



# Autograph

## TRANSKIT FERRARI 250 GTO 1/12 REVELL BASED

### PART 1 – BORRANI WIRE WHEEL KIT

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## PART 1 Chapter 1 - Tools and parts

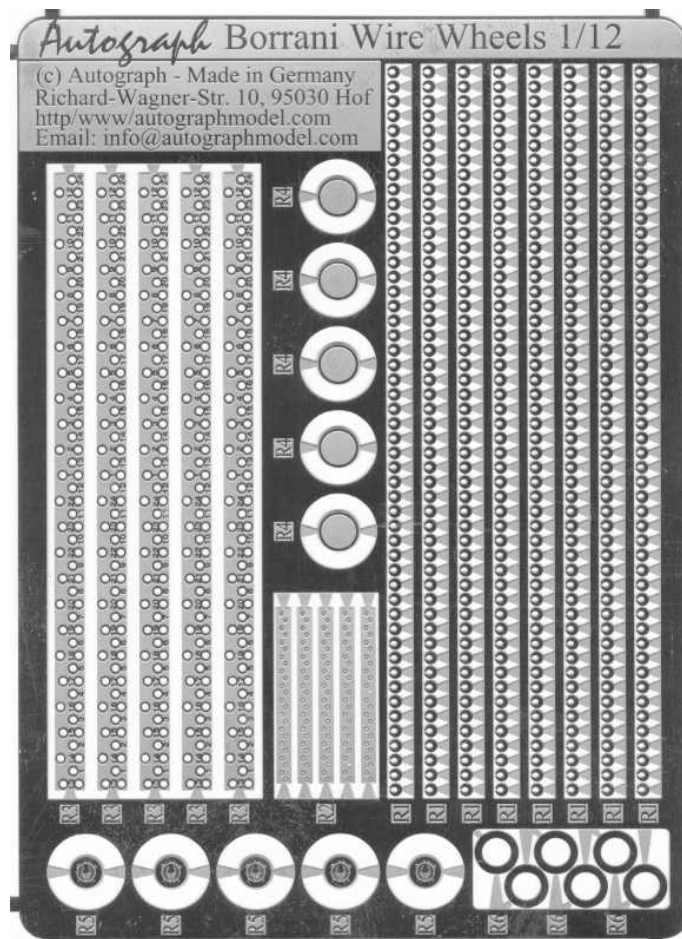
These tools are required for constructing this kit:

Mini drilling machine with some tools (drills 0,4 mm + 1,0 mm, ball-miller, polishing wax and polishing tools), simple drill stand, small machine-vice, flat pliers, tweezers, nail-scissors, wire-cutter, sharp knife, screwdriver, some files, sharp knife, ...

We give additional recommendations in each building step of this instruction.  
Glue: cyanoacrylate, model construction adhesive, 2-component-glue

### R

#### Photoetched parts



1 plate of photoetched parts  
amount: 1



**PART 1** Chapter 1 – tools and parts

<b>T</b>	<b>Parts</b>		
<p><b>T01</b></p>  <p>front rim amount: 2</p>	<p><b>T02</b></p>  <p>rear rim amount: 2</p>	<p><b>T03</b></p>  <p>centering tool amount: 1</p>	
<p><b>T04</b></p>  <p>hub amount: 4</p>	<p><b>T05</b></p>  <p>straight wire (german silver) amount: 11</p>	<p><b>T06</b></p>  <p>wire coil (german silver) amount: 1</p>	
<p><b>T07</b></p>  <p>knock-off amount: 4</p>	<p><b>T08</b></p>  <p>centralizing screw M5 amount: 1</p>	<p><b>T09</b></p>  <p>nipple amount: 300</p>	
<p><b>T10</b></p>  <p>rubber foam material amount: 1</p>	<p><b>T11</b></p>  <p>wheel valve (watchmaker screw) amount: 4</p>		



## PART 1 Chapter 2 – building steps

### A1

 Gluing in drill-template

**Appliances:**  
cyanacrylate (CA)  
tape



Stick the drilling template **R3** into the groove of the rims. In order to achieve a tight fit of the template, wind two to three layers of thin cable around the template and tighten the windings.

