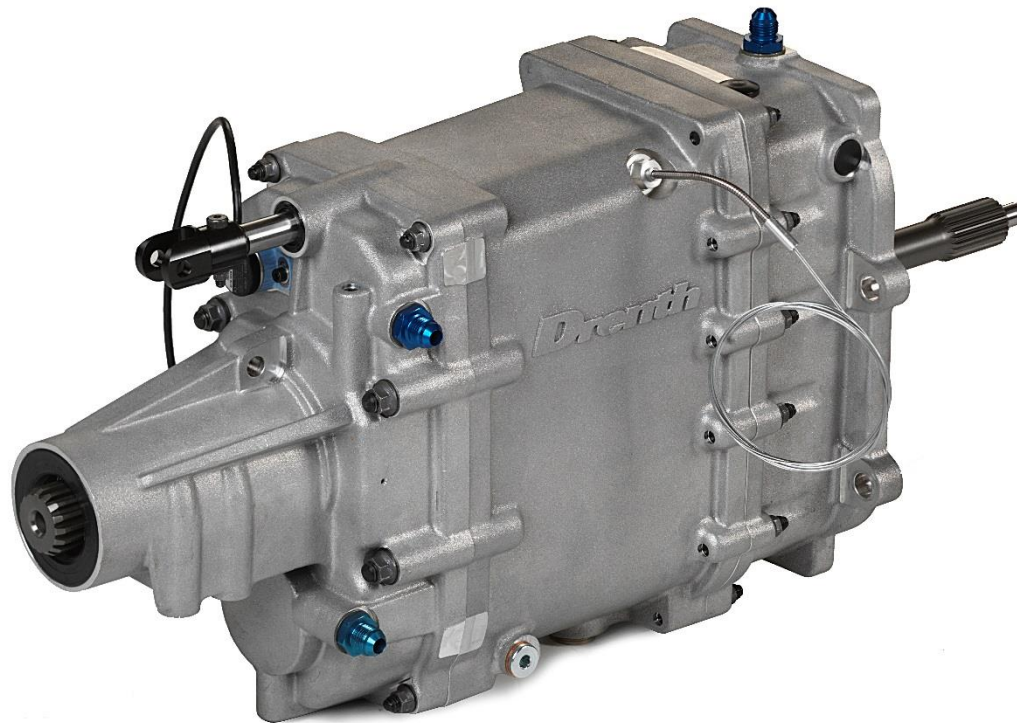


# ***Drenth***

***motorsport gearboxes***

25.03.0031

## ***DG350***



***Pole Position***  
*In gearboxes*

## Introduction

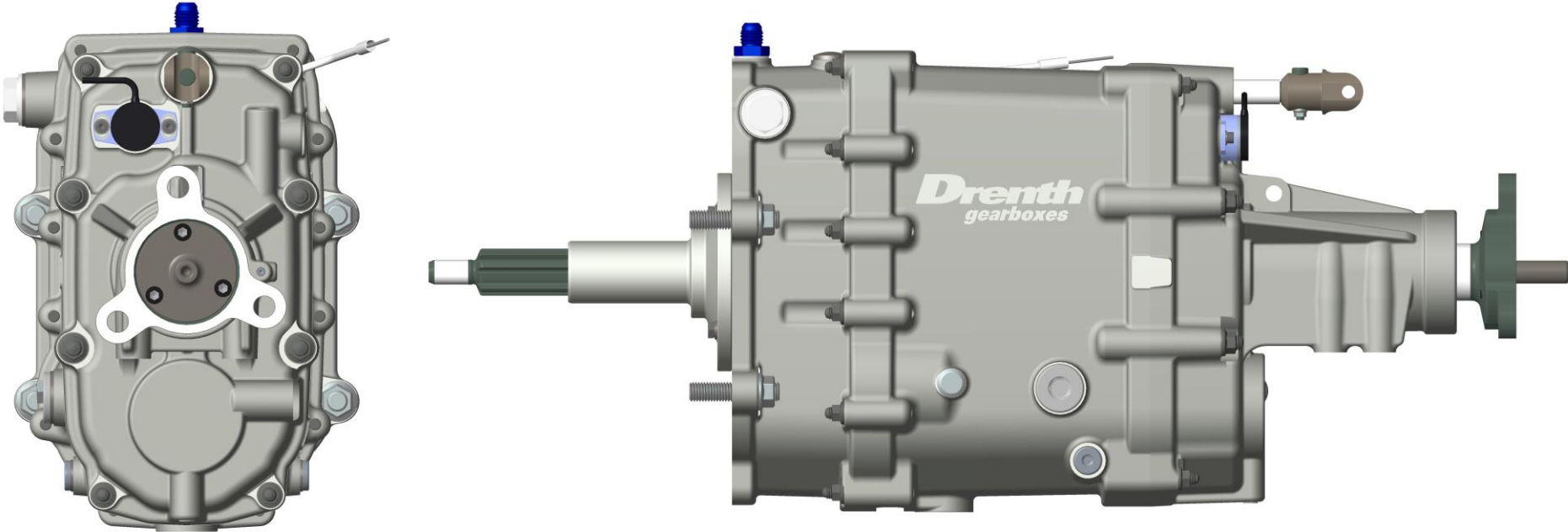
The DG350 is the youngest 6 speed sequential gearbox in the high performance "DG" family. Due its compact design it is suitable in various high performance rear wheel drive cars. The DG350 weighs only 27,5 kg and can handle torques up to 350 Nm. The output comes in 2 options, flanged or a Ford type 9 joint spline. With his adaptive capability, reliability and durability the gearbox can be used in several disciplines like circuit racing, endurance racing, hill climb, rally and rally cross. Due to a complete new design the DG350 includes the latest innovations.

This document contains information about the DG350 gearbox. It includes Technical specifications and possible options. For more detailed information please contact Drenth Gearboxes.

