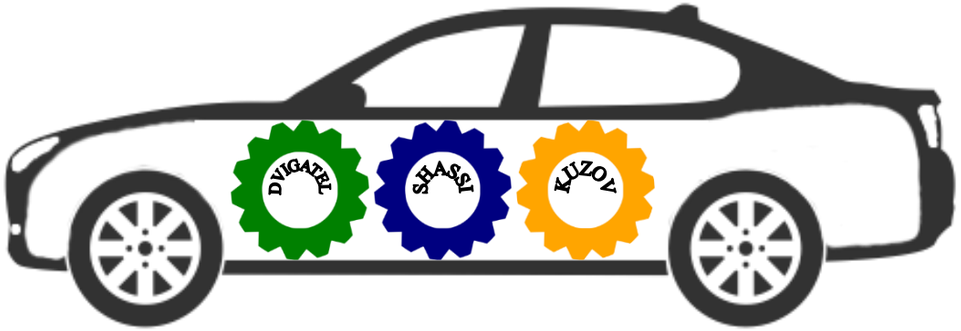
VEHICLES CONSTRUCTION

AVTOMOBILLAR KONSTRUKSIYASI



9th Topic: Transmission. Clutch.

(9-Mavzu: Transmissiya. Ilashish muftasi.)

Part 1

Associate Professor: Yusupov Sarvarbek

9-Mavzu: Transmissiya. Ilashish muftasi.

(9th Topic: Transmission. Clutch.)

O‘quv rejasi:

9.1. Transmissiyaning vazifasi va umumiy tashkil etuvchi qismlari.

9.2. Transmissiya konstruksiyasining turlari va ularning ishlashi.

9.3. Ilashish muftasining vazifasi va konstruksiyasi.

9.4. Ilashish muftasining konstruksiya turlari va ularning ishlashi.

AVTOMOBIL

- DVIGATEL
- SHASSI
- KUZOV

SHASSI

TRANSMISSIYA

- Ilashish muftasi
- Uzatmalar qutisi
- Taqsimlash qutisi
- Kardanli uzatma
- Asosiy uzatma
- Differensial
- Yetakchi g‘ildirak yuritmalari

YURISH QISMI

- G‘ildiraklar
- Ko‘priklar
- Osmalar
- Ramalar

BOSHQARISH QISMI

- Rul boshqarmasi
- Tormoz boshqarmasi

9.1. Transmissiyaning vazifasi va umumiy tashkil etuvchi qismlari.

Avtomobil harakatlanganda unga ta’sir etuvchi kuchlar har bir daqiqada uzluksiz va ixtiyoriy ravishda o‘zgarib turadi.

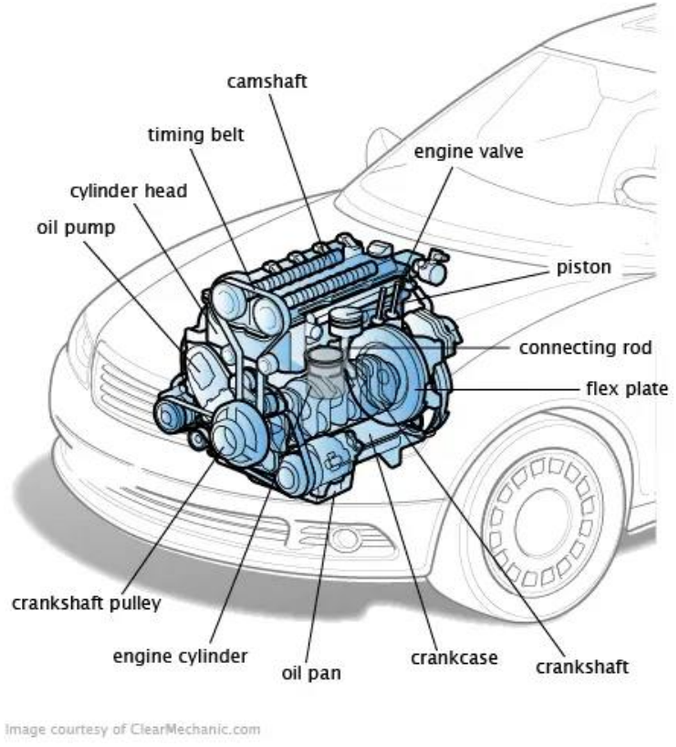
Avtomobilga **ta’sir etayotgan kuchlarning o‘zgarishi**

- **yo‘l sharoitiga**,
- **uning tezligi,**
- **tezlanishiga bevosita bog‘liq bo‘lib**,

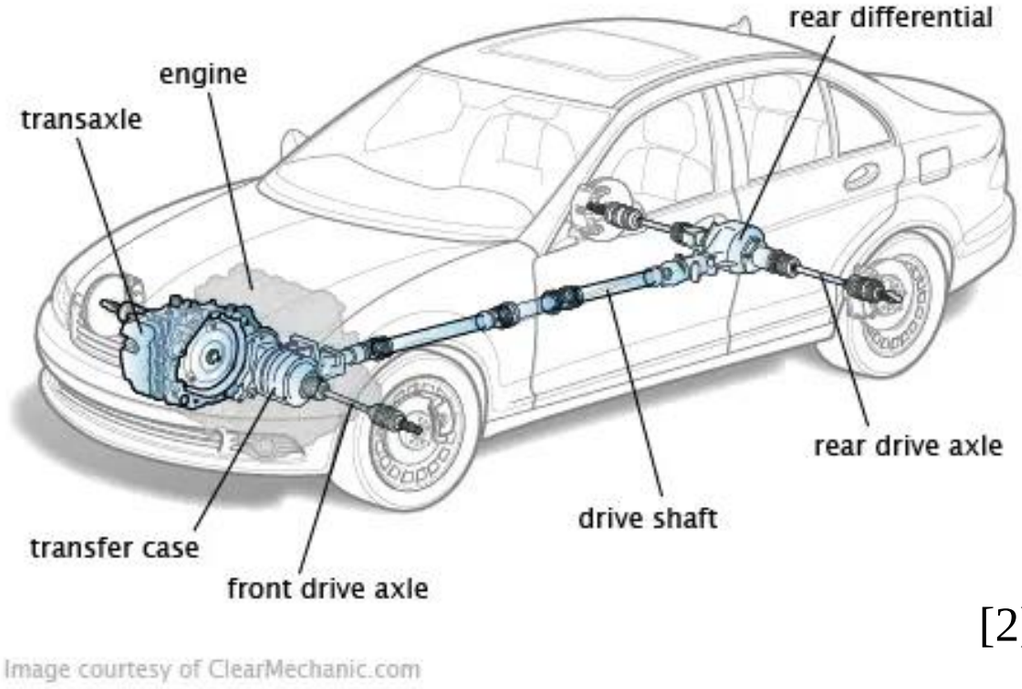
bularning vaziyatiga qarab avtomobilning **yetaklovchi g‘ildiraklariga** **dvigateldan kelayotgan burovchi momentni o‘zgartirib turish lozim bo‘ladi.**

Bu vazifani bajarish uchun avtomobillarda kuch uzatmasi qo‘llaniladi.

Avtomobil transmissiyasi **burovchi momentni** dvigateldan yetaklovchi g‘ildiraklarga **uzatish uchun xizmat qiladi.**

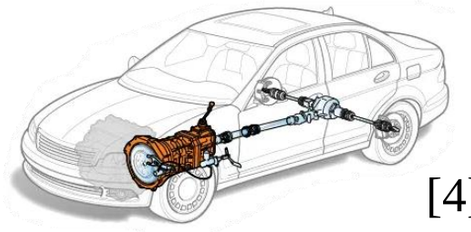


[1]

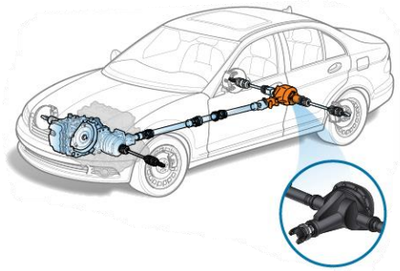


[2]

Kuch uzatma bir-biri bilan uzviy bog‘langan mexanizm va agregatlardan tashkil topgan.



