

Endüstriyel Hidrolik

Hidrolik Pompalar

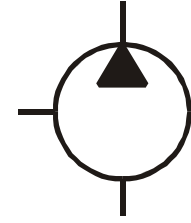
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HİDROLİK POMPALAR

- DİŞLİ POMPALAR
- PALETLİ POMPALAR
- PİSTONLU POMPALAR



Basınç

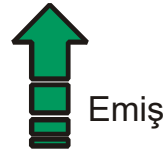


Bu taraftaki hacim
dişler karşılaştıkça
düşer

Boştaki Diş

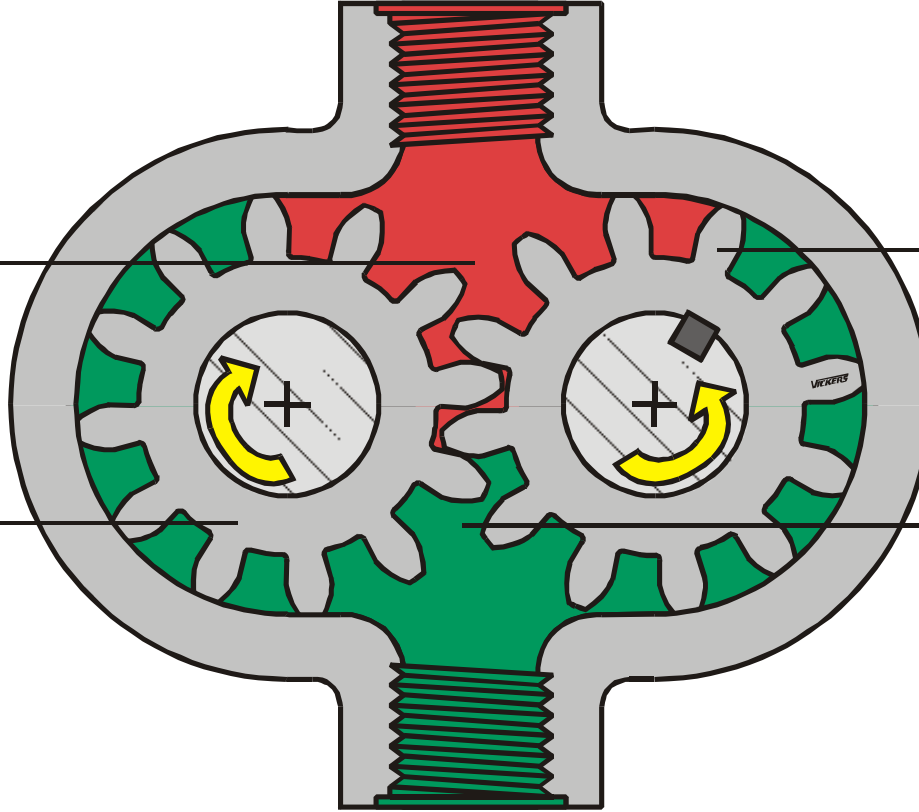
Devredeki Dişli

Bu taraftaki hacim
dişler karşılaştıkça
artar



Emiş

Dıştan dişli pompa



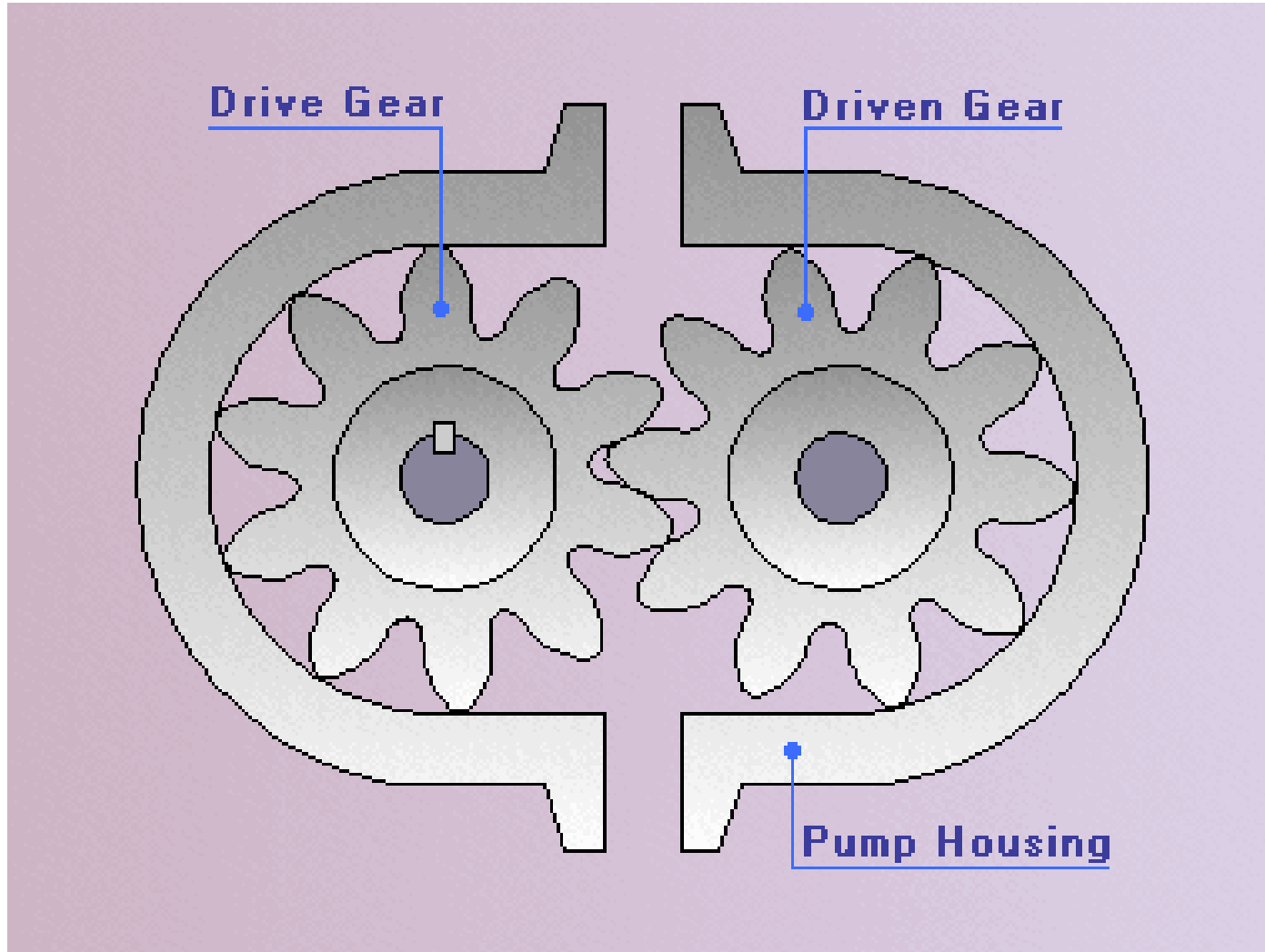
Dışlı Pompanın Avantajı

- İmalatı kolay ve ucuzdur.

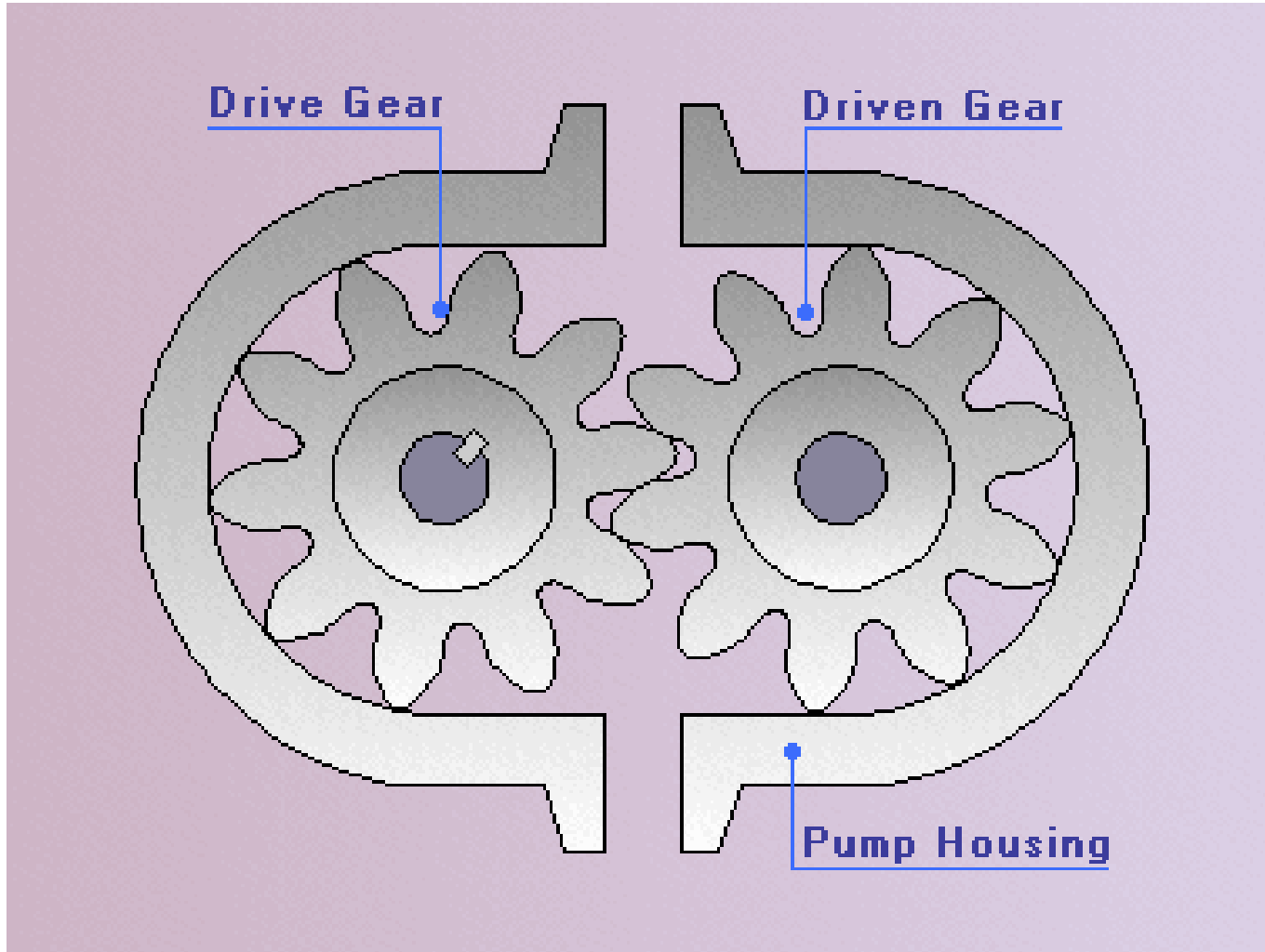
Dışlı Pompanın Dezavantajı

- Sesli çalışır
- Yüksek basınçlara çıkılamaz
- Arızalandığında tamiri mümkün değil
- Kısa ömürlü
- Sabit deplasmanlı
- Tasarımı gereği pisliklerden daha fazla etkilenir
- Debi-basınç kontrolü yok
- Sürekli çalışmaya uygun değil
- Verimleri düşüktür. Pompanın aşınmasıyla verim hızla düşer

