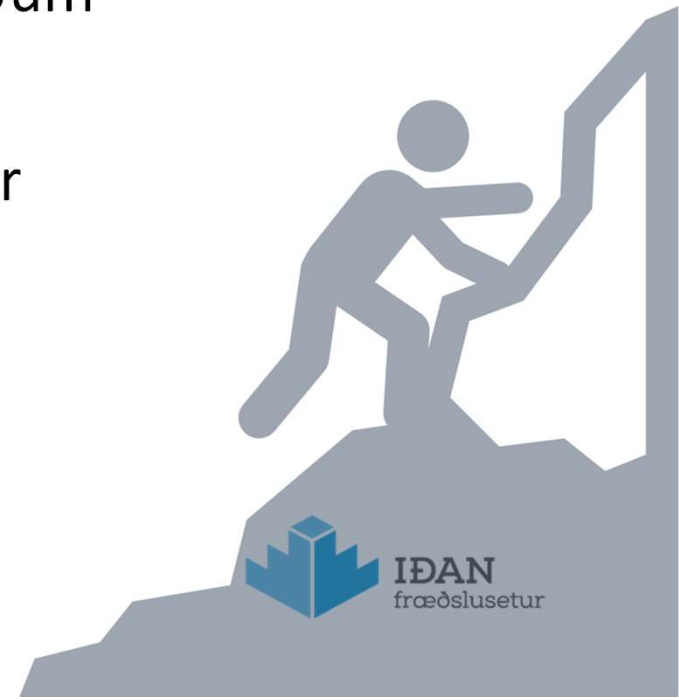
Rafmagn og rafkerfi

IÐAN fræðslusetur

Lærdóms markmið

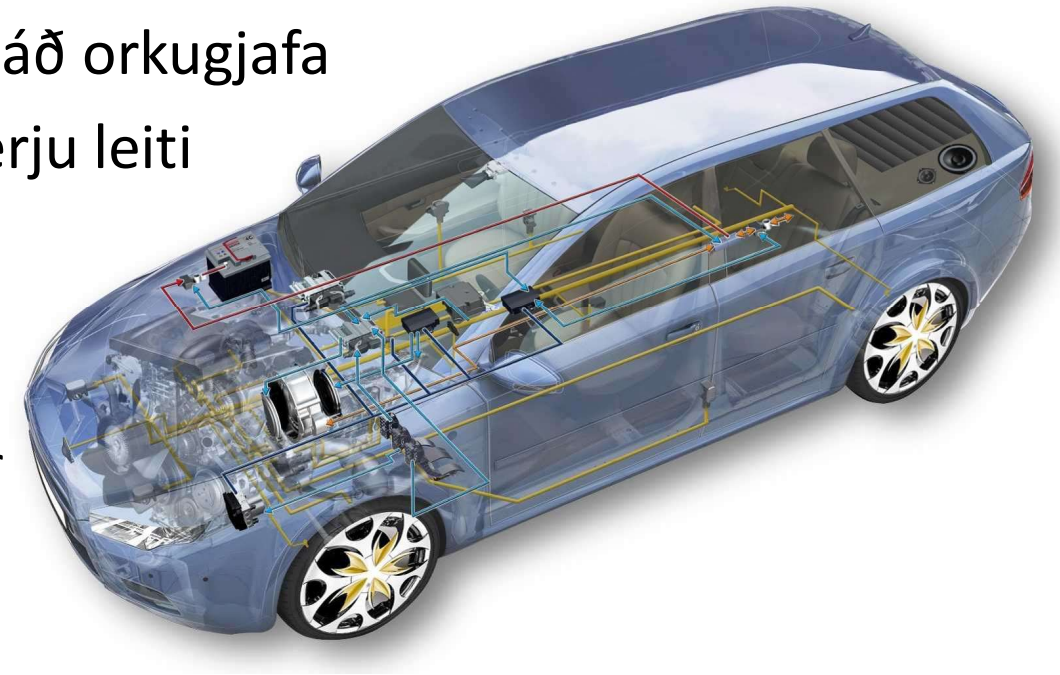
Þátttakandi geti:

- Sagt til um hvað spenna viðnám og straumur er
- Hvernig rafmagn er notað í bifreiðum
- Notað lögmál ohms
- Lesið og notað rafmagnsteikningar