[4]



[7]

Ilashish muftasi

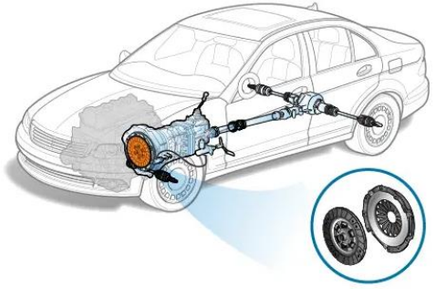
Uzatmalar qutisi

Taqsimlash qutisi

Kardanli uzatma

Asosiy uzatma

Yarim o‘qlar



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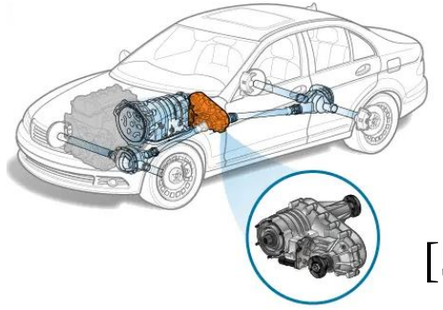
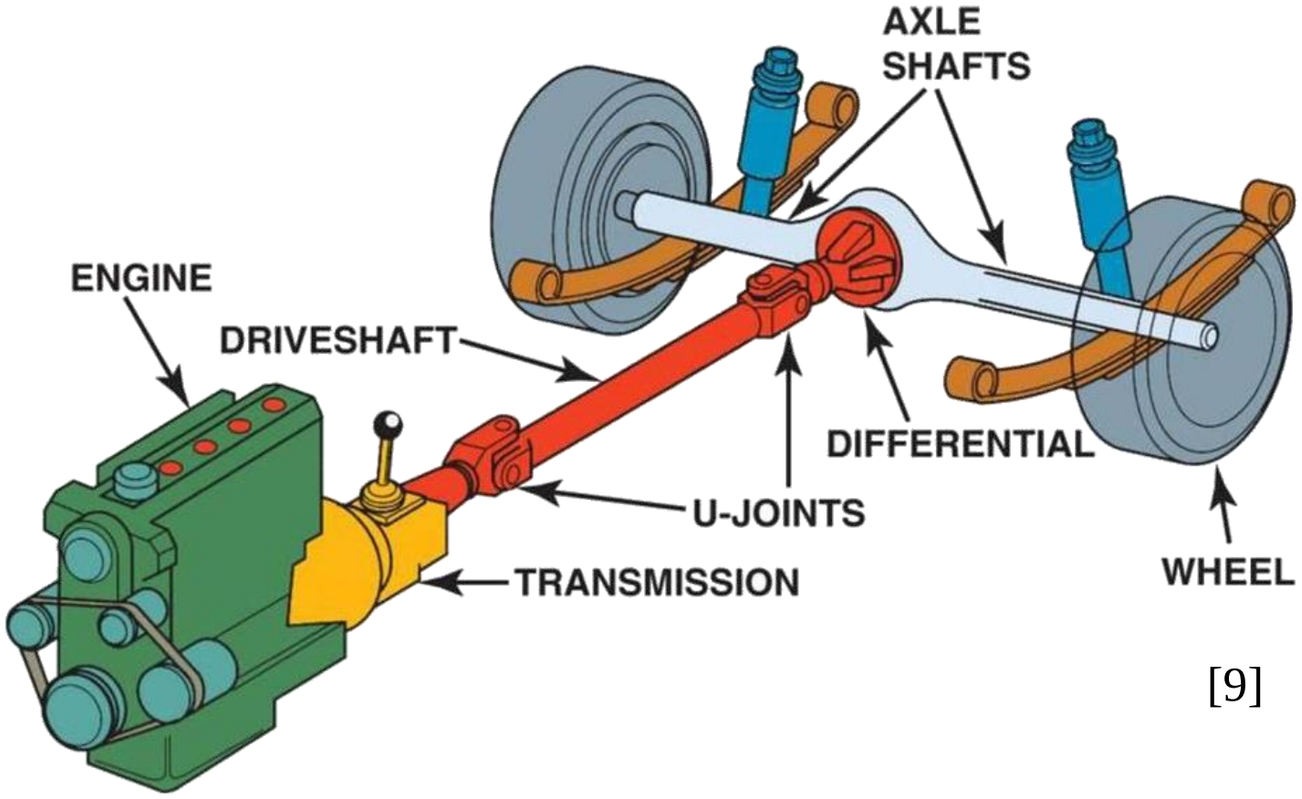


[5]

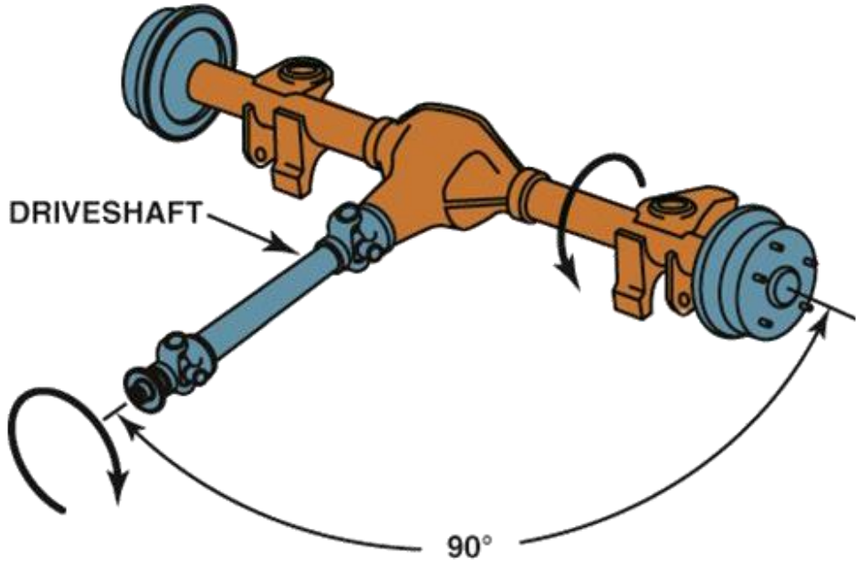
[6]

[8]

Bunda uzatilayotgan aylantiruvchi moment miqdor jihatidan o‘zgaradi va belgilangan nisbatda yetaklovchi g‘ildiraklar orasida taqsimlanadi.



[9]



[10]

Demak, yuqoridagi fikrlarni umumlashtirgan holda,

Transmissiya dvigateldan yetaklovchi g‘ildiraklarga

- **burovchi moment yo‘nalishi,**
- **qiymatini o‘zgartirib**, **uzatish** va

➢ **yetakchi g‘ildiraklarga bo‘lib berish uchun xizmat qiladi.**

9.2. Transmissiya konstruksiyasining turlari va ularning ishlashi.

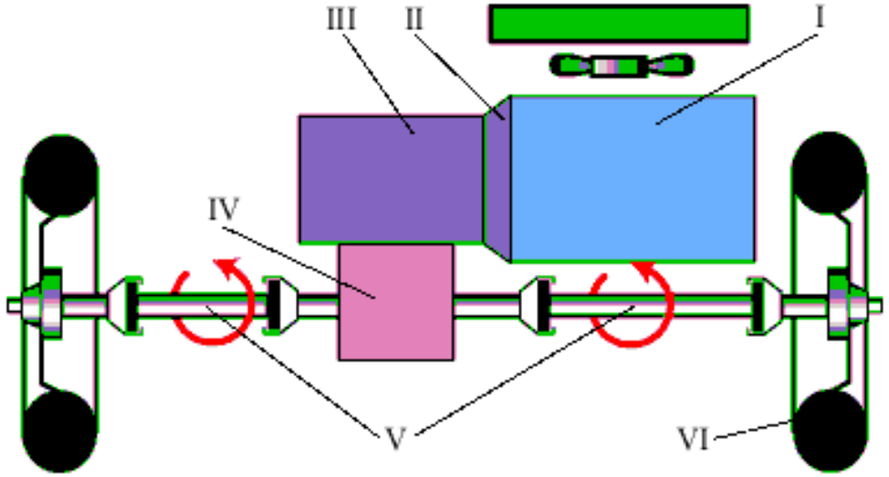
Yangi avtomobilni loyihalashdan to ishlab chiqarishgacha bo‘lgan davr ichida transmissiyaning qanday turida bo‘lishi konstruktorlar uchun asosiy vazifa hisoblanadi.