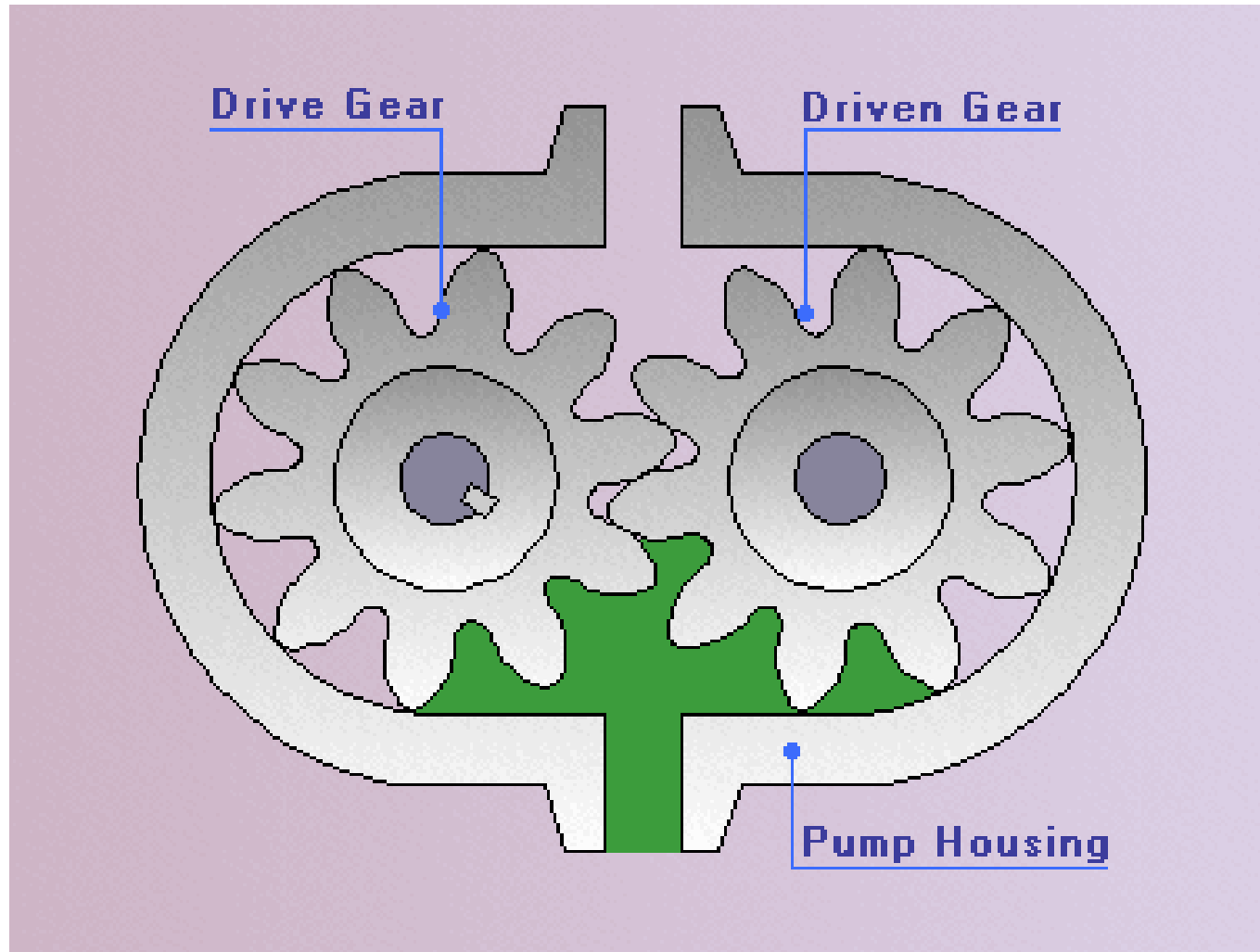
DİŞLİ POMPALAR



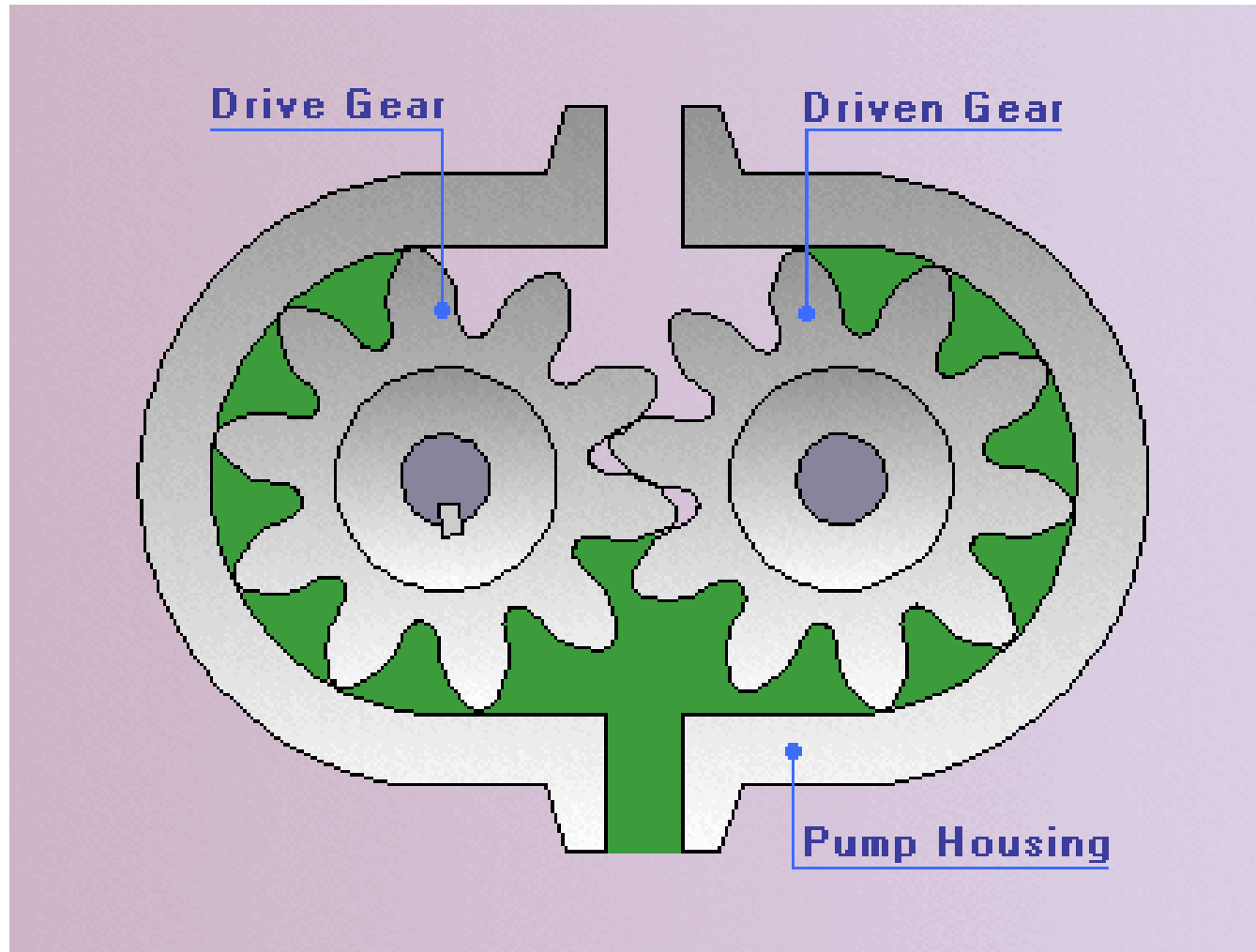
DİŞLİ POMPALAR



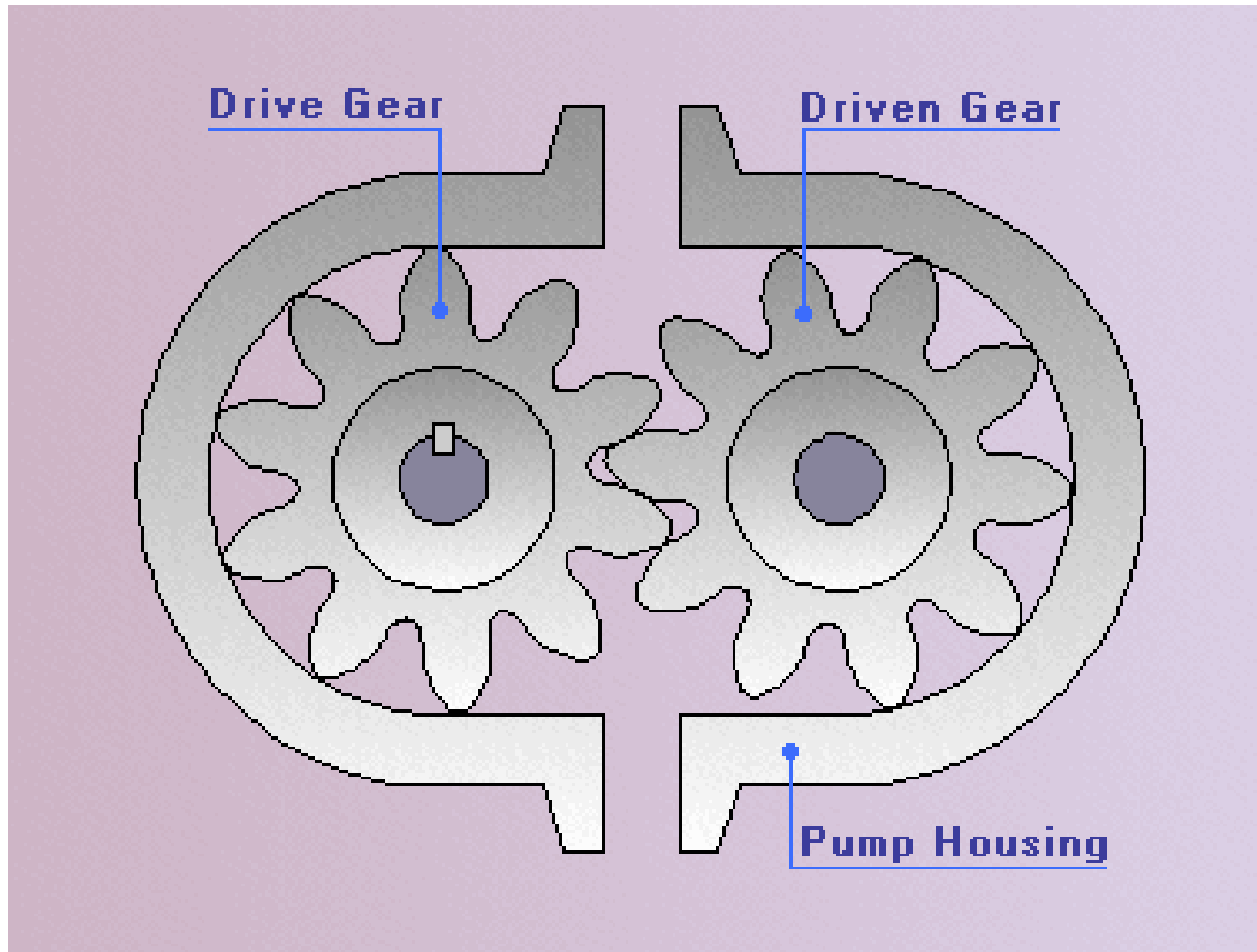
DİŞLİ POMPALAR



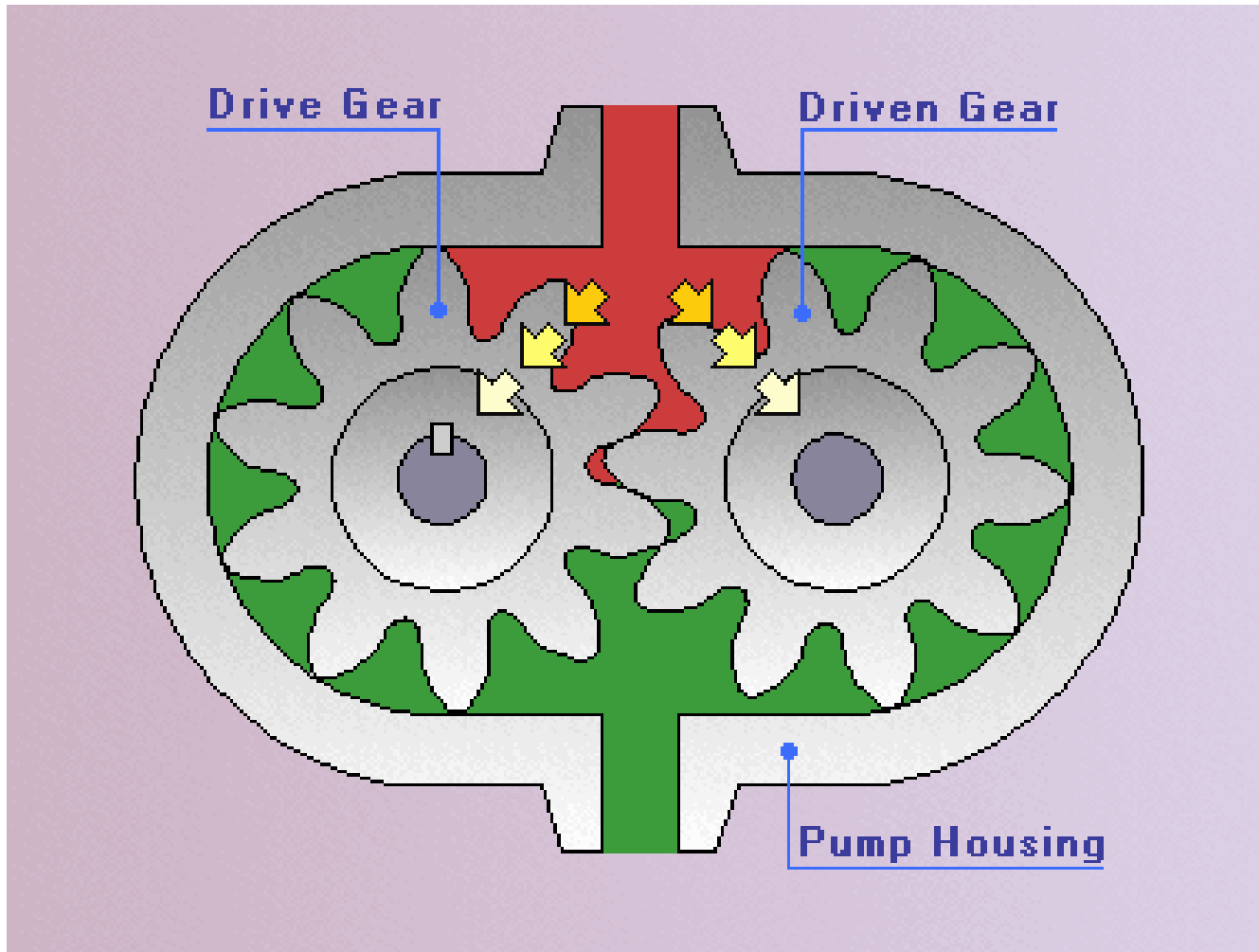
DİŞLİ POMPALAR



DIŞLİ POMPALAR



DİŞLİ POMPALAR



İç Dişli

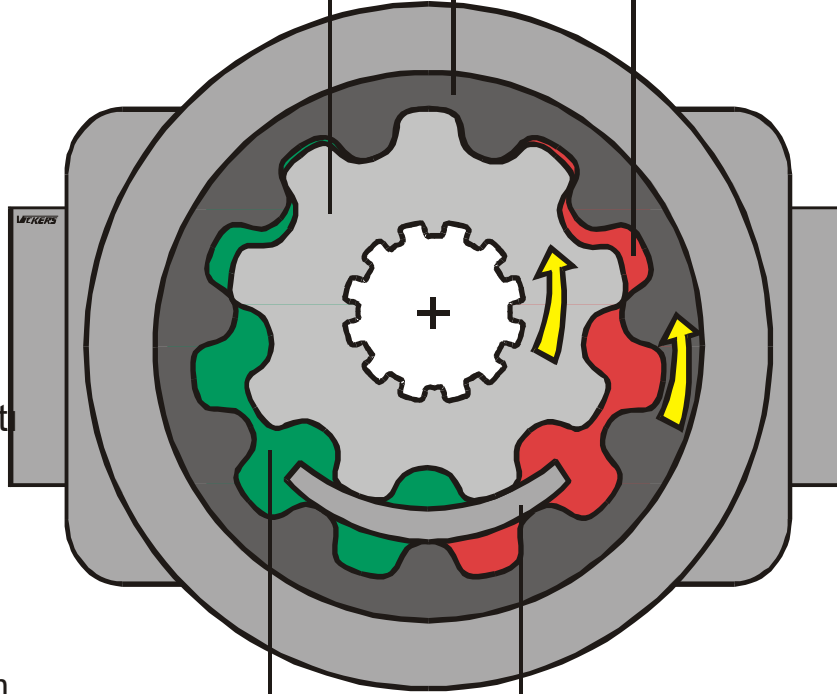
Dış Dişli

Bu taraftaki hacim
dişler karşılaştıkça
düşer



Emiş hattı

Bu hacim
dişler açıldıkça hacim
artar

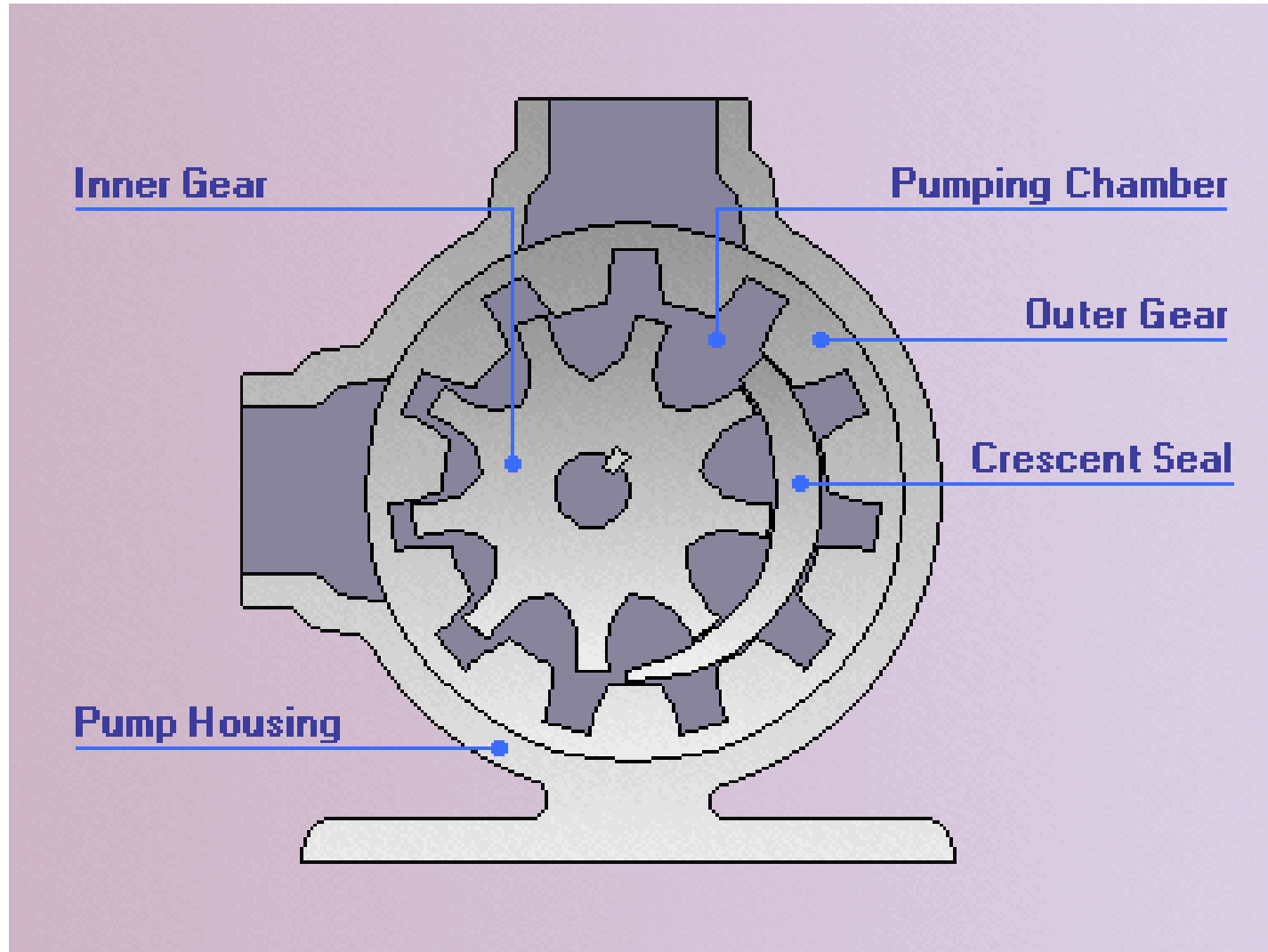


Basınç hattı

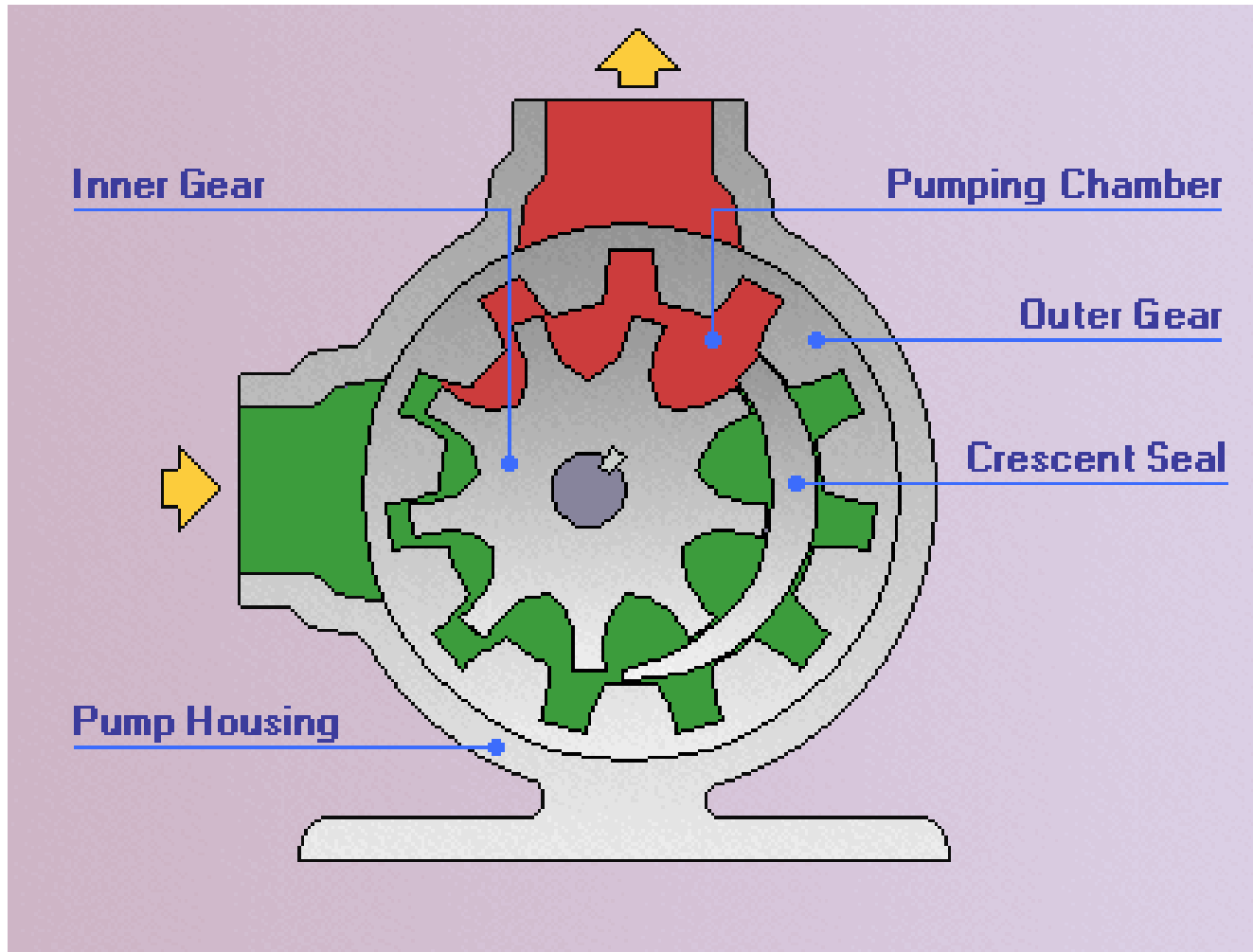
Hilal Conta

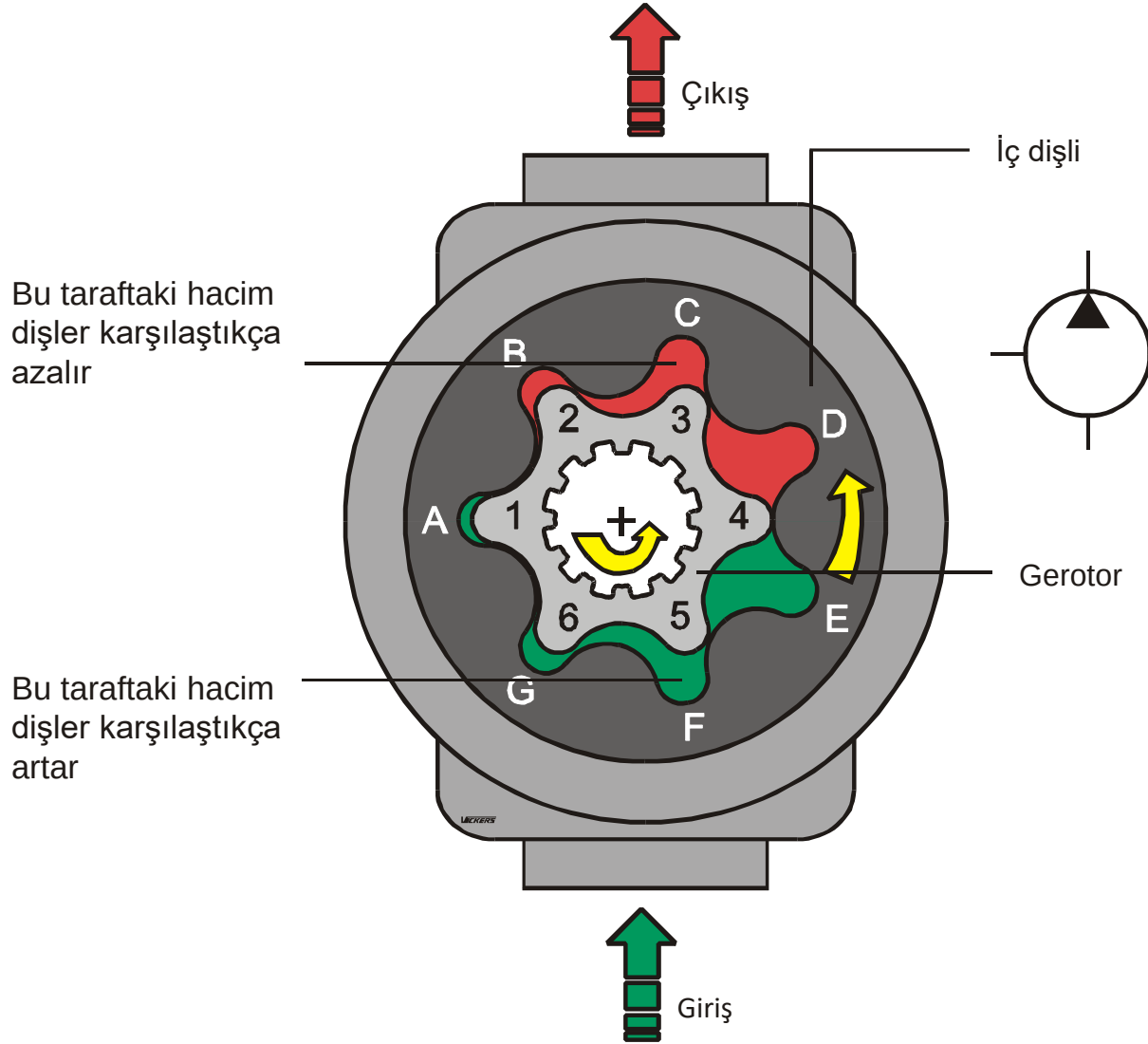
İçten Dişli Pompa

İÇTEN DİŞLİ POMPALAR



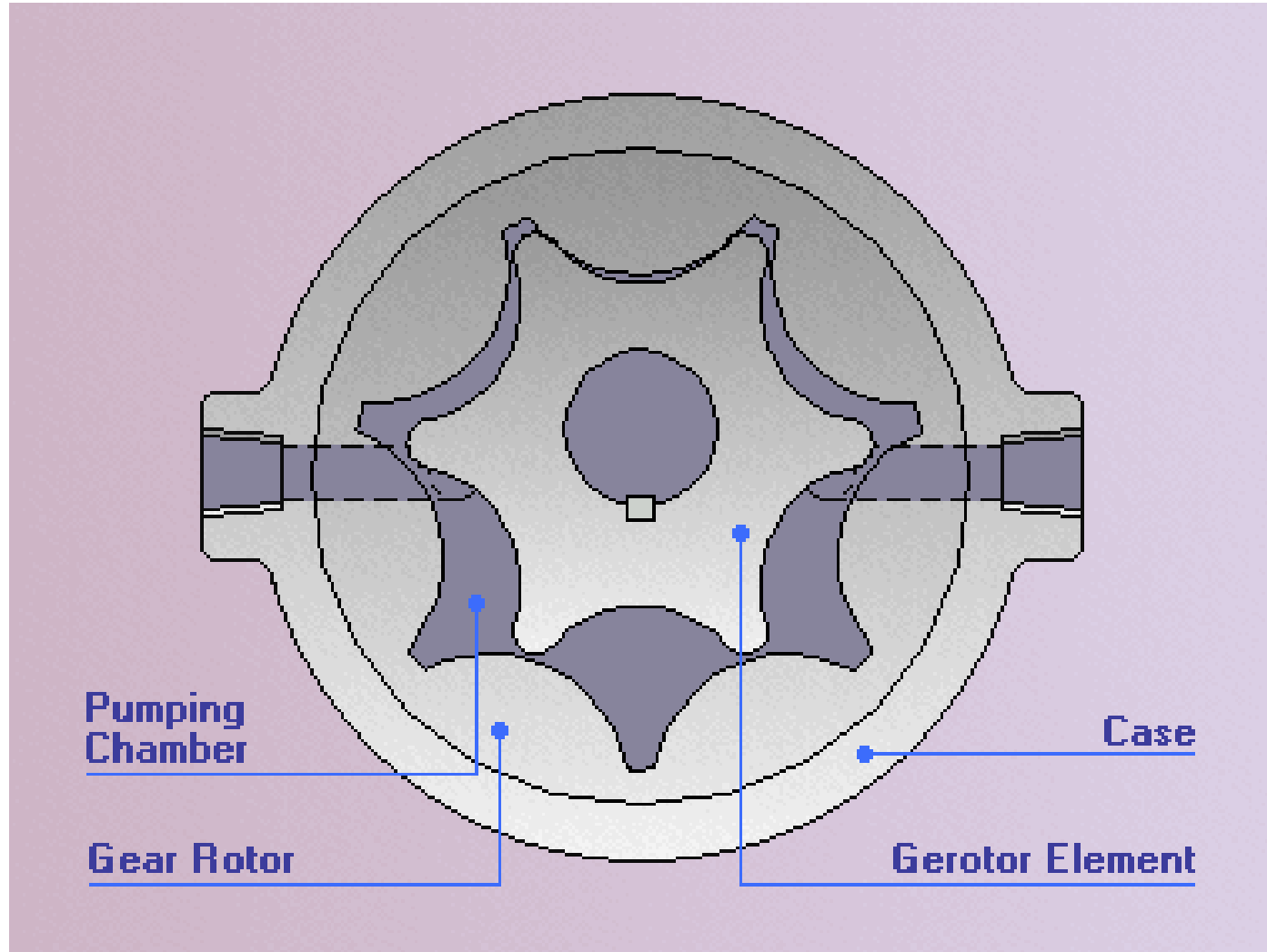
İÇTEN DİŞLİ POMPALAR



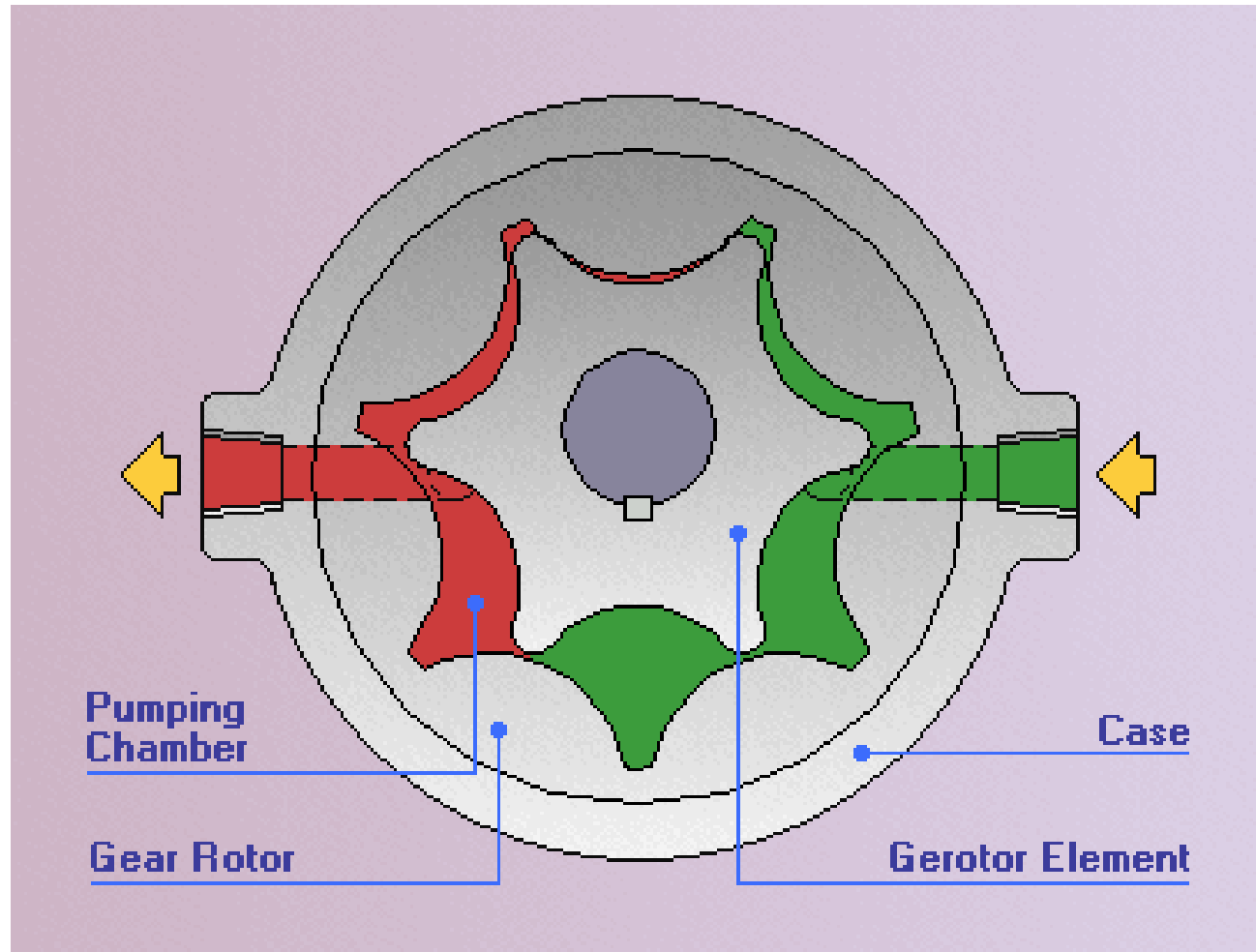


Gerotor tip dişli pompa

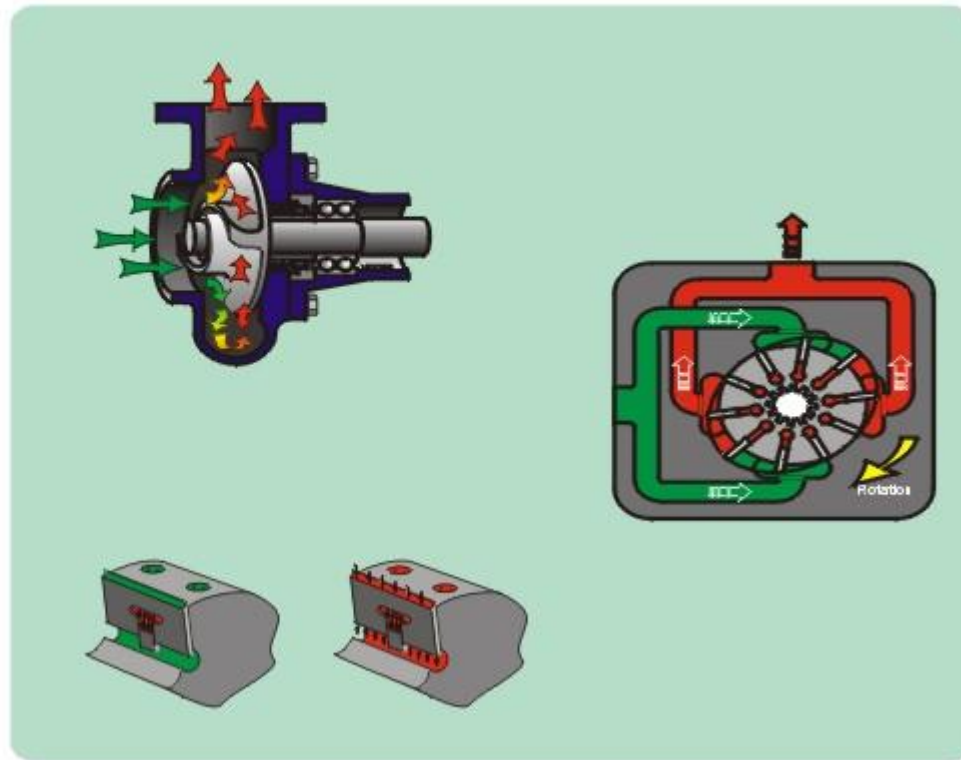
GEROTOR TİP DİŞLİ POMPALAR

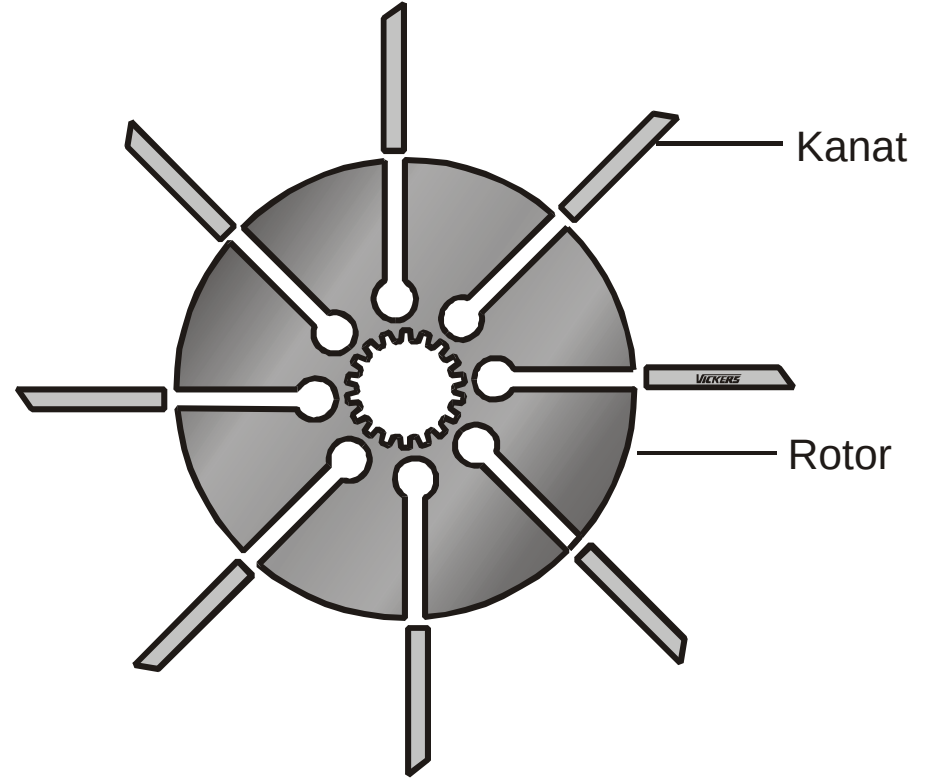
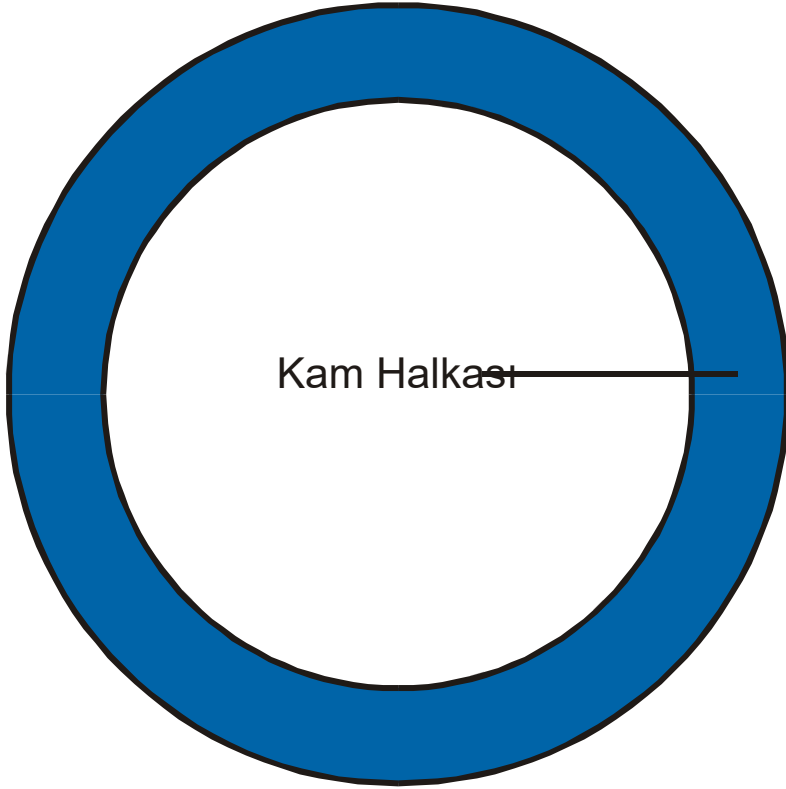


GEROTOR TİP DİŞLİ POMPALAR



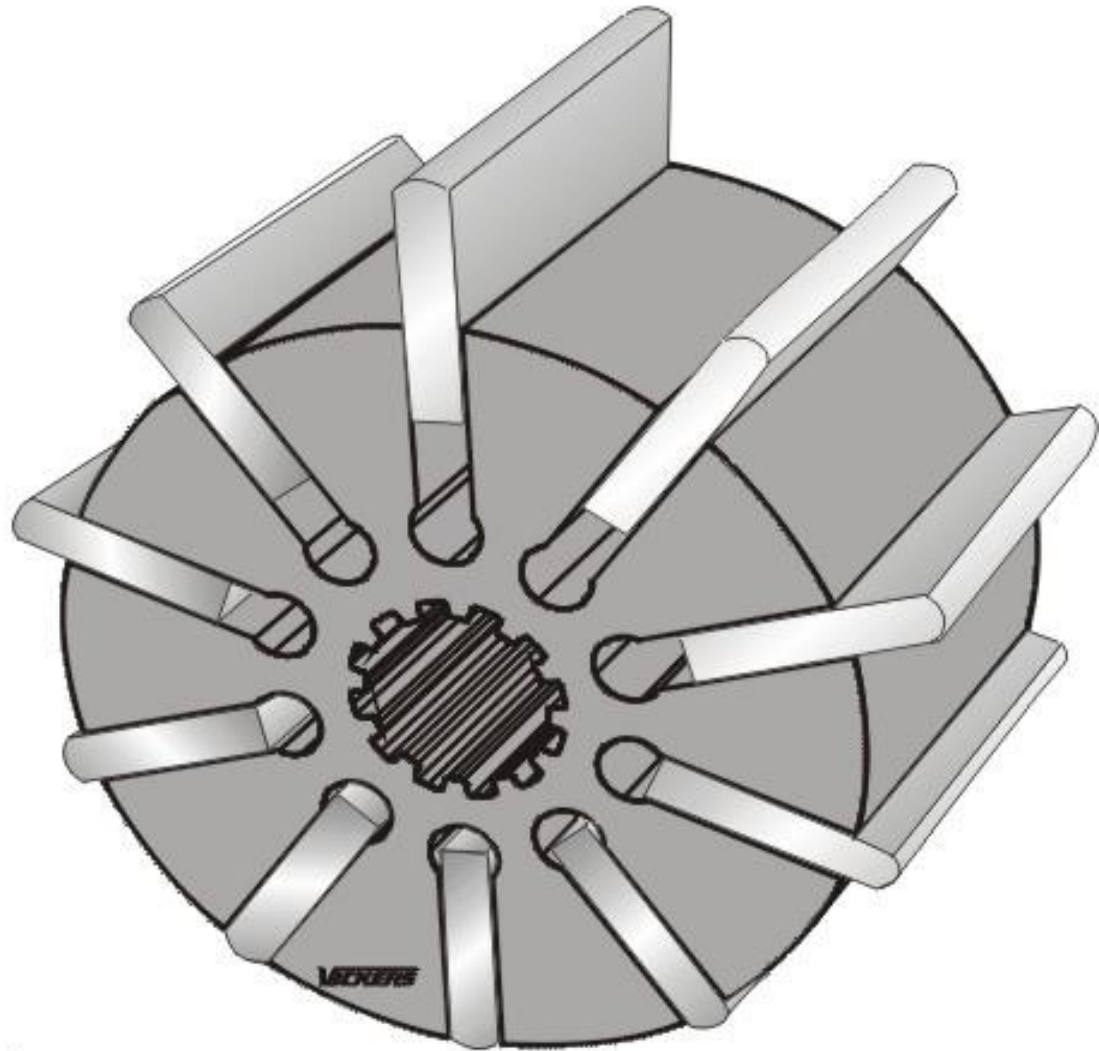
PALETLİ POMPALAR





Şekil 15-12 Paletli pompanın temel bileşenleri

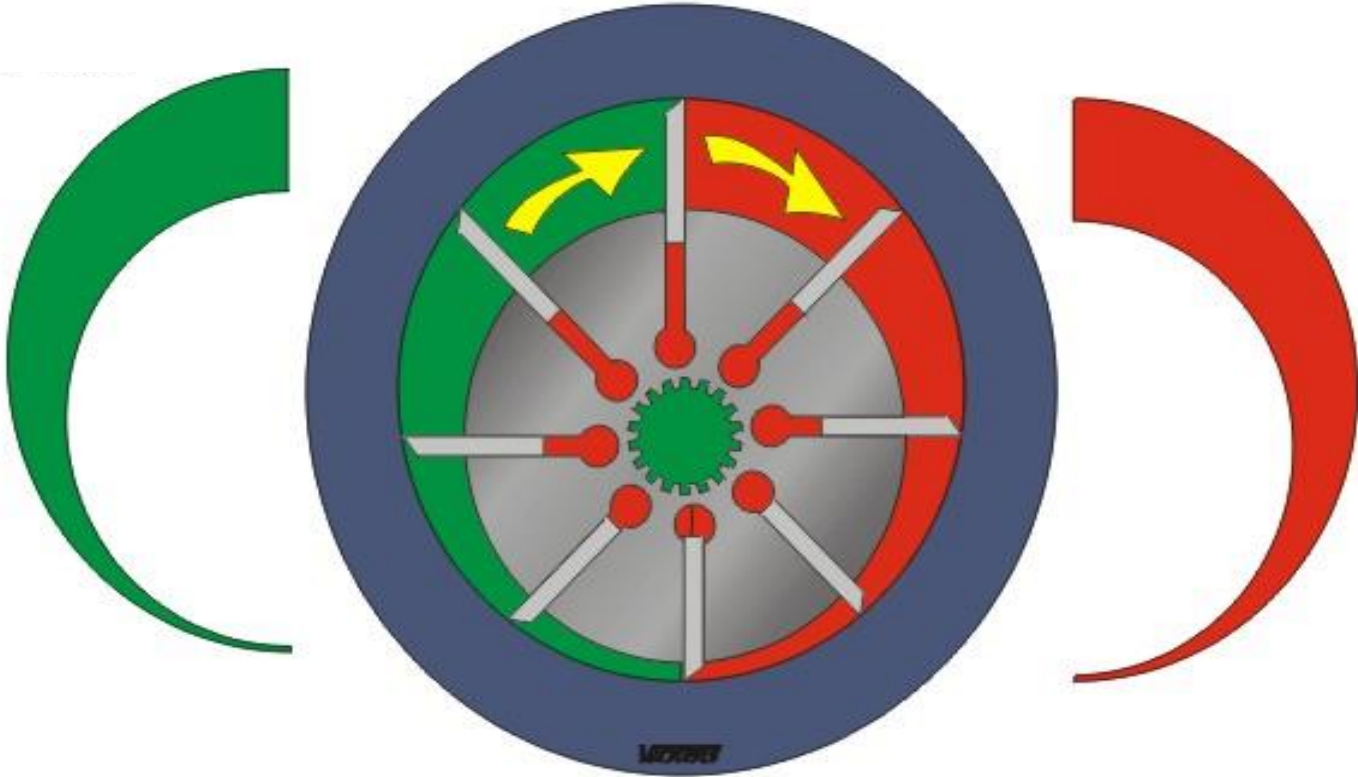
ROTOR ve PALETLER

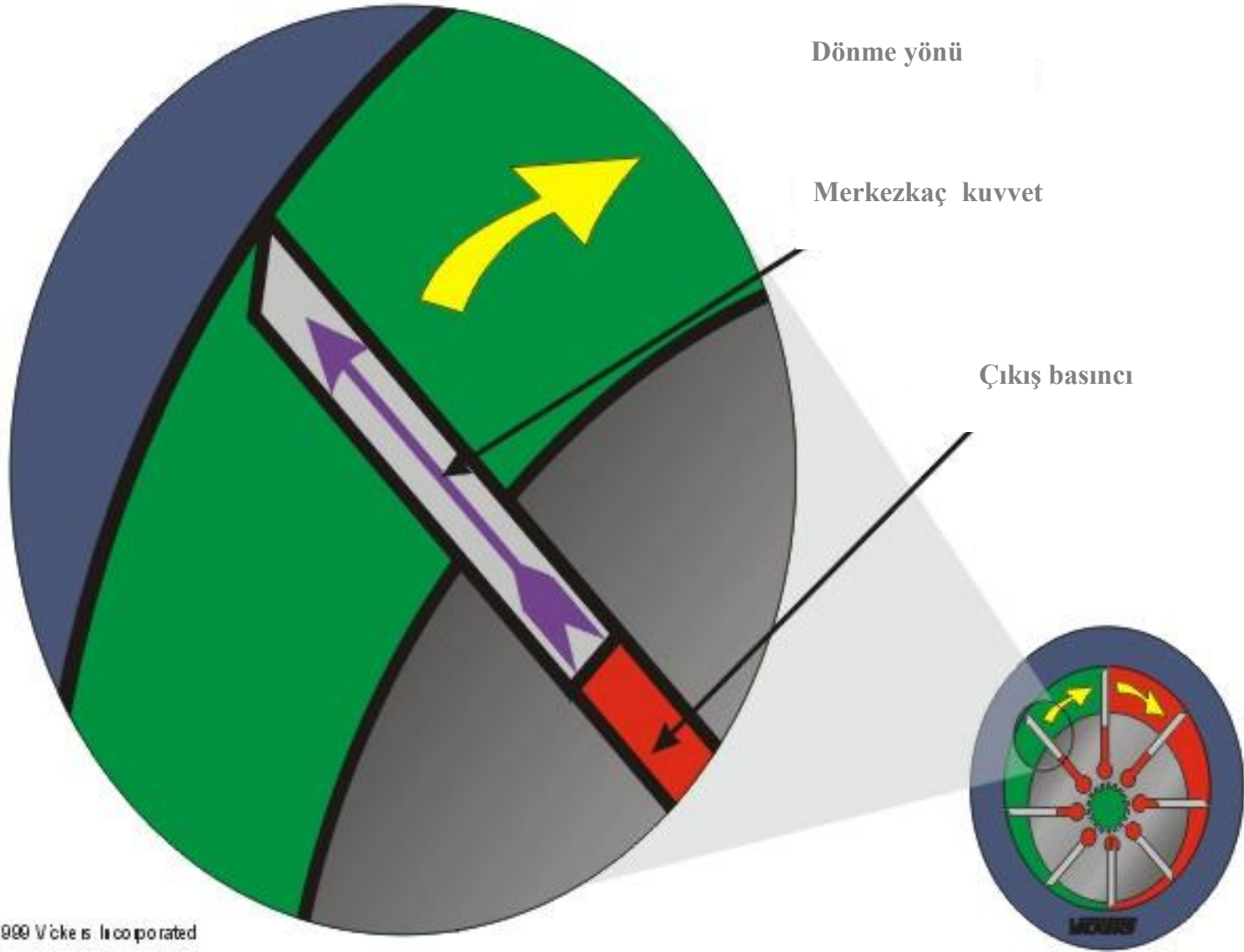


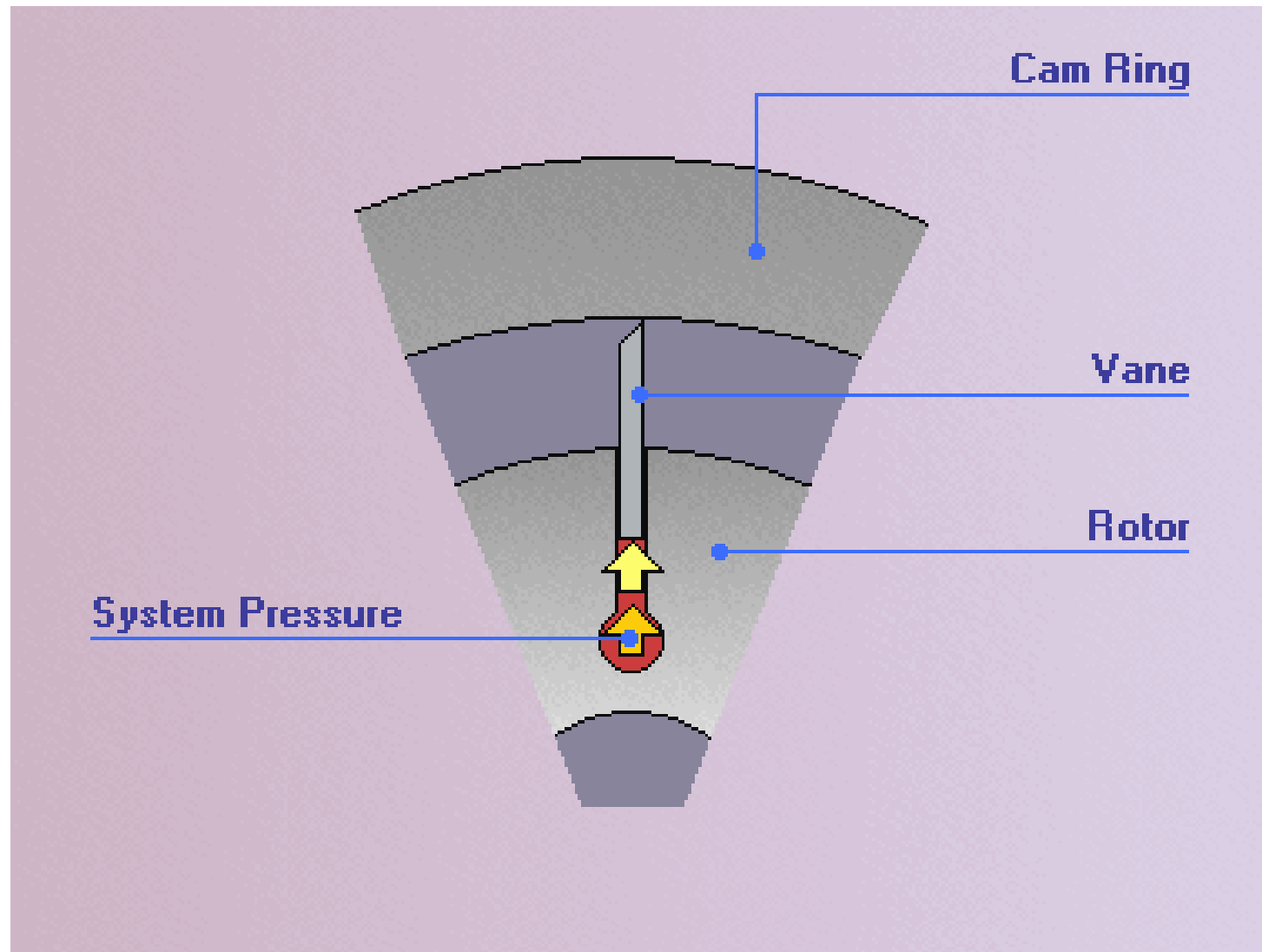
DENGELENMEMİŞ PALETLİ POMPA

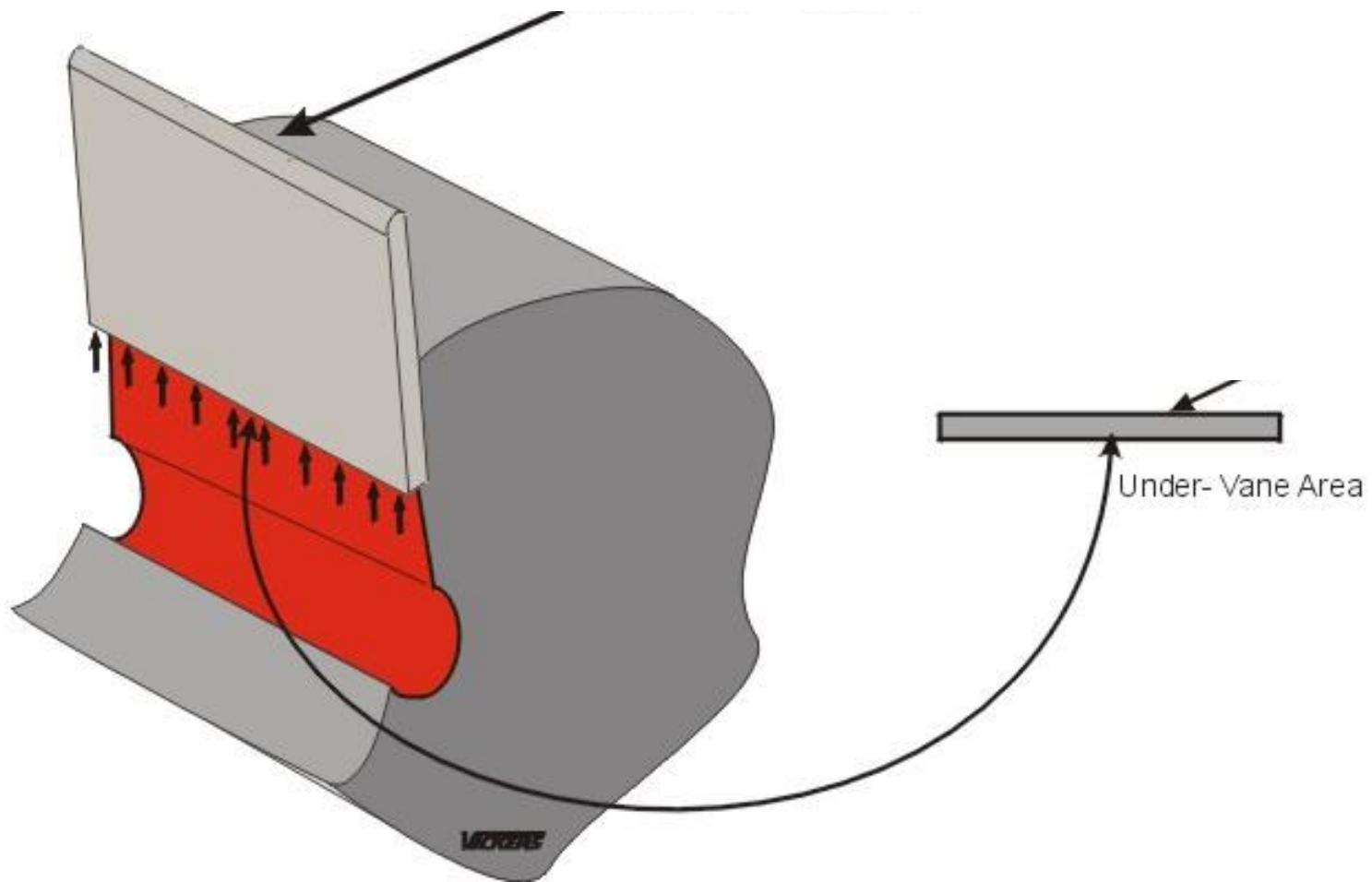
Emiş hattında
hacim artar.

Basınç hattında
hacim azalır.

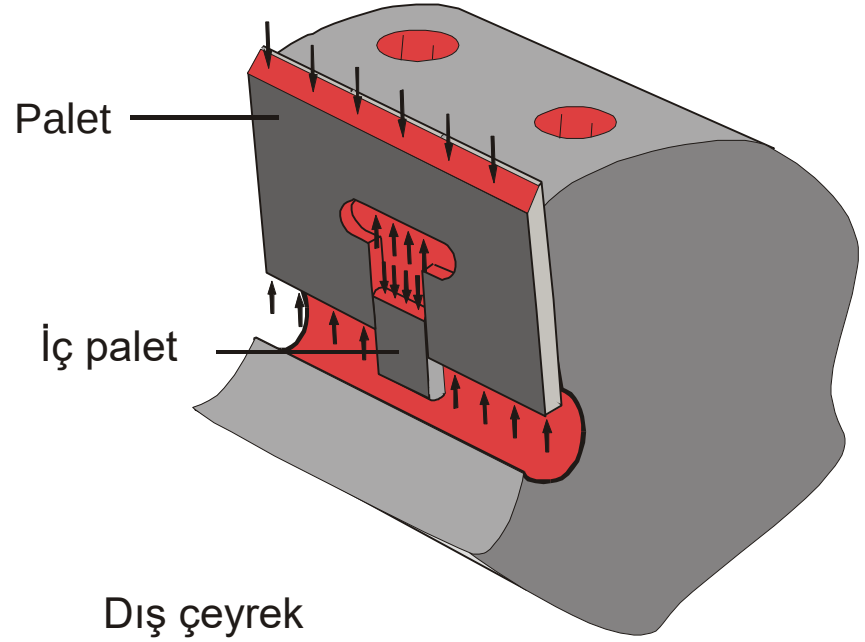
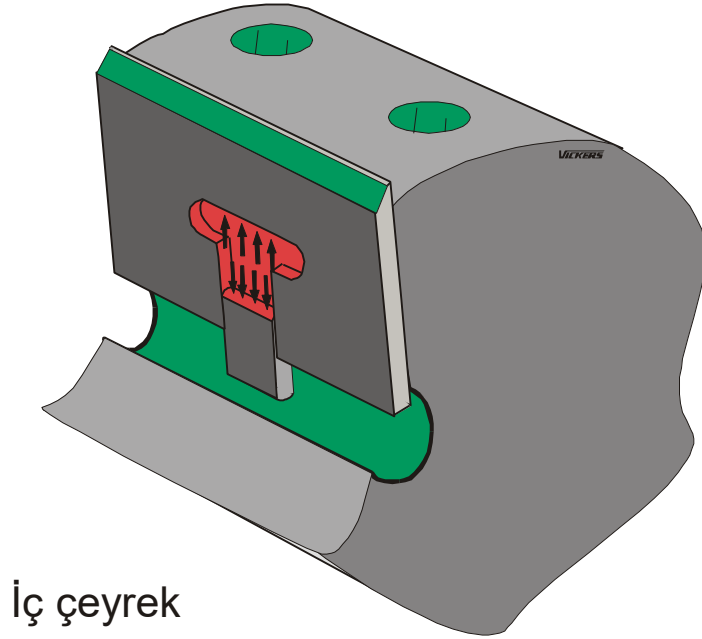






