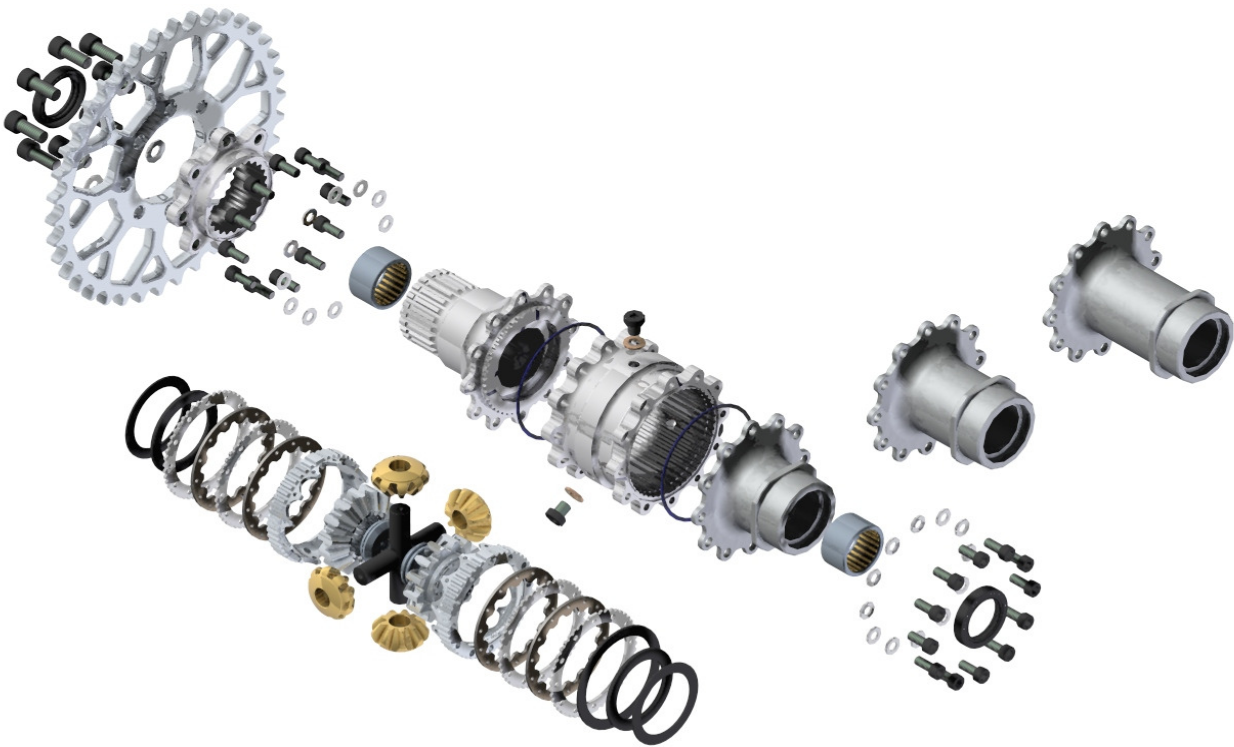


***Assembly and disassembly instruction
Formula Student limited slip differential
2010***



Drexler Motorsport GmbH

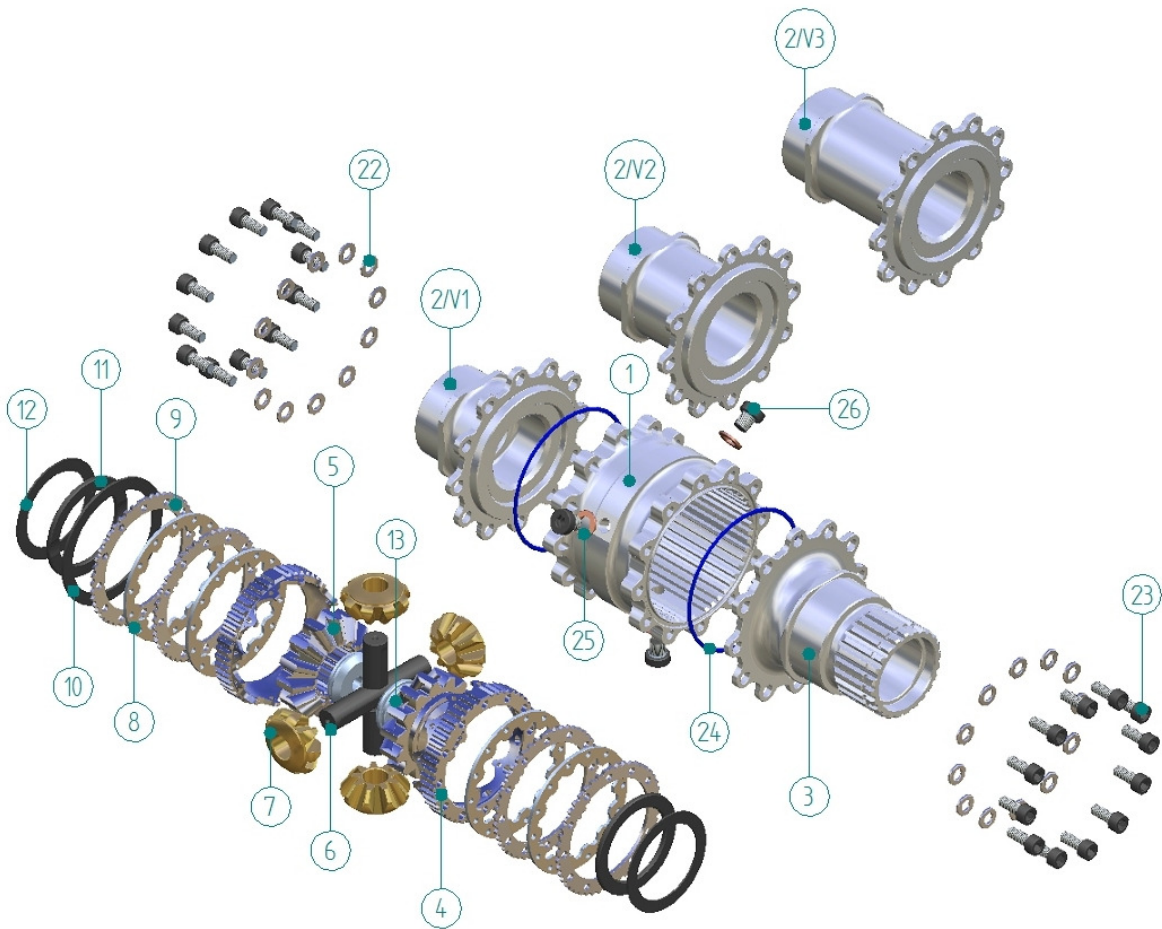
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26	3	STCK./PIECE	KUPFER SCHEIBE COPPER WASHER	---	DSD-100-900-0012	AUF LAGER / IN STOCK	KUPFER / COPPER	0,001 kg
25	3	STCK./PIECE	ZYLINDERSCHRAUBE CAP SCREW, SOCKET HEAD	DIN EN ISO 6912 M8 x 1 x 8	DSD-240-900-0010	FERTIGUNG	10,9	0,008 kg
24	2	STCK./PIECE	O-RING O-RING	DIN 3771-75x2,0-N	DSD-100-900-00024	---	NB	0,001 kg
23	24	STCK./PIECE	ZYLINDERSCHRAUBE CAP SCREW, SOCKET HEAD	DIN EN ISO 4762 M6 x 14	020-001-00596	AUF LAGER / IN STOCK	12,9	0,006 kg
22	24	STCK./PIECE	FLACHE SCHEIBE FLAT WASHER	DIN EN ISO 7092 - 6 - 300	DSD-100-900-0011	AUF LAGER / IN STOCK	BLANK, VERZINKT	0,001 kg
21	1	STCK./PIECE	TRIPODENFLANSCH DECKELSEITE TRIPOD FLANGE COVERSIED	FORMULA STUDENT 2008 - 2009	---	*** HOCHSCHULE / *** CUSTOMERS	---	---
20	1	STCK./PIECE	TRIPODENFLANSCH GEHÄUSESEITE TRIPOD FLANGE BODYSIED	FORMULA STUDENT 2008 - 2009	---	*** HOCHSCHULE / *** CUSTOMERS	---	---
19	1	STCK./PIECE	KETTENRADADAPTER ROHLING CHAINWHEEL ADAPTER BILLET	FORMULA STUDENT 2008 - 2009	---	** HOCHSCHULE / ** CUSTOMERS	D-AF 53	1,746 kg