Bu vazifa avtomobilning quyidagi texnik mukammal ko‘rsatkichlarida namoyon bo‘ladi:

- **Tejamkorlik;**
- **Xavfsizlik darajasi;**
- **Turg‘unligi;**
- **Ixchamligi va umumiy qiyofasi, ko‘rkamligi;**
- **Boshqaruvchanligi;**
- **Tormozlash qobiliyati** va boshqalar.

Ikki o‘qli avtomobillar uchun dvigatel va yetakchi ko‘prikning shassiga joylashtirilishini **oltita** muqobilini ko‘rib chiqamiz:

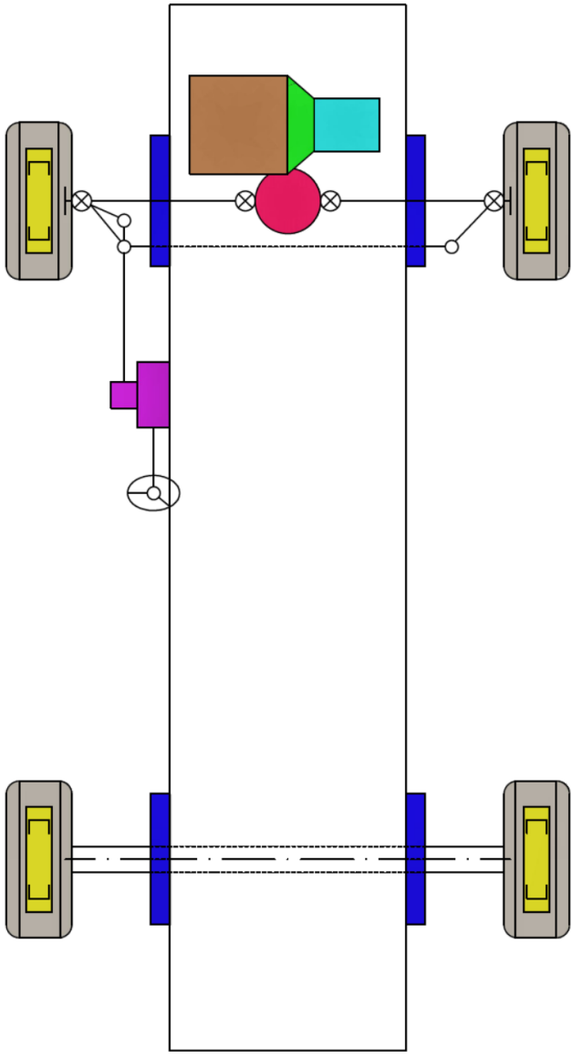
1. Old yuritmali avtomobil.



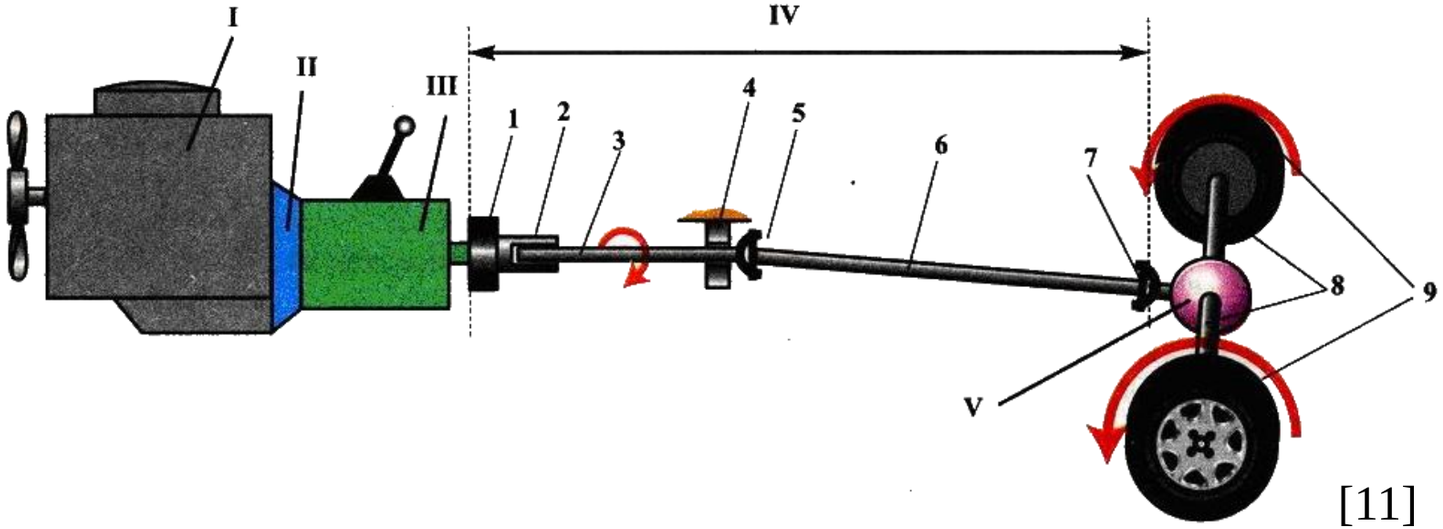
[11]

I- dvigatel, II-ilashish muftasi,
III-uzatmalar qutisi, IV-asosiy uzatma,
V-yetakchi g‘ildirak uzatmasi,
VI- yetakchi g‘ildiraklar.

