SIMPLY
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Direct Shift Gearbox

коробки передач

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Рычаг АКПП

Рычаг переключения передач для обоих типов коробок

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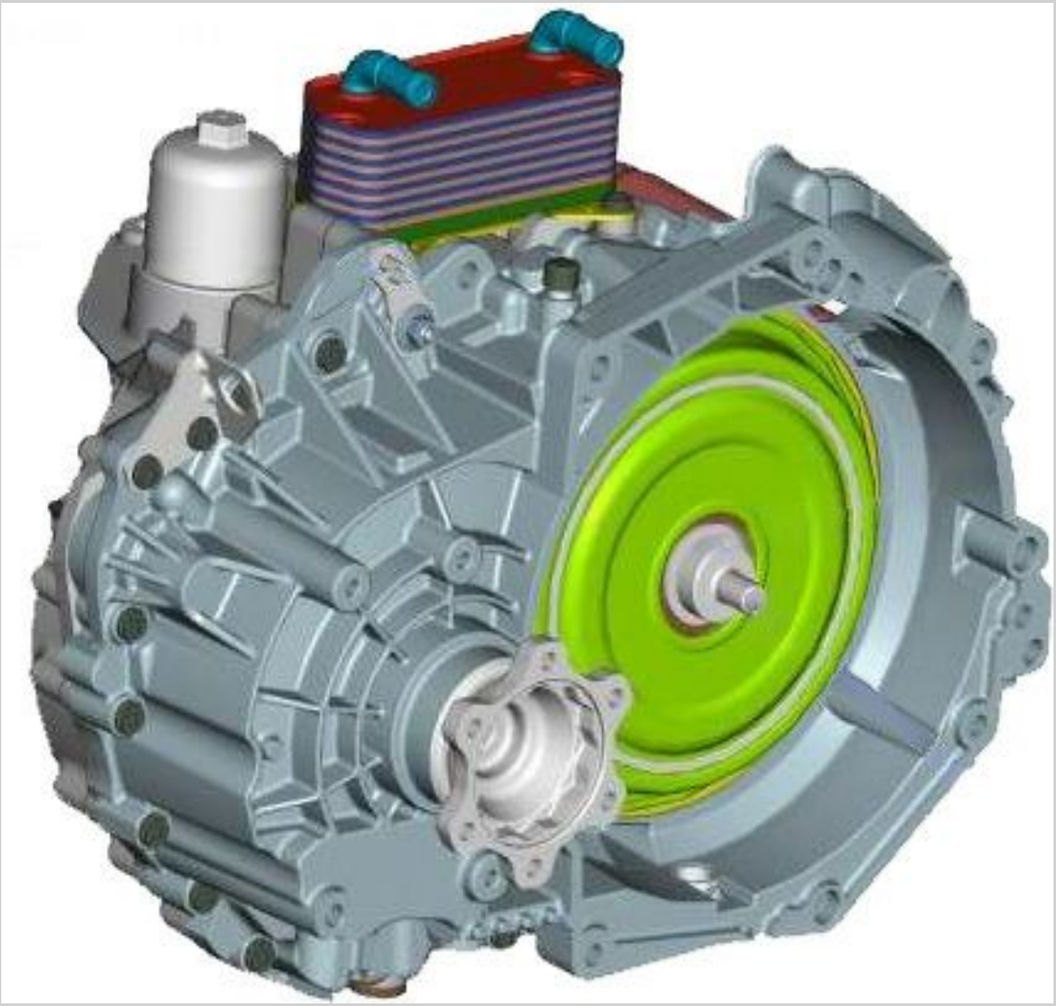
Коробка передач 02E



Мкр: до 325Nm

Общее передаточное отношение: 8,1:1

Масло: G 052 182 (6,4l)

Вес: около 80kg

Тип КПП : полностью синхронизированная, с электрогидравлическим управлением, с двумя сцеплениями, работающими в масле.

Управление: Мехатроник (гидравлический и электронный блоки объединены в один).

Динамическая программа включения передач DSP и Типтроник

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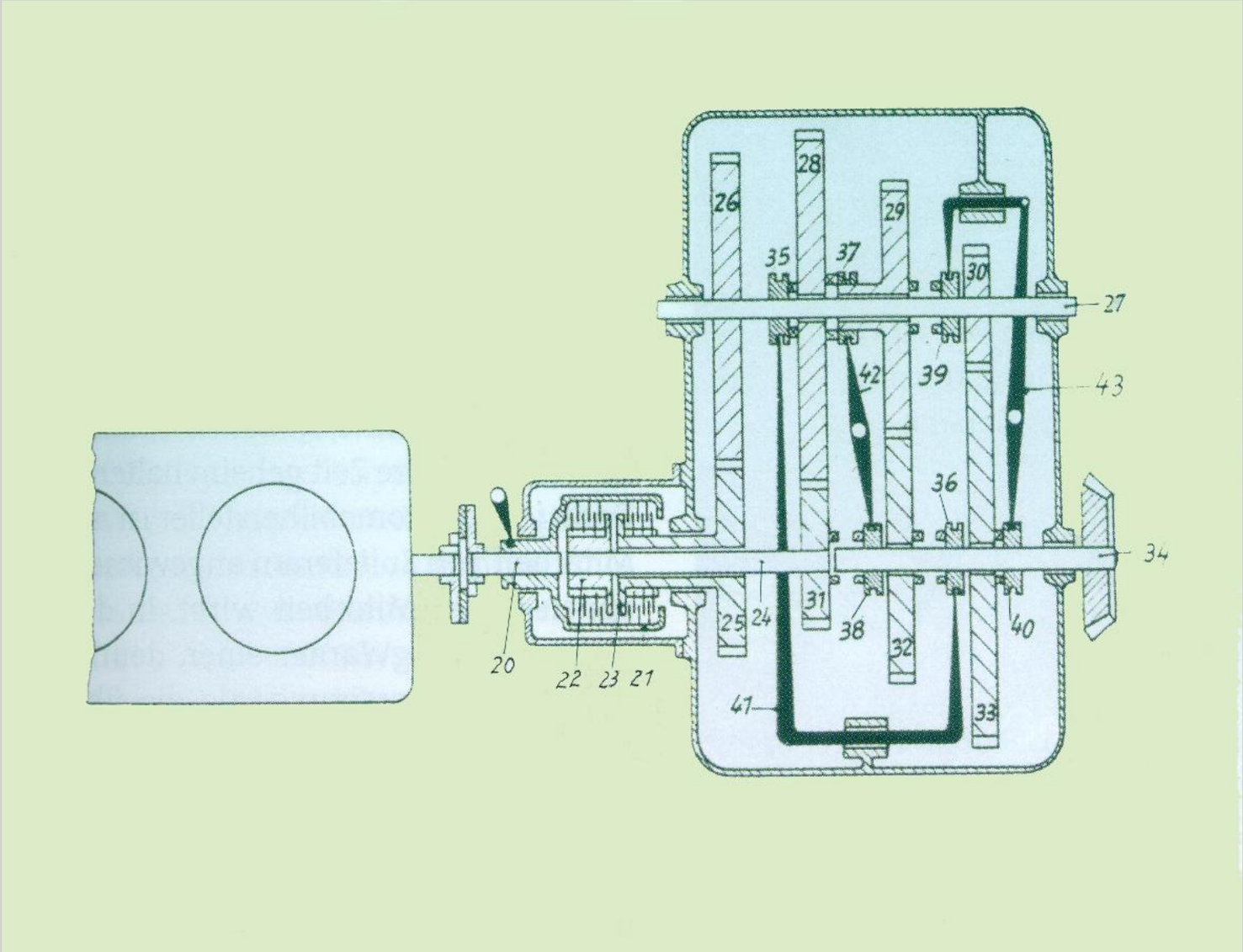
Первоначальная схема системы двойного сцепления



1940 Rudolf Franke

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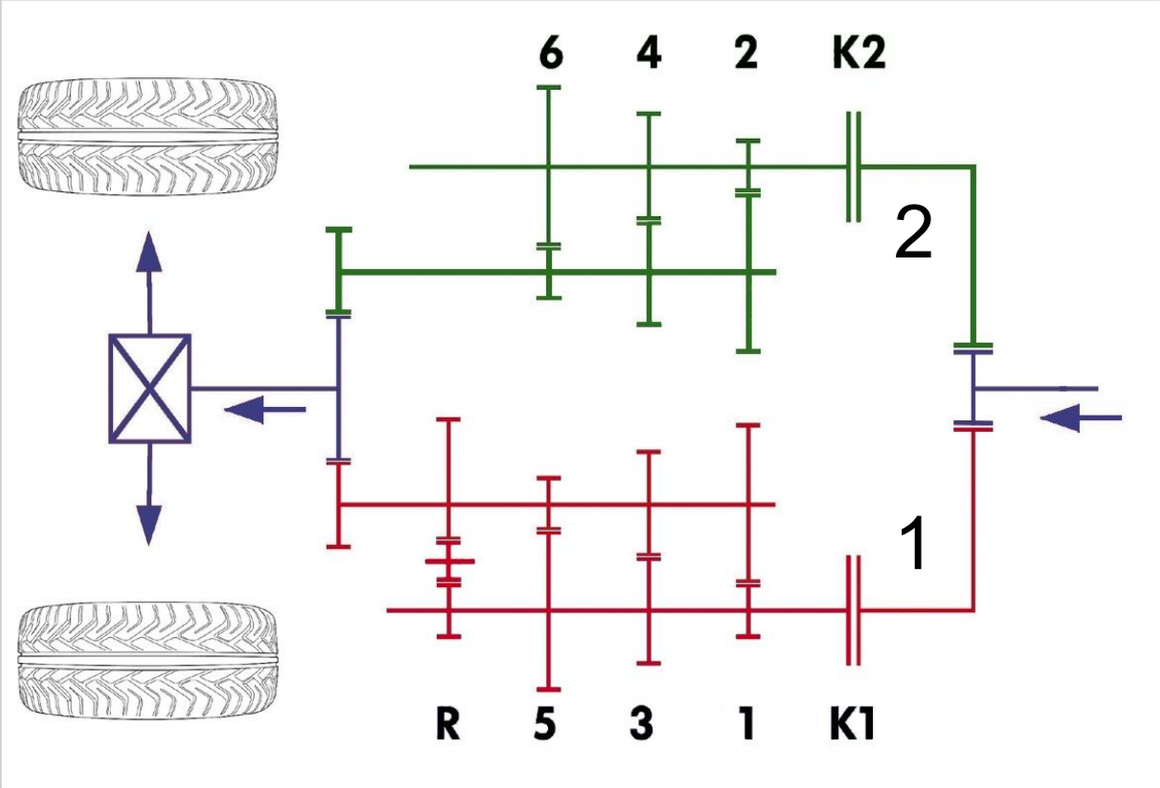
Коробка передач 02E

Схема 6-ступенчатой коробки с двумя сцеплениями.



Принципиально новая конструкция – АКПП состоит из двух частей:
Часть 1 – многодисковое сцепление К1 с валом 1
Часть 2 – многодисковое сцепление К2 с валом 2

На валу 1 находятся шестерни 1,3,5 и задней передач.

На валу 2 находятся шестерни 2,4 и 6 передач.

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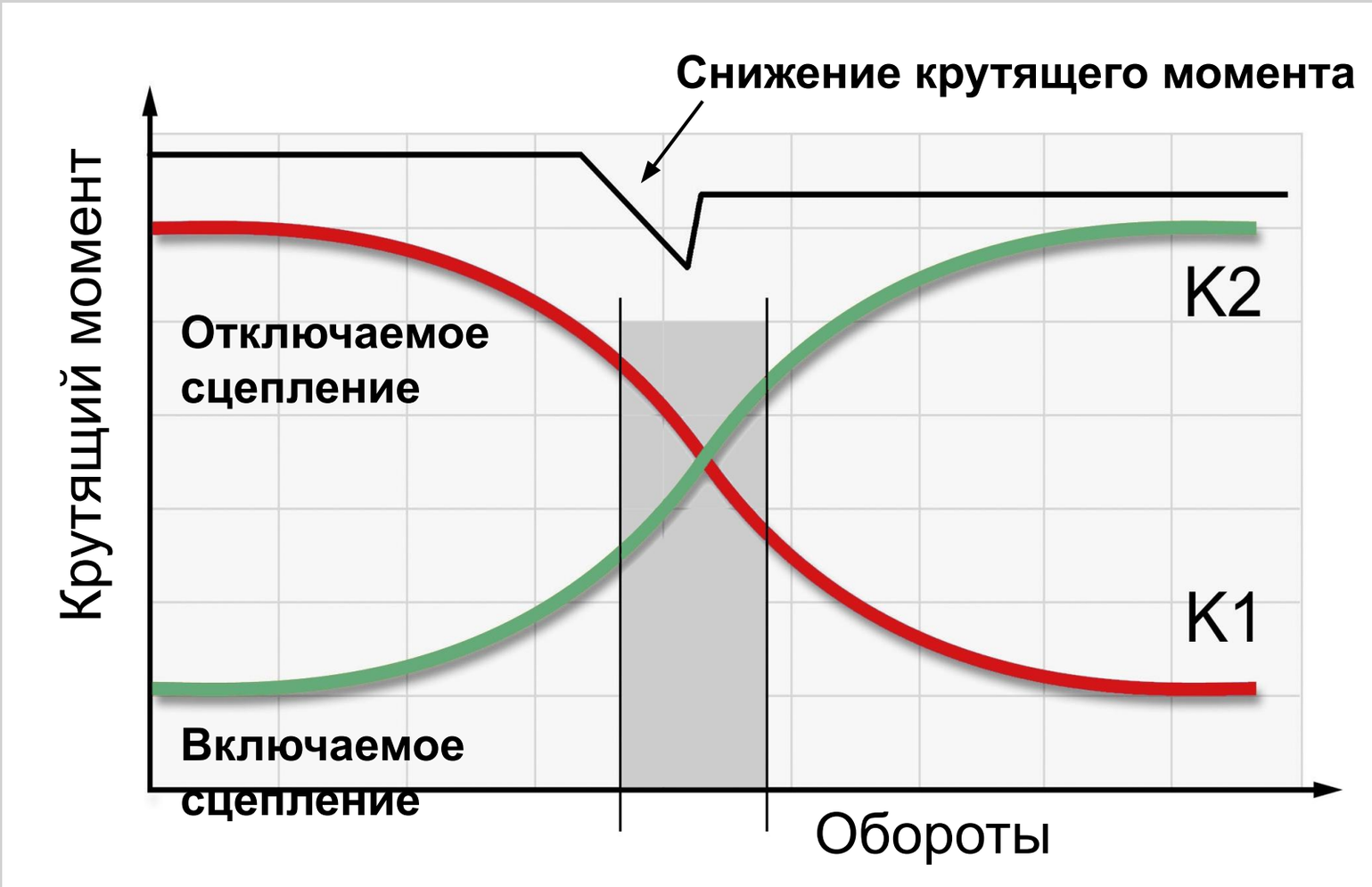
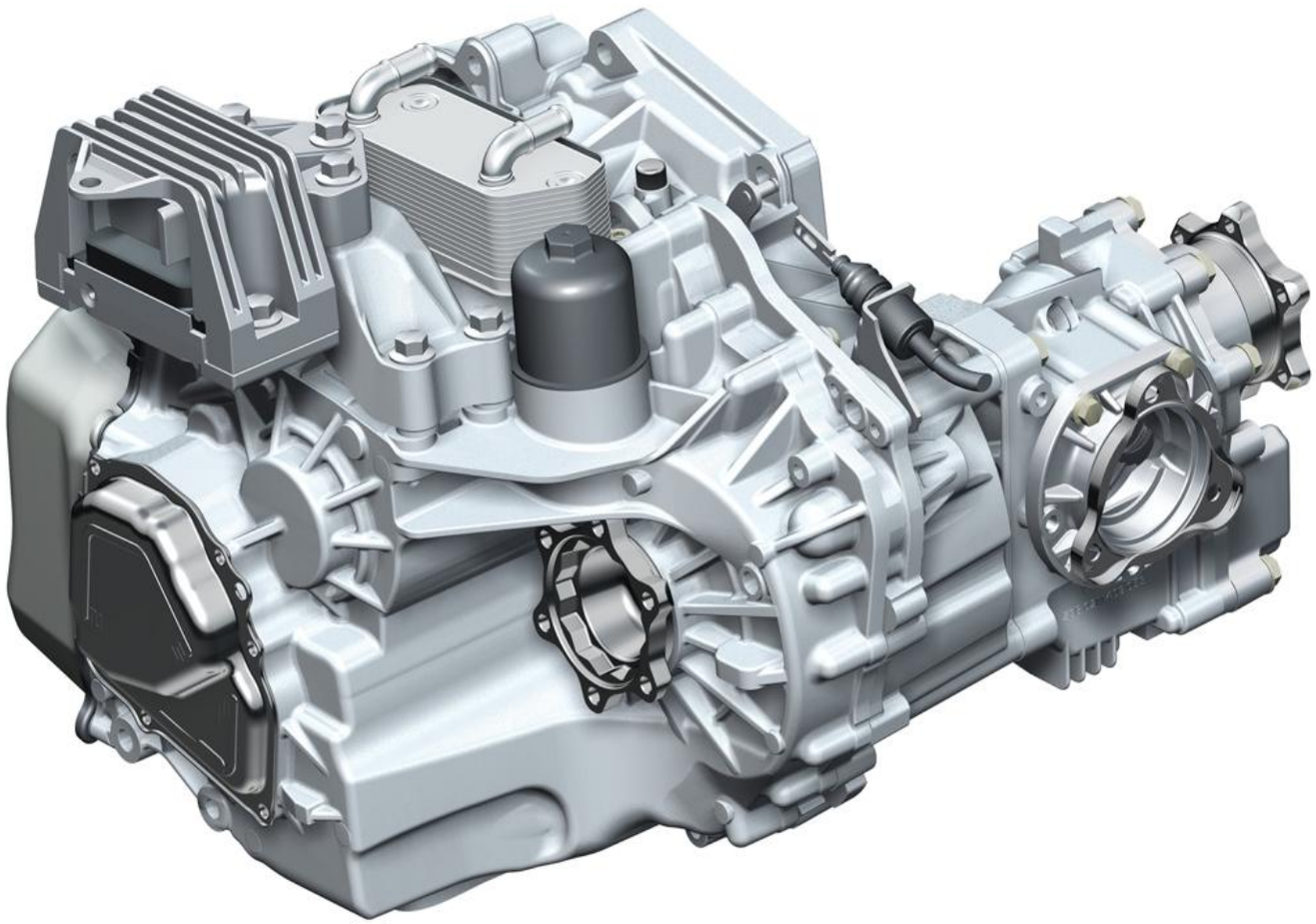
Процесс переключения передач



SIMPLY
CLEVER

Коробка передач 02E



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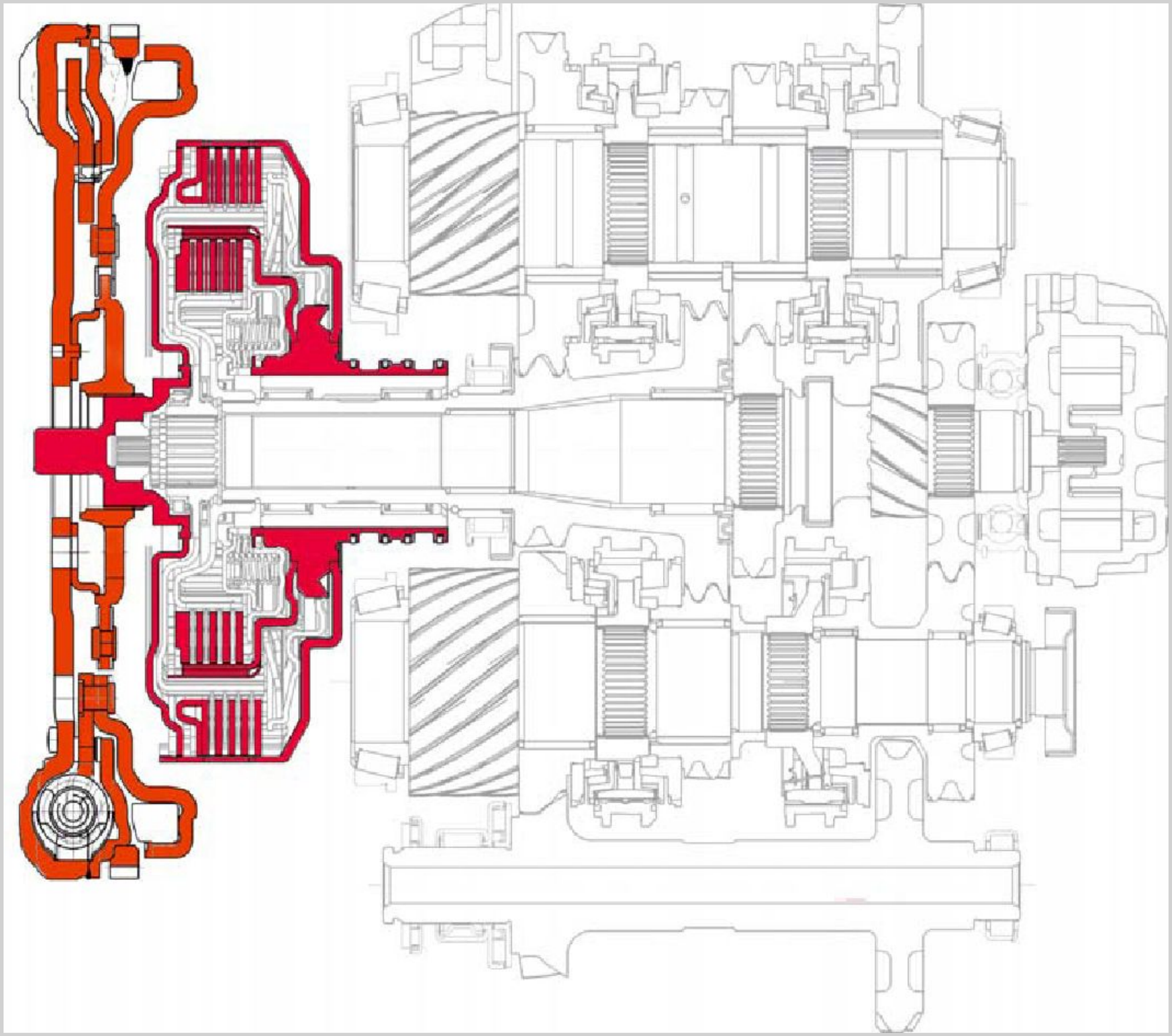
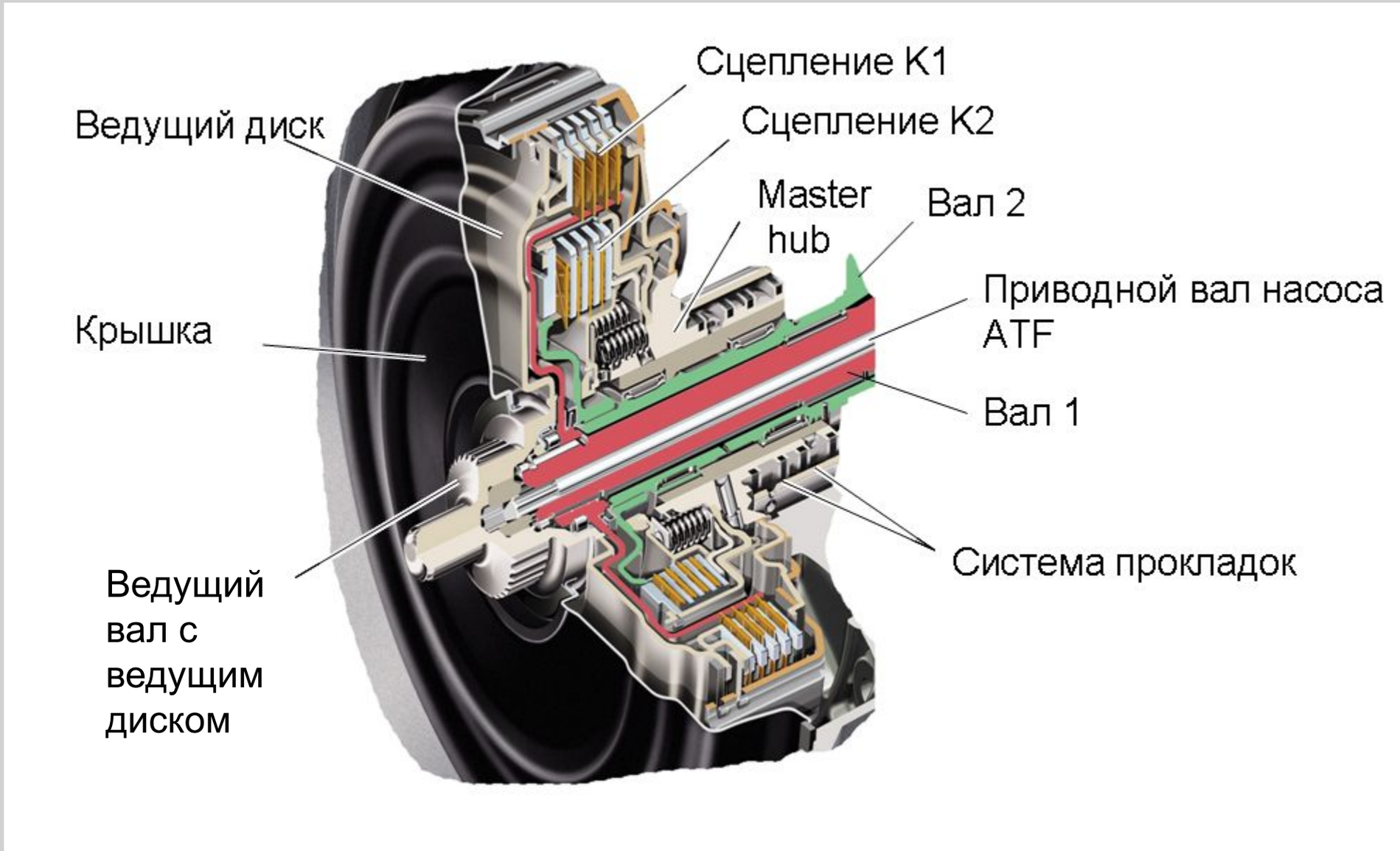
CLEVER