Rafkerfi bifreiða

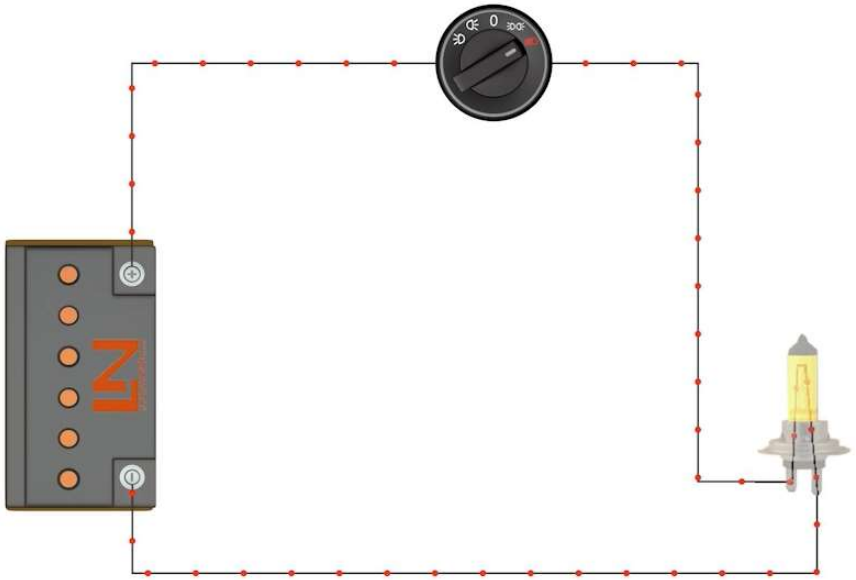
- Almennt mikill rafbúnaður óháð orkugjafa
- Öll kerfi rafmögnuð að einhverju leiti
- Dæmi
  - Ljósabúnaður
  - Drifbúnaður
  - Bremsur og stöðuleikabúnaður
  - Þægindi og öryggi
    - Miðstöð
    - Leiðsögukerfi
    - ADAS



IÐAN fræðslusetur

Rafmagn

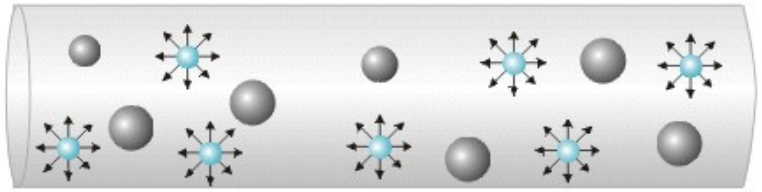
- Ósýnileg orka í formi:
  - Hita
  - Segulsviðs
  - Efnahvarfa
- Spenna , straumur , viðnám og afl.
- Grunn hlutir rafrásar:
  - Spennugjafi
  - Vírar (leiðari)
  - Notandi



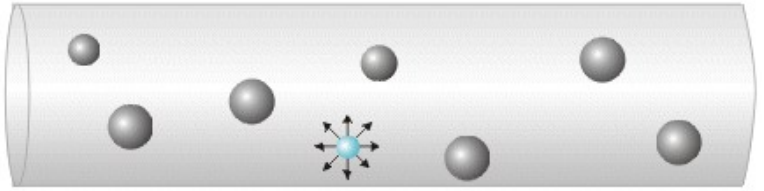
IÐAN fræðslusetur

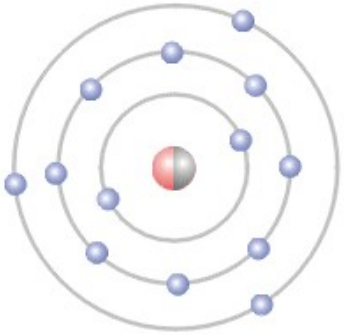
Hvað er rafmagn

- Frjálsar rafeindir atóma
- Leiðarar
  - Ál
  - Stál
  - Járn
  - Silfur
  - gull



- Einangandi efni
  - Gúmmí
  - Plast
  - Nylon
  - Porcelain
  - Keramík
  - Glertrefjar
  - viður

