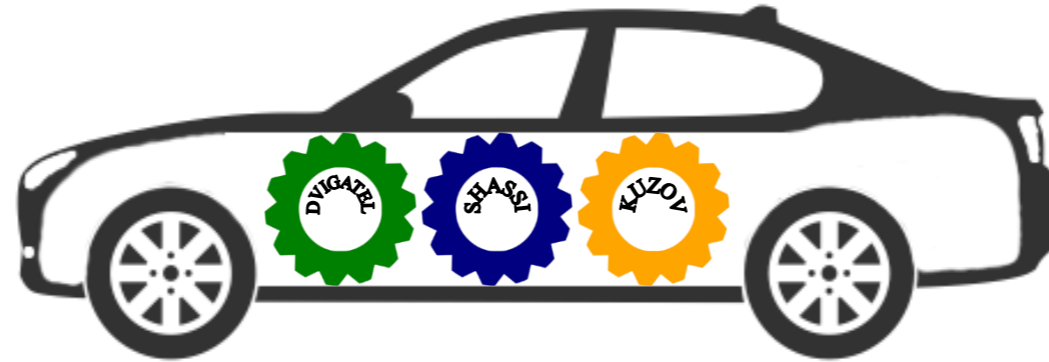


VEHICLES CONSTRUCTION

AVTOMOBILLAR KONSTRUKSIYASI



15th Topic: Brake.

(15-Mavzu: Tormoz boshqarmasi.)

Part 2

Associate Professor: Yusupov Sarvarbek

15-Mavzu: Tormoz boshqarmasi.

(15th Topic: Brake.)

O'quv rejası:

- 15.1. Tormoz boshqarmasining zaruriyati va vazifasi.
- 15.2. Tormoz tizimlarining turlari va ularning vazifasi.
- 15.3. Tormoz mexanizmlari va ularning konstruksiyalari.
- 15.4. Mexanik, gidravlik tormoz yuritmalari va ularning konstruksiyalari.**
- 15.5. Pnevmatik tormoz yuritmasi va uning konstruksiyasi.**

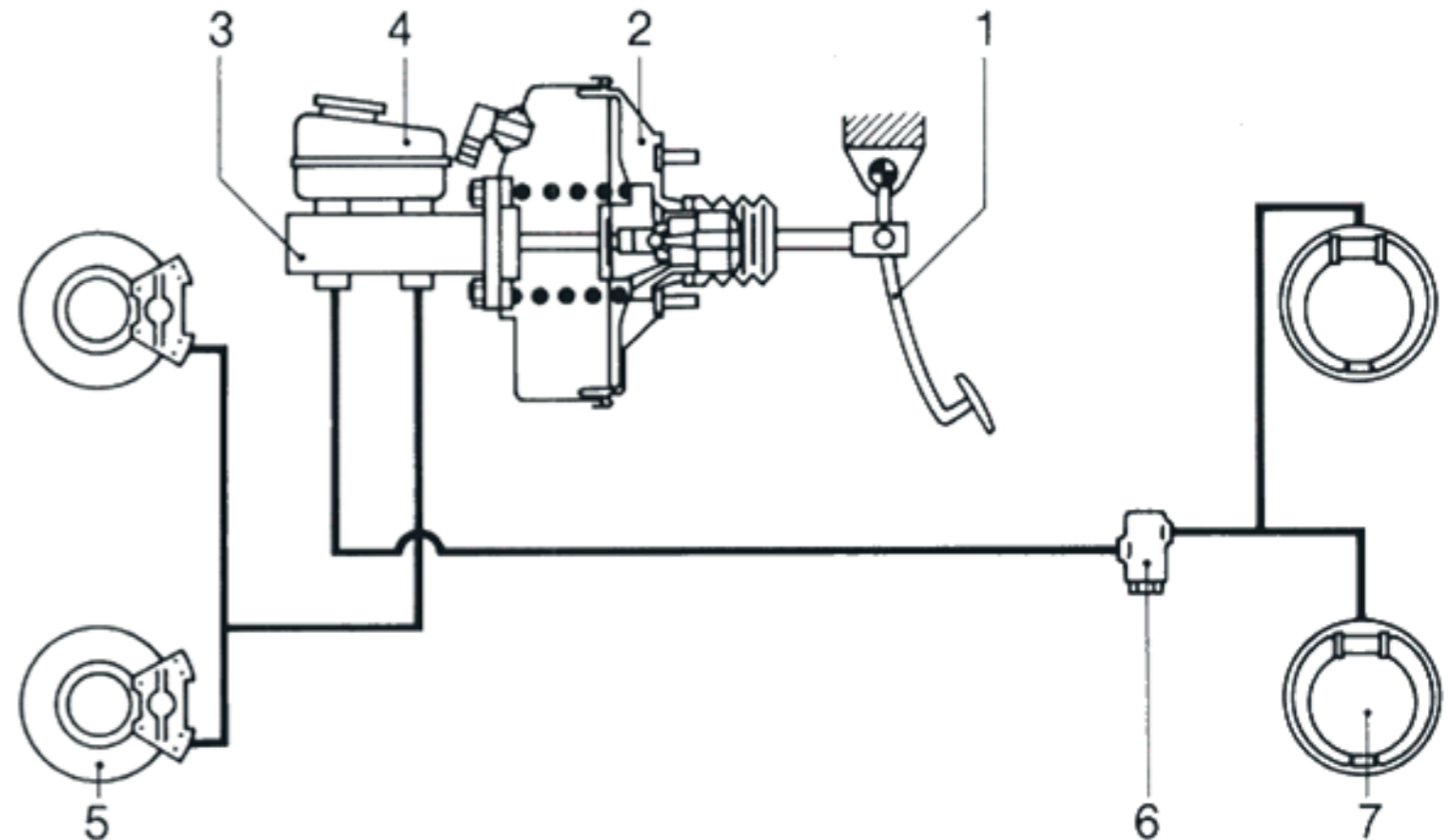
15.4. Mexanik, gidravlik tormoz yuritmalari va ularning konstruksiyalari.

Tormoz yuritmasining vazifasi haydovchi tormoz pedalida yoki tormoz richagida hosil qilgan kuchni **tormoz mexanizmiga** yetkazish yoki tormoz mexanizmini ishga tushiradigan **energiya manbaini boshqarishdan iborat.**

Tormoz yuritmasi tormoz mexanizmlarini **oson**, **tez** va **bir vaqtda ishga tushirishi kerak** va tormoz mexanizmlariga yetkazilayotgan **kuchlarni** kerakli miqdorda **taqsimlab borishi kerak.**

Tormoz tarmog'ining ishlashi uchun kerakli bo'lgan energiya bilan ta'minlovchi tuzilmalar yig'indisi **energiya manbai** deb ataladi.

