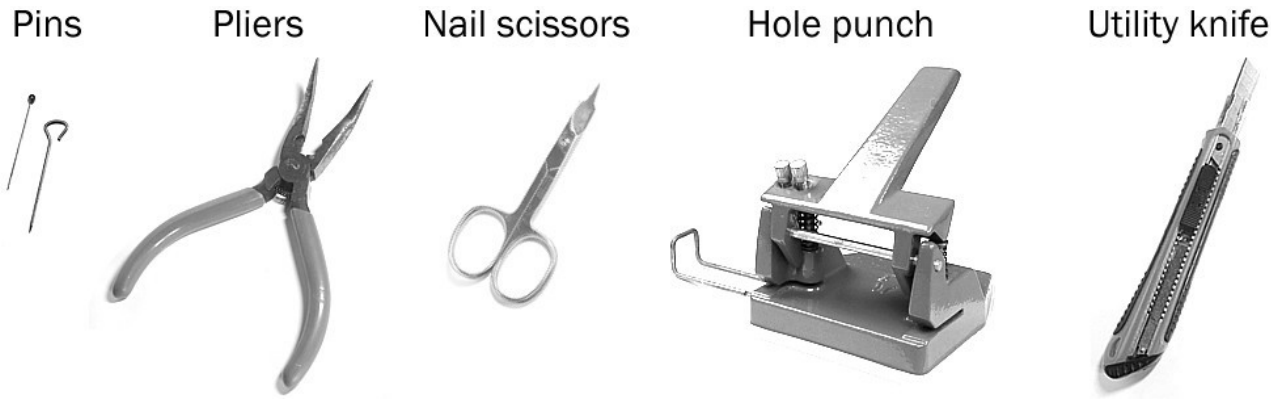
Toothpick Miniatures

by Alexandre Karadimas

Make your own 1:64 miniatures with common household tools and materials







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Booklet 04 – AMR-35 Version 1 – June 2024

1. Tools

Commonly found at home

- 1 small segmented blade or "snap-off blade" utility knife.
- 1 pair of thin pliers with a wire-cutting capability.
- 1 cutting board, made of a flat piece of wood, MDF, thick plastic or any other suitable material.
- 1 piercing board with a Ø 4 mm (*meaning: of a diameter of 4mm*) hole drilled through it *(see step B05 in this booklet)* to make piercing cardboard much easier.

- 1 pair of nail scissors (slim ends are preferable) for cutting paper and thin cardboard precisely. *(see Step B05)*

- 1 hole punch (common stationary item), a diameter of Ø 6 mm is preferred to create this model, Ø 5,5 mm is acceptable.

- 1 pin Ø 0,6 mm, common stationery item.
- 1 thin pin Ø 0,4 mm, typically used to hold cloth while sewing or in newly bought shirts, to make holes with precision. *(see Step B05)*
- 1 nail Ø 1 mm *(see Step C05)*
- 1 nail Ø 2 mm *(see Step E02)*

- 1 mechanical pencil to precisely mark cardboard and paper. *Note: it can't be substituted by a regular pencil because the templates have holes specifically made for mechanical pencil tips.*
- 1 set square in metric or at least a ruler in metric.

- Stationery hinge clips to hold small parts together while the glue dries. *(see Step C01) If you don't have hinge clips, you can hold the pieces together between your fingers until they are glued together.*

- Household glue, in liquid or gel form.

Recommended additional tooling

- 1 calliper (the very economical plastic variety is sufficient, costing about 3 Euros or US Dollars). *It is useful for assessing the thickness of your materials and makeshift tools.*

Always cut downwards on the cutting board and never towards any part of your body.

Please don't cut yourself.

2. Materials

Commonly found for free or nearly free

- Thick cardboard (1,5mm thick, like in delivery pizza boxes) is used for the bases of the miniatures.
- Thin cardboard used in packaging (for instance in breakfast cereal boxes or tissue boxes). The thinner the cardboard, the better.
- Rigid or thick paper (for instance, train or subway tickets).
- Smooth paper found for instance in leaflets or magazine covers is used to create or cover surfaces.

Double Wire Clip (DWC). See more on step E05 page 11.

Rigid Paper (RP) is made of one layer.

Thin Cardboard (TC) is made of several layers that come apart went bent.

- Toothpicks are used for several parts. They are also useful to apply glue precisely and to create holes.
- Ear cleaning swabs ("Q-tips") with paper stems are necessary to create several details. Varieties with a hole in the center are preferred.

- Paper straws, Ø 6 mm, are necessary to create the rims of the road wheels.

Wire, which may be found at home or bought economically

- Ø 0,45mm medium wire can be obtained from from plastic-wrapped "double-wire" metal clips ("DWC") typically used to seal

bread bags. Its plastic sheath is used to create cylindrical volumes of the proper diameter, such as gun barrels or exhausts.

- Ø 0,3 mm thin crafting wire (typically sold online or in supermarket "hobby" sections) are used to make shacklebolts and trailer hitches. Ø 0,25 mm thin "freezer" wire, used to seal bags for the freezer, can substitute for thin crafting wire.

- Paperclips provide straight barrels for the weapons.

Technical aspects

Working on a small scale

The 1:64 scale is at the very limit of where one can operate visually and physically without optical help.

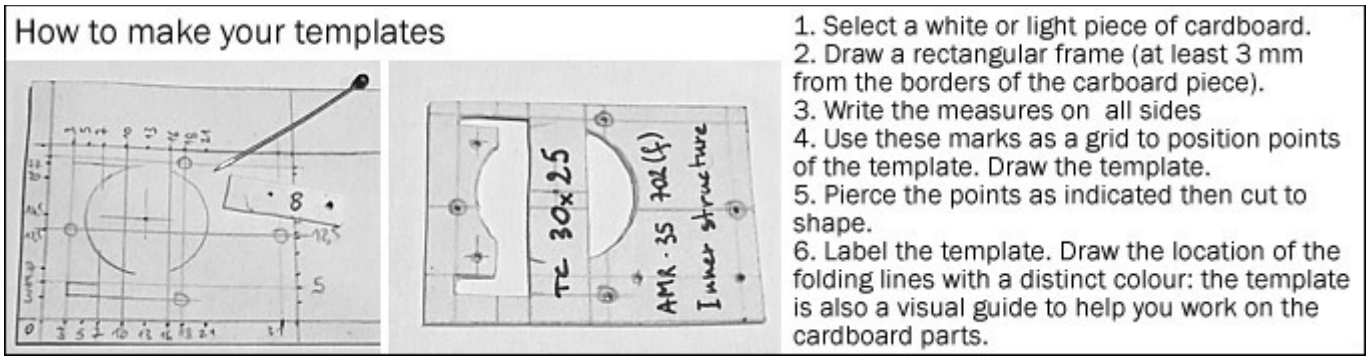
Measurements will be provided in millimeters and half-millimeters. Some parts will have to be trimmed to fit, proceed by removing thin strips of material.

Setting up templates and jigs

Some parts have a simple design and are best drawn in batches, using a ruler. Illustrations will feature an example whenever this is the case.

Other parts have a complex design, which would be too time-consuming to draw from scratch. In these cases we will first make a template, a piece of cardboard with all the markings needed to replicate these parts, as well as indications to modify and position them precisely.

By using templates, you will be sure to have the same dimensions on all parts.



Most templates are on the central pages

Half-templates (1/2 templates)

Some complex templates are for one half of the part only, in order to save time. To use them, draw a line on the piece of cardboard and align the template to it.

Duplicate the markings then flip the template over and duplicate the markings for the second half, as shown on the cover of this booklet.

Piercing holes on templates

To pierce, first use the Ø 0,4 mm thin pin then enlarge each hole with the Ø 0,6 mm pin, wiggling it until it is wide enough to let the Ø 0,7 mm graphite tip of the mechanical pencil through.

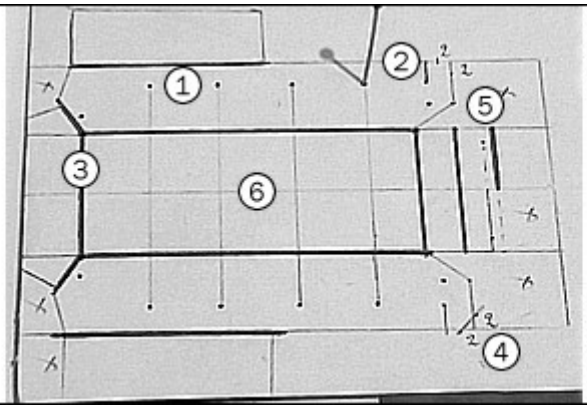
Glue works better on the **porous side** of cardboard packaging. The smooth, printed side is better suited to be painted over.