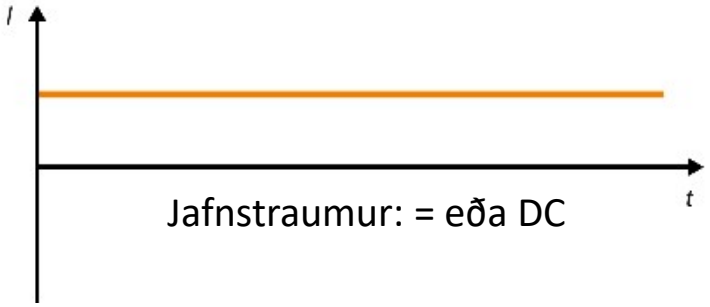


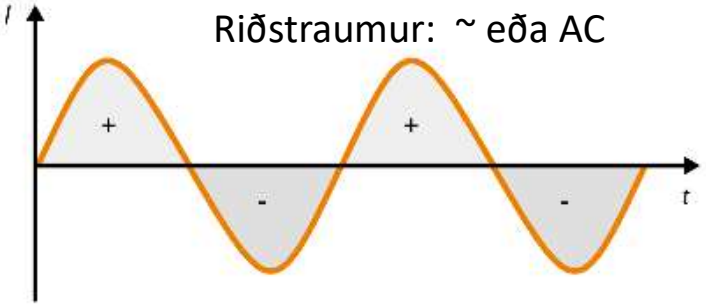


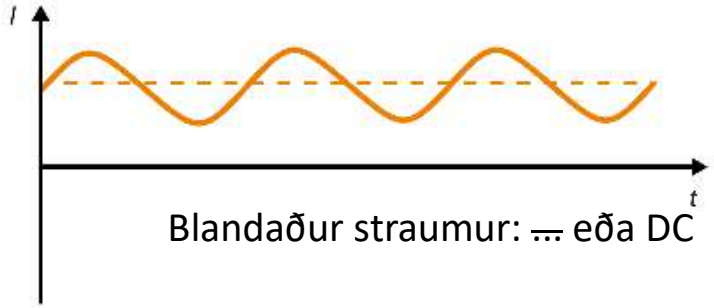
IÐAN fræðslusetur

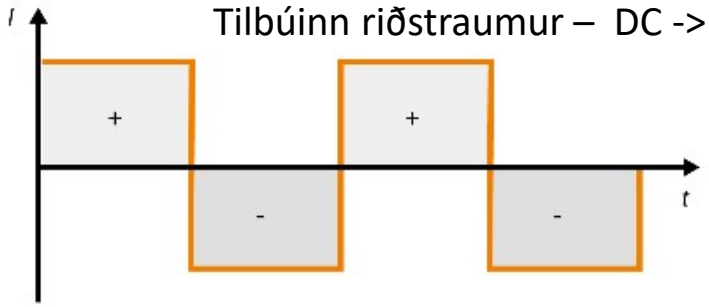
Spenna, Volt (V)

- Þrýstingur rafeinda sem orsakar flæði og framkallar vinnu.
- Í bílum yfirleitt jafnstraumur, 12-14 volt