*Made by Damas Damen  
Last modified: August 2015  
Modified by: Jeroen Brill*

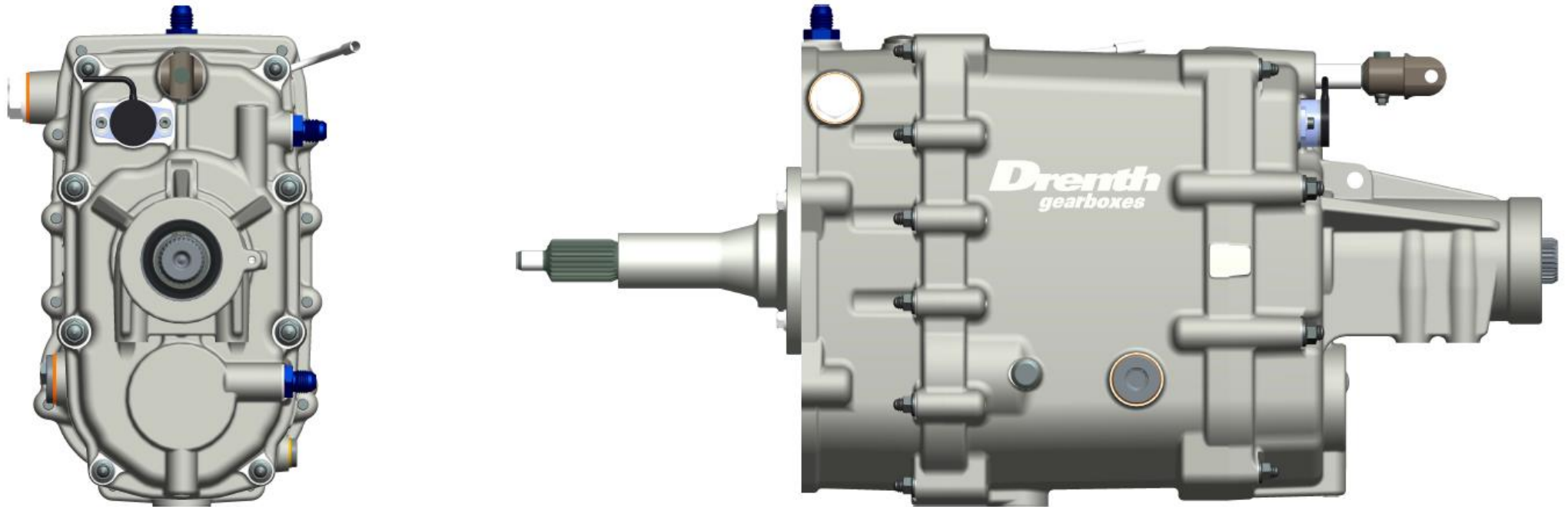
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# DG350 BMW Type Flange