You can use a **roller pen**, even a depleted one, on the folding lines. This will make folding easier and more precise.

Part A: the lower body

A01

- The porous side of cardboard is outwards.
- Positioning lines have to be drawn between return roller points (1) and over the front axle point (2).
- (3) a ball pen has been used to create the crease on the fold lines.
- (4) the 2 x 2 mm corner where the mudguard will bend.
- (5) Notice how the positioning dot is used to draw the assymetric front panels.
- (6) See step B06 for the support pillar holes.

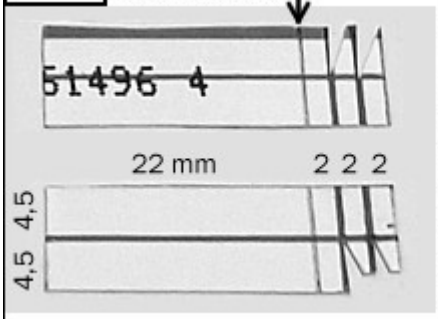


Connecting cardboard piece (25 x 15 mm)

Glue the rear panel to the rear side tabs only after the upper halves have been connected.

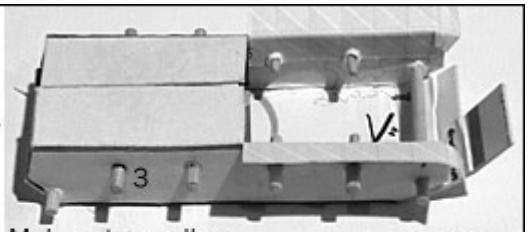
A02

This is a positioning line, not a fold line.

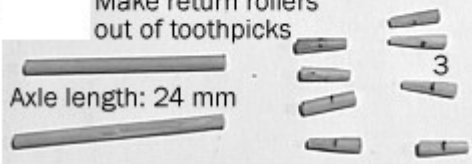


Glue the mudguards on the inside of the lower body.

Once the glue has hardened, pierce through with a pin on the return roller points, then widen these holes using a thin toothpick.
Widen the axle holes as well, then insert the axles. Glue is not required on the axles.



Make return rollers out of toothpicks

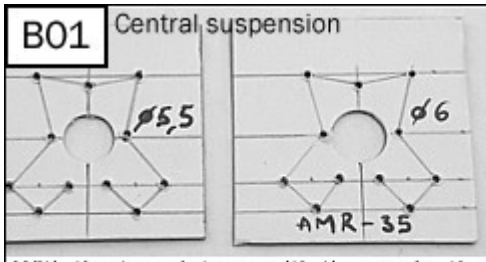


Glue the return rollers so they protrude by 3 mm.

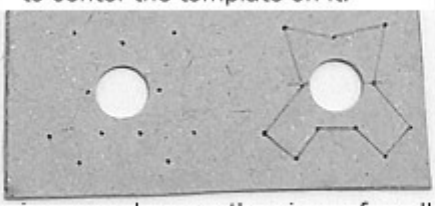
Part B: Suspensions and road wheels

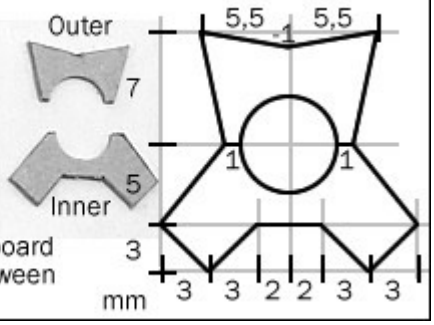
B01

Central suspension



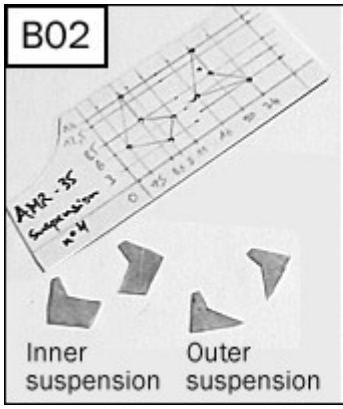
First punch the hole, then use it to center the template on it.





With the template as with the production pieces, make sure the piece of cardboard slides against the inner wall of the hole punch, to keep the same distance between the border and the hole.

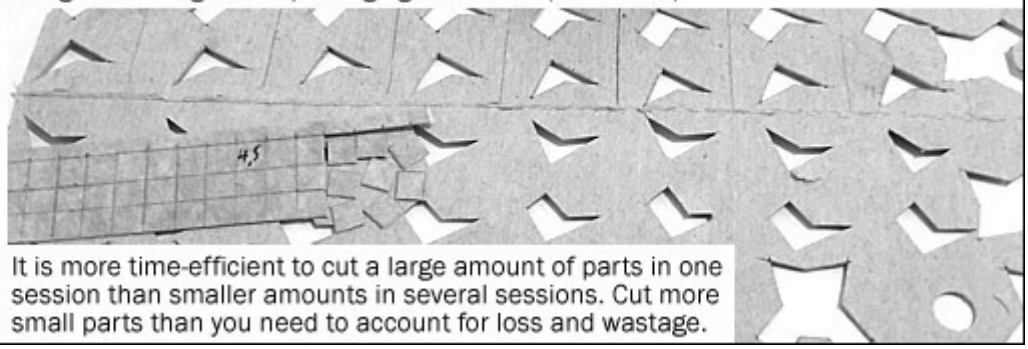
B02



Inner suspension

Outer suspension

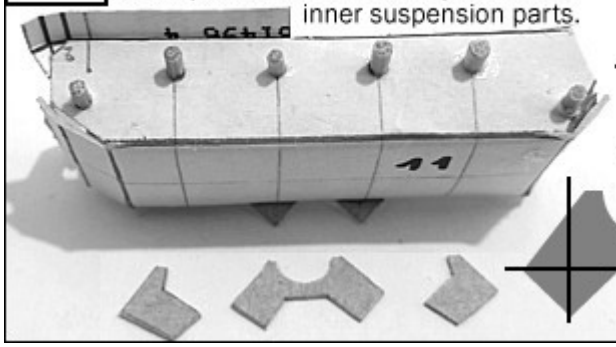
Double your output by cutting cardboard that has been folded onto itself, for instance along the folding line of packaging cardboard (see below).

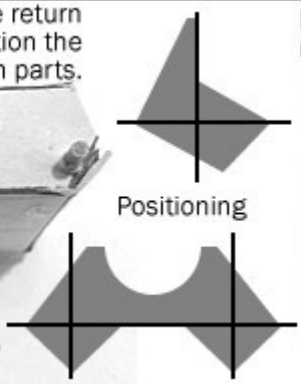


It is more time-efficient to cut a large amount of parts in one session than smaller amounts in several sessions. Cut more small parts than you need to account for loss and wastage.

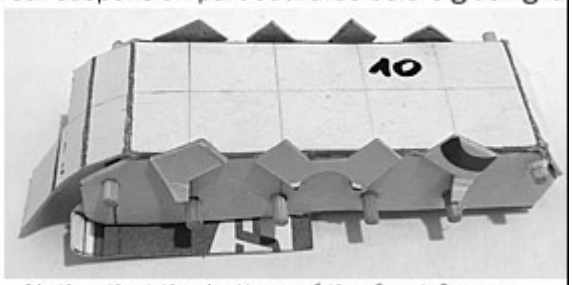
B03

Guidelines drawn between the return roller points are needed to position the inner suspension parts.





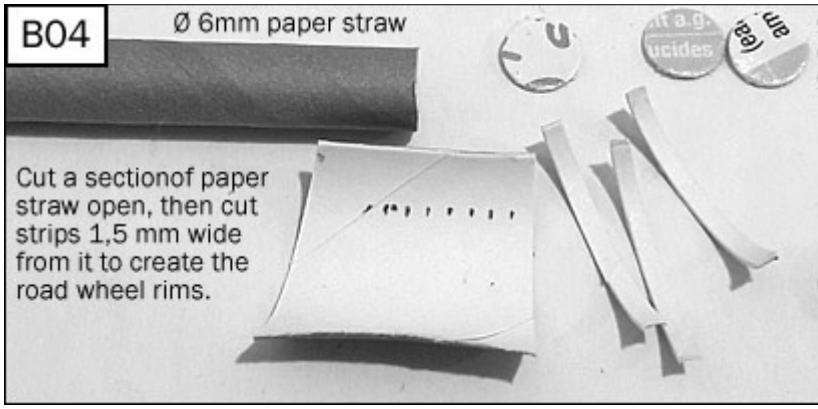
Bend about 2 mm of the top part of the front & rear suspension part outwards before glueing it.