Передача крутящего момента от ДВС



SIMPLY
CLEVER

Комбинация сцеплений



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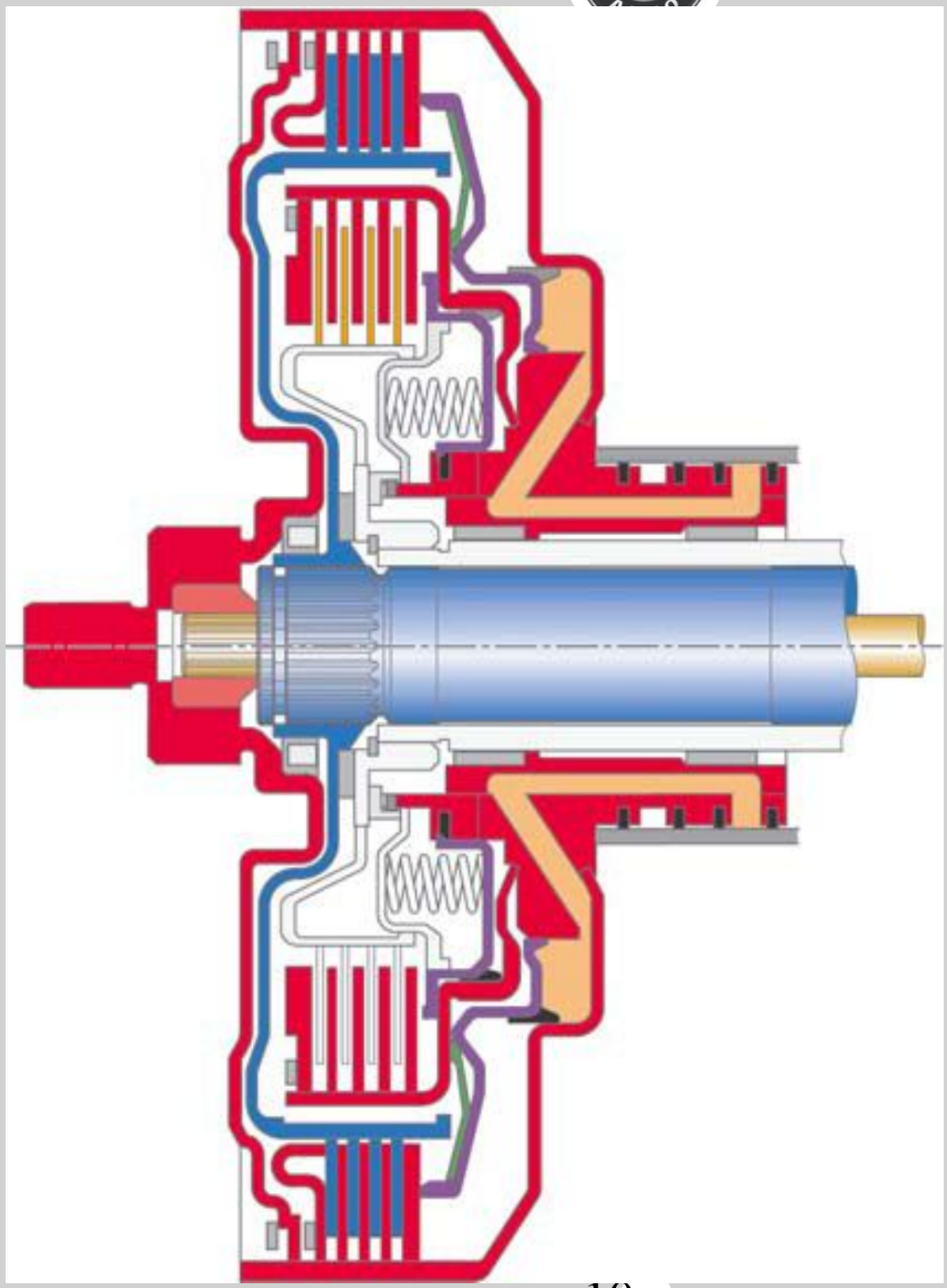
Муфта К1 (внешняя)

- Передачи:

- 1
- 3
- 5
- R



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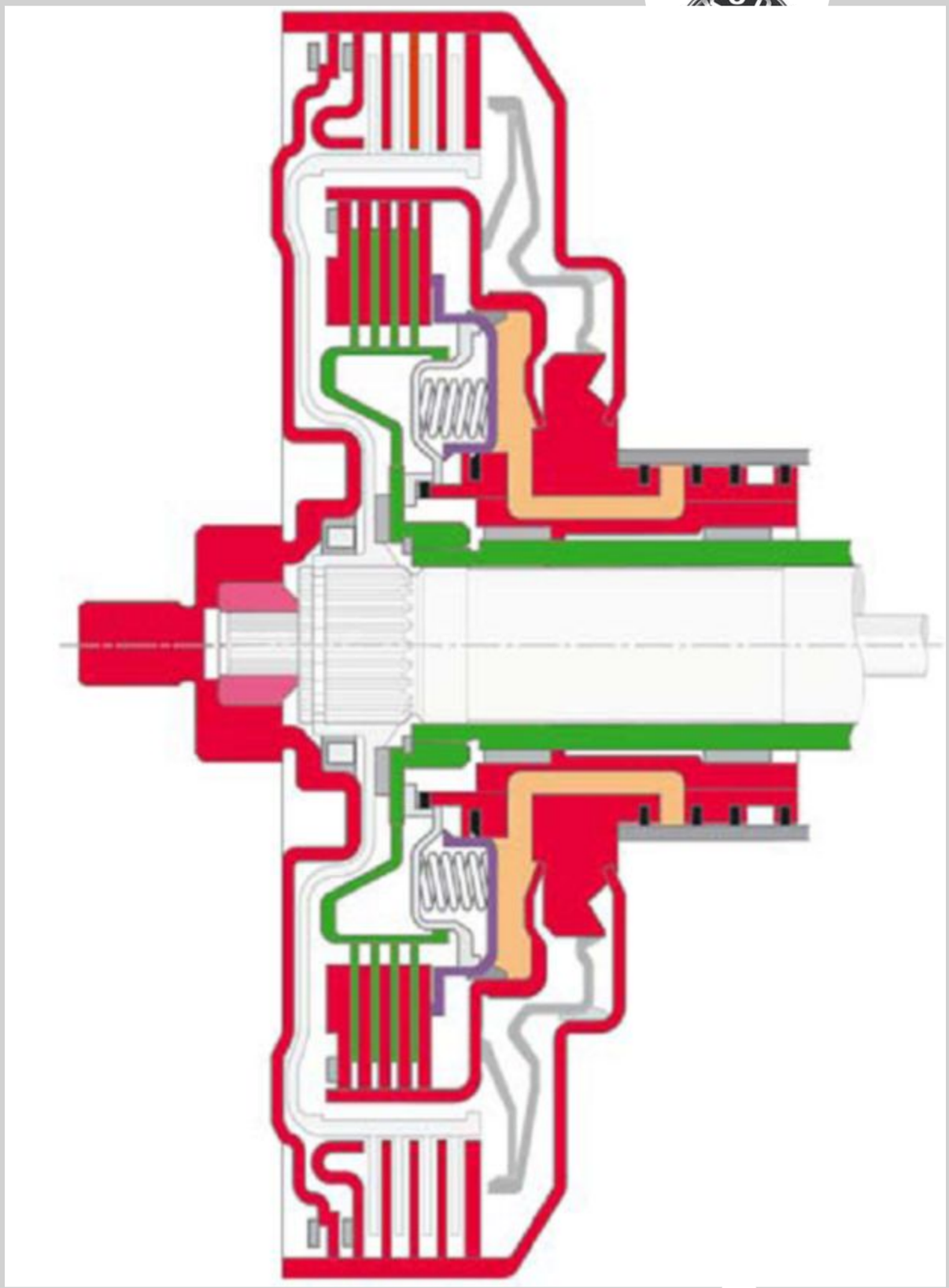
Муфта К2

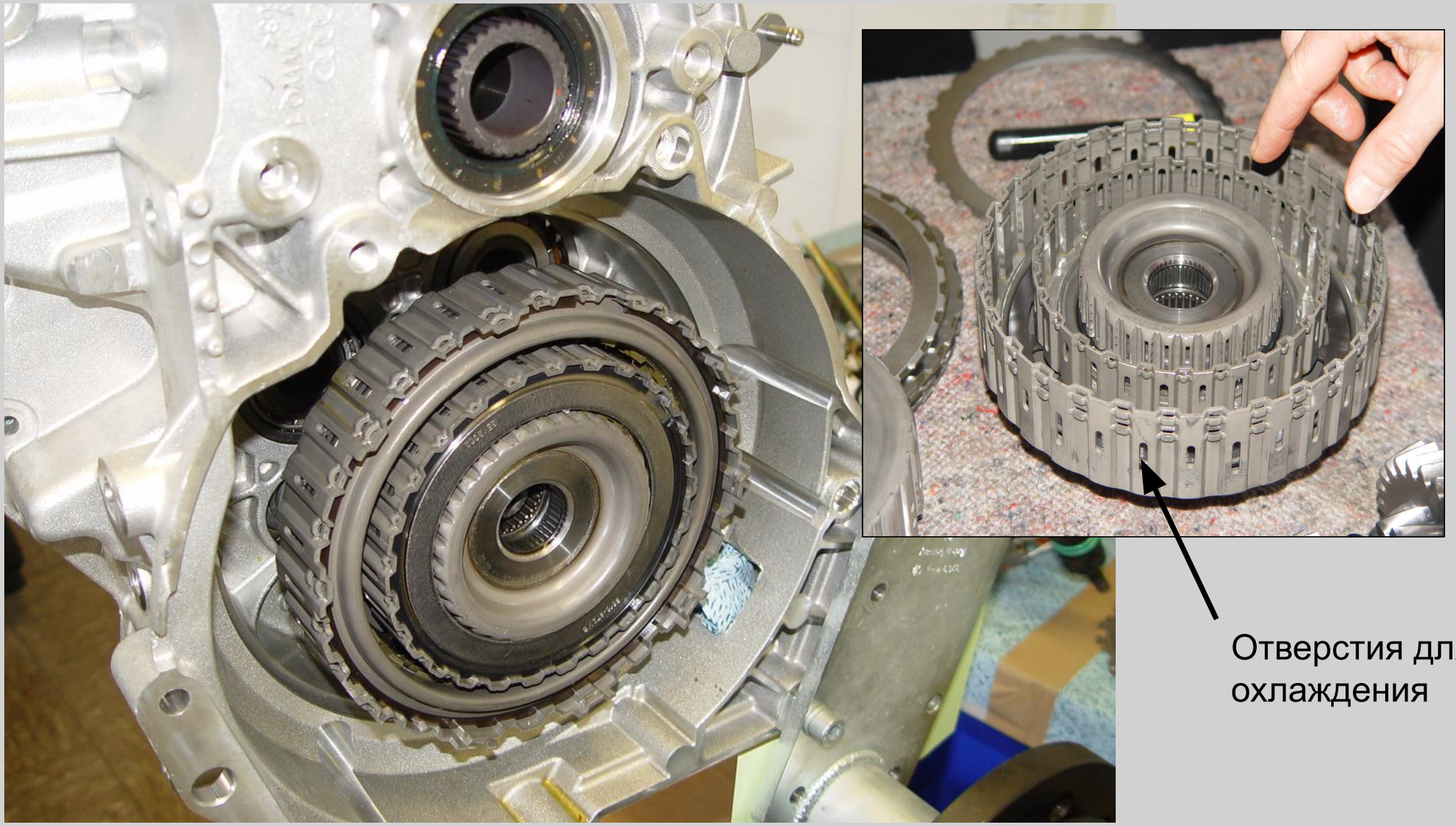
- Передачи

- 2
- 4
- 6



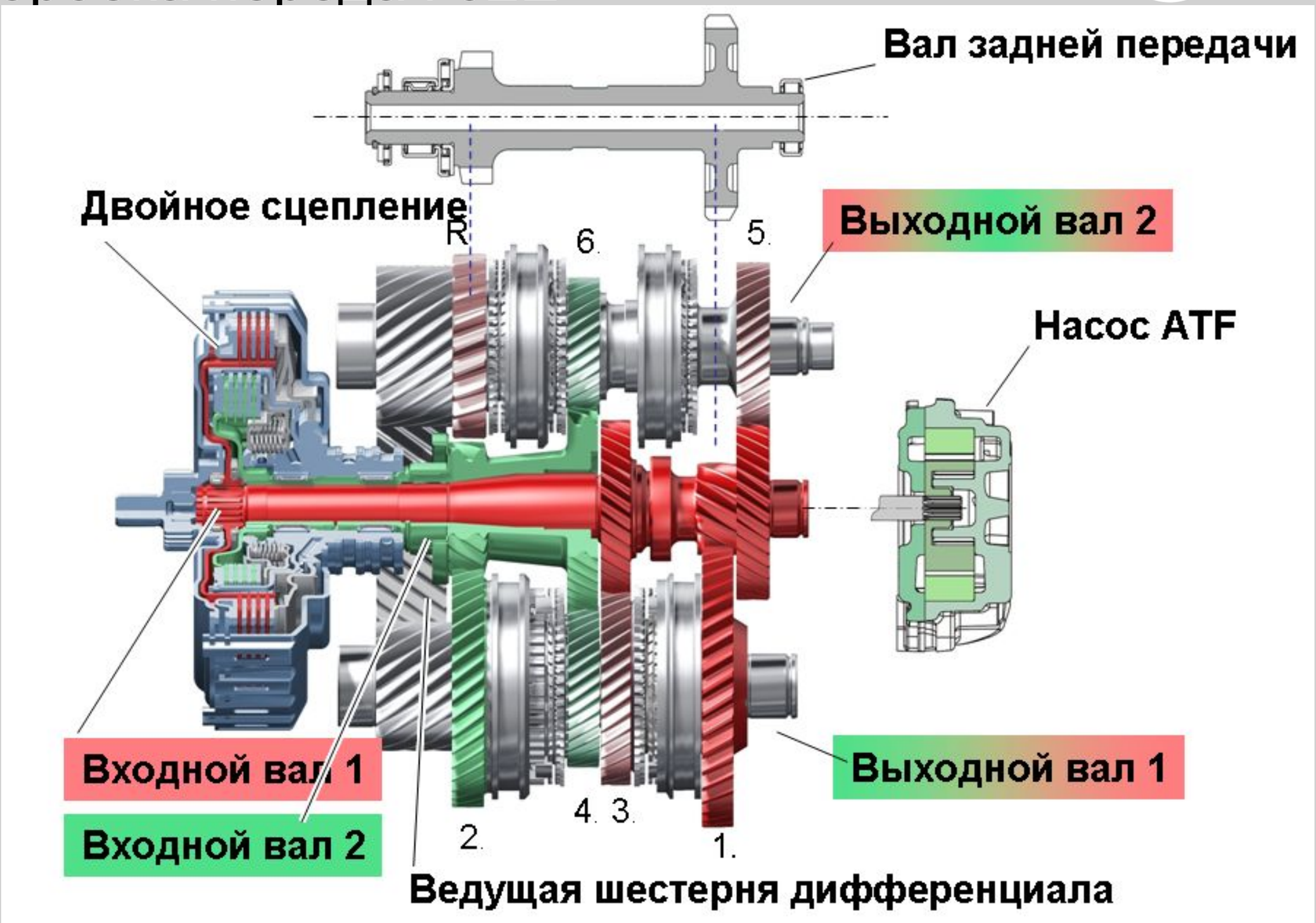
SIMPLY
CLEVER

Сцепление



SIMPLY CLEVER

Коробка передач 02E



SIMPLY CLEVER

Передаточные числа коробок DSG

Автоматическая коробка передач “DSG – 02E“			02E		
Коробка передач	Буквенное обозначение		HFQ	HLH	HQL
	Выпуск	с по	11.04 05.05	08.04 05.05	06.05 11.05
Правильный подбор	Двигатель		2,0 л - 100 кВт TDI 2,0 л - 103 кВт TDI	1,9 л - 77 кВт TDI	2,0 л - 100 кВт TDI 2,0 л - 103 кВт TDI
Передаточное число: Z2 : Z1	главная передача с 1–ой по 4–ую передачи		70 : 17 = 4,118	70 : 16 = 4,375	70 : 17 = 4,118
	раздаточная коробка 5–ой и 6–ой передач		70 : 23 = 3,043	70 : 21 = 3,333	70 : 23 = 3,043
Передаточные отношения	1. передача		45 : 13 = 3,462	45 : 13 = 3,462	45 : 13 = 3,462
	2. передача		41 : 20 = 2,050	41 : 20 = 2,050	41 : 20 = 2,050
	3. передача		39 : 30 = 1,300	39 : 30 = 1,300	39 : 30 = 1,300
	4. передача		37 : 41 = 0,902	37 : 41 = 0,902	37 : 41 = 0,902
	5. передача		32 : 35 = 0,914	32 : 35 = 0,914	32 : 35 = 0,914
	6. передача		31 : 41 = 0,756	31 : 41 = 0,756	31 : 41 = 0,756
	передача заднего хода		33 : 13 x 22 : 14 = 3,989	33 : 13 x 22 : 14 = 3,989	33 : 13 x 22 : 14 = 3,989
$i_{общ.}$ на максимальной скорости			2,300	2,520	2,300
Фланец карданного вала Ø			100 мм	100 мм	100 мм

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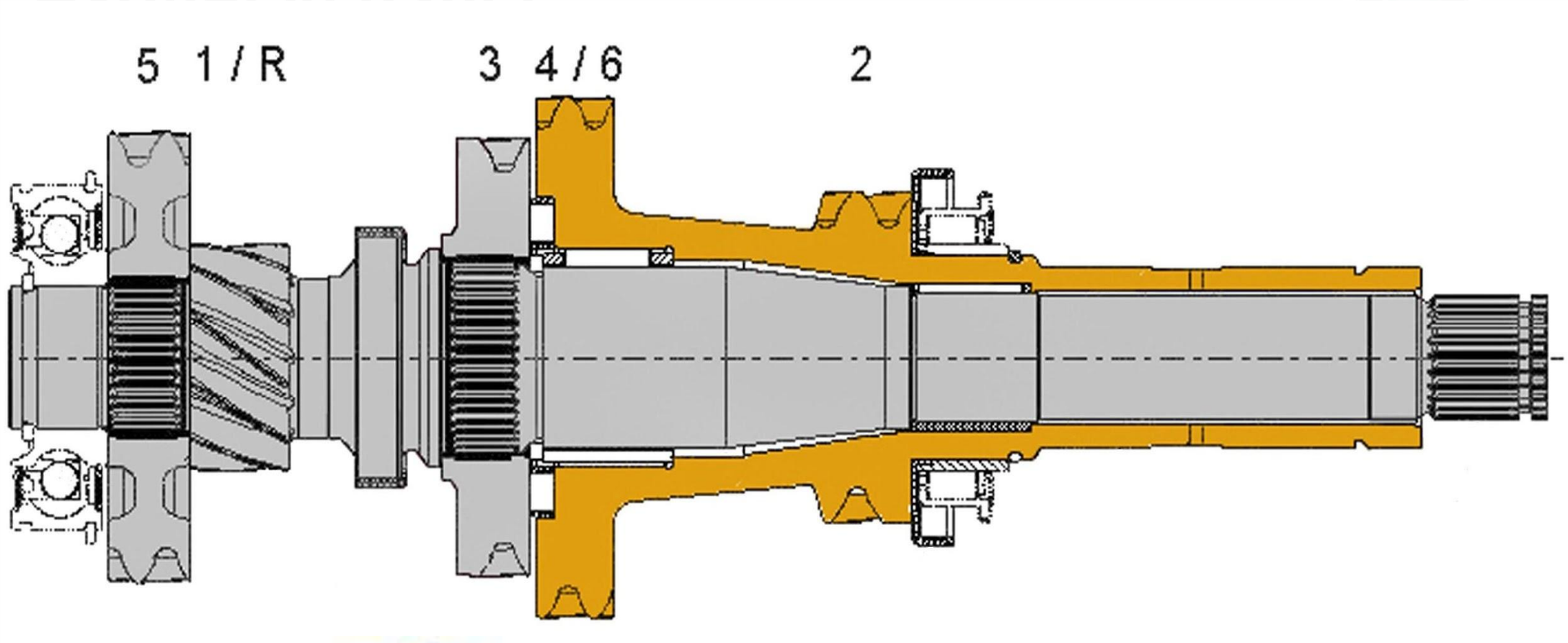
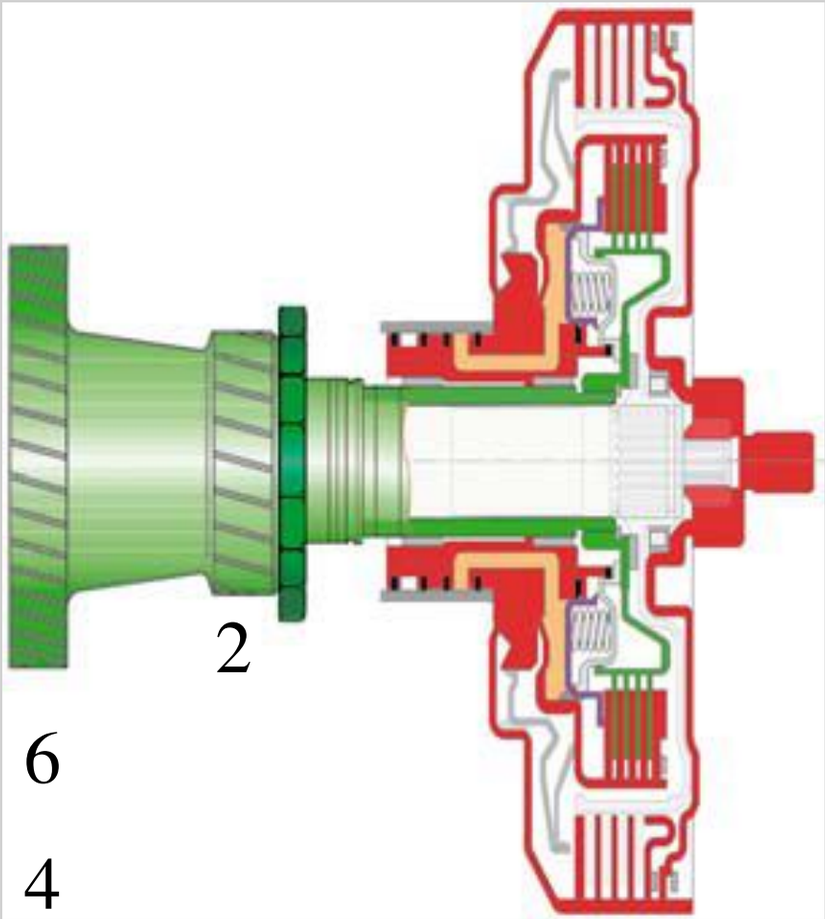
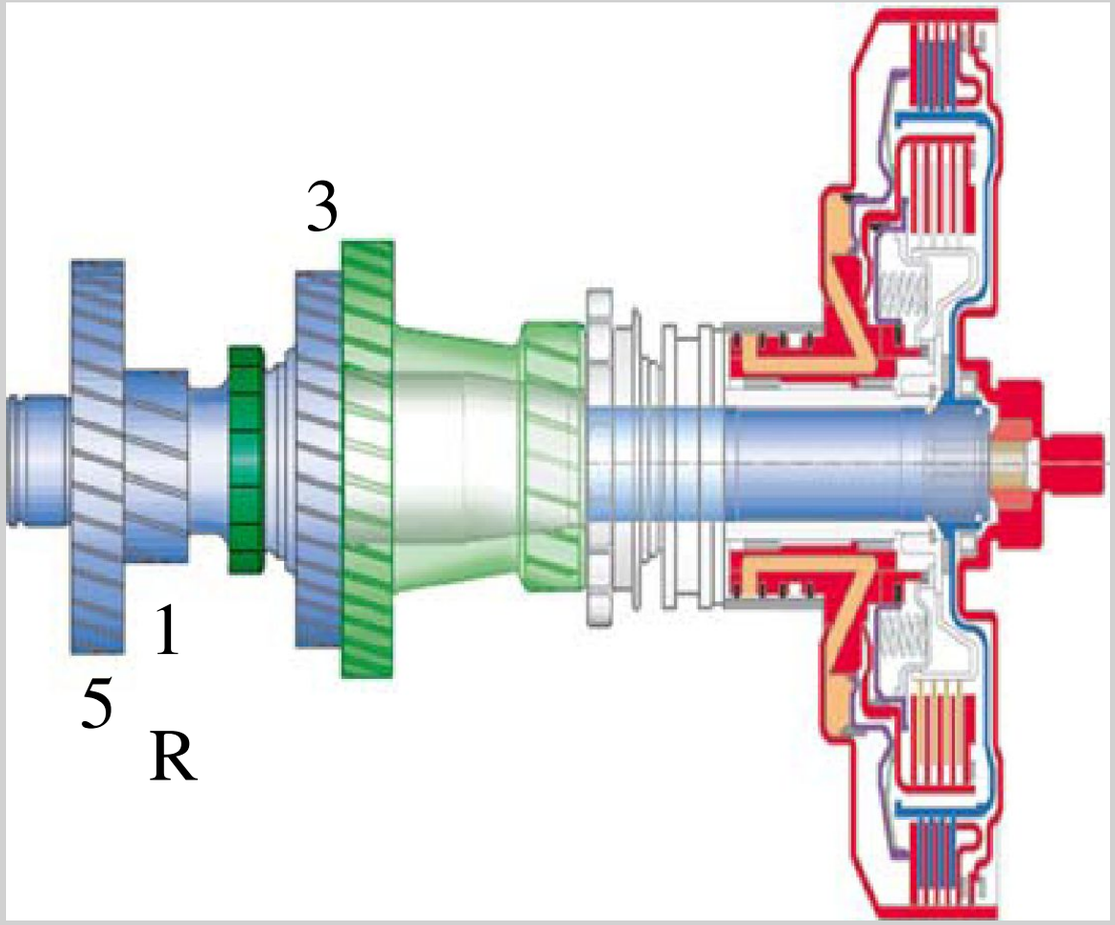
Входные валы