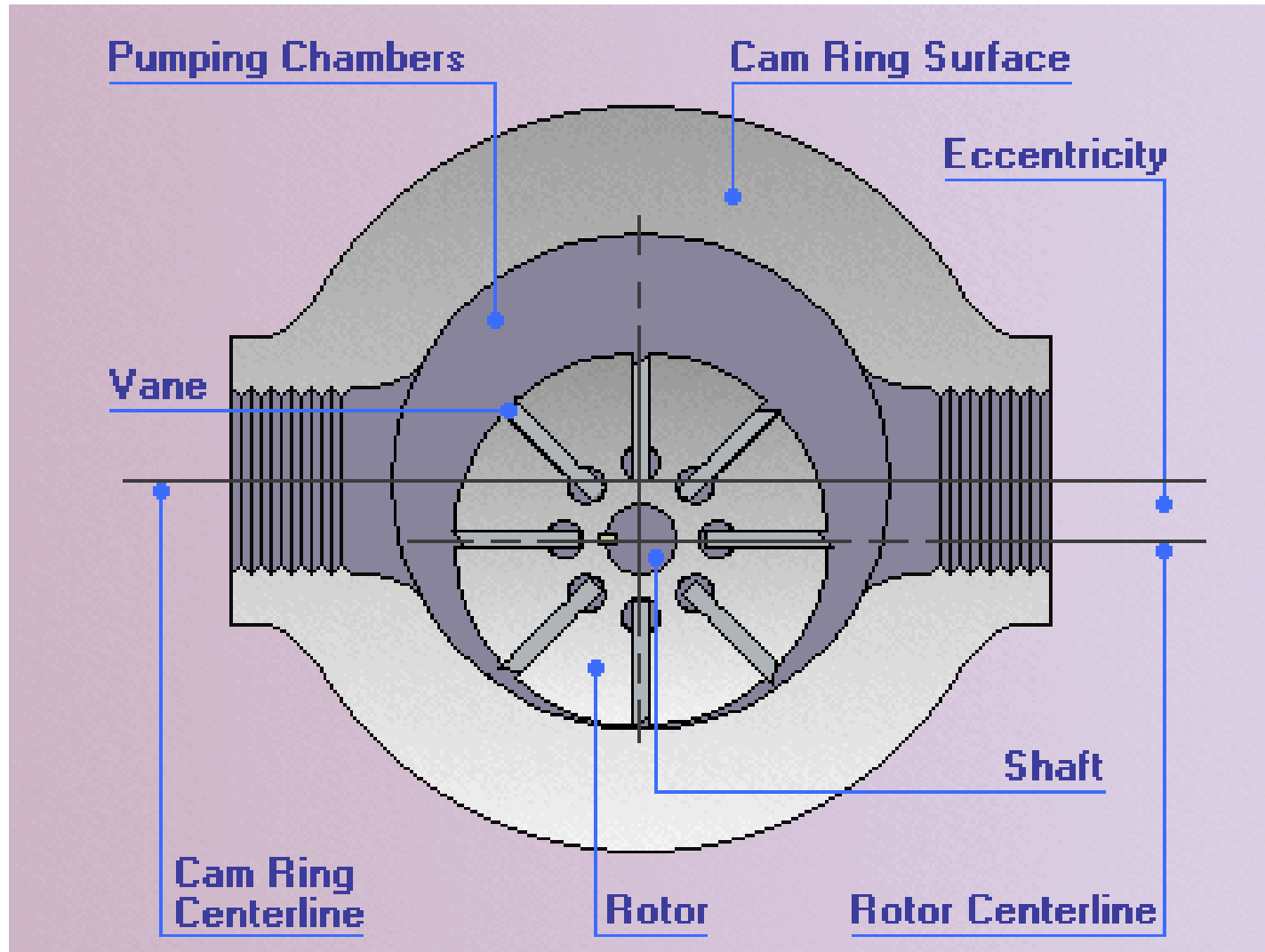


Basınç palet arasında dengeli dağılır

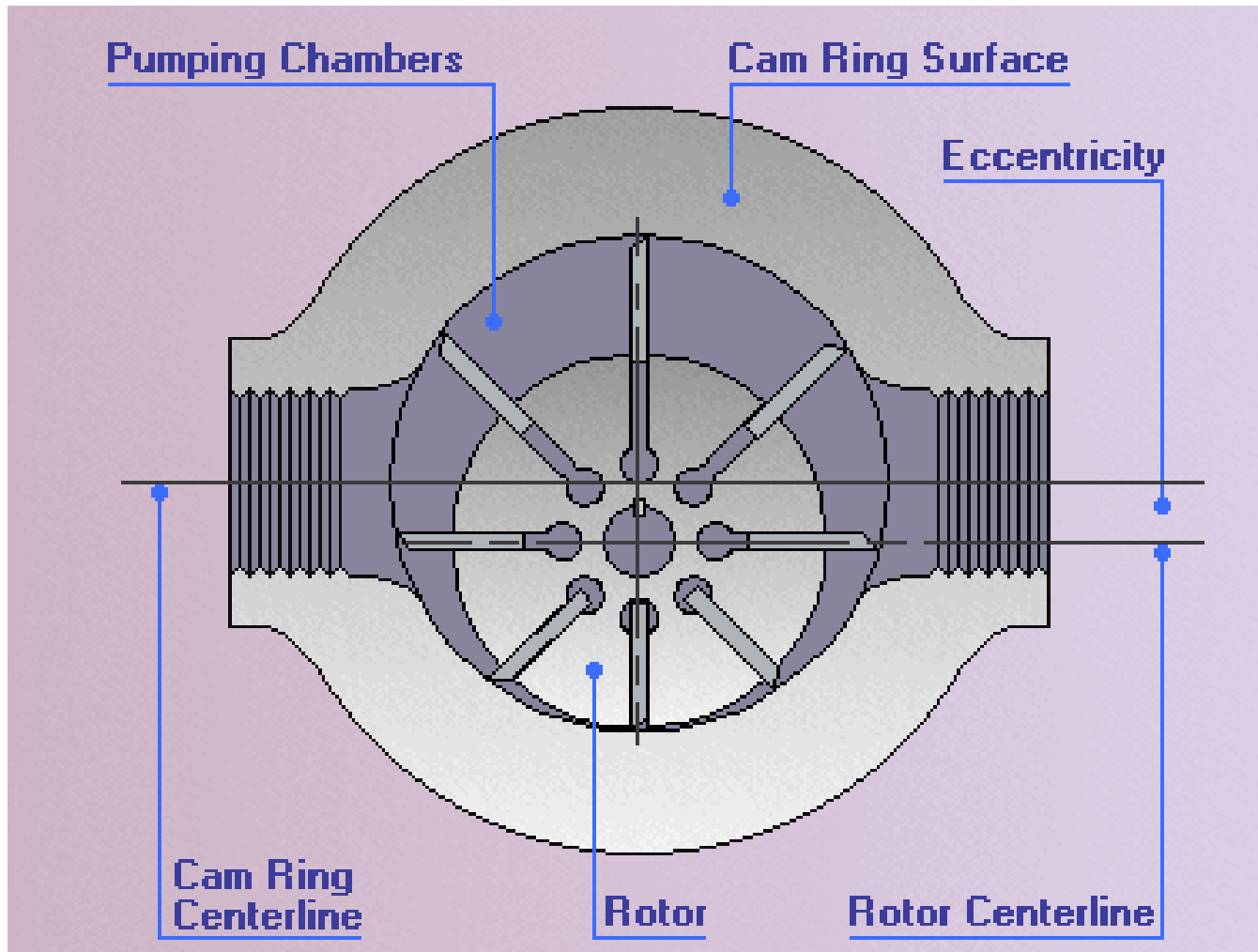


Palet ve iç palet

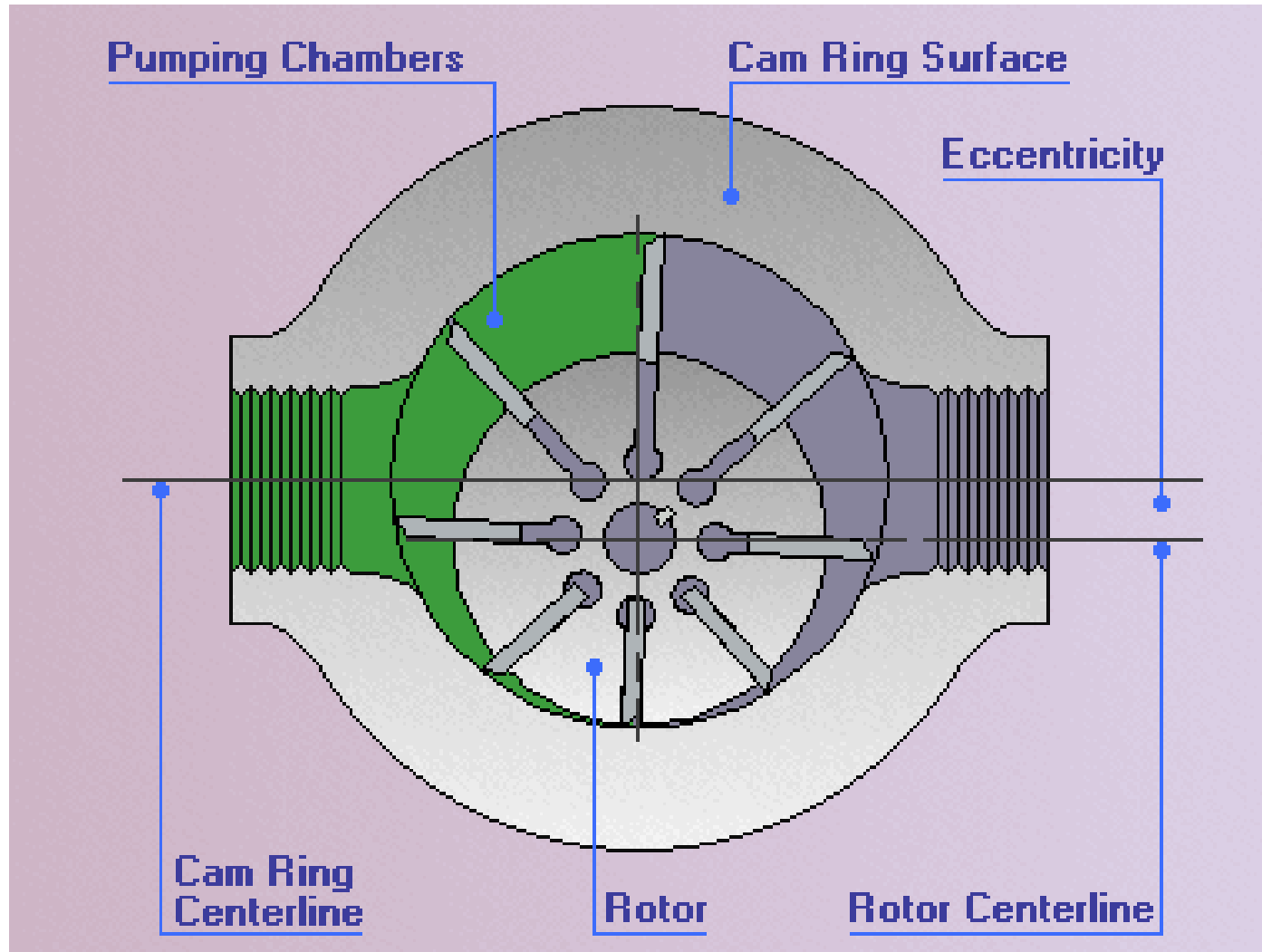
DENGELENMEMİŞ PALETLİ POMPA



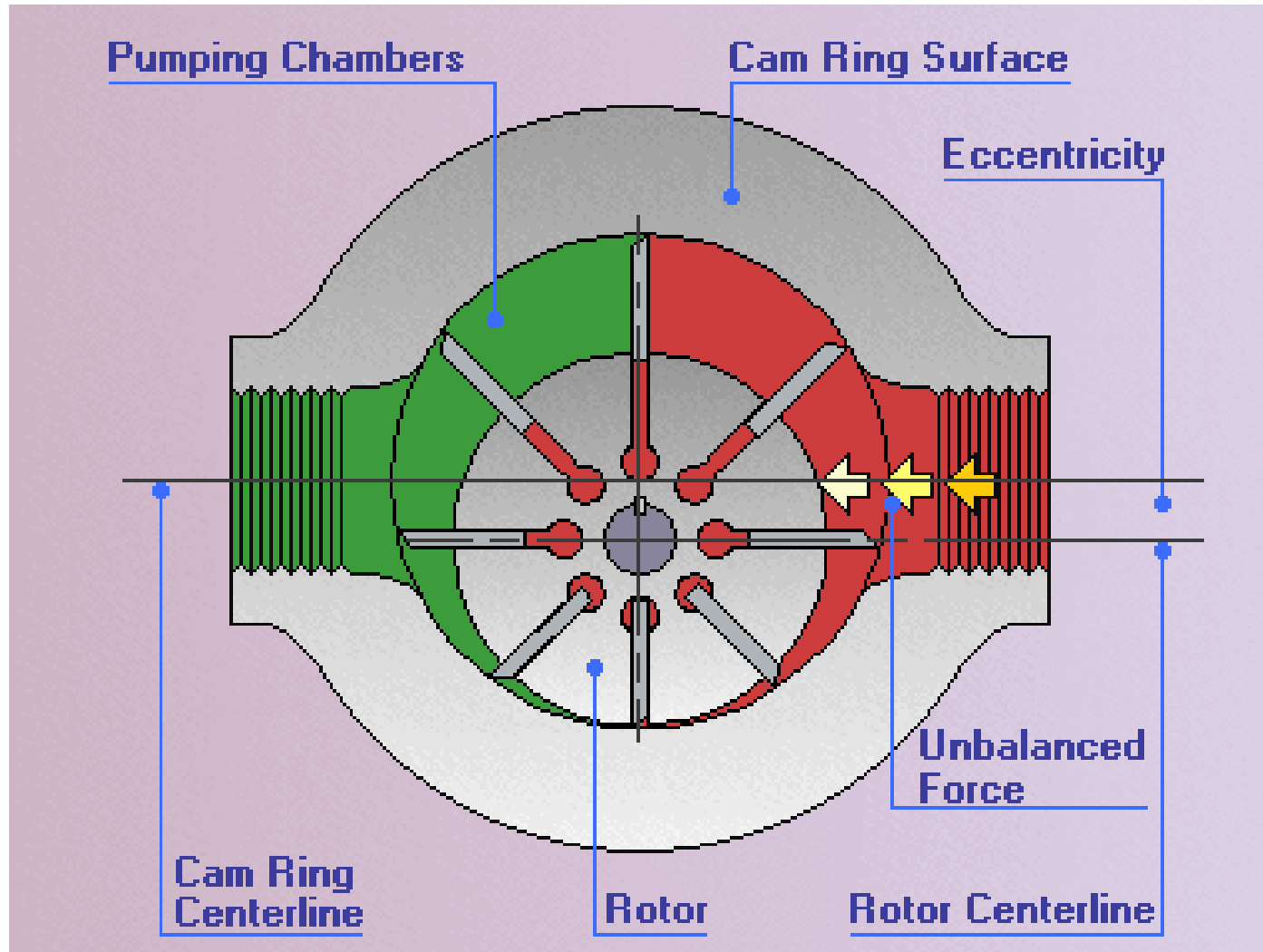
DENGELENMEMİŞ PALETLİ POMPA



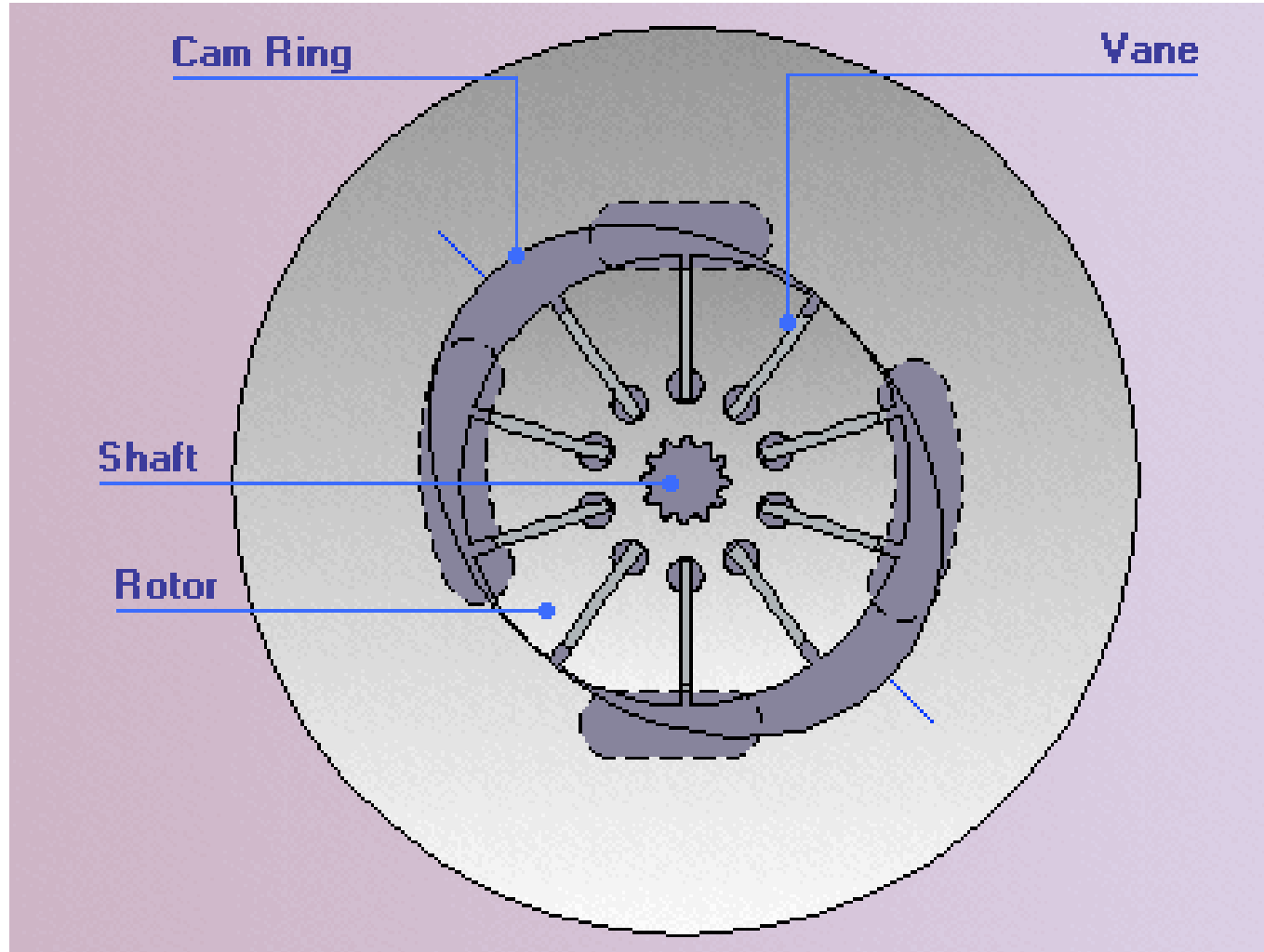
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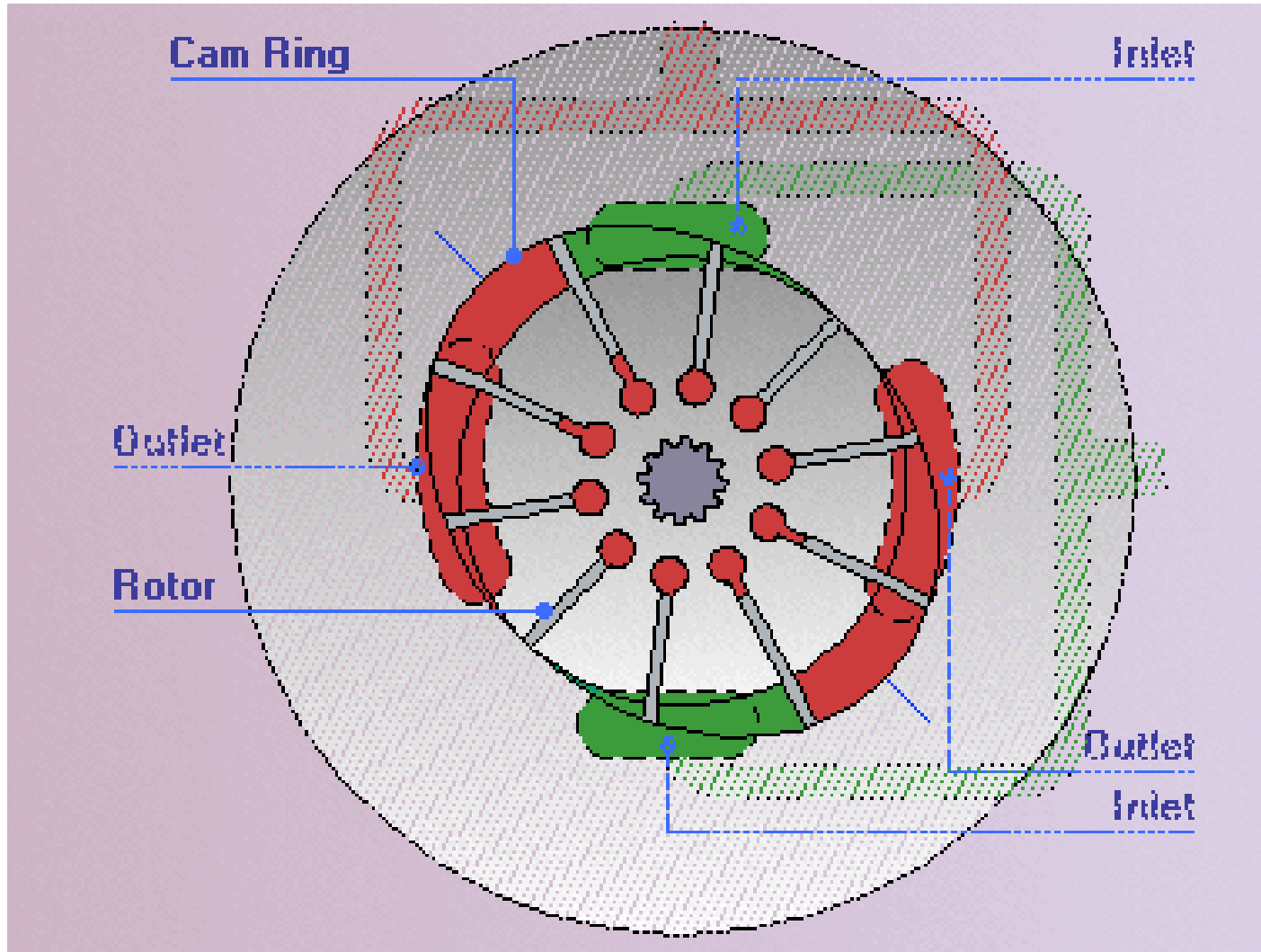
DENGELENMEMİŞ PALETLİ POMPA



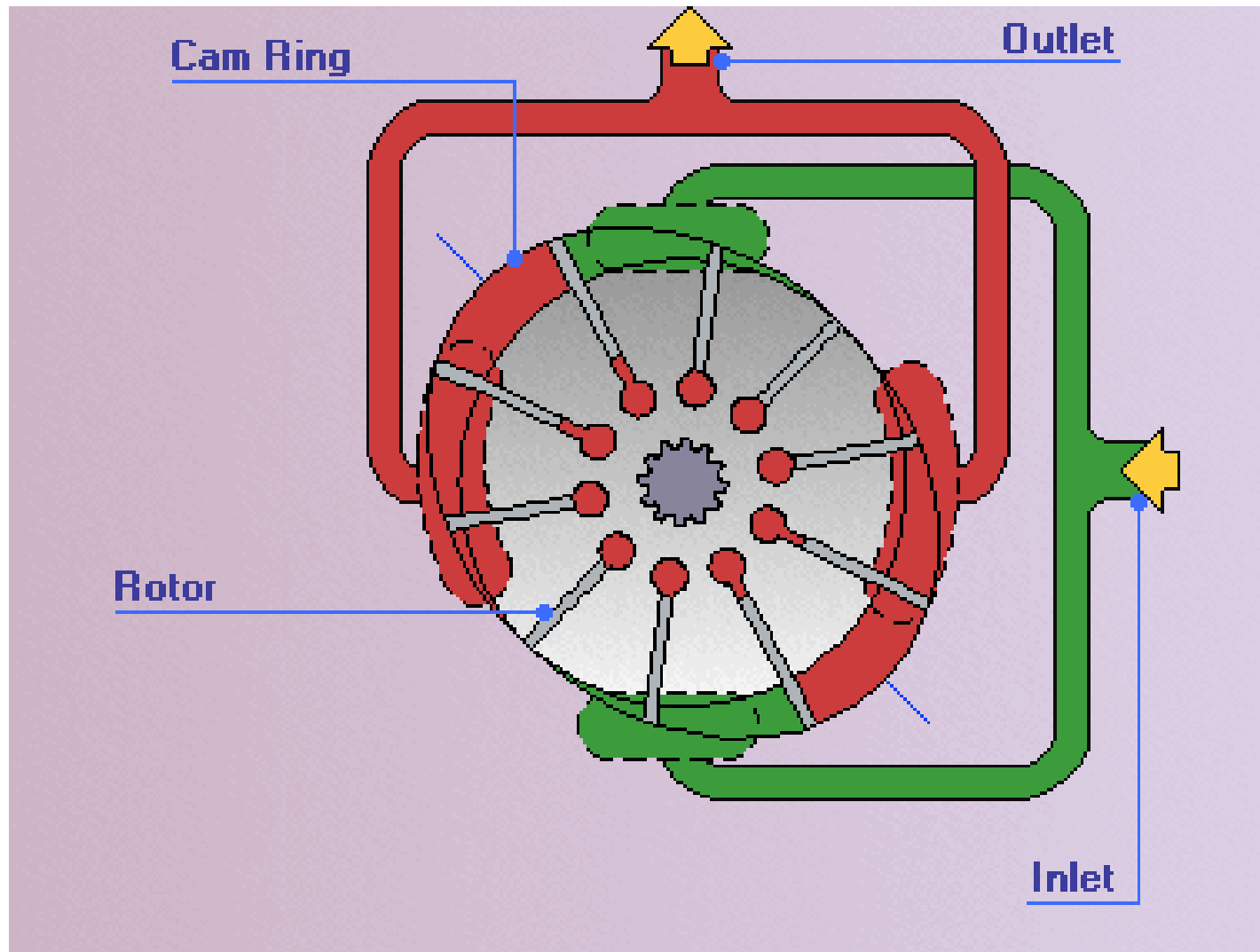
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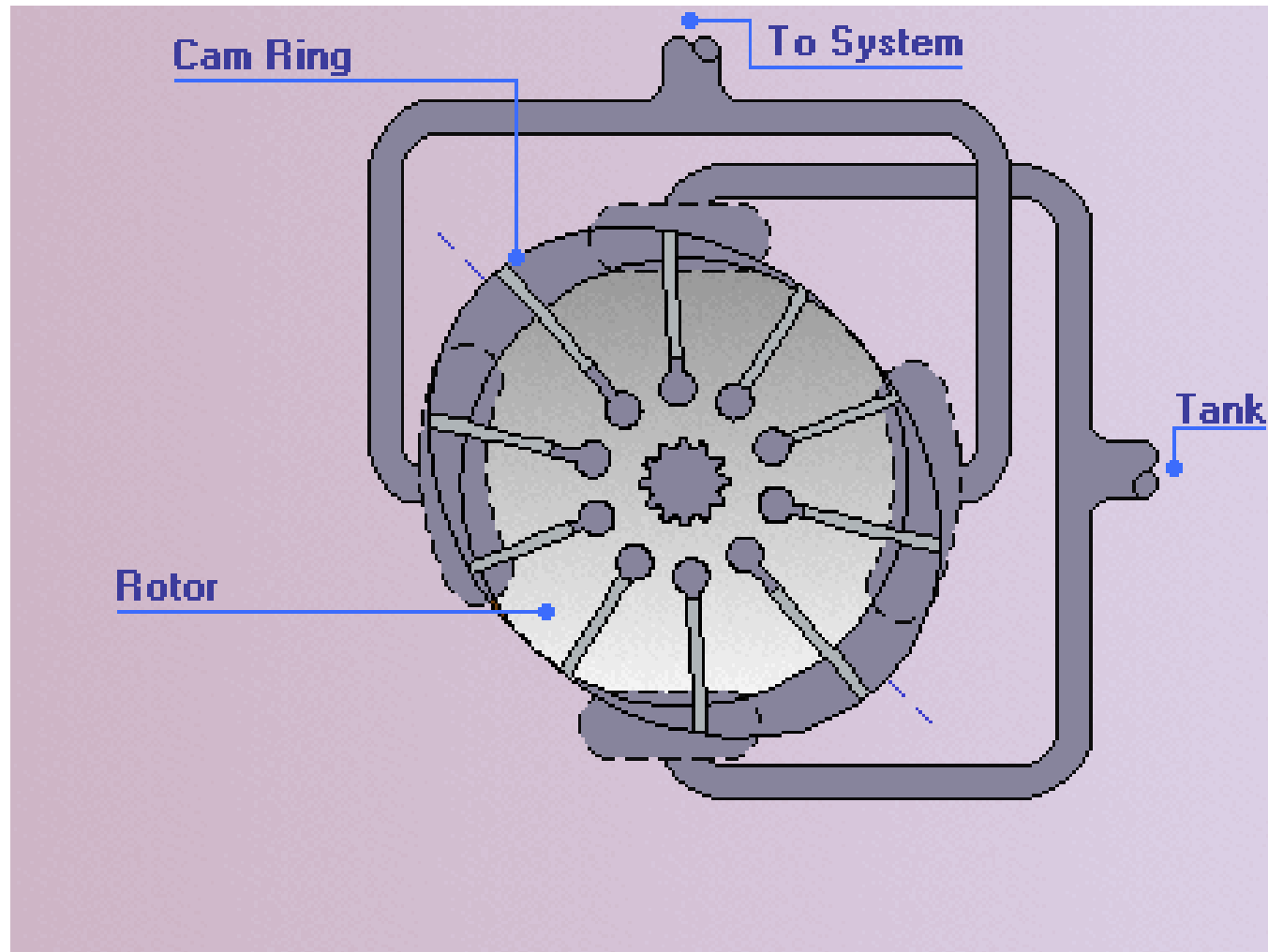
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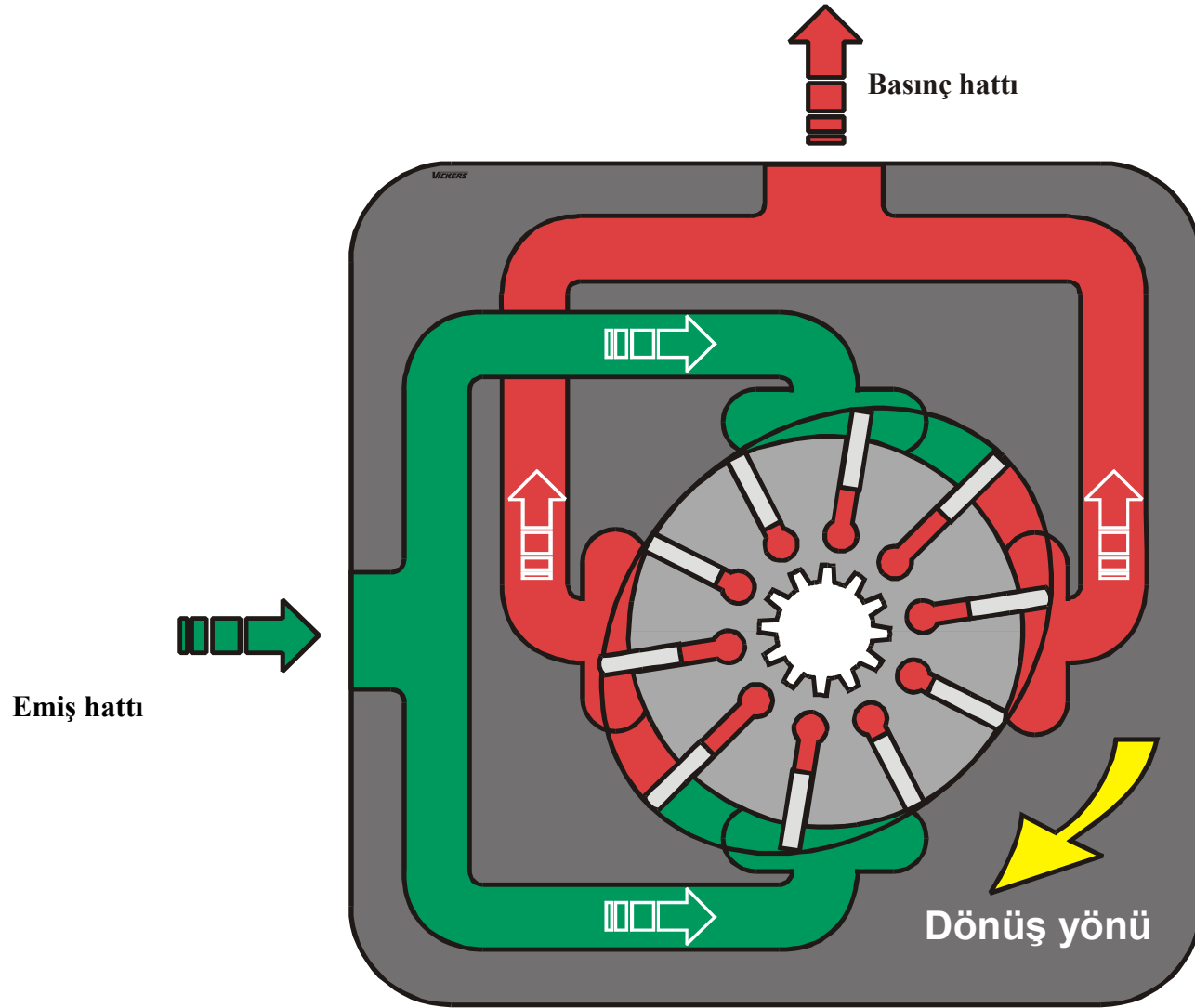


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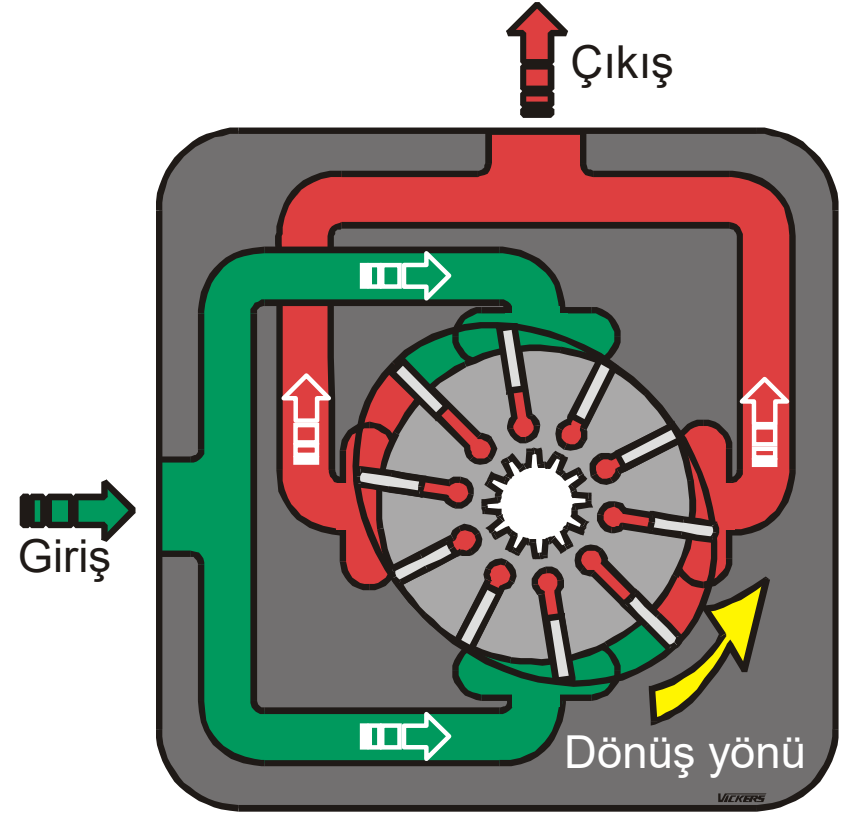
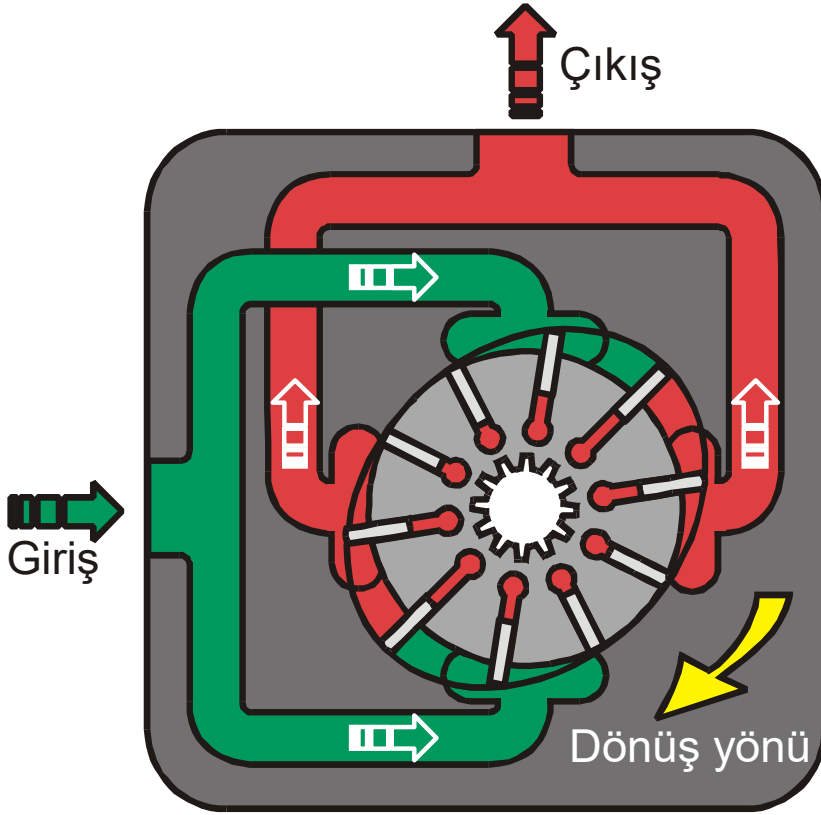


DENGELENMEMİŞ PALETLİ POMPA



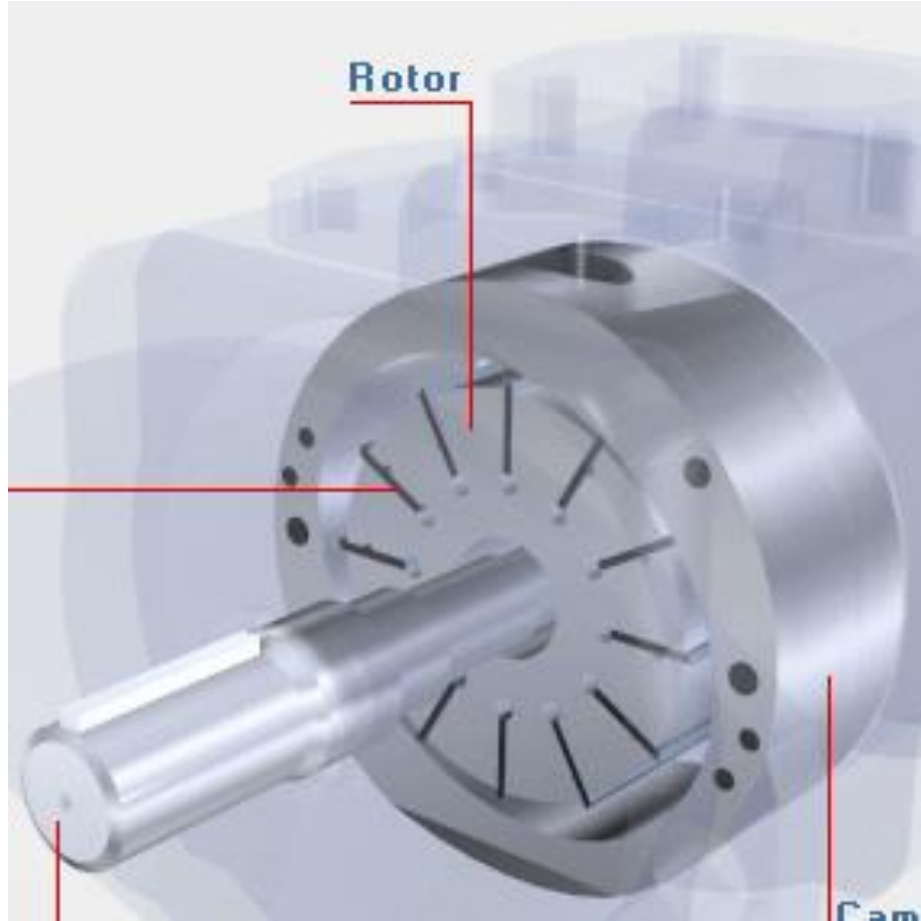


Dengelenmiş paletli pompa

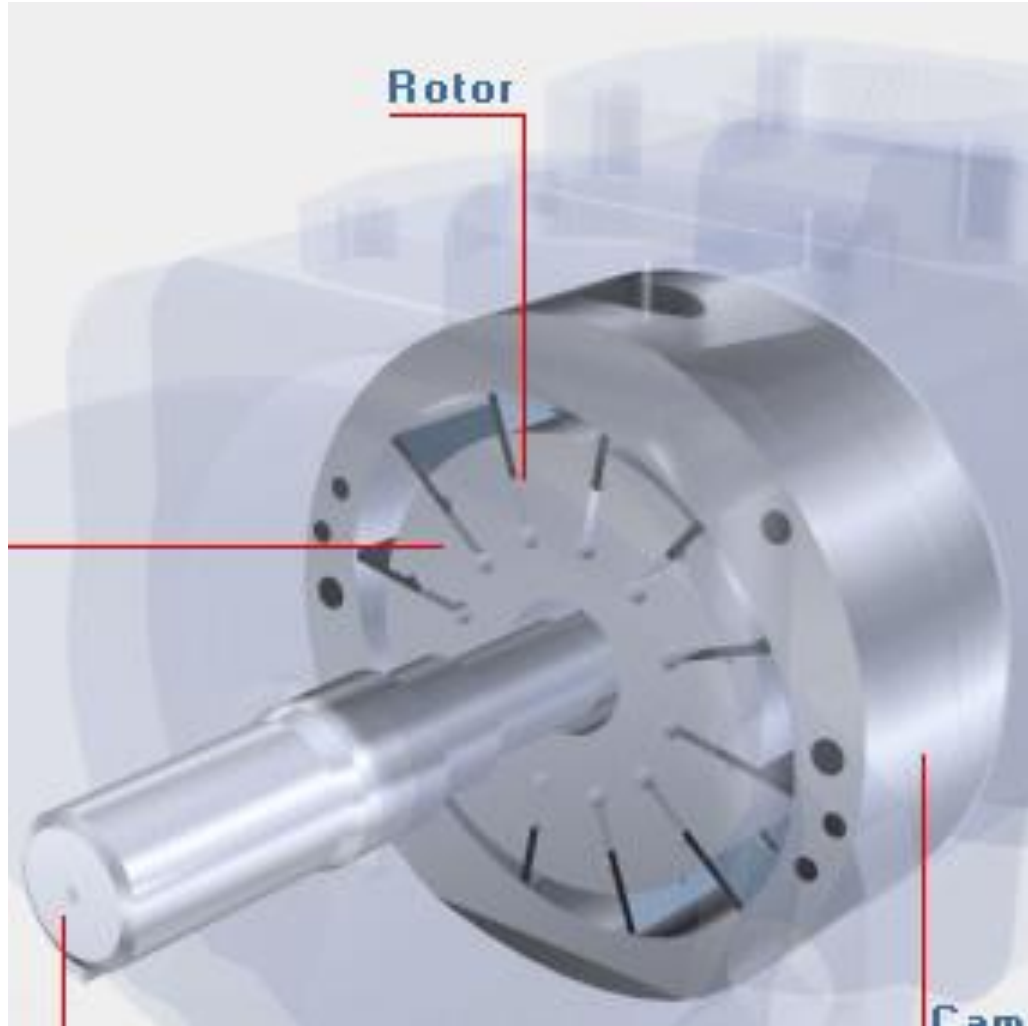


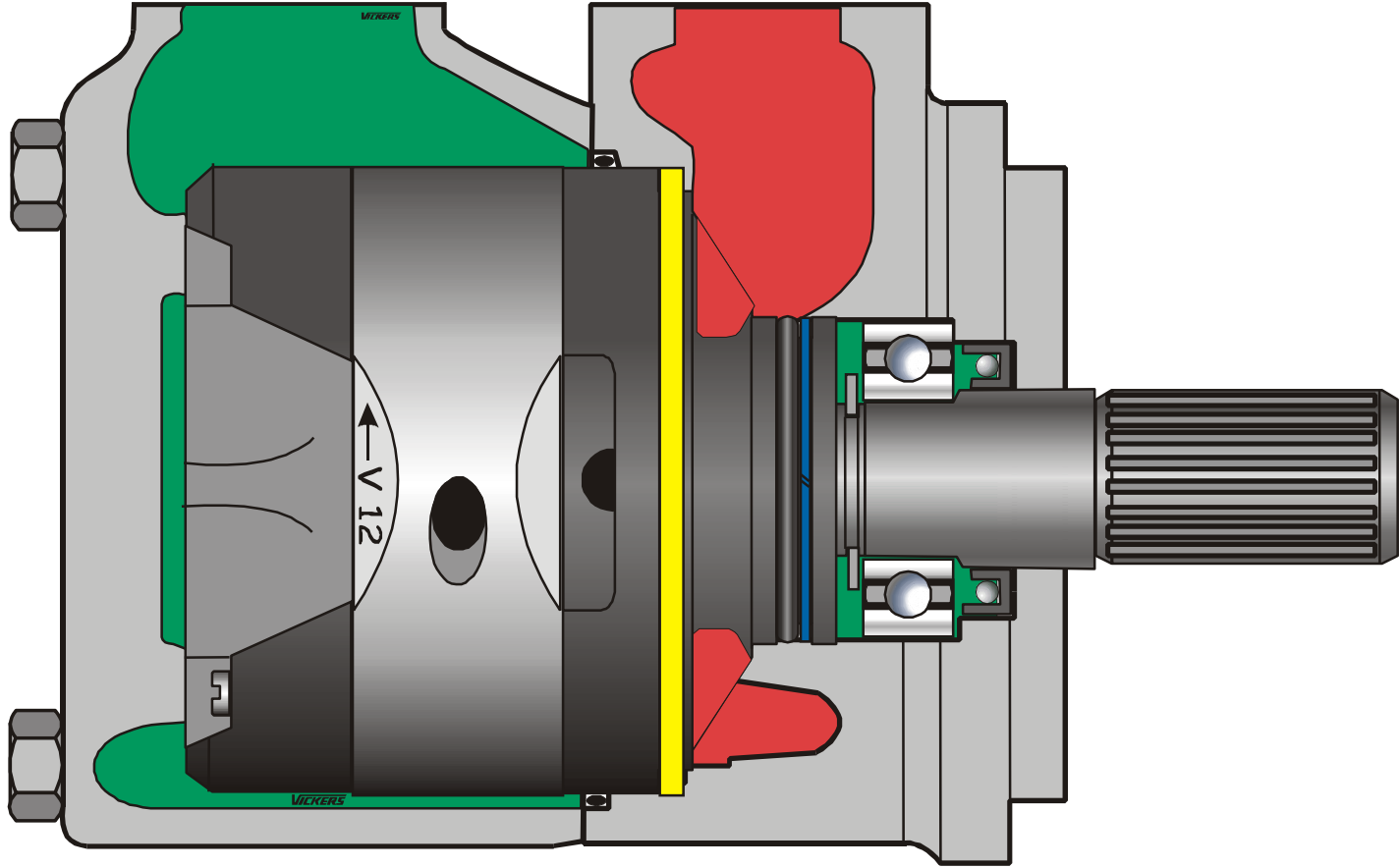
Şekil 15-17 Kam halkası 90derece döndüğünde dönüş yönü de değişir