Notice that the bottom of the front & rear suspension piece is offset relative to the line.

B04

Ø 6mm paper straw



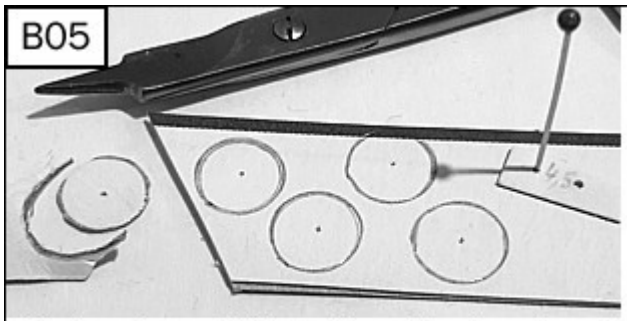
Cut a sectionof paper straw open, then cut strips 1,5 mm wide from it to create the road wheel rims.

Ø 6 mm thin cardboard clippings
(Ø 5,5 mm clippings can be used as well but Ø 6mm clippings are preferable)

Apply glue inside the rim part then wrap it around a paper clipping. Make sure the clipping's glossy side is outwards.

The clipping's porous side is flush with the rim.

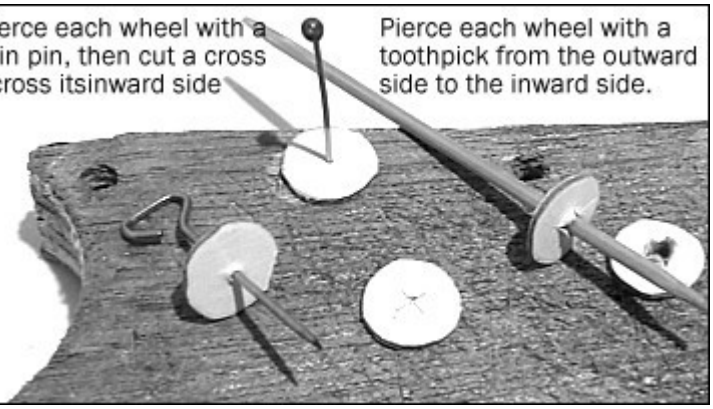
B05



Glue two pieces of thin cardboard together. Use a 4,5 mm compass on it to draw Ø 9mm idler & sprocket wheels. Cut them out with nail scissors.

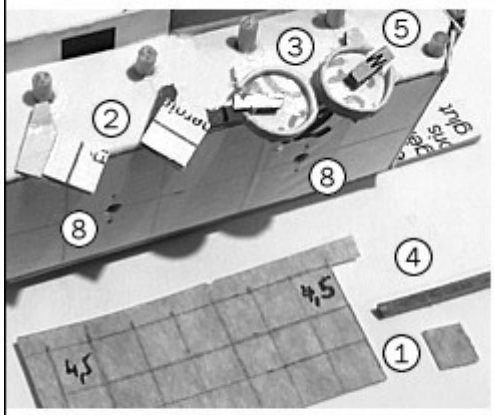
Pierce each wheel with a thin pin, then cut a cross across itsinward side

Pierce each wheel with a toothpick from the outward side to the inward side.



B06

(1) Cut 4,5 mm squares of thin cardboard.
(2) Glue them, porous side inwards, to the inner supsensions, aligning them on the lower tip.

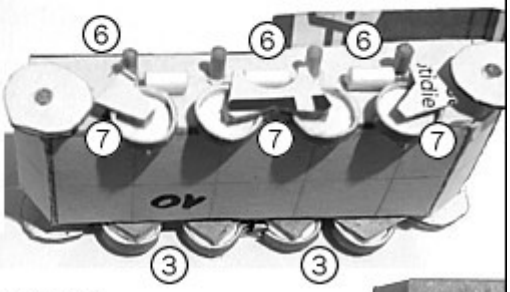


(3) (See both photographs) Glue the road wheels with the opening in the rim so the outer suspension part can hide it.

(4) Glue three layers of thin cardboard together, then cut 1,5 mm wide strips. Be sure that the strip, when inside the road wheel, is taller than the rim of the road wheels.

(5) From this strip, cut 4,5 mm long parts and glue them to the road wheels.

(6) For the **dampers**, cut 4,5 mm pieces of Q-tip stem per side, glue the first one across the central suspension, align the others to it.



Leave the assembly at this stage until the rims have been painted.

(7) Paint the outer suspension parts separately, then glue them to the road wheels. Notice the extremity of the front and read suspension have been trimmed before glueing.

(8) The support pillar holes are also used to place the miniature on the **painting stand**: perforate two holes on a yoghurt cup, insert in each half a toothpick kept in place by perforated trips of DWC plastic (in the center of the picture).

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Templates
Scale 1:64
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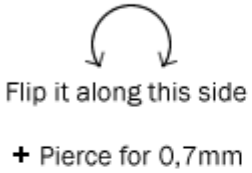
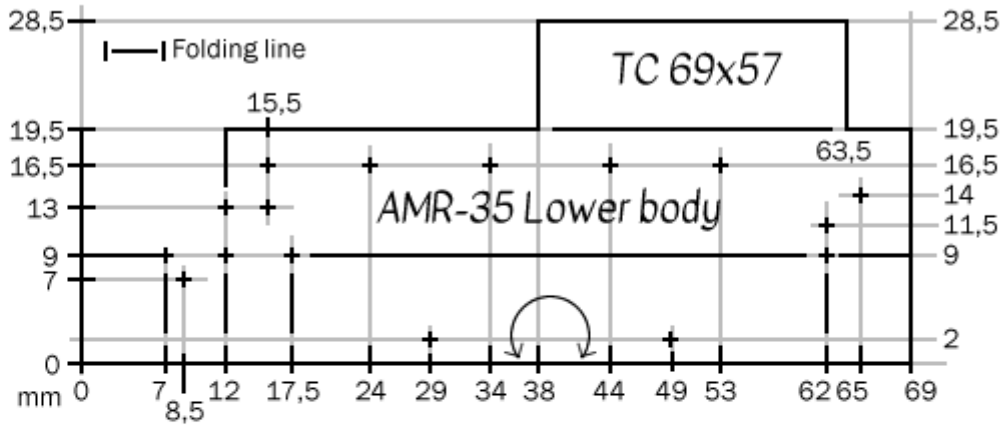
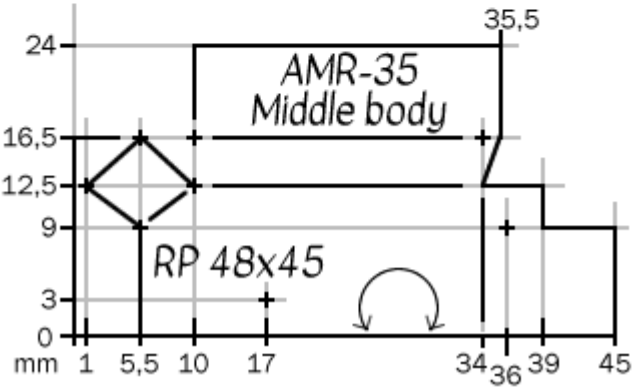
Write it on the template

