288GTO
engine kit (scale 1/4)

static engine model kit, non functional. For display purpose only

2

instruction manual
Legend

- bend along etched-line to inside
- bend curved to shown shape
- carefully press soft-solder wire to position.
- putty and sand clean
- cut to given length using motor tool
- sand edge smooth / sand bottom flat
- cut to shown length & trim edges smooth (cutter knife)
- glue (CA or 2K)
- do not glue (keep joint movable)
- spray in color of own preference
- cut screw head off (trim edge smooth) and only use the threaded rod acc. given length
- soft solder parts together
- carefully!!! heat shrink to position (shrink tubes) (use lighter or heat gun)
- cut off
- drill hole to given size (hand drill recommended)
- clean / trim area with motortool
- spray in color of own preference
- cut screw head off (trim edge smooth) and only use the threaded rod acc. given length

Color list

- X1 RAL 3000 - matt / semigloss red
- X2 RAL 1032 - semigloss zinkchromate
- X3 RAL 3020 - matt / semigloss traffic red
- X4 RAL 2004 - gloss Orange
- X5 RAL 7032 - semigloss stonegrey
- X6 RAL 1002 - matt sand-yellow
- X7 RAL 7016 - semigloss grey-black
- X8 RAL 8011 - semigloss dark brown
- X9 RAL 5015 - semigloss blue
- X10 matt dark gun-metal
- X11 titanium gold
- X12 silver / polished aluminum
- X13 white aluminum (e.g. RAL 9006)
- X14 light grey / aluminum (mix of light grey (e.g. RAL 9002) - 80% and aluminum (e.g. RAL 9006) - 20%)
- X15 steel
- X16 semigloss black
- X17 rubber black
- X18 gold / brass
- X19 RAL 1015 - flat / semigloss beige
- (Cast effect / hammer blow effect) matt steel (spray light mist coats from distance (different colors) to achieve effect)
- (textured effect) RAL 3020 - matt red
  1) spray the parts with a textured effect (e.g. microballoons + primer) prior applying RAL3020
  2) after textured mixed primer dried spray matt RAL 3020 red

Optional: you can use the spray can from company „VHT“ - „Wrinkle crackle coating - red“, over a white primer
This is the real used crackle effect heat-paint. Nevertheless the effect it is slightly out of scale.

Tip:
For a realistic / used look it is recommended to give the parts a „dark-/ or oil-wash“ and apply some dust „pigments“ after the paint has dried. (e.g. „mig“ or „ak-interactive“ products)
making of hose clamps: **HC**

Make hose clamps during the required building step. Where possible do a dry fit on the corresponding finished shrink tube (for correct size) and bend / finish the hose clamp before mounting. It is recommended to solder the clamp ring to the final size first (once positioned on the shrink tube) and then glue the other parts to the ring. Use of decal D13 is optional. To fix the finished clamp on shrink tube use a drop of glue. Depending on the used clamp ring the completed clamp will be labeled HC-1, HC-2 or HC-3 during the construction phase.

**new name:**

- **E-B18** $\rightarrow$ **HC-1**
- **E-B19** $\rightarrow$ **HC-2**
- **E-B31** $\rightarrow$ **HC-3**

E-B18 - Hose diameter 7mm to 11mm
E-B19 - Hose diameter 15mm to 22mm
E-B31 - Hose diameter 8,5mm to 13mm

making of hoses / use of shrink-tube tools:

**R108** is used during building step 14 & 21 to make the hose (red colored) for air intake of the intake unit. Use Z24 shrink tube on this part. (2x)

**R109** is used during building step 6 to make the connector hoses on the water pump unit. Use Z23 shrink tube on this part. (2x)

**R110** is used during building step 13 to make the connecting hose between water pump unit and throttle unit. Use Z22 shrink tube on this part. (1x)

For all other hoses use the shrink tube segment on the intended mounting points and heatshrink carefully to position. Try to heat only the borders to leave the hose in an even thickness.

making process shown on part R108 (**R109 , R110 similar**)

1. Cut shrink-tube-ring to needed size. Leave 1-2mm excess material.
2. Use heat gun to shrink tube on tool all around. **Caution:** Do not damage the tool with too much heat.
3. Once tube has cooled down, peel the part carefully off the tool. Cut excess material with a sharp cutting blade to match correct length acc. tool. You can use a lighter afterwards to carefully smooth the edges again with some heat if required.
Caution:
Handle R104 with extrem caution. Part is very fragile. Use beige colored base part.
Do not use force to insert H35. Enlarge pass through hole on R23 if required. Glue E-D1 on backside (flat side).