1-tormoz pedali, 2-vakuum,
 3-asosiy silindr, 4-suyuqlik
 idishi, 5-old g'ildirak
 tormozi, 6-taqsimlagich,
 7-orqa g'ildirak tormozi.



[13]

Tormoz yuritmasi

tormoz pedalidagi kuch bilan

tormoz mexanizmlarini **ishga tushiruvchi kuchlar** orasidagi

mutanosiblikni ta'minlab borishi **zarur**.

Tormoz yuritmalari:

- **yuqori FIK ga ega bo'lishi;**
- **konstruksiyasi sodda bo'lishi;**
- **foydalanishda ishonchli bo'lishi kerak.**

Tormoz yuritmalari:

- **Mexanik;**
- **Gidravlik (suyuqlik yordamida);**
- **Pnevmatik (havo yordamida);**
- **Elektr;**
- **Kombinatsiyalashgan (pnevmo**gidravlik**, pnevmo-**elektrik** va h.k) yuritmalari bo‘lishi mumkin.**



Mexanik tormoz yuritmalari.

Mexanik tormoz yuritmasi **richag**, **tortqi**, **valik** va **troslardan** iborat bo‘lib, shu detallar orqali tormoz pedalidagi kuch tormoz mexanizmlariga uzatiladi.

Mexanik tormoz yuritmasi tormoz mexanizmlarining bir vaqtda ishga tushishini va tormoz mexanizmlariga uzatilayotgan kuchlarni teng taqsimlanishini ta‘minlab bera olmaydi.

Sharnirli birikmalarning va tayanchlarning ko‘pligi ishqalanishga sarflanadigan energiyani ko‘paytiradi.

Shuning uchun bu yuritmalarda **FIK** ancha past.

Yuqorida sanab o‘tilgan kamchiliklari hisobiga mexanik tormoz yuritmasi ishchi tormoz tizimlarida ishlatilmaydi.

Lekin avtomobillarni o‘z joyida chegaralanmagan vaqt mobaynida ushlab turish uchun mexanik tormoz yuritmasi **to‘xtatib turish tormoz** tizimida keng qo‘laniladi.



Gidravlik tormoz yuritmalari

Gidravlik tormoz yuritmasi gidrostatik hisoblanadi, ya'ni tormozlanish vaqtida gidravlik tormoz yuritmasining hamma qismida suyuqlik bosimi bir xil oshadi va shu bosim hisobiga pedaldagi kuch tormoz mexanizmlariga uzatiladi.

Gidravlik tormoz yuritmasining afzalliklari quyidagilardir:

- **Tormoz mexanizmlarining ishga tushish vaqti juda kam;**
- **FIK yuqori, massa va o'lchamlari kichkina;**
- **Yuritmani avtomobilda kompanovka qilish (joylashtirish) qulay.**

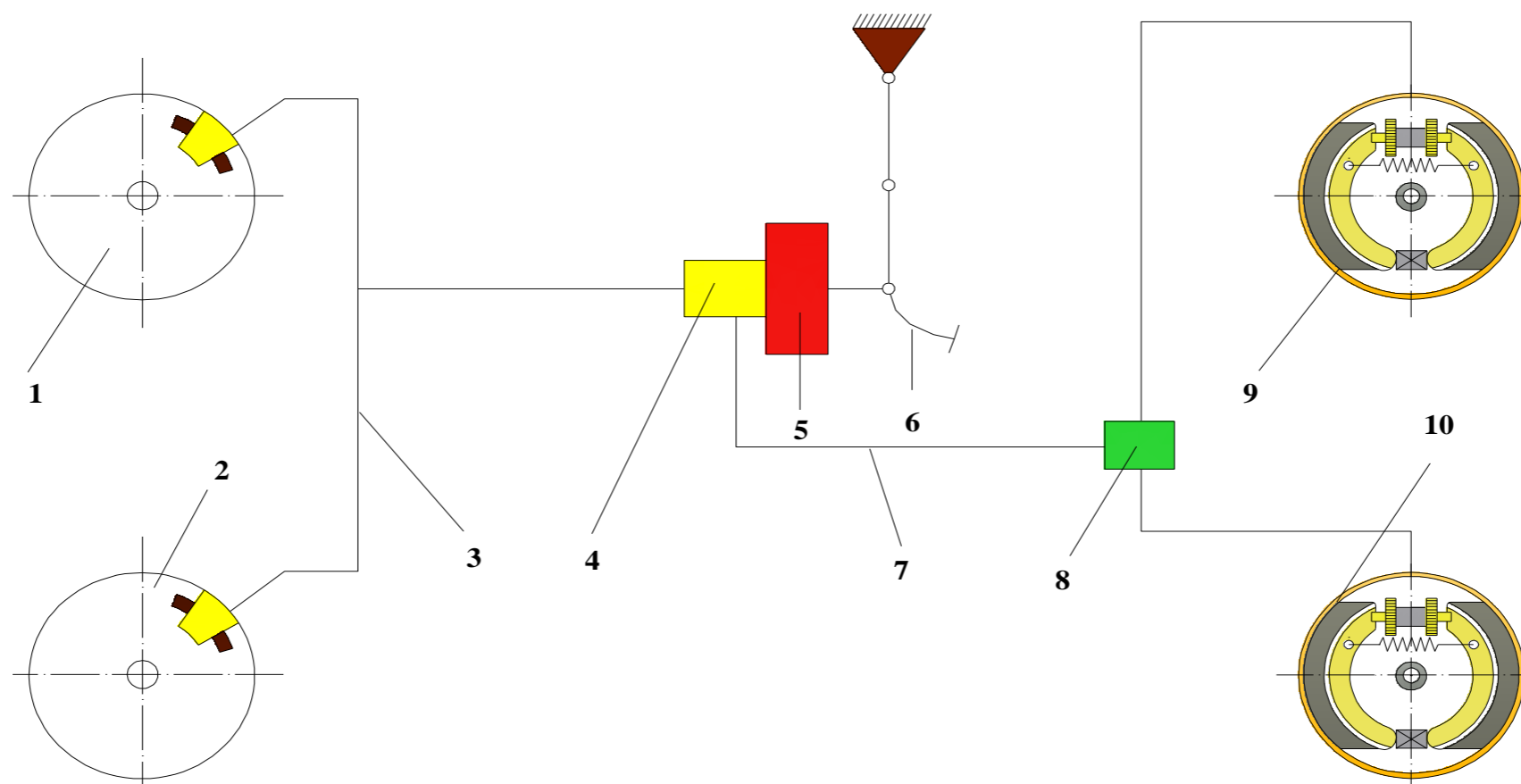
Tormoz yuritmasi quyidagi qismlardan tashkil topgan:

1) **boshqarish qismi** vositasida energiya manбайдan tormoz mexanizmlariga uzatilayotgan energiya miqdor jihatdan rostlab turiladi.