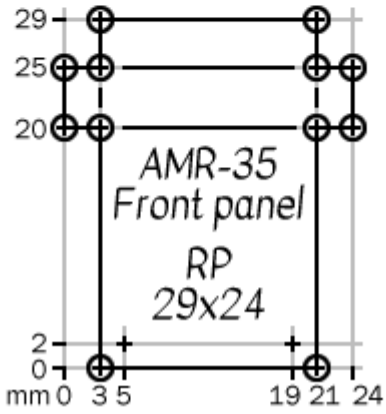
TC: Thin Cardboard
RP: Rigid Paper

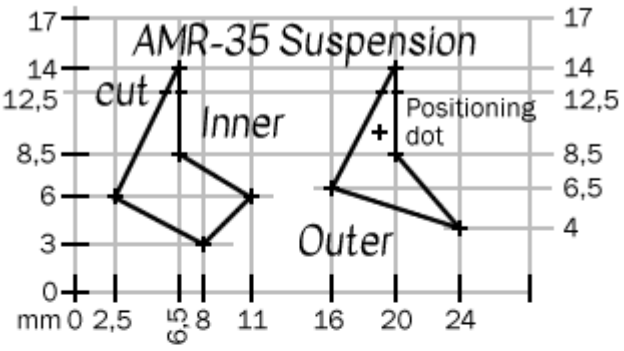


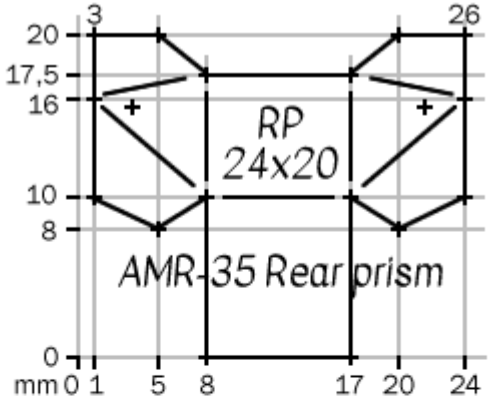
+ Pierce for 0,7mm

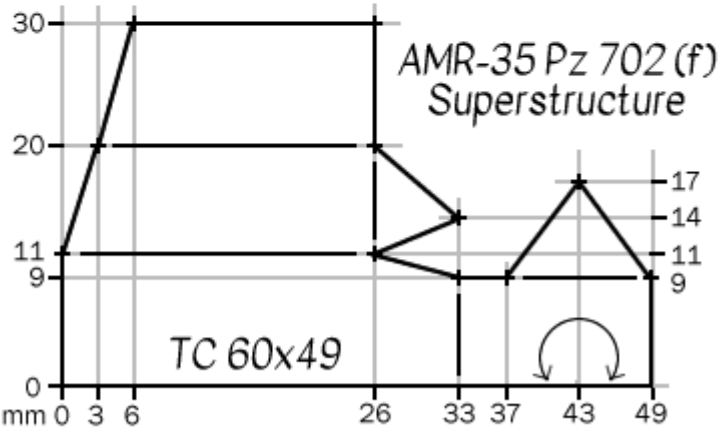


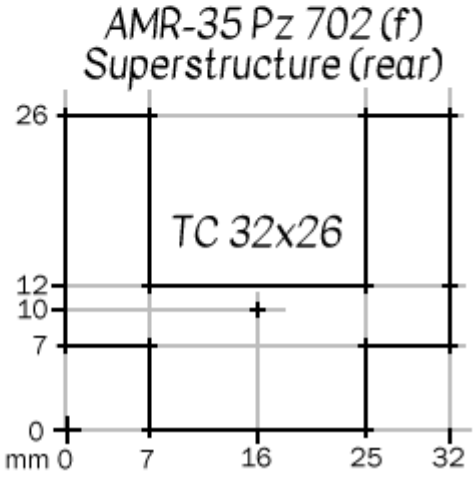












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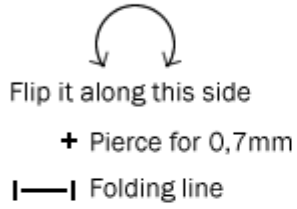
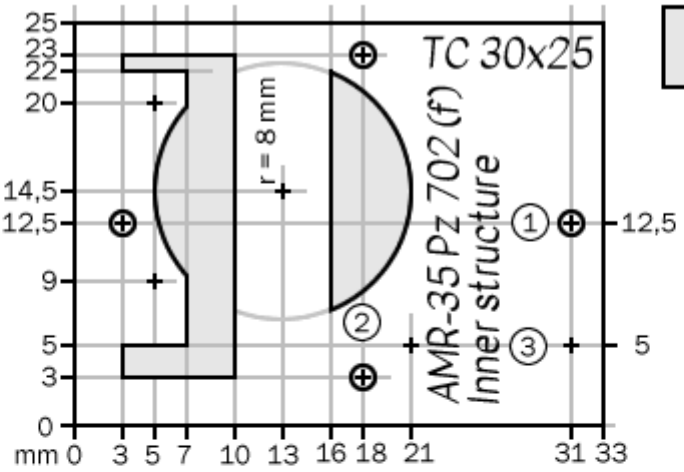
AMR-35
Templates
Scale 1:64
Page 2/2





Remove from template

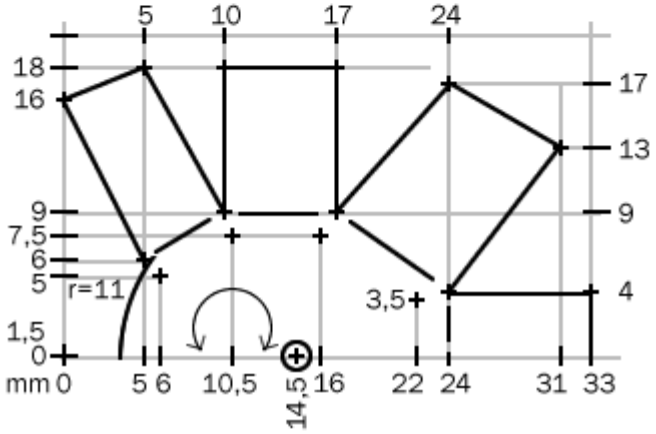
Pierce for 0,7mm (special purpose)

① To align with the central line.

② Cut the rear part along this line.

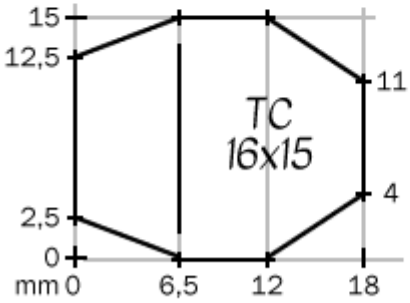
③ Positioning dots for a 10x5 mm hatch with a 1x1 mm corner cut close to the hole.

AVIS-1 turret

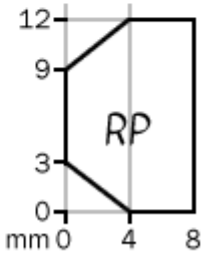


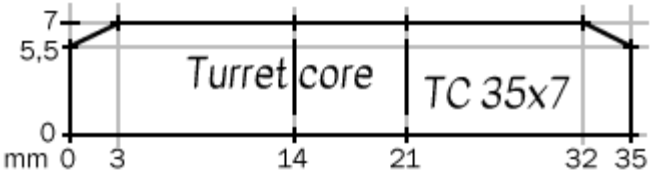
⊕ First use to draw the arc, then pierce for 0,7mm