Put clamps in position once the hose is in place.
sub-assembly 1
Intake unit (left side)

Caution:
Work carefully to not break pins

When mounting **R105** route the long hose **Z10** first through the opening on part **E-E2**. Be careful to not break any pin on **R105** during the process.

**Z3** as core inside of **Z10** for stability with the given dimensions (optional). Heat shrink on a suitable metal rod (~2.3mm) prior mounting - avoid heating the resin parts.

Bend **E-D2 / E-B26** around a similar sized metal rod (e.g. drill).

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When mounting **R105** route the long hose **Z10** first through the opening on part **E-E2**. Be careful to not break any pin on **R105** during the process.

Use **Z3** as core inside of **Z10** for stability with the given dimensions (optional). Heat shrink on a suitable metal rod (~2.3mm) prior mounting - avoid heating the resin parts.

Bend **E-D2/E-B26** around a similar sized metal rod (e.g. drill). Route to the outside through center of **R18** (and leave loose).

**Caution:** Use as core inside of **Z10** for stability with the given dimensions (optional). Heat shrink on a suitable metal rod (~2,3mm) prior mounting - avoid heating the resin parts.

Bend **E-D2/E-B26** around a similar sized metal rod (e.g. drill). Route to the outside through center of **R18** (and leave loose).
sub-assembly 3
Engine main case

Highlight surface in [X12]

Info:
Shorten parts H30 / H31 to the given length. Cut off the excess on the side with the slot. Or, when leaving part untouched glue the part in place on the slotted side. Blue colored size refer to the length to be visible once part is glued in place. It is recommended to enlarge the holes for H30 / H31 and glue them in place instead of thread cutting.

Cut this side
leave this side visible when glue on engine.
(side where nut is mounted)

Highlighted parts for cutting to the given length:
sub-assembly 3
Engine main case

when mounting R8, make sure it stays movable. Do not fix H18 permanently, (e.g. thread R1 instead of using glue) as R8 might be removed again to better mount the drivebelts (R99 / R100) in step 32.

mount to center hole of R7 (Test fit clearance to E-C10)

make sure it is solid glued in place. Test fit hole size to fit H10 later.

trim on backside to fit engine block R10 (red marked area). check alignment of mounting points on R10 (enlarge to fit if required)

1.3mm drill to fit H21 through R40

H52 (12mm)
X15

glue Z14 in place (clean all edges). Leave the joint movable

X12 R40
Z14 (2mm)

Z14 (4mm)
**3.3 Engine main case**

- **Detail: gear linkage grommet (2x)**
- Insert gear linkage rod together with R39 into oil-pan R9
- Mount side covers from previous step first prior mounting oilpan (R9)
- Prepare 8x mounting holes of R103 to fit R63 and bolts in step 11 prior mounting
- Enlarge the 17 pass-through-mounting-holes of R9 to at least 2.4mm to fit on the engine block. Work the part slowly and carefully on R10.
4.1 sub-assembly 4
cylinder head (left side)

mount to R67

insert outer row H30 (towards valve cover), after intake unit is in place (due to missing clearance)

drill R67 to fit H53 (2,0mm)

mount R81 in step to fit drive belt first

either glue in place or thread (M2,0)

enlarge openings (14x) for H30.
4.2 sub-assembly 4
cylinder head (left side)

Cut Z1 to the required length and route each of the 4 ignition wires acc. the bottom drawing.
Use the black wire clips (R70, R71, R72) to support the wires. Be careful to not break the clips.
Make a dry fit first before adding the yellow shrink tube segments Z2. Use Z2 cuts on both ends of Z1. Once Z2 is in position heat shrink them to fit tight on Z1.
On the last step add decals D4 as shown below. (D4 & Z2 on both ends od Z1)

The center wire on R74 will lead to the ign. coil (not included in kit).
Let this wire hang loose acc. own preferences.

Carefully route and press the wires into support brackets R70, R71, R72.
5.1 sub-assembly 5

cylinder head (right side)

you either can enlarge the holes in R84 and glue in the complete unit (H30,H25,H15) or thread the holes in R84 (M2,0) and insert the parts seperately.

insert outer row H30 (towards valve cover), after intake unit is in place (due to missing clearance)

mount to R67

H53 (2x)

mount R81 in step to fit drive belt first

use H3 for lower mounting points and H2 for upper mounting points on R83

3mm
2mm

drill R84 to fit H53 (2,0mm), cut H53 to 3mm
5.2 sub-assembly 5
cylinder head (right side)

Sample of ignition wire

Cut Z1 to the required length and route each of the 4 ignition wires acc. the bottom drawing. Use the black wire clips (R70, R71, R72) to support the wires. Be careful to not break the clips. Make a dry fit first before adding the yellow shrink tube segments Z2. Use Z2 cuts on both ends of Z1. Once Z2 is in position heat shrink them to fit tight on Z1. On the last step add decals D4 as shown below (D4 & Z2 on both ends of Z1).