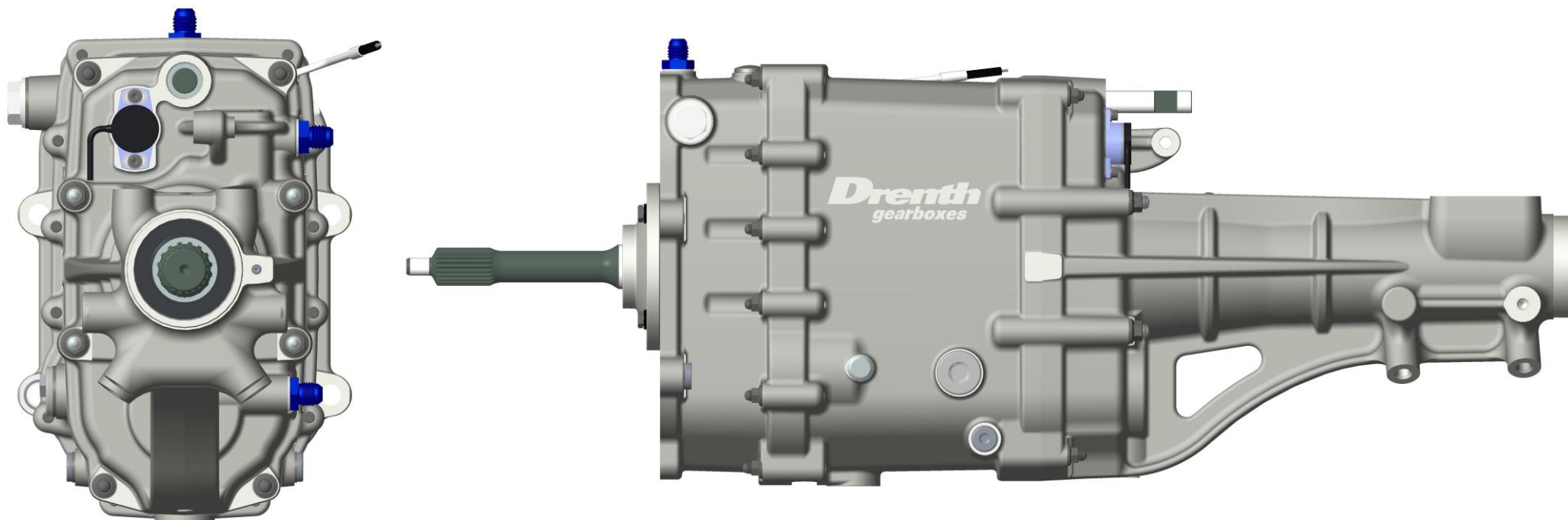
**Figure 1:**  
Rear and side view

## DG350 Ford Type 9



*Figure 2:  
Rear and side view*

## DG350 Toyota GT86



**Figure 3:**  
Rear and side view

## Technical Specifications

### General Dimensions DG350 Flanged with Oil pump

Weight:  
26.5 kg

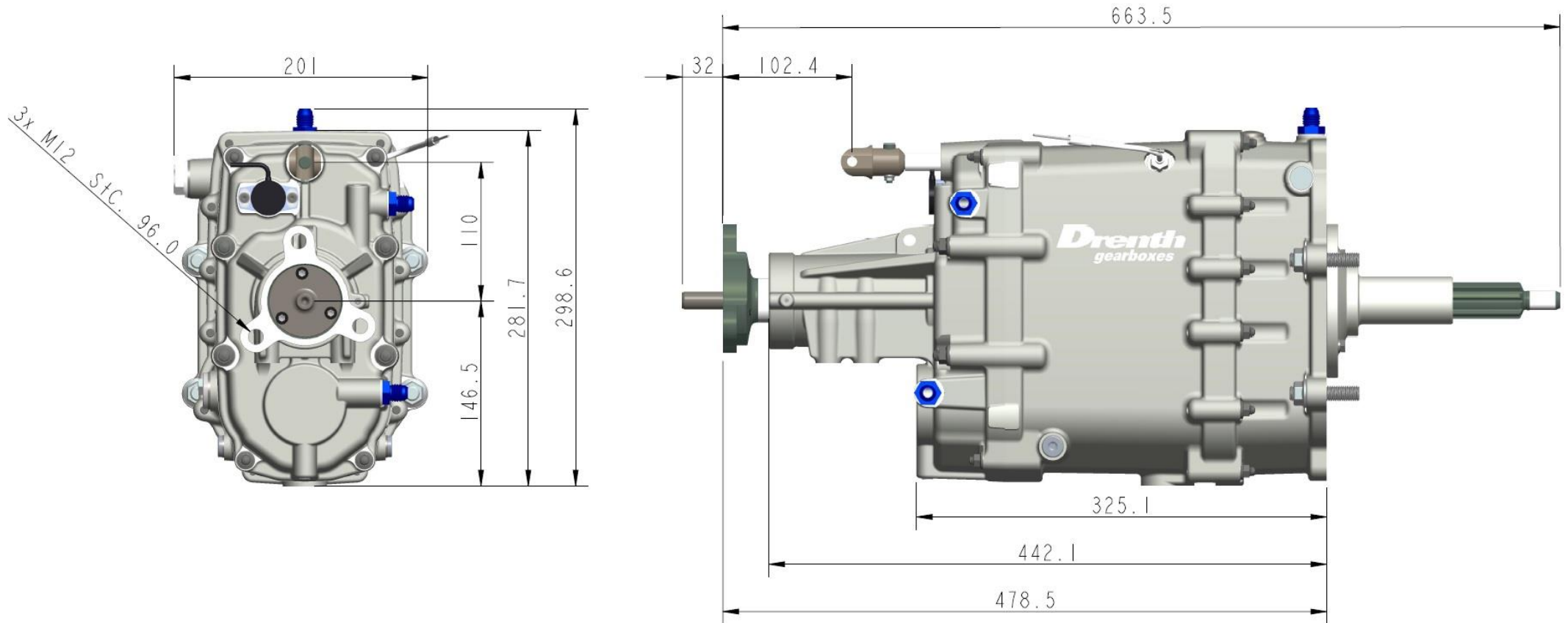
Max. torque:  
350Nm\*

Spline:  
23 x 1"

Oil qty:  
1.1 litres  
(Without oil cooler and  
external oil lines)

Oil Type:  
○ Castrol SAF-XJ  
○ API GL-5  
○ SAE 75W-140

Flange output:  
BMW



\*Depending on gear-ratio and car weight

Figure 4:  
General dimensions  
Flanged

## General Dimensions DG350 Ford type 9 standard with oil pump.

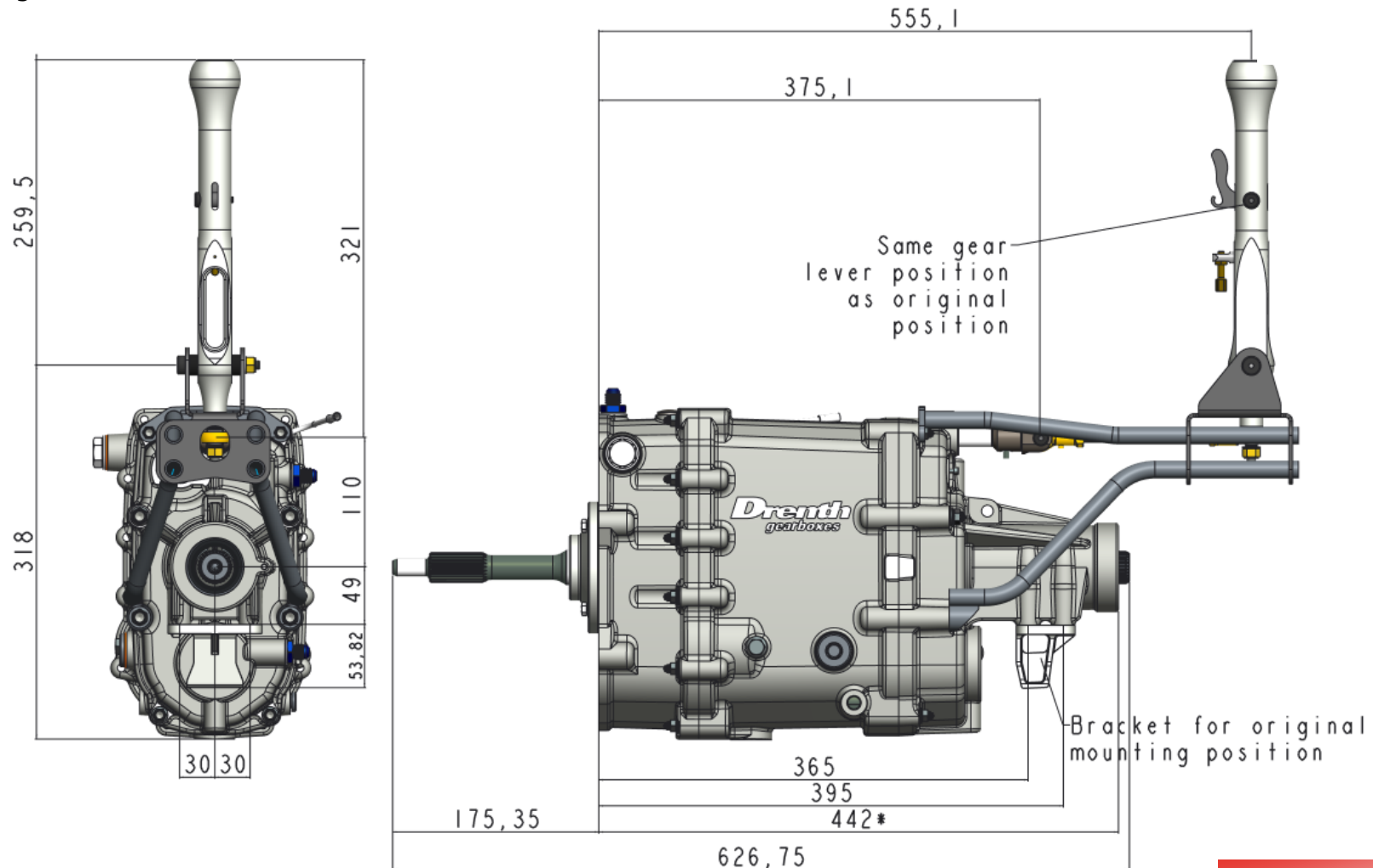
Weight:  
27.5 kg

Max. torque:  
350Nm\*\*

Spline:  
23 x 1"

Oil qty:  
1.1 litres

Oil Type:  
 Castrol SAF-XJ  
 API GL-5  
 SAE 75W-140



\*OEM Ford Type 9 length is 595 mm: Lengthen your cardan shaft with +/- 150 mm.  
 \*\*Depending on gear-ratio and car weight