Turret top panel

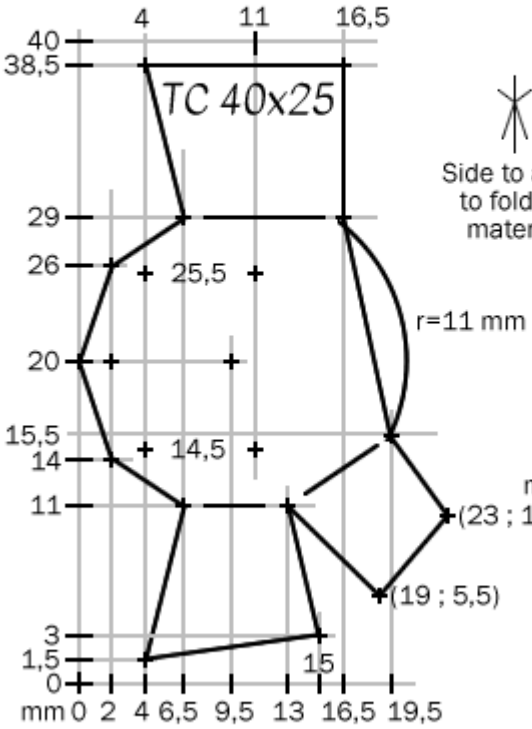


AVIS-1 hatch

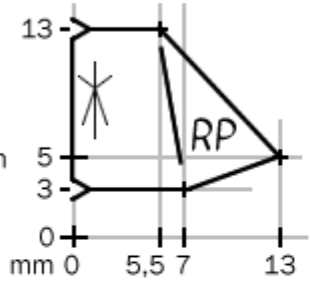




AVIS-2 turret

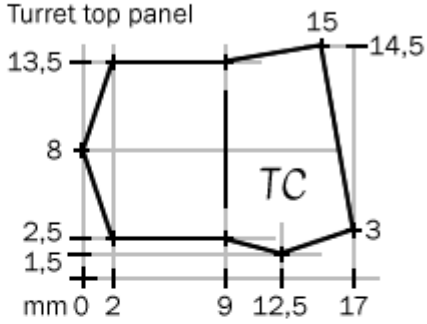


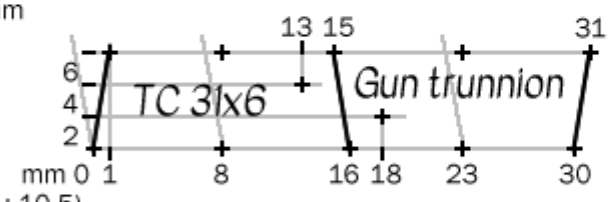
Rear panels template

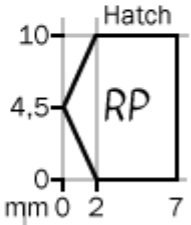


Side to align to fold on material

Turret top panel







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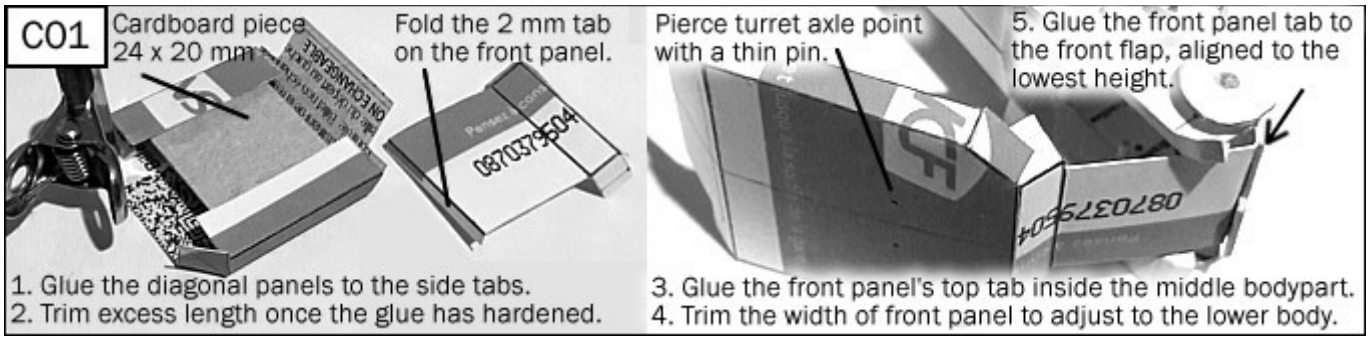
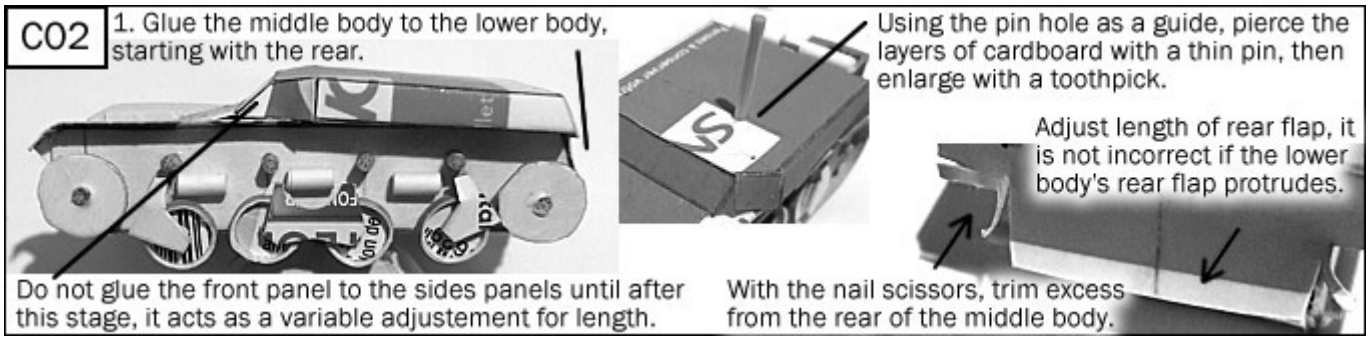
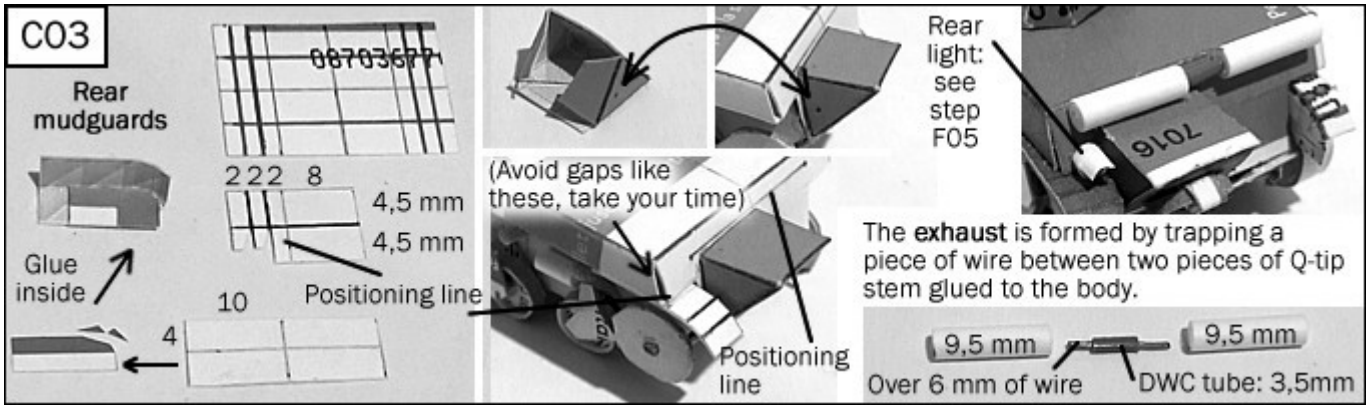
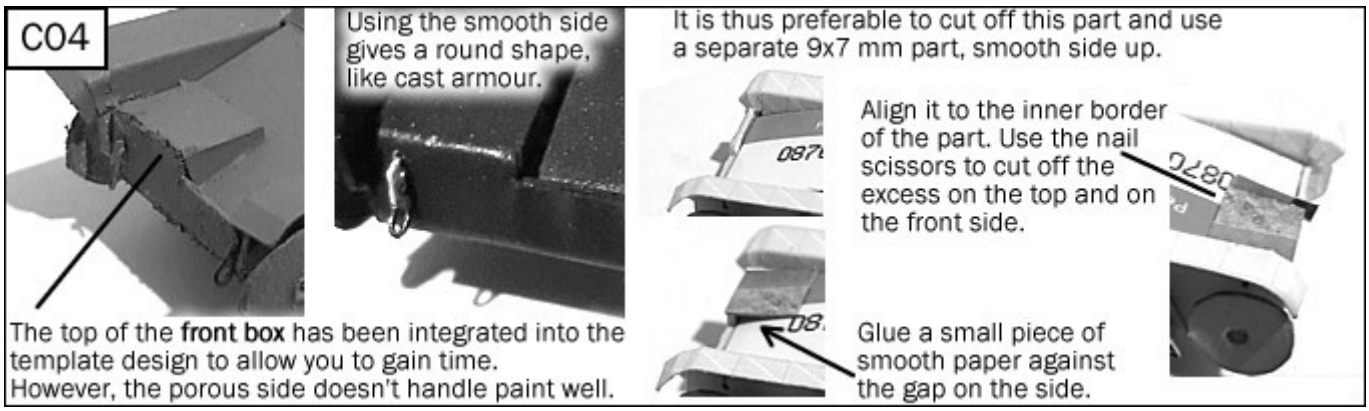
Part C: middle body, assembly to lower body, final details.



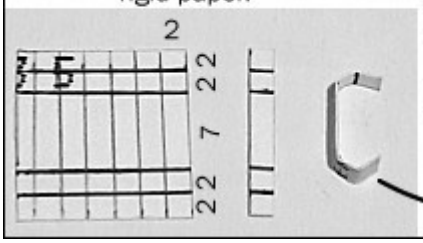


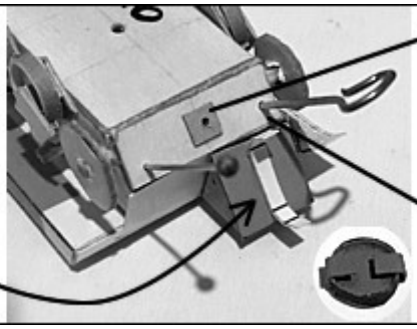




C05

The **spare road wheel bracket** is made from rigid paper.