18	1	STCK./PIECE	SICHERUNGSRING RETAINING RING	DIN 471 - 50 x 2	---	*** HOCHSCHULE / *** CUSTOMERS	---	---
17	1	STCK./PIECE	RILLENKUGELLAGER DEEP GROOVE BALL BEARING	DIN 61910-2RS1	---	*** HOCHSCHULE / *** CUSTOMERS	---	---
16	1	STCK./PIECE	RILLENKUGELLAGER DEEP GROOVE BALL BEARING	DIN 6211-2RS1	---	*** HOCHSCHULE / *** CUSTOMERS	---	---
15	2	STCK./PIECE	RADIAL - WELLENDICHTRING ROTARY SHAFT SEAL	DIN 3760 - AS 28 x 40 x 7 - NBR	---	*** HOCHSCHULE / *** CUSTOMERS	---	---
14	2	STCK./PIECE	NADELLAGERHÜLSE NEEDLE BEARING	DIN 618-1 INA HK 2820	---	*** HOCHSCHULE / *** CUSTOMERS	---	---
13	2	STCK./PIECE	EINSCHLAGDECKEL PLUG	FORMULA STUDENT 2008 - 2009	DSD-240-060-0134	FERTIGUNG / PRODUCTION	D-18	0,035 kg
12	2	STCK./PIECE	TELLERFEDER ANLAUFSCHLEIBE DISCSRING FOR THRUST WASHER	DREXLER MOTORSPORT GmbH	DSD-240-080-0102	AUF LAGER / IN STOCK	D-51V	0,008 kg
11	2	STCK./PIECE	ANLAUFSCHLEIBE THRUST WASHER	DREXLER MOTORSPORT GmbH	DSD-240-010-0101	AUF LAGER / IN STOCK	D-18	0,024 kg
10	1	STCK./PIECE	TELLERFEDER FÜR VORSpannung 1,50mm DISCSRING PRE-LOAD 1,50mm	DREXLER MOTORSPORT GmbH	DSD-240-090-0101	AUF LAGER / IN STOCK	D-51V	0,016 kg
9	4	STCK./PIECE	AUSSENAMELLE 2,00mm FRICTION PLATE OUTERSPLINED 2,00mm	DREXLER MOTORSPORT GmbH	DSD-240-300-0109	FERTIGUNG / PRODUCTION	D-Ck	0,023 kg