**Figure 5:**  
 General dimensions Ford  
 Type 9

## General Dimensions DG350 Toyota GT86 standard with oil pump

Weight:  
TBA

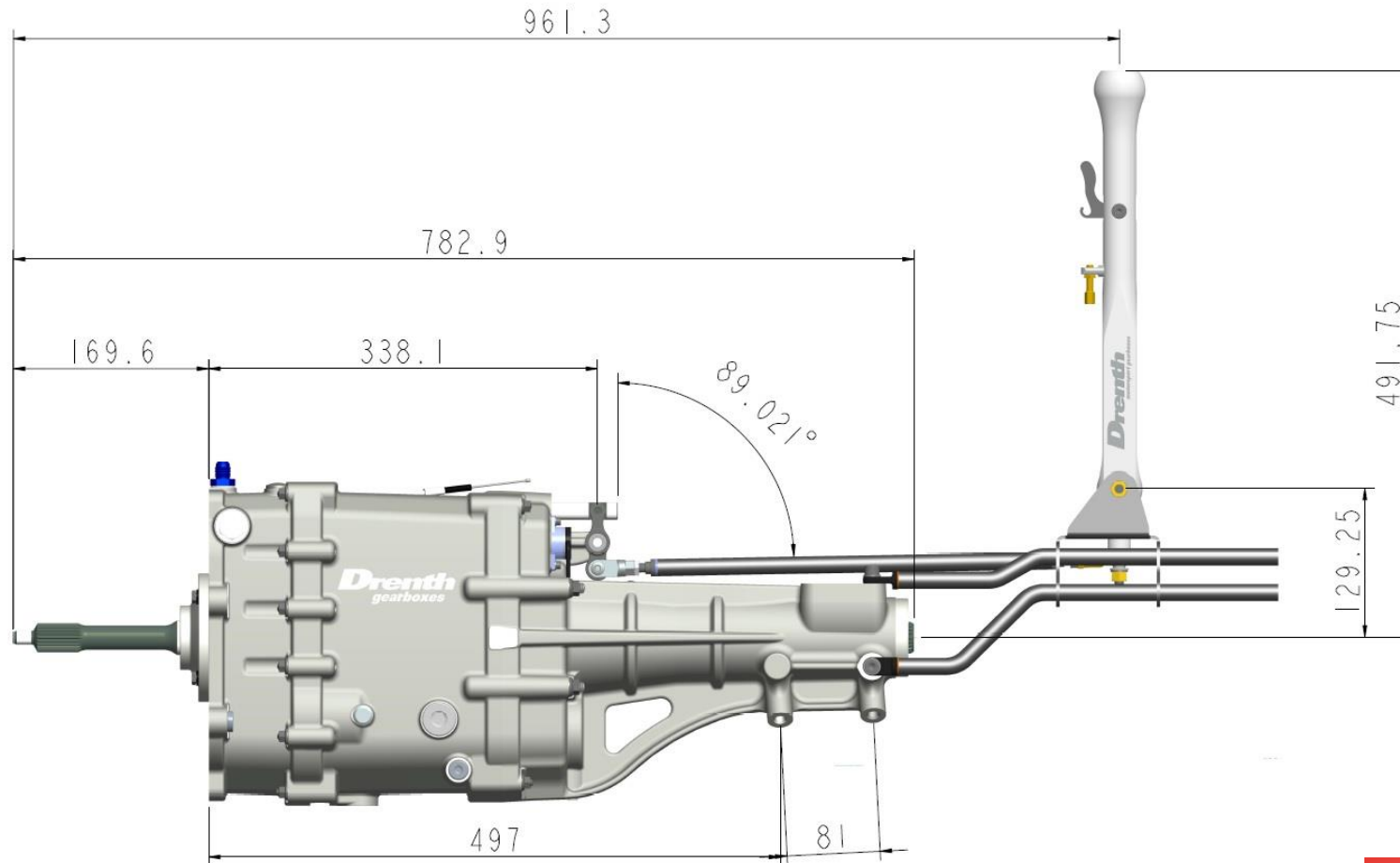
Max. torque:  
350Nm\*\*

Spline:  
23 x 1"

Oil qty:  
TBA

Oil Type:

- Castrol SAF-XJ
- API GL-5
- SAE 75W-140



\*\*Depending on gear-ratio and car weight

**Figure 6:**  
General dimensions  
Toyota GT86



Cross-Section (Ford type 9)