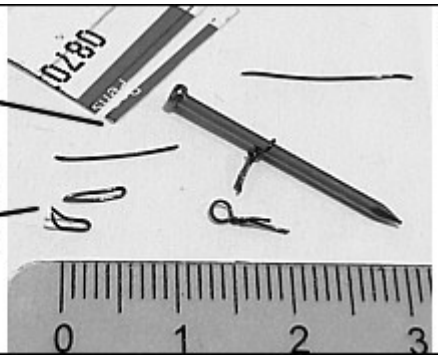
Use the middle line to position the piece of cardboard for the **trailer hitch**, glue it on its porous side.
It is the same square 4,5 mm part that can be seen on step B06.

Pierce the holes (Ø 0,7 mm) for the **shacklebolts** and the trailer hitch so that they will be above the axle.
The holes are located 2 mm from the top and 2 mm from the side.

C06

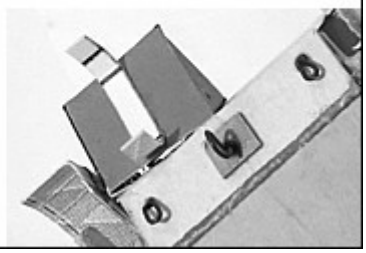
Cut 1 mm-wide strips of rigid paper.

To make a **shacklebolt** cut a piece of thin wire at least 10 mm long, fold it in two, then use the pliers to fold it so that the loop is about 2 mm long.

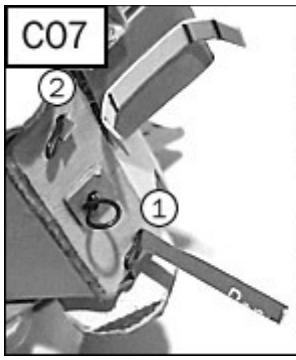


To make the **hook** for the trailer hitch cut a piece of thin wire at least 15 mm long. Use a nail (Ø 1 mm) or make an equivalent from a toothpick to create a loop.

Glue the stem of these elements and insert them into the holes.



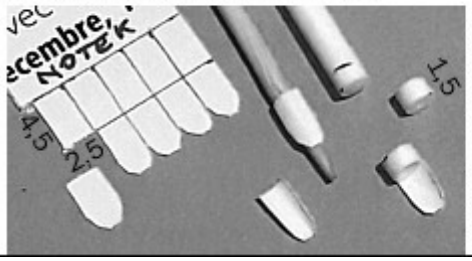
C07



(1) - Glue the 1 mm strips of rigid paper inside the shacklebot loop and over the hole. Wait for the glue to harden.

(2) - Once the glue has hardened, use the nail scissors to cut the ribbon over the shacklebolt.

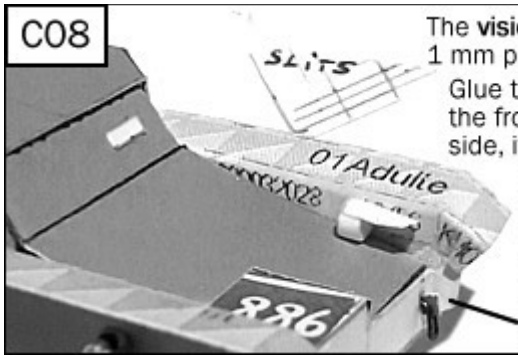
For the **Notek light** prepare 2,5 x 4,5 mm pieces of glossy paper, round one extremity off. Cut one piece off and give it a round shape using a toothpick.



Cut a 1,5 mm section from a Q-tip stem. Glue the rounded piece of paper on it.

(Side note : these parts are very small and can be lost easily, make several of them).

C08

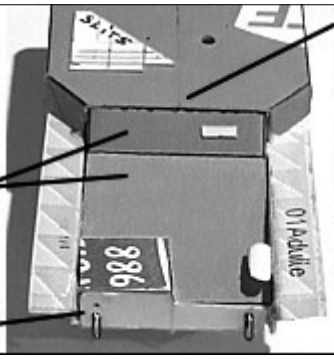


The **vision slit** is a 4 mm x 1 mm piece of rigid paper.

Glue the Notek light both to the front panel and to the side, its top is horizontal.

Note: there are no radiator grilles in this design, for lack of a practical solution.

Note position of front shacklebolts.

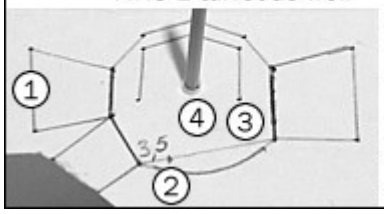


Take the central line, that you used to flip the middle body template, as a reference for the positioning of the vision slit.
The vision slit is centrally located in its half of the panel.

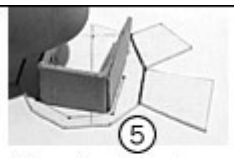
Part D: Turrets.

D01

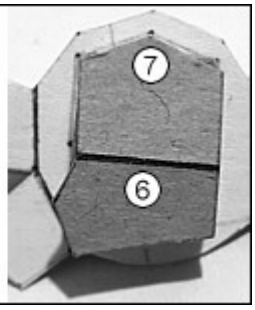
AVIS-2 turret
Most applies to the AVIS-1 turret as well



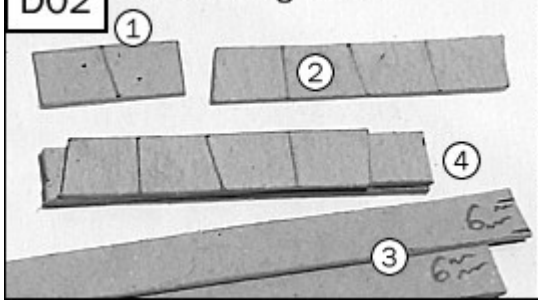
(1) Prolong the side panels if desired, the upper ends will be trimmed.
(2) Positioning dot for the barrel 3,5 mm from the side.
(3) Inner positioning dots and lines.
(4) Pierce with pin then with a toothpick, from the smooth side to the porous side.



Glue the turret core part (5), bend the turret top panel (6) then glue it to the turret core, using the rear positioning dots (7).



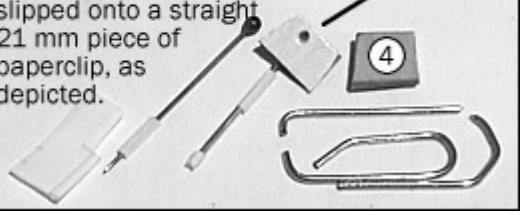
D02 Trunnion and gun barrel



(1) Two trunnion top parts, perforate and separate.
(2) Trunnion lower stack guide.
(3) Make 6 mm wide strips of thin cardboard and glue them together with part (2) so that the stack is 2 mm tall (4).

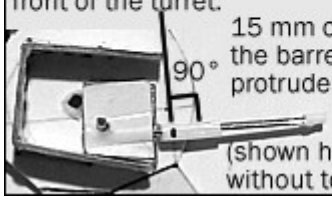
Cut 2 parts (6 mm and 2 mm) from a DWC tube and widen them with pins until they can be slipped onto a straight 21 mm piece of paperclip, as depicted.

Slide the hook of the barrel part into the top trunnion part.



D03

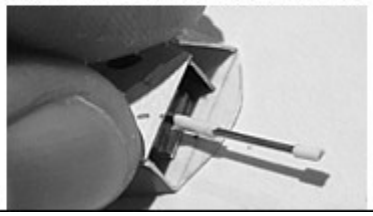
Glue the trunnion parts together. Position the trunnion so that the barrel is orthogonal to the line on the front of the turret.

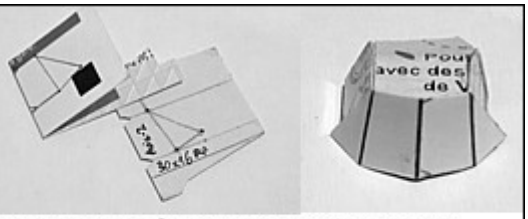


15 mm of the barrel protrudes.

