

FIA / CSI HOMOLOGATION 580 / GROUP 3

# Twelve original pages. A much deeper 912.

A reading atlas and set of independent calculations built around the original 912 Targa homologation file. Not a competition history for Marc's car.

580

FIA form number

12

Pages in the linked original scan

1968

Period of the approval record

## What makes the document unusual

This is a **912 Targa** form, not a generic 911 sheet. It includes factory component photographs, dimensioned port sketches, engine data, valve events and gearing choices. Its opening page describes both opening and fixed rear-window bodies. [S05]

### THE DOCUMENT IS NOT THE CAR

Homologated dimensions and alternatives do not identify the fitted components of chassis 12871136.  
No racing participation, FIA eligibility or present-day compliance is implied.

The FIA database describes its downloadable forms as consultation copies, not documents valid for an event. Keep the original as a clearly labelled external archive link rather than presenting this guide as an official FIA document.

[S05 / FIA's 912 Targa archive entry](#)

[S05 / Open the original 12-page homologation PDF](#)

## 01 / CYLINDER GEOMETRY

# 82.5 × 74 mm.

## The arithmetic behind 1,582.

Use the period bore and stroke as nominal inputs. The results below are geometric calculations, not measurements of this engine after possible repair or machining. [S05, p.8]

# 1,582.30

Calculated total swept volume /  
cm<sup>3</sup>

# 1.1149

Bore / stroke ratio

# 47.66

Calculated clearance volume / cm<sup>3</sup>  
per cylinder

| INPUT / RESULT                | VALUE                                                       | INTERPRETATION                                                              |
|-------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------|
| Bore D / stroke S             | 82.5 mm / 74 mm                                             | Nominal homologation dimensions                                             |
| Cylinders / compression ratio | 4 / 9.3 : 1                                                 | Period reference values                                                     |
| Swept volume, one cylinder    | $\pi \times D^2 \times S / 4000 = 395.576 \text{ cm}^3$     | D and S in mm; division by 1000 converts mm <sup>3</sup> to cm <sup>3</sup> |
| Total swept volume            | $4 \times V_s \text{ (unrounded)} = 1,582.302 \text{ cm}^3$ | The period 1,582 figure is rounded                                          |
| Clearance volume Vc           | $395.576 / (9.3 - 1) = 47.660 \text{ cm}^3$                 | Consistent with the form's 47.7 cm <sup>3</sup> entry                       |

### A COMMON INTERPRETATION ERROR

**The 47.66 cm<sup>3</sup> calculation is the total clearance volume at top dead centre. Do not use it as an instruction to machine a cylinder-head chamber to that volume.**

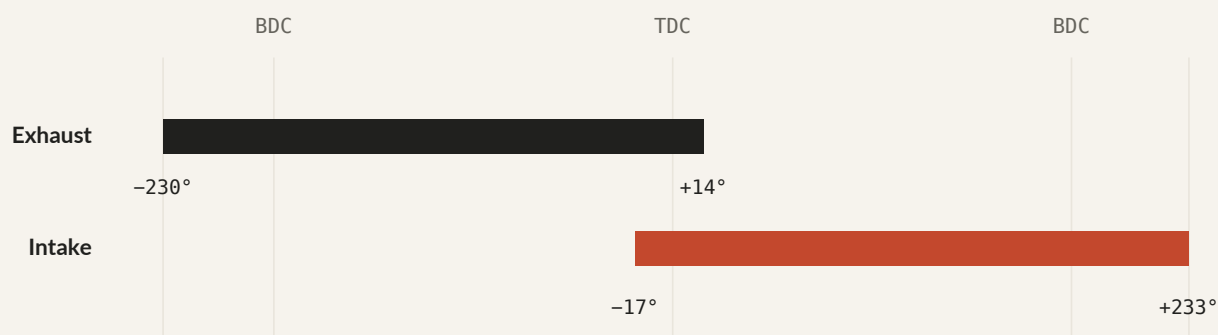
Bore larger than stroke makes the nominal geometry oversquare. That classification alone does not establish a safe rev limit, cooling capacity or power potential. Those depend on the actual assembly and operating conditions.

[S05 / Original engine geometry - PDF page 8](#)

## 02 / VALVE EVENTS

# 250° intake. 244° exhaust. 31° of overlap.

These durations are calculated from the period events in FIA form 580. The critical detail is the stated checking clearance: 1 mm, not the normal running adjustment. [S05, p.9]



Original timing graphic. Crank angle is referenced to the TDC between exhaust and intake. The diagram is schematic; it is not a cam-lift curve.

| PERIOD EVENT                         | POSITION                            | DERIVED RESULT       |
|--------------------------------------|-------------------------------------|----------------------|
| Intake opens / closes                | 17° before TDC / 53° after BDC      | 17 + 180 + 53 = 250° |
| Exhaust opens / closes               | 50° before BDC / 14° after TDC      | 50 + 180 + 14 = 244° |
| Intake / exhaust simultaneously open | 17° before to 14° after overlap TDC | 17 + 14 = 31°        |

### NEVER TURN CHECKING DATA INTO AN ADJUSTMENT

The form specifies these events at 1 mm valve clearance. Do not set a running engine to 1 mm, or assume this timing proves the camshaft fitted to the USA-specification 616/39.