8	4	STCK./PIECE	INNENAMELLE MOLYBDÄN BESCHICHTET 2,00mm FRICTION PLATE INNERSPLINED 2,00mm	DREXLER MOTORSPORT GmbH	DSD-240-350-0105	FERTIGUNG / PRODUCTION	D-Ck	0,022 kg
7	4	STCK./PIECE	KEGELRITZEL BEVELGEAR	DREXLER MOTORSPORT GmbH	DSD-240-070-0410	FERTIGUNG / PRODUCTION	D-18	0,057 kg
6	2	STCK./PIECE	DIFF.-ACHSE AXLE	DREXLER MOTORSPORT GmbH	DSD-240-020-0102	FERTIGUNG / PRODUCTION	D-18	0,061 kg
5	2	STCK./PIECE	ACHSKEGELRAD SIDE BEVEL GEAR	FORMULA STUDENT 2010	DSD-240-100-0141	AUF LAGER / IN STOCK	D-18	0,186 kg
4	1	STCK./PIECE	DRUCKRING (LINKE SEITE / RECHTE SEITE) RAMP (LEFT SIDE / RIGHT SIDE)	FORMULA STUDENT 2010	DSD-240-040-0040 DSD-240-040-0041	FERTIGUNG / PRODUCTION	D-18	0,102 kg
3	1	STCK./PIECE	DIFFERENZIAL GEHÄUSEDECKEL DIFFERENTIAL BODY COVER	FORMULA STUDENT 2010	DSD-240-700-0005	FERTIGUNG / PRODUCTION	D-AF 53	0,297 kg
2	1	STCK./PIECE	DIFFERENZIAL DECKEL VERSION V1 / V2 / V3 DIFFERENTIAL COVER V1 / V2 / V3	FORMULA STUDENT 2010	DSD-240-700-0006 / 0007 / 0008	FERTIGUNG / PRODUCTION	D-AF 53	V1-0,218 kg V2-0,231 kg V3-0,331 kg
1	1	STCK./PIECE	DIFFERENZIAL GEHÄUSE DIFFERENTIAL BODY	FORMULA STUDENT 2010	DSD-240-600-0006	FERTIGUNG / PRODUCTION	D-AF 53	0,268 kg
POSITION POSITION	MENGE QUANTITY	EINHEIT DEVICE	BENENNUNG I / DESCRIPTION I	BENENNUNG II / DESCRIPTION II	ARTIKELNUMMER / PARTNUMBER	SONDERANGABEN / DECLARATION	WERKSTOFF MATERIAL	GEWICHT WEIGHT