PALETLİ POMPANIN KARTRİÇ YAPISI

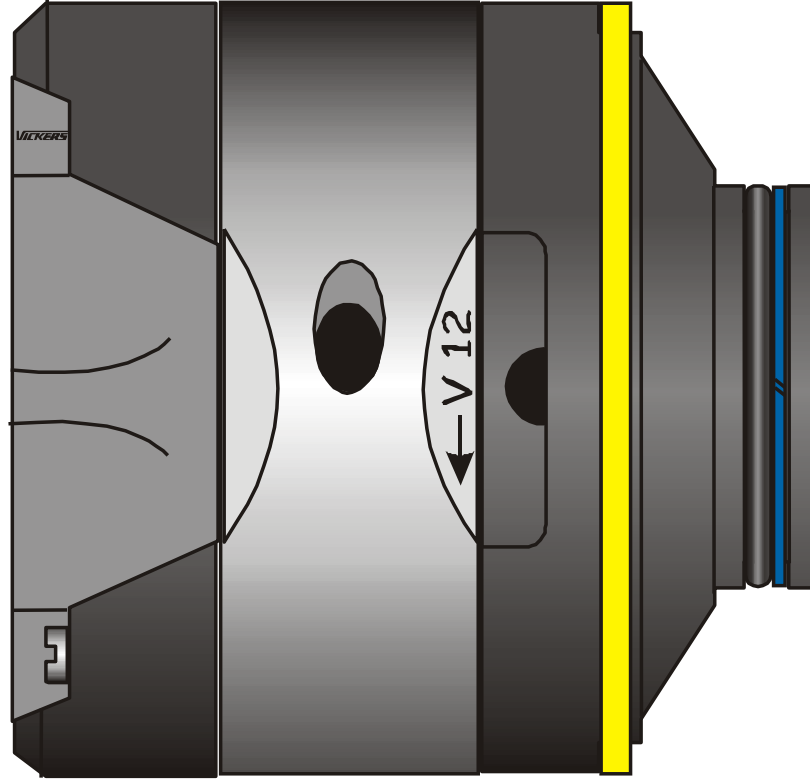


PALETLİ POMPANIN KARTRİÇ YAPISI

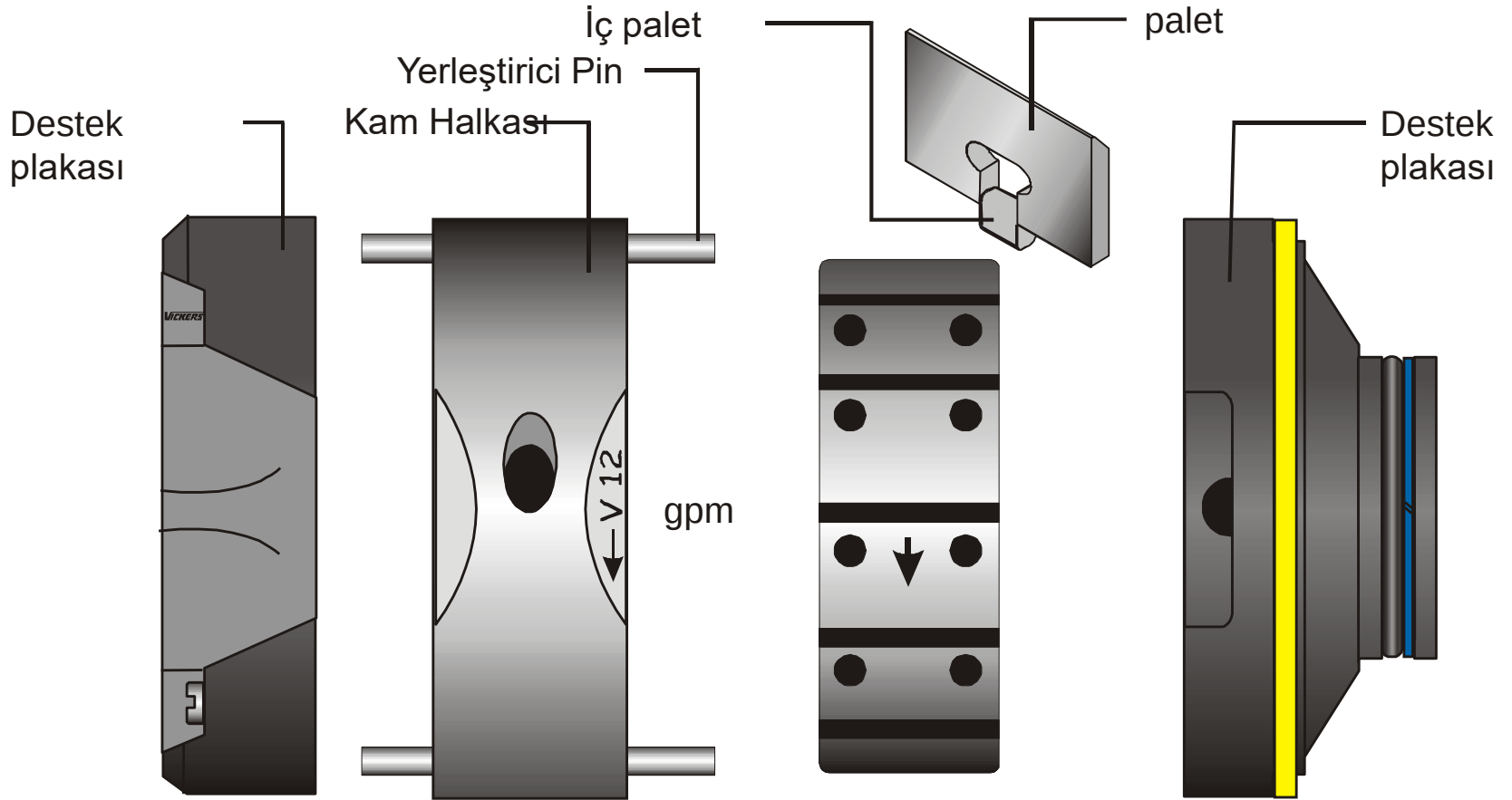




Paletli pompa kartriğ yapısı

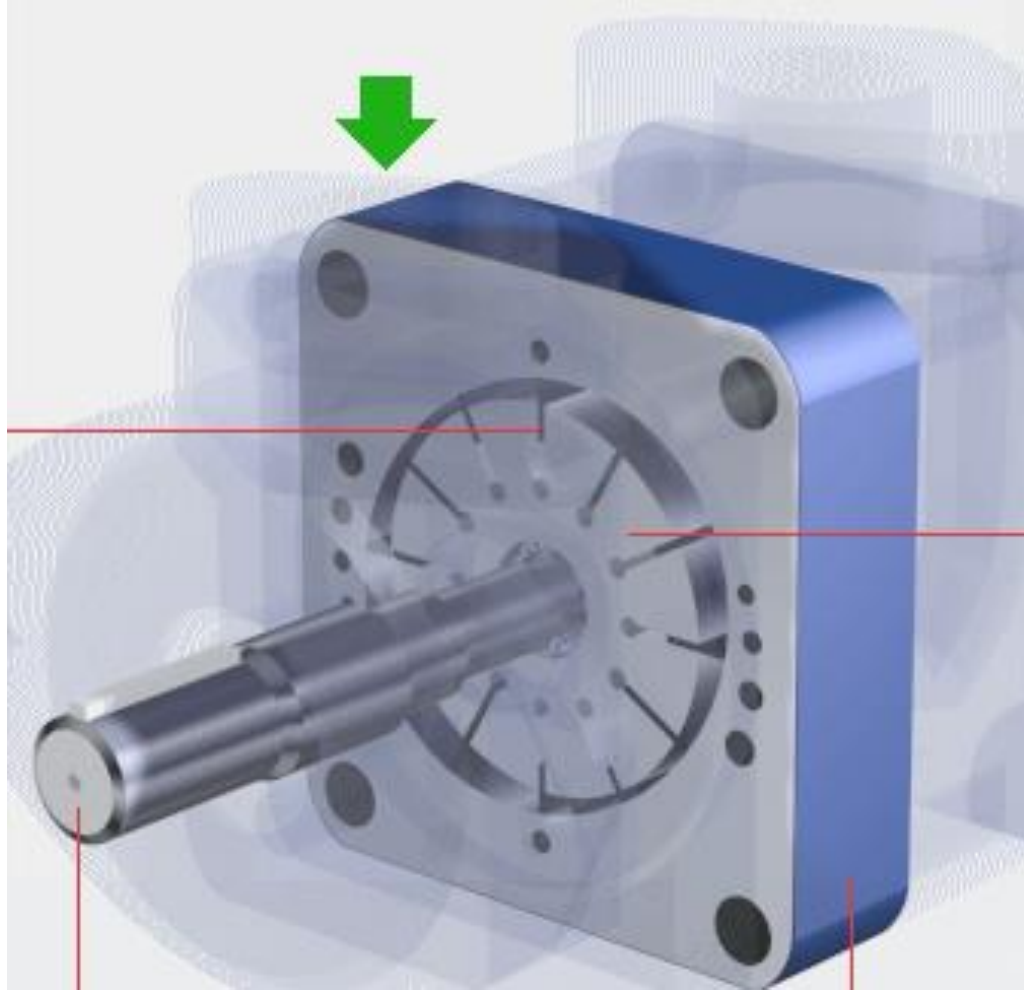


İç palet pompa kartuşu

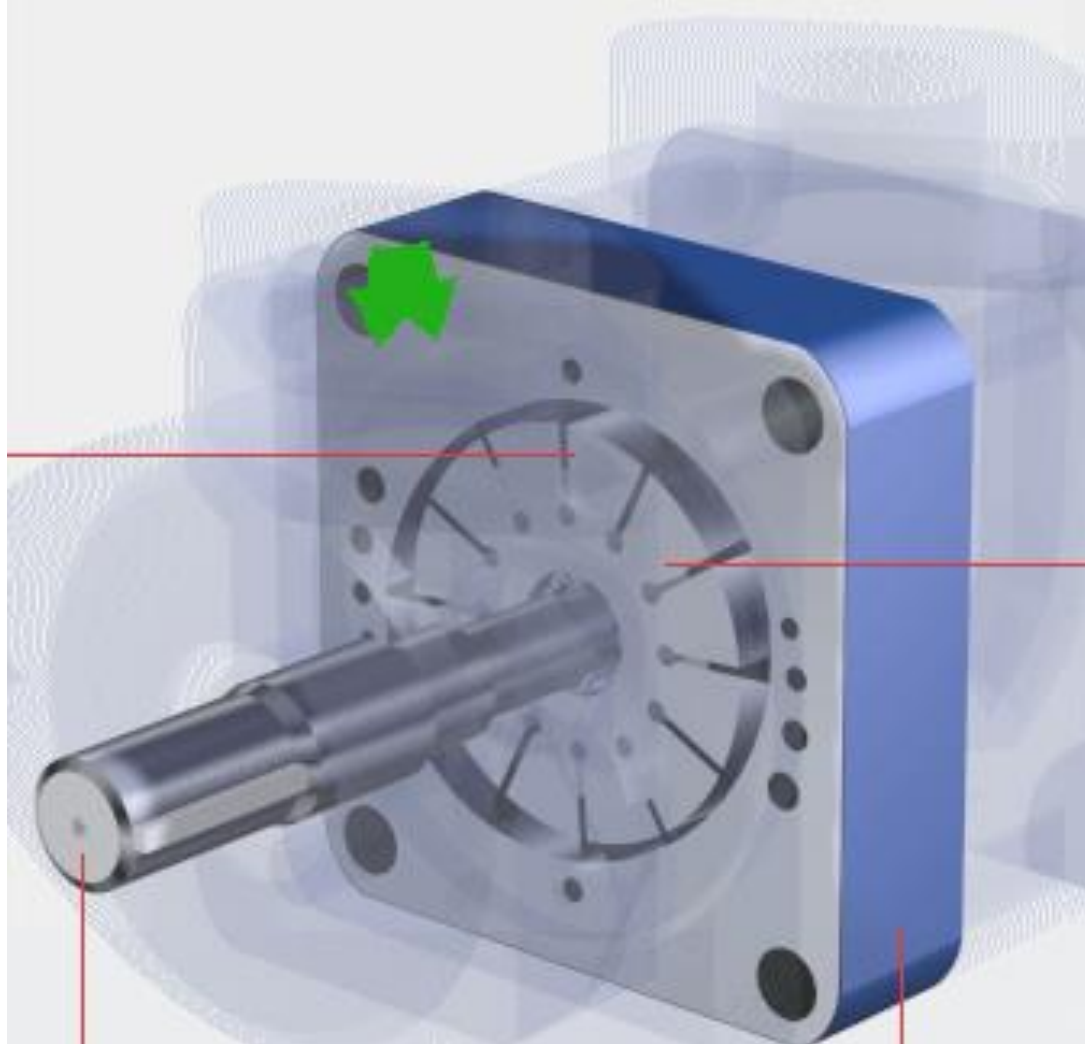


Yüksek performanslı pompa kartuş bileşenleri

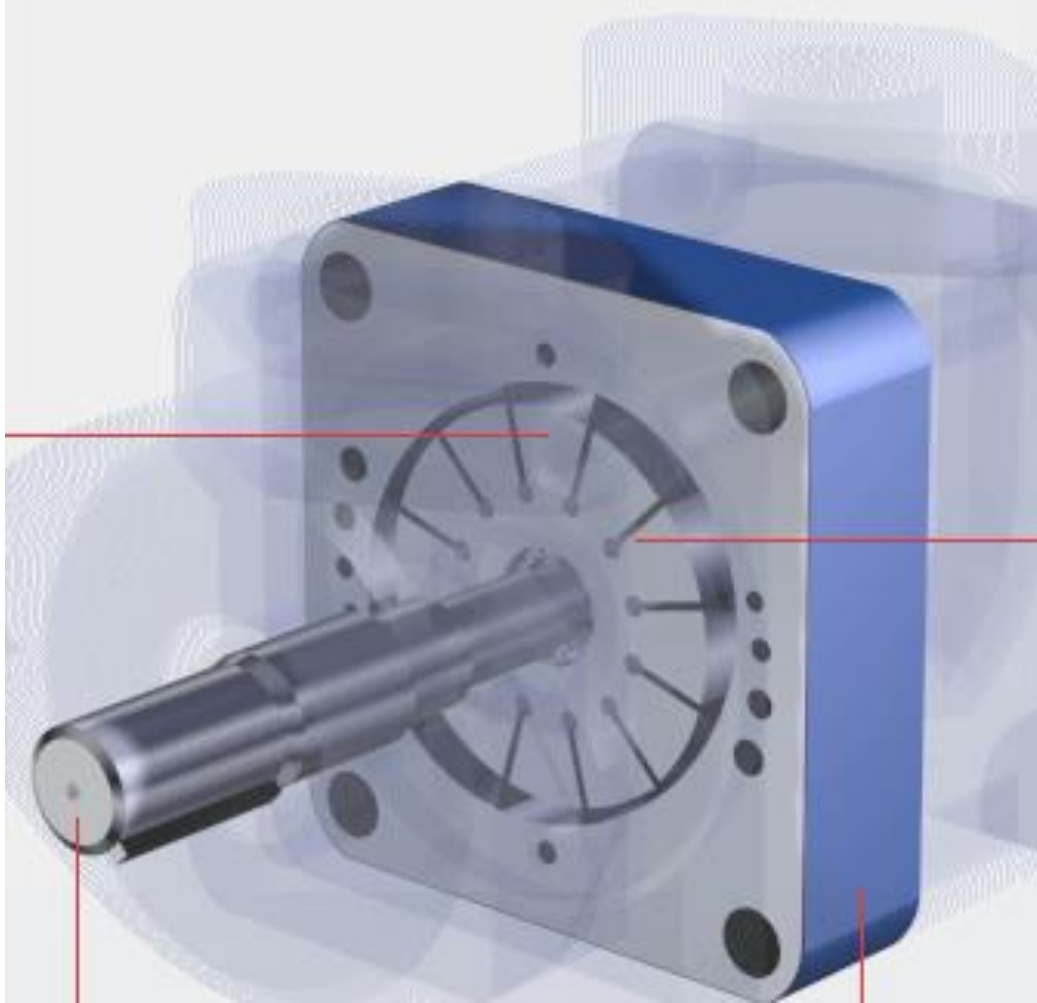
PALETLİ POMPANIN KARTRİÇ YAPISI



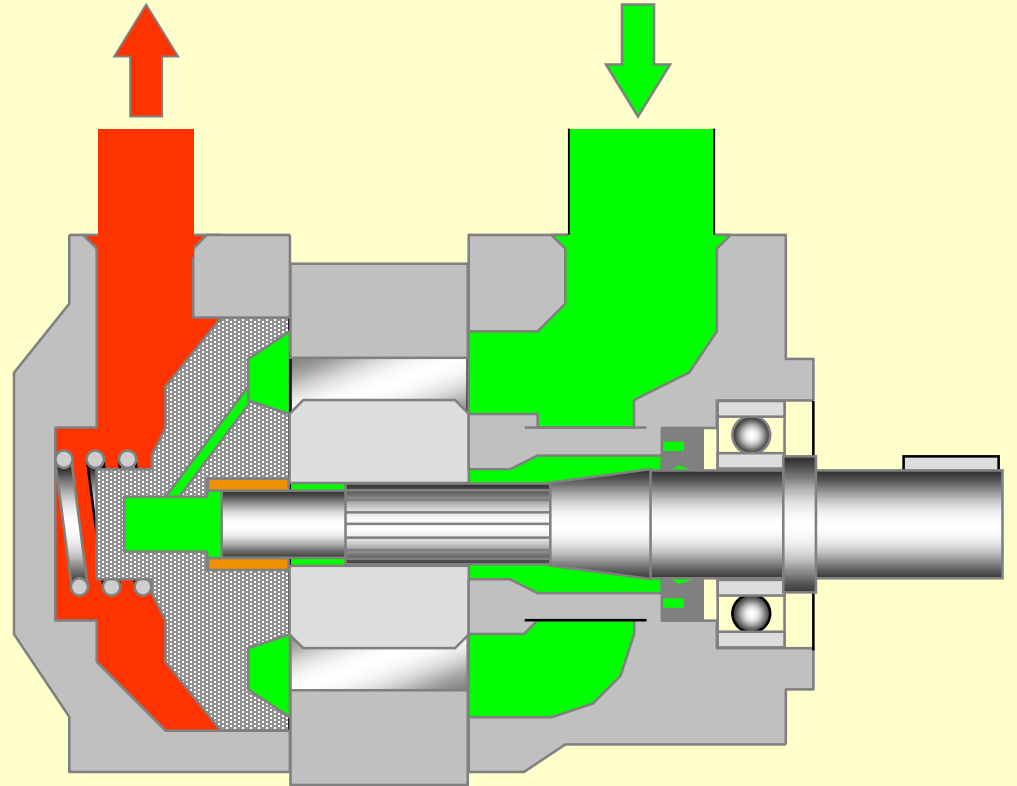
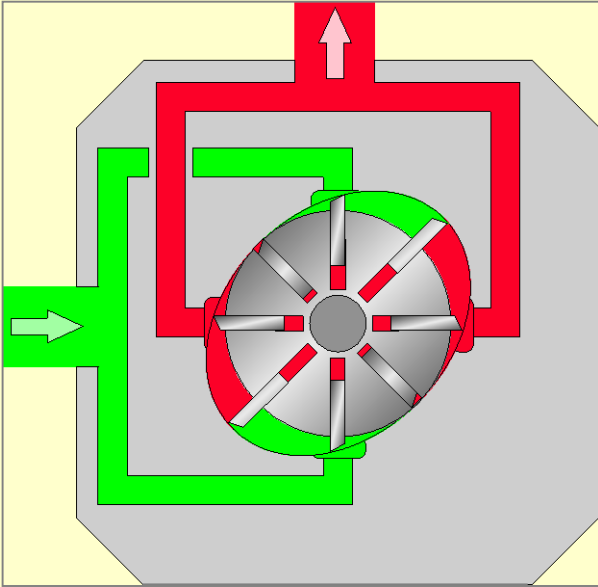
PALETLİ POMPANIN KARTRİÇ YAPISI



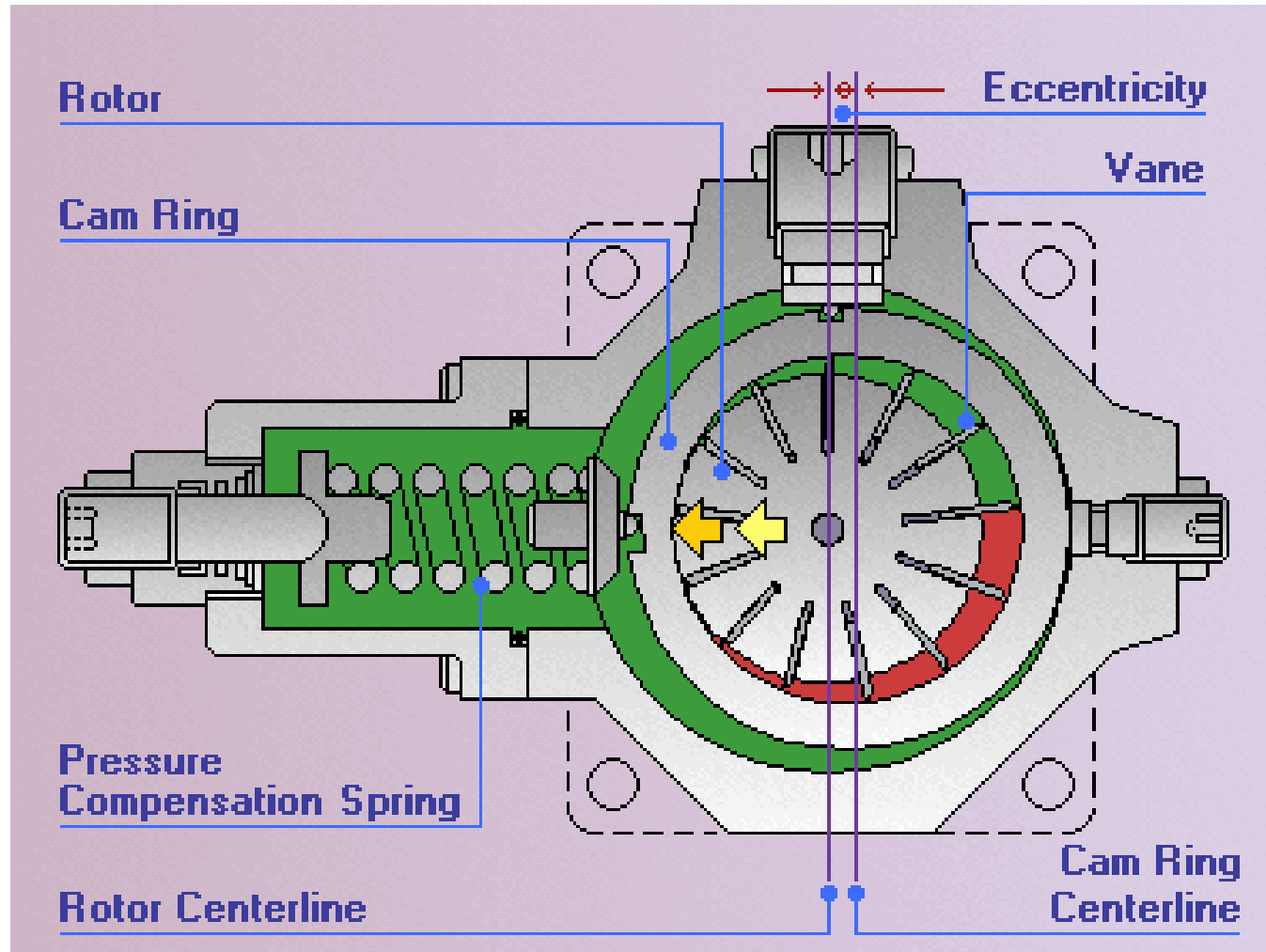
PALETLİ POMPANIN KARTRİÇ YAPISI



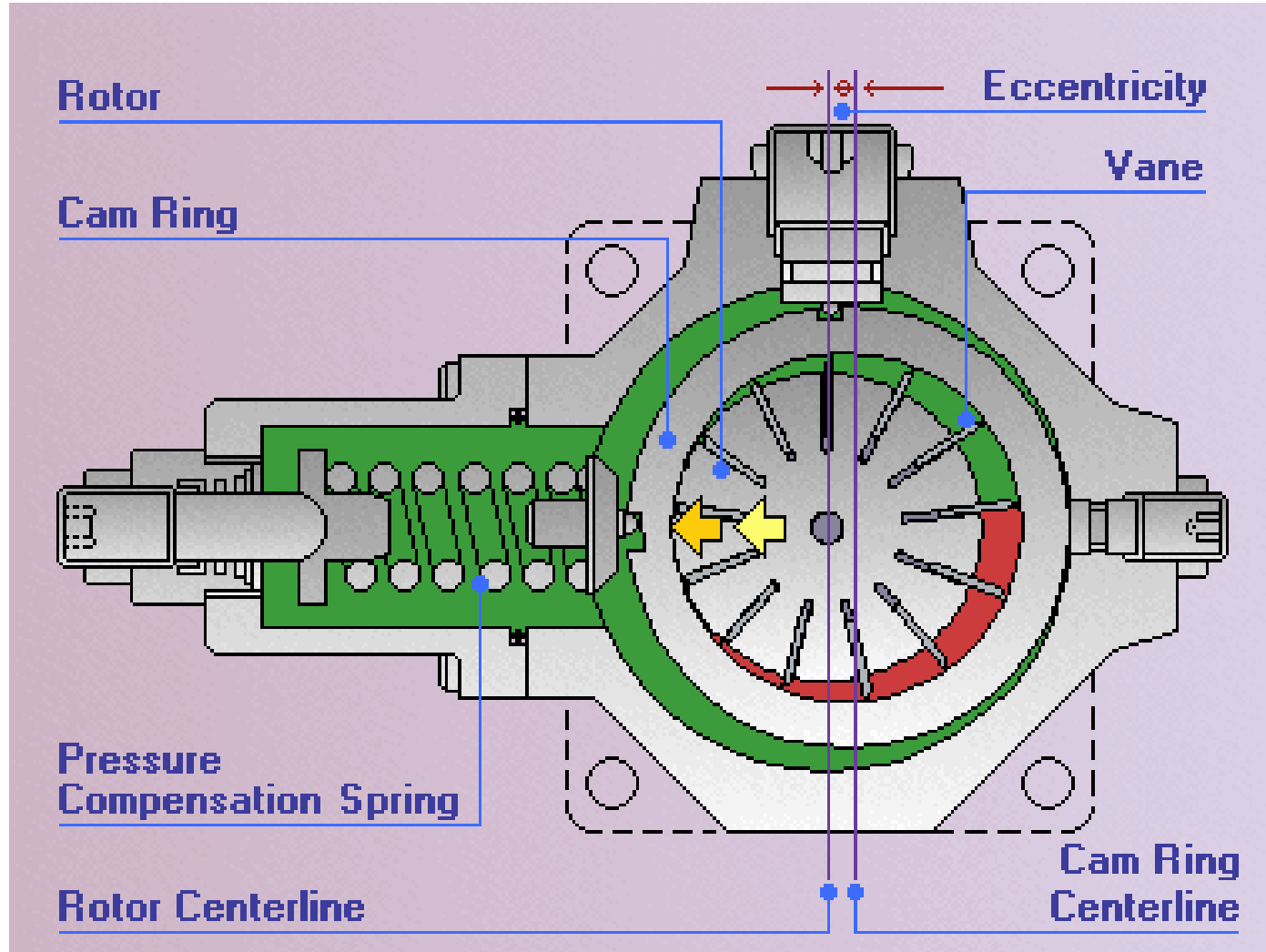
DENGELENMİŞ PALETLİ POMPANIN YAPISI



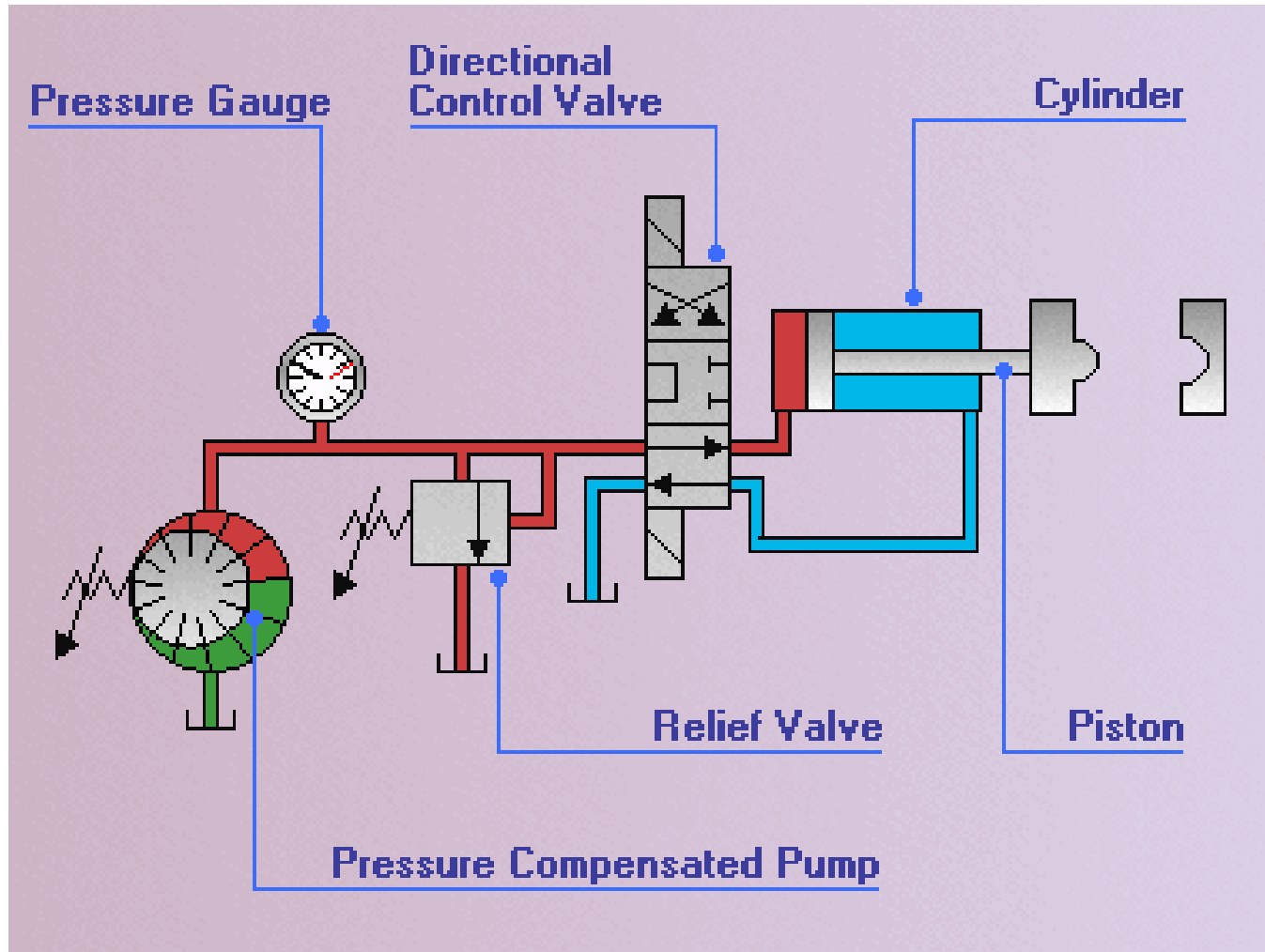
DEĞİŞKEN DEPLASMANLI PALETLİ POMPANIN YAPISI



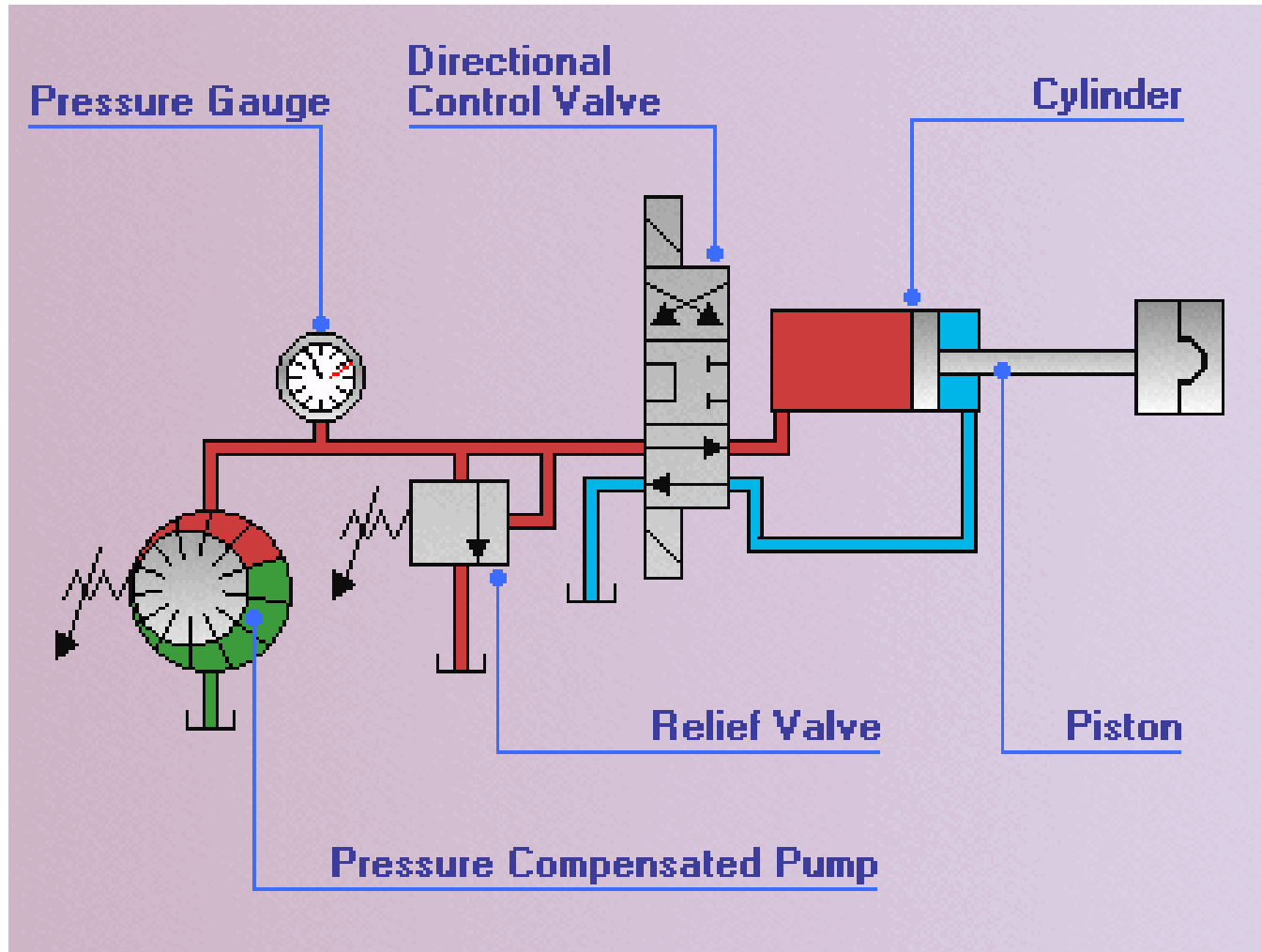
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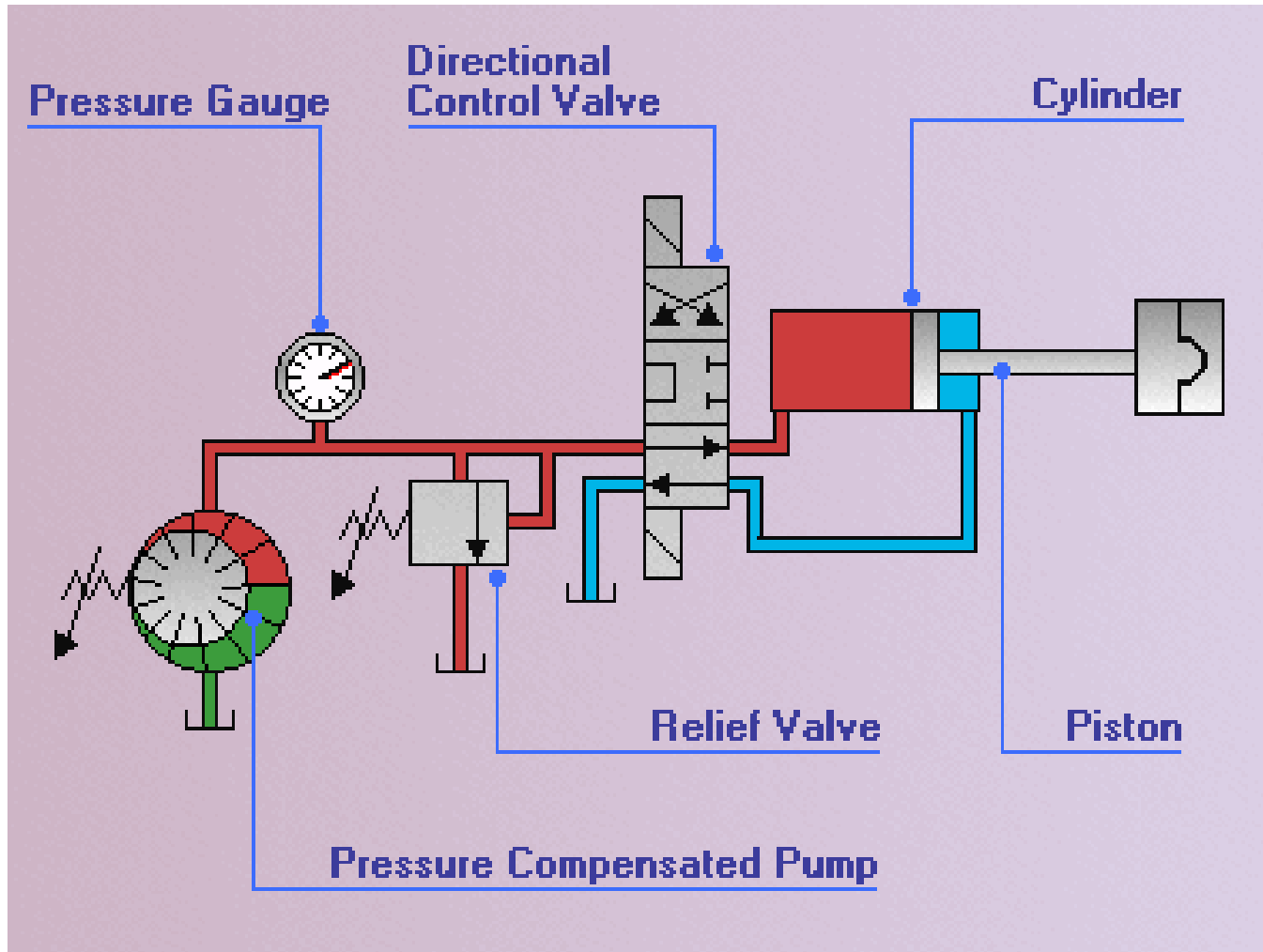
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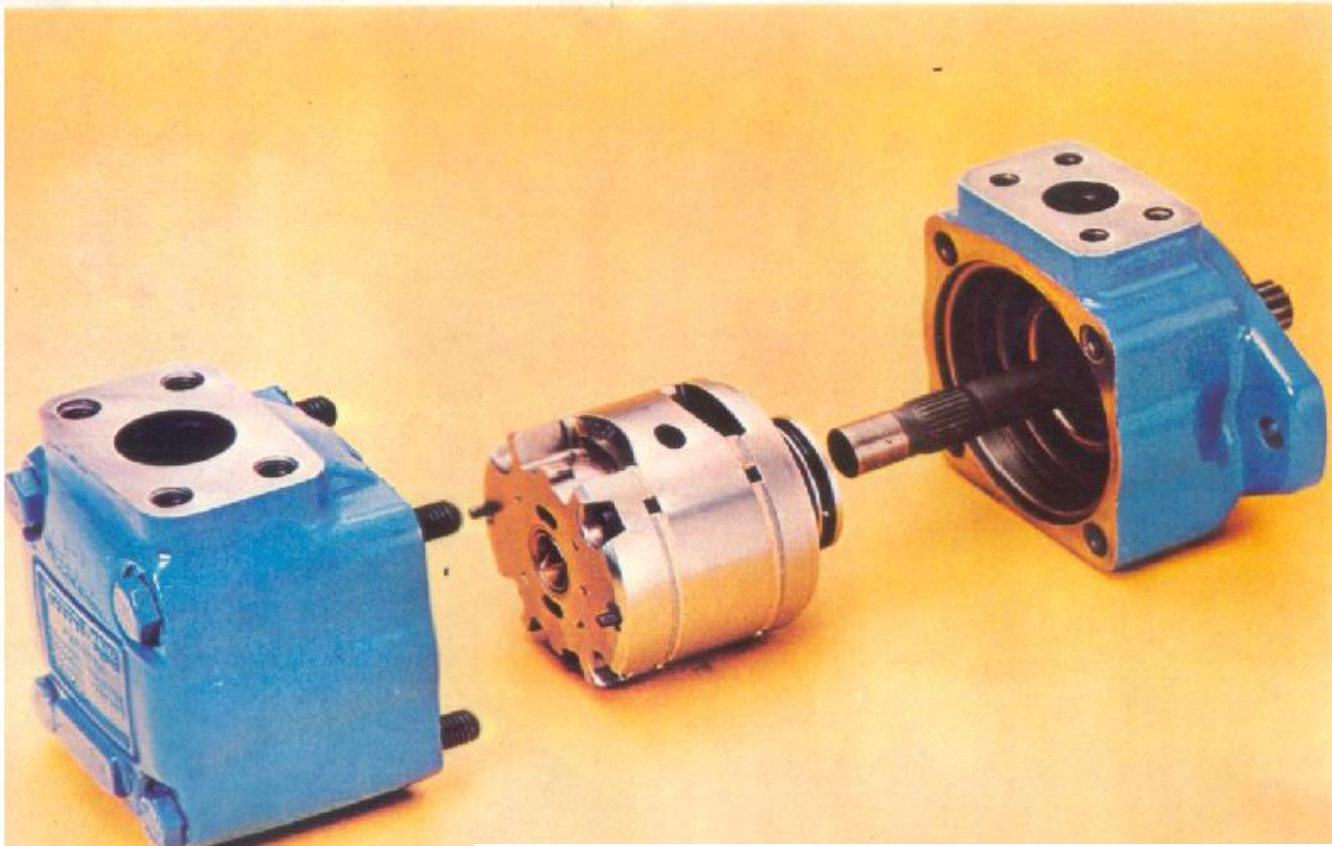