1

R





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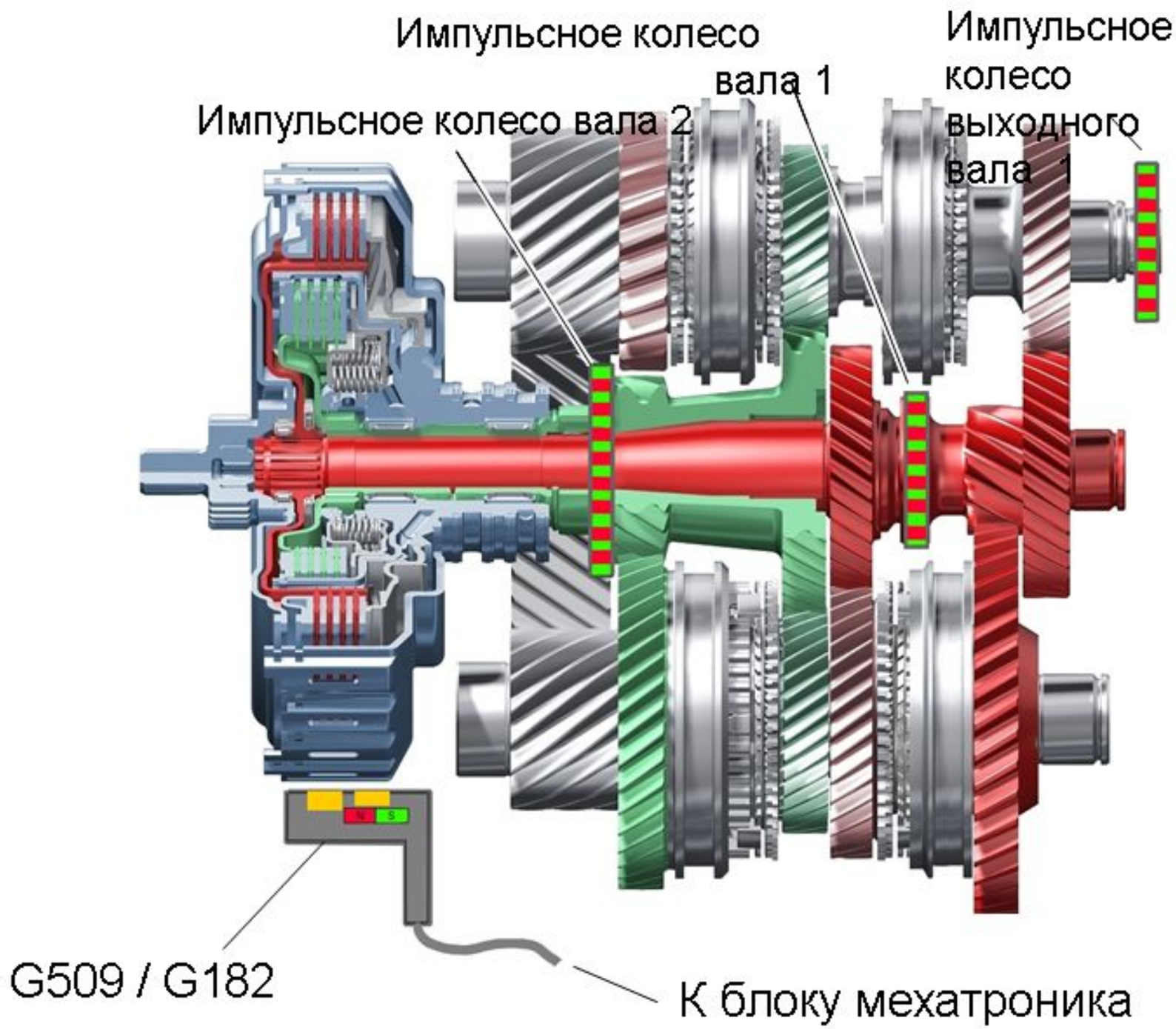
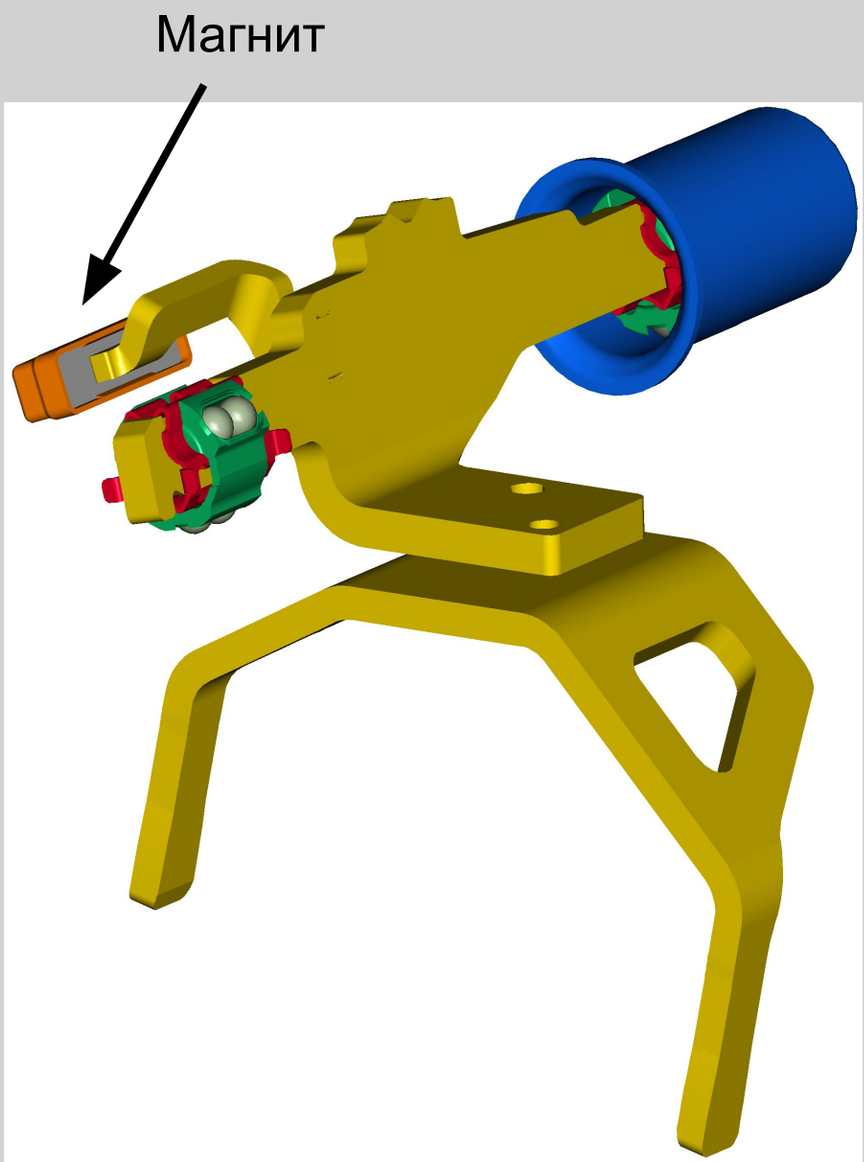
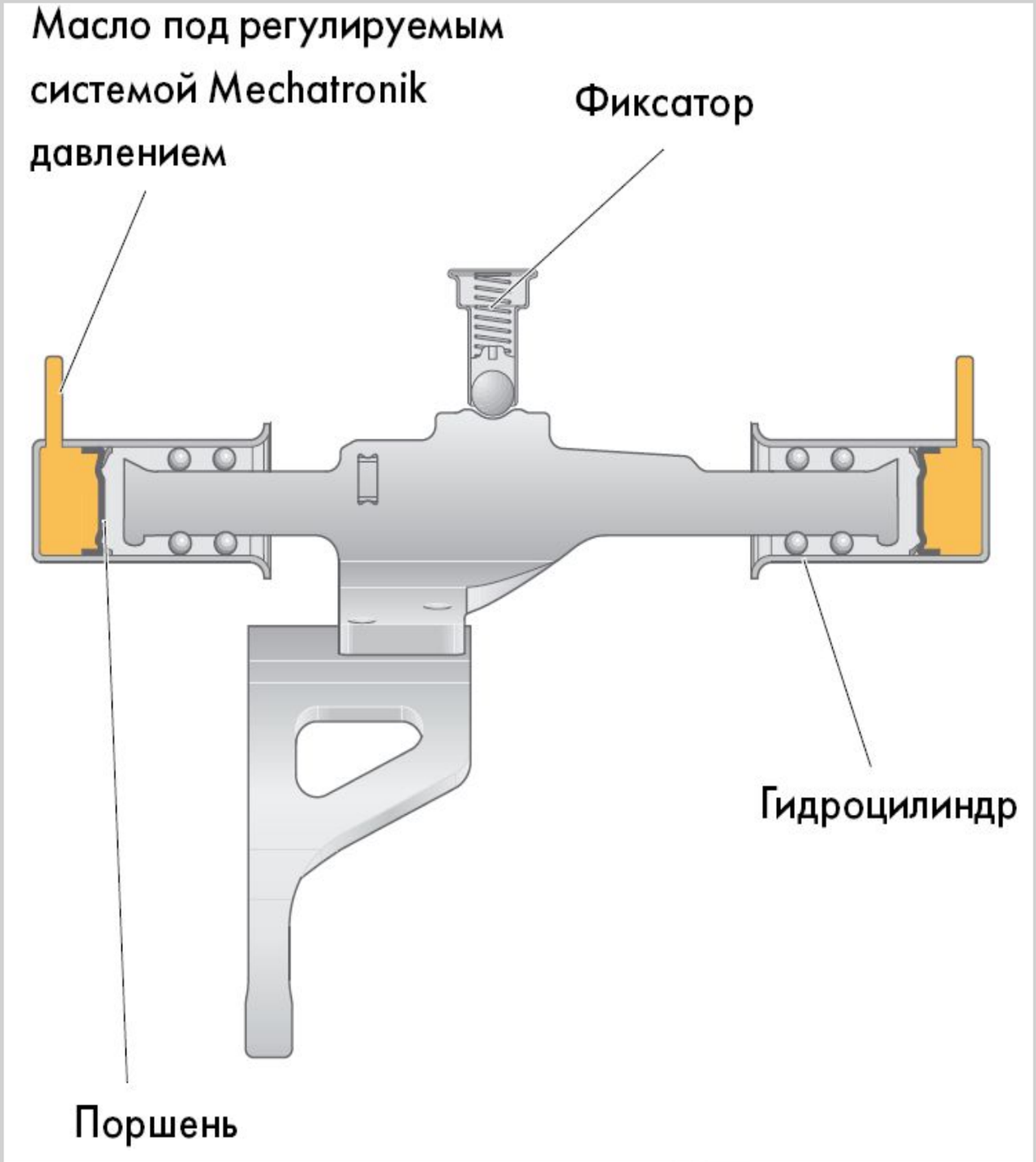
Датчики вращения



Вилка включения передач





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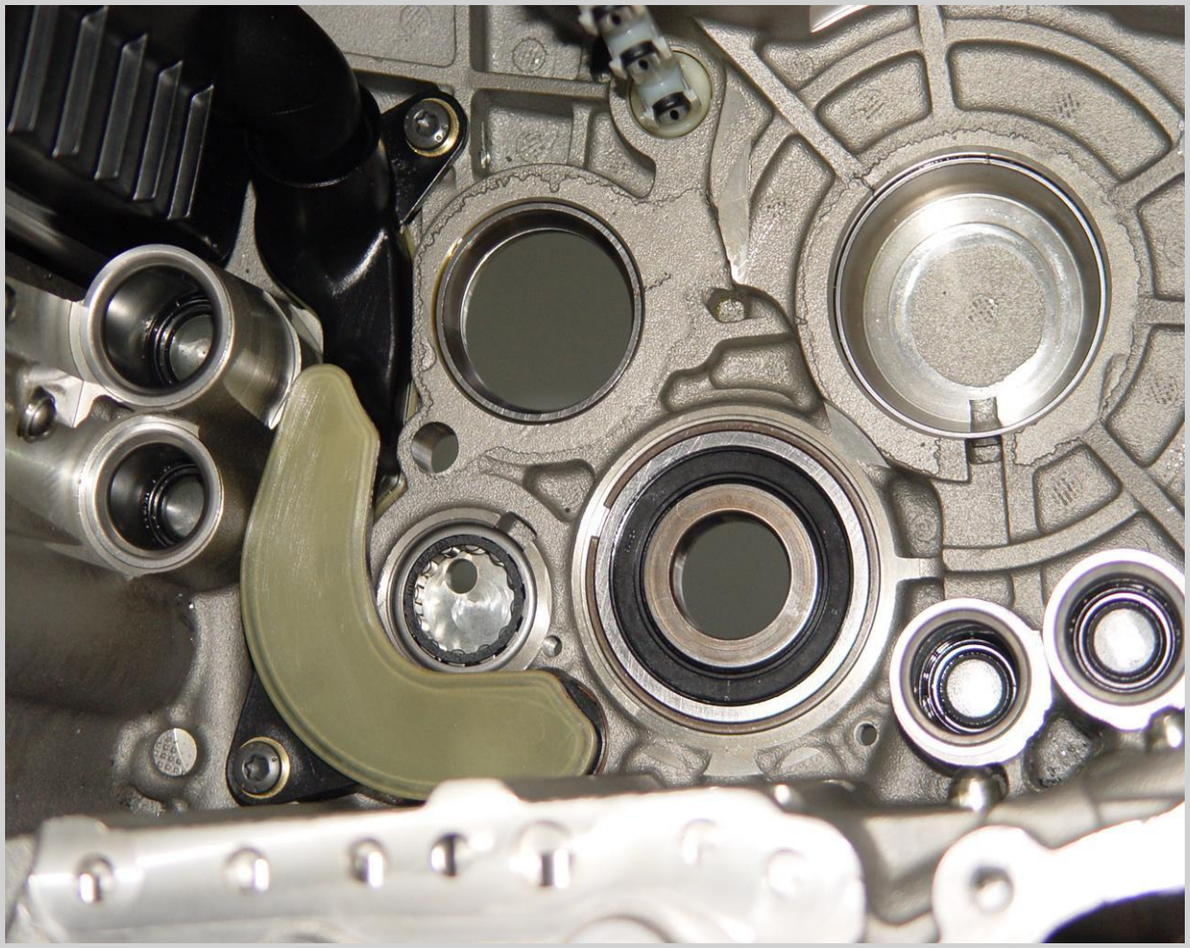
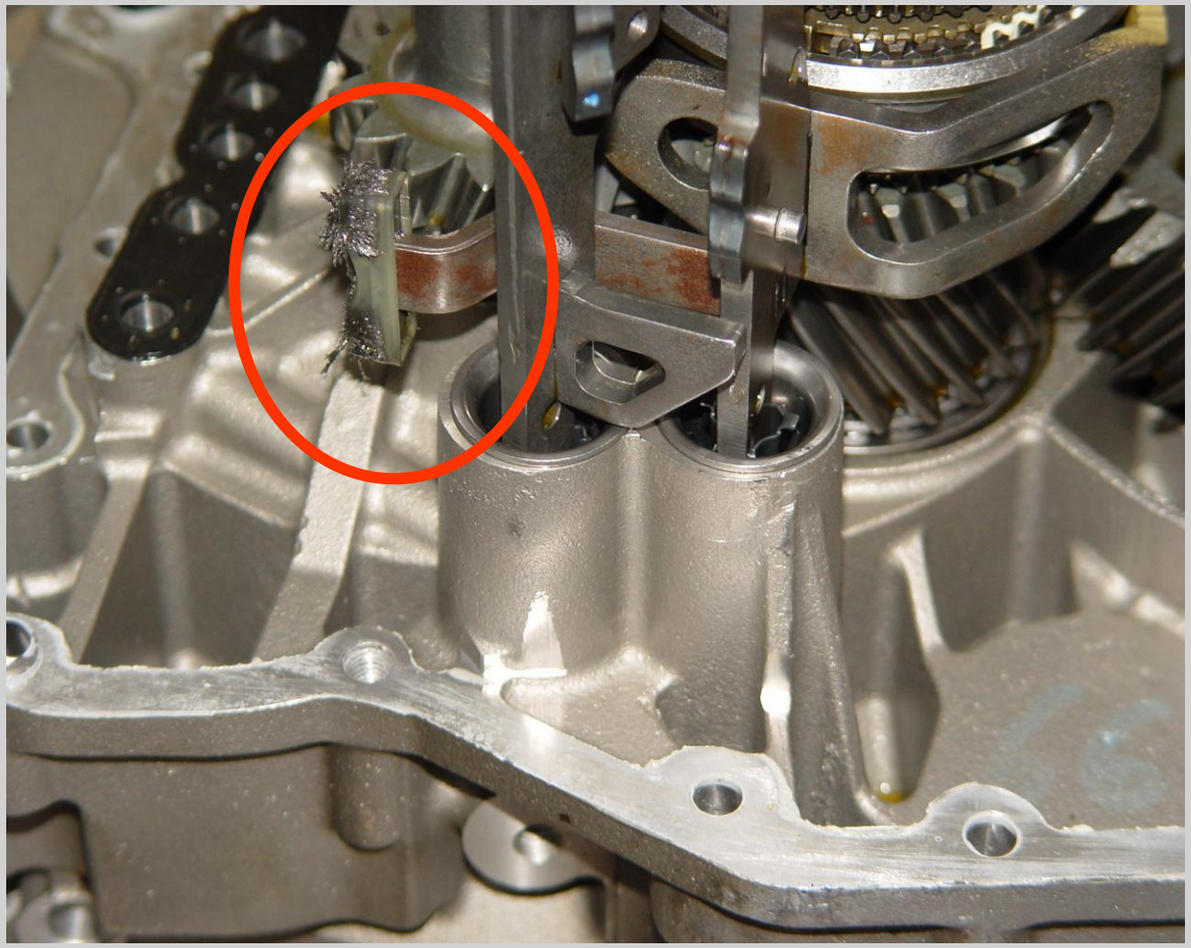
Вилка включения передач





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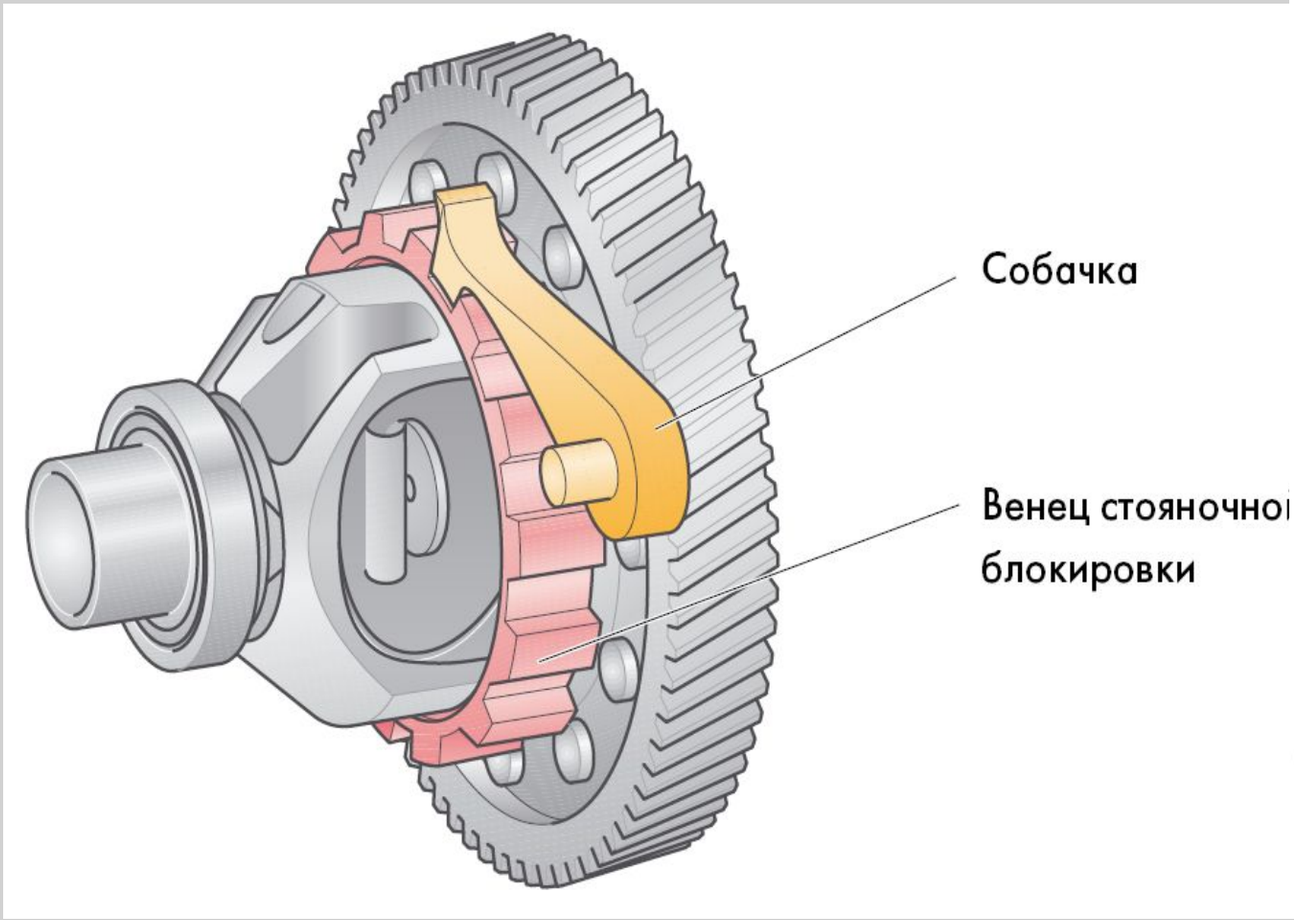
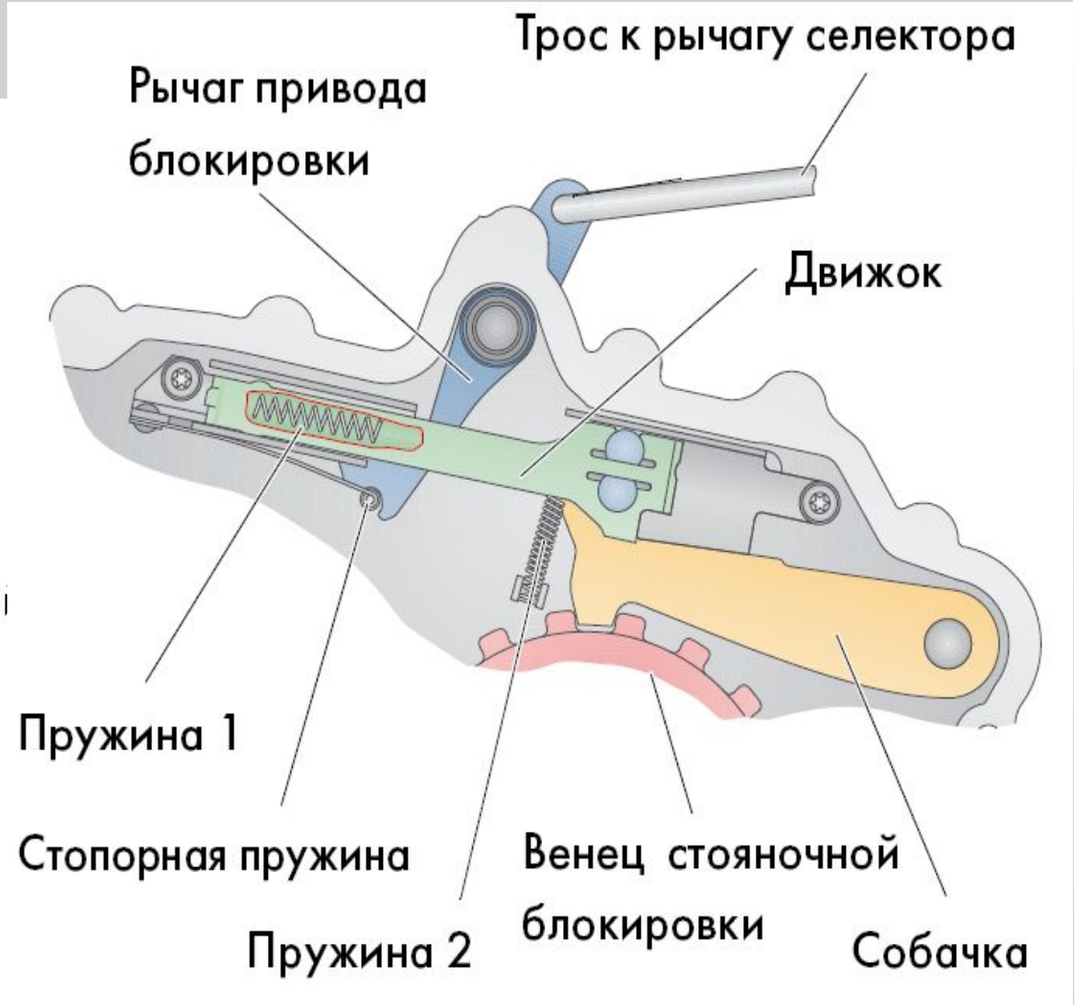
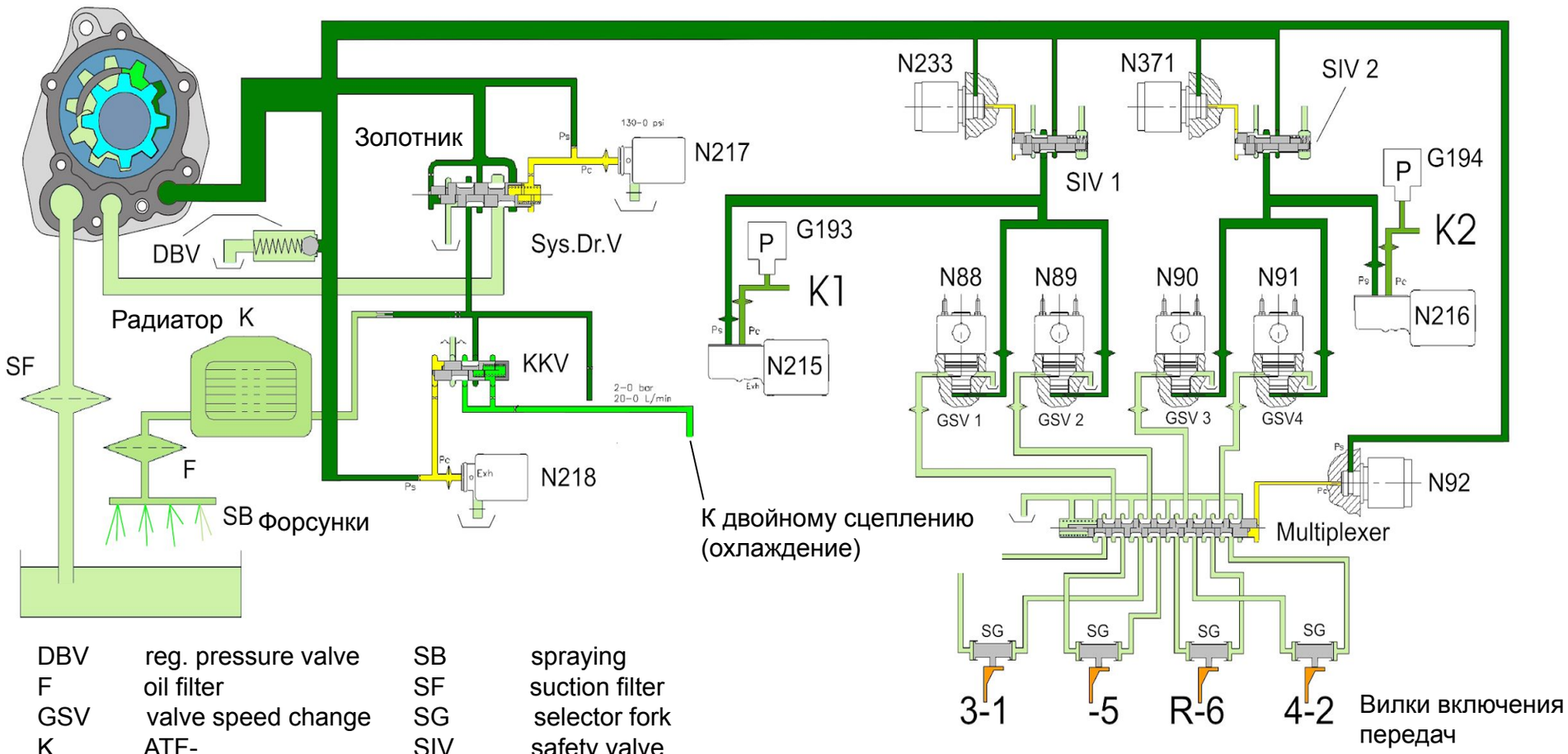
Блокировка при паркинге