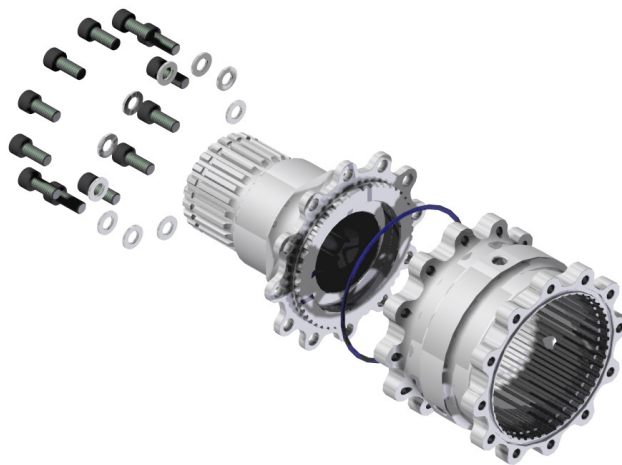


During the assembly of a Drexler Motorsport limited slip differential Formula Student 2010 all function-relevant measurements will be measured and put down on a setup sheet.

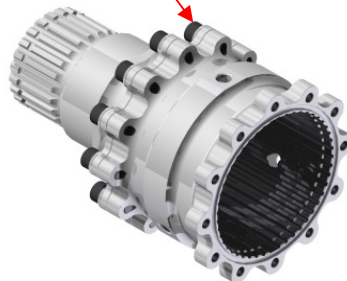
Therefore it is necessary, that the layers of the multi-disc clutches, remain in the same order as during the first assembly and become interchanged!

After measuring the constructed size, as well as the single parts, the differential is assembled as it can be seen at the drawing below. Further every differential is equipped with a running number for better traceability.

First of all the differential body (item no. 1), the O-ring (item no. 24) and the differential cover are assembled with 12 pieces of cap screws socket head M6x14 (item no. 23) and the fitting flat washers (item no. 22). Lubricants can be used to position the O-Ring. The torque in the property class 12.9 is about 15 Nm. An adhesion is not intended to keep assembly and disassembly simple.

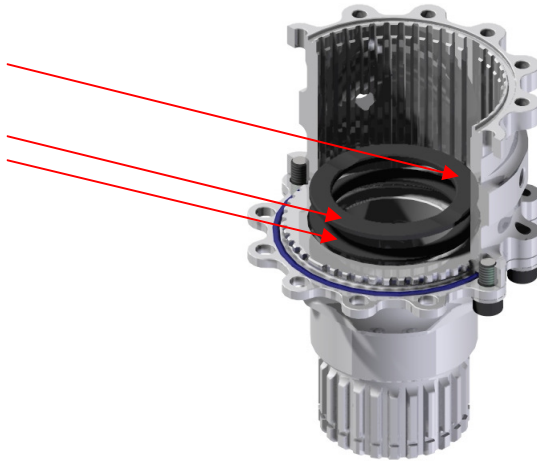


Torque of 12x M6x14 cap screws: **about 15 Nm!**



Put the discspring for thrust washer (item no. 12) and the thrust washer (item no. 11) in the intended bore. **Caution:** Apply oil on every surface.