4x2

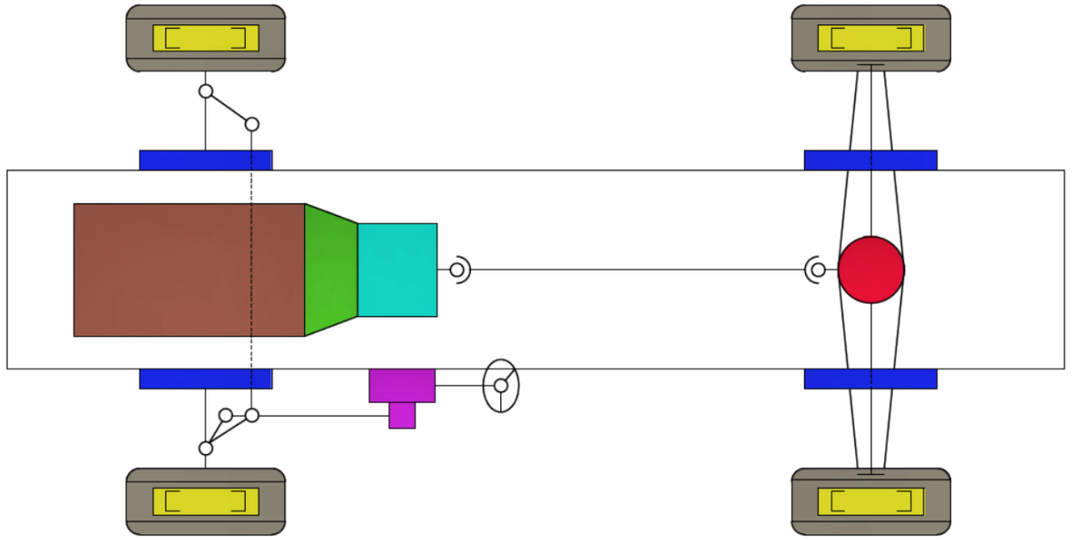


2. Ketingi yuritmali avtomobil. 4x2



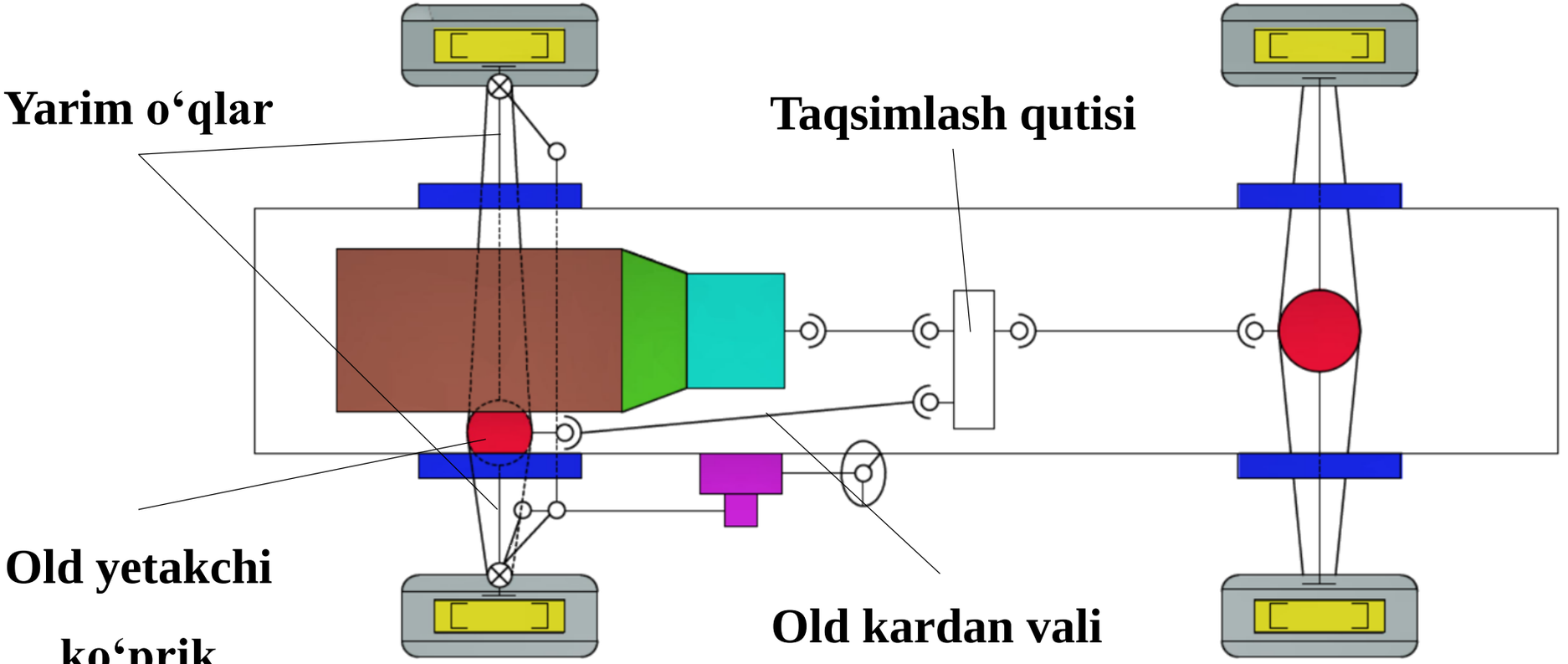
[11]

I-dvigatel; II-ilashish muftasi; III-uzatmalar qutisi; IV-kardan uzatmasi; V-asosiy uzatma;



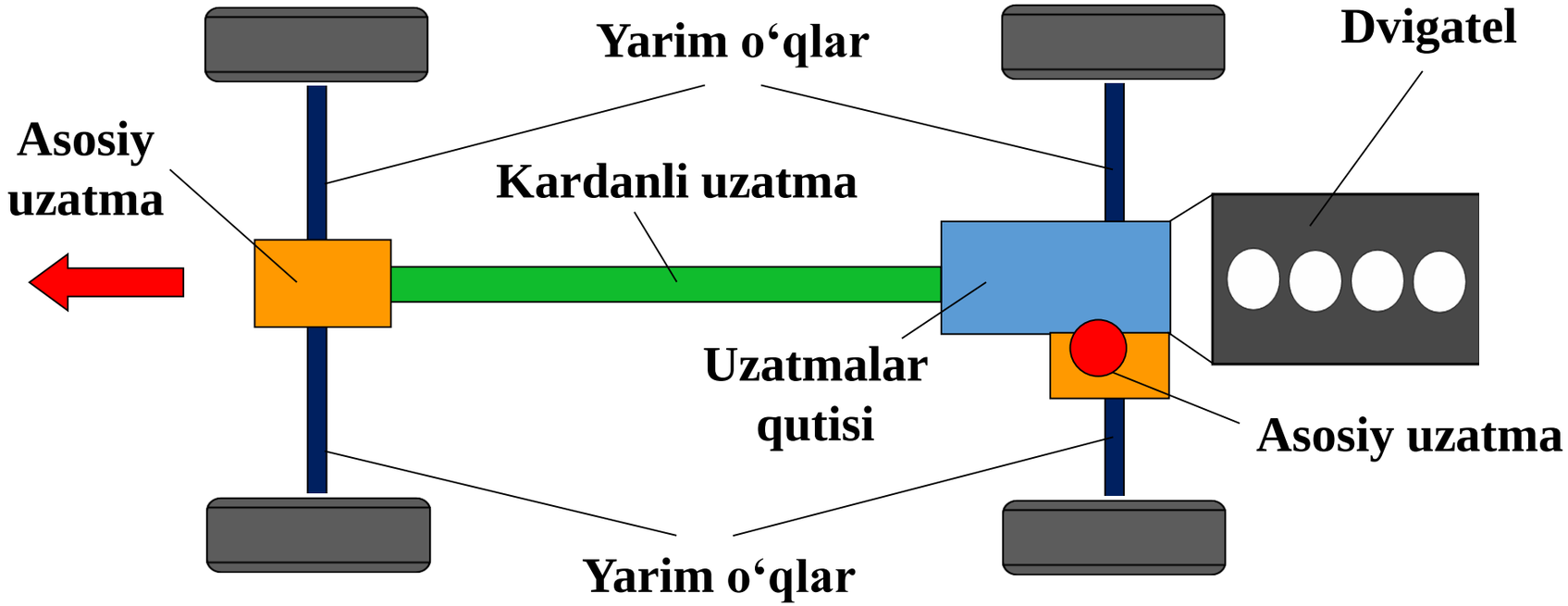
1-elastik mufta; 2-shlitsali ulanish; 3-oldingi kardan vali; 4-podshipnik osmasi; 5,7- kardan sharniri; 6-orqa kardan vali; 8-yarim o‘qlar; 9-yetakchi g‘ildiraklar.

3. Hamma g‘ildirakli yetakchi avtomobil. 4x4



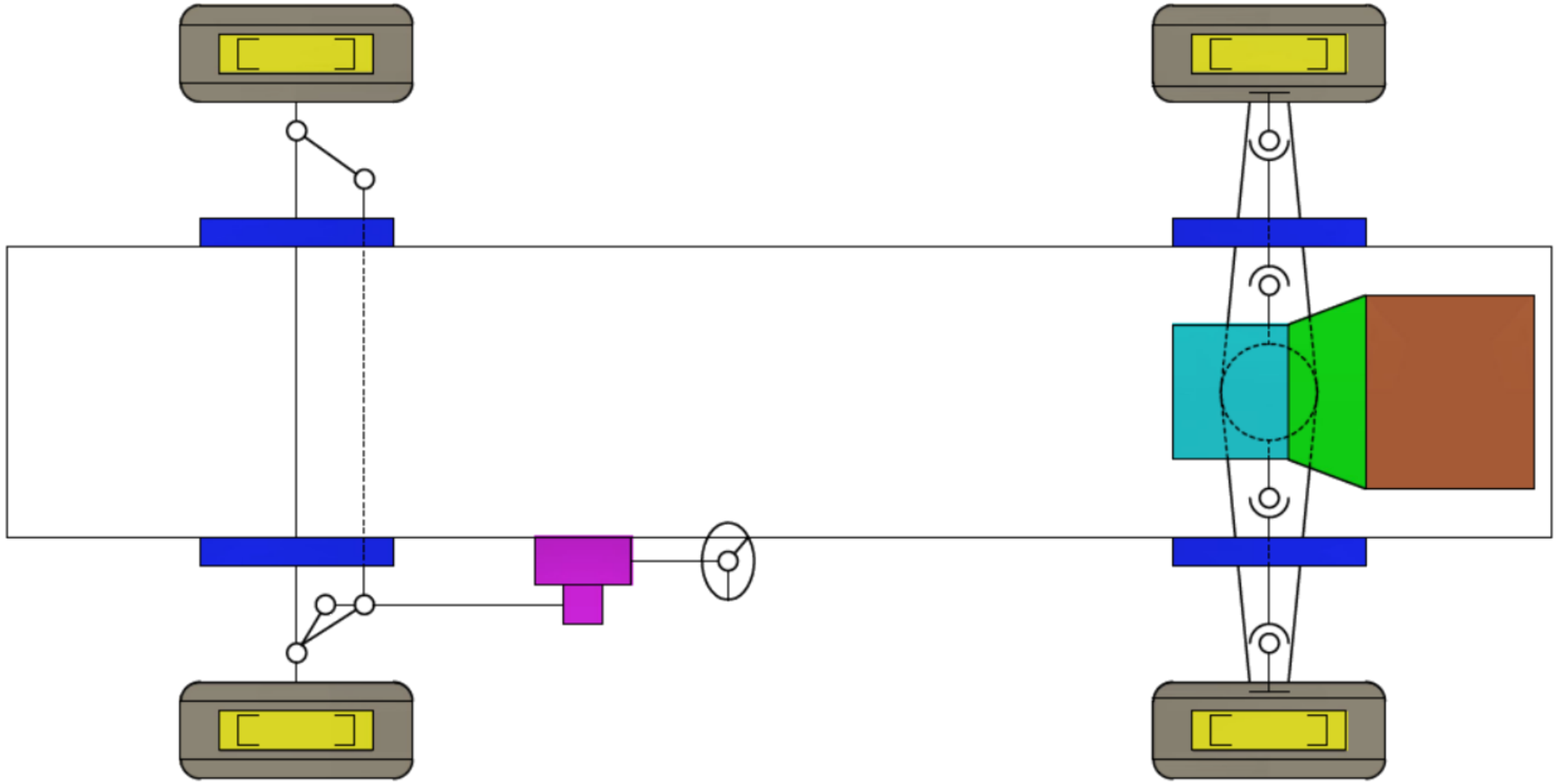
4. Hamma g‘ildiraklari yetakchi avtomobilning boshqacha muqobili.