(shown here without top panel)

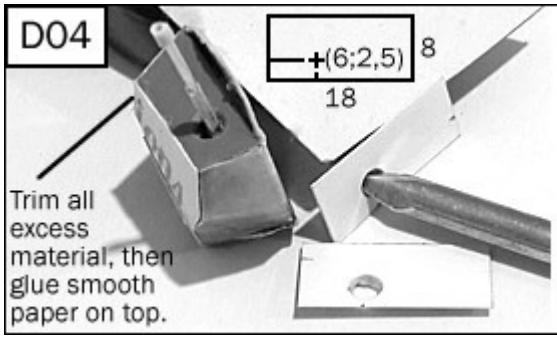
Glue the side panels to the top panel. Hold them in place with your fingers while maintaining the bottom corners flat with the table.





Fold a piece of rigid paper and align the template on the fold. It is still folded when you cut along the lines. Make fold lines, then glue the part to the rear of the turret.

D04



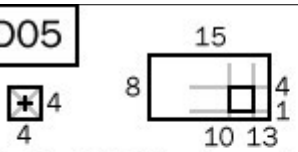
Trim all excess material, then glue smooth paper on top.

For the **AVIS-2 front panel**, cut and pierce a piece of rigid paper as specified. Enlarge the gun hole with a toothpick, then rotate the tip of a large nail inside to enlarge it to 3 mm. Glue it centered to the barrel, trim all excess.

Glue the rigid paper hatch to the top and visions slits to the front (see picture on the booklet's cover) and the rear of the turret.

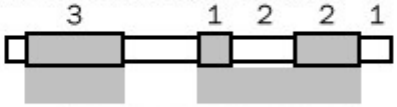
Insert a piece of toothpick about 12 mm long to act as the turret axle, do not glue it neither to the turret nor to the body.

D05



For the **AVIS-1 front panel**, mark a piece of **thin cardboard** on the **porous** side and cut out the square shape. Also make a 4x4 mm square part out of thin cardboard and pierce it in its center.

Cut two parts from DWC (see below), insert 12 mm of medium wire into the square and the two DWC parts to hold it in place.

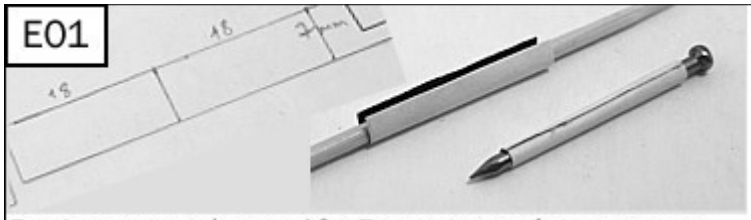


(When trimming the side panels to fit, do not cut too much at once).

Flip the front panel part to the smooth side, glue the gun assembly to the porous side. Position the front panel to coincide with the bottom left corner (from your perspective) and glue in place.

Part E: 81 mm mortar, vehicle mounted and standalone models

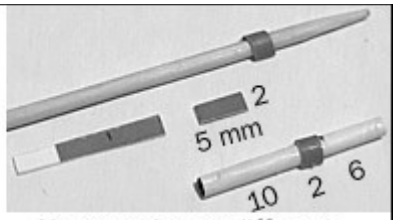
E01



For the **mortar tube**, cut 18 x 7 mm pieces of glossy paper, form it into a cylinder around a toothpick, then glue it around a Ø 1 mm nail. Remove the nail while the glue is still liquid, to avoid getting it stuck to the tube.

Make a 2 mm-wide ribbon of rigid paper, which will be used for three different parts.

For the **tube ring**, cut a 5 mm piece from the ribbon and form it around a toothpick.



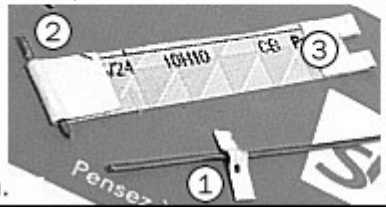
You can choose different positions for the tube ring. Positioning it 6 mm from the muzzle works well.

E02

For the **mortar traverse axle**, wrap medium wire from a Double Wire Clip, around a Ø 2 mm nail. Bend the handle across the loop, then bend the handle up halfway. Cut so that the axle is 7 mm long.

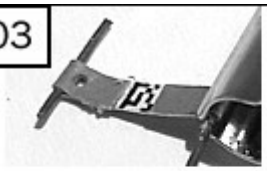
(1) - Cut a 6-mm long piece from the 2 mm strip of rigid paper, shape and perforate into a **flat bracket** as shown.

For the **traverse frame:** (2) glue the end of a 6 mm - wide strip of rigid paper onto itself, with a piece of medium wire where the axle will go. (3) Remove the wire then cut a notch slightly more than 2 mm in width, so that the flat backet can pass through it.

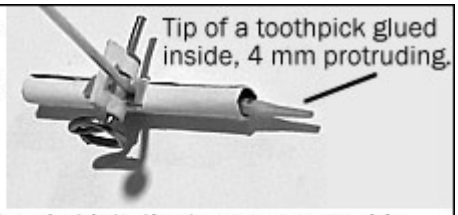


Cut both sides of the frame so that it 5 mm wide. Finally, separate the frame from the strip by cutting about 1 mm under the notch.

E03

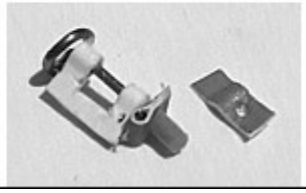


Cut it loose from the strip so that it becomes a 2x2 mm square part. Assemble, without glueing, the **mortar traverse** as shown below, with a piece of DWC tube to keep the parts together and also act as a knob.



Tip of a toothpick glued inside, 4 mm protruding.

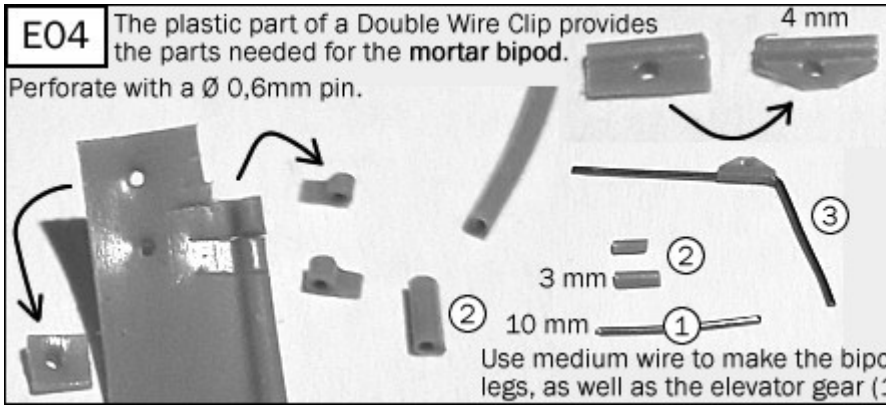
For the **mortar optical sights** glue the end of a 2 mm wide ribbon of rigid paper with a piece of wire in the fold. You can use a hinge clip to accentuate the cylindrical shape. Perforate under the cylinder and remove the wire.



Slide the bracket into the traverse assembly and glue it to the mortar tube, in the hole left by the tube collar, with the bracket hole on the bottom side and the knob as shown. Perforate the lowerside of the mortar tube as shown.

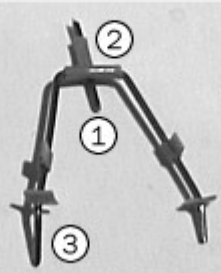
E04

The plastic part of a Double Wire Clip provides the parts needed for the **mortar bipod**. Perforate with a Ø 0,6mm pin.



Use medium wire to make the bipod legs, as well as the elevator gear (1).

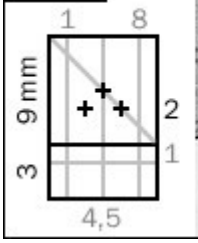
Change the height of the elevating tube (2) if you want to change the angle of the mortar tube.

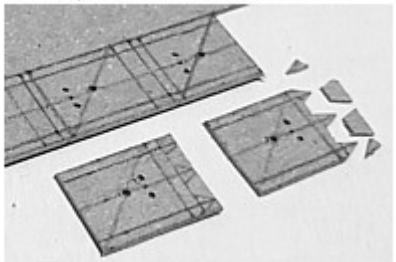


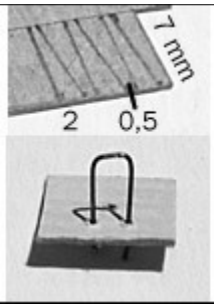
A bipod leg (3) is 12 mm long. Make it 2 mm longer and bend it to stick it into a base. To mount it on the vehicle, the length is 8 mm plus 2 mm.