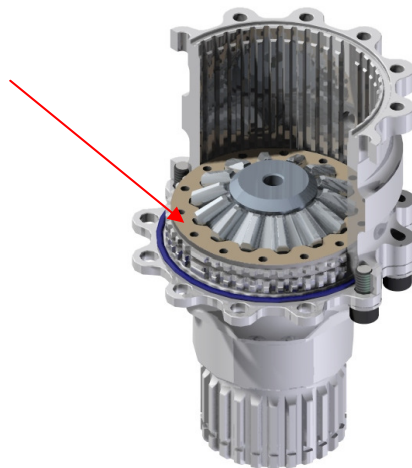
Apply oil on surfaces!



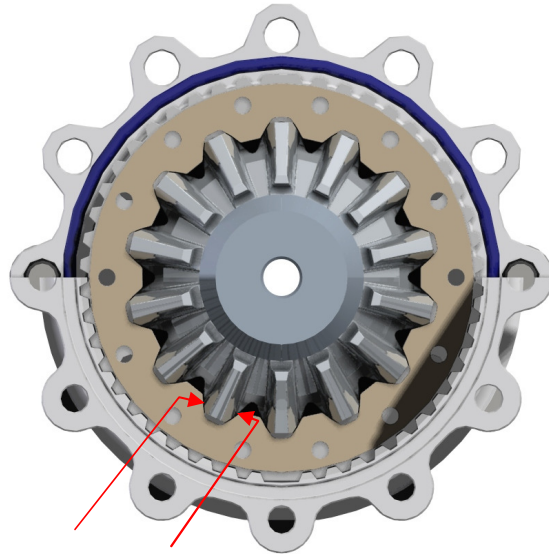
Put the package consisting of two friction plates outer splined (item no. 9) and friction plates inner splined (item no. 8) in the differential body and orient to the positioning in the body.

Caution: Apply oil between the friction plates.

Apply oil between the friction plates!



Caution: Fit side bevel gear (item no. 5) with impressed plug (item no. 13) in the gearing of the inner splined friction disc and orientate it.

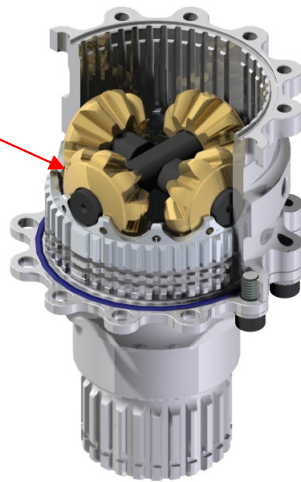


Pay attention to alignment of tooth flank!

Assemble grinded ramps (item no. 4) and axle (item no. 6) with bevel gear (item no. 7).

Caution: Care for enough lubrication between item no. 6 and 7.

Apply oil on surfaces!