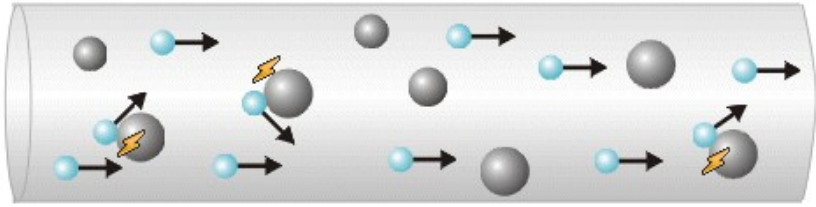




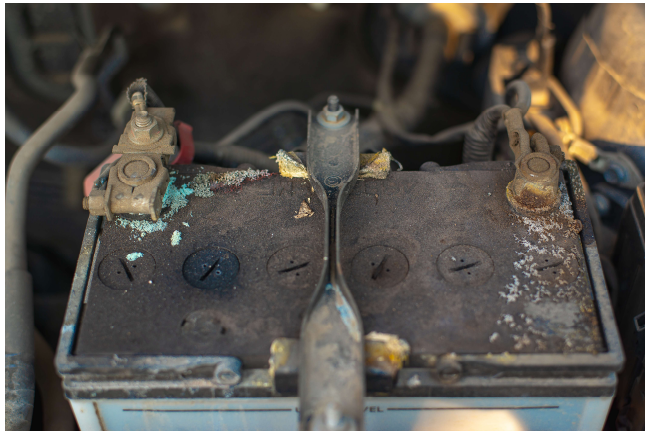
IÐAN fræðslusetur

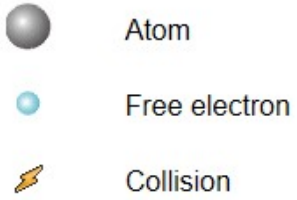
Viðnám, Ohm (Ω eða R)

- Hindrar flæði frjálsra rafeinda
- Er víða í bílum
- Stundum ekki æskilegt



1.5 ohm

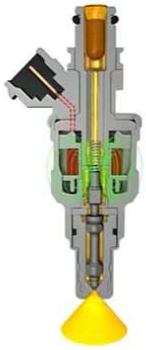


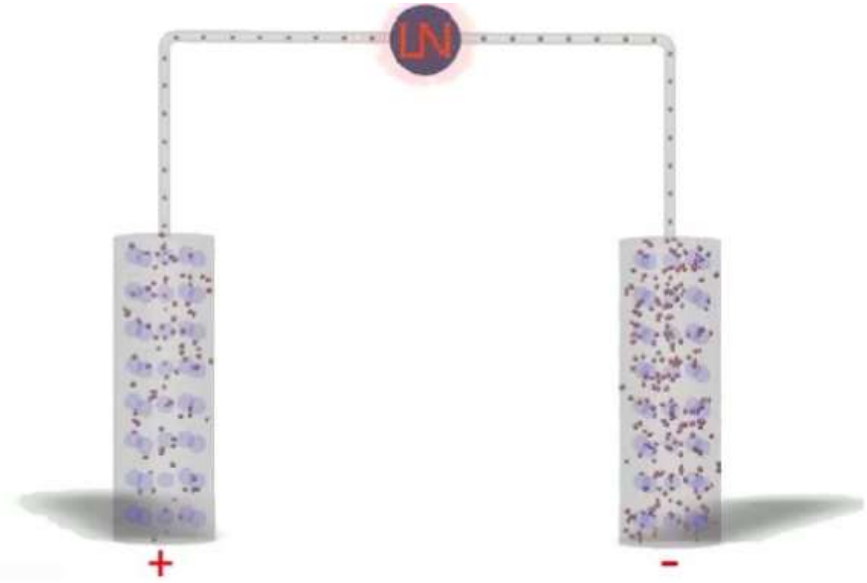


IÐAN fræðslusetur

Straumur, Amper (A)

- Flæði frjálsra rafeinda í rafrás
  - Meiri spenna = meiri straumur
  - Meira viðnám = minni sraumur
- Þrjár birtingamyndir straums
  1. Hiti
  2. Segulsvið
  3. Efnaorka