Bularga tormoz **krani**, **asosiy tormoz silindri**, **to‘xtatib turish** va **yordamchi tormoz tarmog‘ining qo‘l yuritmasi kiradi;**

2) **ijro etuvchi qism** - tormoz yuritmasidan tormoz mexanizmiga energiyani uzatuvchi tuzilma.

Gidravlik yuritmalı ishchi tormoz tizimining konstruksiyasi.

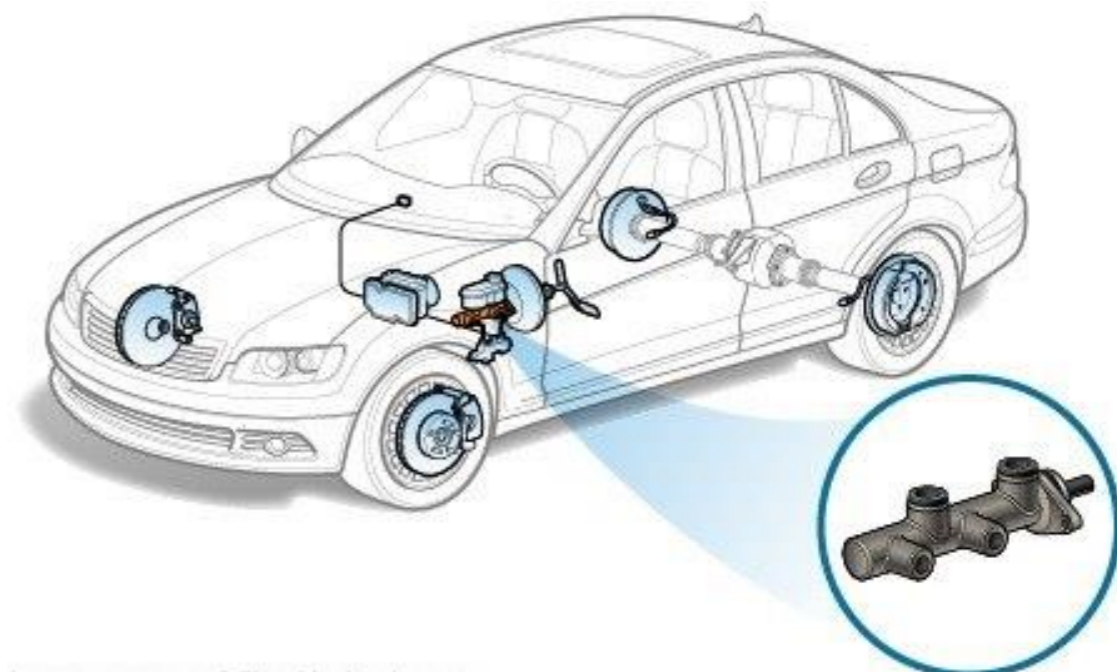
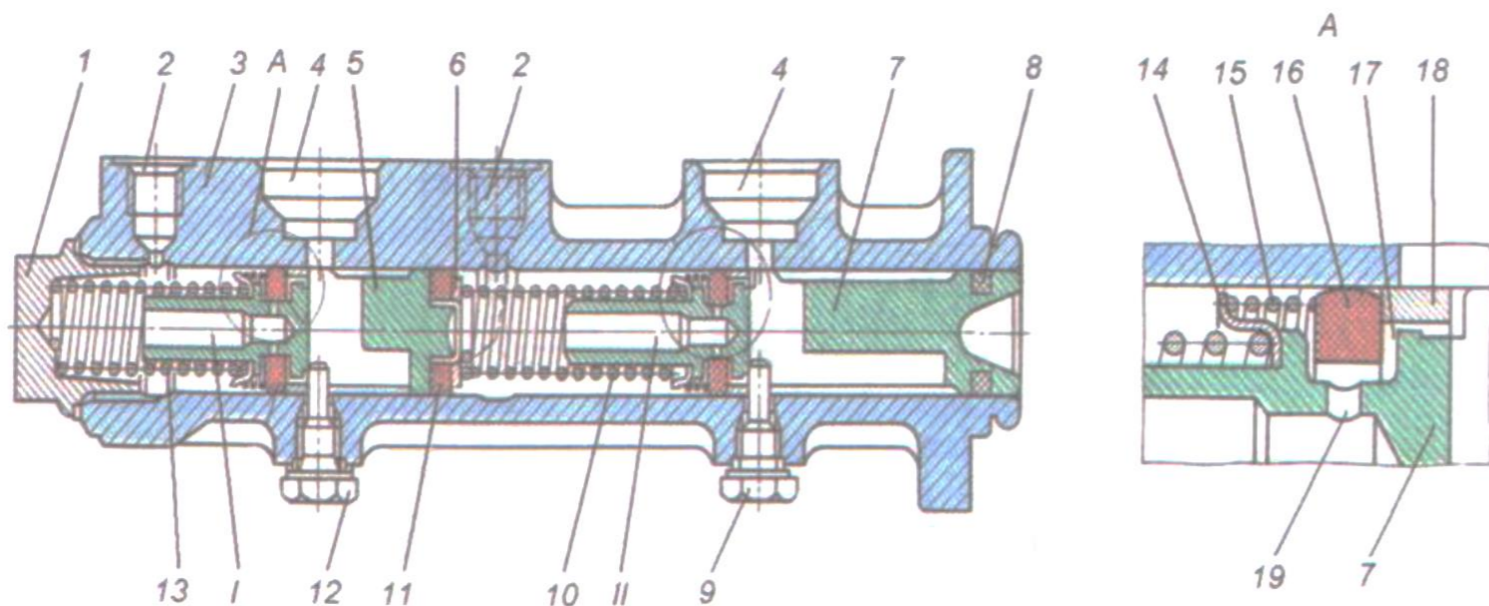


1 va 2-oldingi g'ildiraklardagi diskli tormoz mexanizmlari; 3-tormoz yuritmasining oldkonturi; 4-asosiy tormoz silindri; 5-vakuum kuchaytirgich; 6-tormoz pedali; 7-tormoz yuritmasining orqa konturi; 8-tormoz kuchlarini rostlagich; 9 va 10-orqa g'ildiraklarning barabanli tormoz mexanizmlari.

[15]



Ikki seksiyali asosiy tormoz silindrining konstruksiyasi.