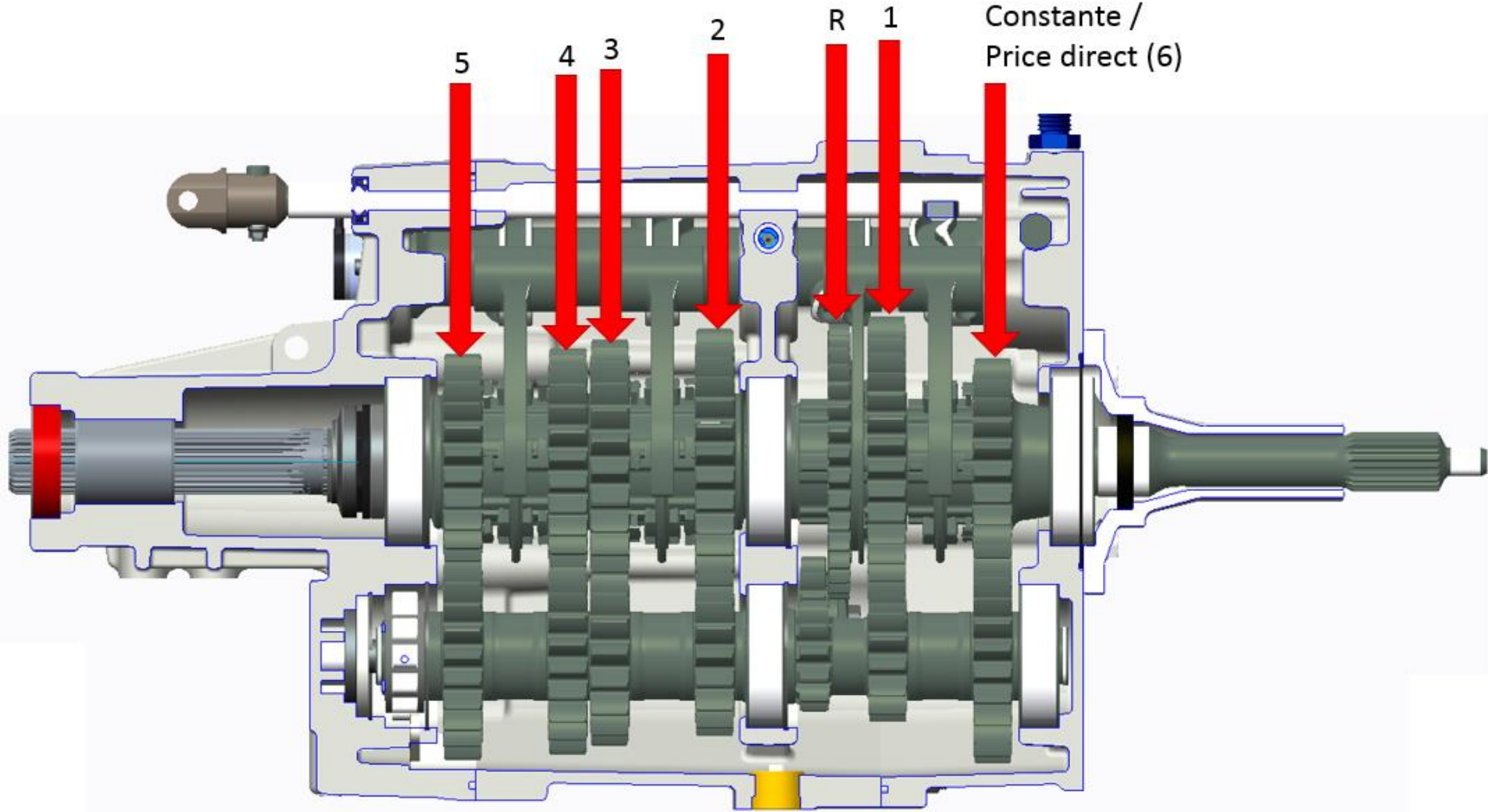
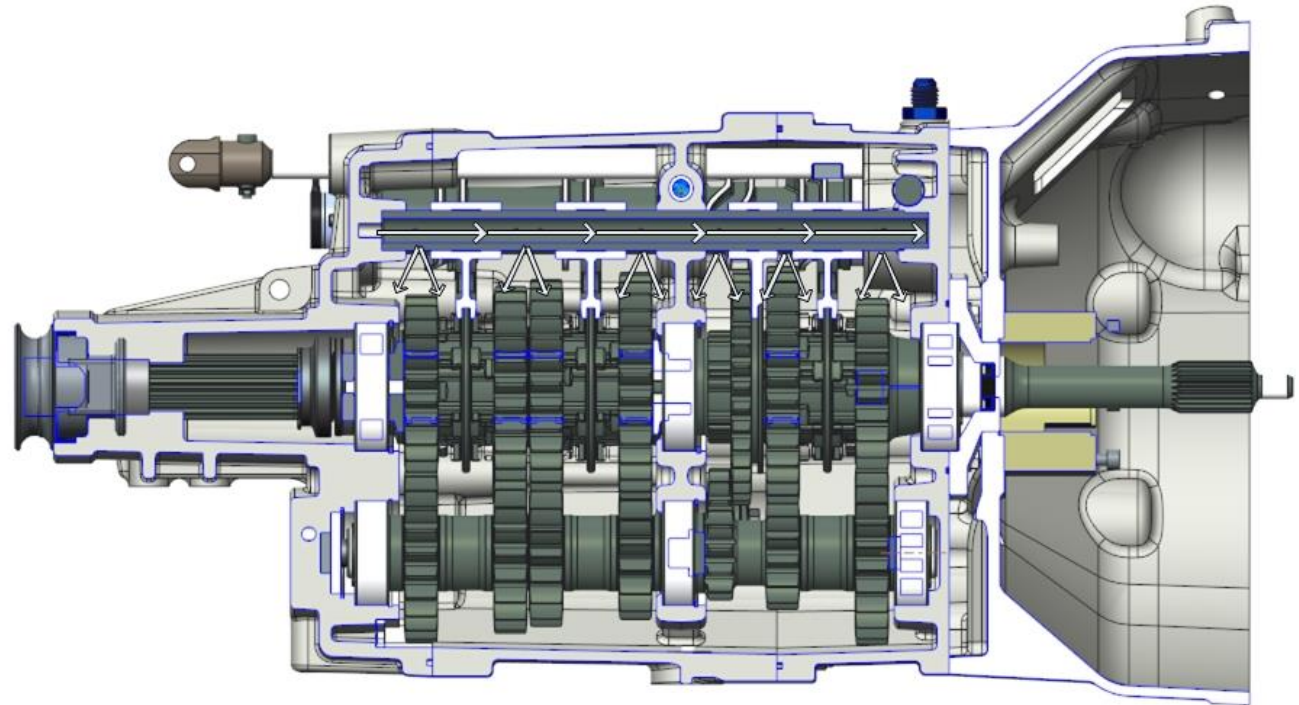


Figure 7:  
Cross-section

## Optional Lubrication System

- Pump type: 8 tooth Gerotor.
- Filter type:
  - A normal filter on suction side integrated in gearbox.
- Pump location: Oil pump is located on the lower side of the rear end cover.
- The spray bar is integrated in the selector shaft of the gearbox. The spraybar sprays on all the gears and dogrings of the outputshaft and on the upper dropgear.
- There are two connections to fit an external oil cooler. For more information see the next page.
- Recommended oil specification:
  - Castrol SAF-XJ
  - API GL-5
  - SAE 75W-140
- Oil Capacity: Without oil cooler and external oil lines; 1.1 litre.