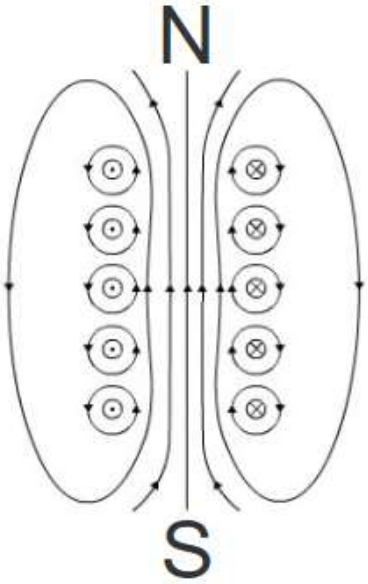



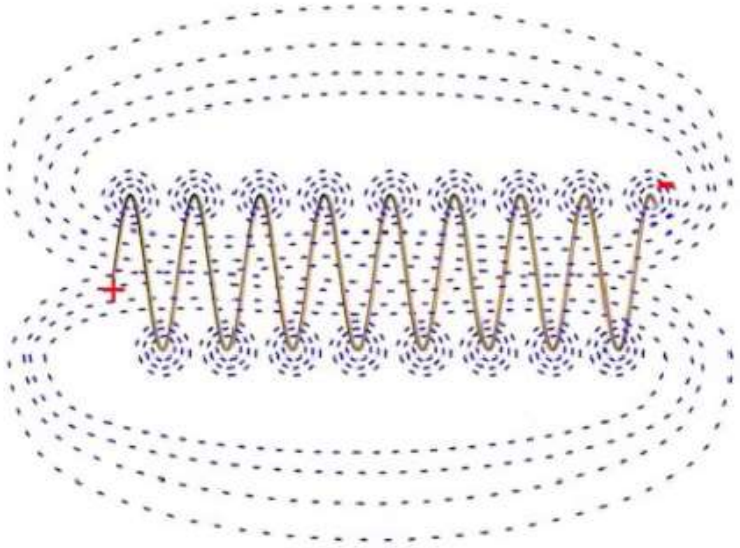


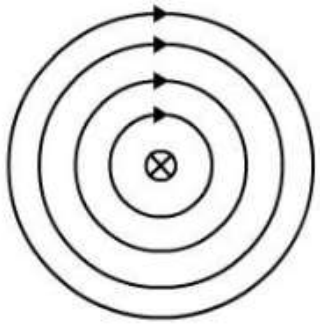
IÐAN fræðslusetur

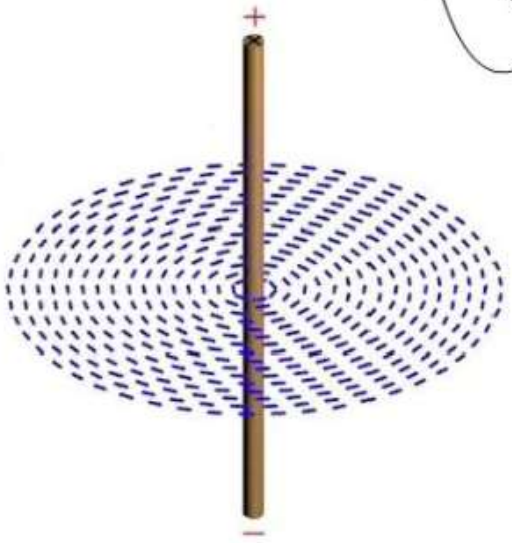
Segulsvið

- Segulsvið myndast þegar straumur flæðir um leiðara
- Mikið notað í bílum









IÐAN fræðslusetur

Efnaorka

IÐAN fræðslusetur

Ohms lögmálið, kW og kWh

- Samband spennu, straums, viðnáms afls og orku

V = Voltage

I = Current

R = Resistance

$V = I \times R$

$I = V \div R$

$R = V \div I$

- Afl (kW)

$P = V \times I$

- Orka (kWh)