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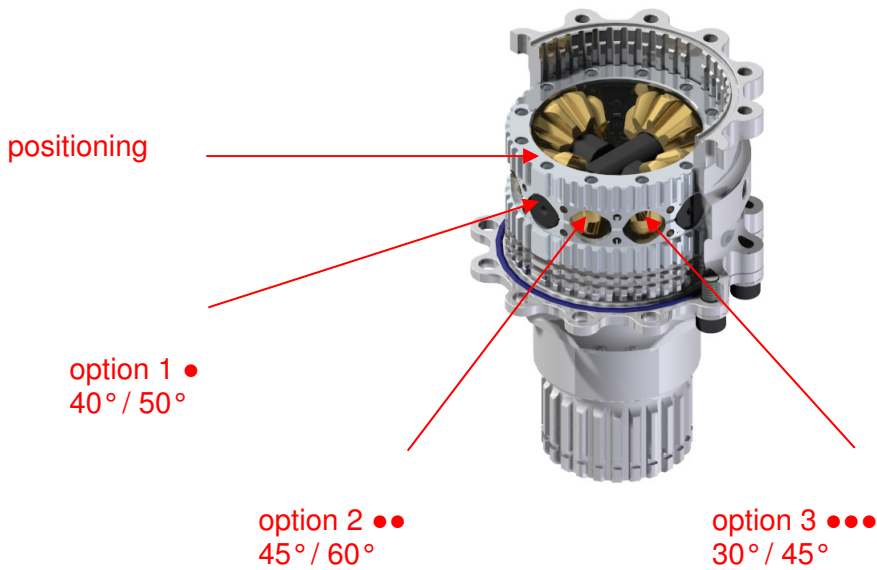
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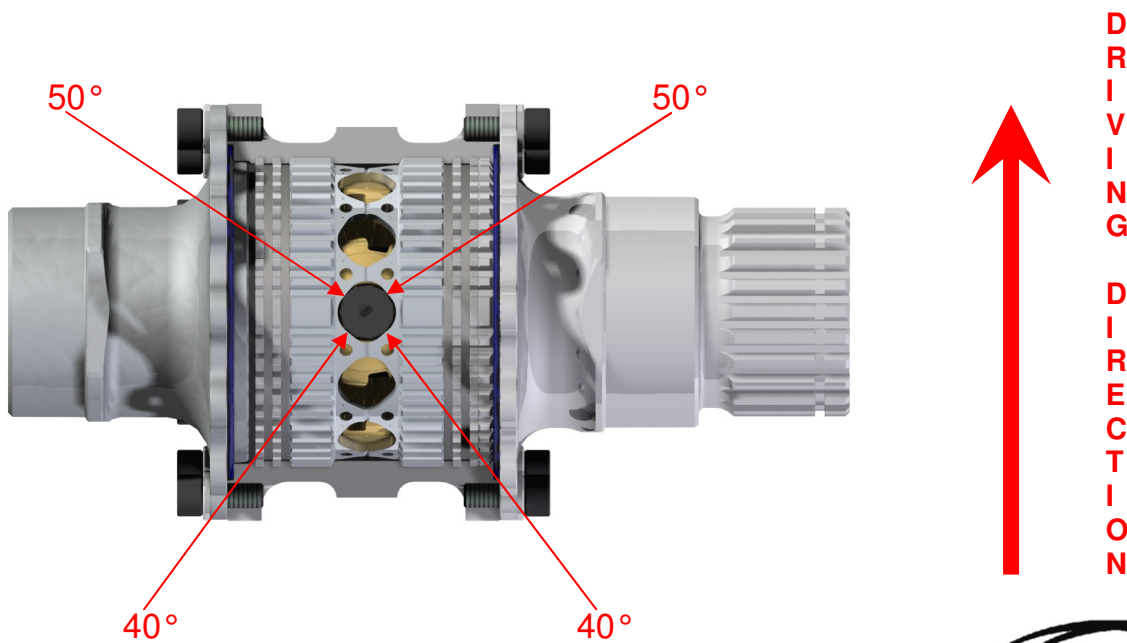
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Ramps have 3 different ramp options. The ramp angles are:

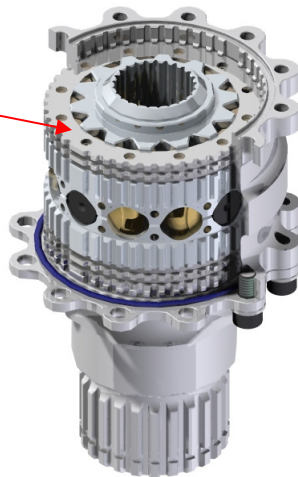


For the first assembly all differentials are assembled in the basic position 40° / 50° and drivetrain on the right side of the vehicle. This means, that the axles (item no. 6) are in option 1 ● (● marking at ramp). In this installation position the angle with 40° determines the acceleration side. The angle with 50° is the deceleration side.