DEĞİŞKEN DEPLASMANLI PALETLİ POMPANIN YAPISI

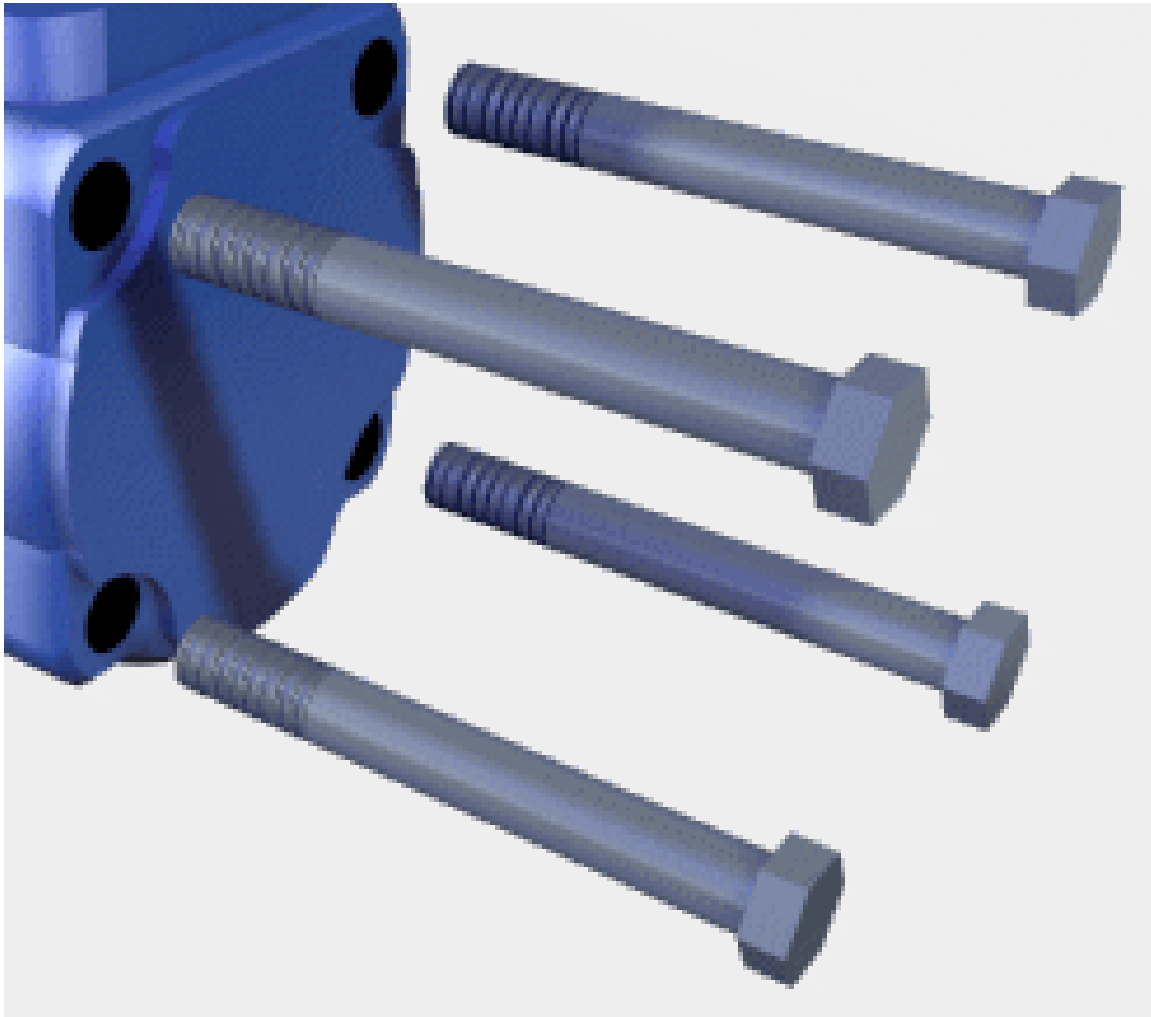


DEĞİŞKEN DEPLASMANLI PALETLİ POMPANIN YAPISI

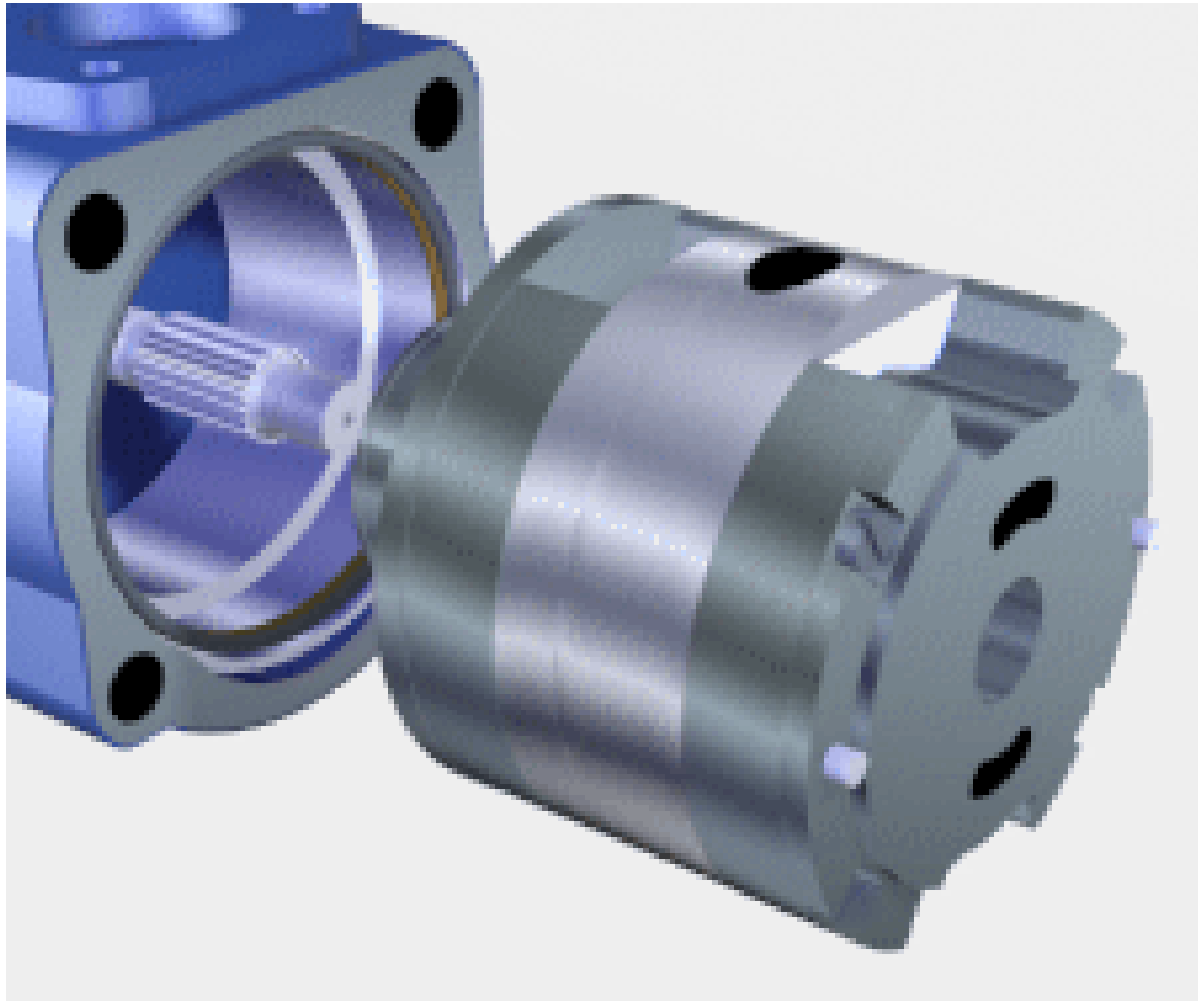


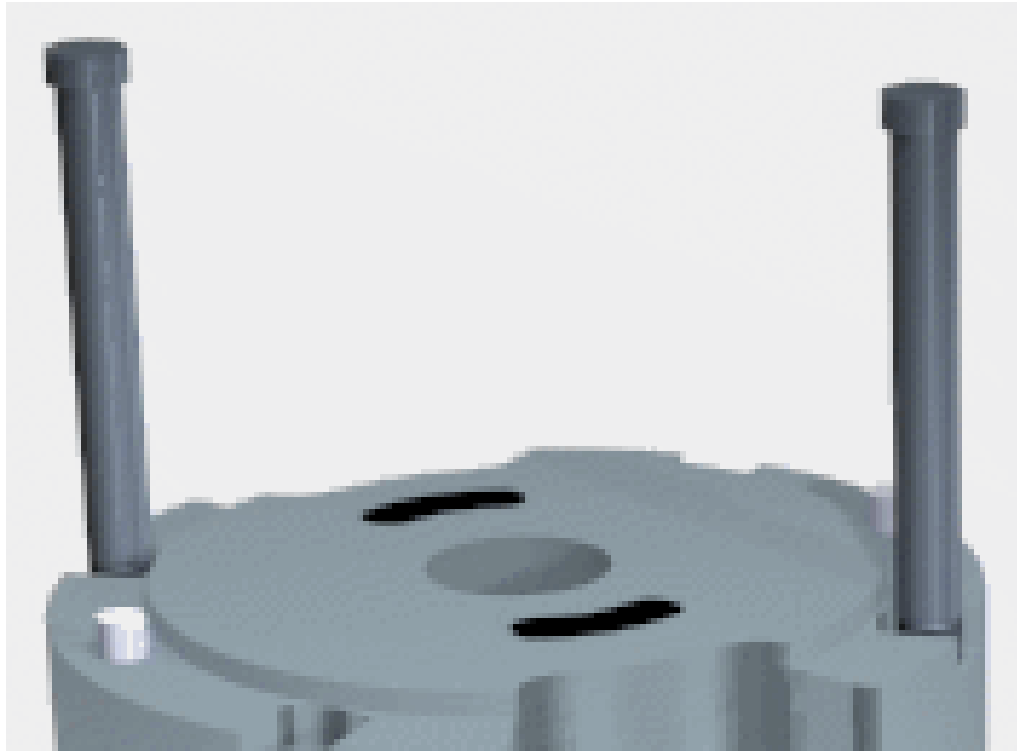


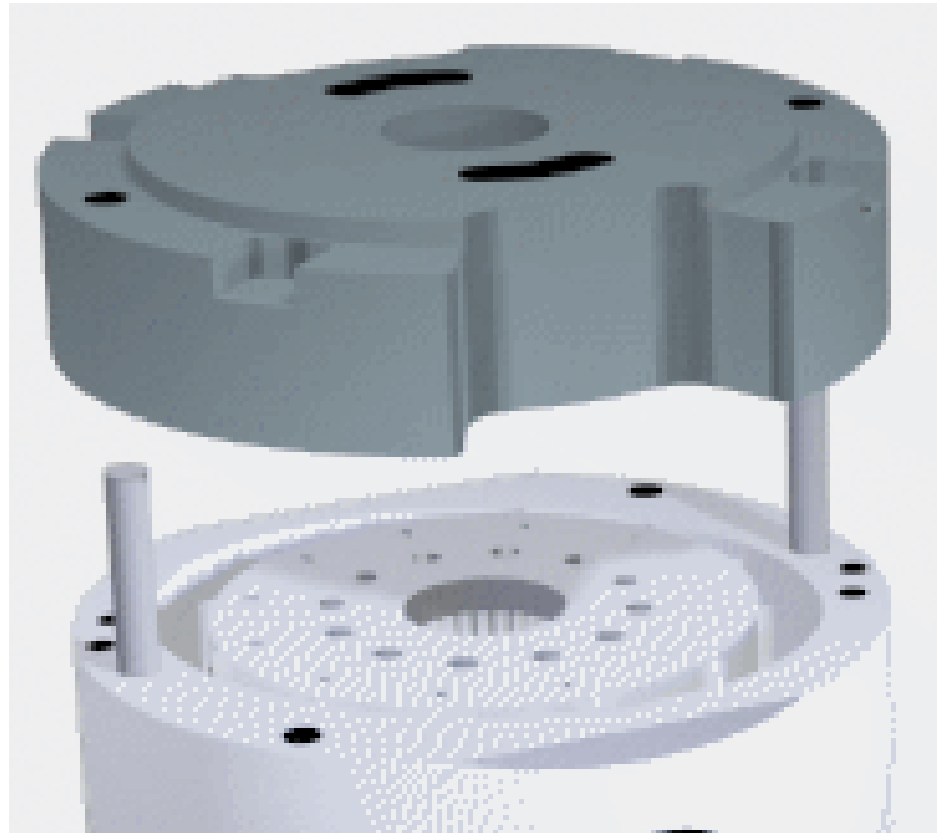
PALETLİ POMPANIN KARTRİÇ YAPISI

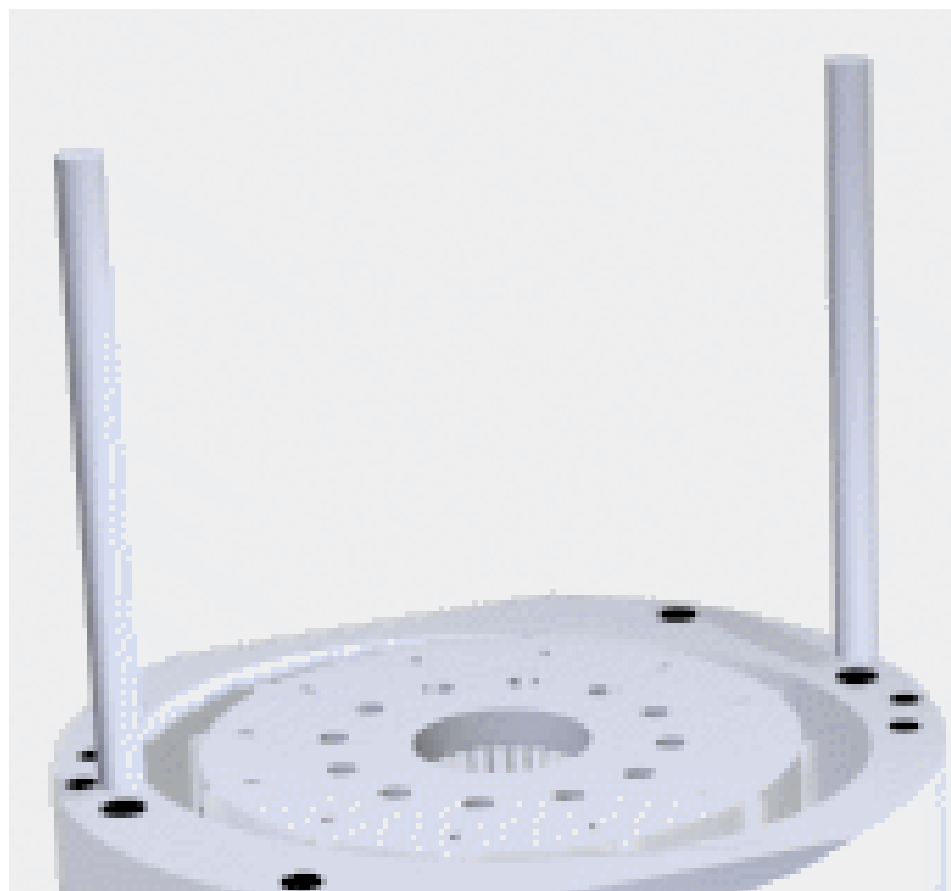


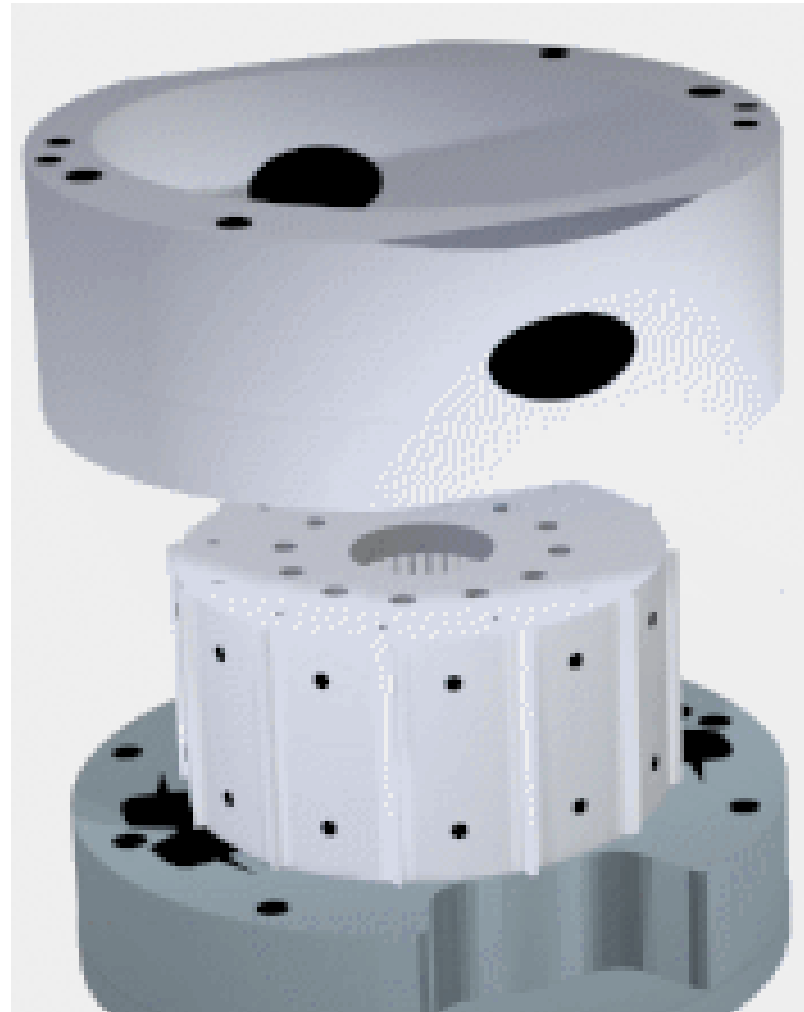


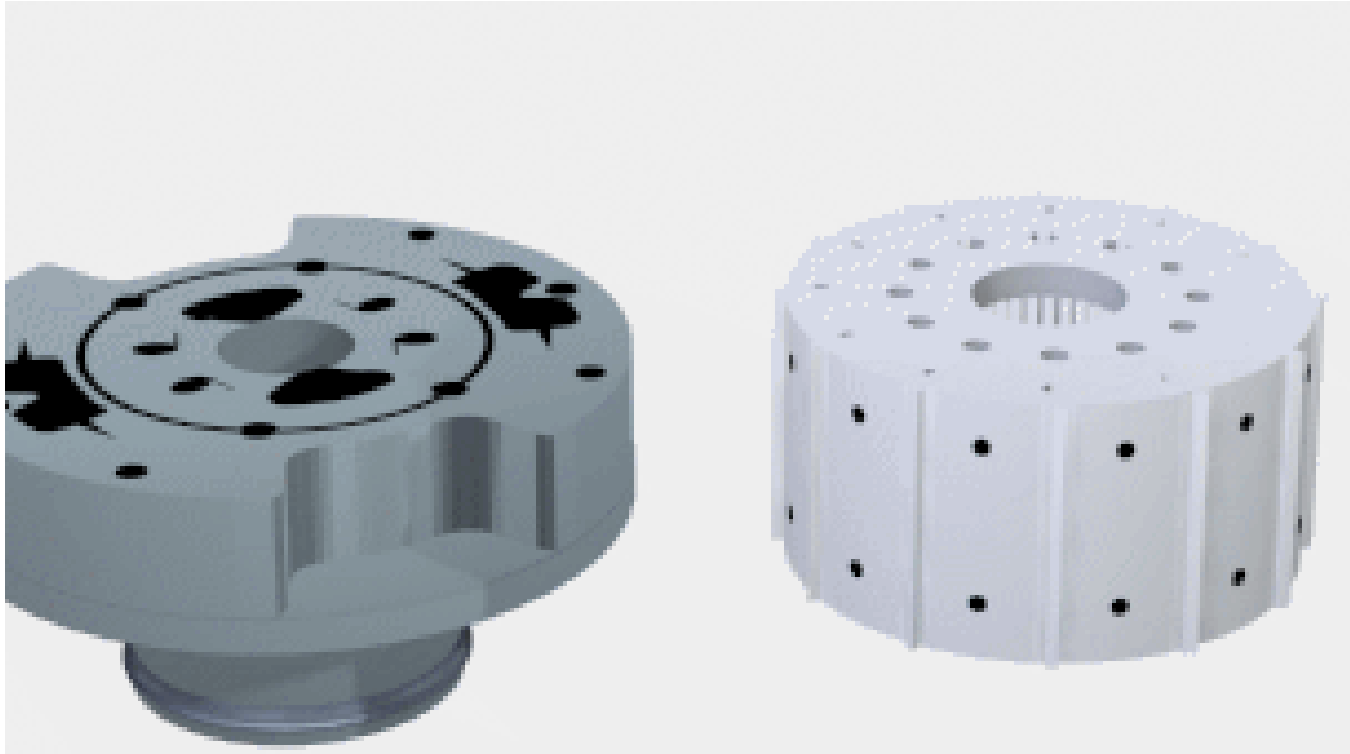


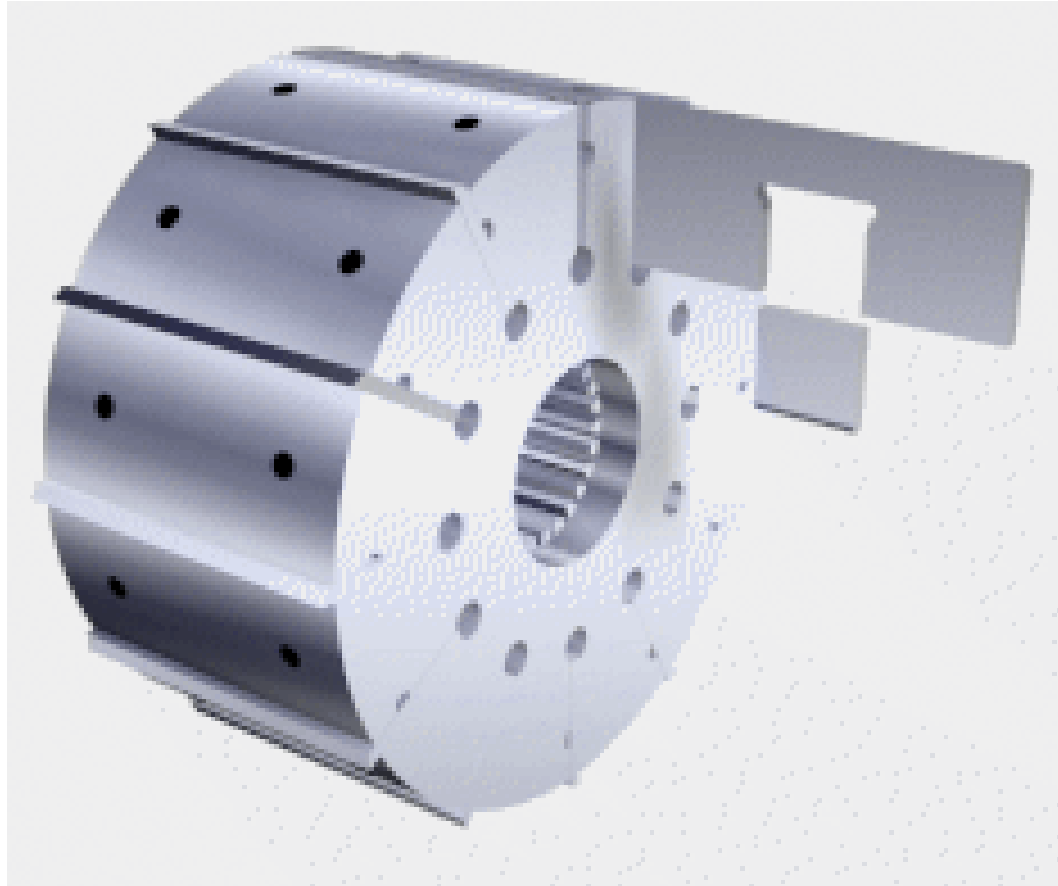


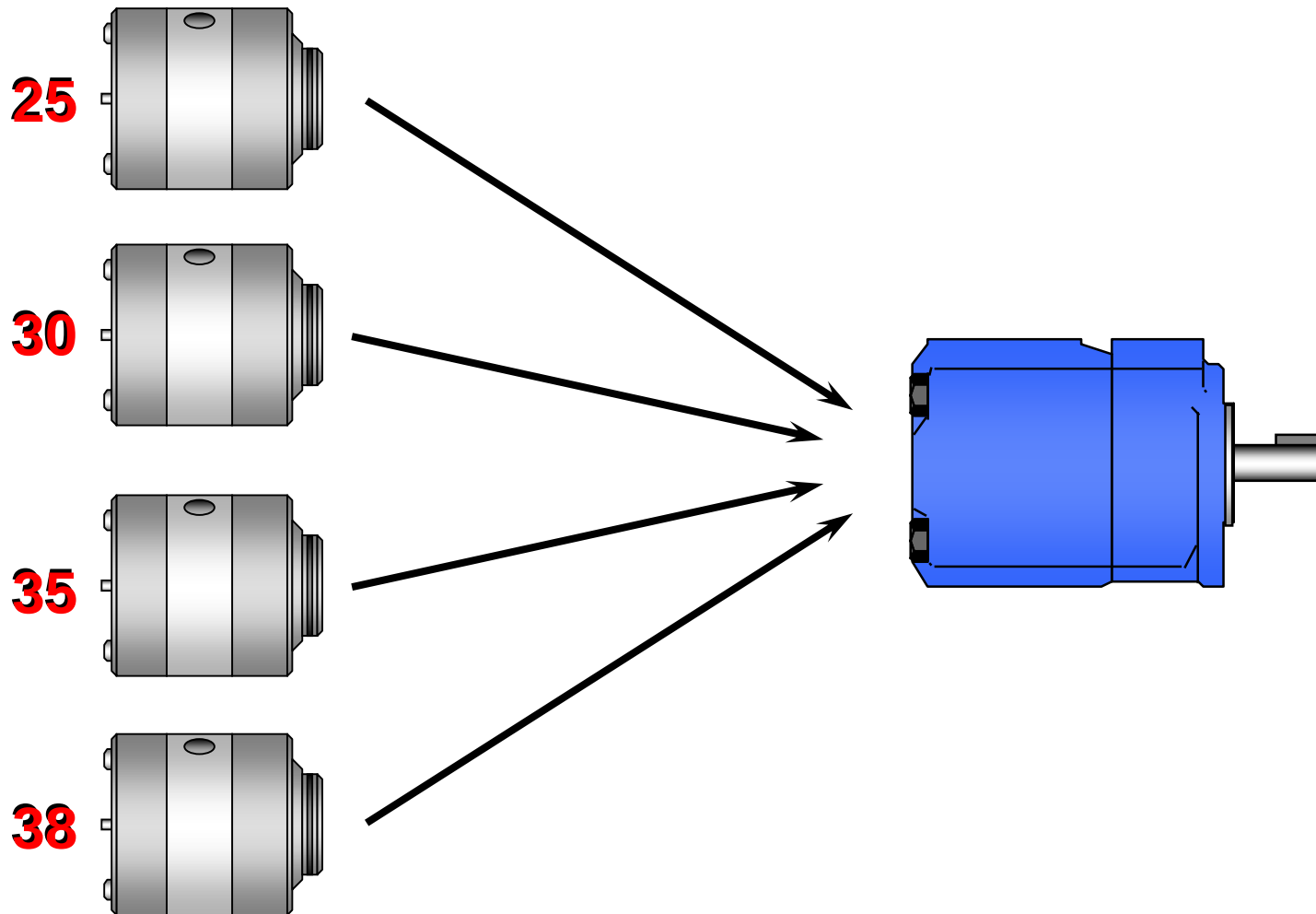




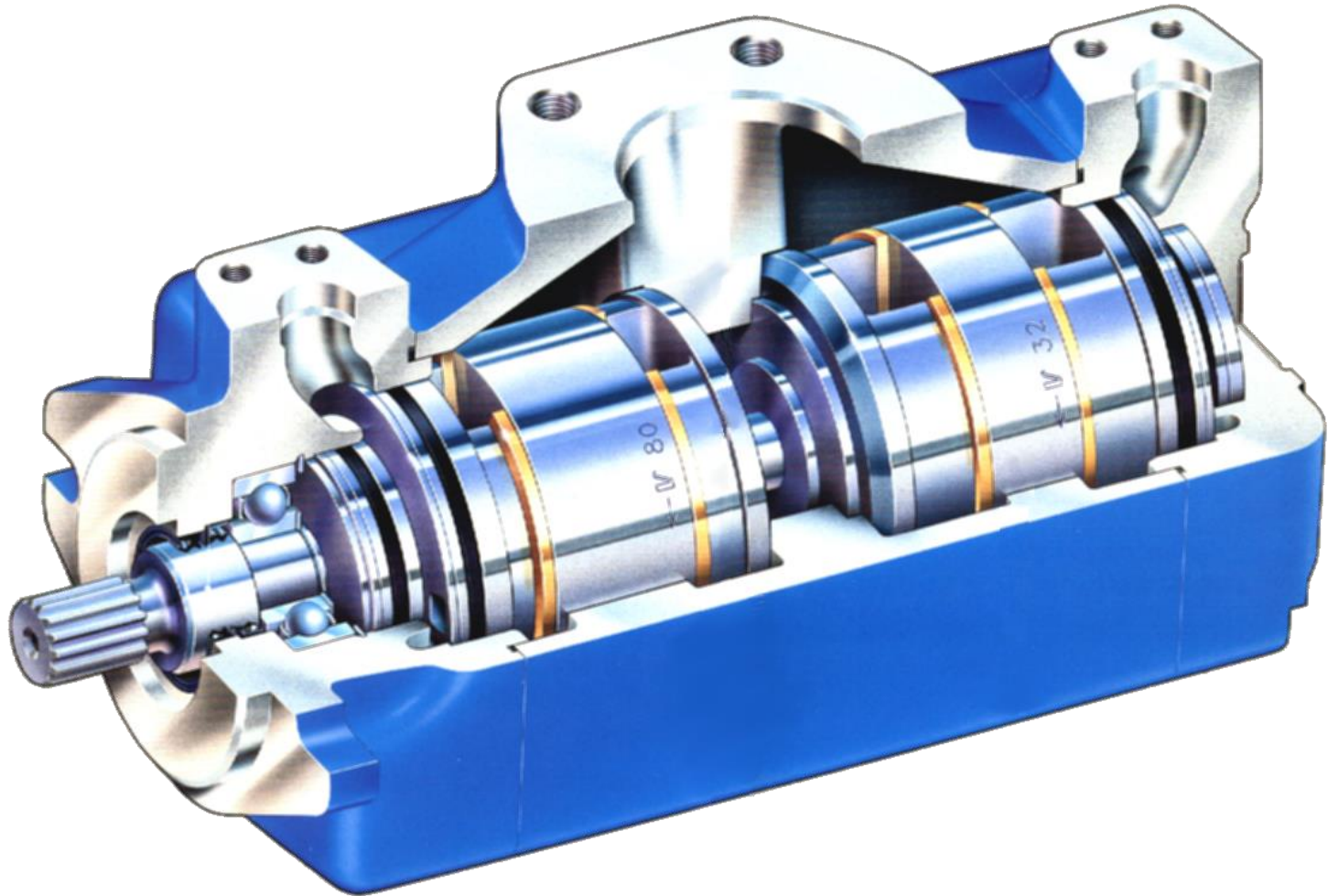




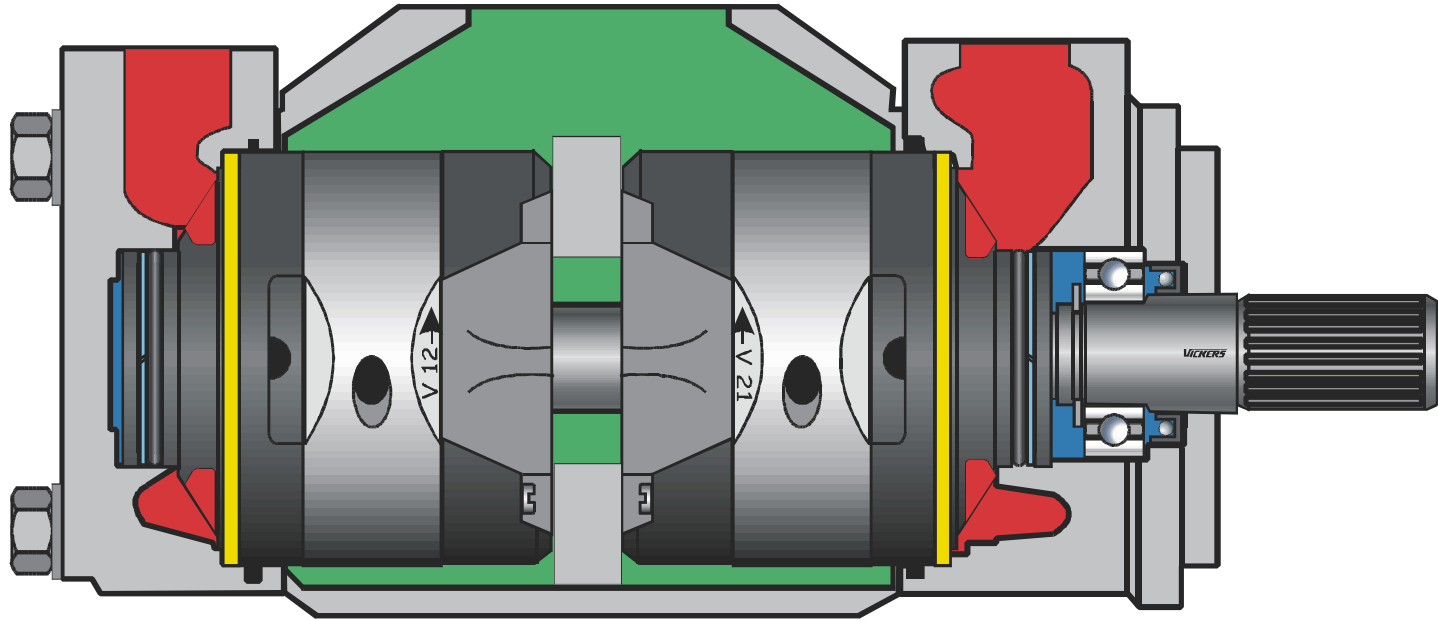
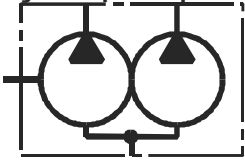




ÇİFT KADEMELİ (TANDEM) POMPA

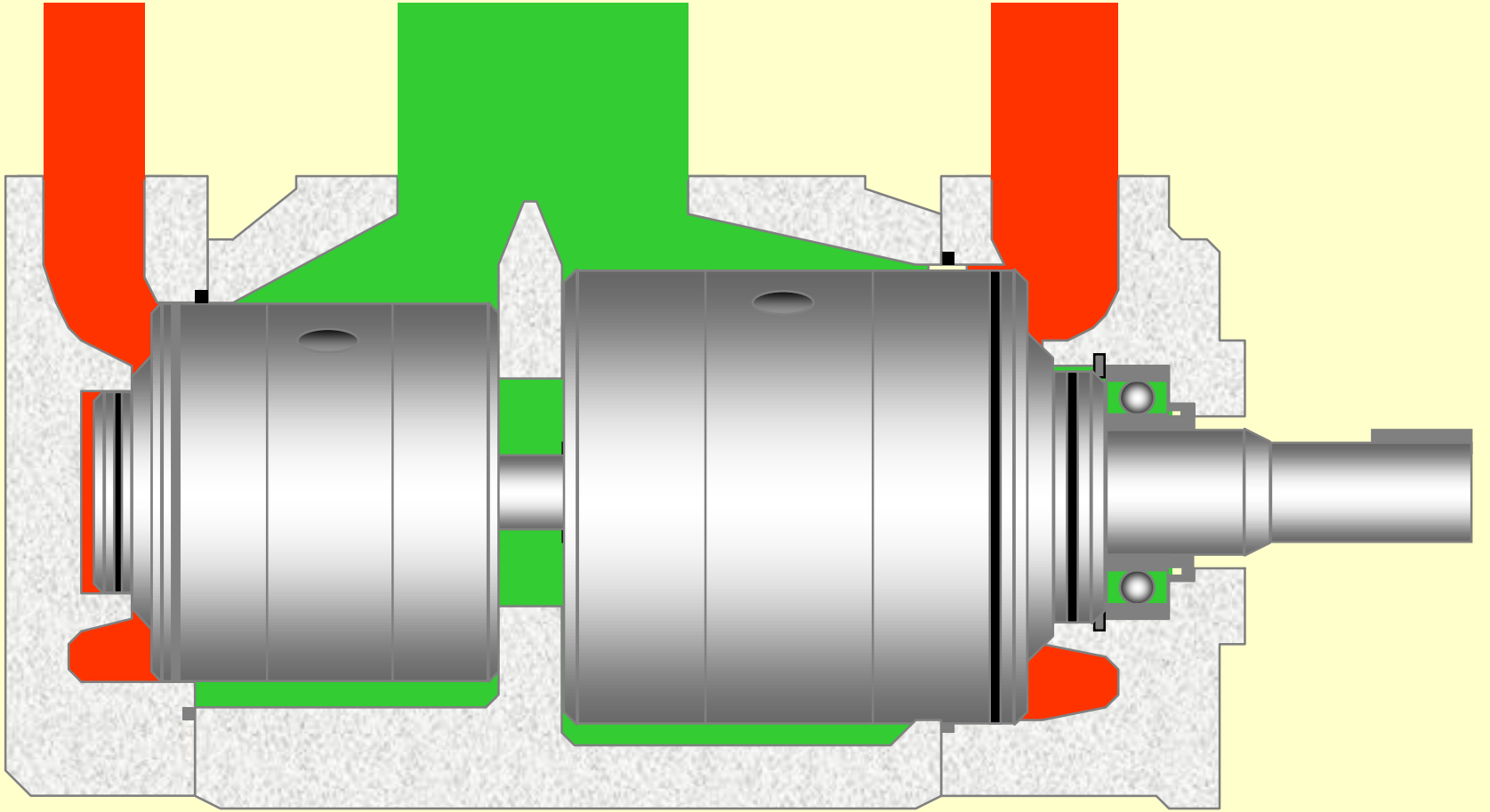


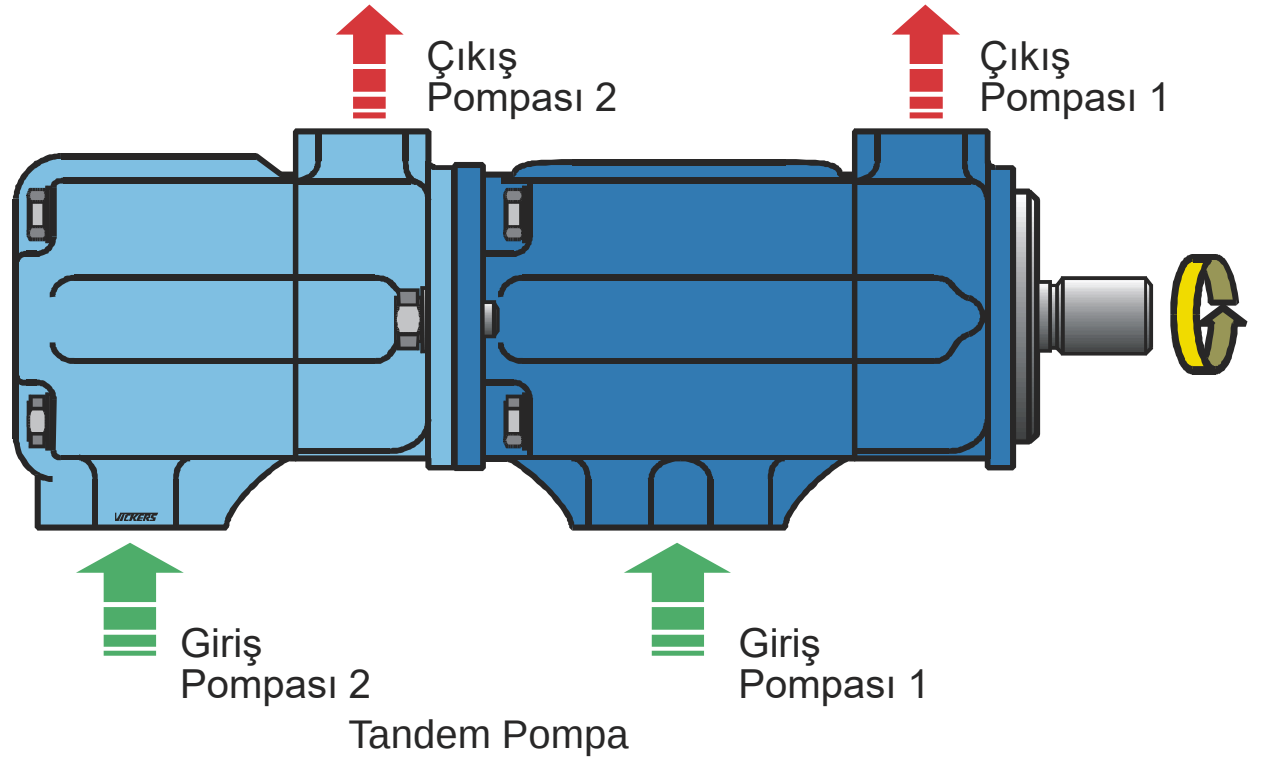
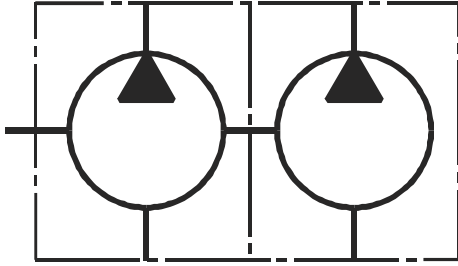
Ciftli pompa



Tek girişli çiftli pompa

ÇİFT KADEMELİ (TANDEM) POMPA





Ayrı girişli çift (tandem) pompa

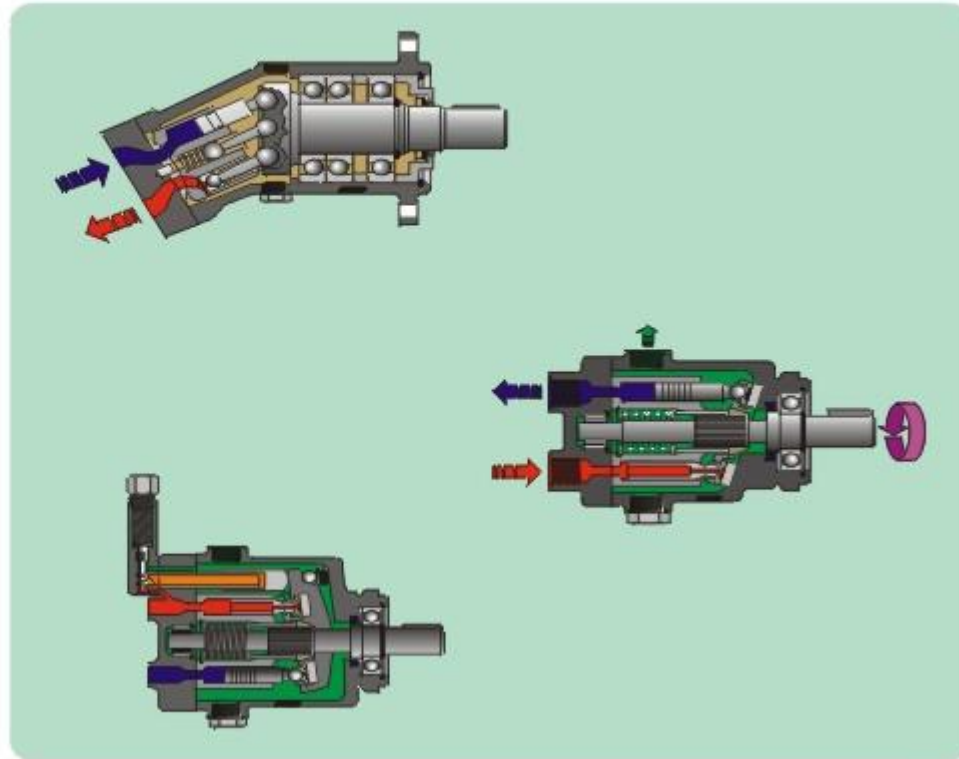
Paletli Pompanın Avantajları

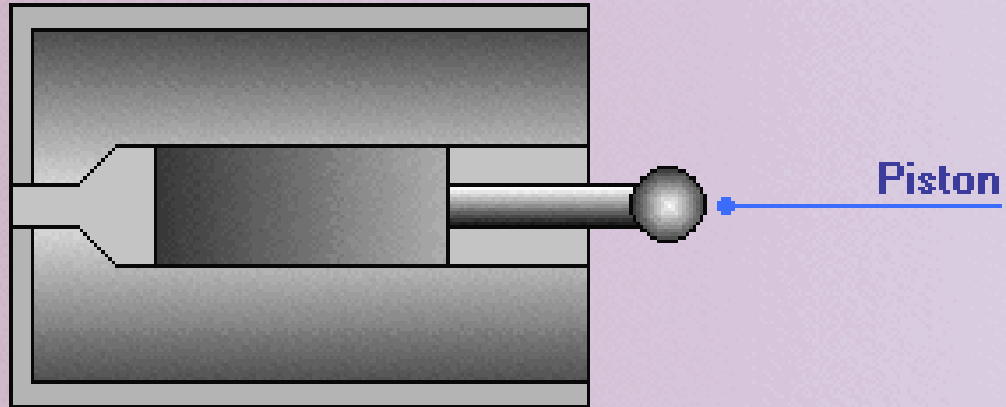
- Sessiz çalışır
- Verim yüksektir.
- Yenilenmesi çok basit ve ekonomiktir.
- Bakımları pompa yerinde sökülmeden çok kısa sürede yapılabilir. Dört cıvatayı söküp içerisindeki kartıç değiştirilerek pompa komple yenilenir.