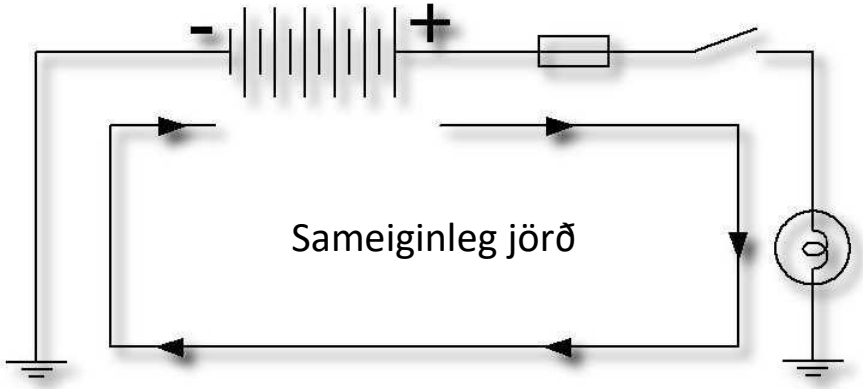
$E = P \times t$

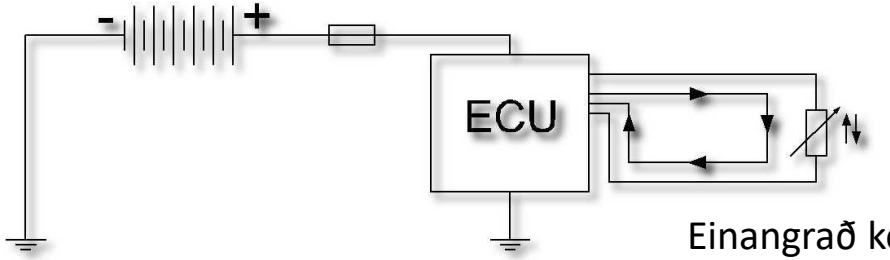
- Orku notkun (Wh/km)

IÐAN fræðslusetur

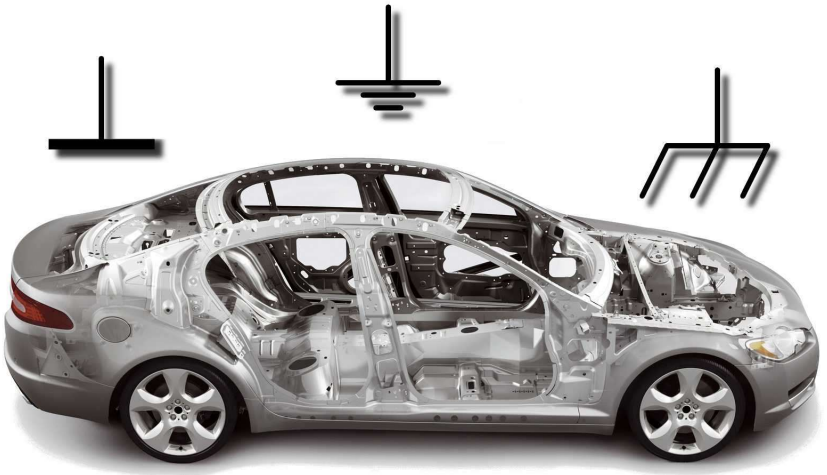
Body sem jörð

- Einungis í bílaiðnaðinum (12 V DC)