**Figure 8:**  
Lubrication system

Placement Oil Cooler

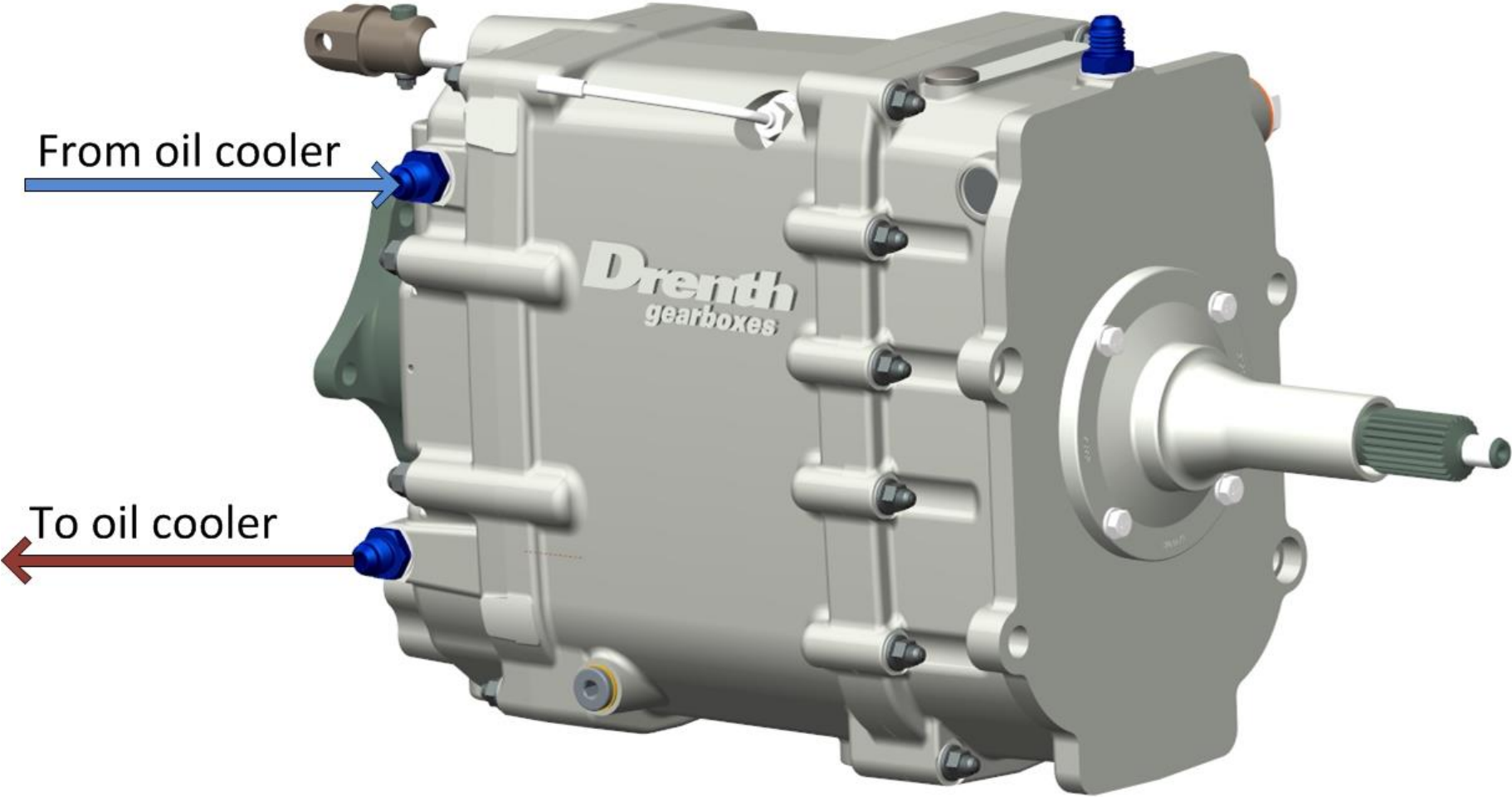
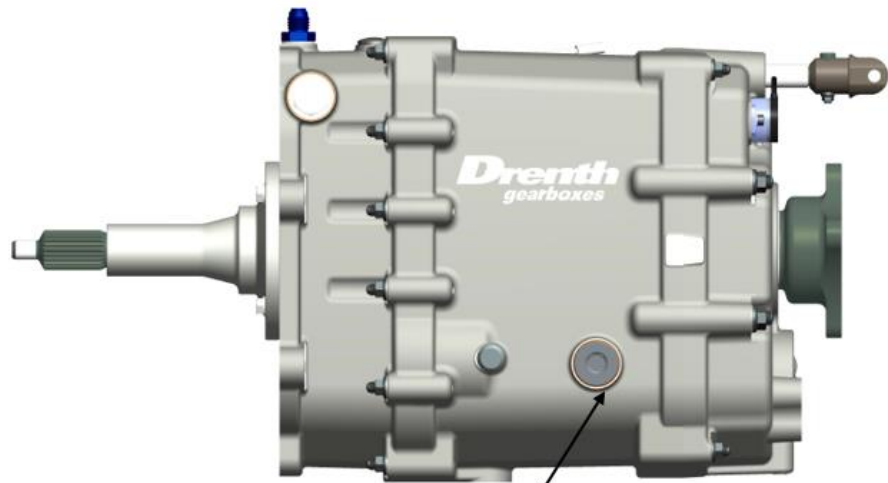


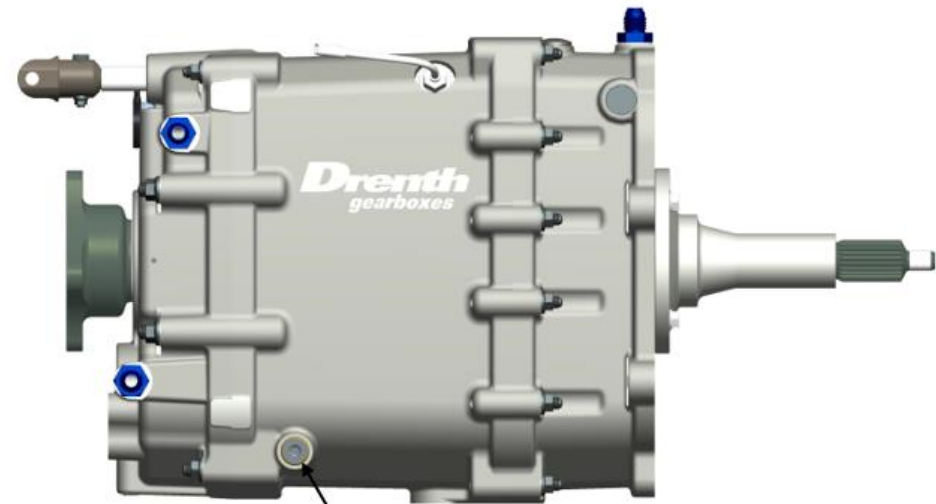
Figure 9:  
Oil cooler placement

## Oil level and placement temperature sensor



Fill the gearbox till this plug

Figure 10:  
Oil level



Temperature sensor

Figure 11:  
Placement oil sensor

## Run-in Procedure

- Run through the gears while the gearbox is not mounted underneath the car. Also check if the gear indicator shows the correct information while going through the gears. If not check the calibration of the potentiometer.
- When this is working and the oil level is correct (1.1 litre), the gearbox can be mounted on a test bench or underneath the car. For the first test the wheels should be tilted from the ground. Before the test run make sure that the gearbox is in the neutral position. During the test run go through all the gears in a low rpm range. When the temperature starts to rise, the engine rpm may also go up. The temperature and the rpm build-up must go up evenly and check the given information on the gear indicator. During the run also concentrate on the noise production, vibrations and the temperature. When one of them is out of the ordinary, stop the test and see what could be wrong. The first test is done when all is operating correctly and the gearbox has reached its operating temperature.
- After the first test the gearbox is ready for a test drive. The procedure is the same as the first test. Slowly build-up the engine rpm and torque when the temperature level starts to increase. During the warm-up of the gearbox don't warm-up the brakes.