Paletli Pompanın Dezavantajları

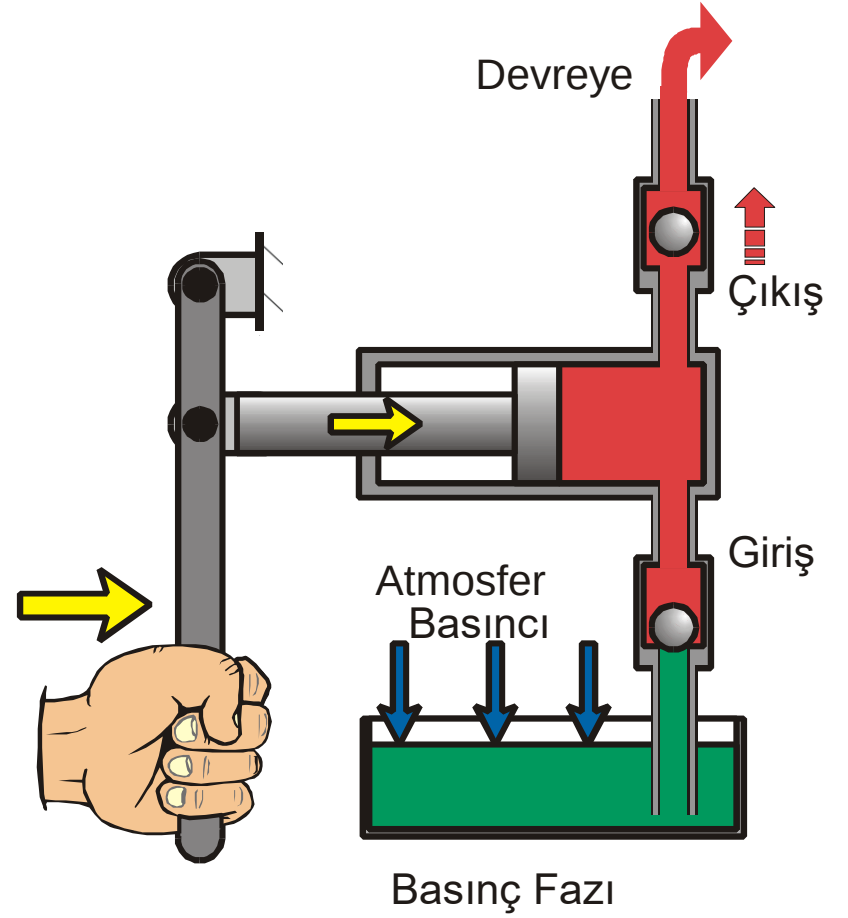
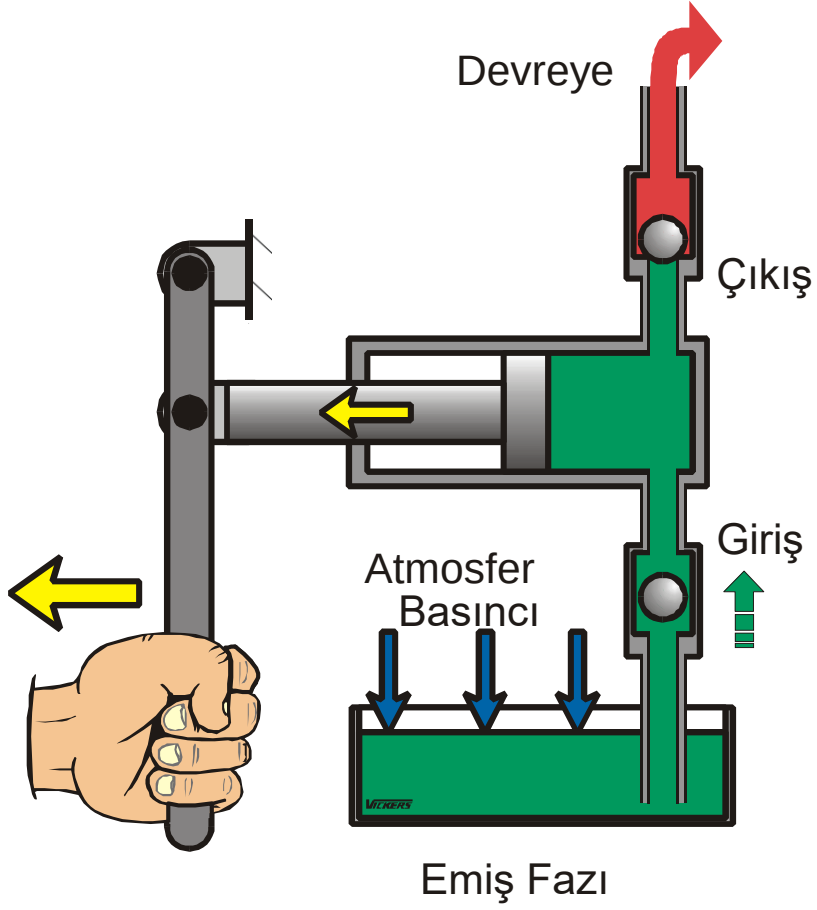
- Dişli pompalara göre daha pahalıdır
- Yüksek basınçta (350 barın üzerinde) çalışmaz

PİSTONLU POMPALAR

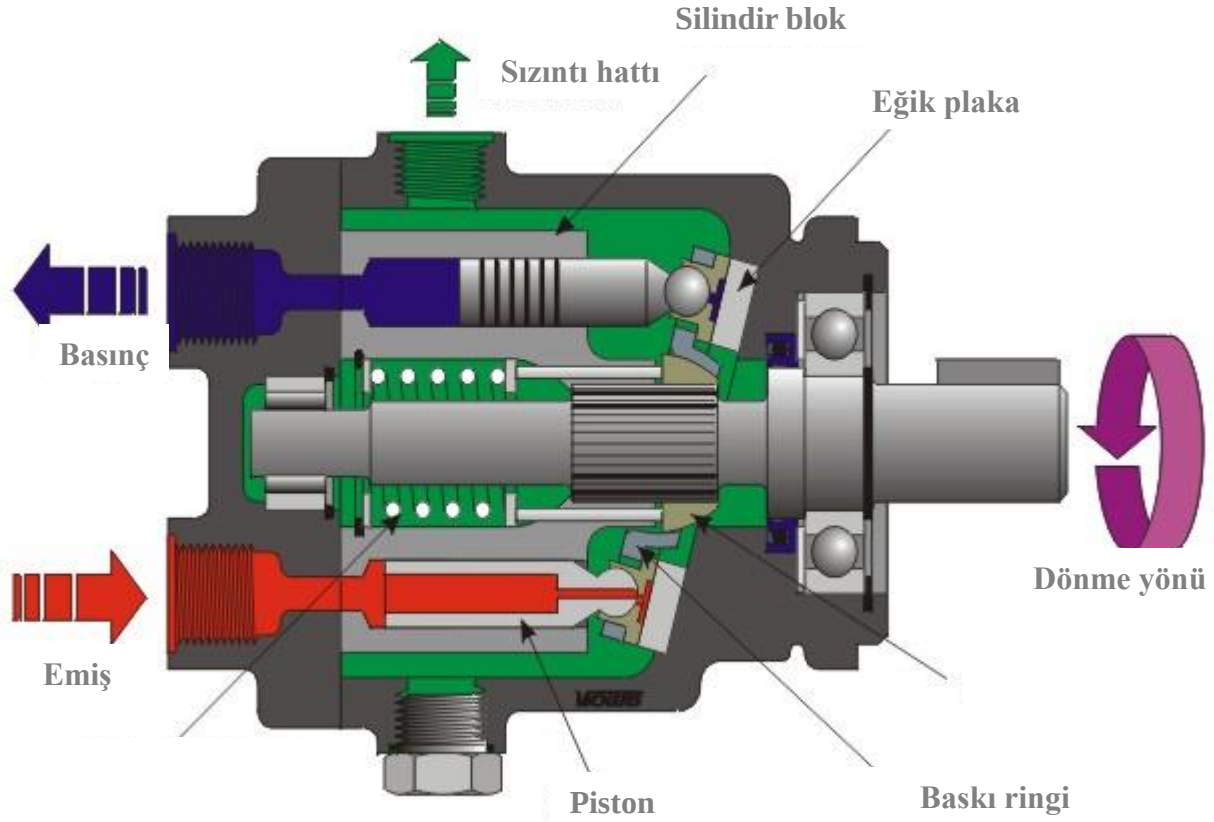




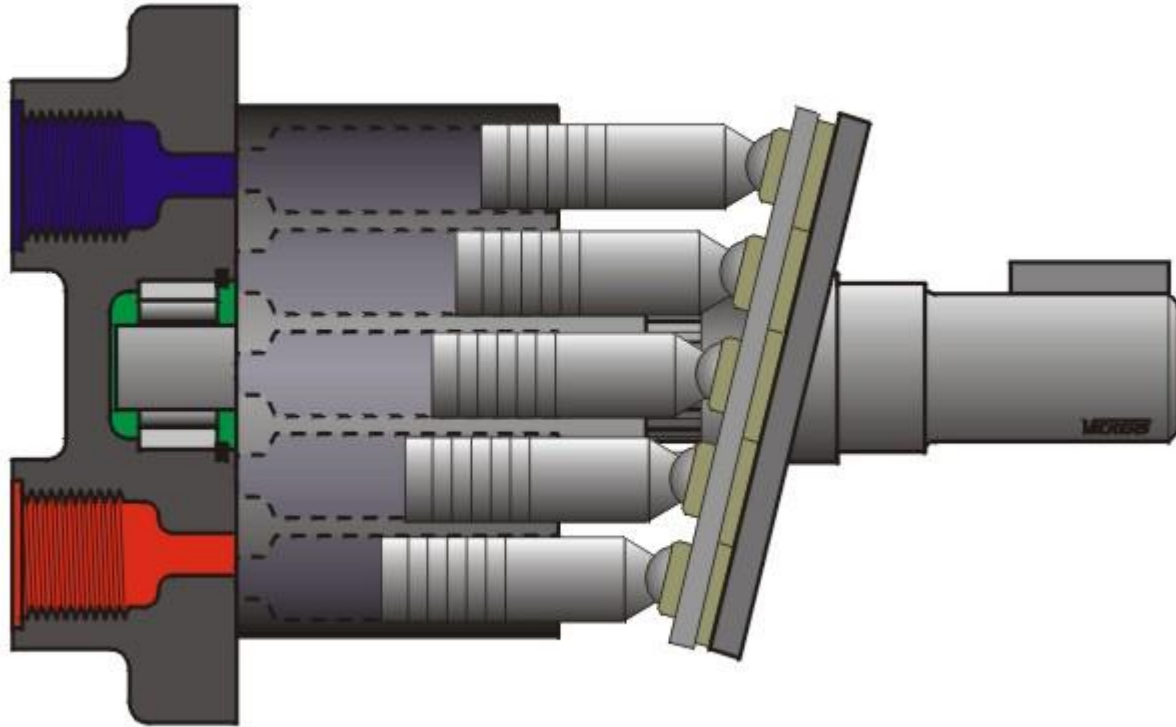
PİSTONLU POMPALAR



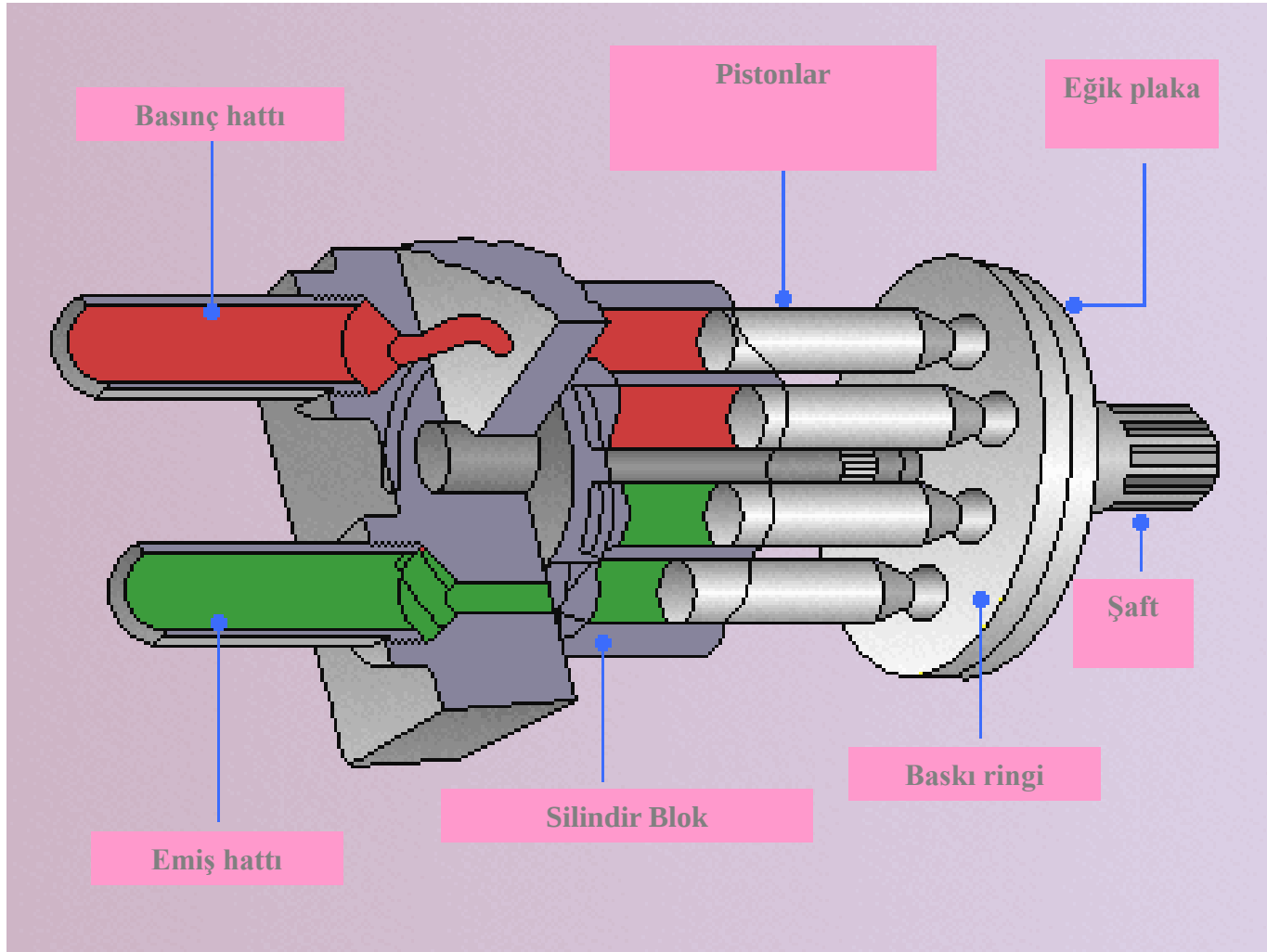
EKSENEL PİSTONLU POMPALAR



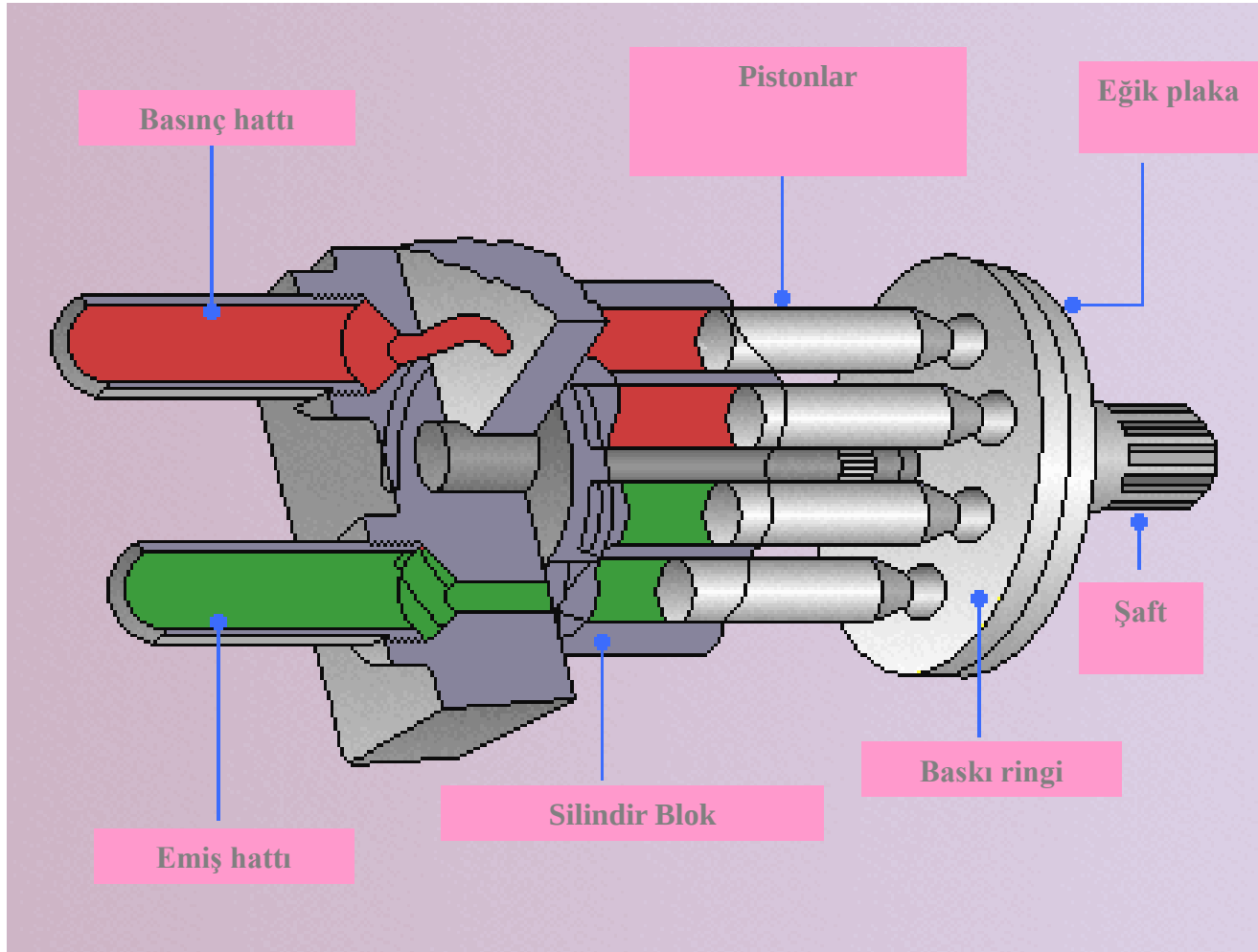
EKSENEL PİSTONLU POMPALAR



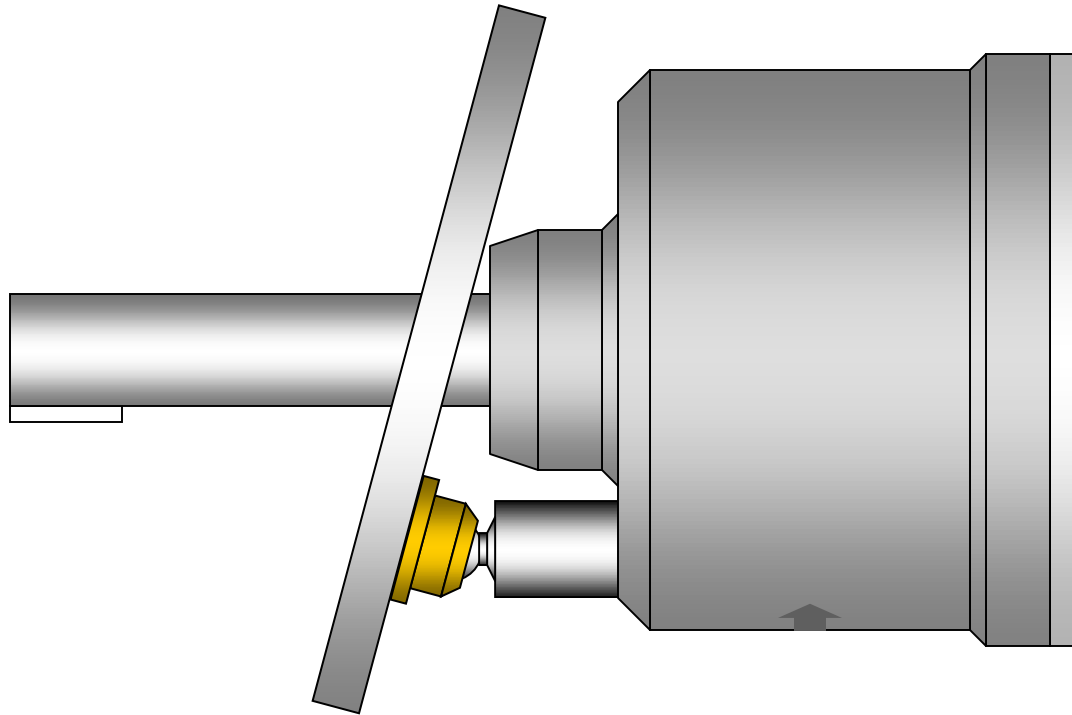
EKSENEL PİSTONLU POMPALAR

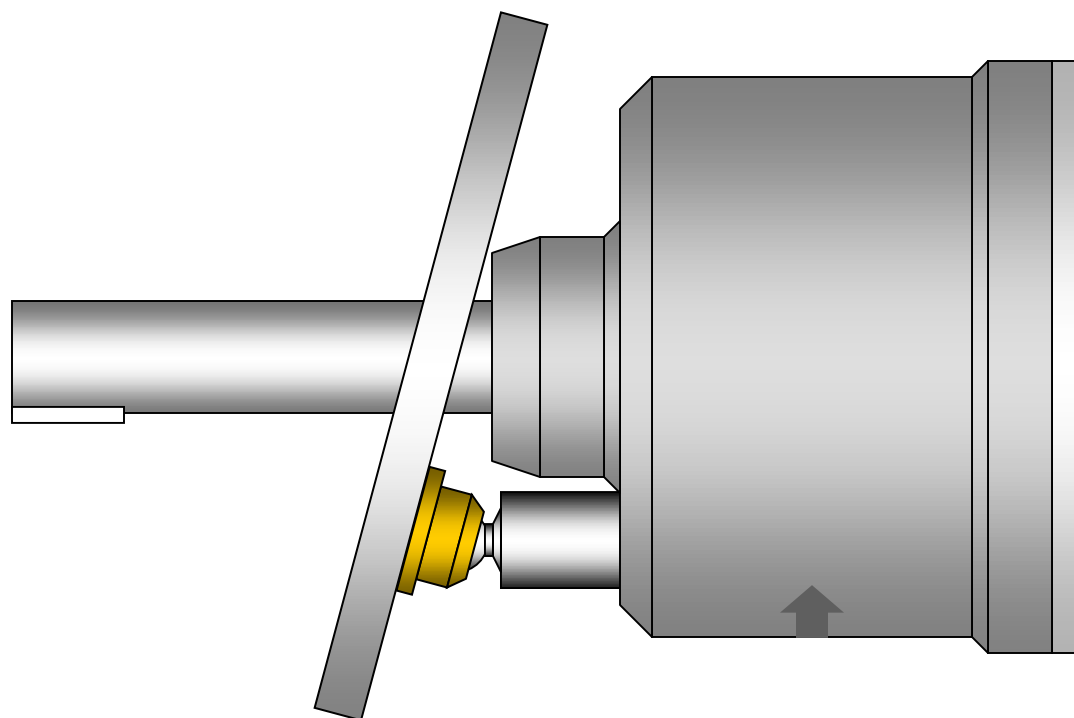


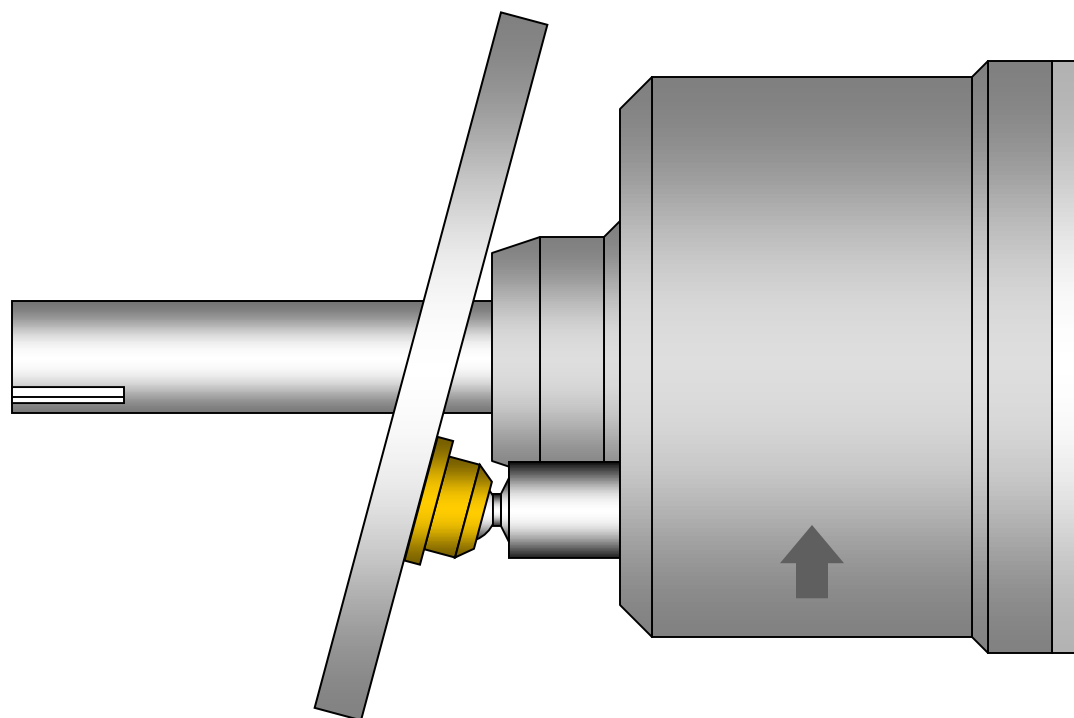
EKSENEL PİSTONLU POMPALAR



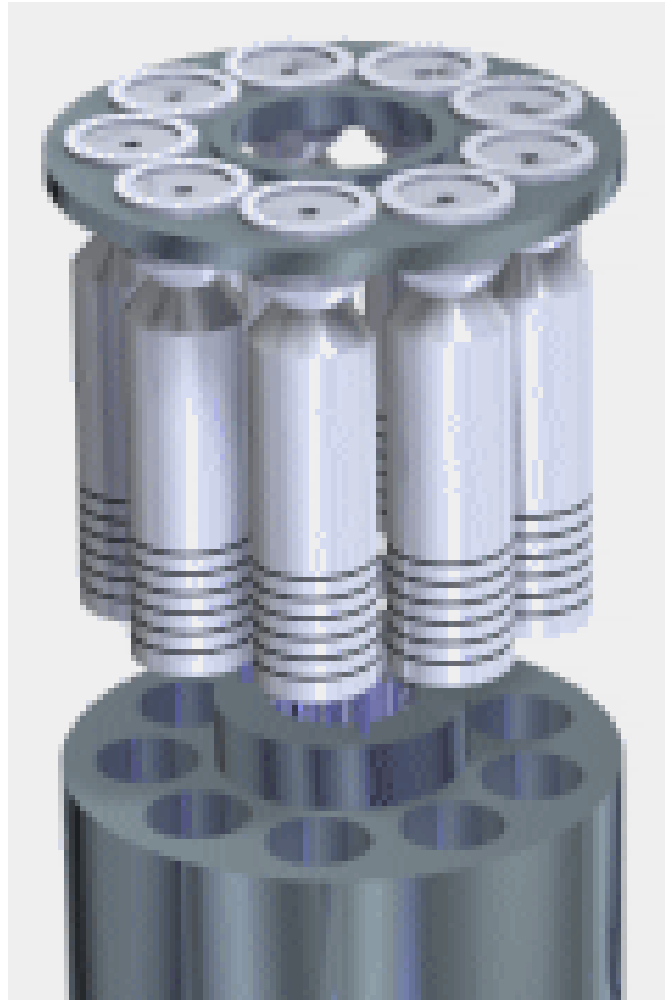
EKSENEL PİSTONLU POMPA

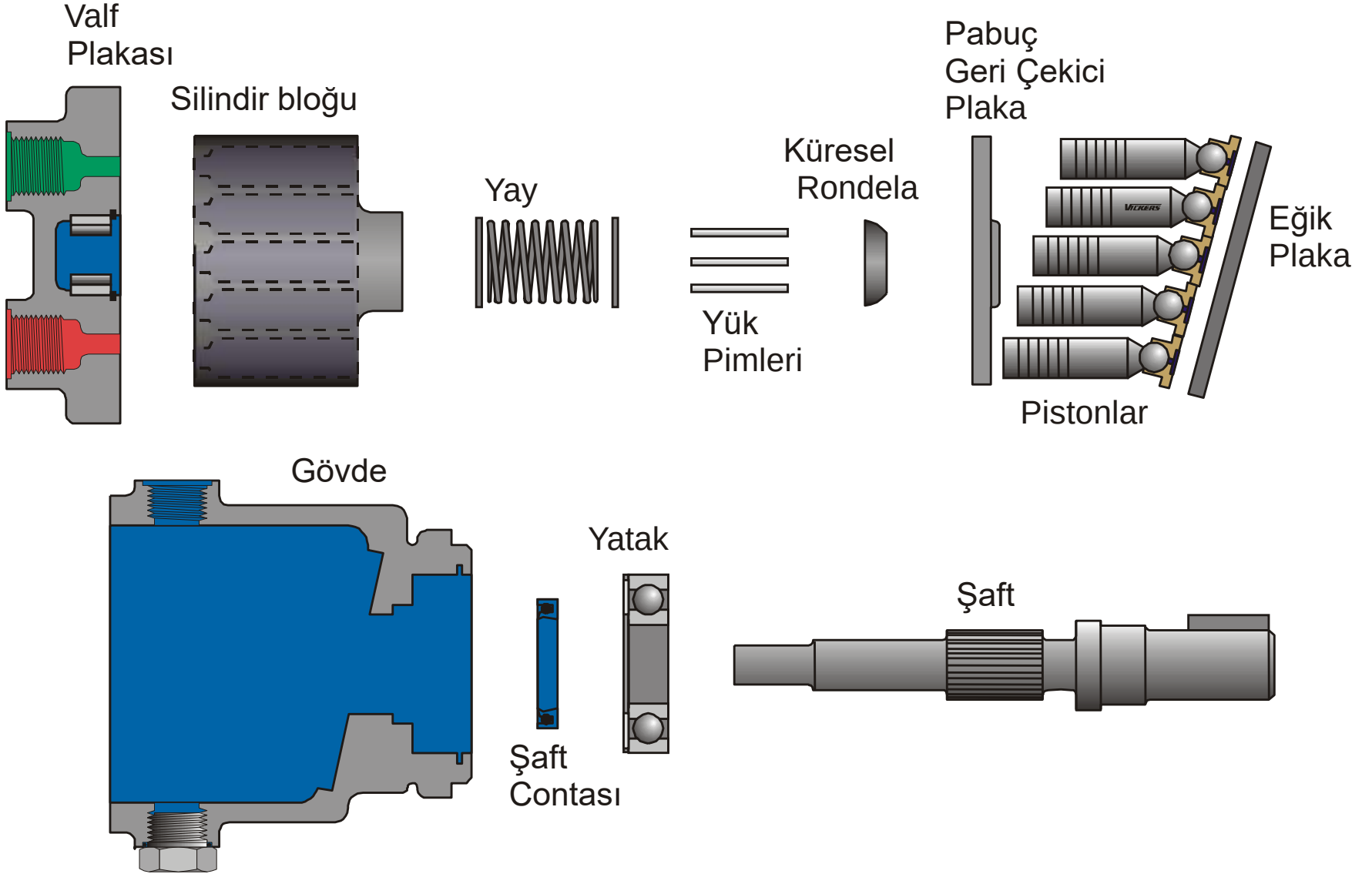






EKSENEL PİSTONLU POMPA ROTARY GRUBU





Eksenel pistonlu pompanın bileşenleri

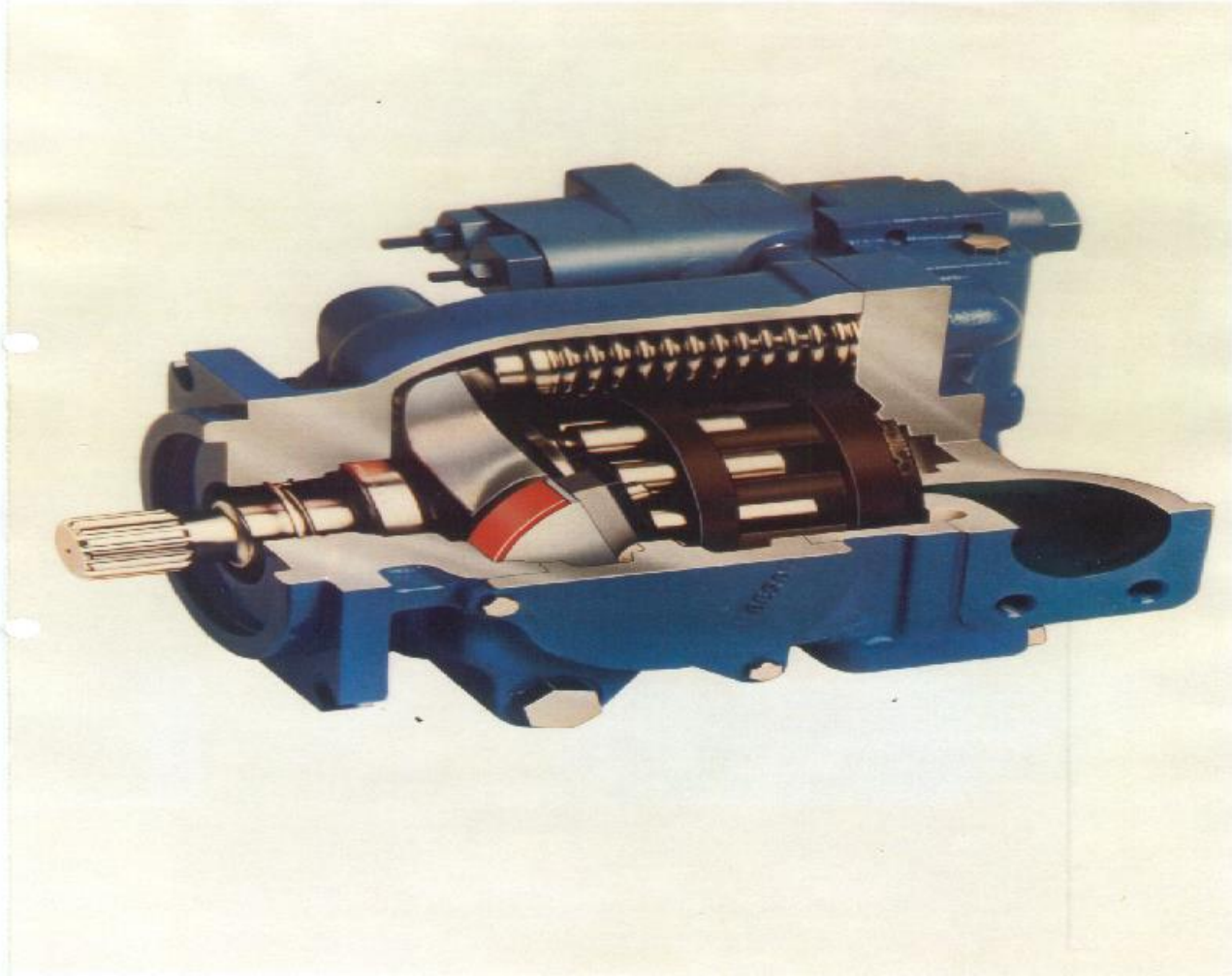
Eksenel Pistonlu Pompanın Avantajları

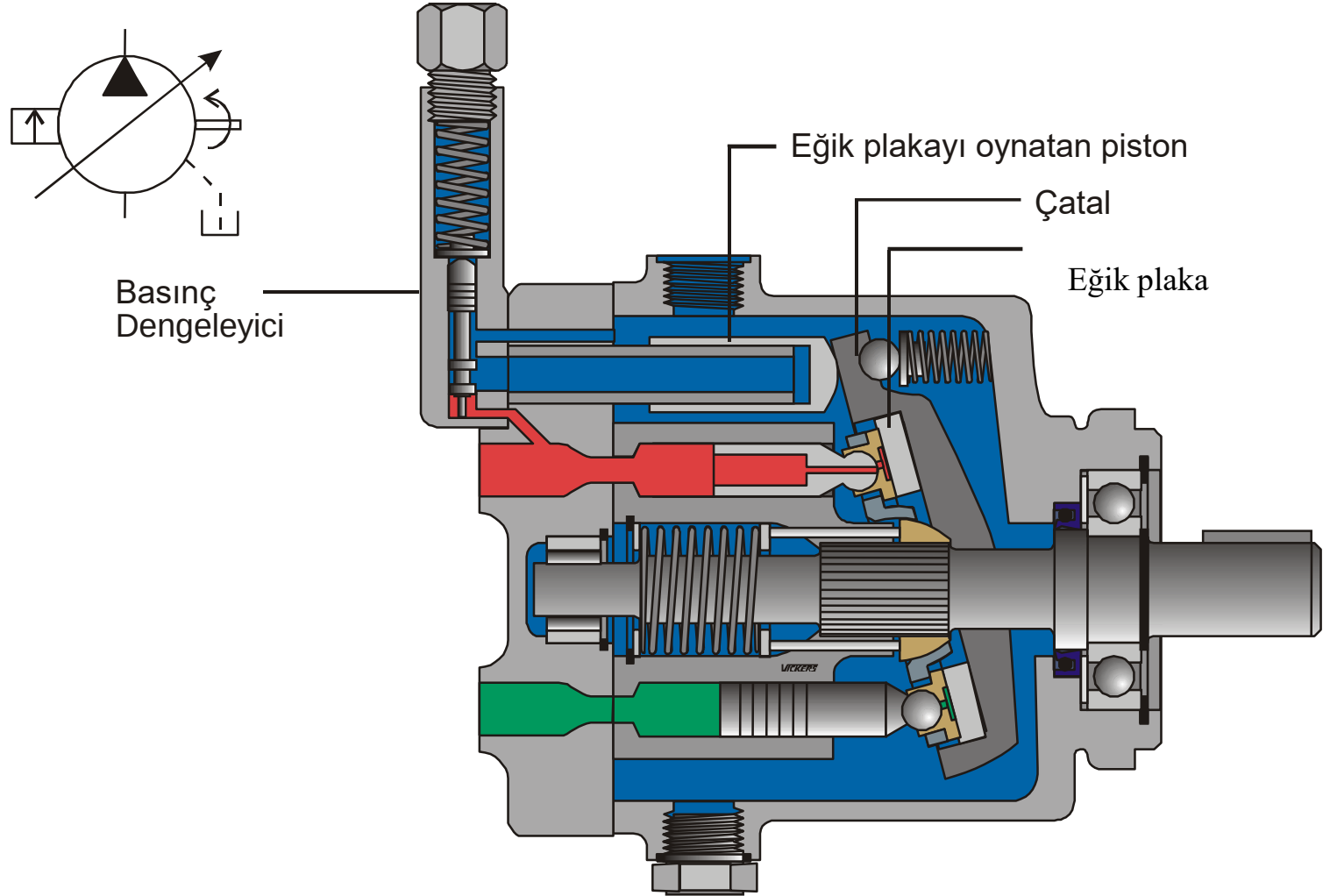
- Verim yüksek
- Yüksek hızlara çıkabilir
- Yüksek basınçlara çıkabilir
- Sessiz
- Tamir imkanı var. İç takım olarak pistonlar ve kovan değiştirilebiliyor.