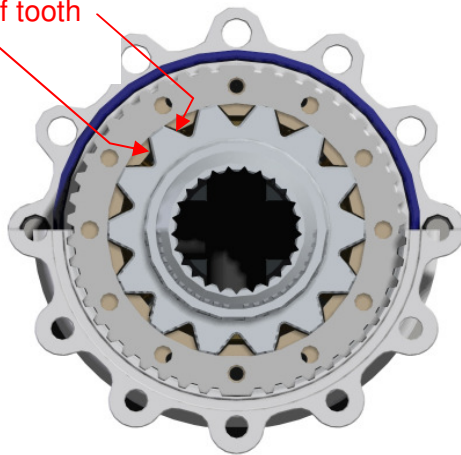


To change the lock-up torque (see page 10) the position of the axles must be rotated and so the differential has to be opened. There are three different adjustments possible. Further there can be gained three more different adjustments by overturning the package of ramps. This leads to a swap of the acceleration and deceleration values.

Apply oil between the friction plates!



Pay attention to alignment of tooth flank!



Place a second layer of friction plates (item no. 8) on the ramp and fit with the gearing of the inner splined friction disc.

Caution: Apply on every friction disc, ramp and friction disc.

Put the discspring preload (item no. 10) on the package and on the second side bevel gear the thrust washer and discspring for thrust washer.



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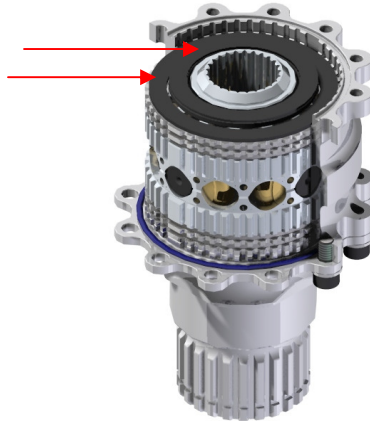
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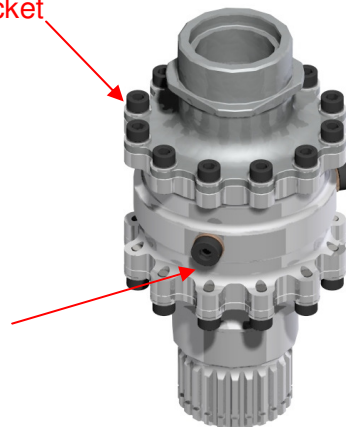
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Apply oil on surfaces and between components!



Altogether there will be used 6 grams of oil per limited slip differential for first assembly or revision. Put the differential cover (item no. 2) on the differential body and fix it with flat washers (item no. 22), O-ring (item no. 24) and 12 pieces of cap screws socket head M6x14 (item no. 23). Here a torque of 15 Nm is used. At the first assembly a preload of 30 – 35 Nm can be reached. This value will go down to 25 – 30 Nm when the differential is used (due to removal of unevenness of the friction discs' coating).

Torque of 12x cap screws socket head M6x14: about 15 Nm!



Tighten screw hand-tight



On the side of the differential body there are three copper washers (item no. 26) and three cap screws socket head (item no. 25). These can be used to fill in the oil (**Castrol SAF-XJ-oil**), without undertaking a revision. Further the screws work during the filling and draining as aeration of the system.

Normally (with consultation of teams) the fill quantity is 6 cl. Firstly it should be cared for, that the oil can drain out of the differential. After every longer test or race the differential should be opened and cleaned (due to removal of unevenness of the friction disc's coating).

Following tighten the screw hand-tight.

Caution:

At the insertion of the flanges the screws should be tightened with 25 Nm. At a revision or amendment of the differentials' setup it is important to make sure that the layers remain in the same order as during the first assembly.

The chainwheel adapter should be heated up to 50° - 60°C before assembly, if the part does not fit properly on the gearing of the diff body.

Ramp angles and belonging theoretical lock-up torques in percent:

30°	→	ca. 88 %
40°	→	ca. 60 %
45°	→	ca. 51 %
50°	→	ca. 42 %
60°	→	ca. 29 %