Гидравлическая система



DBV	reg. pressure valve	SB	spraying
F	oil filter	SF	suction filter
GSV	valve speed change	SG	selector fork
K	ATF- heat exchanger	SIV	safety valve
		Sys.Dr.V	valve system pressure
K1	clutch 1	G193	sensor hydr. pressure 1
K2	clutch 2		
KKV	valve cool. clutch	G194	sensor hydr. pressure 2

N88 - N92	magnet. valve	1-5
N215 - N218	el.pressure valve (EDS)	1-4
N233	el.pressure valve (EDS)	5
N371	el. pressure valve (EDS)	6

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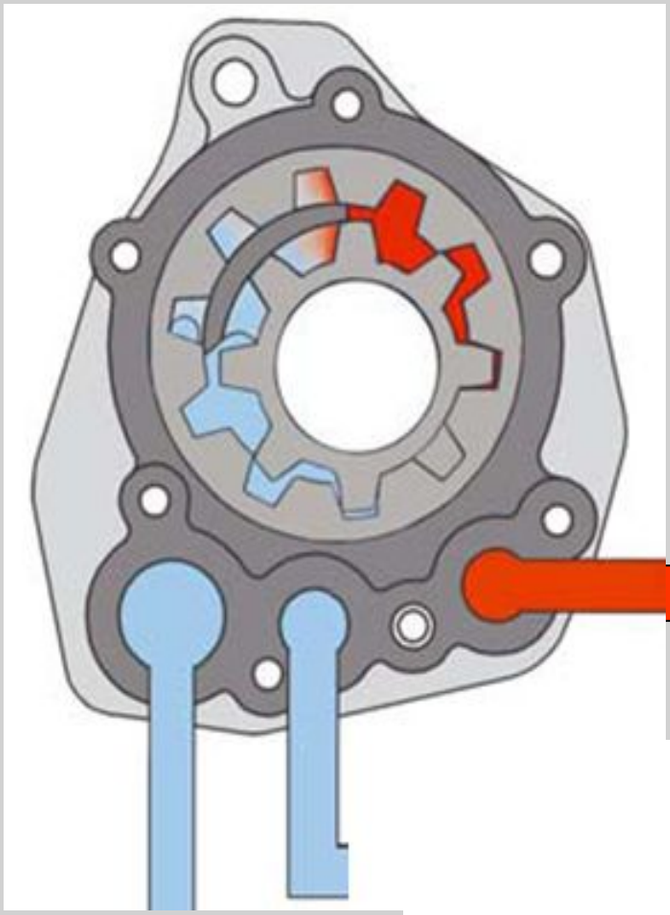
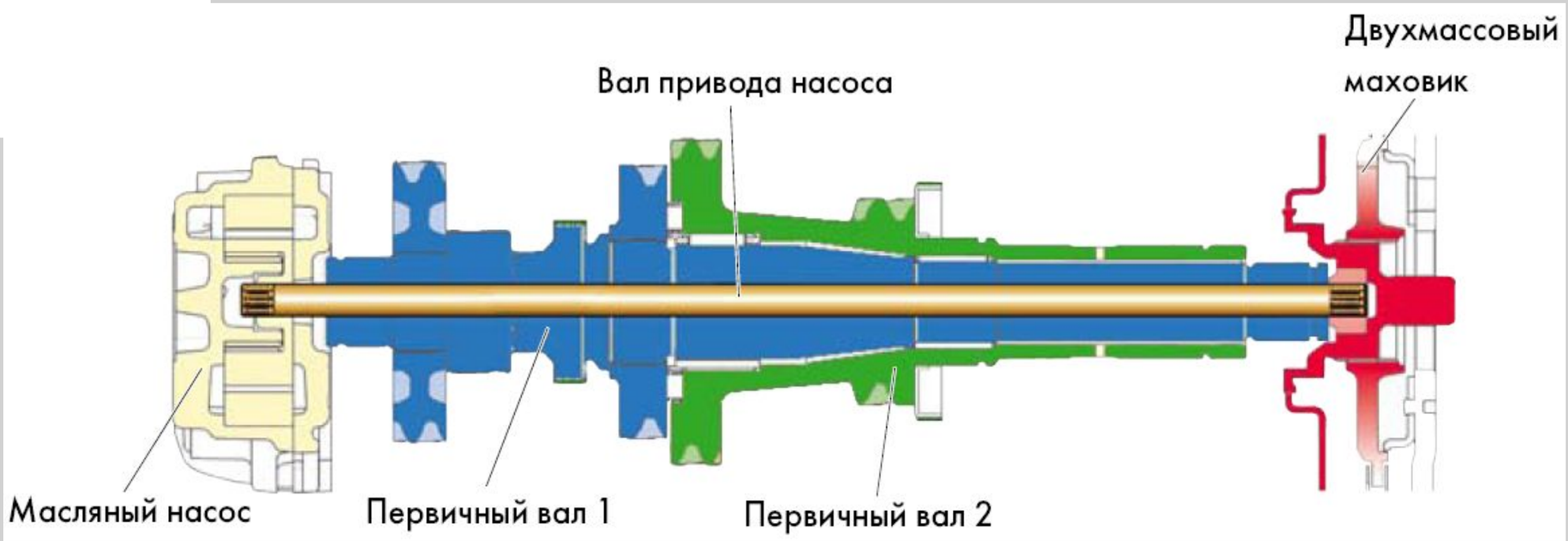
Масляный насос. Привод

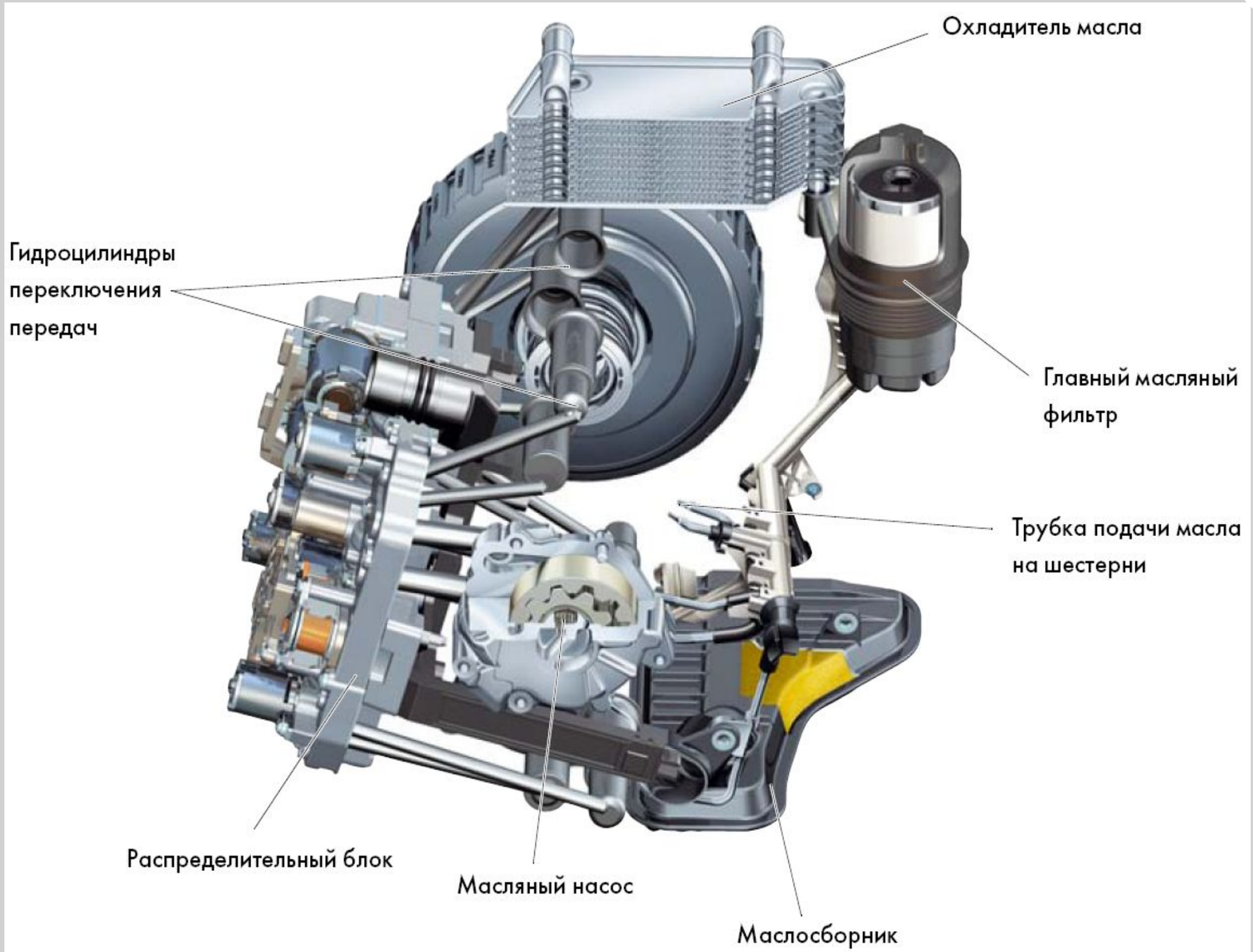


Q = 100 л/мин

P = 20 кг/см2



Масляный контур



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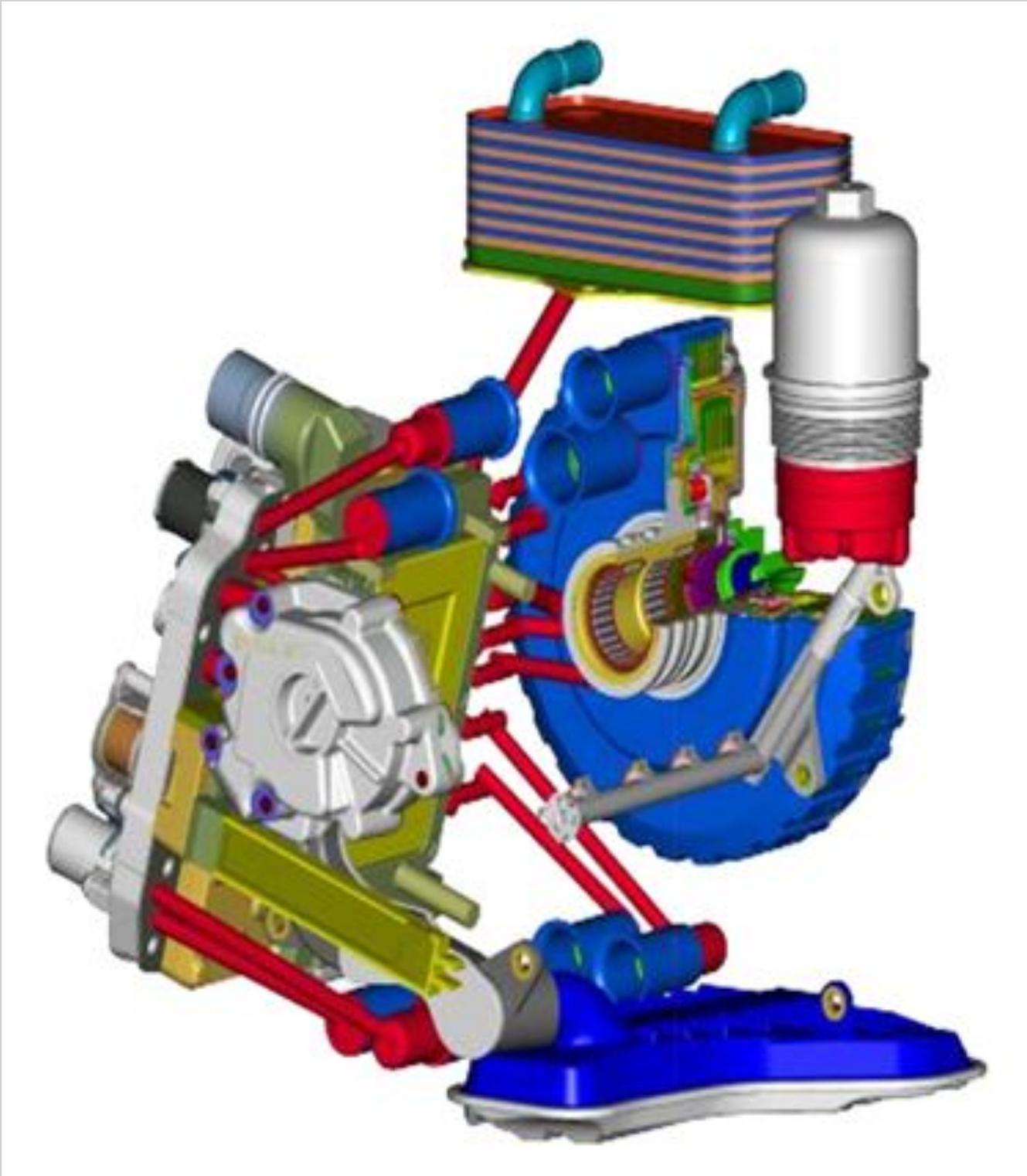
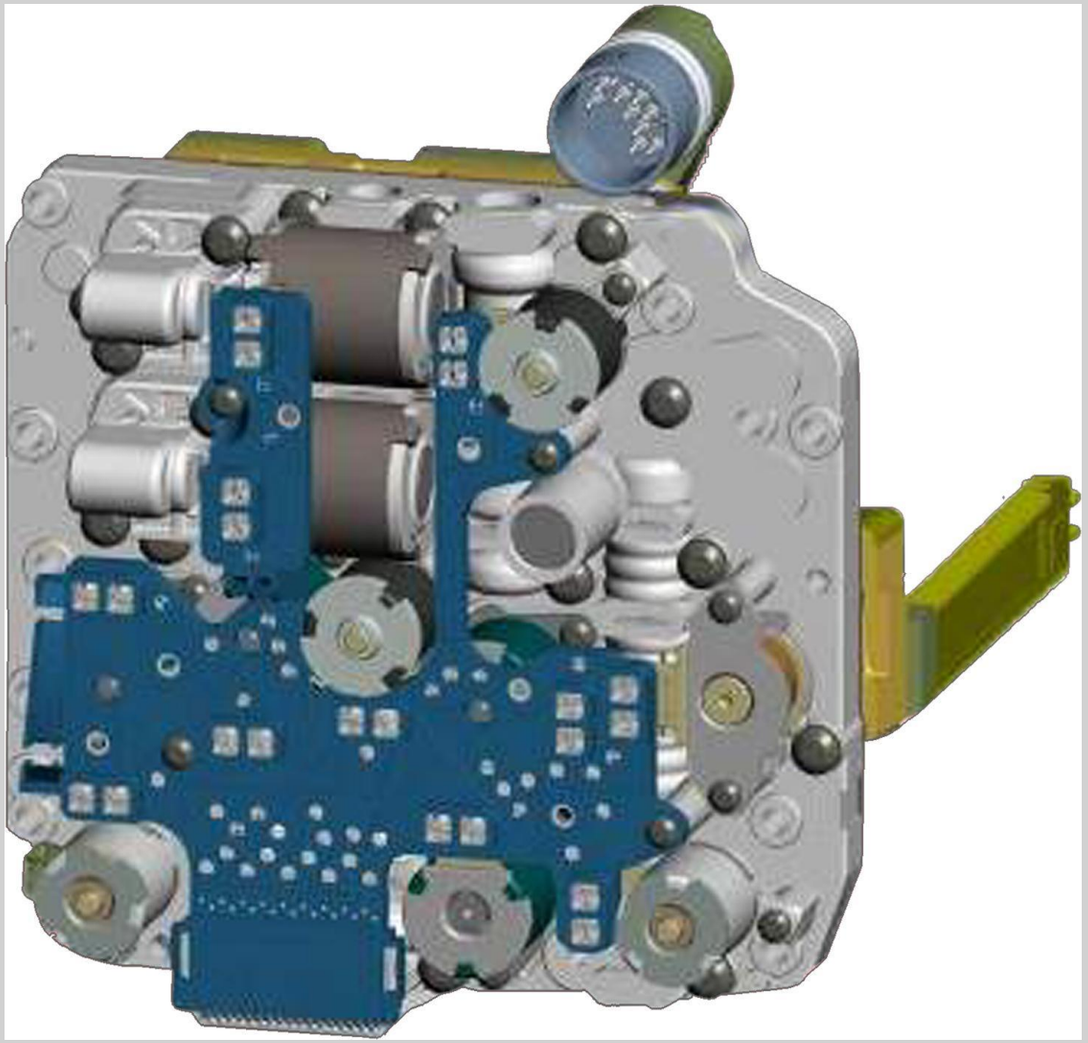
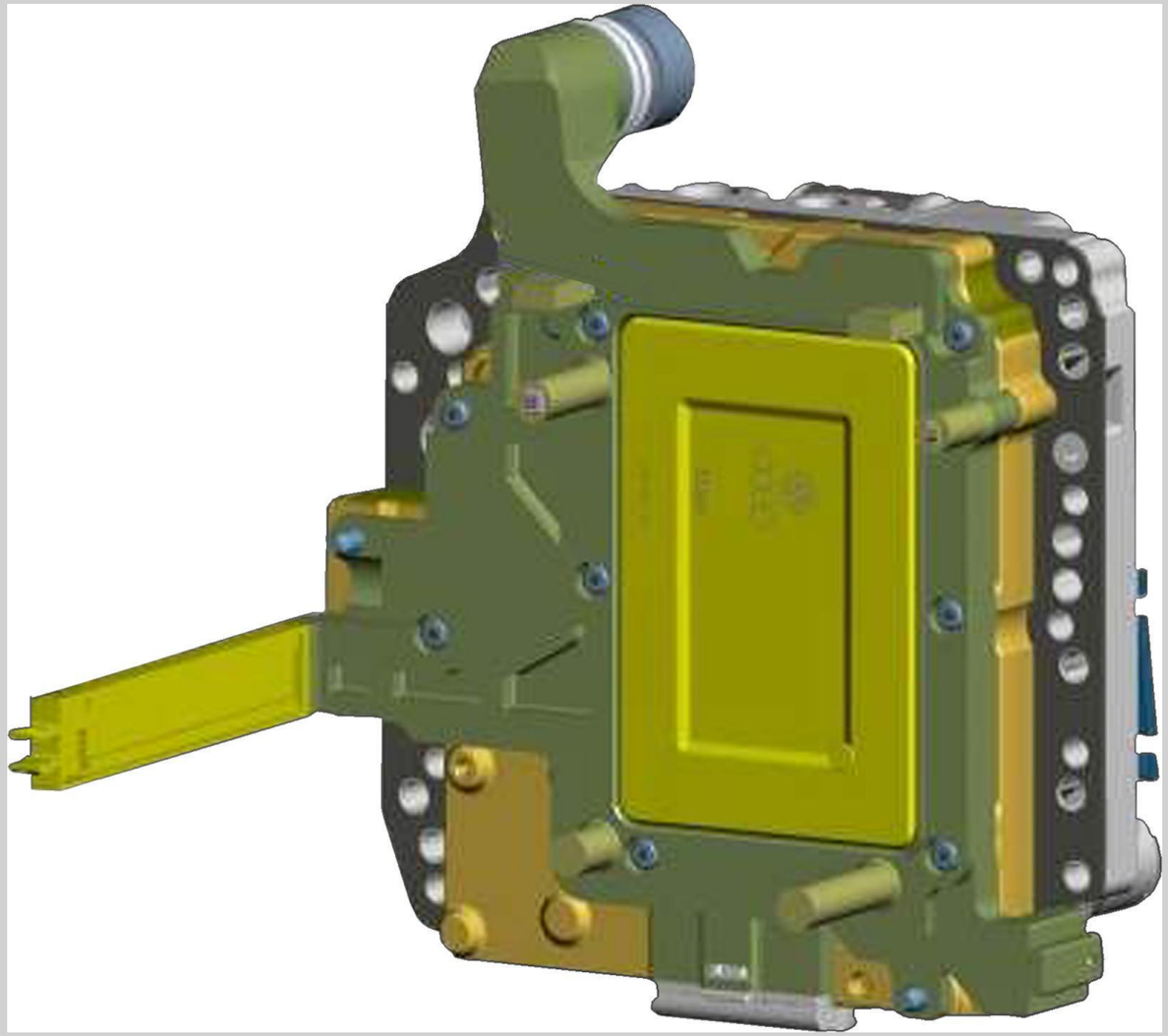
Масляный контур