Eksenel Pistonlu Pompanın Dezavantajları

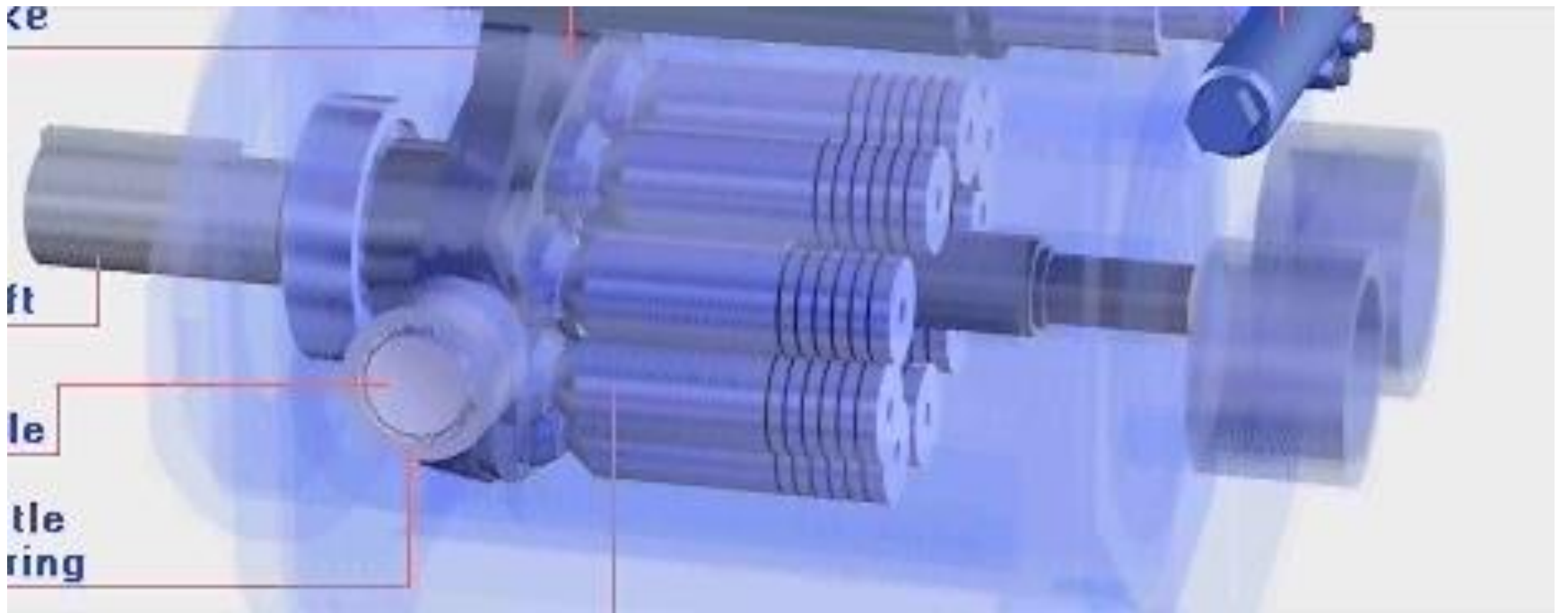
- Diğerlerine göre daha pahalı
- Kirliliğe karşı hassas

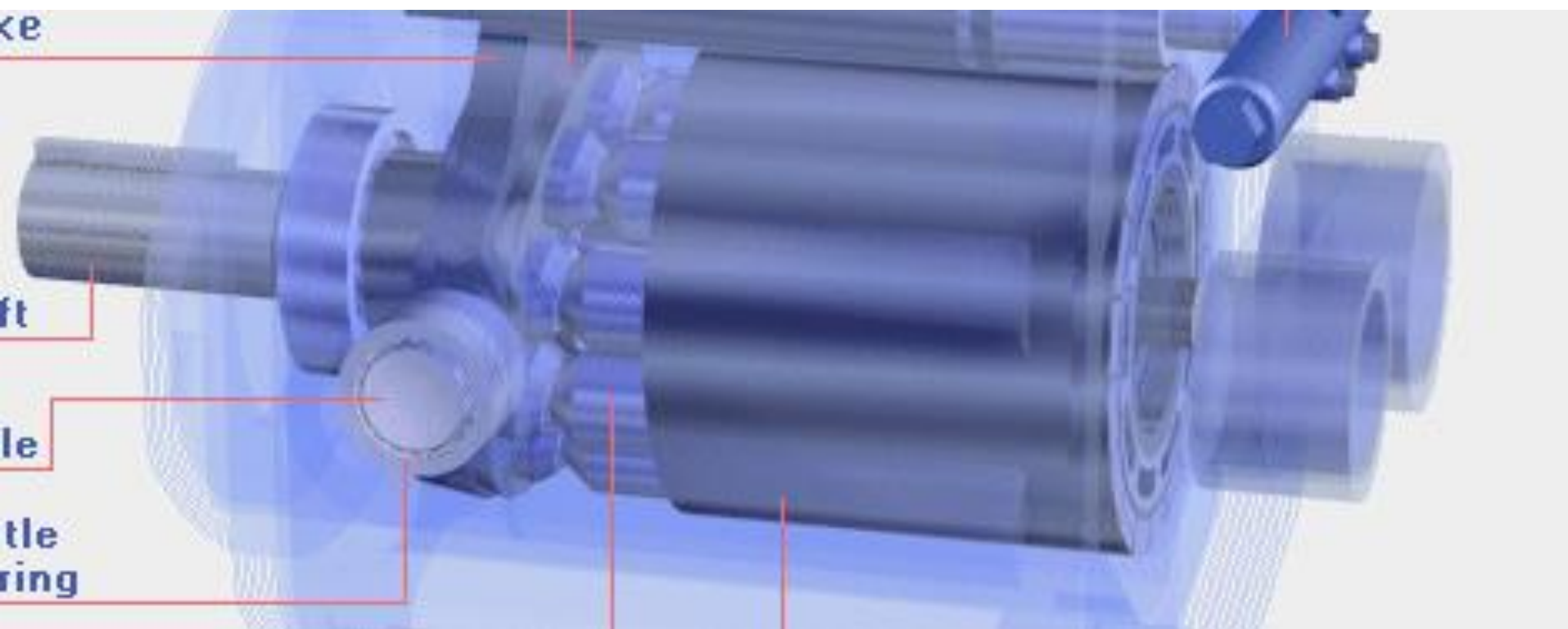
YÜK DUYARLI (LOAD-SENSİNG) PİSTONLU POMPA

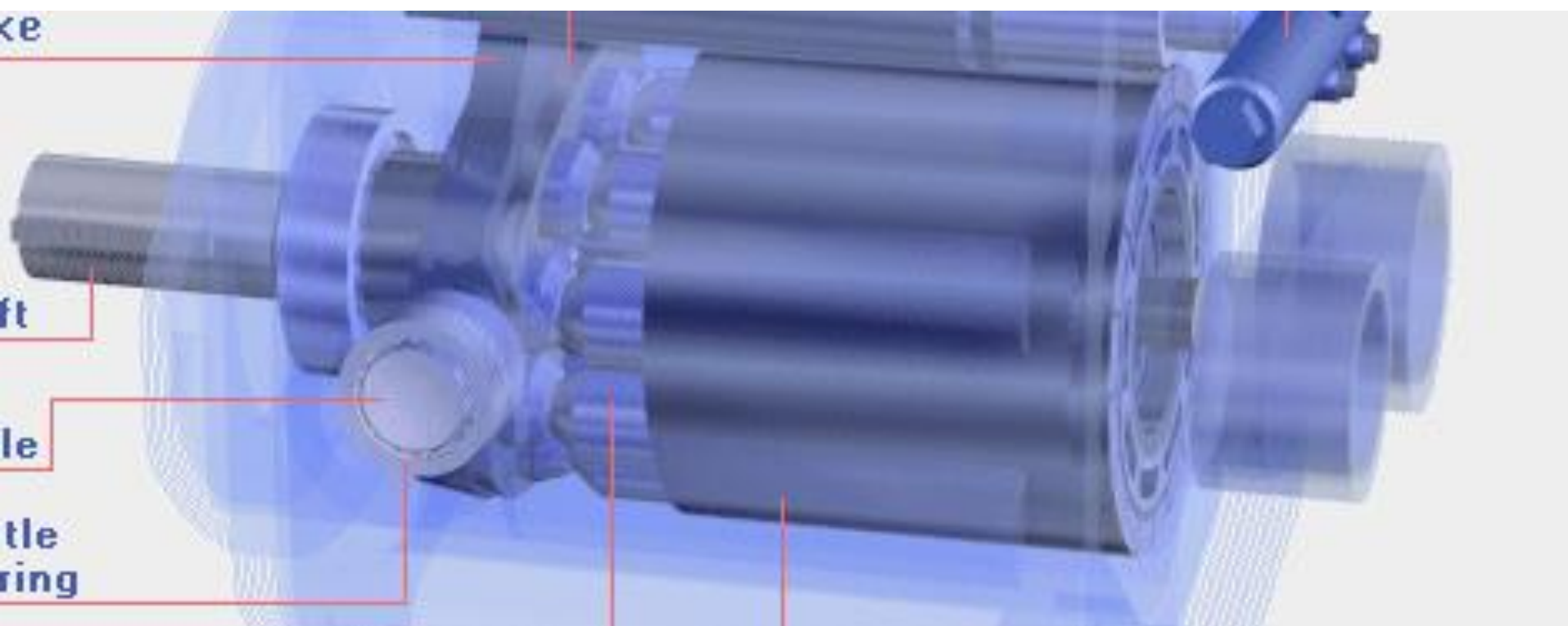


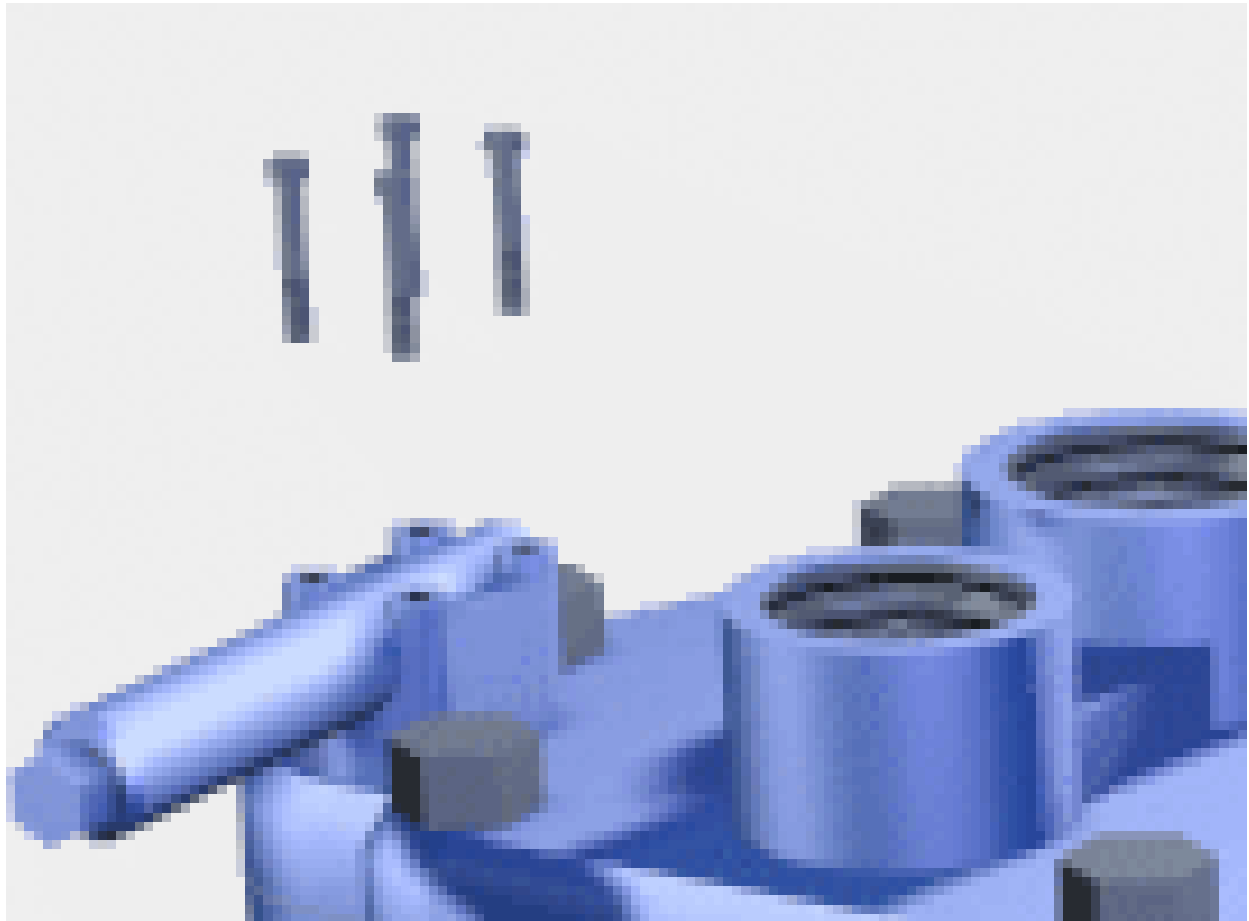


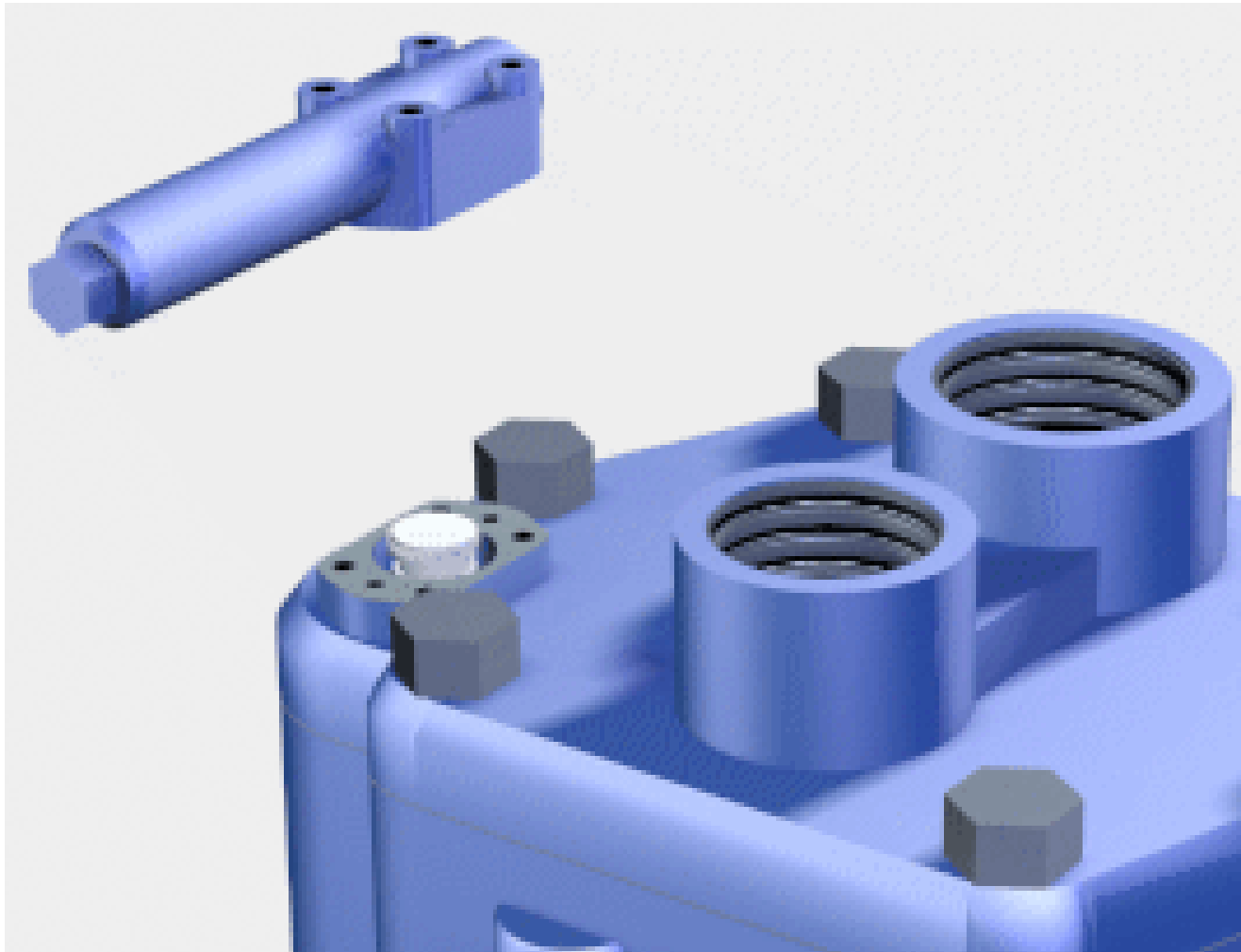
BASINÇ KOMPANSATÖRLÜ PİSTONLU POMPANIN YAPISI



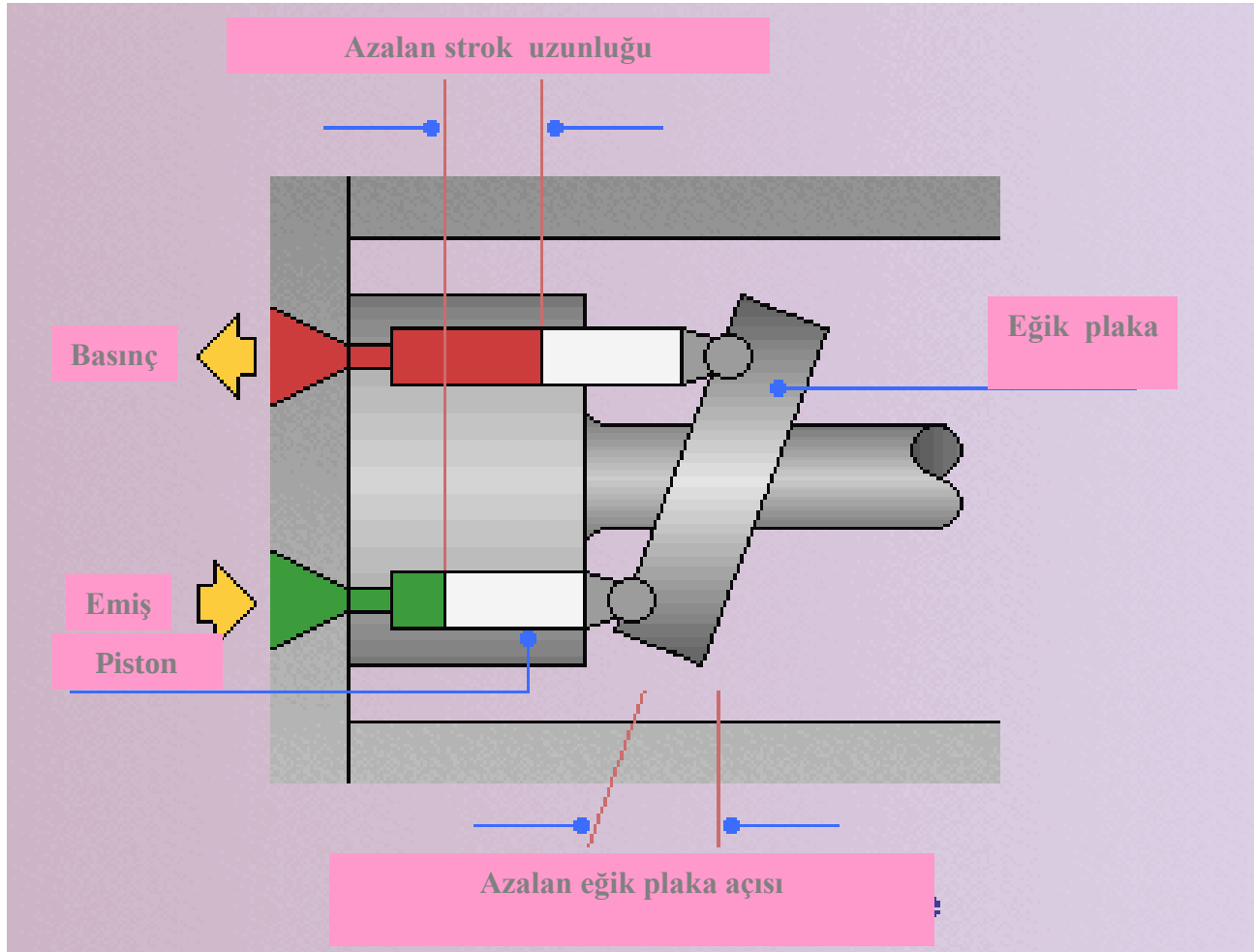




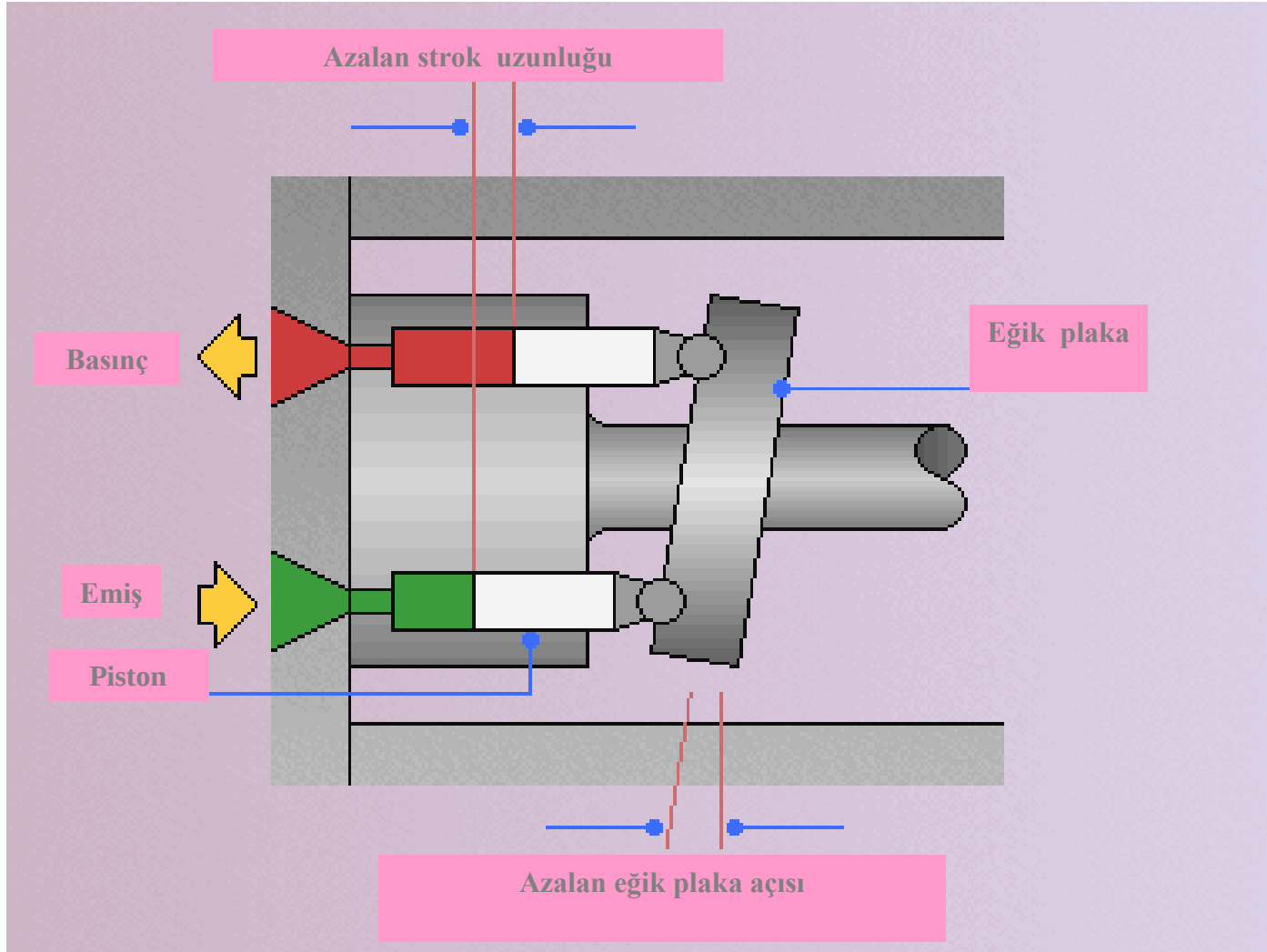


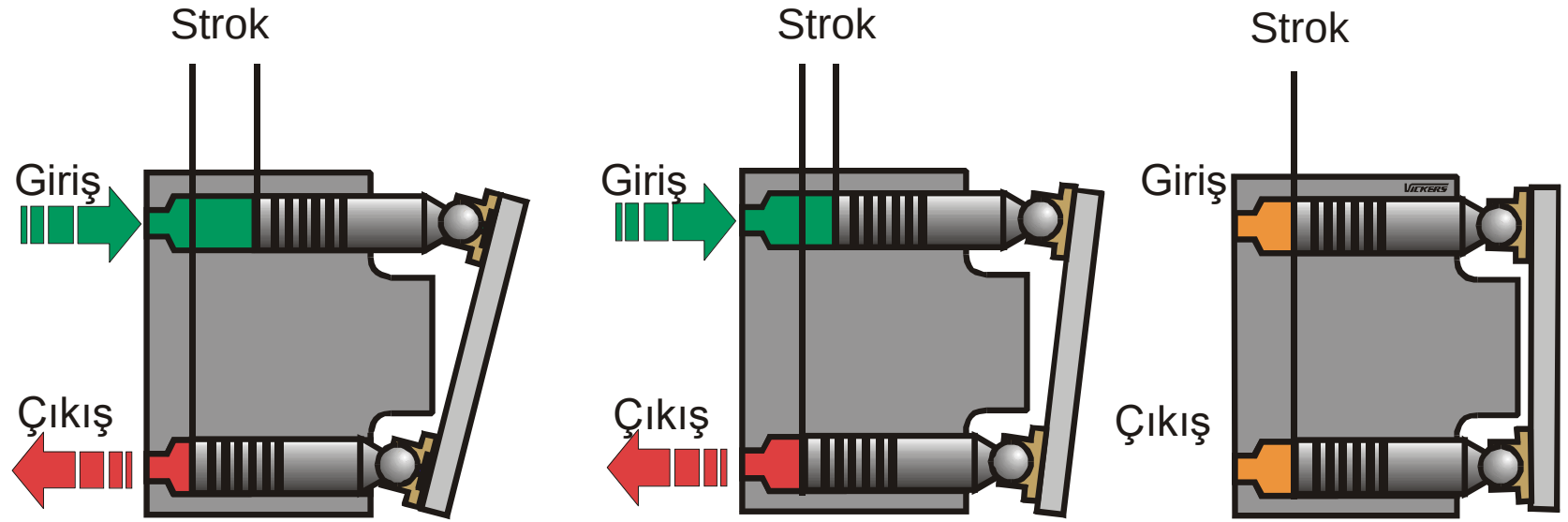


EKSENEL PİSTONLU POMPA

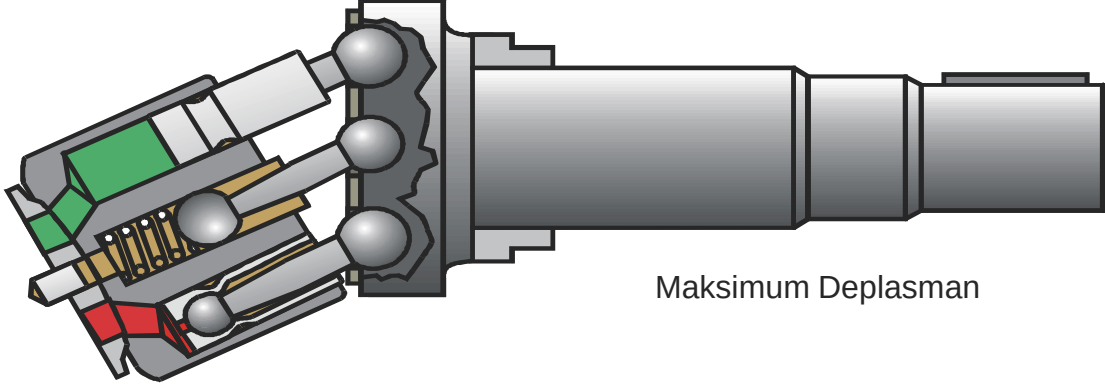


EKSENEL PİSTONLU POMPA

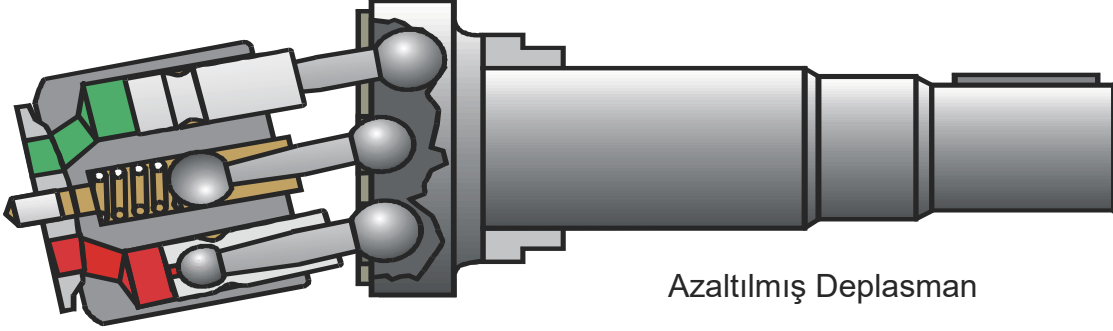




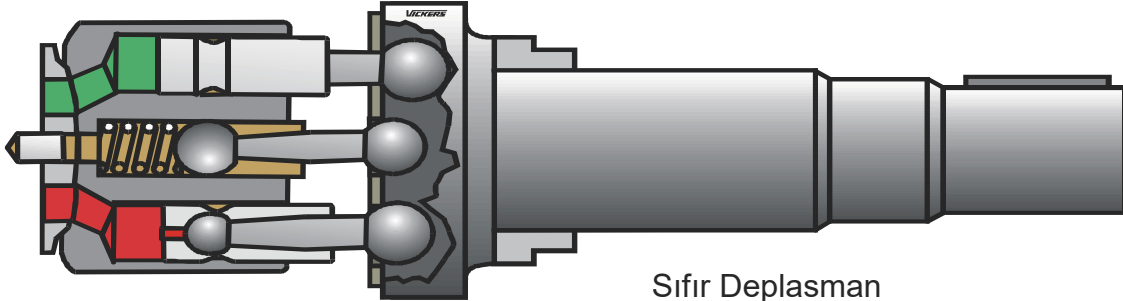
Pompa deplasmanı eğik plakanın açısına bağlıdır.