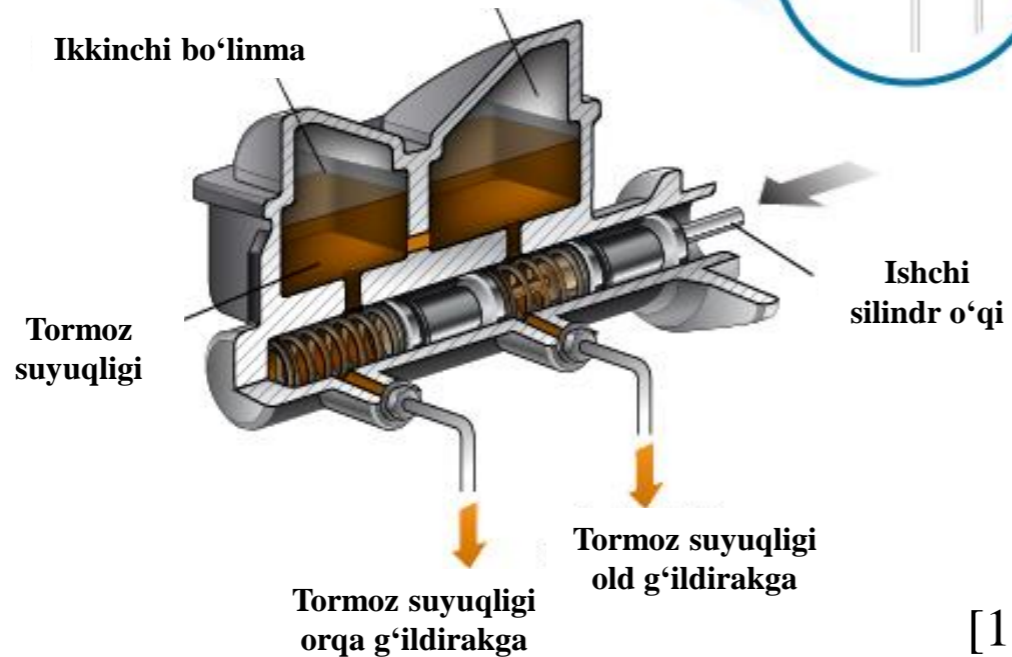
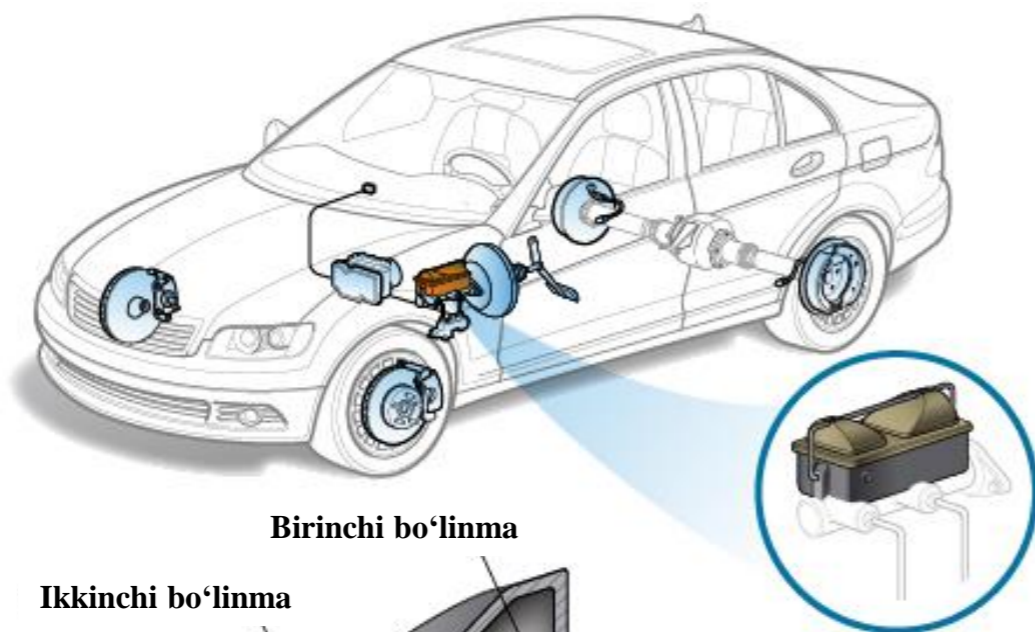


[16]

[15]

1—probka; 2, 4, 19 —teshiklar;
 3—korpus; 5, 7—porshenlar; 6—shayba;
 8, 16—zichlovchi halqalar; 18—chegara-
 lovchi halqa; 9, 12 —cheklagichlar;
 10, 13, 15—prujinalar; 11—manjet;
 14—tarelka; 17—tirqish; I, II—kameralar.

Asosiy tormoz silindri



[15]



[17]