4x4



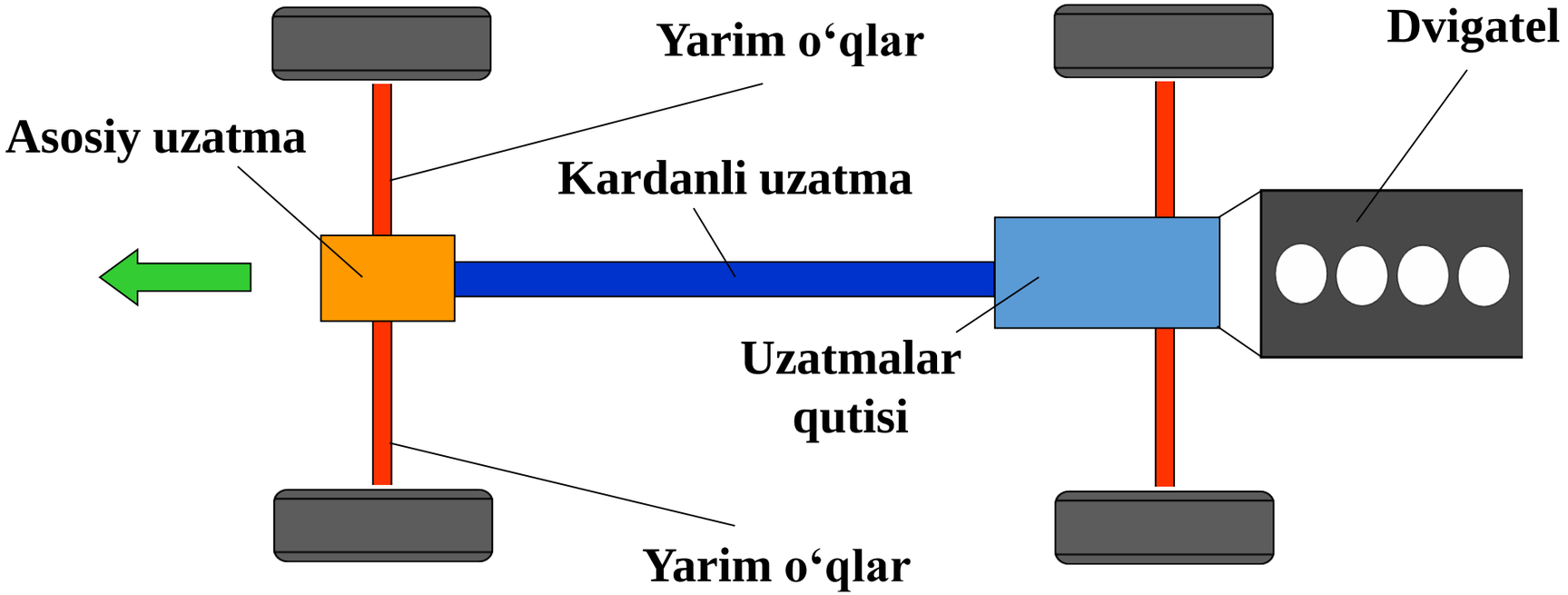
5. Ketingi yuritmali avtomobillarning o‘zgacha muqobili.

4x2

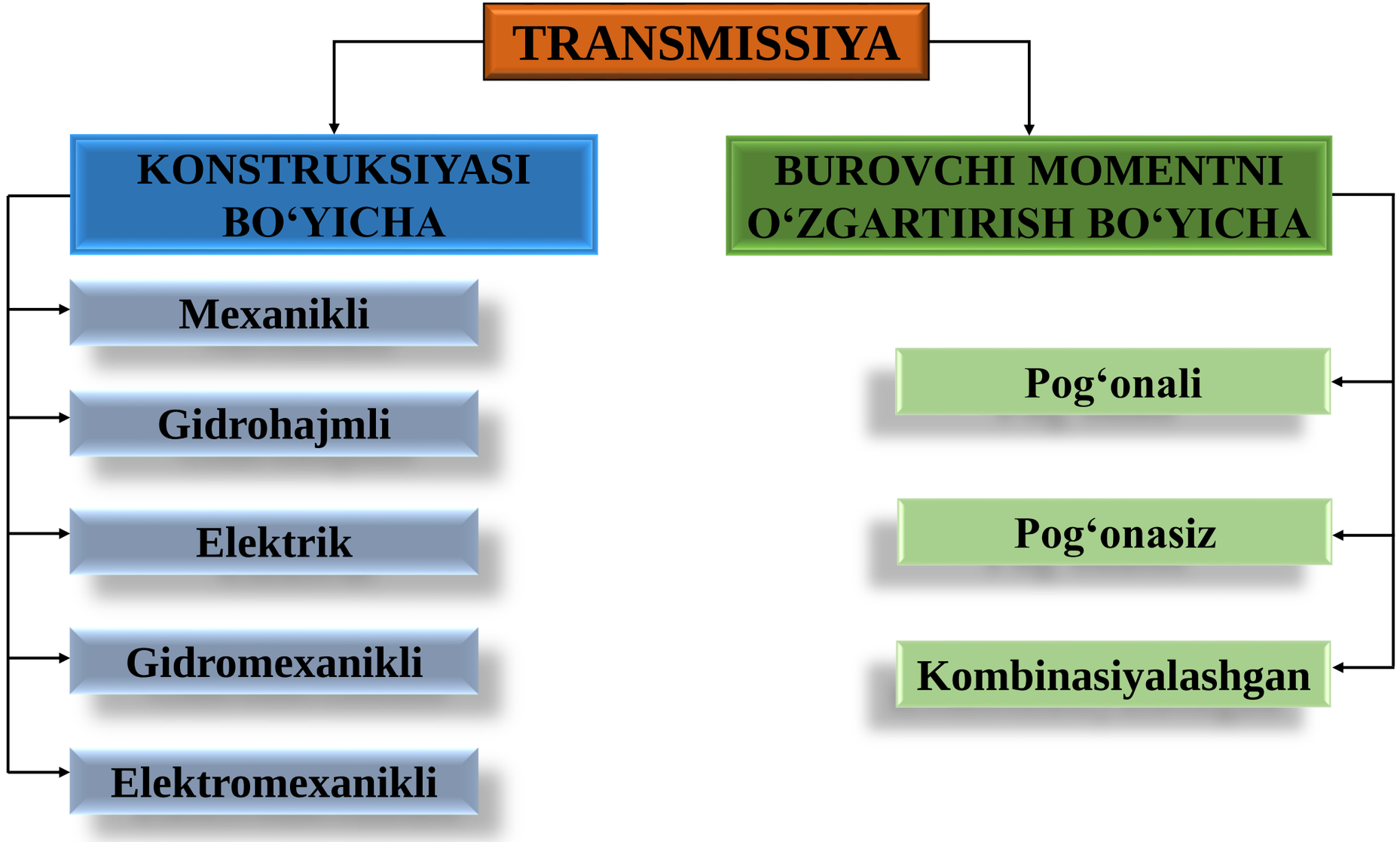


6. Dvigateli orqada bo‘lgan old yuritmali tizim asosida loyihalashtirilgan avtomobilni ishlatish mumkin bo‘lmagan muqobili.