Solder the seam or fix with cyanacrylate. You can also secure the drilling template instead of soldering with thin double sided tape. It will remain in the rim.

**Caution:** Make sure that the array of 24 holes points to the exterior (deep dish) side of the rim. Refer to the picture!

ETCHED:	CASTED:	DECALS:	SCREWS:	OTHER:
4x R3	-	-	-	4x Rims cable centralizing tool

### A2

 Drilling the rims

**Appliances:**  
drill bit  
Ø 1,0 mm



If you now bore all holes of the template through the aluminium, use a drill diameter of 1.0 mm. Make sure that the drillings run approximately centrally to the middle of the rim. The use of a drill stand and a machine vice is very useful. Stick the rim in addition with a piece of tape on the provided centralizing tool and put the tool on the machine vice - so you can easily turn the whole construction by hand.

Altogether there are 72 drillings. You will find it more easily as it looked before, because the aluminium is very thin in this area.

If the drill bit should break, lubricate during drilling with **spirit**.

ETCHED:	CASTED:	DECALS:	SCREWS:	OTHER:
-	-	-	-	4x rims centering tool



**B1**

Cutting the wire into quarters, - cutting and bevelling of straight spokes

Appliances:



Cut the provided **german silver wire coil** into approximately 4 equal large parts. Note: The wires may not be squeezed or bent when cutting - fingernail scissors are suitable very well for this work.

Cut the **straight arranged wires** into parts of approx. 25 mm of length and fold them right-angled off at the end - at least 24 curved and 24 straight spokes are needed for each wheel.

Bent end is approx. 1 - 2 mm.

<b>ETCHED:</b>	<b>CASTED:</b>	<b>DECALS:</b>	<b>SCREWS:</b>	<b>OTHER:</b>
-	-	-	-	german silver wire curved german silver wire straight

**B2**

Spoking work - rear layer - part 1

Appliances:



Put a **curved** spoke through the holes with the number 24. Subsequently, the next spoke by the holes number 23, then number 22, etc.

Work at it systematically **in one direction!** Put in each case the next spoke over the preceding. The slight bend of the wire should always show **outwards**, so that in the center of the wheel a small cavity results. Continue the pattern.

Starting from No. 12 you must always go through the developed cavity in the center.

<b>ETCHED:</b>	<b>CASTED:</b>	<b>DECALS:</b>	<b>SCREWS:</b>	<b>OTHER:</b>
-	-	-	-	curved spokes



**C1** Spoking work - rear layer - part 2

**Appliances:**



Continue the spoke pattern up to the full circle. Always stay with the next spoke under the existing spokes, go through the cavity in the middle, and on the other side over all wires into the opposite hole with the same number

At the end a completely **homogeneous spoke pattern** from all 24 wires is made, wherein no beginning or end is recognizable. The cavity in the centre of the spoke sample is important. Pay attention to equal way of the individual spokes from one hole to the opposite.

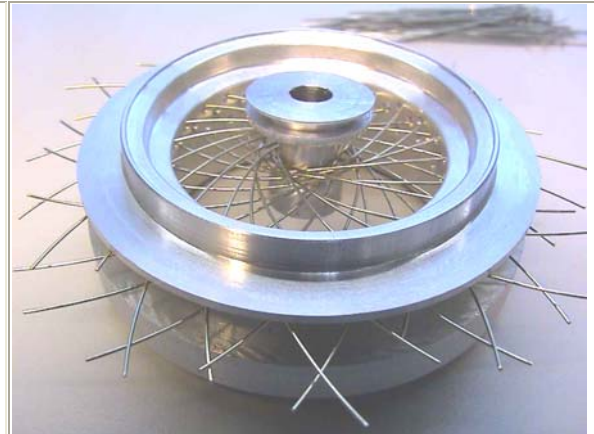
**C2** Drilling of hub, mounting it

**Appliances:**

double sided tape

drill bit  
Ø 0,4 mm

spirit (for lubrication)