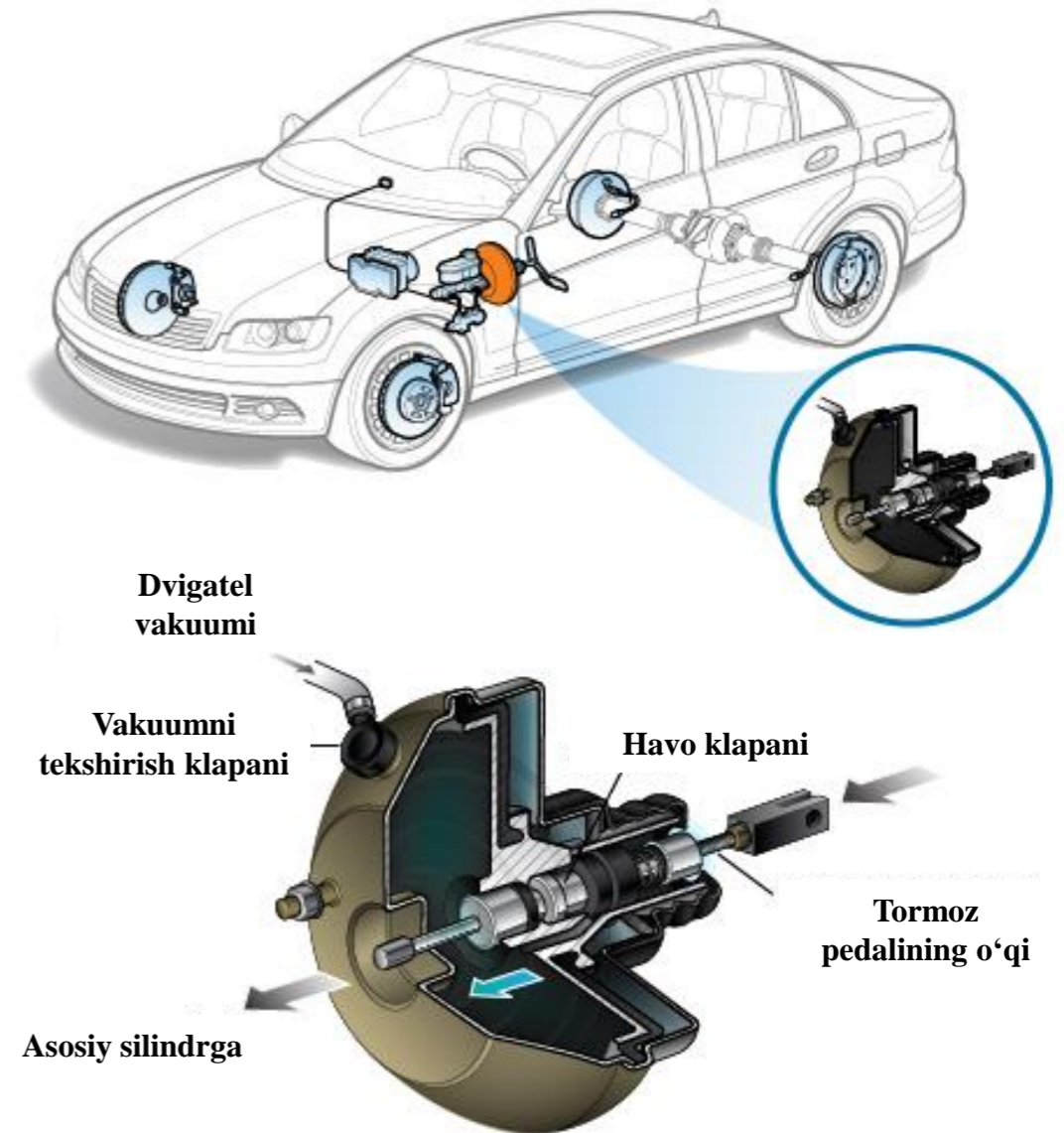


[18]

Gidrovakuum kuchaytirgich.

Tormoz pedaliga qo'yiladigan kuchni kamaytirish maqsadida avtomobillarda turli xil vakuum kuchaytirgichlar ishlatiladi.

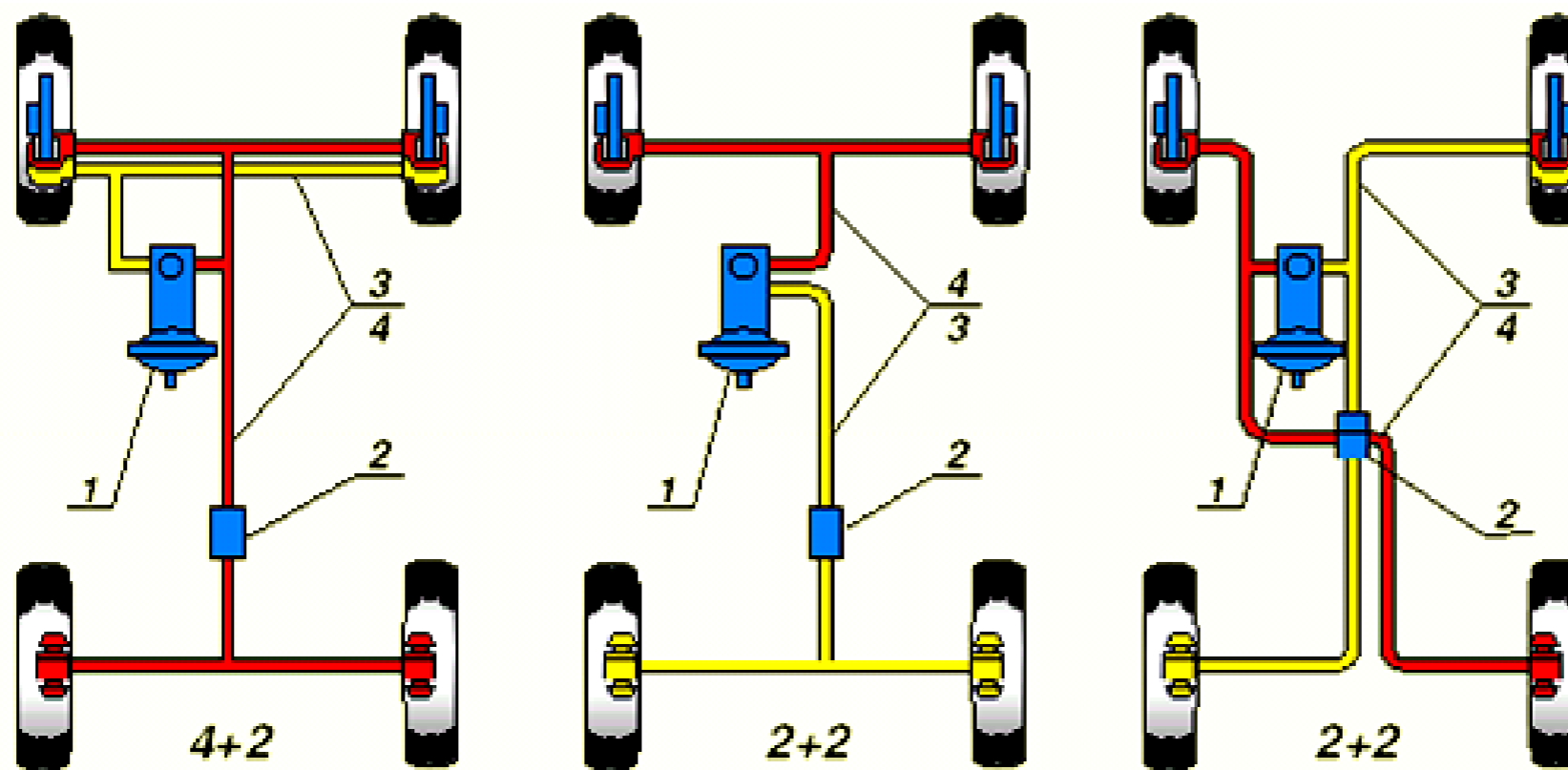
Gidrovakuum kuchaytirgichning ishlashi kiritish kollektoridagi siyraklanish bilan atrof-muhitning bosim o'rtasidagi farqga asoslangan.



Tormoz tizimining ishlash uslubi.