# Options

## D.M.S. Gearlever

- The D.M.S. gearlever has got a built-in strain gauge which constantly gives several signals. These signals can be used for up and down shifting and other functions. The up shift signal can be used in combination with the Drenth display unit (see chapter 'Options' for more information about the display unit). The other signals can be used in combination with an aftermarket ECU such as a Motec, TDA or Gems.
- There are two different D.M.S. gearlevers available, the short version and the long version.
- Short version: 37.02.0905, Length: 240 mm from mounting position
- Long version: 37.02.0901, Length: 360 mm from mounting position

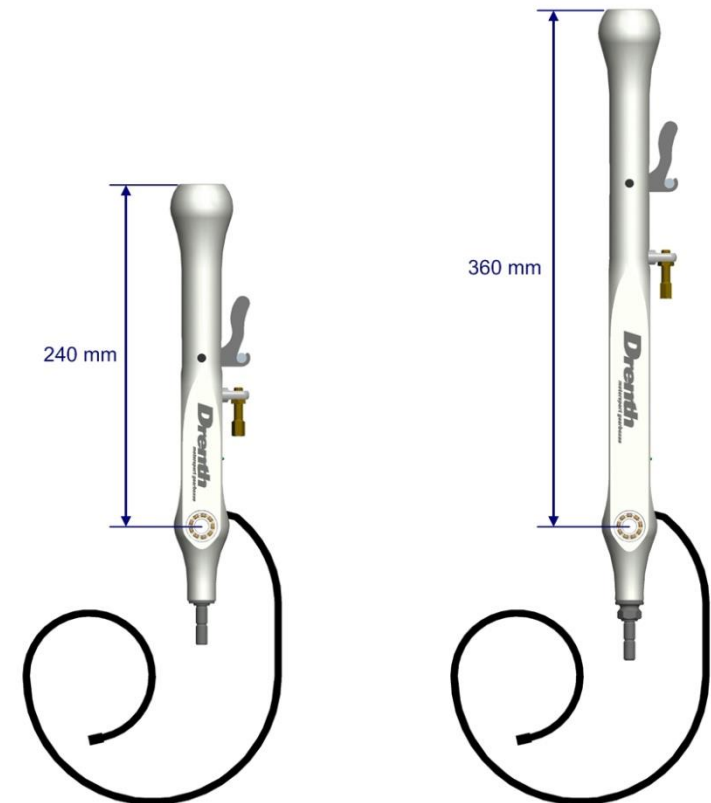


Figure 12:  
Dimensions gearlever

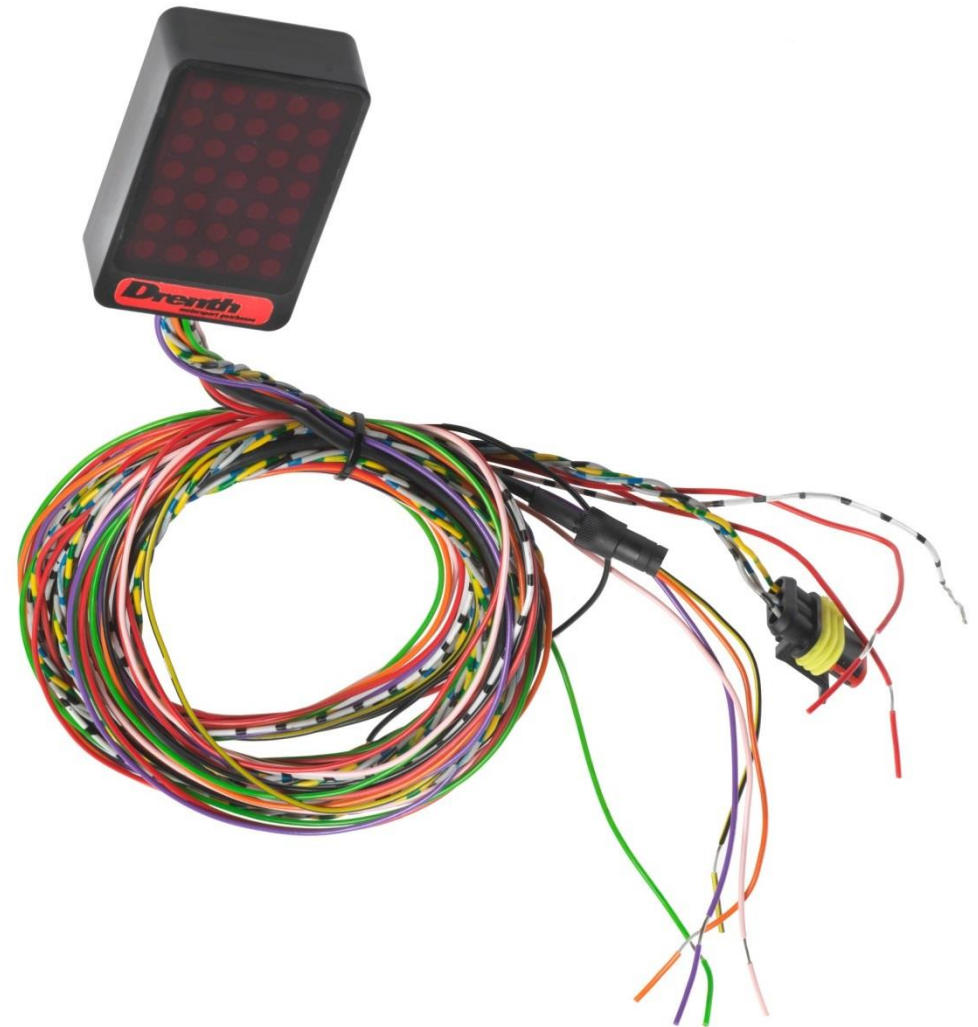
## Drenth Display Unit

The display unit houses several functions to adjust to the driver's needs and to fine-tune the gearbox.

The gear indicator displays the selected gear by measuring the position of the selector barrel with a rotary sensor. This function can be calibrated through the supplied software. It also can be used as a shift light when a preset level of RPM is reached. This preset level and the manner of indicating can be set with the supplied software.

The gear indicator, combined with the D.M.S gearlever, can act as a flatshift system (powershift) This means that you can accelerate (full throttle) and shift up without using the clutch or lifting the throttle. This can also be calibrated with the supplied software.

The set comes with a separate user manual. For more information contact our sales department or visit our website.



*Figure 13:  
Display unit*

## Drenth Gear Indicator

The Drenth Gear indicator is a display unit that can be used with any Drenth gearbox with a rotary sensor. Any gear order can be accommodated with up to 7 forward speeds besides neutral and reverse.

Programming the unit is achieved by the use of a single button and a user-friendly programming routine. Additionally, the unit features a counter to log the total number of gearshifts made – useful for tracking the life of critical gearbox components. . The set comes with a separate user manual. For more information contact our sales department or visit our website.