Ignition wires routing overview

- 21cm
- 20cm
- 18cm
- 14cm

The center wire on R74 will lead to the ign. coil (not included in kit). Let this wire hang loose acc. own preferences.
sub-assembly 6
waterpump

adding water hoses

(2x)

H2
H11
(3x)

H25
(3x)

H12
(3x)

H25
(3x)

H25
(4x)

H7
(4x)

mount H7 at stage

H17

H4

P16

6mm

R52

X20

(3x)

H2
(3x)

R53

H11

H2
(3x)

R52

R53

(3x)

H2

H2

(3x)

H11

H2

H11

R52

R53

(3x)

H2

(4x)

H30

(3x)

14mm

R53

need to be flush on backside of R53

when cutting H2 / H30 sand the cutting edge smooth. Insert the cutted side into R53

Due to missing space screw H11 to H2 first. Enlarge the mounting holes (R52 / R53) to 1,7mm. Then glue the H11 / H2 unit through R52 to R53.

After decal has dried it is recommended to spray a thin layer of flat clear over Z23 prior mounting

When cutting sand the cutting edge smooth.

Adding water hoses

It is recommended to spray a thin layer of flat clear over prior mounting
7 sub-assembly 7
throttle linkage

Opening to “inside” on both rods
(90° to mounting point on R59)
see drawing below

- glue H22 to R57, make sure that the linkage rod is still movable around R59
- glue M27 to R58, do not glue R59. Make sure R59 is movable around M27.

keep movable

opening

top view

keep movable

opening
sub-assembly 8
oil filter

mount the 3 nuts and washers (H12 / H25) in step 13 to the engine block

(3x) H12 ↔ Step 13
(3x) H25 ↔ Step 13

version 1 - instruction manual - page 17 / 29
sub-assembly 9
alternator

mounting is optional
(only early engines had them fitted)
If R32 will not be mounted you still should mount the 4 bracket units

glue 3 wires Z12 in sockets. Insert one end into Z11 and heat shrink / stretch. Final routing is done in step

remove insulation on area where in contact with E-B1 and press etched part around Z18

enlarge center hole of R26, R31, R35 to 4.2mm to fit M22

shorten by 1.5mm (remove red area)
sub-assembly 10 climatic compressor

mount in step 13.6

mounting gap on engine oil pan (R9)

mount in step 13.6

mounting gap on engine oil pan (R9)
11 sub-assembly 11
flywheel and clutch

mount clutch unit in step 1 once flywheel is mounted on engine housing

sand down backside by 1.5mm (red marked area)

mount this to engine block first!!!

side view (clamp towards flywheel)

(2x)

R63

(6x) H12
(6x) H25

X10
R65

(8x) H6
H4
H25
(6x) H31
(6x) H12

R63
X10
50%
X10
50%
X15

slotted side of H31 to the right

sand down backside by 1.5mm (red marked area)

Version 2 - instruction manual - page 20 / 29
solder the frame components acc. template on page 11. Recheck correct position esp. acc. red circled dimensions on template!!! This step is crucial to fit the engine block properly on the frame.

Paint the finished frame prior continuing with follow-on steps. Use decals (D7) and color acc. own preferences.

Parts Z19 & Z20 are already precut to the correct length. Just clean the edges for good solder connection.

tighten handtight only

(4x)
13.1 final construction

mounting engine block to stand:
Screw the 2 main engine mounts with the spacer block M28 to the engine stand. Feed the engine with the 3 studs through the corresponding holes of the engine stand and secure them with nuts and washers as shown.

engine block from stage 3

engine stand from stage 12

cylinderhead gaskets
Apply decals D12 to the corresponding position of E-B22 / E-B23. Apply decals only on the top side of D12. Open the clear areas of the holes with a sharp scalpel. It is recommended to cover the finished gasket with a thin layer of flat clear once dried.