Gidravlik yuritmalı tormozlash tizimining sxemasi



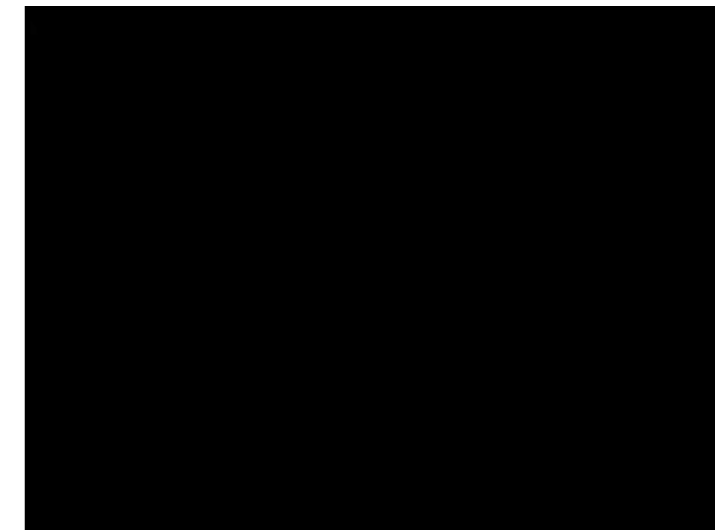
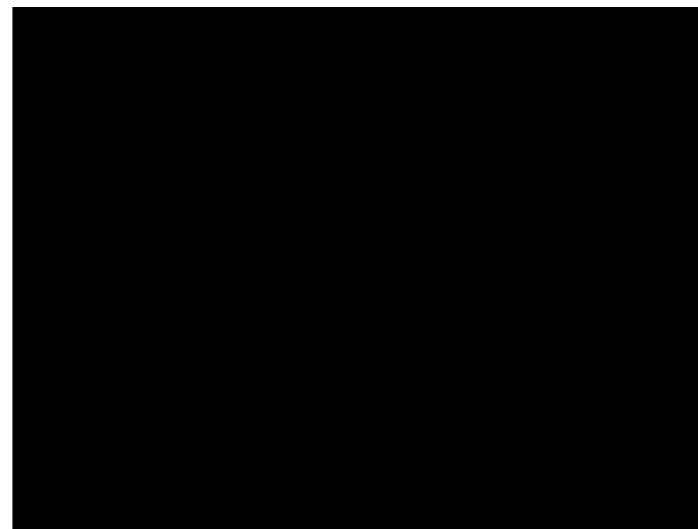
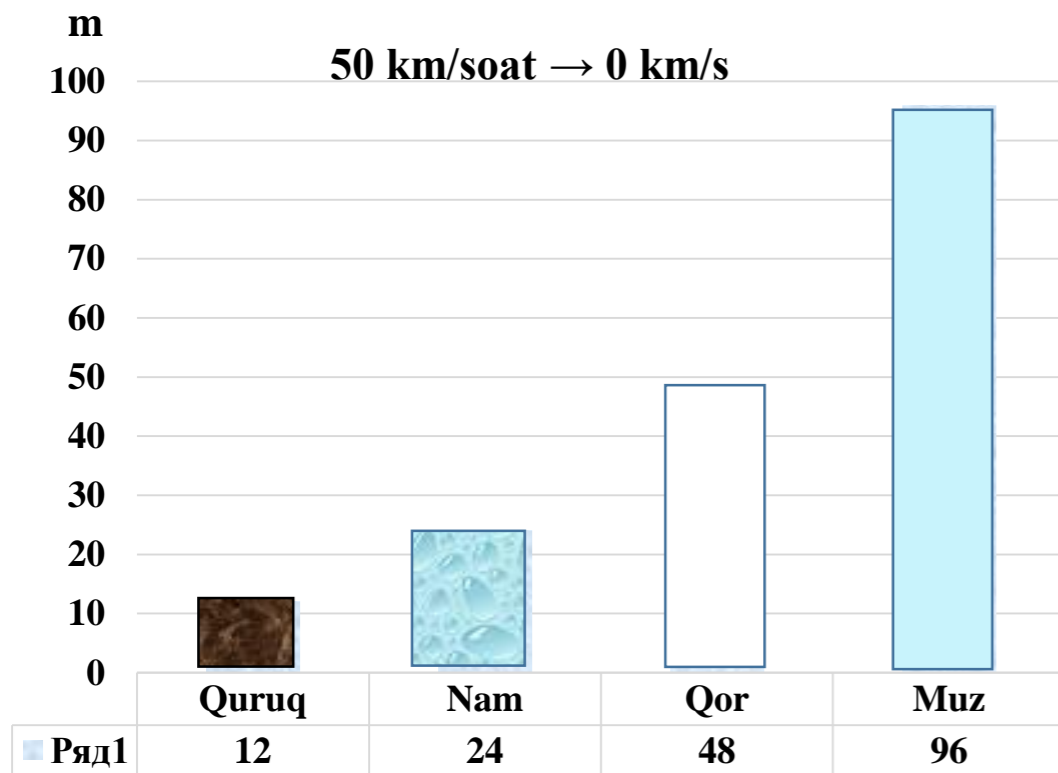
Parallel boshqariluvchi

Diagonal boshqariluvchi

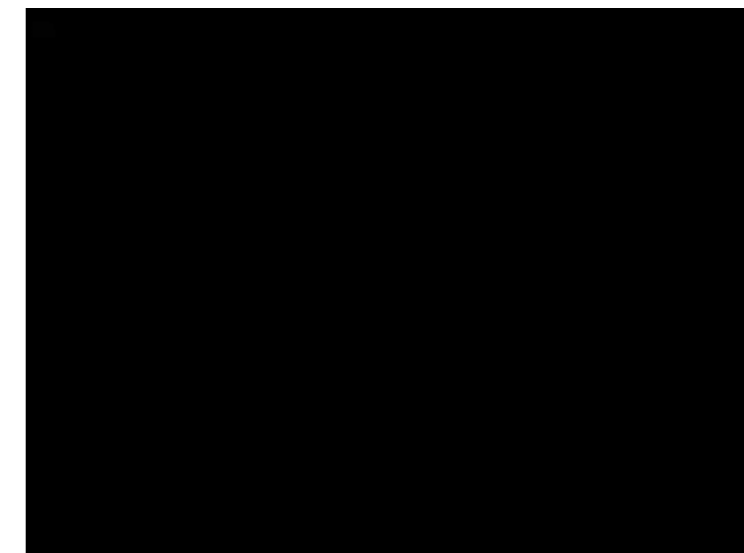
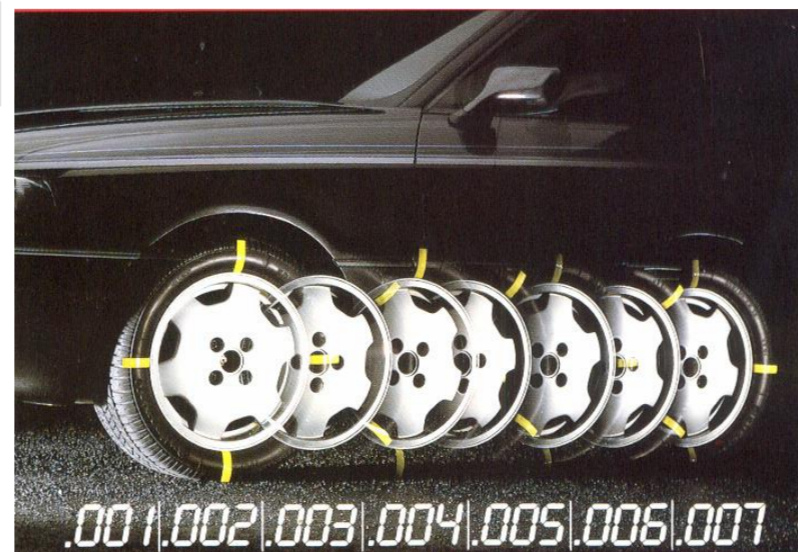
1 – asosiy silinr va vakuum kuchaytirgichi; 2 – orqa tormoz mexanizmini suyuqlik bosim regulyatori; 3-4 – ishchi yuritma naychalari.