Блок Mechatronic





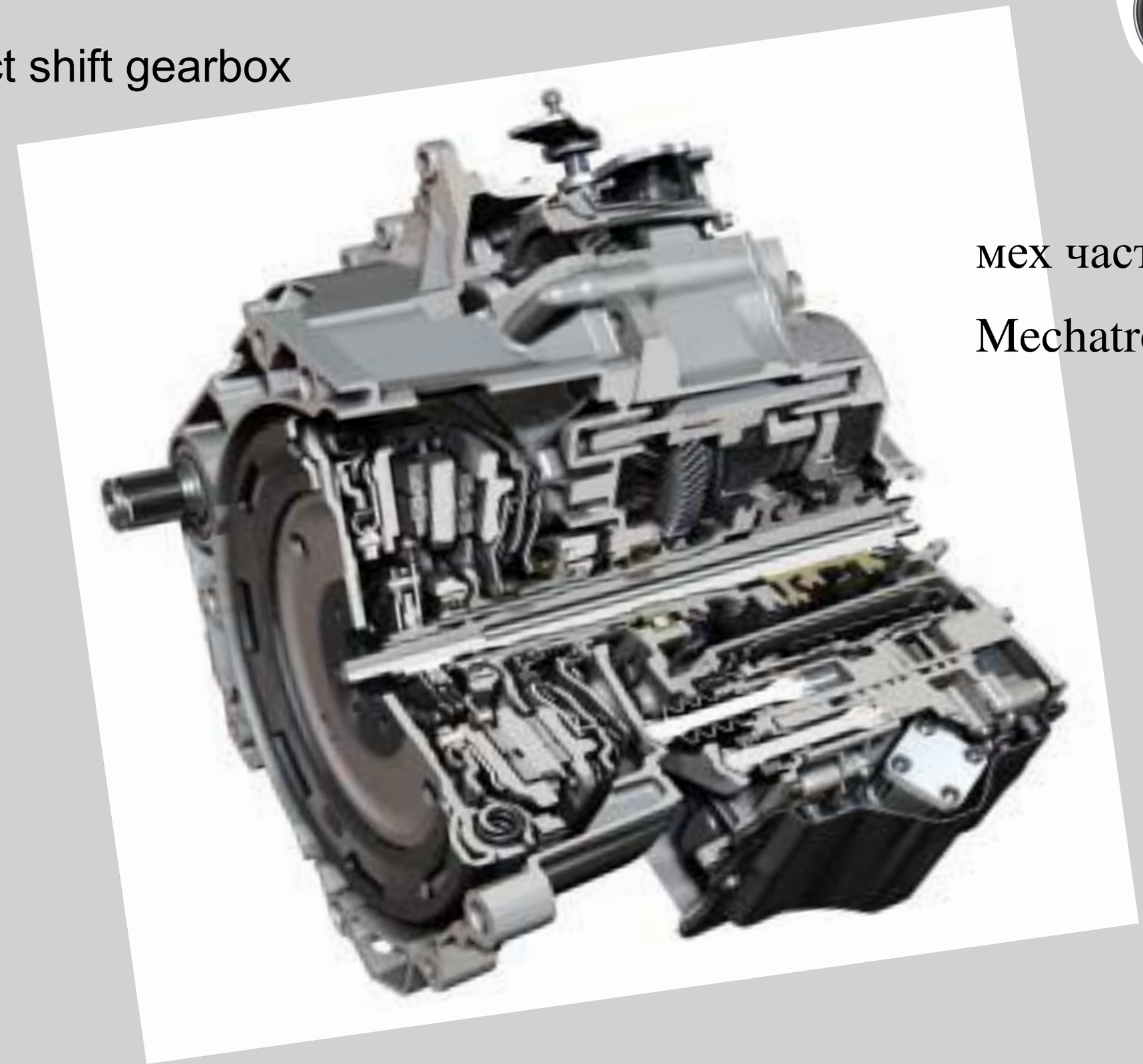
SIMPLY
CLEVER

7-ми ступенчатая КП

0AM

SIMPLY
CLEVER

Direct shift gearbox
0AM



мех часть – 1,7 л

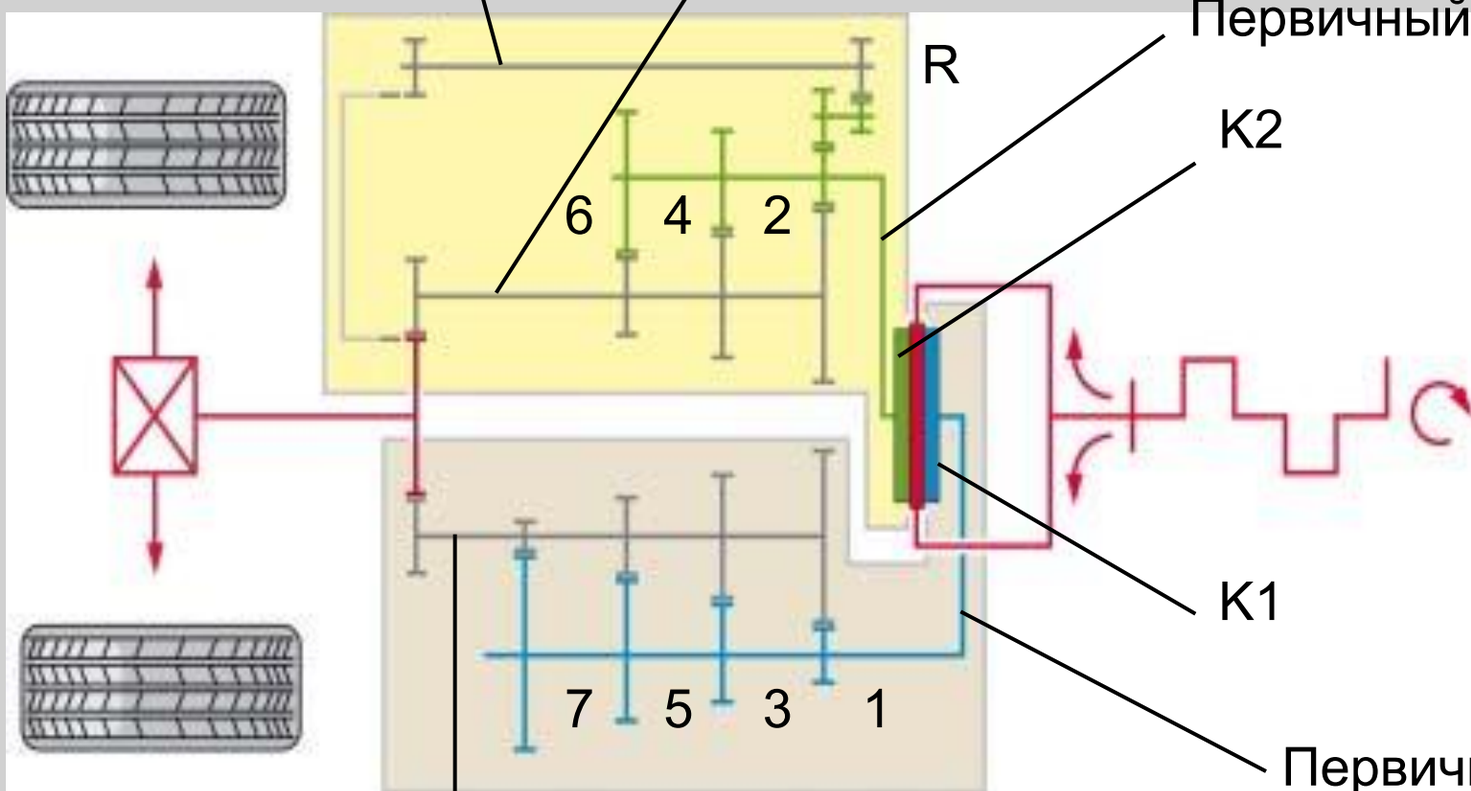
Mechatronic 1,1 л

SIMPLY CLEVER

Обзор КП

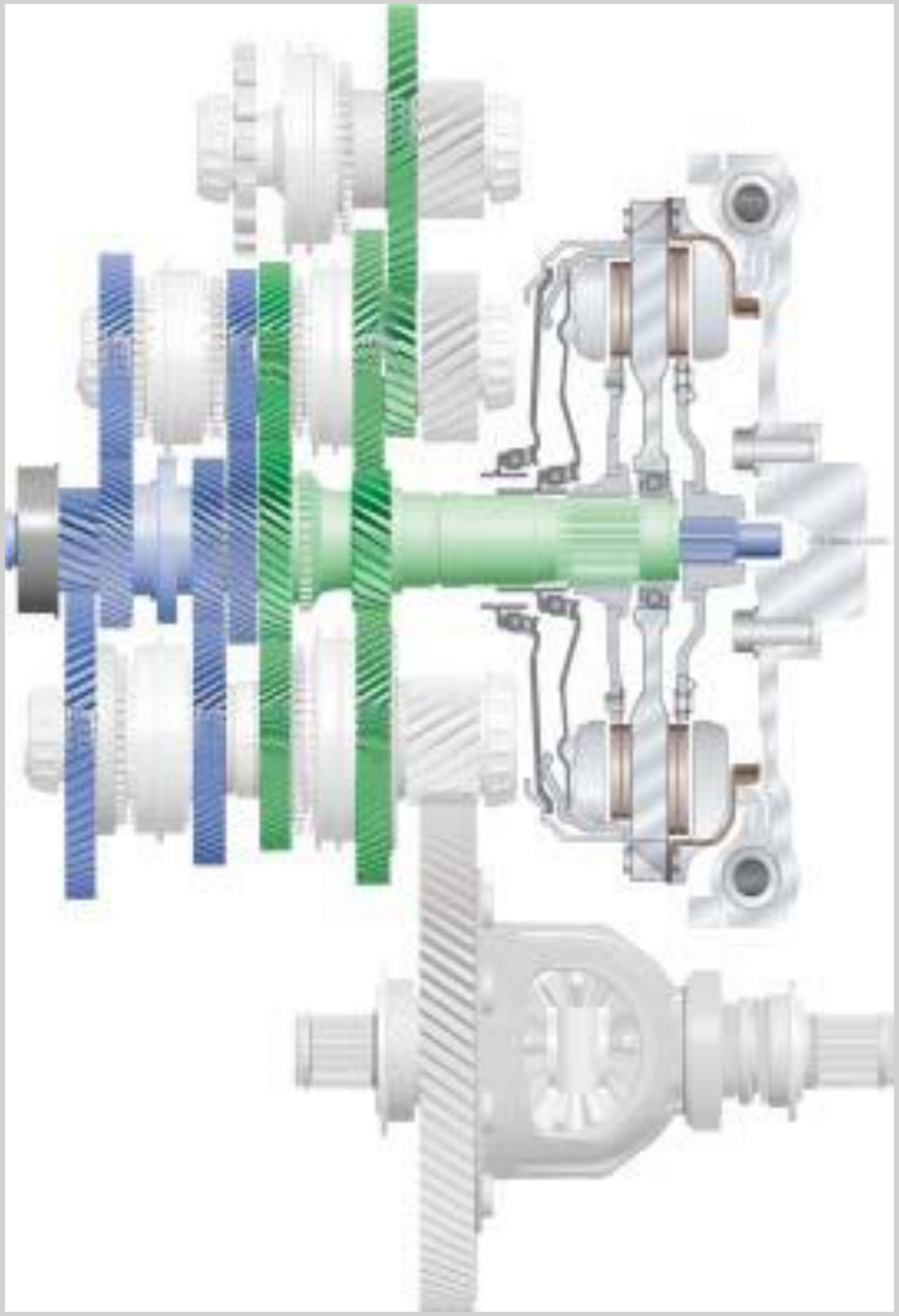
SIMPLY CLEVER

Обзор конструкции КП



SIMPLY
CLEVER

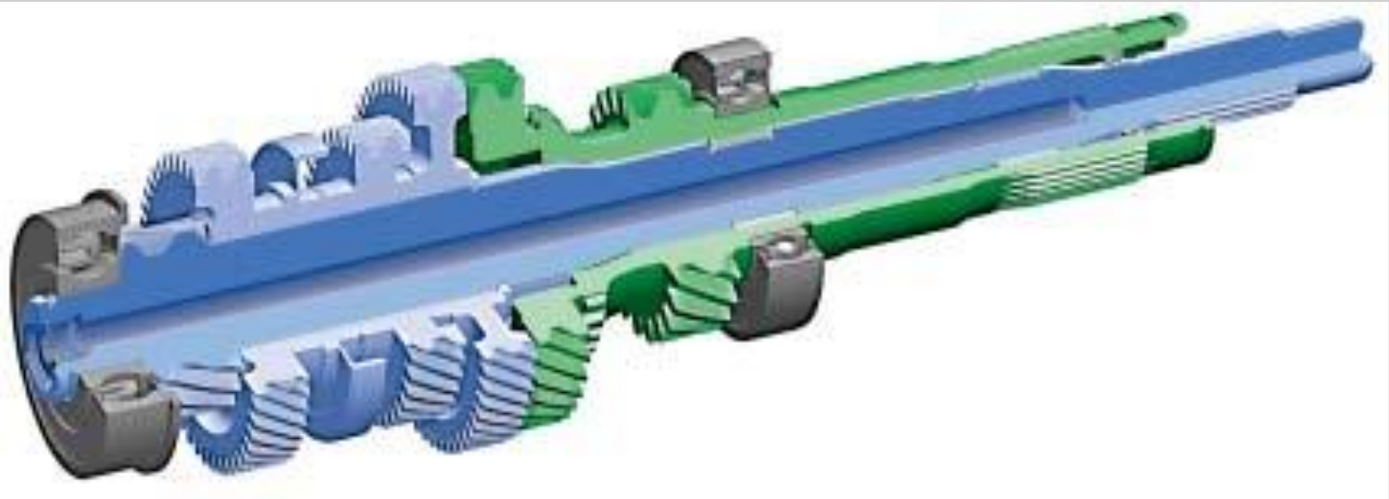
Обзор конструкции КП



SIMPLY
CLEVER

Обзор конструкции КП

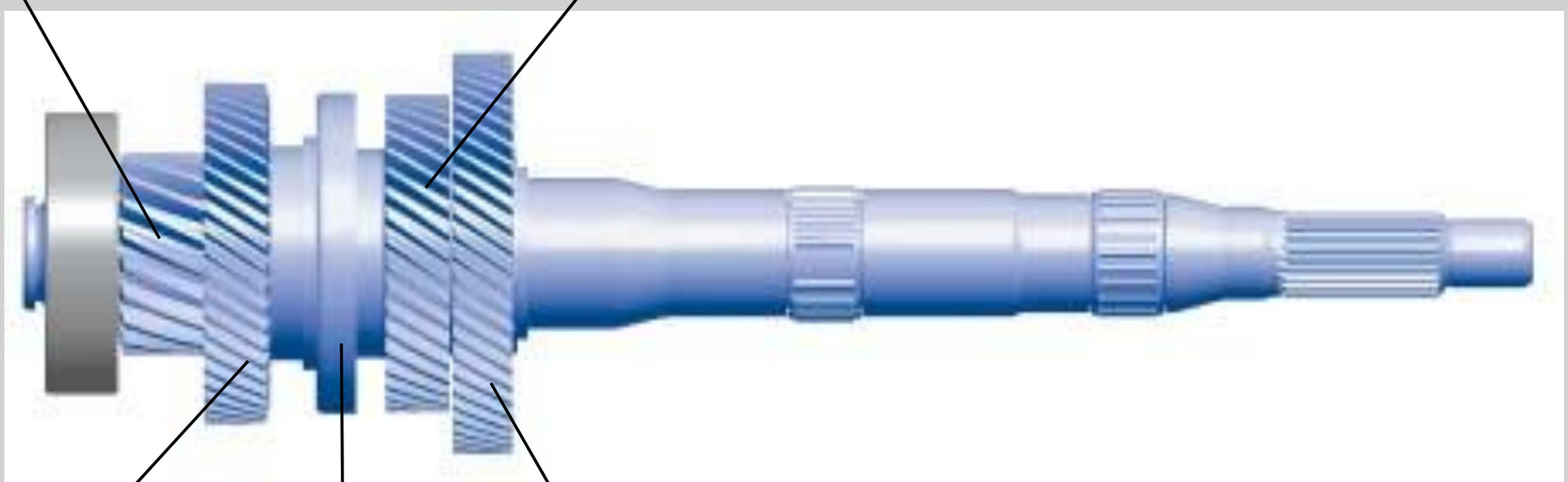
Hollow input
shaft



SIMPLY
CLEVER

Обзор конструкции КП

Input shaft
1

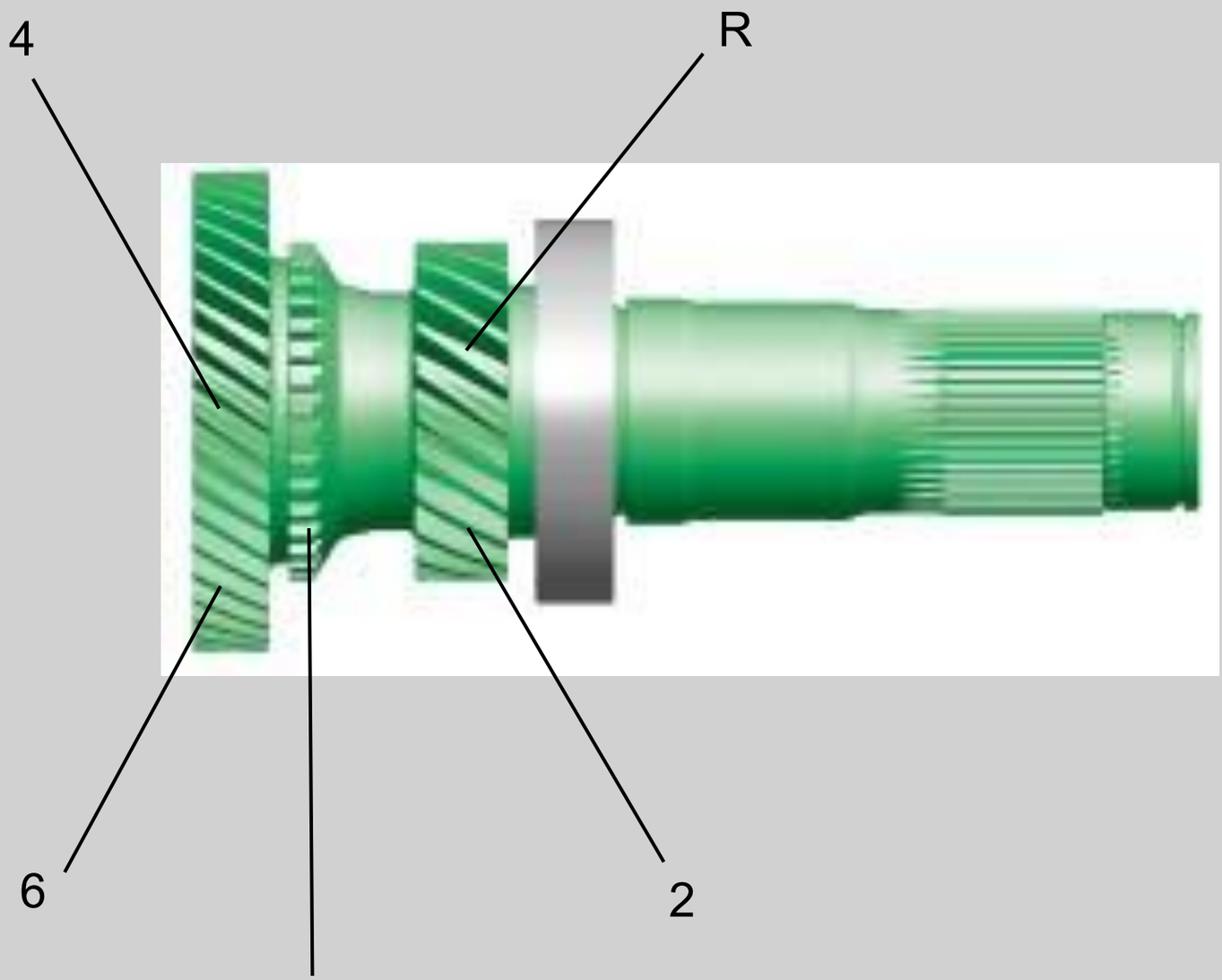


Impulse wheel for sensor 1 of gearbox input speed
G632

SIMPLY
CLEVER

Обзор конструкции КП

Input shaft
2

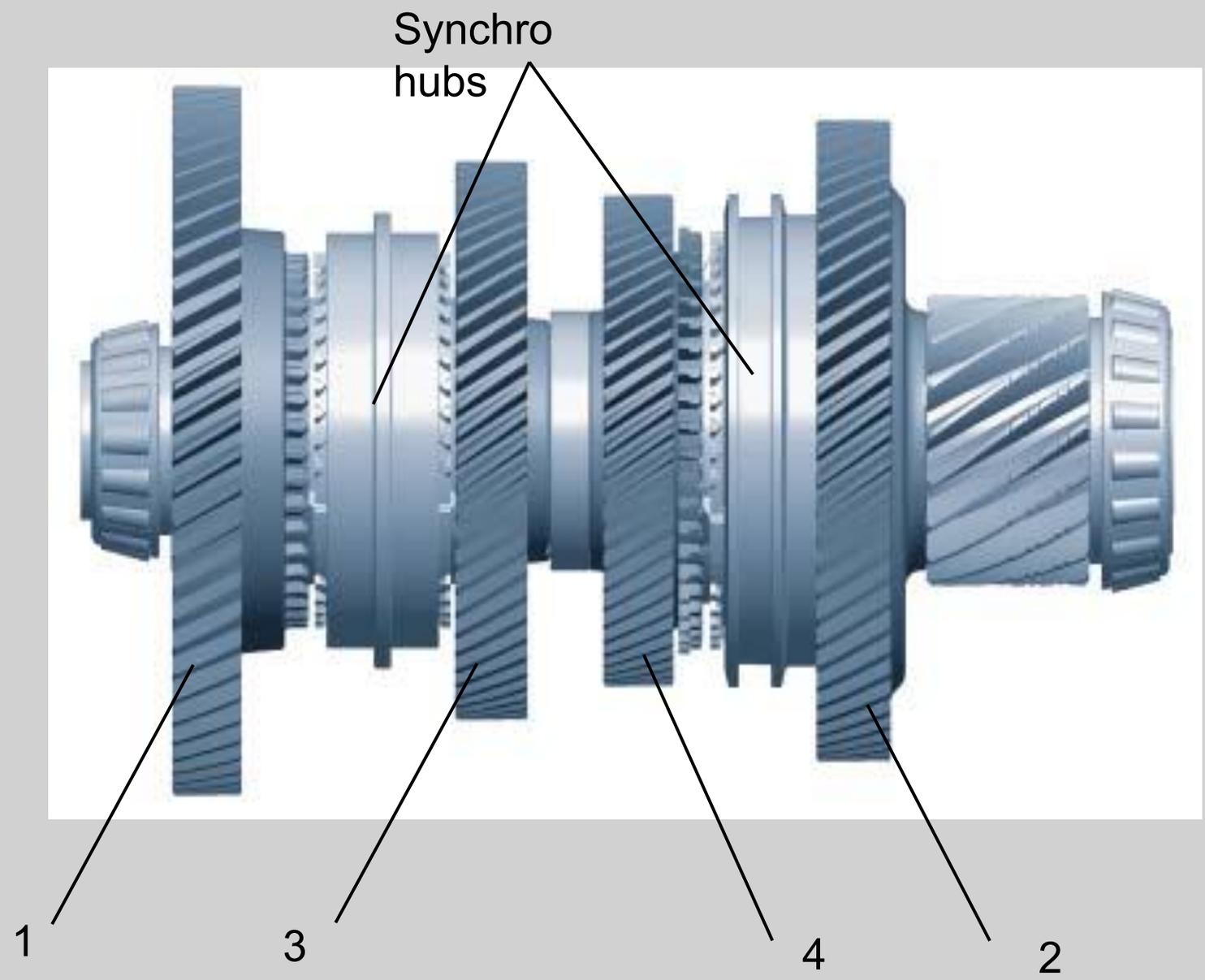


Tooth wheel for sensor 2 of gearbox input speed
G612

SIMPLY
CLEVER

Обзор конструкции КП

