Racing Clutch System

motorsport

Installation Instructions

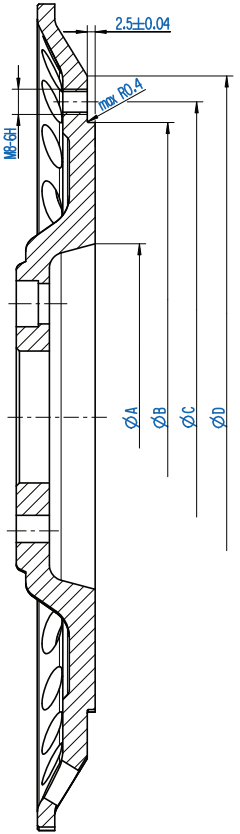
The RCS clutch is a vehicle independent developed clutch suitable for the installation into all sorts of vehicles. Thus the following points need to be checked prior to installation: the flywheel contour, the position, the travel and form of the releaser as well as the maximum available installation space. If necessary the installation needs to be adapted to suite the RCS clutch. When installing a clutch the following points need to be considered.

Releaser

- To position the releaser the setup height must be considered precisely (see “installation drawing”).
- The releaser should always be in contact with the diaphragm spring (rotation in sync). The preload should be between 100 – 150 N to reduce the wear on the contact surface to a minimum and to extend the operational life of the bearing.
- The release travel must be limited, compared to the serial setup. Otherwise the clutch will be over-stroked (release travel please see installation drawing). This may lead to damage (loss of clamp load) of the diaphragm spring and eventually to malfunction.
- If the clutch is in new condition, the releaser must not be at its end stop. This is important because the diaphragm spring finger position changes during wear and therefore requires the releaser to provide an additional 6.0 mm of wear travel (wear travel refer to installation drawing).
- The releaser should have a convex shaped contact surface with an appropriate release diameter (see release diameter when selecting the RCS clutch housing assembly). With a flat surface it is recommended to use an additional release ring which is available as an accessory.

Clutch

- With multi-plate clutches please ensure that the sinter paddles are aligned to each other.
- Lubricate the hub spline with a thin layer of enclosed special Sachs grease and move the clutch discs back and forth on the central shaft until the hub moves smoothly on the shaft. Remove any excessive grease.
- Under no circumstances should grease get in contact with the clutch disc friction facings.
- The spline of the gear input shaft must be in contact throughout the whole length of the hub



Flywheel

- For the application of the ZF Race RCS clutch, it is essential, that the flywheel contour corresponds to the dimension stated in the table. The precise machining of the flywheel is necessary to guarantee a proper clutch function.
- To mount the clutch, it is recommended to use M8 Screws with a property class of min. 10.9 and a hexagonal socket. In addition a plain washer should be used. The tightening torque is 20Nm.

Type	ØA [mm]	ØB [mm]	ØC [mm]	ØD [mm]
RCS 115	max. 72.0	$117.52_{-0.03}$	127.5 ± 0.1 (10x36°)	min. 138.5
RCS 140	max. 97.0	$142.67_{-0.04}$	154.45 ± 0.1 (8x45°)	min. 167.0
RCS 184	max. 132.0	$186.88_{-0.046}$	200.0 ± 001 (6x60°)	min. 215.0
RCS 200	max. 128.0	$201.98_{-0.046}$	214.0 ± 0.1 (6x60°)	min. 228.0

A = Internal Diameter **B** = Centering Diameter **C** = Fixation Diameter **D** = External Diameter

Installation Drawing

Measurements

Below you will find a step by step instruction, allowing you to determine the correct installation dimensions for the ZF RCS clutch kits.

1. Measure the distance from engine flange to the flywheel bolt surface to define dimension A.

2. To define the distance between the diaphragm spring and the engine flange, add the SUH (see clutch drawings) value to the measured dimension A.

3. Measure the distance from the engine flange to the contact surface of the slave cylinder at full stroke to define dimension B.

4. Measure the distance from the engine flange to the contact surface of the fully retracted slave cylinder to define dimension C.

Now that all required dimensions are defined, the installation space can be calculated using the equations seen below to ensure a perfect fit.