[21]

ABS tormoz tizimi bo'lmagan avtomobil



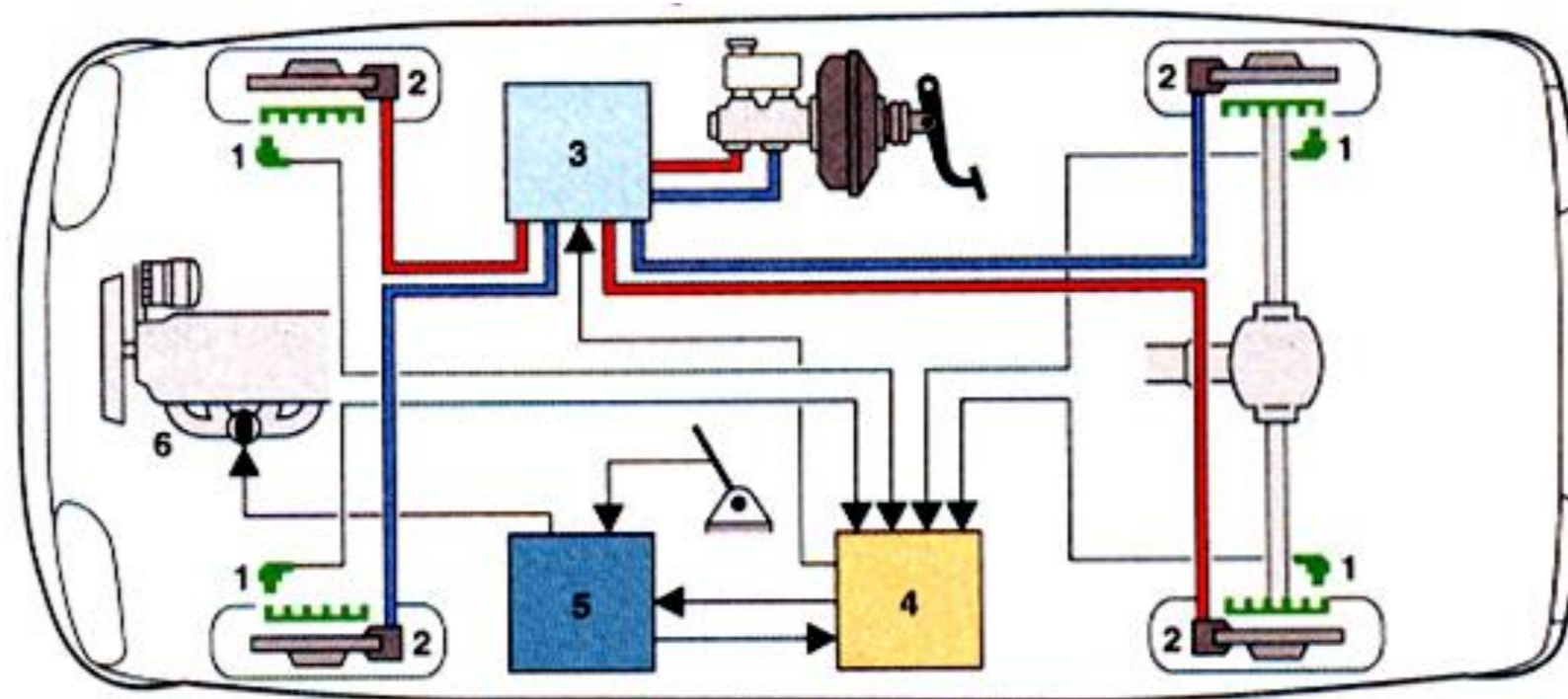
ABS tormoz tizimi bor bo'lgan avtomobil



[22]

Antiblokirovkali (ABS) tormozlash tizimini elektron boshqarish.

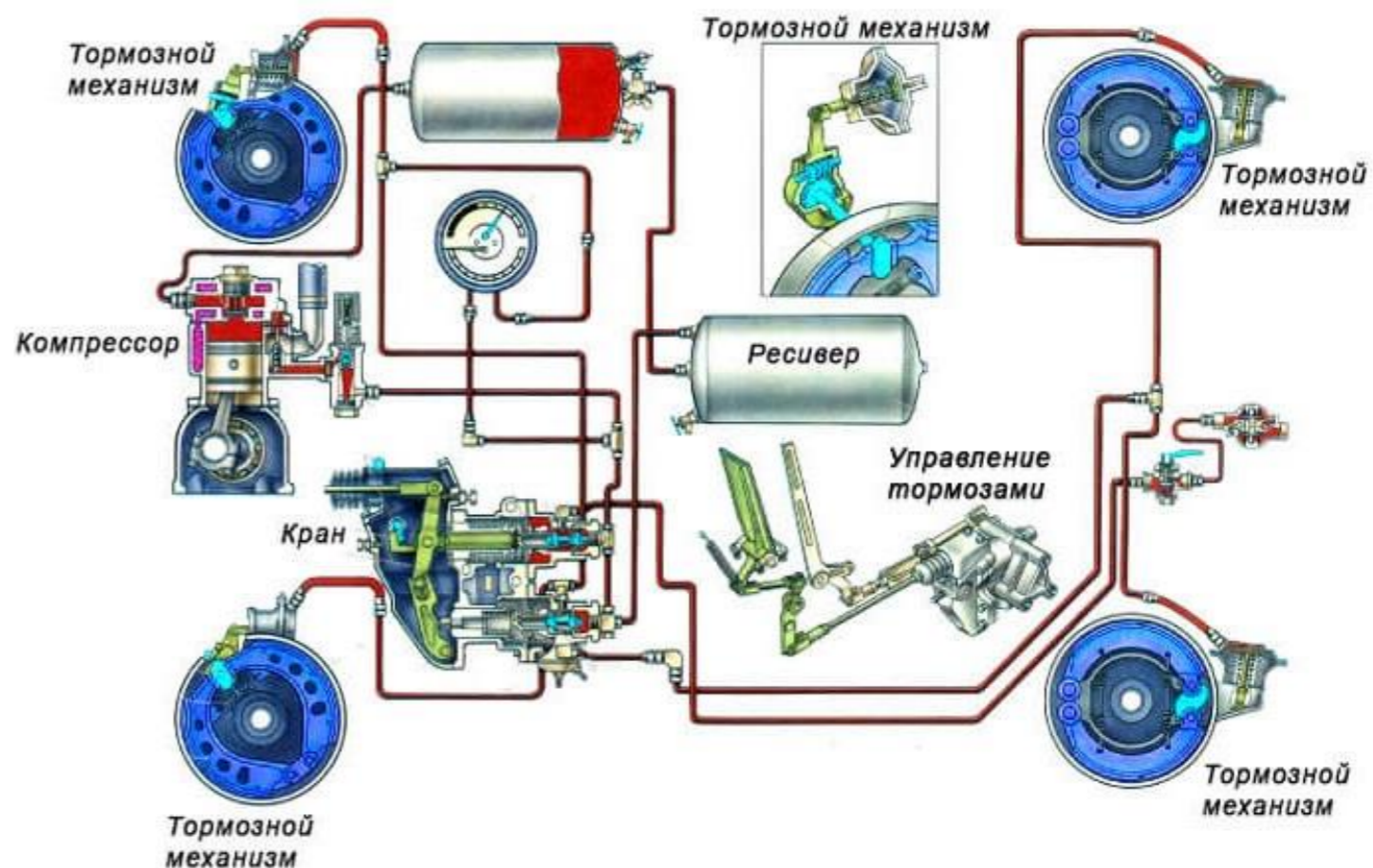
- 1- G'ildirak datchigi,
- 2- Tormoz g'ildiraklari,
- 3- ABS/ASR-gidravlik qurilma,
- 4- ABS/ASR qurilmalarining kommutatori,
- 5- Dvigatelning elektron kommutatori,
- 6- Drossel-zaslonkasi.