When completed put the gaskets on the engine as shown above (left (LH) and right (RH) side).

cylinderhead gaskets - top view

RH

E-B23

D12

LH

E-B22

D12
13.2 final construction

mounting of cylinderheads & clutch

mount both cylinderheads as shown using the threaded rods on the engine block as guiding rails

left side cylinder head from step 4

clutch parts from step 11

right side cylinder head from step 5

Attach the clutch according to the instructions during building step 11. Mount R63 & R66 according to "step 1" at stage 11. Then attach all the other components of the clutch.

mounting of oilfilter unit

attach the oilfilter unit from building stage 8 as shown

Caution: Do not damage resin parts with too much heat!
13.3 final construction

mounting of water pump and throttle unit

water pump unit from stage

mounting points

throttle unit from stage

Create hose from Z22 using R110 as guide. Once done add decal D11 on both sides. (cut to size). Clearcoat (mat) once finished. Make 2 hoseclamps and slide on Z22 before putting the hose in position.

make sure the 2 plugs on the throttle unit face towards the oil-filter.

mount the throttle linkage on the 2 waterpipes on the cylinderheads using 4x H12 and H25.

add on all 8 positions
13.4 final construction

mounting of left and right intake unit

left side intake unit from step 1

right side intake unit from step 2

feed throttle unit rods through intake unit (90° to engine block) as shown on previous page and below.

before mounting the top left and right nut & washer (H25 / H12) on the intake units insert E-B35 on the position shown.

connect throttle-linkage-end to intake units on both sides. Shorten H21 to be smooth to the linkage.

right engine side viewed from front

left engine side viewed from front
First!!! bend E-A5 and put on stud H47 as shown. DO NOT GLUE! THEN add rear covers (E-B10 / E-B11) and carefully insert the 2 timing belts. Do not use force to insert them. If you have difficulties to fit them, remove R81 (stage 4/5) first and try again. Make sure the grooves sit in correct position. Once the timing belts are in position, mount pulley (R5/R6).

The decals D2 on R99 / R100 should be trimmed and clear coated (matt). Position on drivebelts acc. own preferences.

To preserve the view on the timing belts you can leave the covers R89 / R90 also off (still insert 4x H46).

Nevertheless if you want to mount the drive belt for the waterpump you need to mount at least the right cover R90, or you need to leave the waterpump belt off too (mounted on R91 / R92). Do not glue R89 / R90.
13.6 final construction

mounting of climate compressor and alternator

Carefully mount the 3 drive belts in shown sequence. Once set in grooved position adjust the mounting brackets E-A3 / E-A5 / R91 to fit properly if required. Do not use force!!!

Mounting the drive belts

Route all wires through E-B26. Mount E-B26 at shown position using the nut H12. Let the wires hang loose.

Mount the climate compressor as shown and as labeled during building stage. Make sure to put a washer on each side of the mounting brackets for the lower mounting points.

Mounting of climate compressor unit from step 10

Mount the climate compressor from step 10

Upper mounting point alternator

Upper mounting point climate compressor

Carefully mount the 3 drive belts in shown sequence. Once set in grooved position adjust the mounting brackets E-A3 / E-A5 / R91 to fit properly if required. Do not use force!!!

Alternate from step 9

Inner groove R97 (install first)

Middle groove R98 (install second)

Outer groove R96 (install last)

Generator wiring

Route all wires through E-B26. Mount E-B26 at shown position using the nut H12. Let the wires hang loose.
13.7 final construction

mounting of hoses and tubes
**cont. final construction - main wiring loom**

**left side**

- **diagnosis socket**
- **facings to front**
- **E-B27**
- **R88**
- **main core**
- **E-B35**
- **(2x) Z16 core**

**right side**

- **E-B35**
- **E-B1**
- **main core**

**main core schematic**

For the main core use Z16 as inner core and slide in segments of Z9, Z10 or Z11 as appropriate for outer layer on top. Insert the shown socket wires in the gaps before heat shrink into place.

- **Z11** (10mm)
- **Z10** (5mm)
- **Z7** (10mm)
- **Z7 / Z13**
- **Z9 / Z10 / Z11**
- **max main core diameter should not exceed 4.5mm.**
- **Loom should be thicker towards front.**
- **Achieve with more (longer) Z16 segments**

**left side main wiring loom routing**

- **connect to one of the 3 mounting points (left intake)**
- **(analogously) connect to one of the 3 mounting points (right intake)**

**right side main wiring loom routing**

- **make the wiring looms while measuring on the model the needed length of each wire.**
- **Start on front and work slowly to the rear.**
- **Insert R101 and sockets R102 after the main core is routed through E-B35.**
- **Let the wire with R101 and R102 hang loose in front of the timing belt covers (about 70mm).**

**color of choice**

- decal D14 numbers acc. labels on ignition wires (see 4.4 and 32)

**main core**

- For the main core use Z16 as inner core and slide in segments of Z9, Z10 or Z11 as appropriate for outer layer on top. Insert the shown socket wires in the gaps before heat shrink into place.

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- **Z7 / Z13**
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- **Z7** (10mm)
- **Z7 / Z13**
- **Z9 / Z10 / Z11**
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