Stick the small drilling template **R2 (again solvable)** on the front diameter of the hub. It could be helpful to solder the small template to a ring before sticking. Bore all suggested holes with the diameter 0.4 mm. Screw the hub onto the centering tool for this work. Calculate per hub at least one new drill, because the small diameters break off very easily! Remove the template after boring, it is not necessary anymore. The picture shows a prototype drilling template made of paper.

Insert the hub from the rear, into the cavity of the spokes mentioned above. Pass the hub through so far, until the spokes engage into the rear groove of the hub.

Now you should align the spokes evenly again from both sides, e.g. with a toothpin or a pair of tweezers.

ETCHED:	CASTED:	DECALS:	SCREWS:	OTHER:
4x R2	-	-	-	4x hubs centering tool



**D1** Using centering tool, insert nipples

**Appliances:**

CA  
sand paper



Cut the spokes approximately level with the outside edge of the rim - **attention: do not squeeze or bend the spokes** during this process. Recommended tools: Fingernail scissors! Set the wheel on the centering assistance and pull the hub with the provided screw M4x16 slightly downward - approx. for 2 to 3 threads. The spokes are a little linked up. Do not tighten the screw completely yet.



Push a nipple onto each end of the spokes and press it into the hole. Tighten the central screw gradually - in such a way the nipples in the hole's wedge and do not fall out again. Align the spoke sample again, before you tighten completely. **Caution:** You only may loose 3 nipples per wheel maximum - there are 300 pieces in the packing!

**ETCHED:**

-

**CASTED:**

-

**DECALS:**

-

**SCREWS:**

-

**OTHER:**

centering tool  
screw M4 x 16  
48 nipples/wheel

**D2** Securing rear layer of spokes, cutting

**Appliances:**

CA



Secure the nipples against falling out with cyanacrylate, preferably **Loctite**. Caution: Avoid bringing adhesive into the still open drillings for the front spoke layer! When adhesive is dry, the wheel should sit cleanly on the centering tool, also without the central screw .



Cut off the remaining ends of the spokes within the rim. Again fingernail scissors work also here, because of the close space conditions. If despite all caution some adhesive went into the drillings of the front spokes, then do the appropriate openings over again by hand.



**E1** Front layer of spokes, securing

**Appliances:**  
CA



Now insert the angled spokes into the holes of the hub. Each spoke should rest exactly tangential against the hub and run into a suitable hole of the rim. First use the lower 12 pieces. Secure each spoke within the hub by slightly bending against falling out. Afterwards the second layer, in opposite direction!

Secure the spokes in the hub with adhesive. Successively insert all 24 nipples into the remaining drillings of the rim. then secure these with cyanacrylate and cut off the supernatant ends of the spokes.

ETCHED:	CASTED:	DECALS:	SCREWS:	OTHER:
-	-	-	-	24 angled spokes/wheel 24 nipples/wheel

**E2** Milling ends of spokes, gluing the nipples

**Appliances:**  
CA  
ball miller  
adhesive



After securing of the nipples mill out the supernatant wire ends of the spokes within the hub. Use a ball-miller for this work. Here later the wheel nut sits on the axle ends. Therefore each supernatant spoke end would prevent tightening of the wheelnuts.