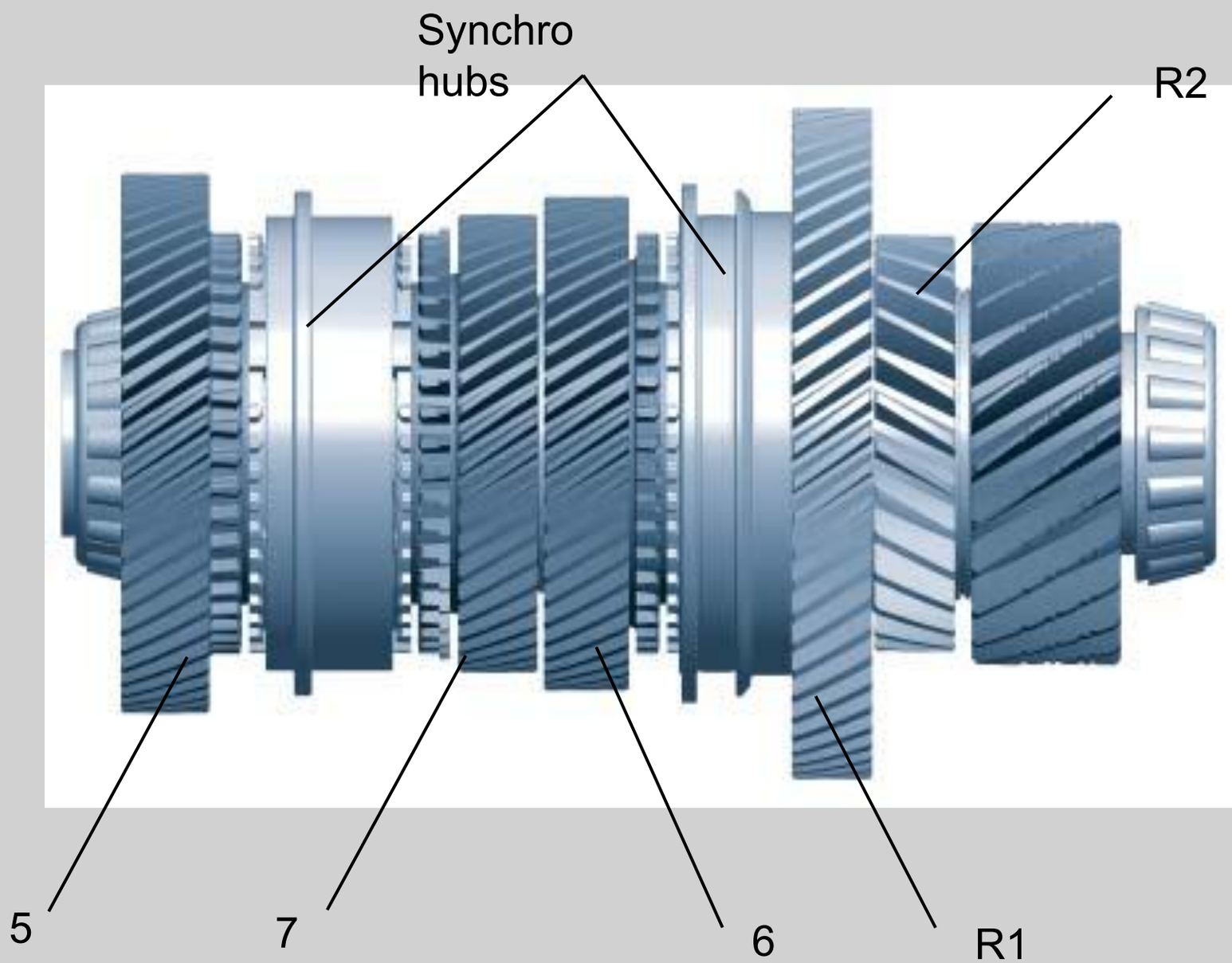
Output shaft
1



SIMPLY
CLEVER

Обзор конструкции КП

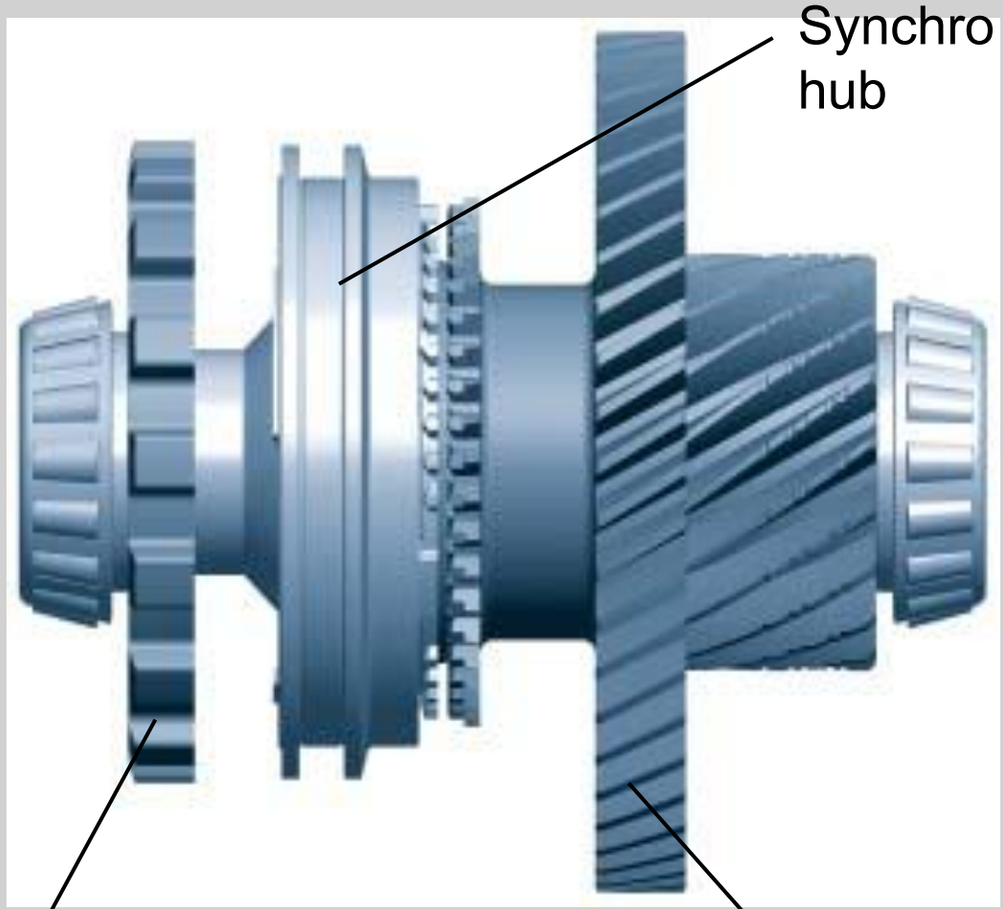
Output shaft
2



SIMPLY
CLEVER

Обзор конструкции КП

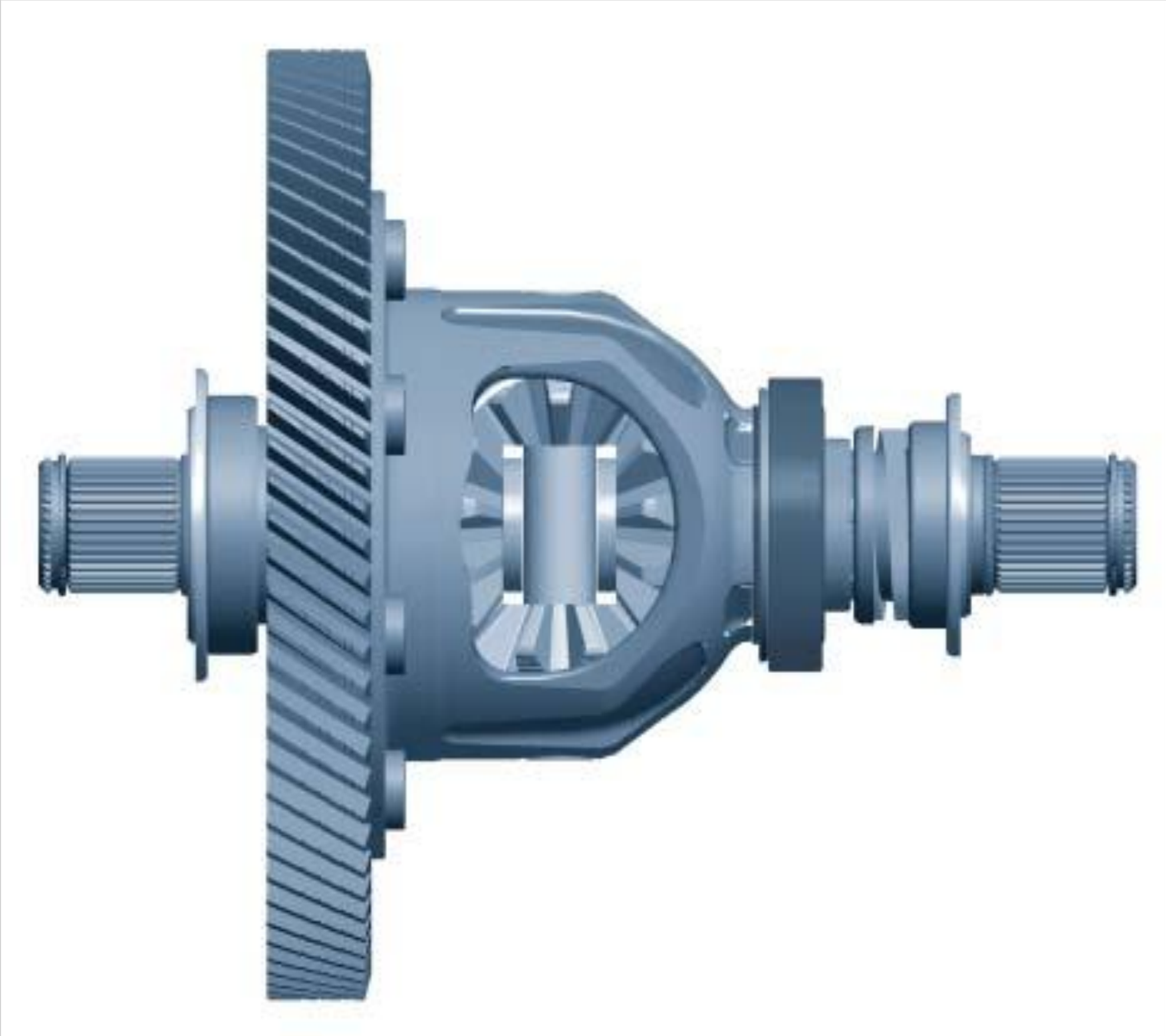
Output shaft
3



SIMPLY
CLEVER

Обзор конструкции КП

Differentia
l



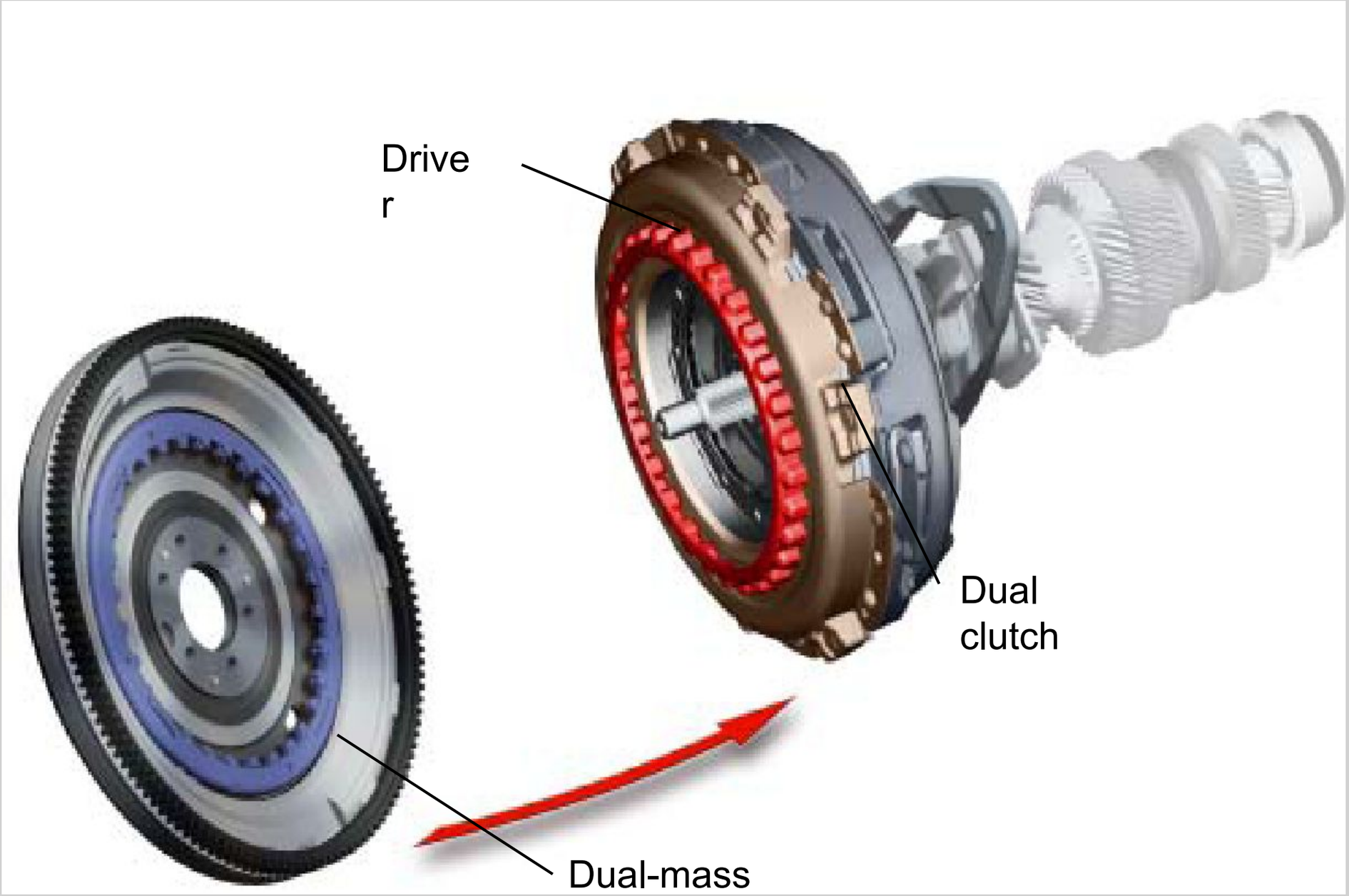
SIMPLY
CLEVER

Обзор конструкции КП

Parking
pawl

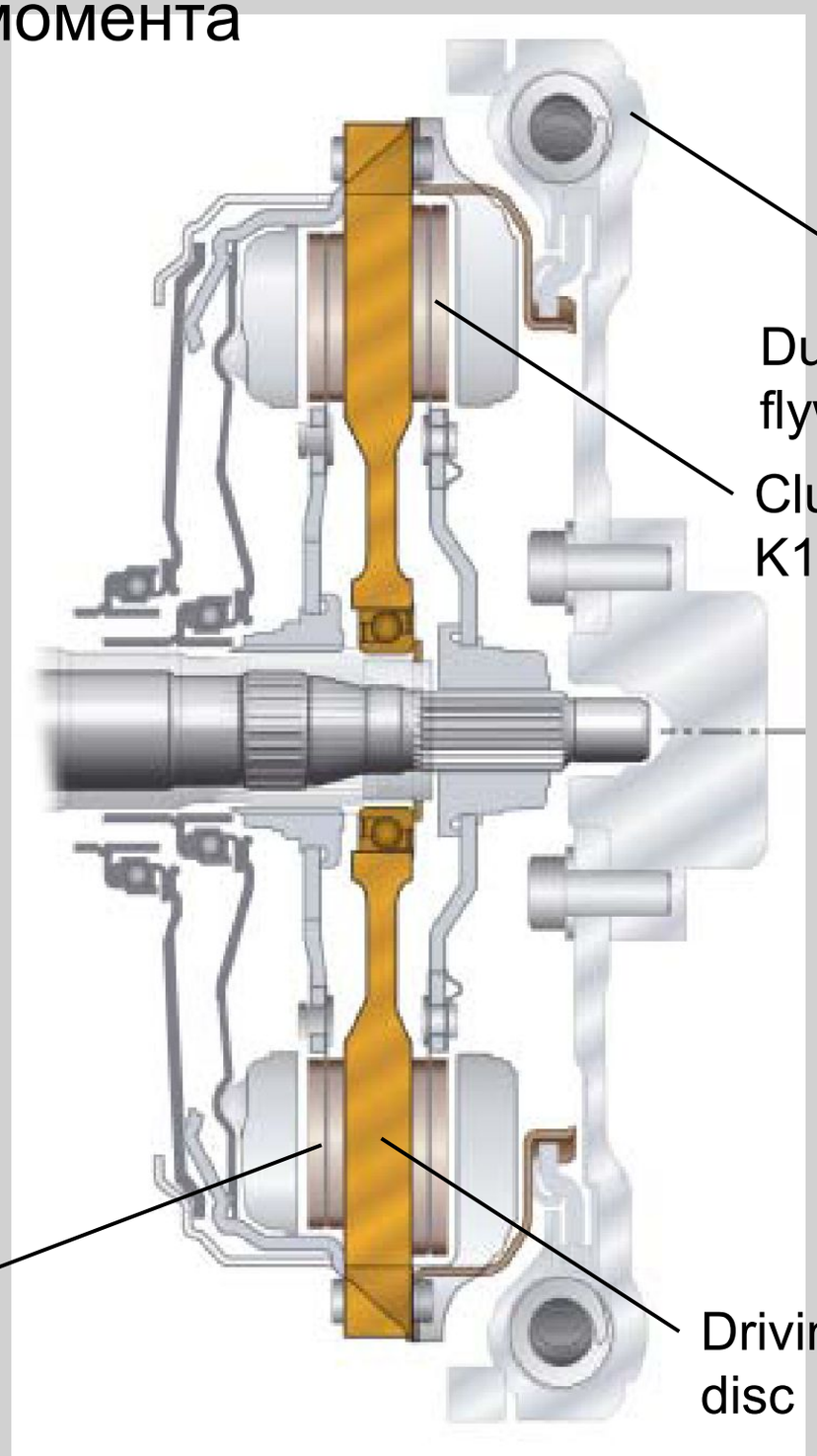
SIMPLY
CLEVER

Передача крутящего момента



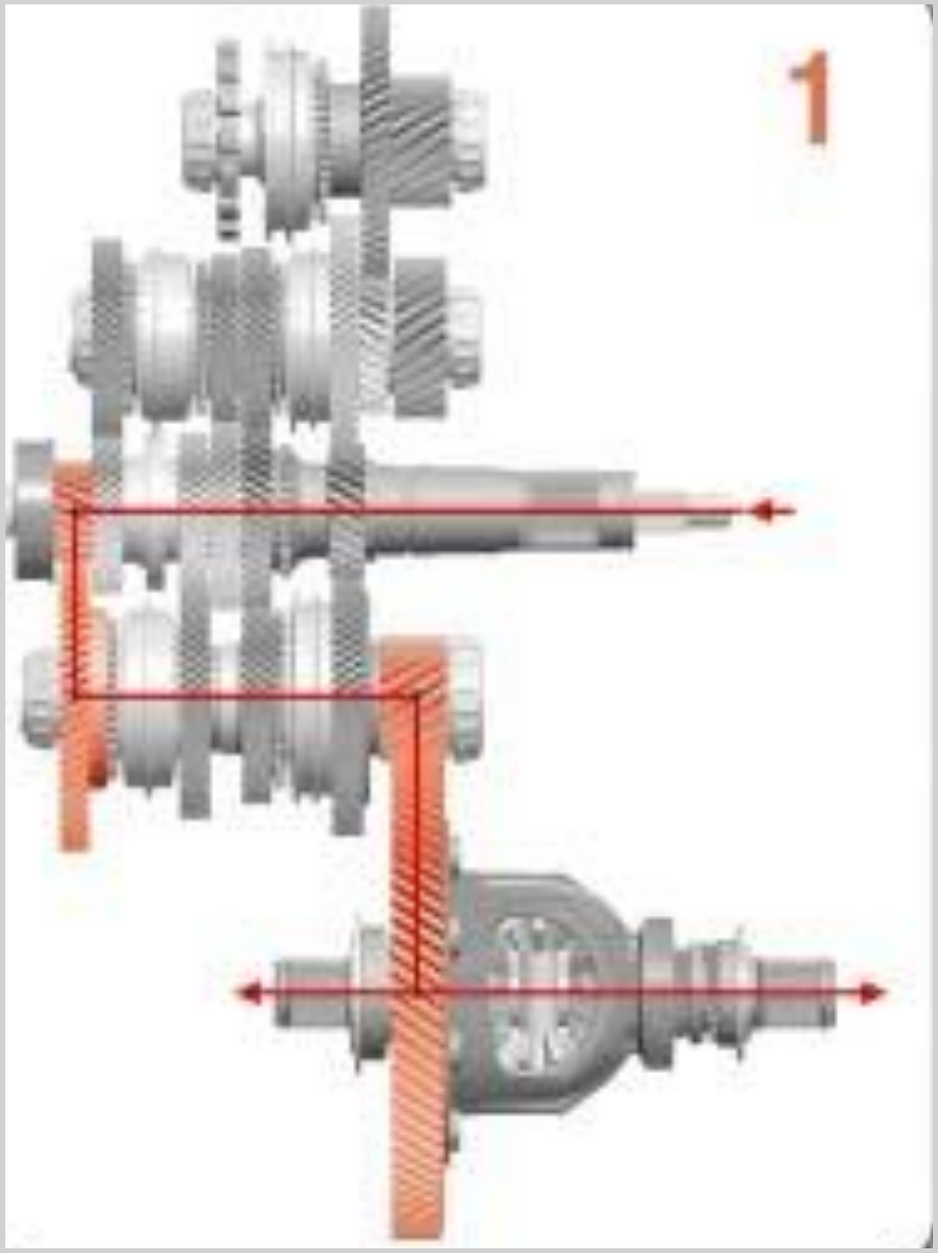
SIMPLY
CLEVER

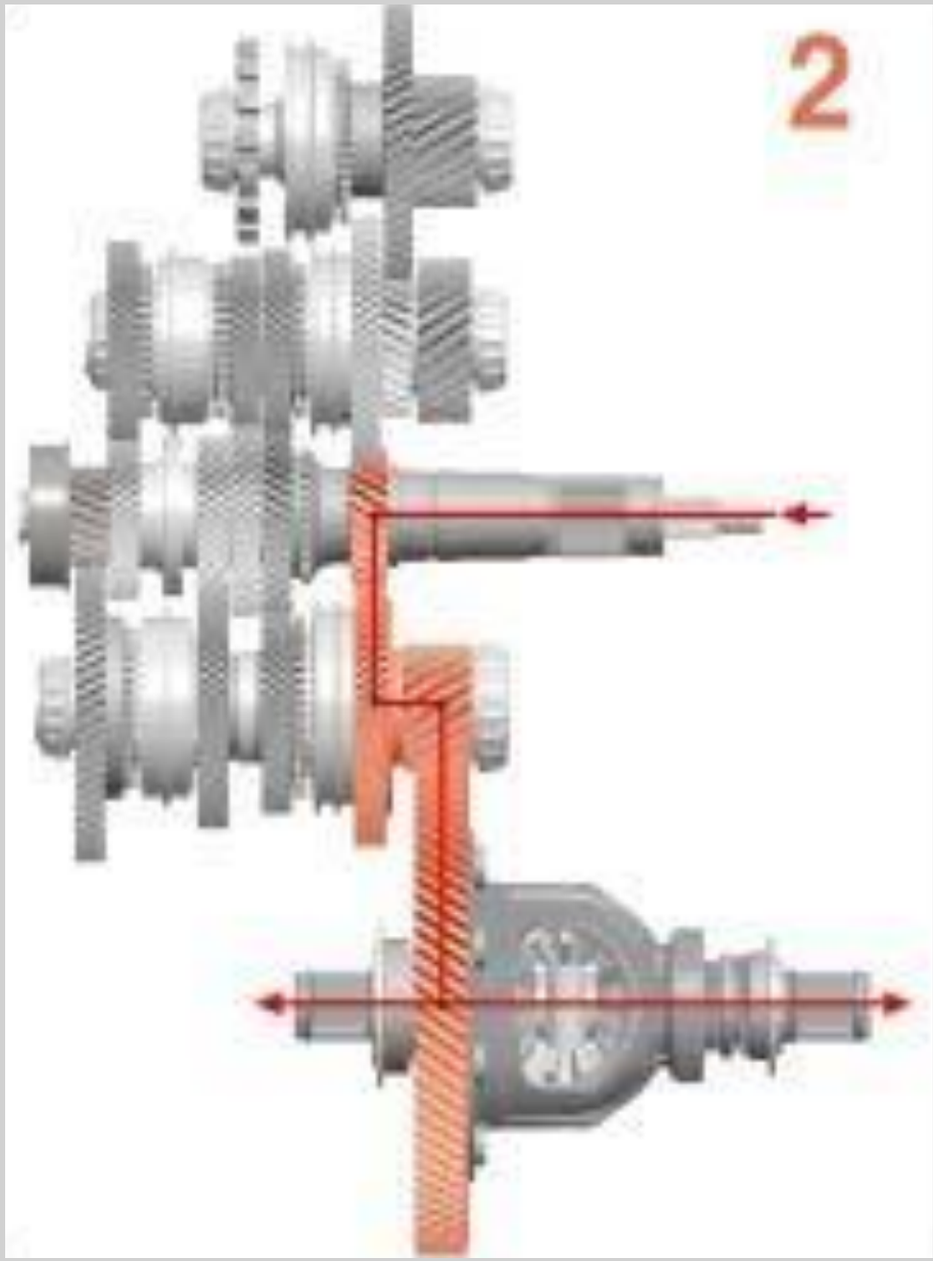
Передача крутящего момента



SIMPLY
CLEVER

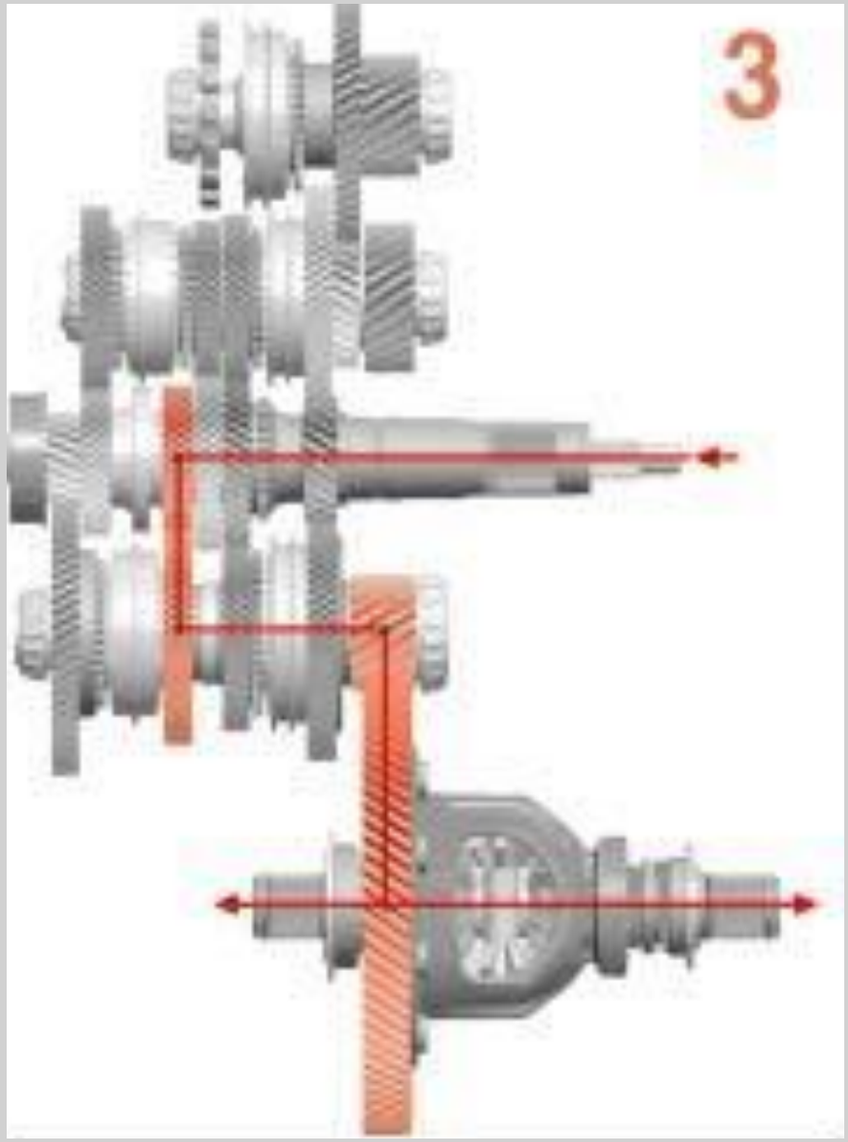
Передача крутящего момента

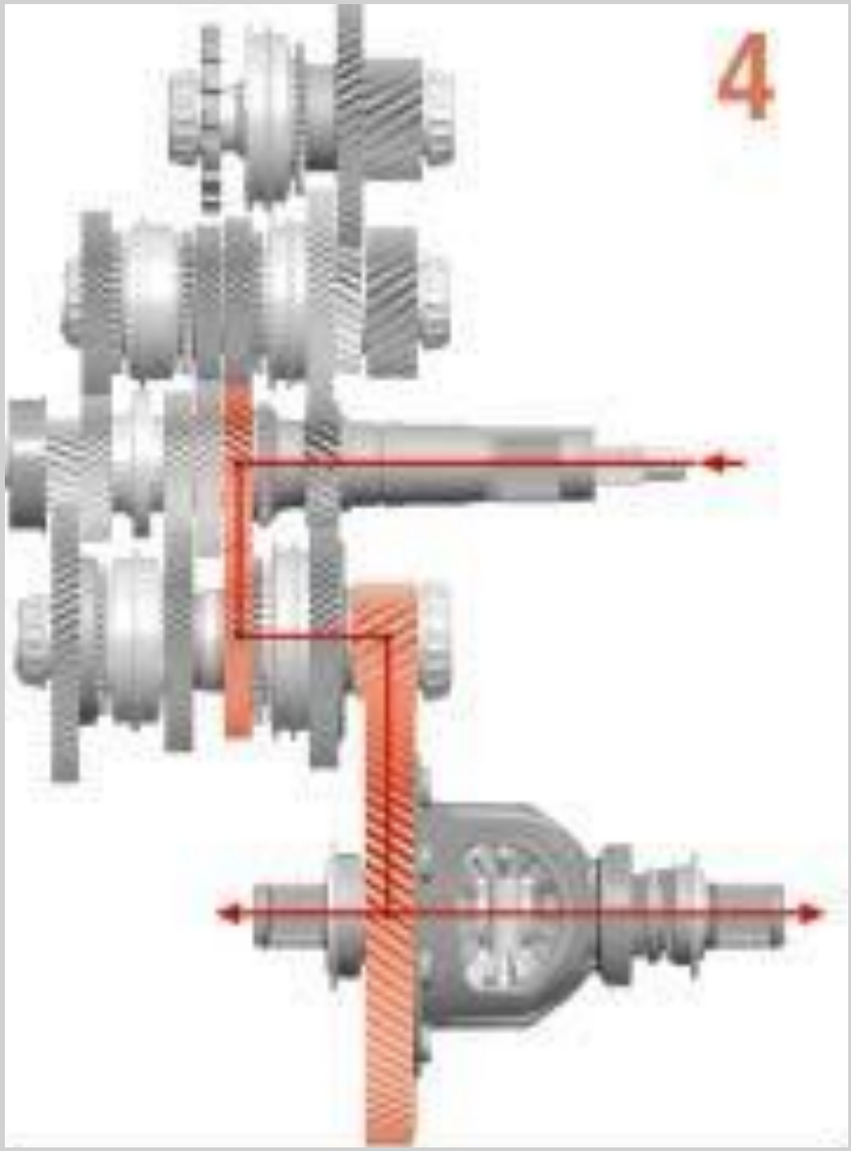




SIMPLY
CLEVER

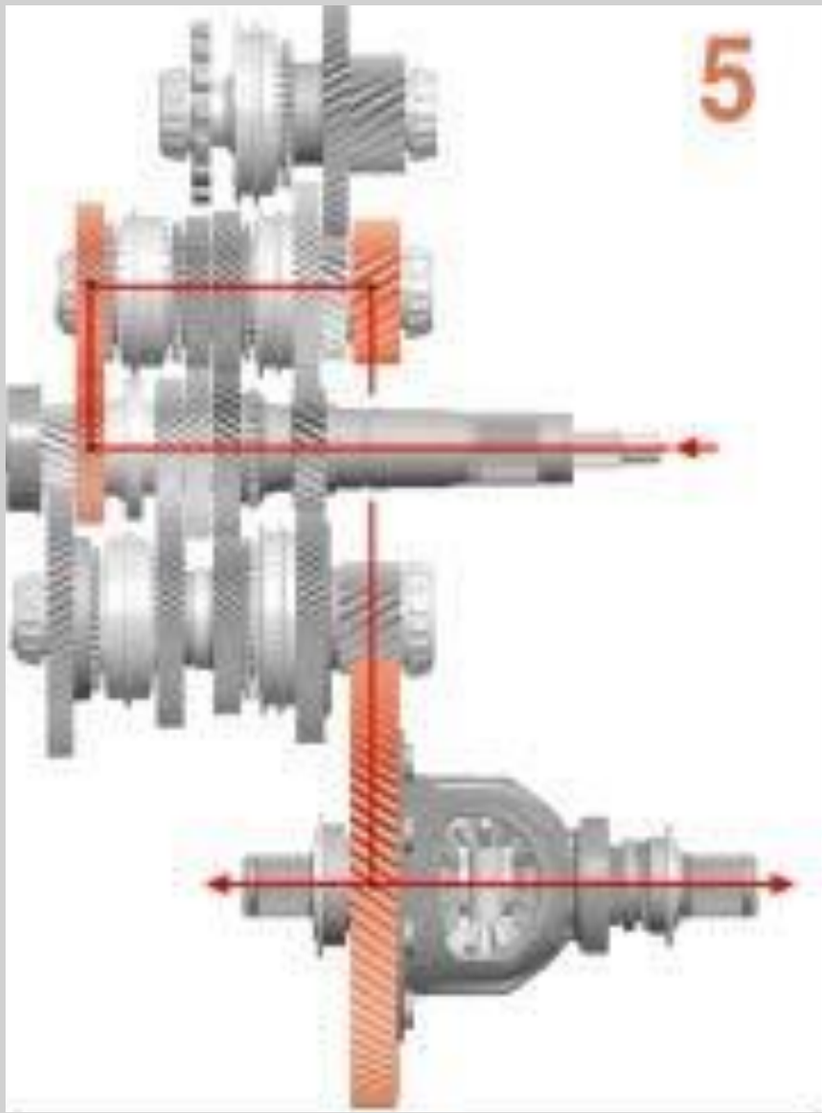
Передача крутящего момента