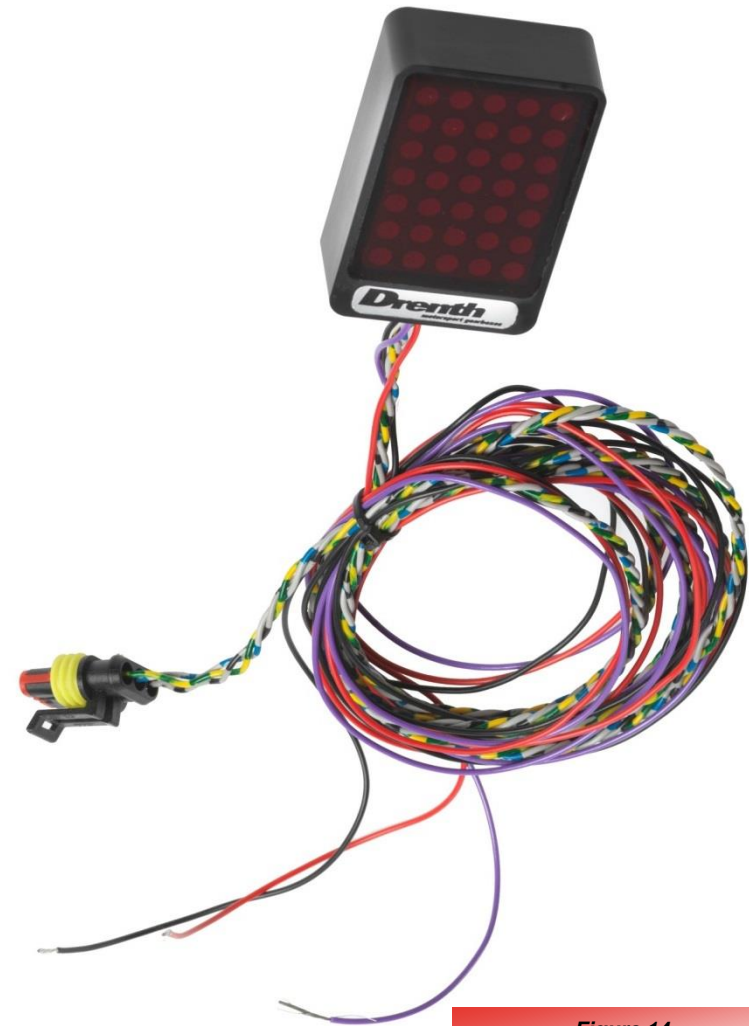


Figure 14:  
Display unit



## Oil breather catch tank

The DG350 gearbox needs an oil breather system for breathing the gearbox.  
Drenth gearboxes recommends an oil breather catch tank for breathing the gearbox.

The following breather catch tank with the corresponding parts suits for a Drenth gearbox.

The tank needs to be placed vertical and above the gearbox for a smooth return of the oil.  
For mounting the tank there are two 6 mm holes, the hose needs to be cut to size.

For more information, please contact our sales department.

*The system consist of:*

Description	QTY.	Part Number
Complete oil breather catch tank	1	25.03.0200
Oil breather catch tank	1	25.03.0201
Adaptor (hose)	2	25.03.0203
Oil hose (1 m)	1	25.03.0202



Figure 15:  
Oil breather catch tank

## Gear ratio's

Drenth offers a selection of pre-determined gear ratios to be chosen from. It is also possible to request a custom-made set of gears to better fit the performance of your car.

<i>Available gear ratios</i>				
<b>1<sup>st</sup> gear</b>	<b>2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup>, 5<sup>th</sup> gear</b>			
2.381	2.014	1.621	1.355	1.137
2.605	1.954	1.536	1.303	1.086
	1.839	1.505	1.232	0.926
	1.794	1.471	1.184	0.893
	1.737	1.406	1.153	0.863

These ratios are calculated with the ratio of the constant gear included.

## Contact Information

### Address

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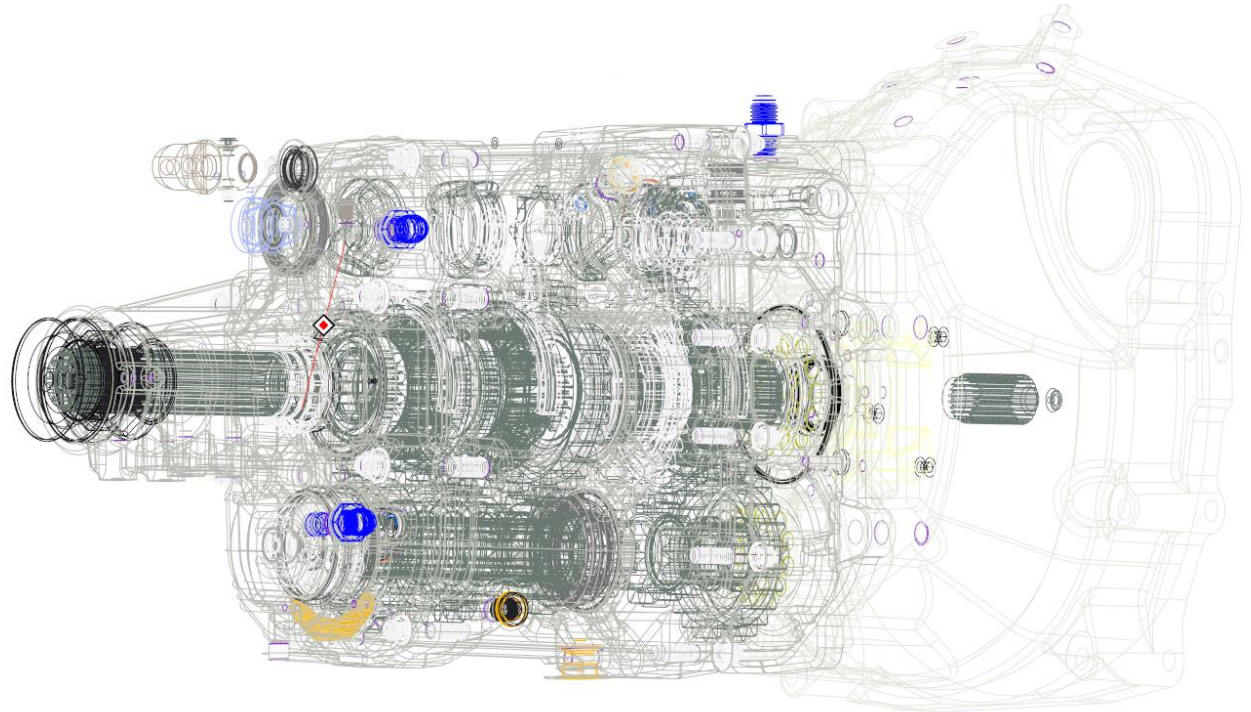
### Contact Persons

#### *Sales department:*

Johan Drenth  
Johan@drenth-gearboxes.com

#### *Engineering:*

Jeroen Grolleman  
Jeroen@drenth-gearboxes.com



**Figure 16:**  
Oil breather catch tank

*Pole Position  
In gearboxes*

**Dreht**  
*motorsport gearboxes*

[www.dreht-gearboxes.com](http://www.dreht-gearboxes.com)