15.5. Pnevmatik tormoz yuritmasi va uning konstruksiyasi.

Eng sodda pnevmatik tormoz yuritmasi:

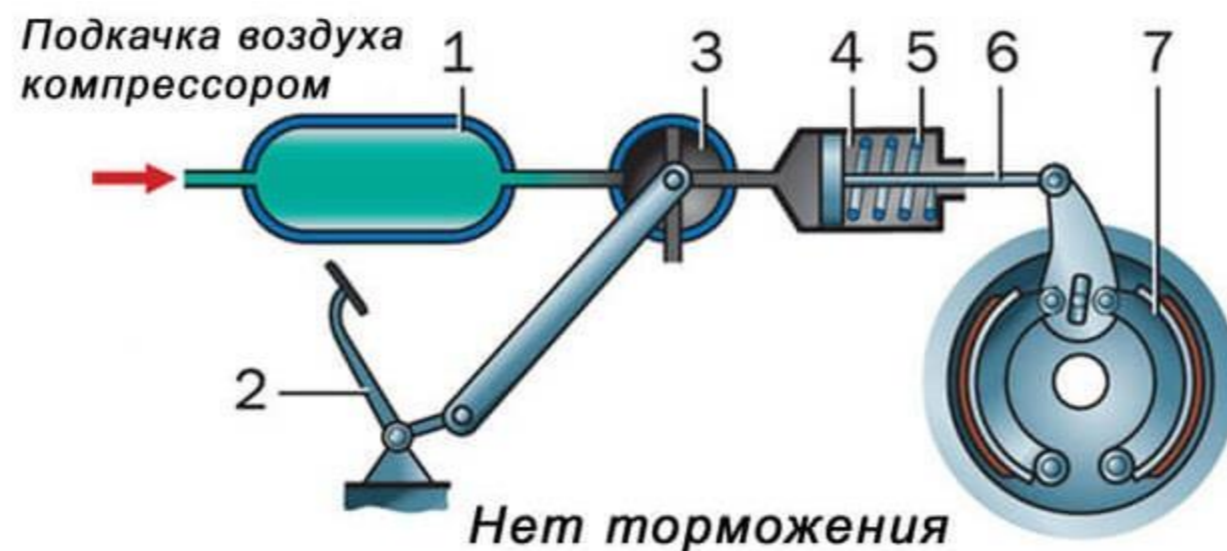
- Kompressordan uzatilayotgan havo bilan to'ldirilgan resiverdan;
- Tormoz pedali bilan boshqariladigan krandan;
- Tormoz silindri (kamerasi)dan;
- Shtokdan;
- Ajratuvchi mushtdan tuzilgan.



[24]

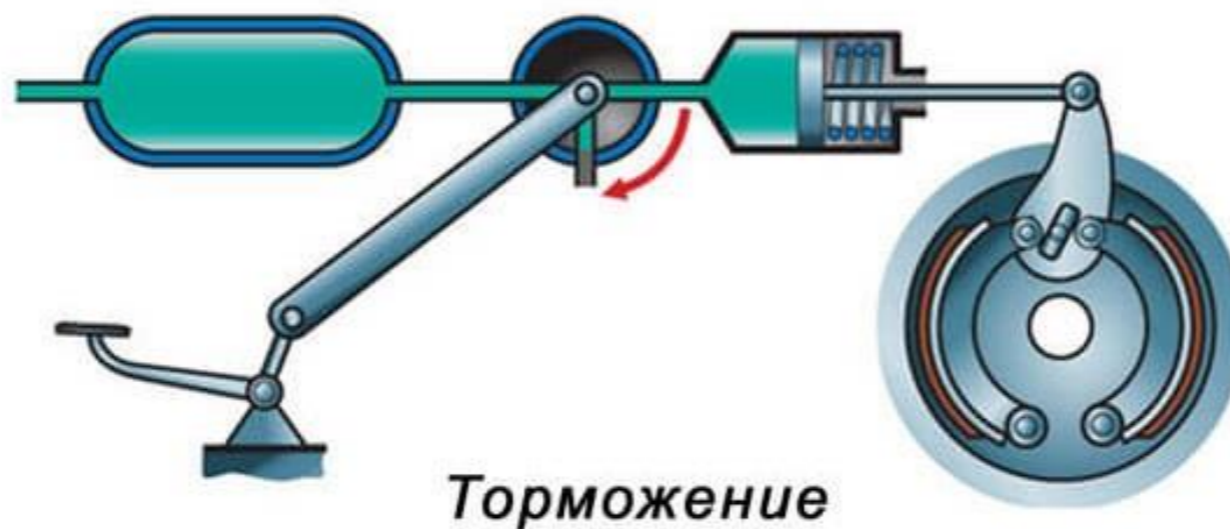
Tormozlanish vaqtida kran tormoz silindrini resiver bilan ulaydi va siqilgan havo porshen orqali tormoz mexanizmini harakatga keltiradi.

Resiverdagi bosim
0,7-0,75 MPa



- 1-resiver;
- 2-pedal;
- 3-kran;
- 4-tormoz silindri;
- 5-porshen;
- 6-shtok;
- 7-tormoz mexanizmi.

Tormoz silindridagi havo bosimi resiverdagi havo bosimi bilan bir xil bo‘ladi, natijada avtomobil doim bir xil kuch bilan tormozlanadi.



[25]

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