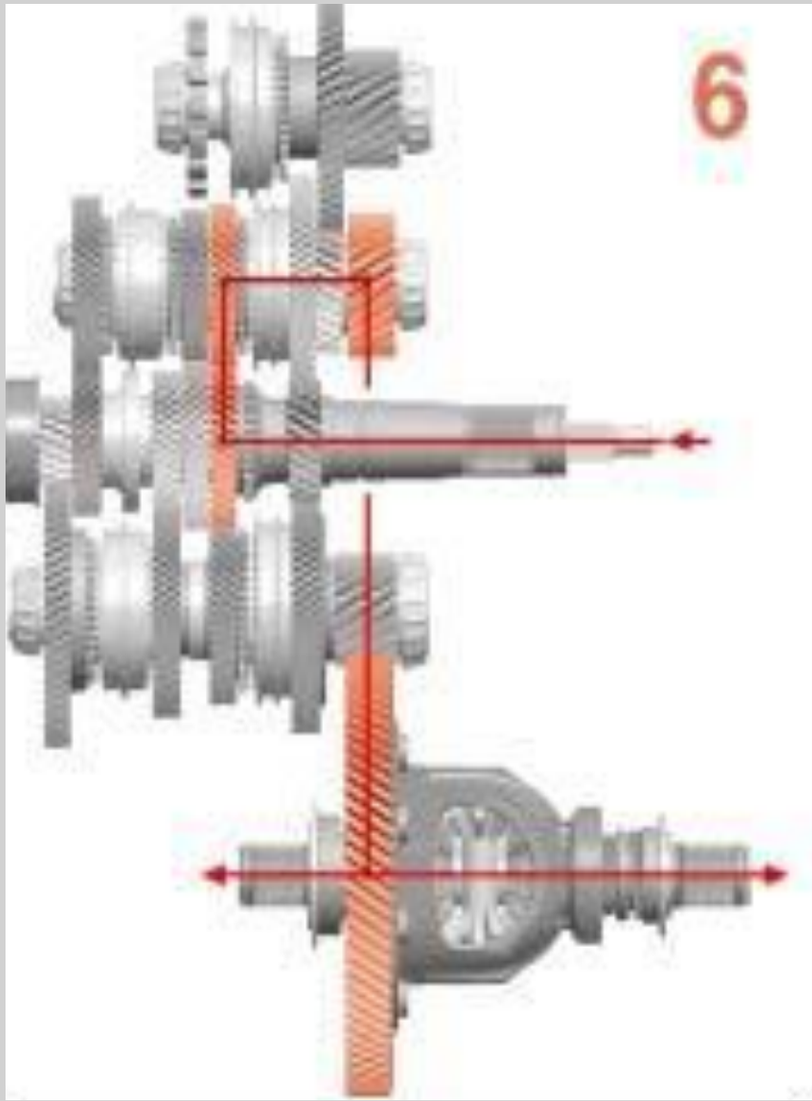




SIMPLY
CLEVER

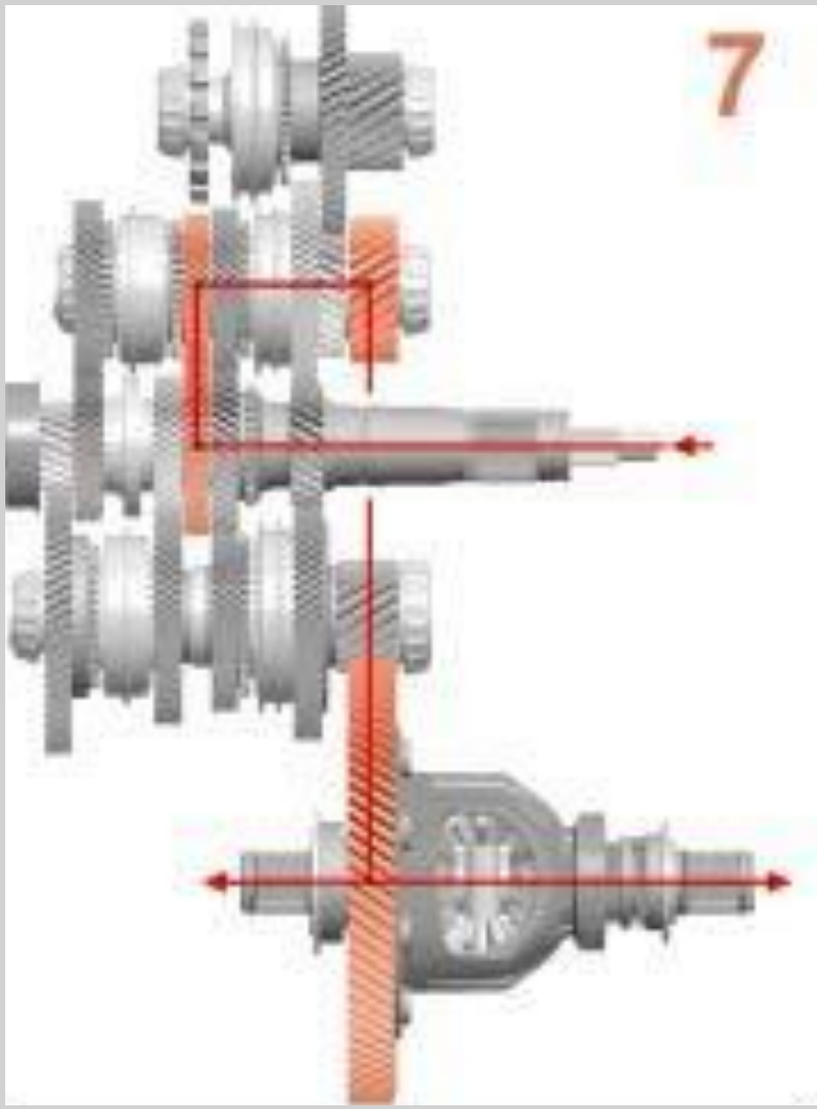
Передача крутящего момента

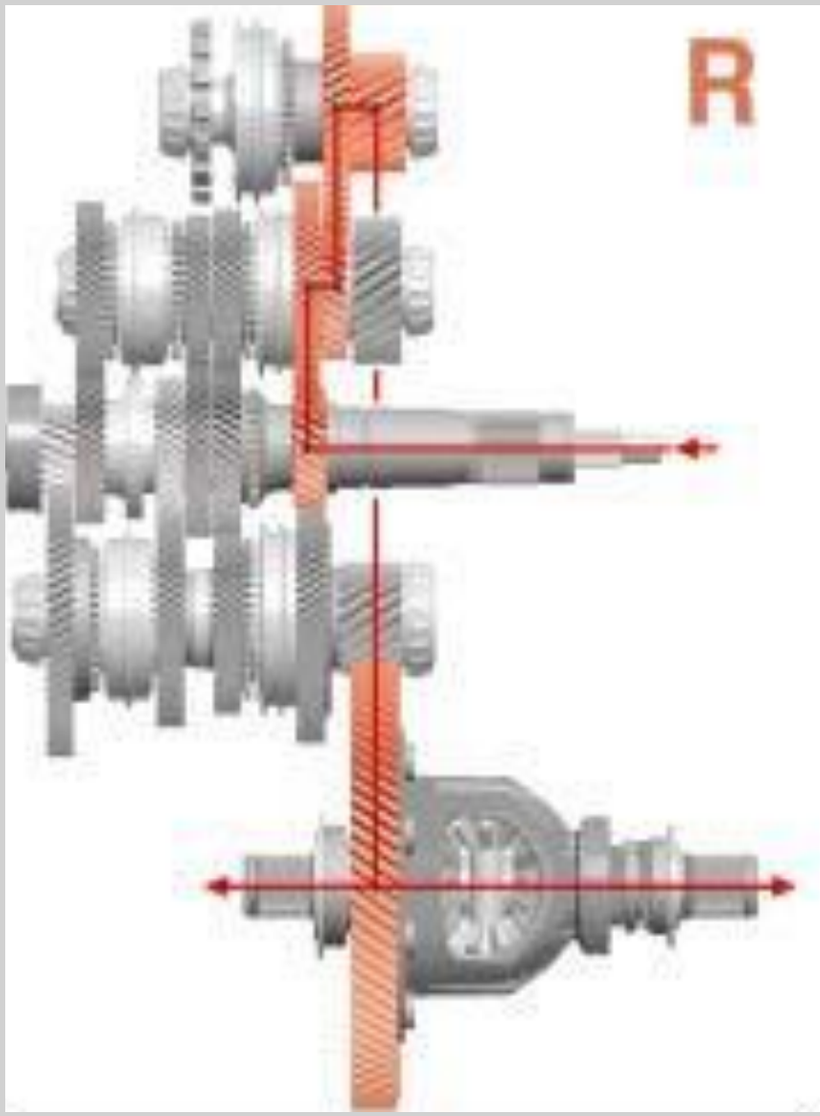




SIMPLY
CLEVER

Передача крутящего момента

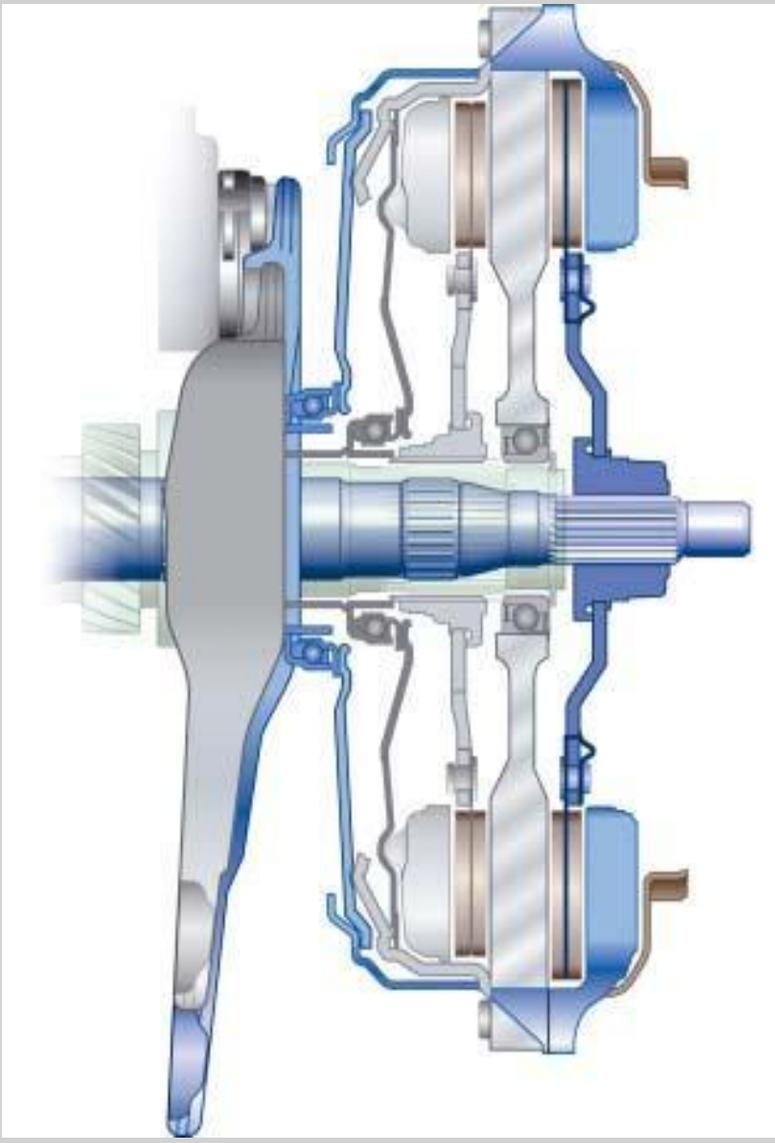




SIMPLY
CLEVER

Работа сцеплений

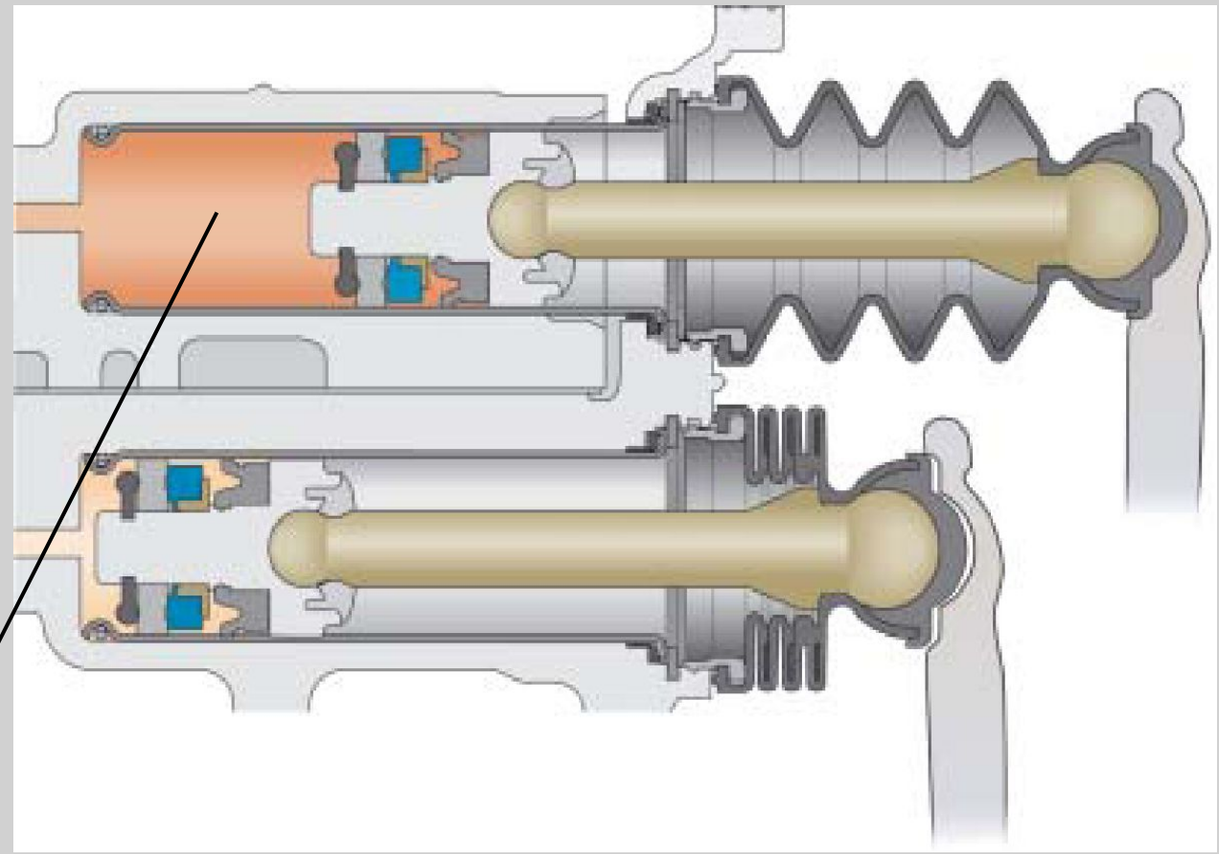
Сцепление K1



SIMPLY
CLEVER

Работа сцеплений

Сцепление K1

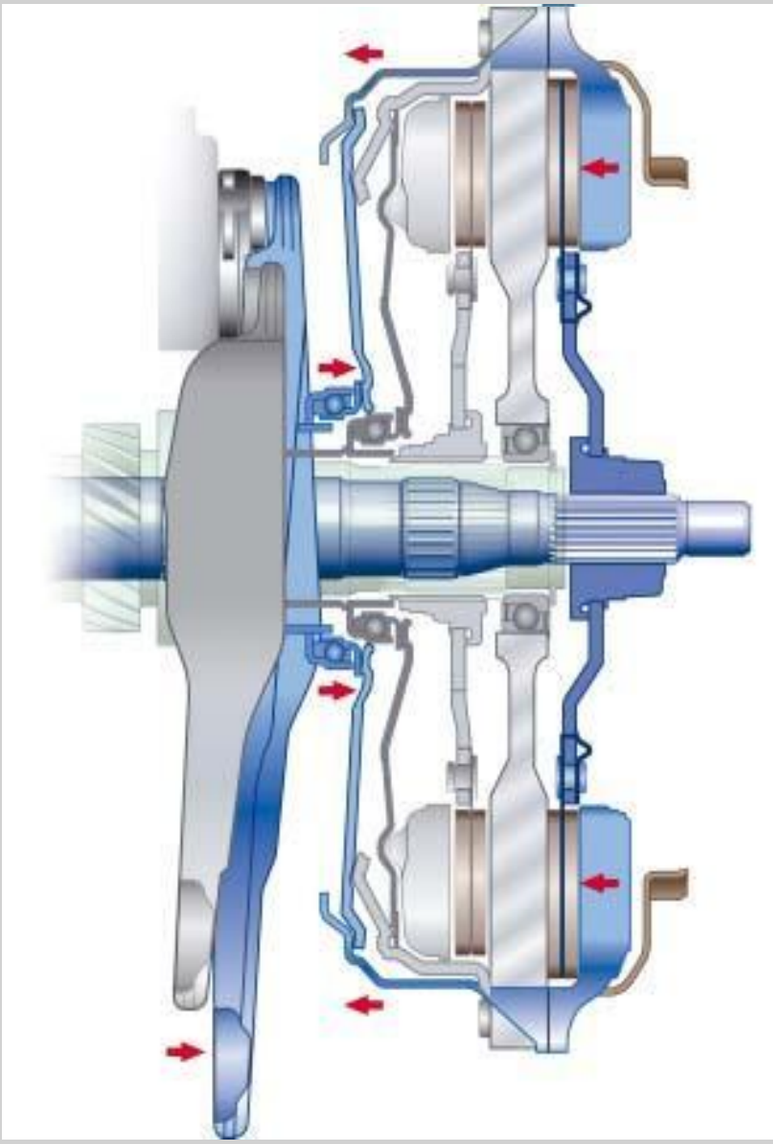


Повышение давления

SIMPLY
CLEVER

Работа сцеплений

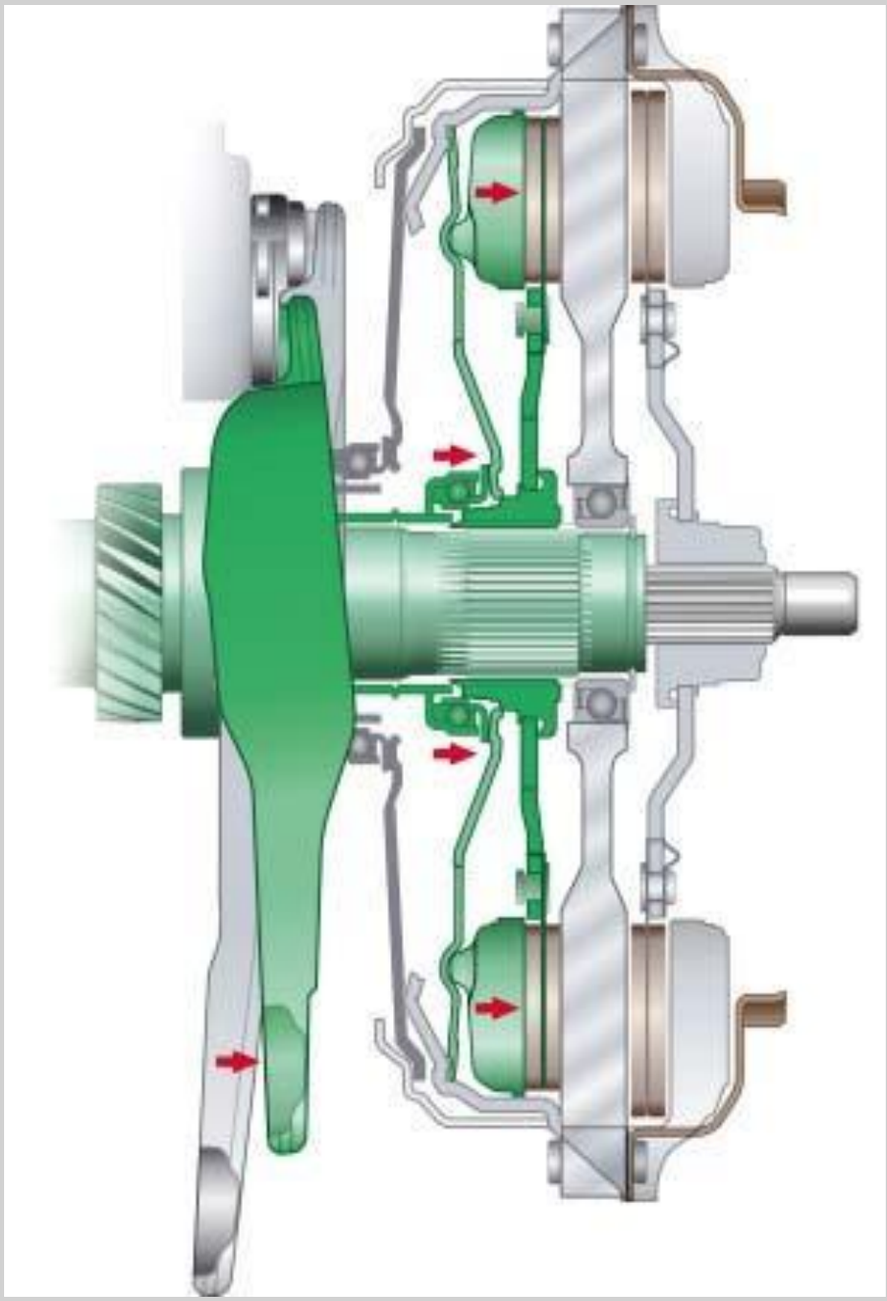
Сцепление K1



SIMPLY
CLEVER

Работа сцеплений

Сцепление K2



SIMPLY
CLEVER

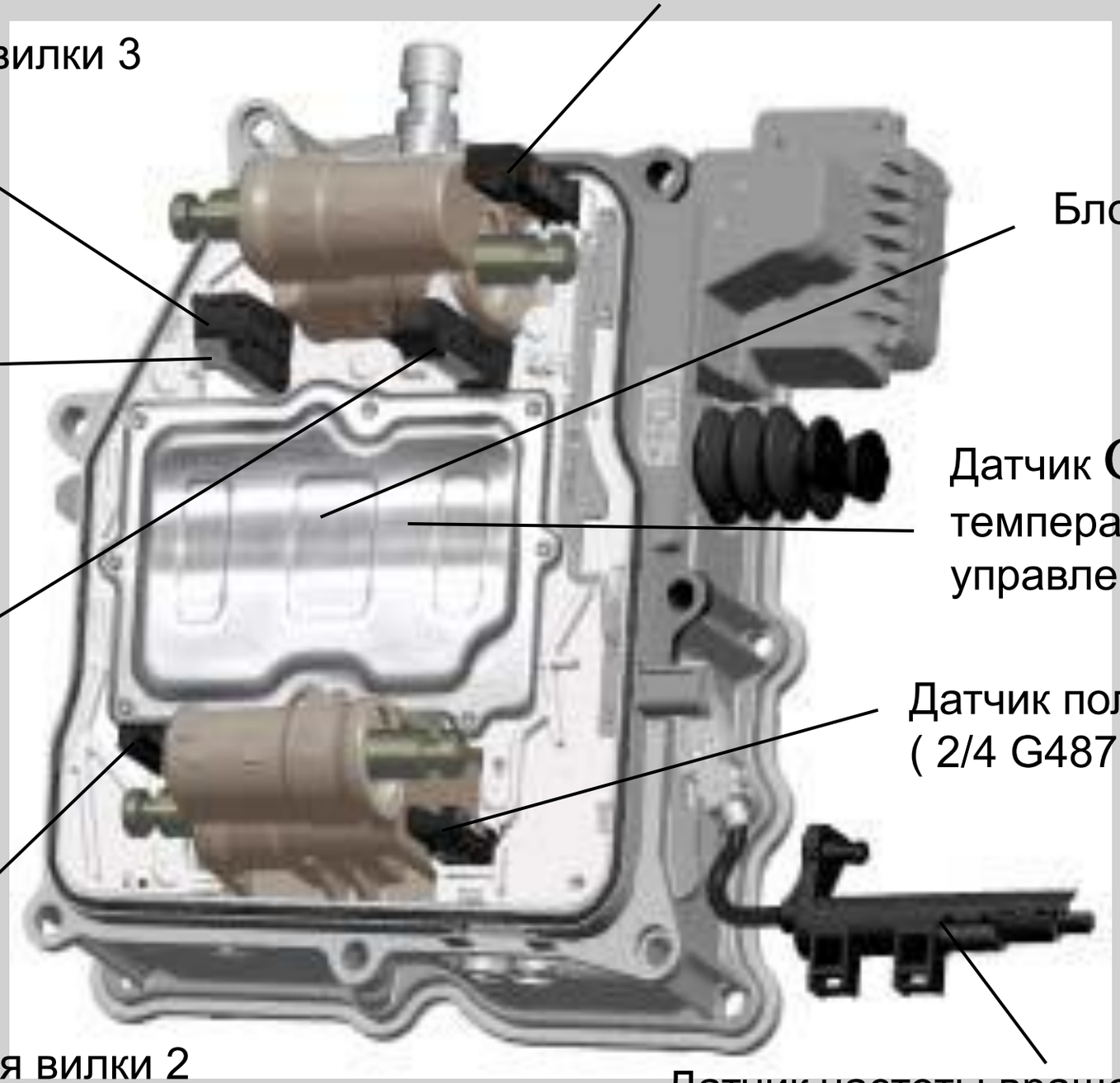
Блок управления Mechatronic

Расположение
на коробке
передач

Блок Mechatronic с масляным насосом

SIMPLY CLEVER

Mechatronic - устройство



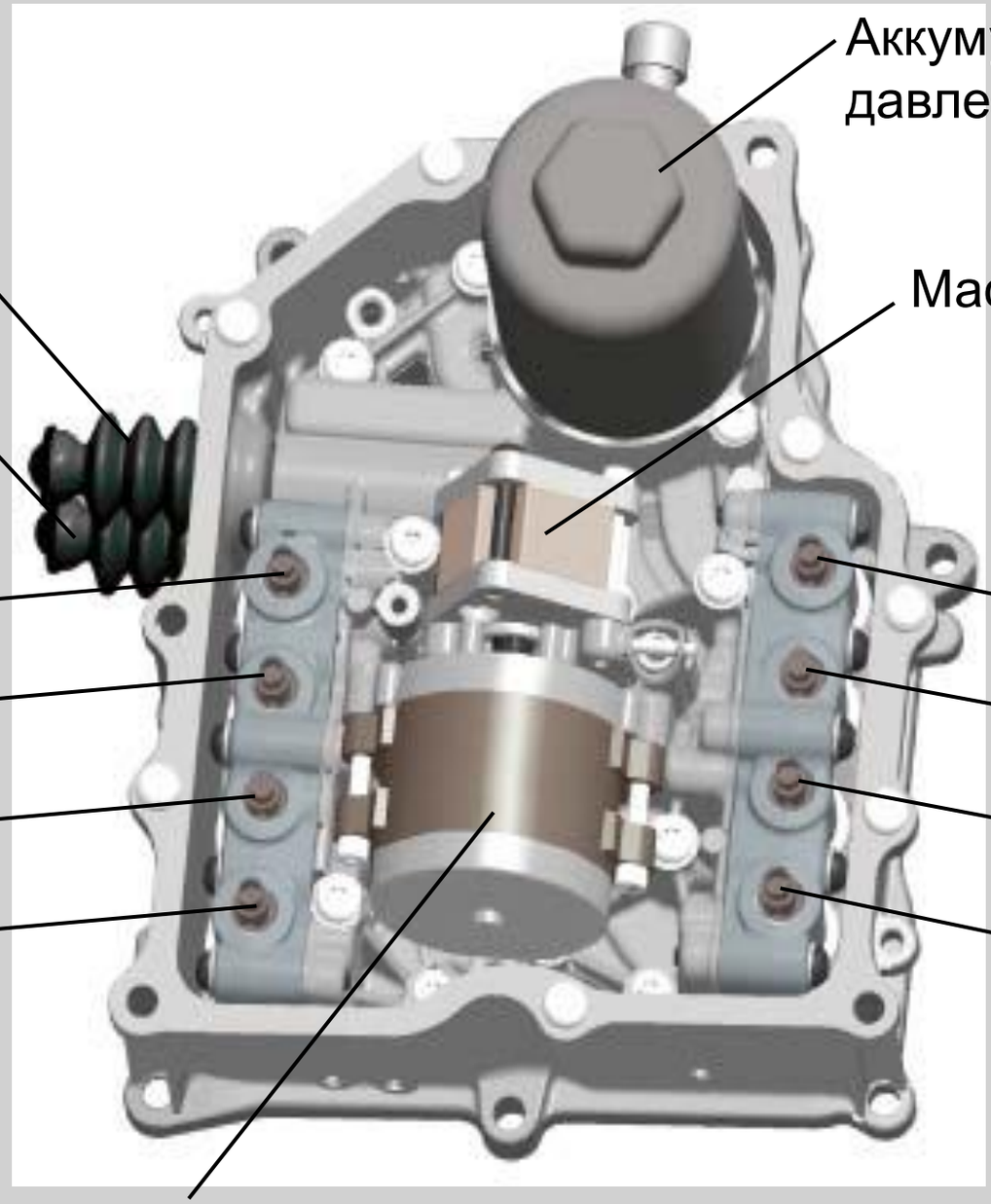
SIMPLY