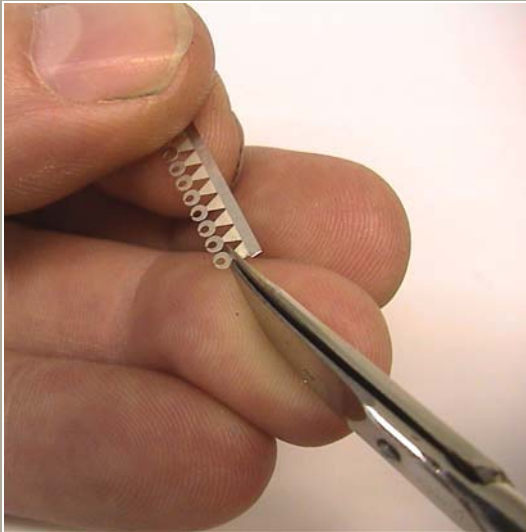
Insert now a thick layer of model construction adhesive into the groove of the rims - for reason to stabilize the wheel and to prevent the loosening of the nipples. Since this range is no longer visible after drawing the tires up, you do not have to save here with adhesive....





**F1** Punches – for masochists

**Appliances:**  
CA



There were different shapes of Borrani's produced over the years: with and without punches. If you insist to have punches in your rims, use the photoetched parts R1. Cut out, put it over the spoke and glue it into the rim. But do not under-estimate the work, which is required: it will take you at least one hour per wheel!

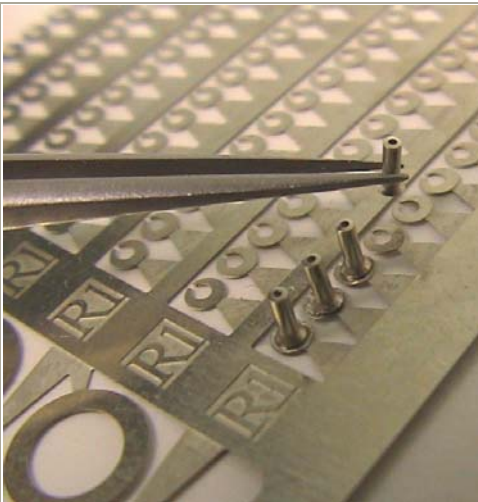
Use a blunt pair of pliers for this work and hold the punch very good – otherwise it will snap away. Fix the punches by putting cyanacrylate with a needle to the area where the nipples meet the punches.

A good method of saving work is using the punches only for the front layer of spokes.

ETCHED:	CASTED:	DECALS:	SCREWS:	OTHER:
- Punches R1	-	-	-	

**F2** Making tire valves

**Appliances:**  
CA  
sand paper





You can make the tire valves by gluing one of the nipples onto a photoetched part R1.

Or use the supported watchmaker screws.

Glue the valve (after painting, which is described in chapter 1N) into the rim as shown.



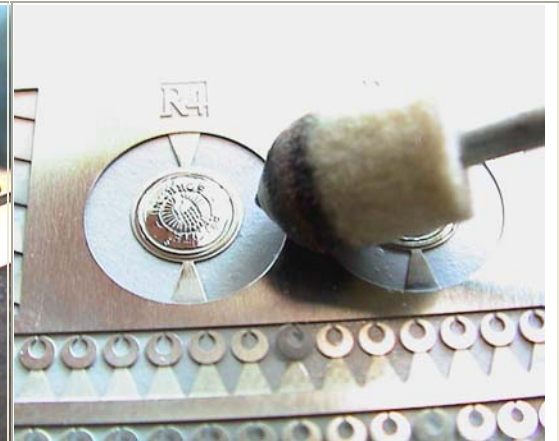
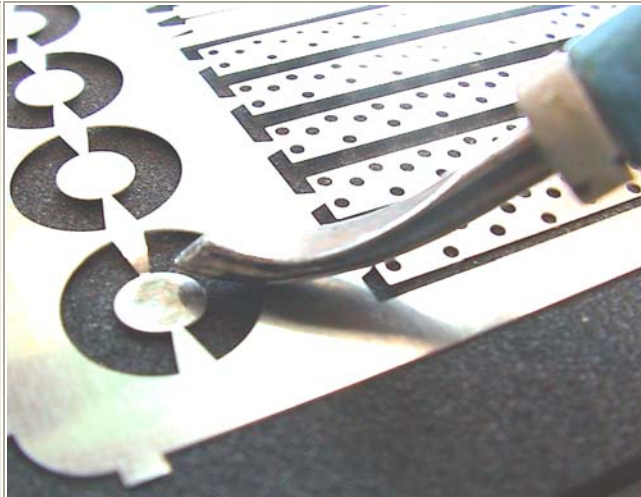
G1	<b>Inserting ring of foam-rubber, drawing up the tires</b>			
<p><b>Appliances:</b></p> <p>CA</p> <p>sand paper</p>				
	<p>Cut from the provided foam rubber material 2 each of the following strips:</p> <p>Front wheel: 11 x 145 mm Rear wheel: 13 x 170 mm</p> <p>Stick it together to a ring (<b>Loctite</b> adhesive). Insert this ring into the tires, in order to increase the rigidity.</p>		<p>Grind the tread of the tires with 280 and 400 sandpaper - this looks more realistically. The tires have different widths of the tire flanks in the rim bed. We considered this with the construction of the rims. <b>Note: Draw the tires up correctly around on the rims! When assembling:</b> Pay attention to proper position of the foam rubber reinforcement rings within the tires.</p>	
ETCHED:	CASTED:	DECALS:	SCREWS:	OTHER:
-	-	-	-	foam rubber material