4x2



Transmissiya dvigatel bilan yetakchi g‘ildiraklar orasidagi bog‘lanishga qarab quyidagi turlarga bo‘linadi:

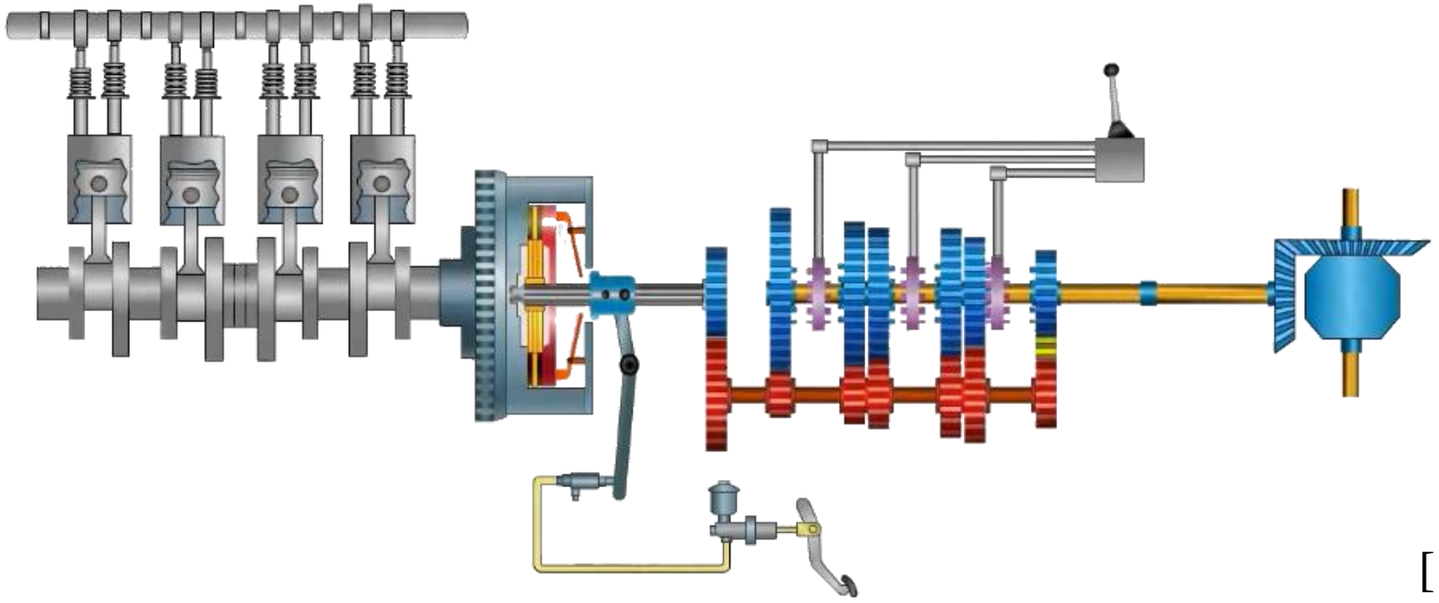


Pog‘anali mexanik transmissiya.

Zamonaviy avtomobillarda asosan mexanik (pog‘onali) transmissiya qo‘lanilib, **ular avtomobillarning vazifasi** va **agregatlarning o‘zaro joylashishiga** qarab turli sxemalarda tayyorlanishi mumkin.

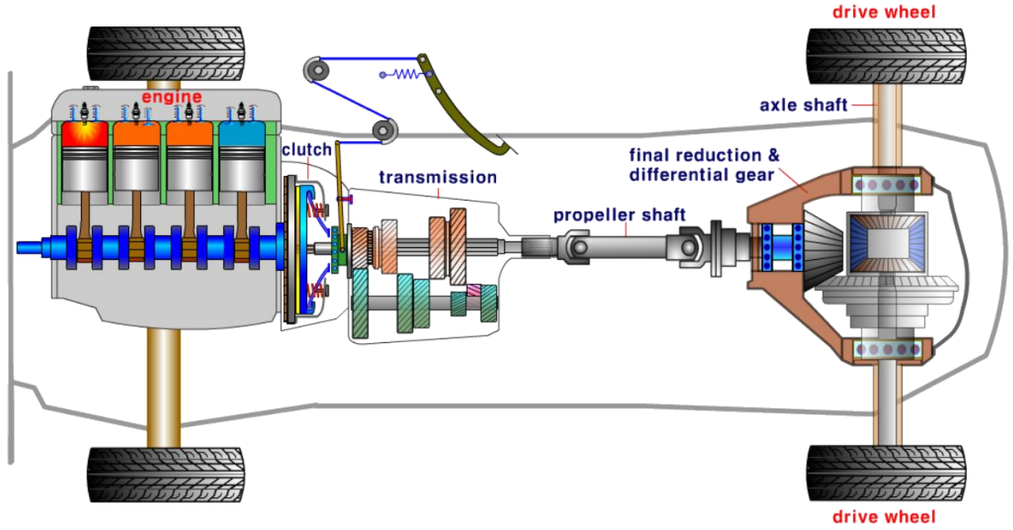
Mexanik kuch uzatmaning ko‘p tarqalgan.

Pog‘onali mexanik transmissiyaning konstruksiyasi.



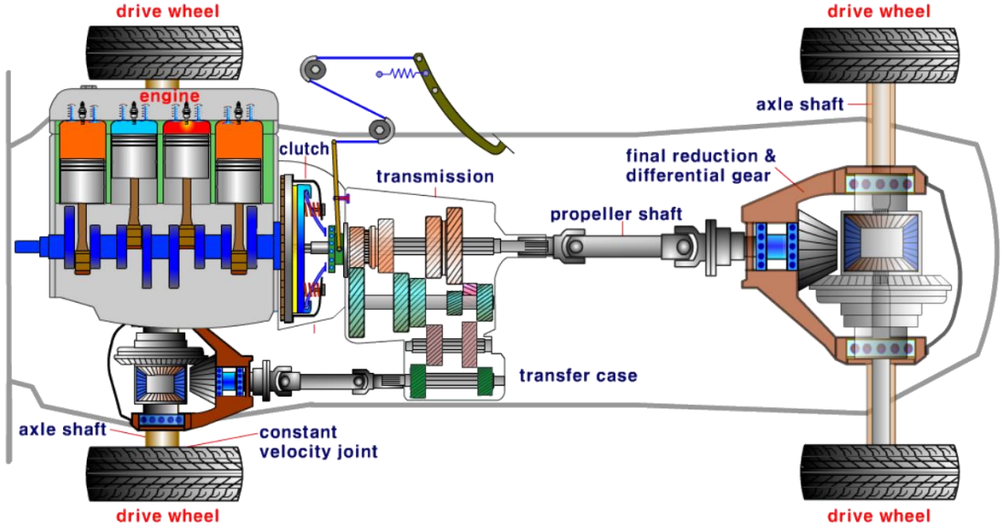
[12]

Ketingi yuritmali avtomobilning transmissiyasi.