CLEVER

Mechatronic - устройство

Датчик положения вилки
сцепления К1 - G617
сцепления К2 - G618

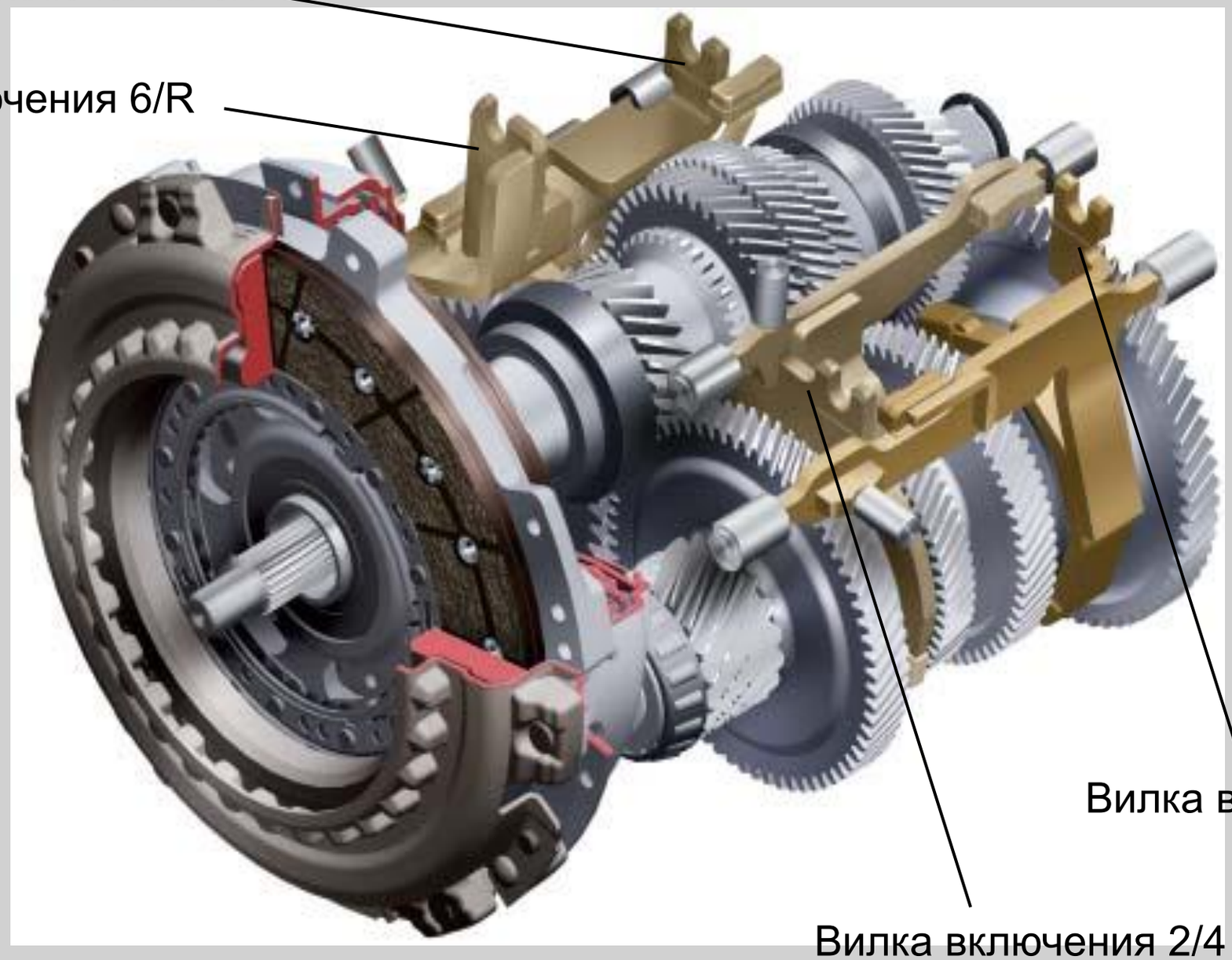
Датчик давления масла G270

Mechatronic - устройство



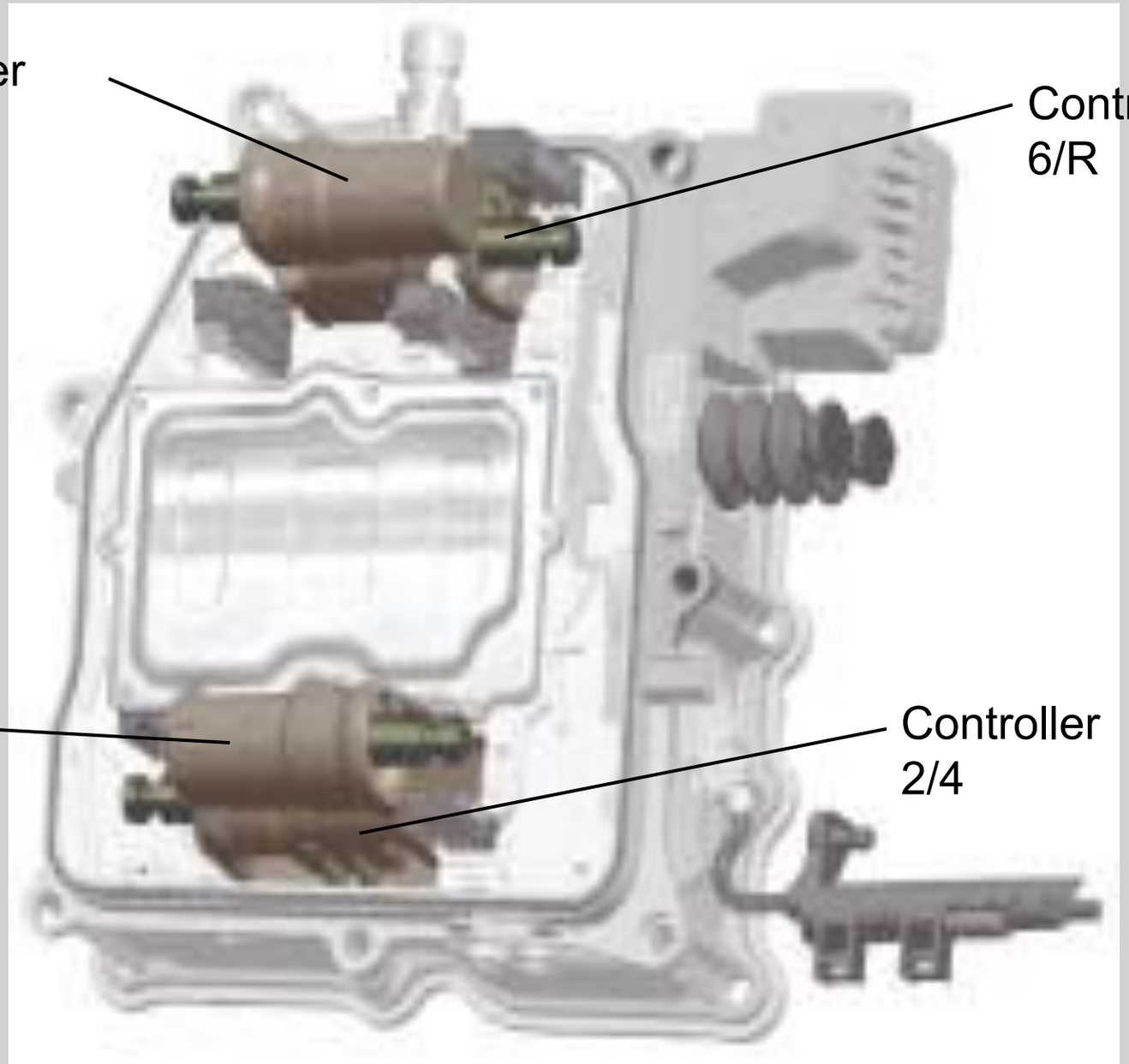
SIMPLY
CLEVER

Механизм переключения передач



SIMPLY
CLEVER

Механизм переключения передач



SIMPLY CLEVER

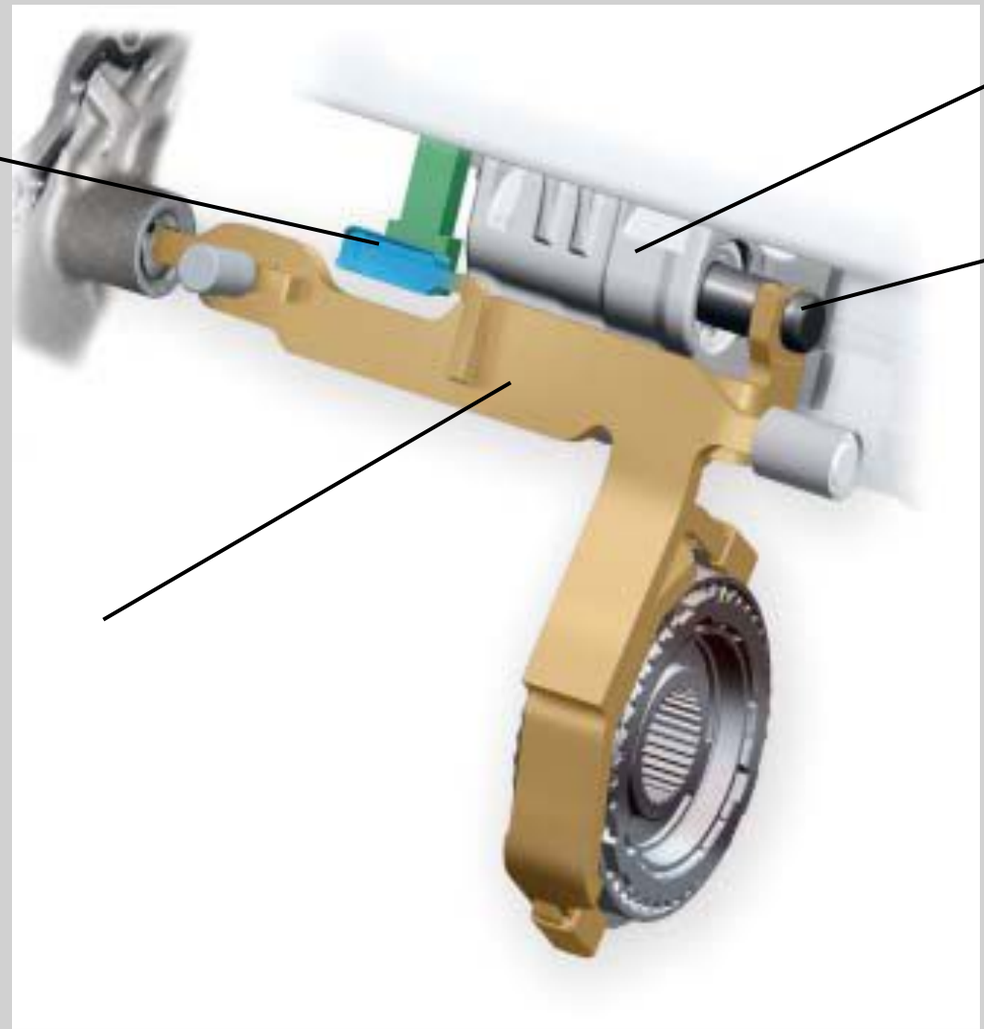
Механизм переключения передач

Selector fork position sensor

Controller

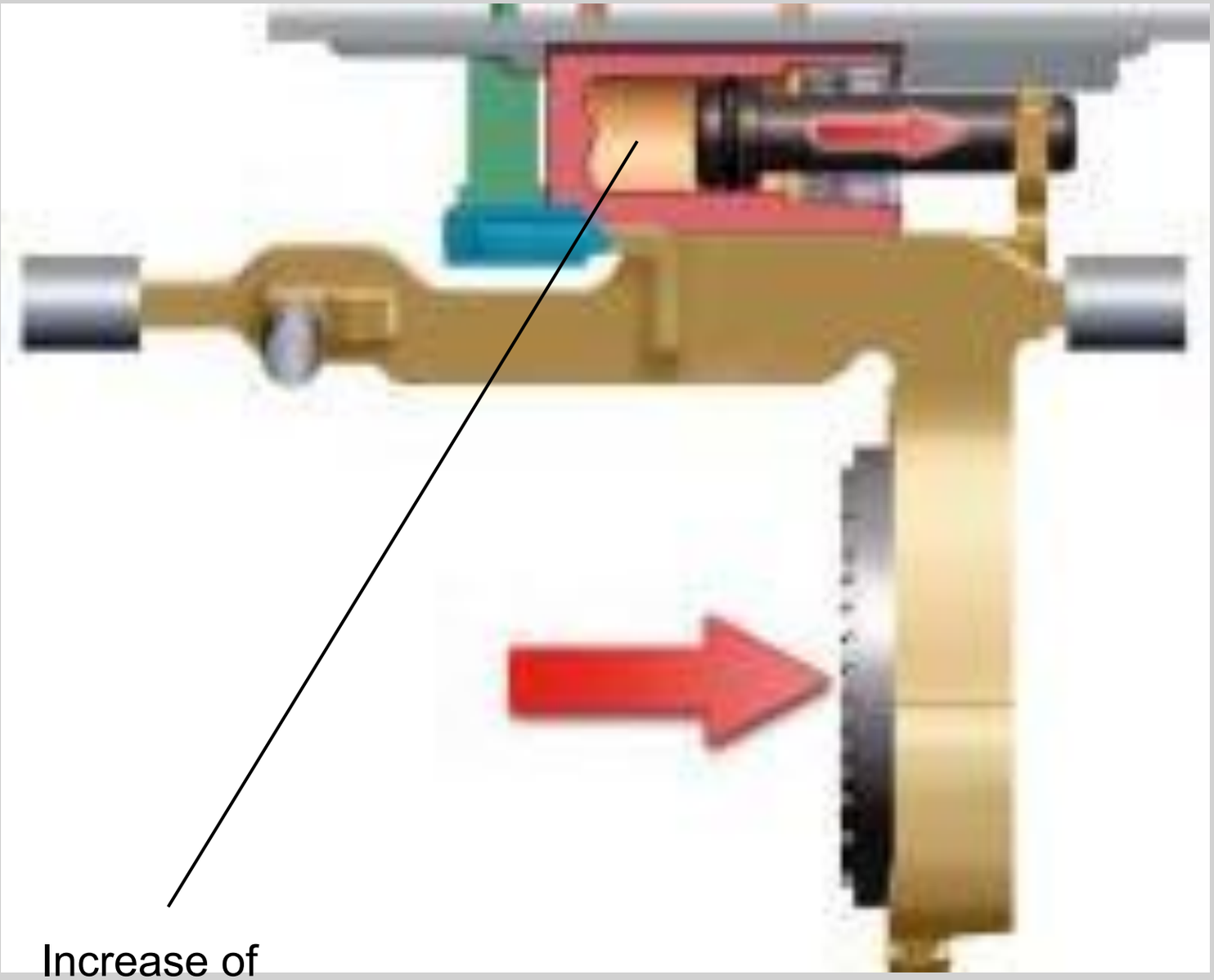
Shift piston

Selector fork



SIMPLY
CLEVER

Механизм переключения передач

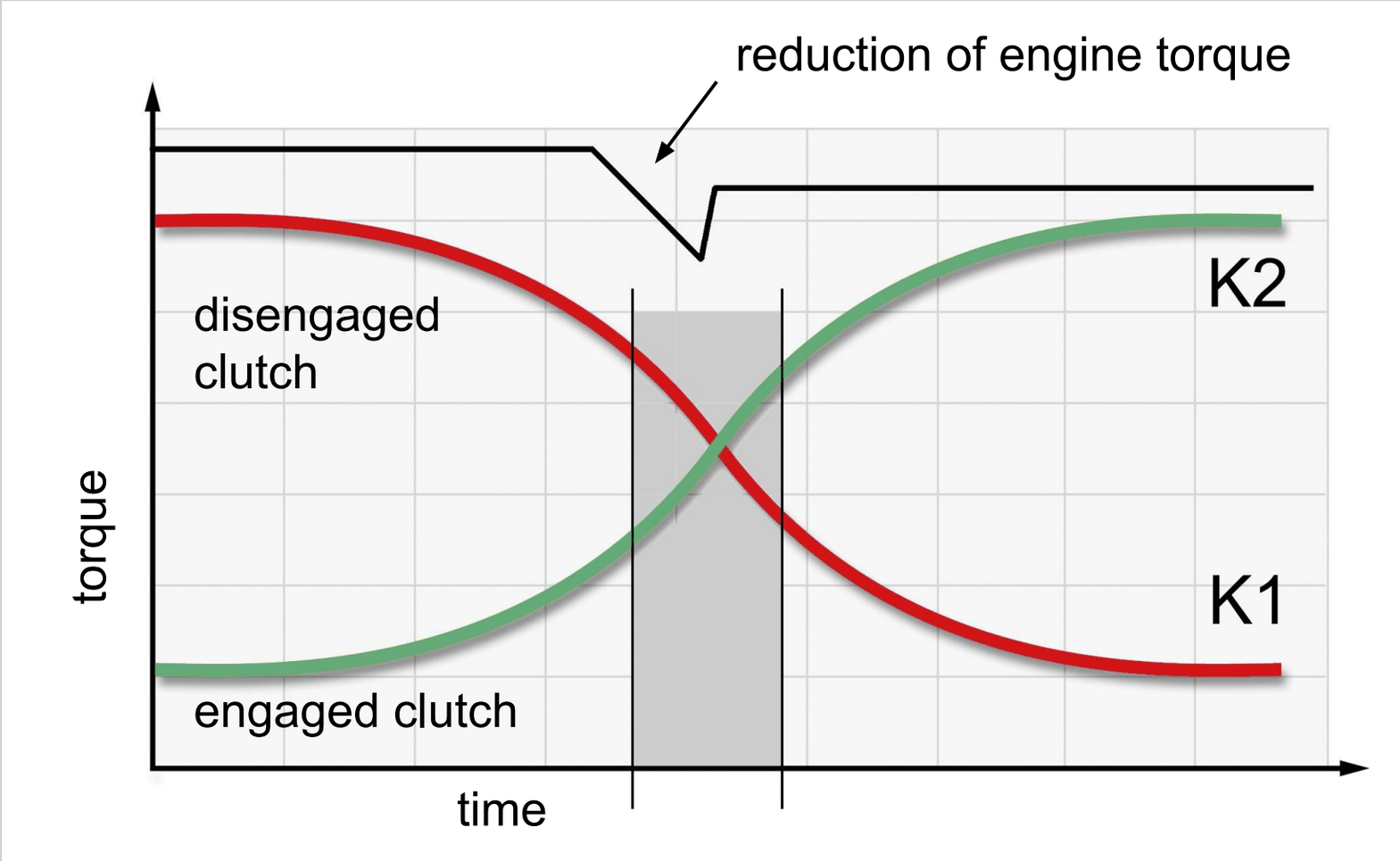


Increase of pressure

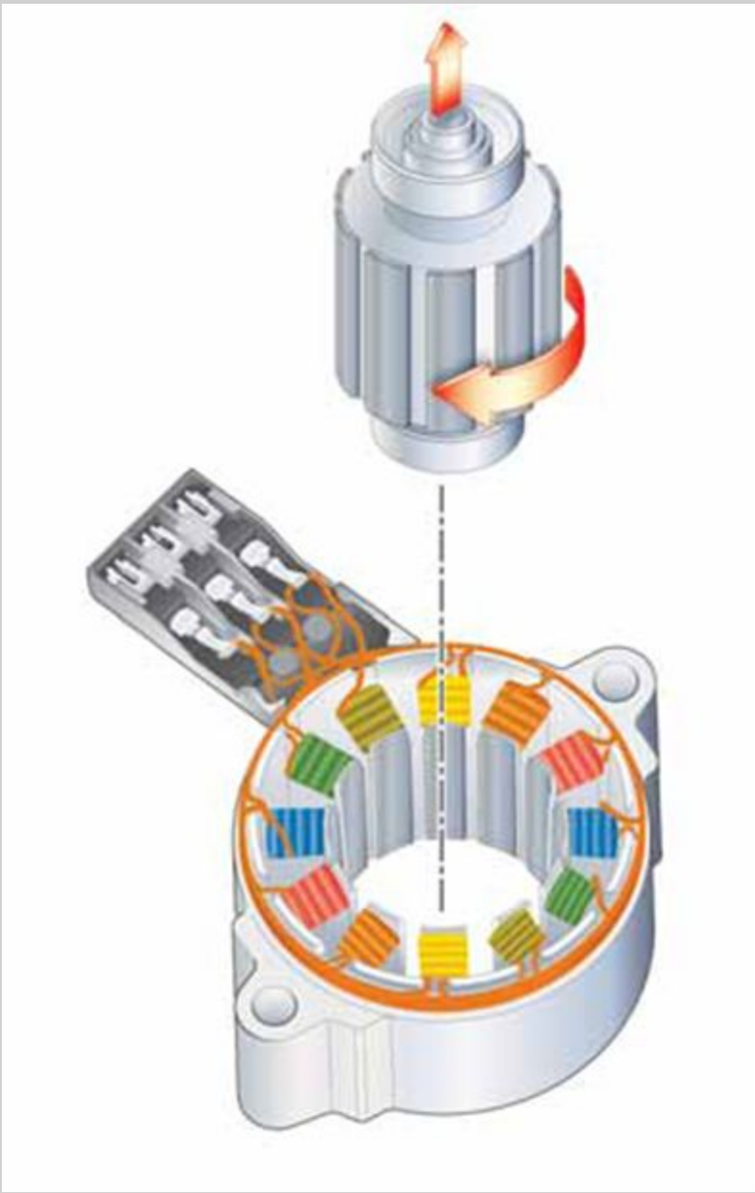
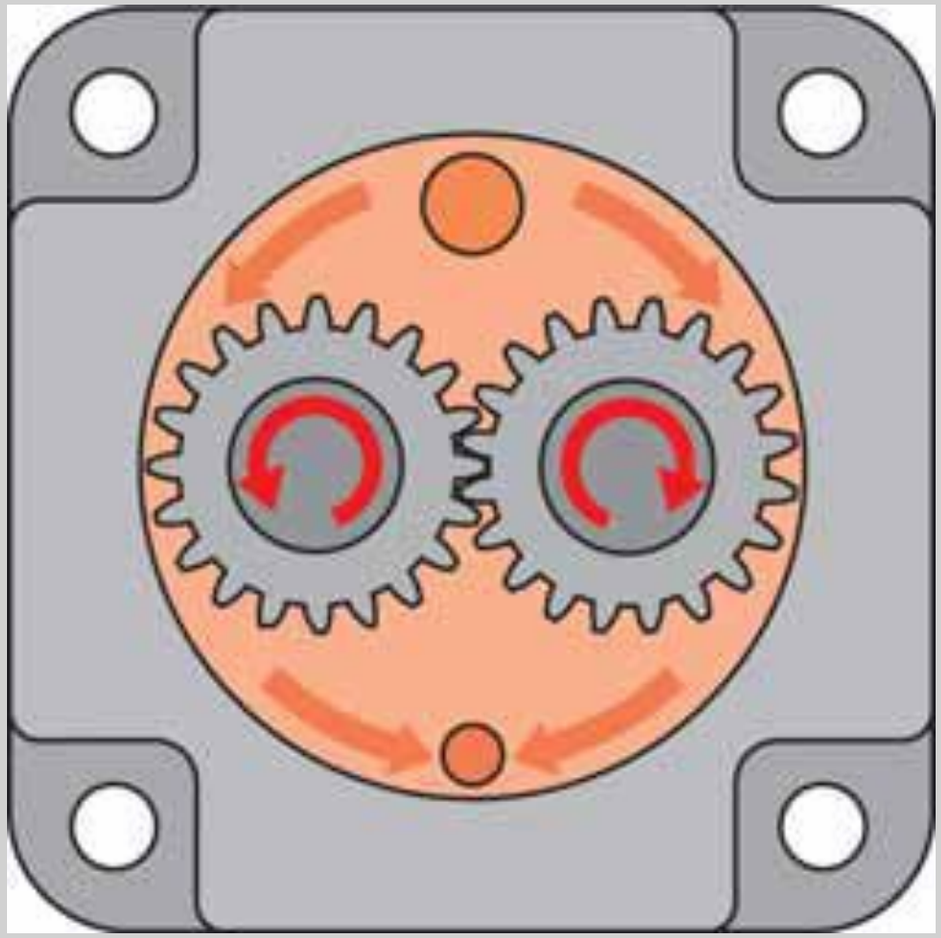
CONTENT

SIMPLY CLEVER

Процесс переключения передач



SIMPLY
CLEVER

Масляный насос

Рабочее давление 70 бар