E05

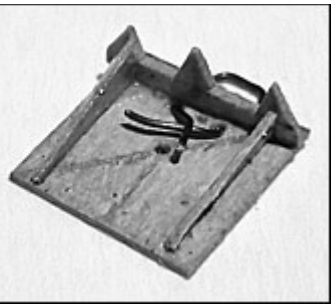
Mortar base plate





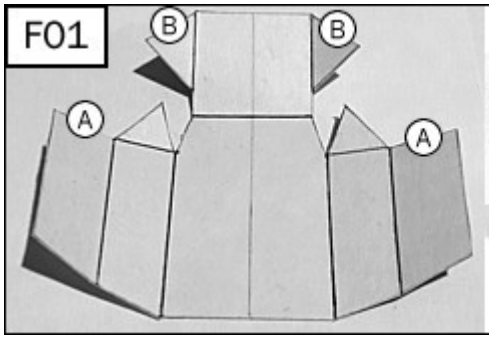


Use 15 mm of thin wire, bend into shape and insert. The loop is 4mm high before bending.

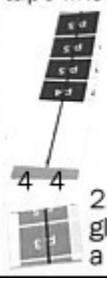


Part F: 8 cm schwerer Granatwerfer 34 auf Spähpanzerwagen ZT AMR-35 702 (f).

F01



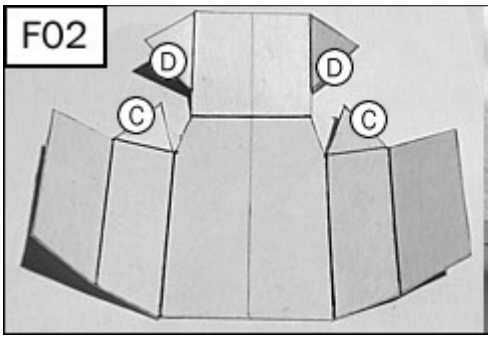
1. Use adhesive tape (if possible, easily removeable tape like "Scotch green") to make sides A and B join.

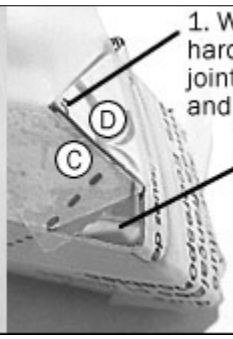


2. Make strips of glossy paper, with a folding line.

3. Cut a 11 mm piece of that strip , apply glue to it and move it to the inside using a toothpick, so that its folding line coincides with the juncture between A and B.

F02



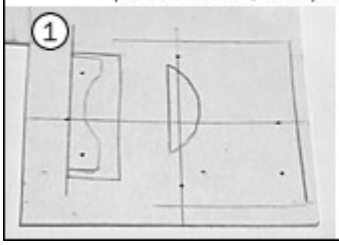


1. When the glue from the assemblies of step E01 has hardened, repeat the procedure to make sides C and D jointive, cut a 8 mm part from the strip of glossy paper, and glue this juncture together as well.

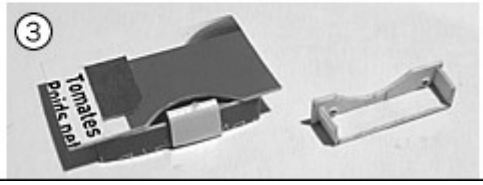
2. Cut pieces of glossy paper and glue them to the openings at the bottom.
3. When the glue has hardened, trim them off using the nail scissors.

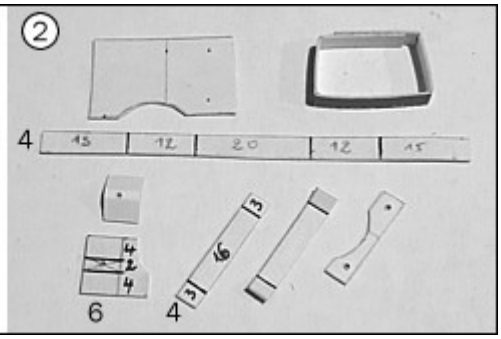
F03

(1) The template for the **inner structure** is shown on page 3. The markings for the two parts are transferred on the cardboard's porous side, the parts will be flipped over on their glossy side.

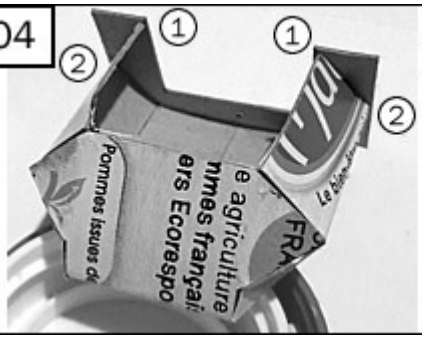


(2) Prepare the TC parts, (3) assemble them.



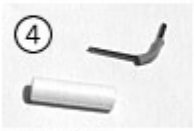


F04



Glue the rear panel so that the top sides of the armour are aligned to points (1) and its sides to points (2).

(4) First insert 4 mm of DWC tube then bend medium wire

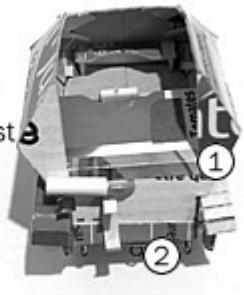


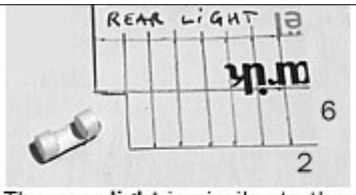
(3) Glue the inner structure elements inside afterwards.

Use the front panel template, but omit the wings and the central fold.

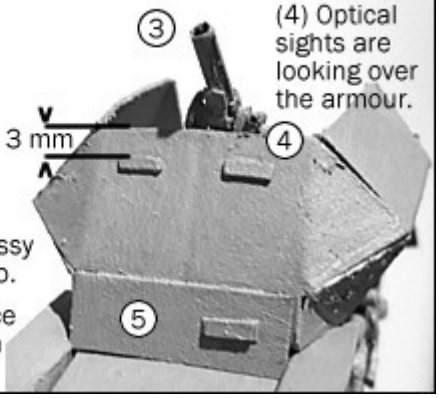
F05

The other elements are identical to the AMR-35, notice:
- there is only one exhaust
- there is no rear prism
- pieces of glossy paper have been folded and glued to hide gaps in the assembly (1) and (2).





The **rear light** is similar to the Notek light, glue two 1,5 mm sections of Q-tip stem to each end of a 6 x 2 mm piece of glossy paper, then cut the latter in two.



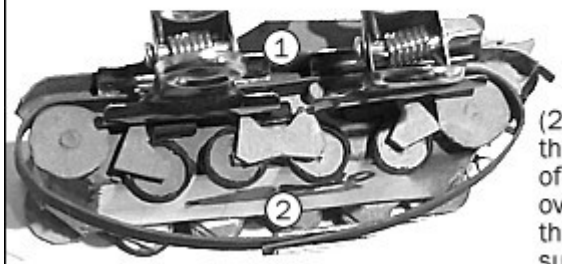
(4) Optical sights are looking over the armour.

(3) Mount the mortar in place by inserting the mortar legs in the holes on the forward inner structure.

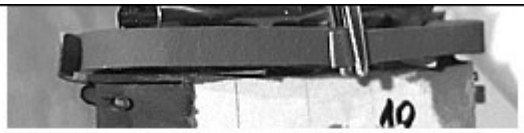
(5) The driver plate is a 6 mm high piece of rigid paper, trimmed to fit. The vision slit is located as on the AMR-35.

G02

(1) Once the paint is completely dry on the body and the tracks, bend the tracks in a more circular shape. Apply glue on the upper side of the return rollers, position the track there and hold it in place using hinge clips.



(2) Make sure that the ends of the track overlap below the central suspension.



Also make sure that the track is parallel to the body and can be glued on the road wheels.

Once the track is glued to the return rollers, apply glue to the other wheels, one side at a time, and hold the track to them using your fingers.

Trim both ends of the track so that they meet below the central suspension. Glue them together with a strip of smooth paper.