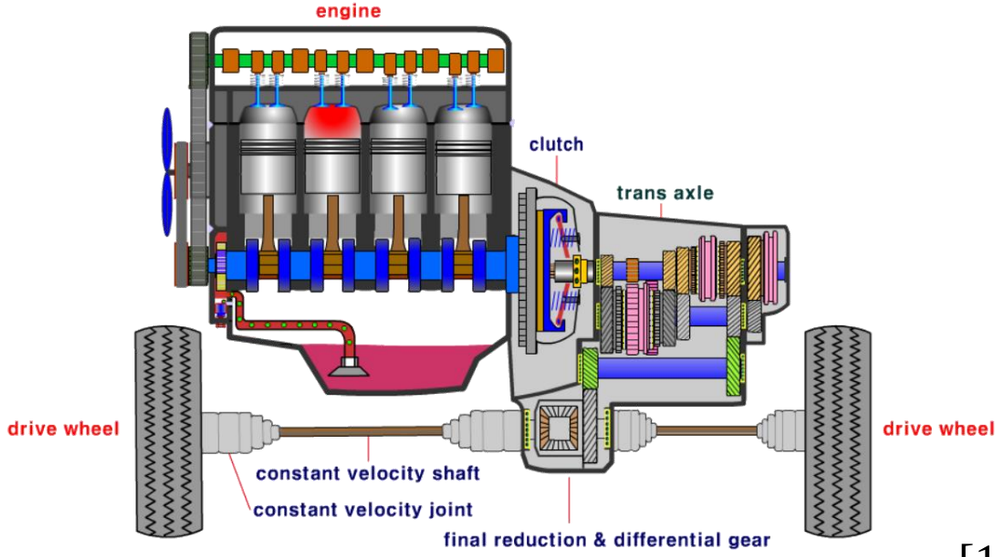
[13]

To‘la yuritmali avtomobilning transmissiyasi.



[14]

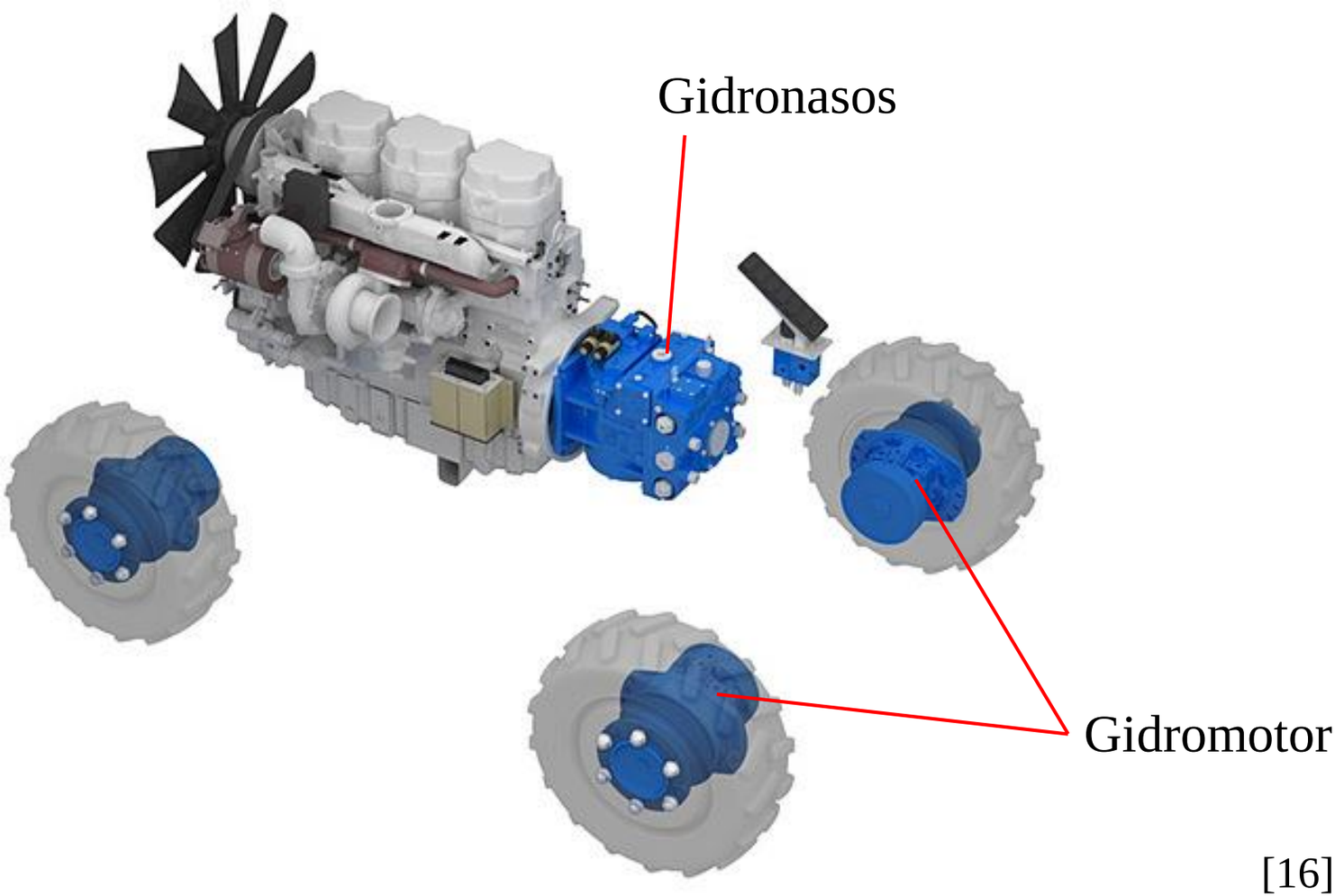
Oldingi yuritmali avtomobilning transmissiyasi.



[15]

Gidrohajmli transmissiya.

So‘nggi yillarda ayrim, juda katta va ko‘p yuk ko‘taruvchi karyer avtomobillarida **gidrohajmli** yoki **elektr kuch uzatmasi** qo‘llanilmoqda.



[16]

Elektrik transmissiya.

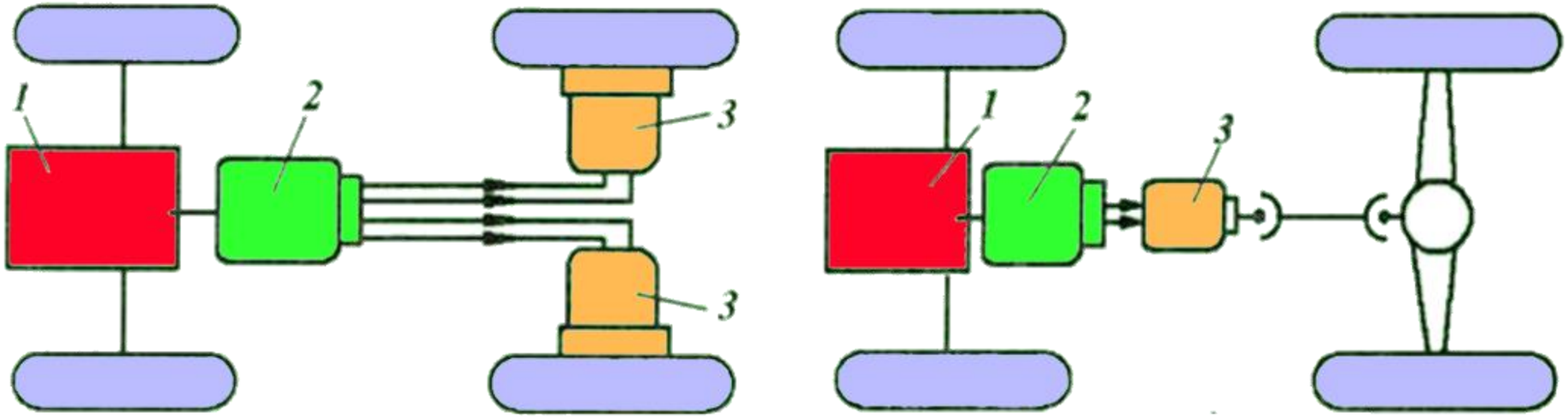
Elektr kuch uzatmasida generator ichki yonuv dvigatelidan kelayotgan burovchi momentini elektr toki hosil qilishga sarflaydi.

Elektrodvigatellar esa o‘z navbatida elektr tokini burovchi momentga o‘zgartirib, avtomobilning yetakchi g‘ildiraklariga uzatadi.

Agarda yetaklovchi g‘ildiraklar gidromotor yoki elektrodvigatel valiga o‘rnatilsa, **gidromotor – g‘ildirakli** yoki **elektromotor – g‘ildirakli avtomobil** deb aytiladi.

[17]

Tezyurar gidromotor yoki elektrodvigatellar qo‘llanilganda, yetaklovchi g‘ildiraklarda uning tezligini kamaytiruvchi tishli uzatma mexanizmi – g‘ildirak reduktori o‘rnatiladi.