[S05 / Original valve-event page - PDF page 9](#)

## 03 / CHASSIS AND BRAKE REFERENCE

# Useful dimensions. No invented tolerances.

Selected reference entries from the homologation form. Alternatives in the form must not be silently collapsed into one “standard” setup for this car.

| SYSTEM                      | FORM ENTRY                                                          | LIMIT OF USE                                                               |
|-----------------------------|---------------------------------------------------------------------|----------------------------------------------------------------------------|
| Wheelbase                   | 2,211 mm [p.5]                                                      | Nominal reference, not a body-alignment tolerance.                         |
| Wheels / tyres              | 5.5 J × 15 / 165 HR 15 [p.6]                                        | Do not derive a measured rolling circumference from this label alone.      |
| Front disc outside diameter | 282 mm [p.7]                                                        | Identification dimension, not a wear limit.                                |
| Rear disc outside diameter  | 285 mm [p.7]                                                        | Identification dimension, not a wear limit.                                |
| Disc thickness entries      | Front 12.7 or 20 mm; rear 10.5 or 20 mm [p.7]                       | The form contains alternatives. These are not minimum service thicknesses. |
| Carburettors                | Two twin-throat Solex 40 PII-4; 40 mm bores / 32 mm venturis [p.10] | Period reference; jets and current fitment require their own evidence.     |

## WHY NO TIGHTENING TORQUES?

A parts catalogue, patent and homologation form are not a complete workshop manual. Unverified fastener torques, bearing clearances and wear limits would add risk, not technical value.

[S05 / Dimensions - PDF page 5](#)

[S05 / Brakes - PDF page 7](#)

[S05 / Carburettors and performance - PDF page 10](#)

## 04 / ENGINEERING QUANTITIES

# What the headline power does not explain.

The following values are independent calculations from period reference inputs, not a dyno curve and not present-day test data.

| QUANTITY                                     | CALCULATION                                                                          | RESULT          |
|----------------------------------------------|--------------------------------------------------------------------------------------|-----------------|
| Peak-torque unit conversion                  | $12.4 \text{ kgf}\cdot\text{m} \times 9.80665$                                       | 121.60 N·m      |
| Brake mean effective pressure at that torque | $\text{BMEP} = 4\pi T / (V_d \times 100000)$ ; $V_d$ in $\text{m}^3$ ; result in bar | 9.66 bar        |
| Mean piston speed at 5,800 rpm               | $2 \times 0.074 \times 5800 / 60$                                                    | 14.31 m/s       |
| Mean piston speed at 3,500 rpm               | $2 \times 0.074 \times 3500 / 60$                                                    | 8.63 m/s        |
| Metric power conversion                      | $90 \text{ PS} \times 0.73549875$                                                    | 66.19 kW        |
| Combustion-event rate at 5,800 rpm           | $4 \text{ cylinders} \times 5800 / 120$                                              | 193.33 events/s |

## How to read these results

**BMEP** is a comparative work-per-displacement measure. It is not peak cylinder pressure. **Mean piston speed** is an average; actual piston speed varies through the stroke. **Event rate** is not the pitch or full spectrum of a recorded exhaust sound.

### NO IMAGINARY POWER CURVE

**Peak torque and peak power occur at different engine speeds in the period data. Two headline points cannot reconstruct the engine's entire torque curve.**

INPUTS: S05 pp.8 and 10: four-stroke flat-four, bore 82.5 mm, stroke 74 mm; peak torque 12.4 kgf·m at 3,500 rpm; rated 90 PS (DIN) at 5,800 rpm. Formulae are stated explicitly so results can be reproduced.

[S05 / Period performance entries - PDF page 10](#)

# Open the right page. Keep the contradictions.

The page references below use the PDF viewer's page count, starting at 1. Each original remains hosted by its source; the archive does not rebrand or redistribute the source scans.

| PAGES | WHAT IS THERE                                          | BEST USE                                                                    |
|-------|--------------------------------------------------------|-----------------------------------------------------------------------------|
| 1-3   | Approval record, vehicle and component photographs     | Identify the exact form and the assemblies being described.                 |
| 4     | Inlet/exhaust port sketches and cam-profile dimensions | Inspect an original engineering drawing, not a guessed modern illustration. |
| 5-7   | Dimensions, body, wheels, suspension and brakes        | Keep options and measurement definitions visible.                           |
| 8-10  | Engine geometry, valve events and performance          | Rebuild calculations and check the units.                                   |
| 11-12 | Transmission ratios and optional equipment             | Compare with PET; do not assume every listed ratio is fitted.               |

## Three source issues worth preserving

**Date:** the scan's approval entry reads 1 January 1968; the FIA web metadata gives 2 January. This guide uses "1968" rather than silently resolving the discrepancy.

**Fifth gear:** the FIA main table and Porsche's 912 PET entry differ; the transmission notebook keeps both.

**Final drive:** use  $31/7 = 4.428571$  for calculations rather than the inconsistent printed 4.448.

[S05 / Port and cam sketches - PDF page 4](#)

[S05 / Optional equipment and underbody photographs - PDF page 12](#)

[S05 / FIA landing page and consultation-only notice](#)

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