Equations to check the installation space:

$$B < A + SUH - X$$
$$C > A + SUH + Y$$

In the case that the defined dimensions do not match the equation requirements, the following modifications can be done. For instance:

1. Displace the position of the slave cylinder. e.g. move into the direction of the gearbox if dimension B is too big or into the direction of the engine if dimension C is too small.

2. Install an additional release ring (accessory) to the diaphragm spring fingers. e.g. if dimension B is OK but dimension C is too small

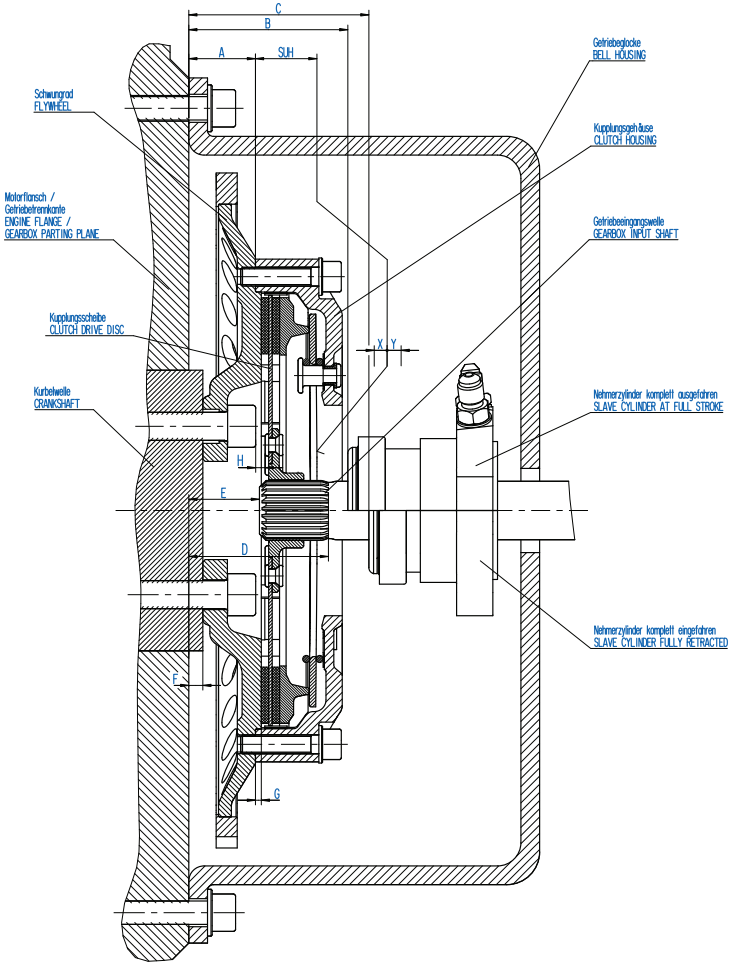
3. Install one of the ZF Race slave cylinder kits (accessory), available in different heights and fixation patterns.

Further Dimensions

Dimension D, E & F support the definition of the spline length and position of the gearbox input shaft. To define the axial position of the hub, please see the hub configuration pages of the corresponding clutch category.

Dimension G refers to the required centring step (see clutch drawings) of the flywheel.

Dimension H refers to the distance between the top of the crank shaft bolt heads and the friction stack / the first clutch disc, which is in contact with the flywheel. The minimum distance between these two components should be 1mm, to ensure that no interference/contact takes place when the friction stack/clutch plate reaches its maximum worn condition.



- **A** Distance from engine flange to flywheel bolt surface
- **B** Distance from engine flange to the slave cylinder at full stroke
- **C** Distance from engine flange to the fully retracted slave cylinder
- **D** Distance from engine flange to the end of spline of the gearbox input shaft
- **E** Distance from engine flange to the beginning of spline of the gearbox input shaft
- **F** Crank shaft overlap to the engine flange
- **G** Flywheel step (if inner centring or outer centring)
- **H** Distance from crank shaft bolt head to friction stack / clutch disc
- **SUH** Setup height
- **X** Release travel
- **Y** Wear travel