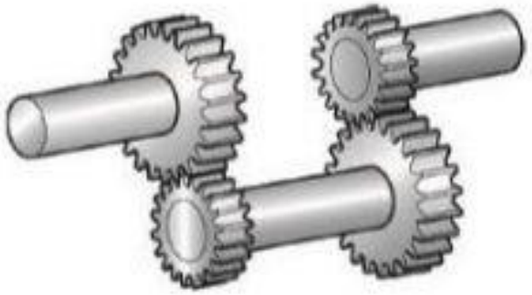
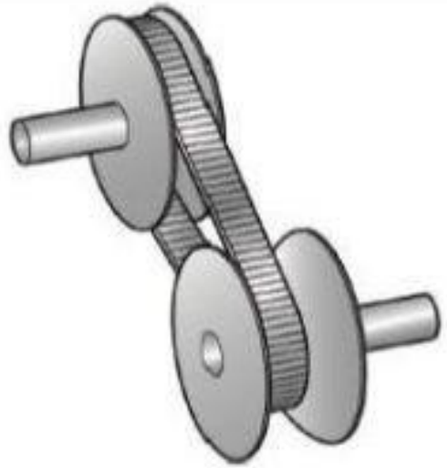


Elektr kuch uzatma Elektromexanikli kuch uzatma

[18]

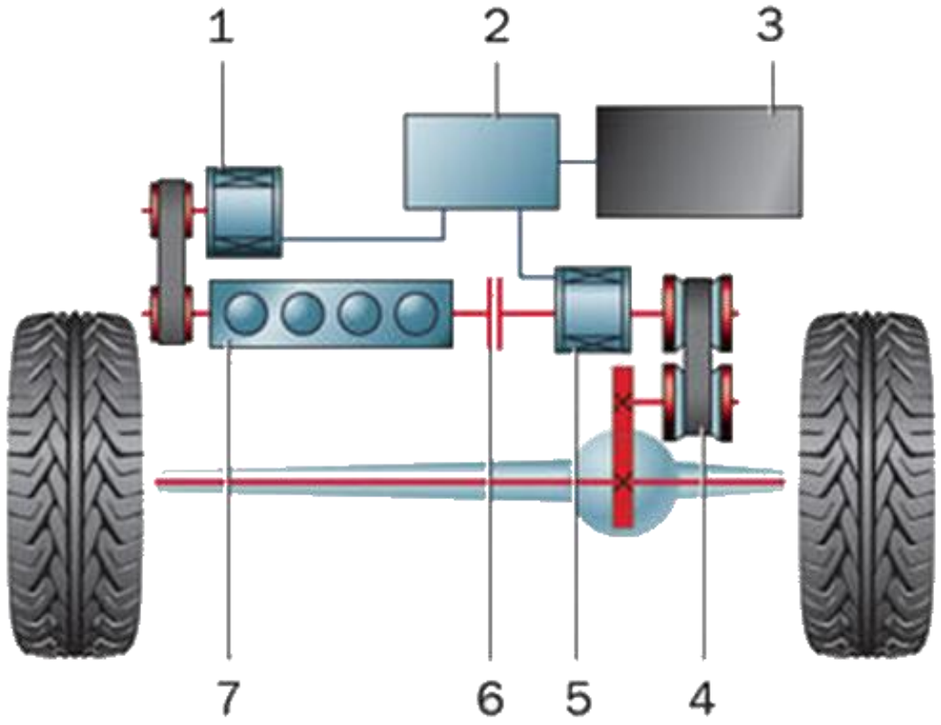
1-dvigatel, 2-generator, 3-elektrodvigatel.

Burovchi momentni o‘zgartirish bo‘yicha:

Manual Transmission (MT)	Automatic Transmission (AT)	Continuously Variable Transmission (CVT)
		

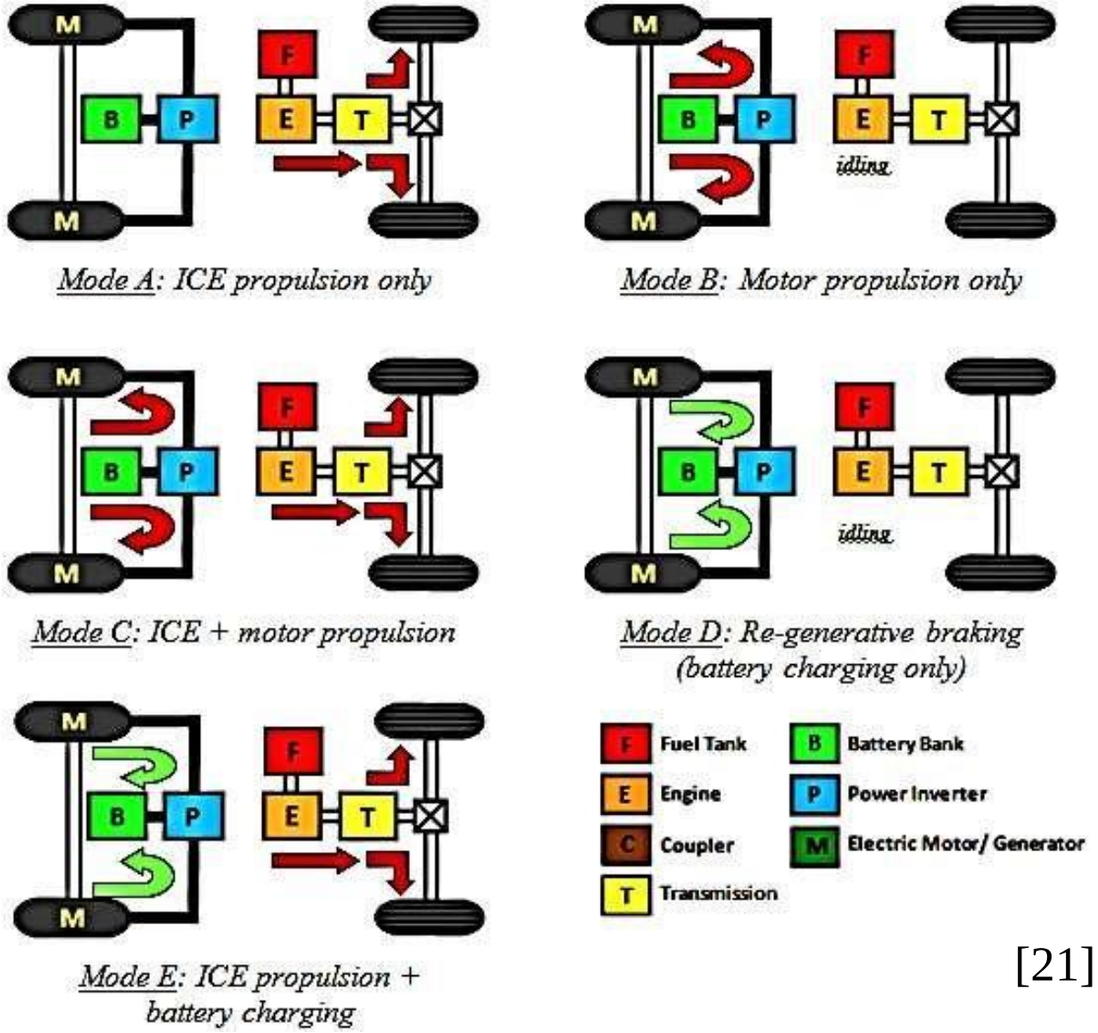
[19]

Gibrid transmissiya.



[20]

1 — doimiy magnitli sinxron elektr dvigatel;
2 — konvertor; 3 — litiy-ionli akkumulyator; 4 — CVT variatori; 5 — elektr dvigatel; 6 — ilashish muftasi;
7 — IYoD.



[21]

FOYDALANILGAN ADABIYOTLAR

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2. Drivetrain. [Online image] [Accessed in 2017]. https://storage.googleapis.com/rp-production-public-content/pvMUNB7CLjFNwPjX9Bb9Sayu
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5. Transfer Case. By Stephen Fogel. [Online image] [Accessed on 4 August 2019]. https://storage.googleapis.com/rp-production-public-content/qBBUPqp5jKaVu1TeN6aL2Y9U
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E'TIBORINGIZ UCHUN RAHMAT!!!