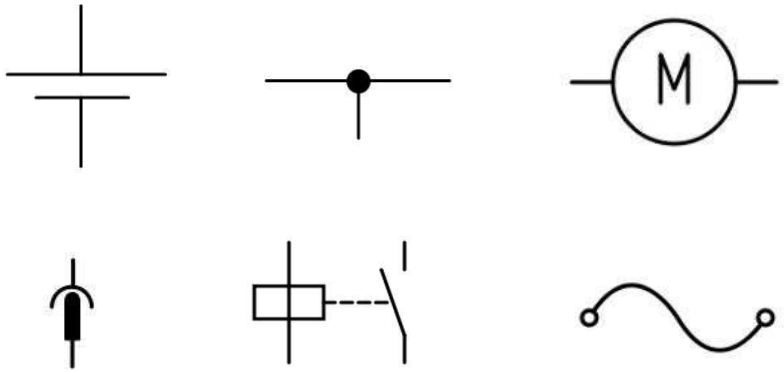
Einangrað kerfi



IÐAN fræðslusetur

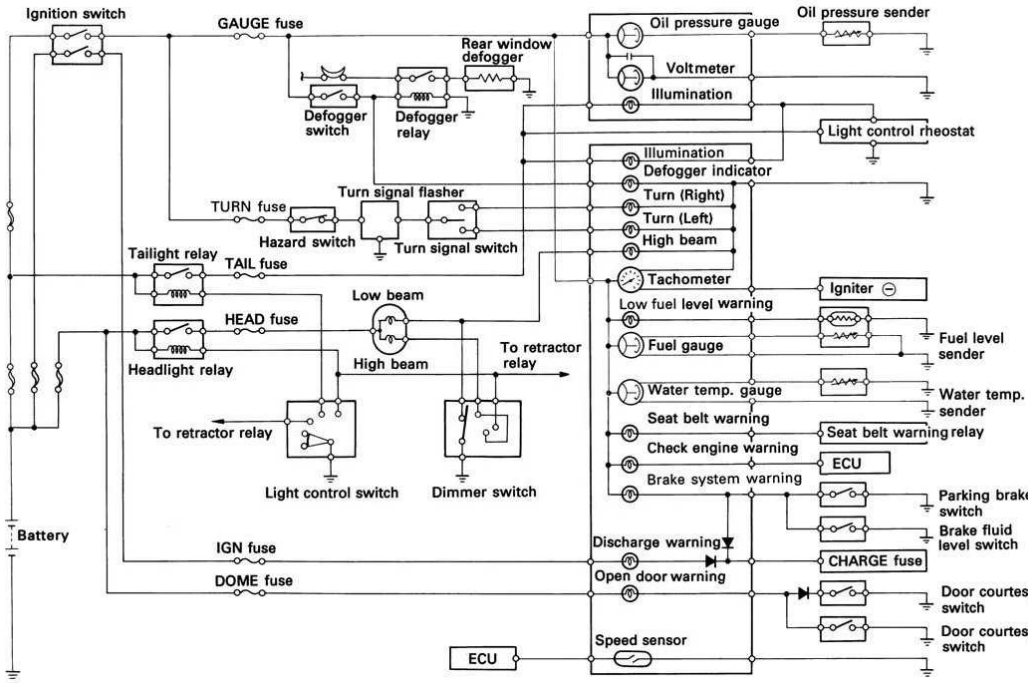
Rafkerfi bifreiða (loom)

- Mög flókið og getur verið erfitt að finna bilanir.
- Rafmagnsteikningar.

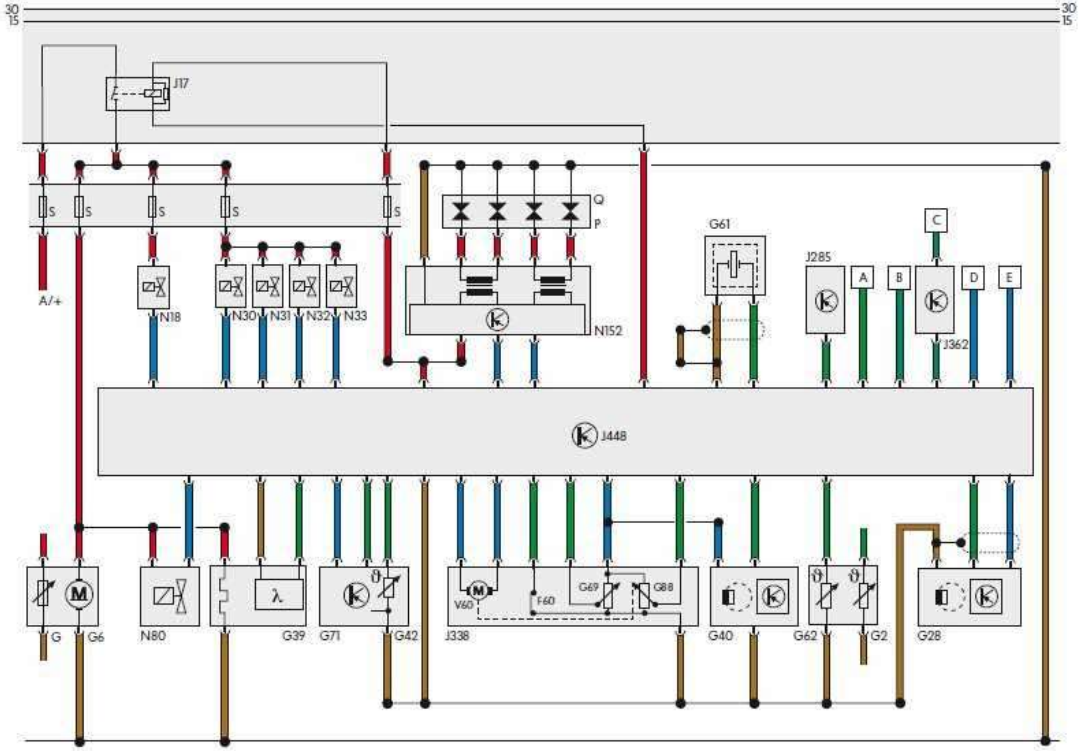


IÐAN fræðslusetur

Rafmagnsteikningar



N- Ameríka og Asía



Evrópa

IÐAN fræðslusetur