G2	<b>Painting the wheels, inserting valves and balancing weights</b>			
<p><b>Appliances:</b></p> <p>silver paint</p> <p>solder</p> <p>CA</p>				
	<p>If you want to remain as close as possible to the original of a racing-GTO, then you should paint the entire wheel in silver. Background: In and the 50's and 60's no chromium-plated wire wheels were certified in motor-racing, because of the danger of fracture. Chromium-plating embrittles the material very strongly. Instead all wheels were painted.</p> <p>To the comparison: The left wheel was silver painted, the right one only was a little polished. Nowadays all new Borrani wheels are equipped with chromium-plated spokes, and those rims are usually polished.</p> <p>I use for painting a so called "Metalizer", from <b>Model Master (Italiere)</b> or <b>Gunze Sangyo</b>. Those are very fine metal particles in a solvent. After drying one must up-spray still another thin layer of "<b>sealing</b>". For these works an airbrush is recommended - do not try to paint the fine wire wheels with a spray can. The spray thereby would be much too rough and the fine details would be buried!</p>		<p>Stick a suitable watchmaker-screw <b>T11</b> or the tire-valves made in chapter <b>1L</b> into the rim. Stick some balancing weights on the wheel flange.</p> <p>Production of the balancing weights: Cut off a small piece of tin solder (approx. 1 mm in diameter) with a sharp cutter. Press it to a flat shape, e.g. with the back of a tweezers. Manufacture different lengths of balancing weights.</p>	
ETCHED:	CASTED:	DECALS:	SCREWS:	OTHER:
-	-	-	4x S4 or	- 4 nipples



**H1** Forming the knock-off caps, Polishing

**Appliances:**  
CA  
sand paper



Before polishing the knock-off-caps **R5** you should give it a light convex shape. You can reach this by putting the plate on a soft document (e.g. expanded polystyrene or foam rubber material) and work out the convex shape by rubbing with a blunt tool from the rear.

Polish the parts **R4** and **R5** to a high gloss. Use polishing wax and the related tool for the mini drill. Leave the parts in the platine for all forming and polishing work. Then cut out **R5** (slightly convex shaped) and glue it onto **R4**.

ETCHED:	CASTED:	DECALS:	SCREWS:	OTHER:
- 4x R4 - 4x R5	-	-	-	

**H2** Completing the knock-offs

**Appliances:**  
CA  
sand paper



Carefully file away the rest of the cast sprue. You can also polish the knock-off to a high gloss.

Glue the polished covers to the knock offs. Use cyanacrylate for this work.

ETCHED:	CASTED:	DECALS:	SCREWS:	OTHER:
-	2 left wheelnuts 2 right wheelnuts	-		



PART 1 CHAPTER 3 – PHOTOS FOR REFERENCE