Maksimum Deplasman



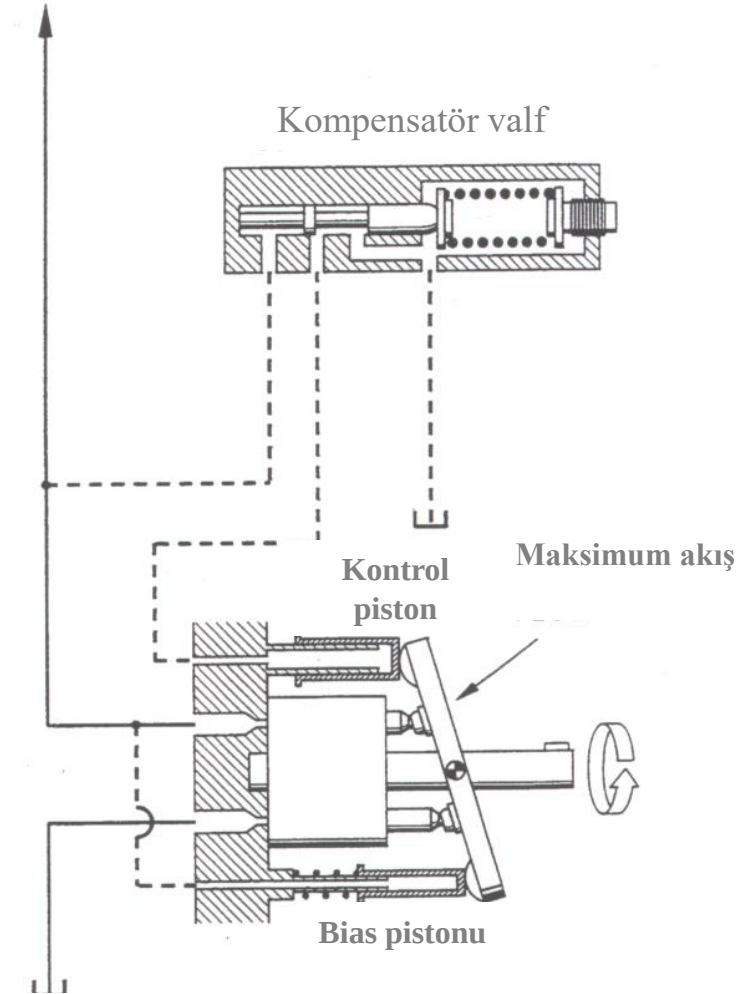
Azaltılmış Deplasman



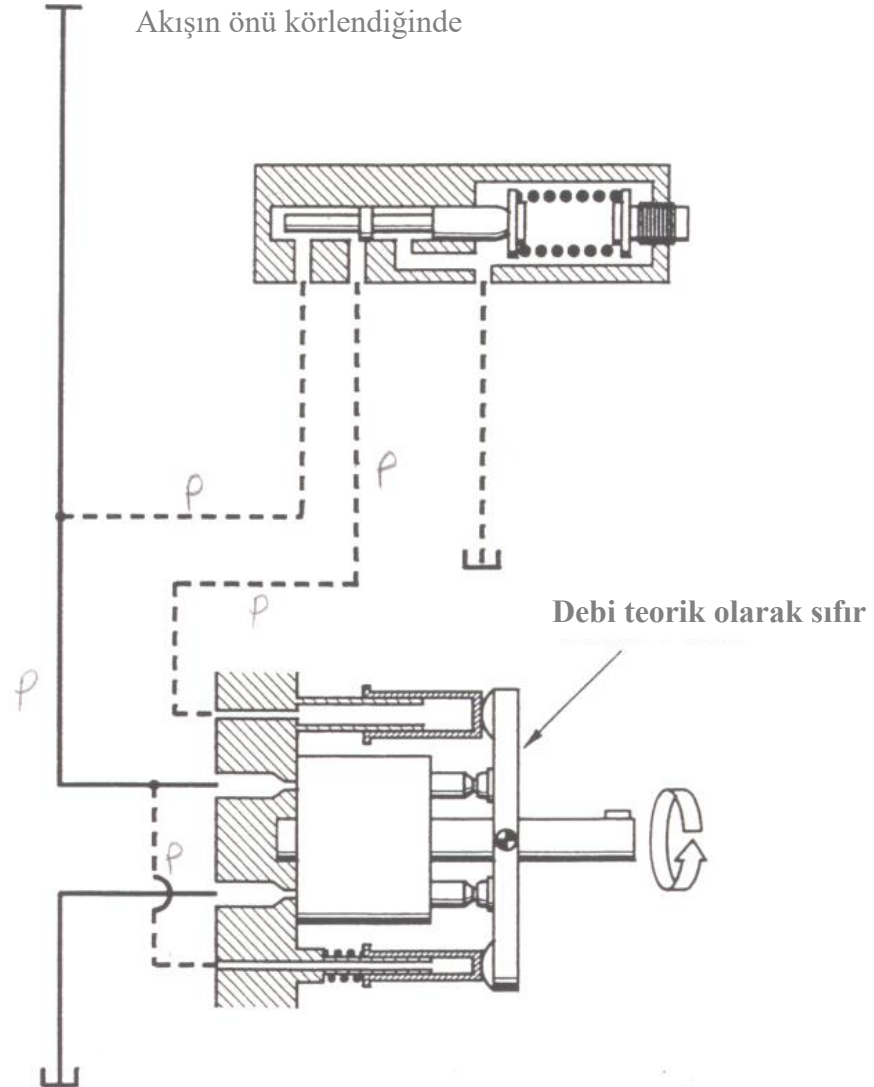
Sıfır Deplasman

Deplasman, silindir bloğunun açısıyla kontrol edilir

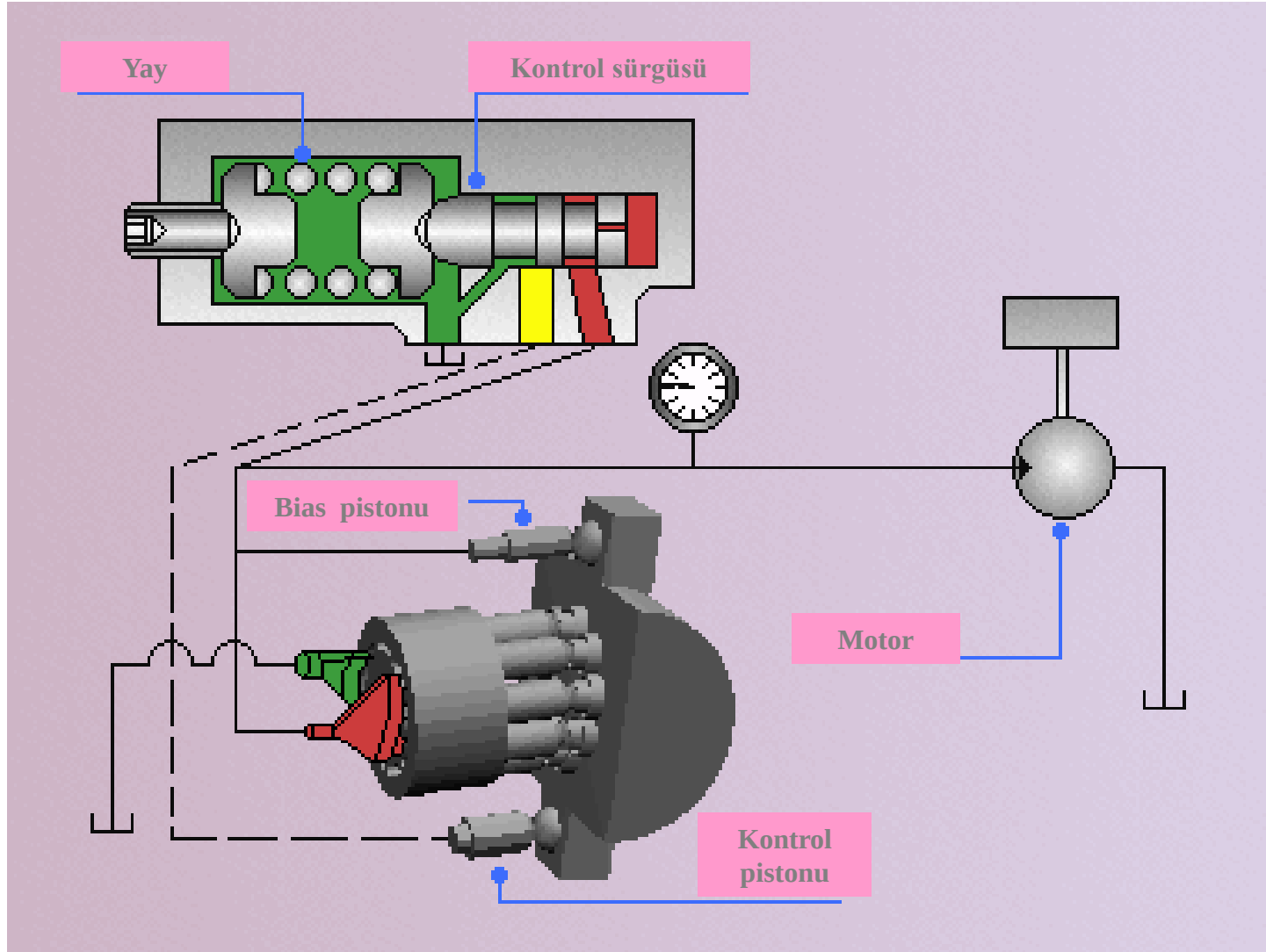
BASINÇ KOMPANSATÖRLÜ PİSTONLU POMPANIN YAPISI



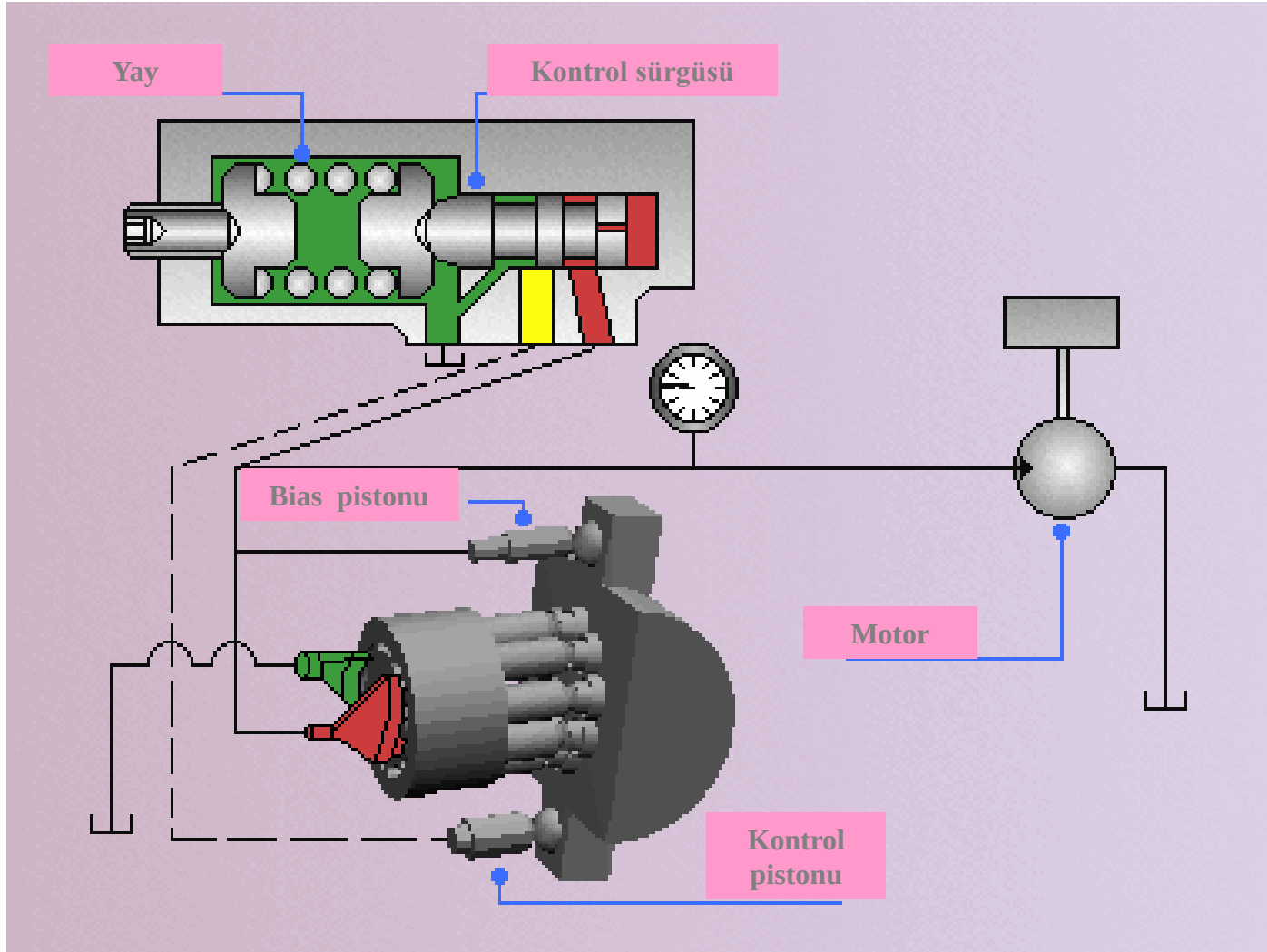
BASINÇ KOMPANSATÖRLÜ PİSTONLU POMPANIN YAPISI



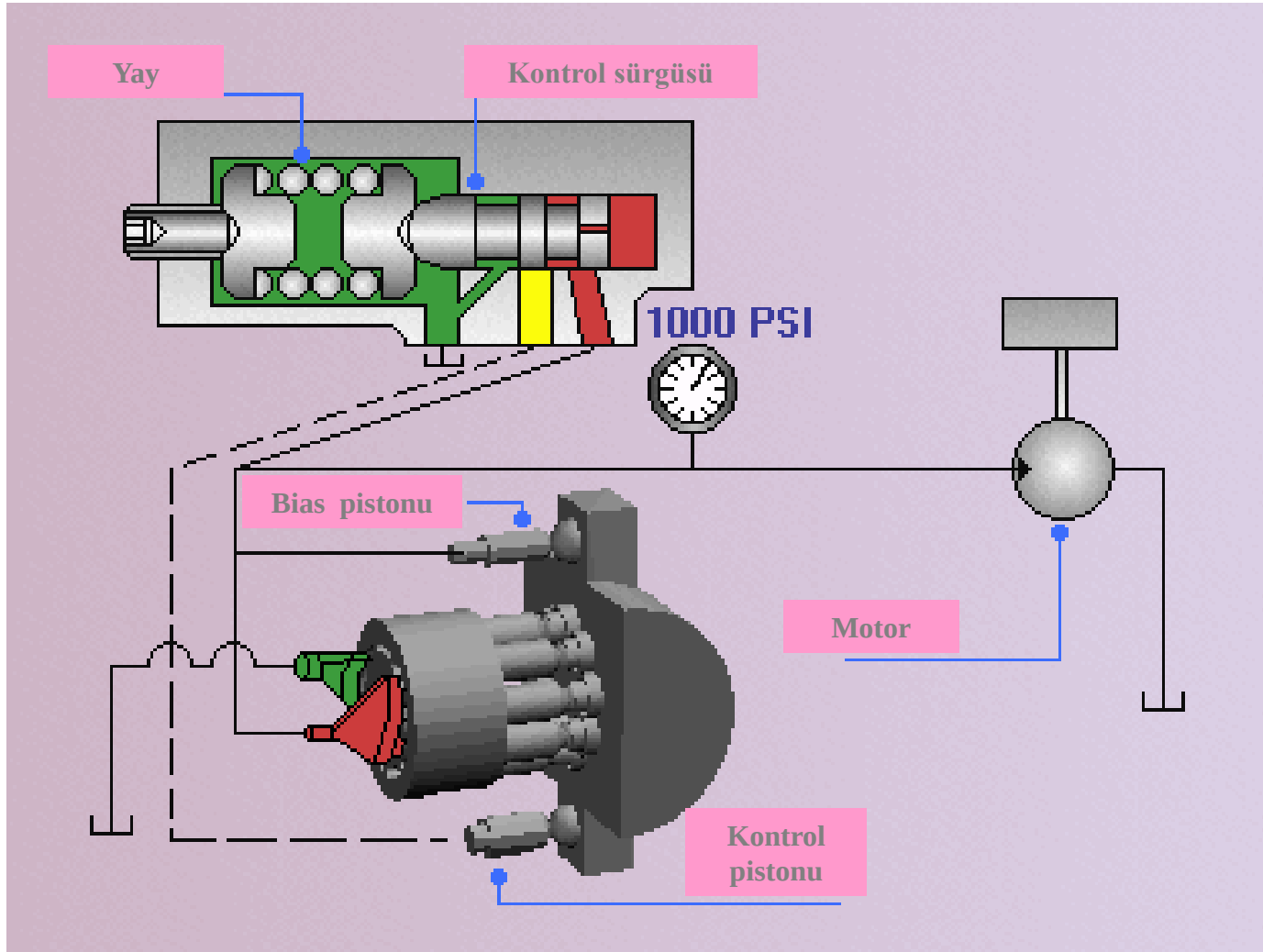
BASINÇ KOMPANSATÖRLÜ PİSTONLU POMPANIN YAPISI



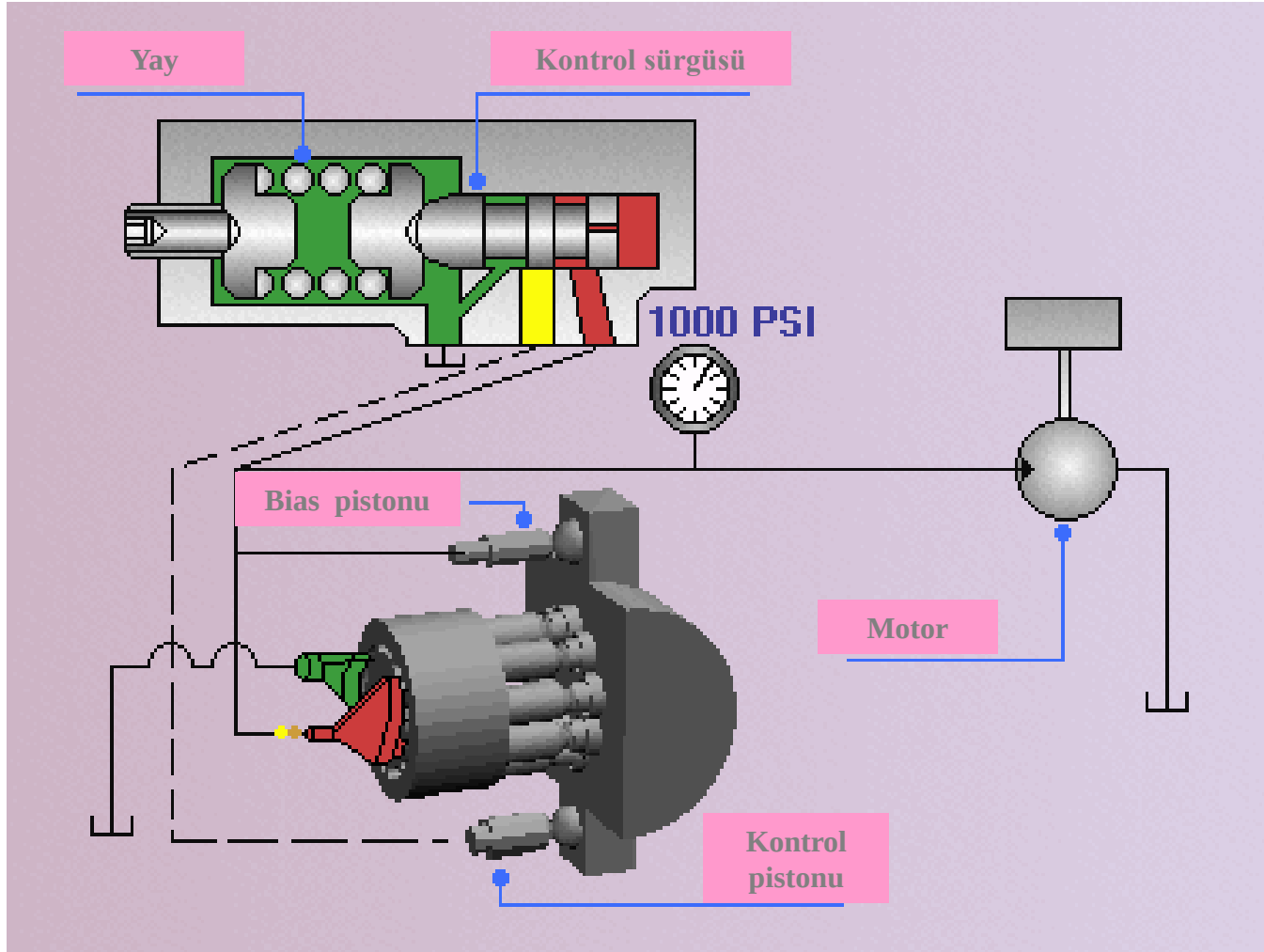
BASINÇ KOMPANSATÖRLÜ PİSTONLU POMPANIN YAPISI



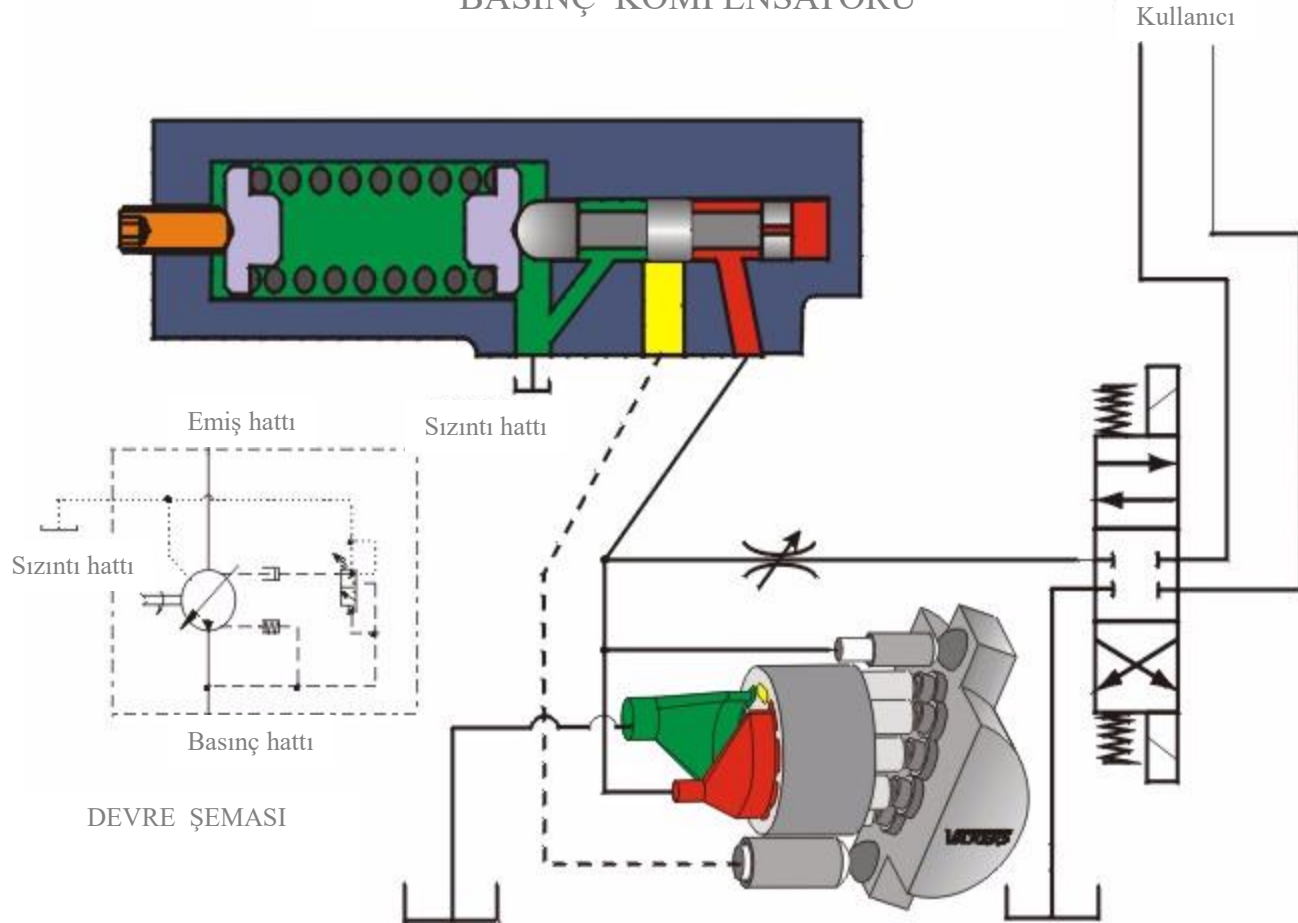
BASINÇ KOMPANSATÖRLÜ PİSTONLU POMPANIN YAPISI



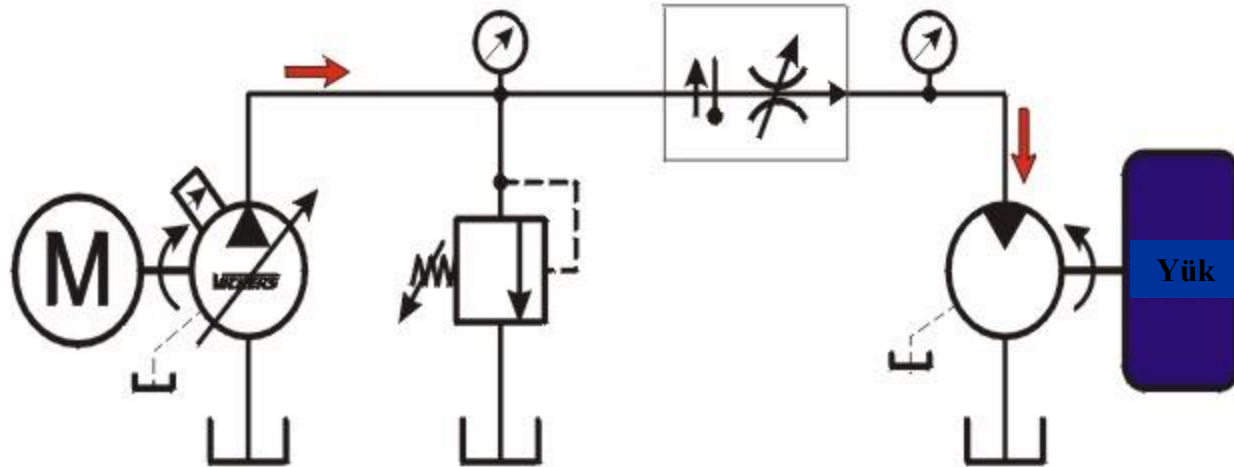
BASINÇ KOMPANSATÖRLÜ PİSTONLU POMPANIN YAPISI



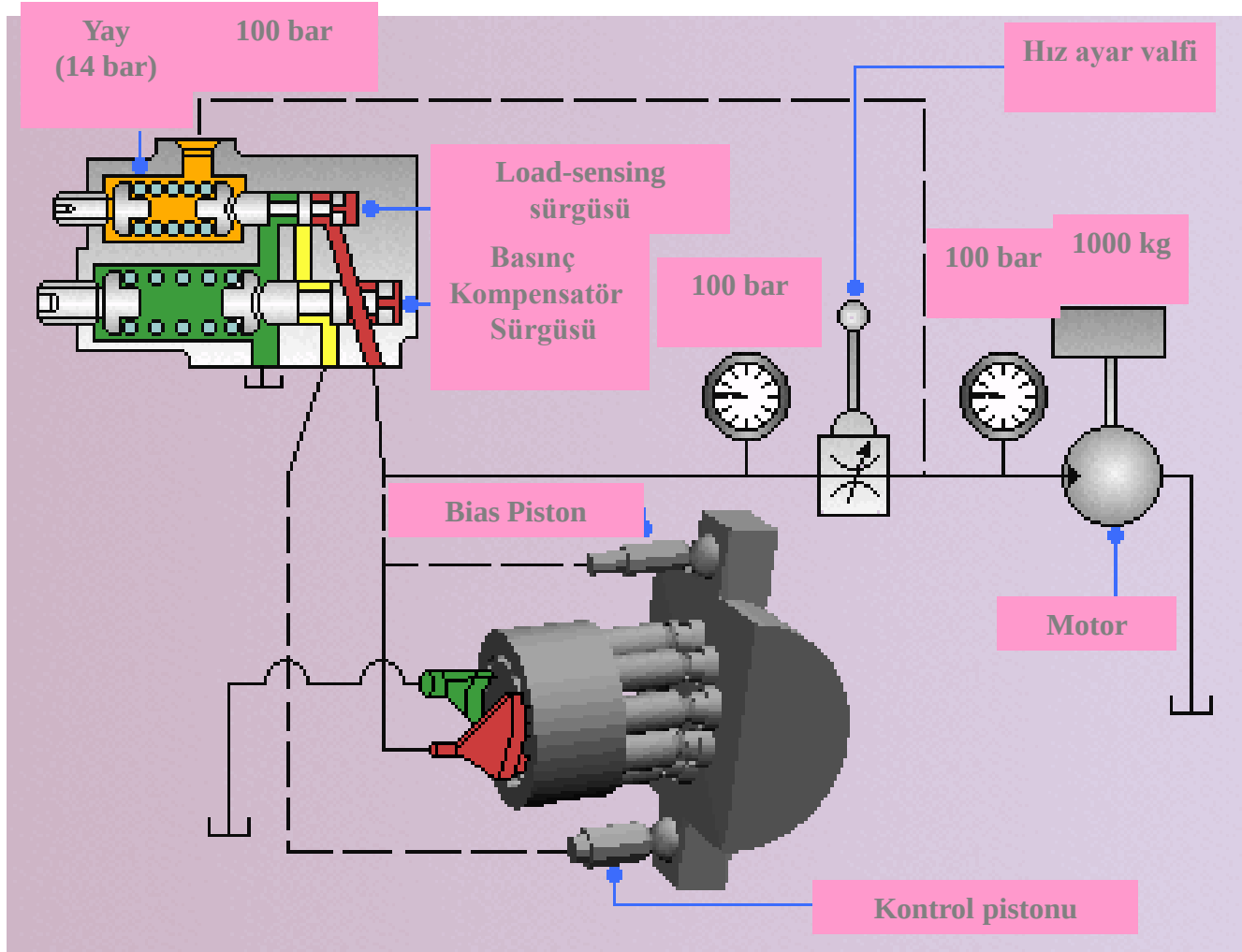
BASINÇ KOMPENSATÖRÜ



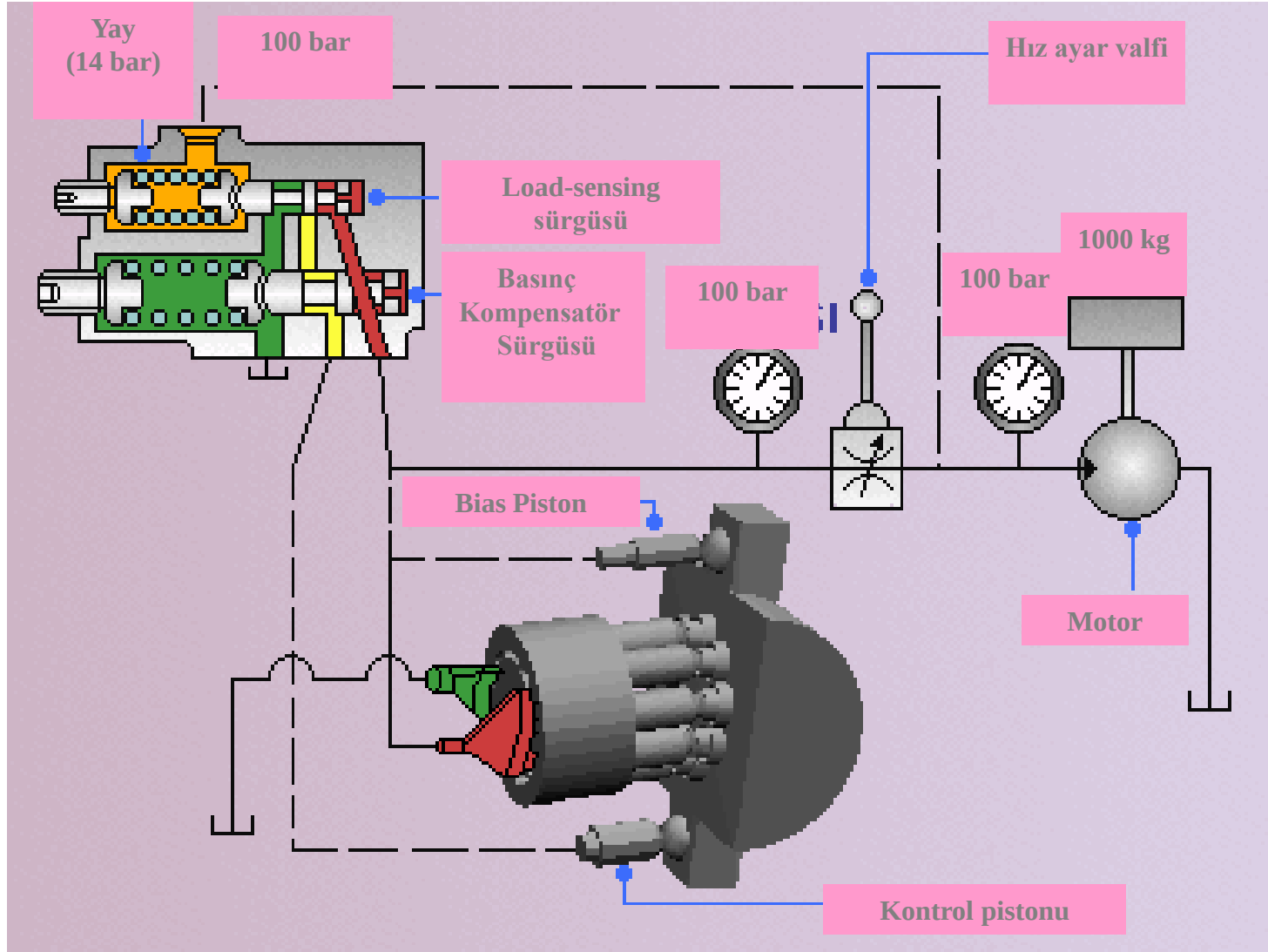
BASINÇ KOMPENSATÖRLÜ POMPA



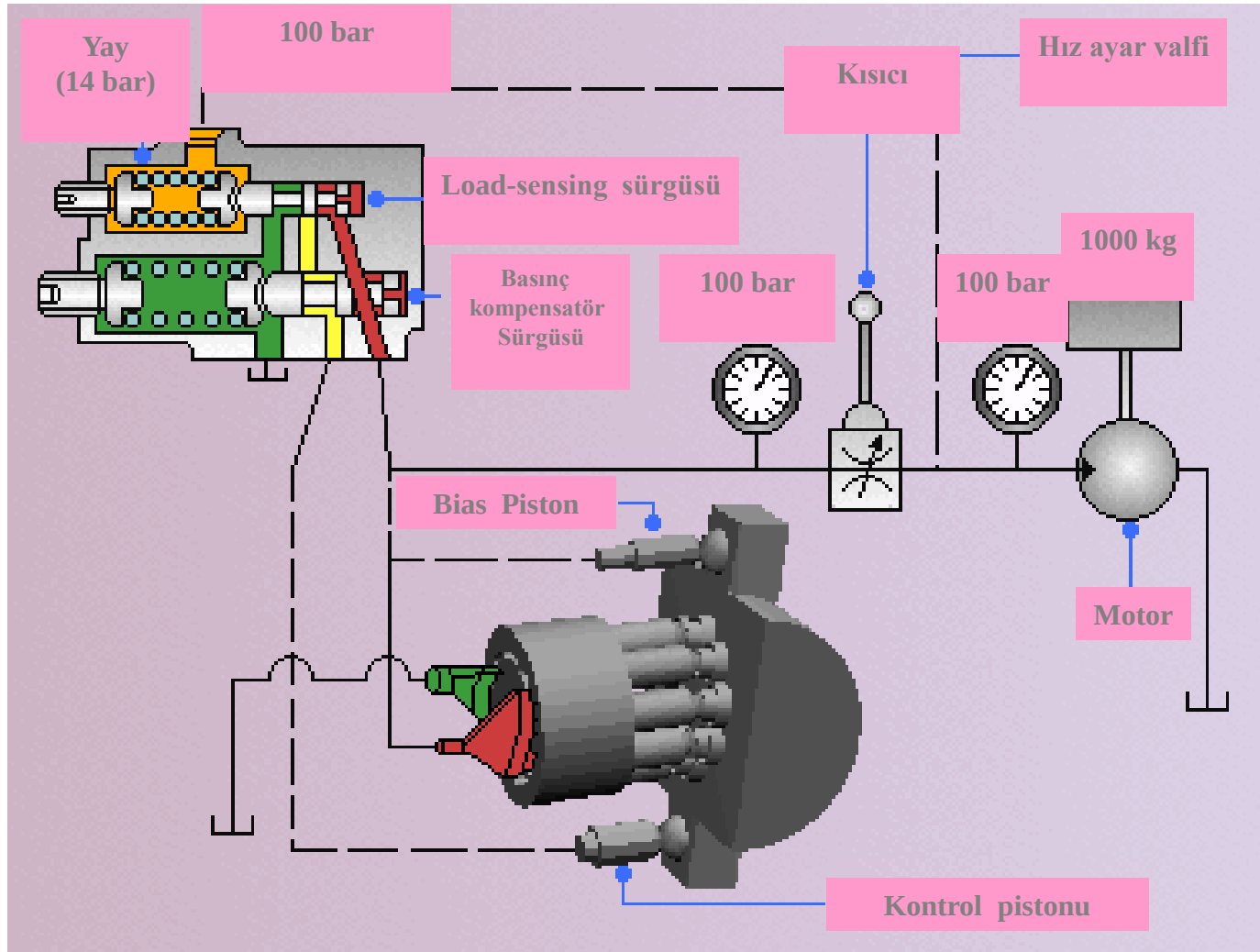
YÜK DUYARLI (LOAD-SENSİNG) PİSTONLU POMPANIN YAPISI



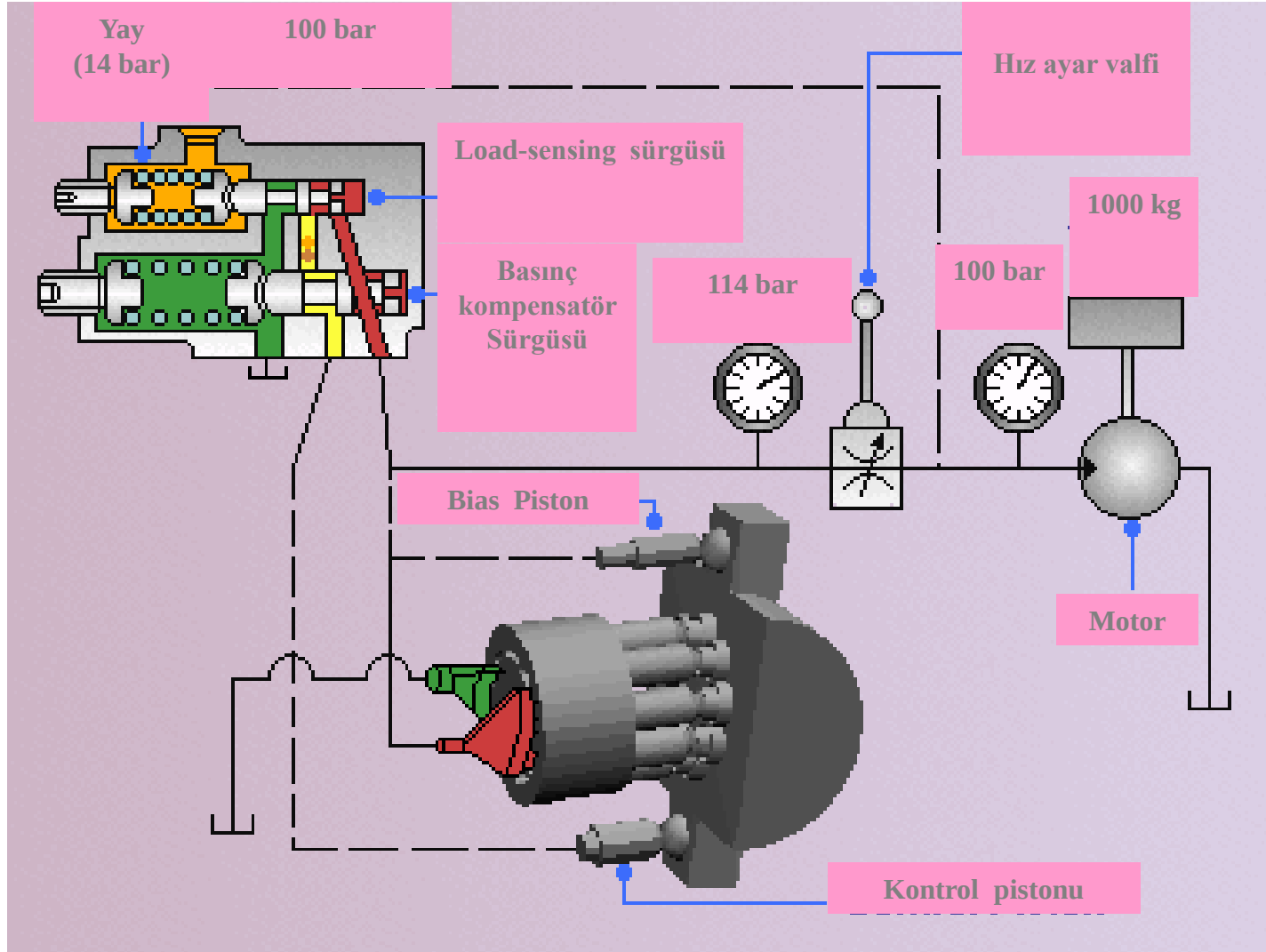
YÜK DUYARLI (LOAD-SENSİNG) PİSTONLU POMPANIN YAPISI



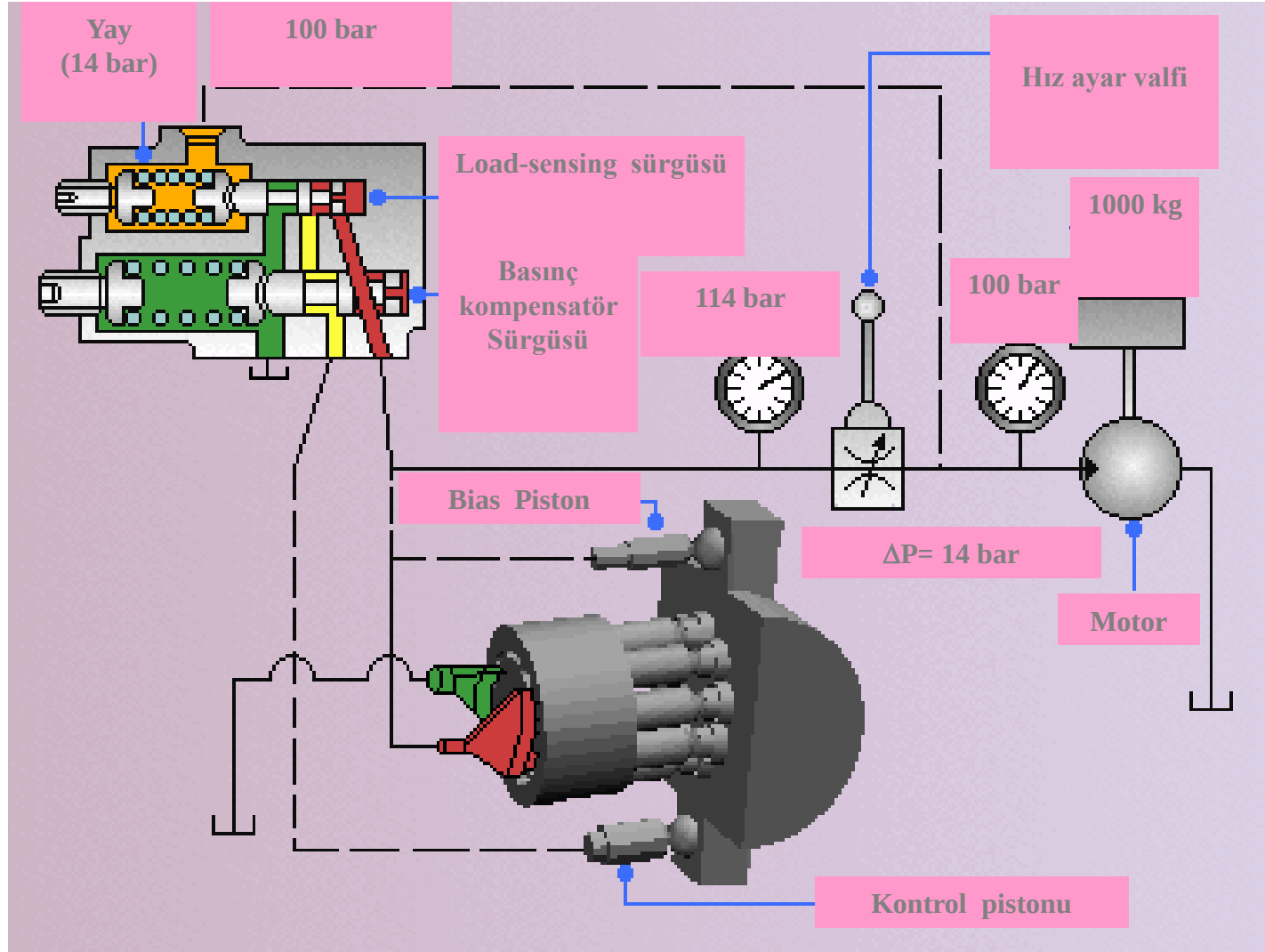
YÜK DUYARLI (LOAD-SENSİNG) PİSTONLU POMPANIN YAPISI



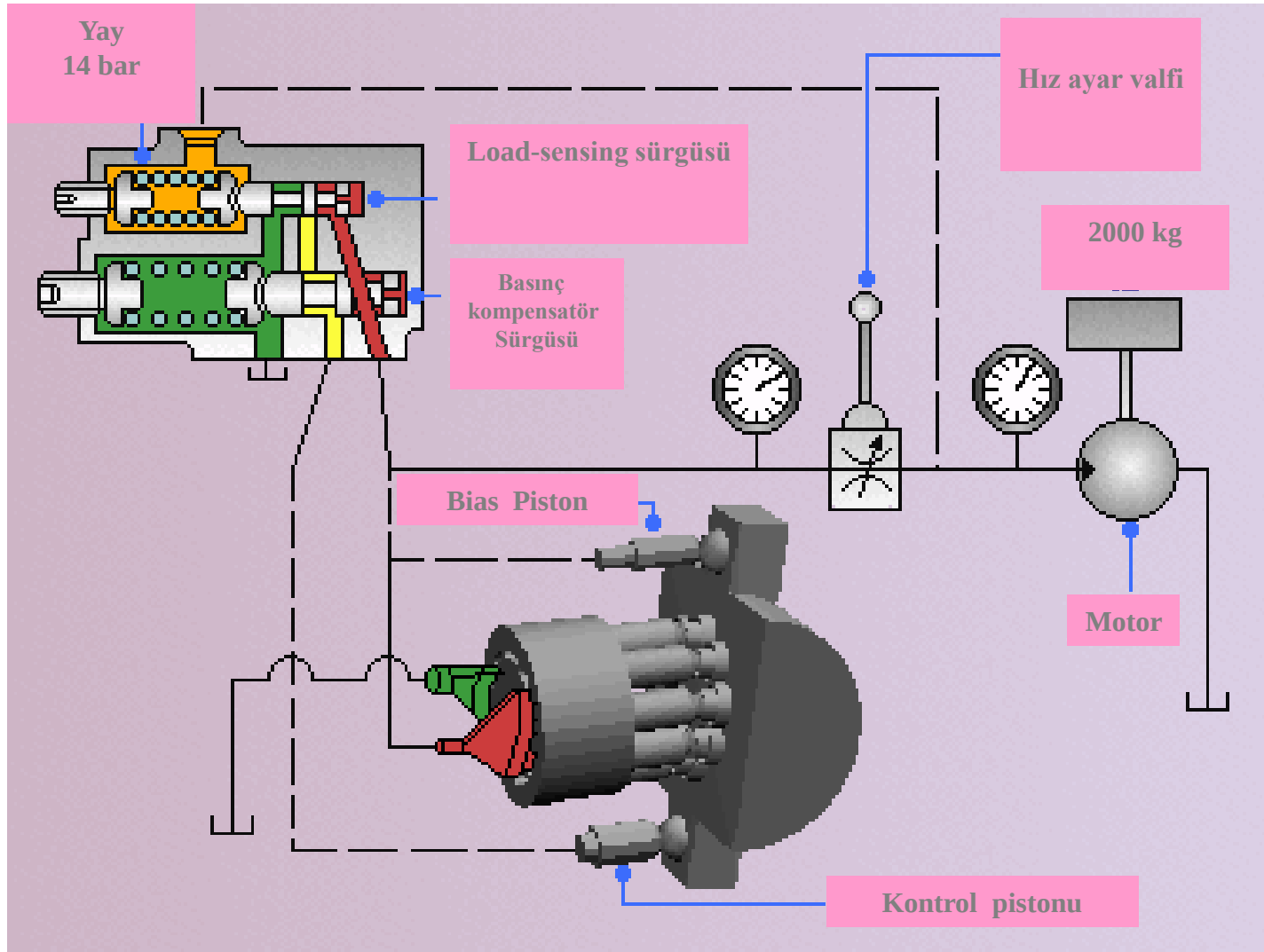
YÜK DUYARLI (LOAD-SENSİNG) PİSTONLU POMPANIN YAPISI



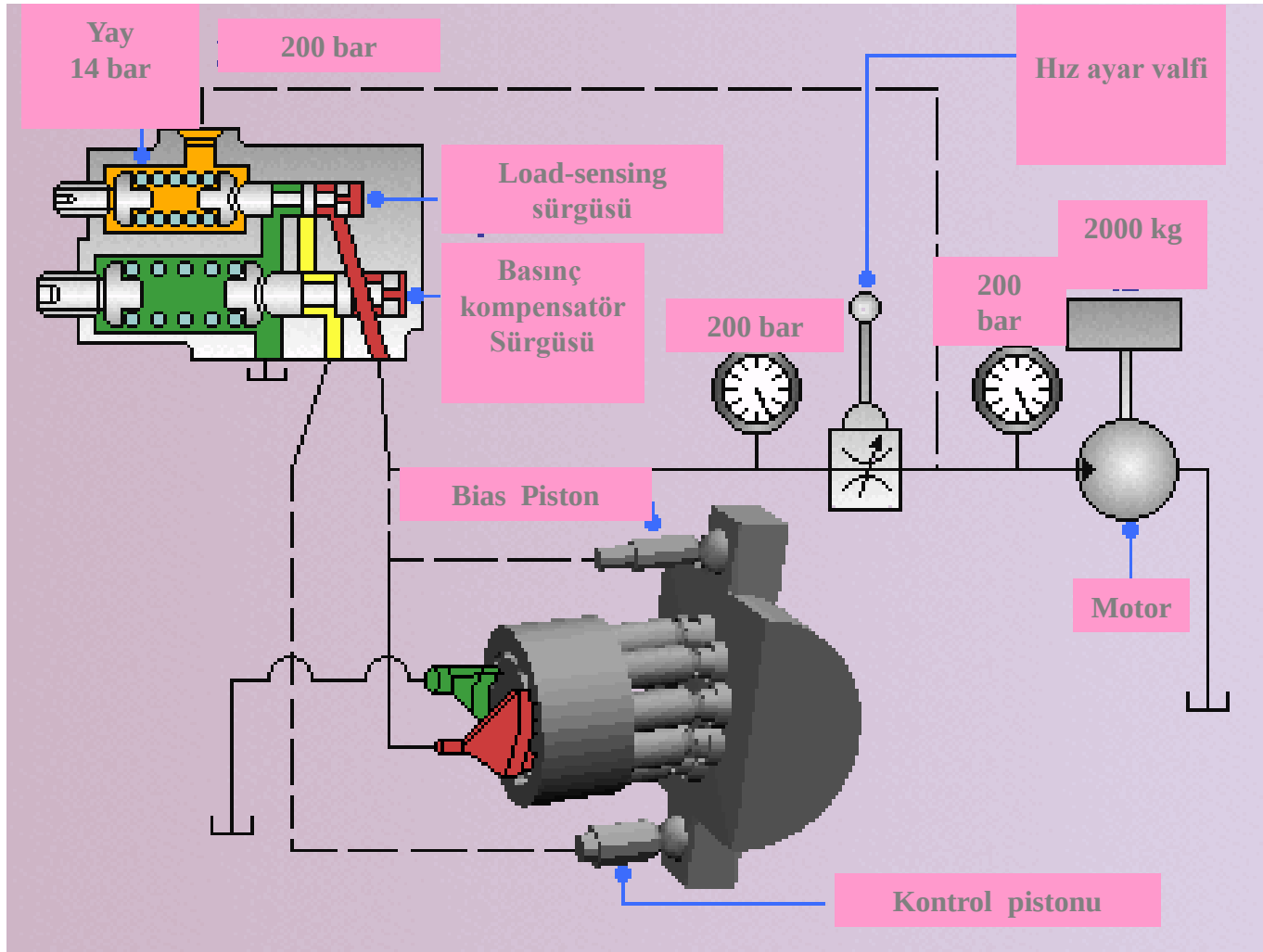
YÜK DUYARLI (LOAD-SENSİNG) PİSTONLU POMPANIN YAPISI



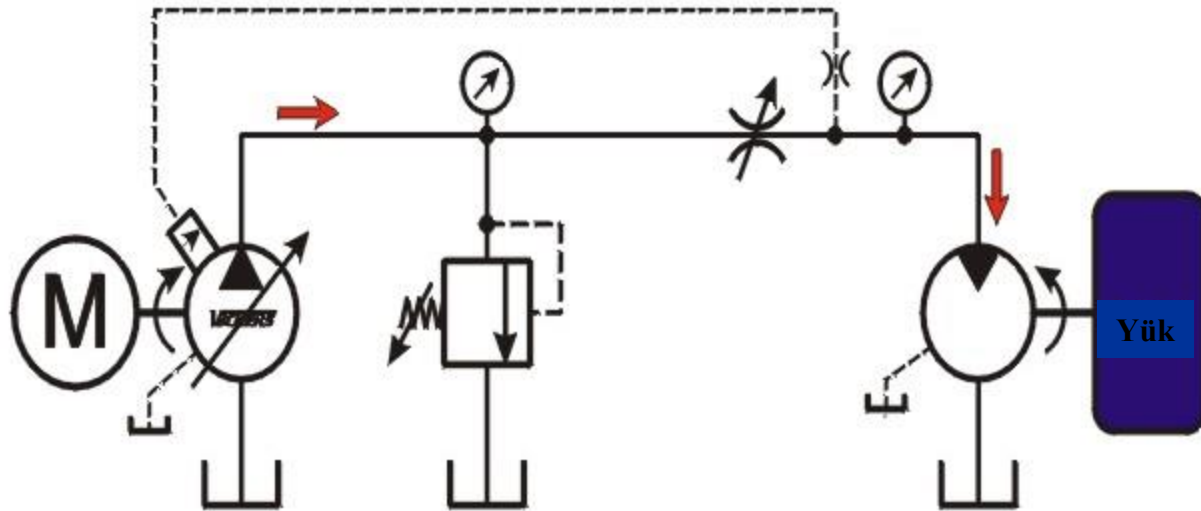
YÜK DUYARLI (LOAD-SENSİNG) PİSTONLU POMPANIN YAPISI

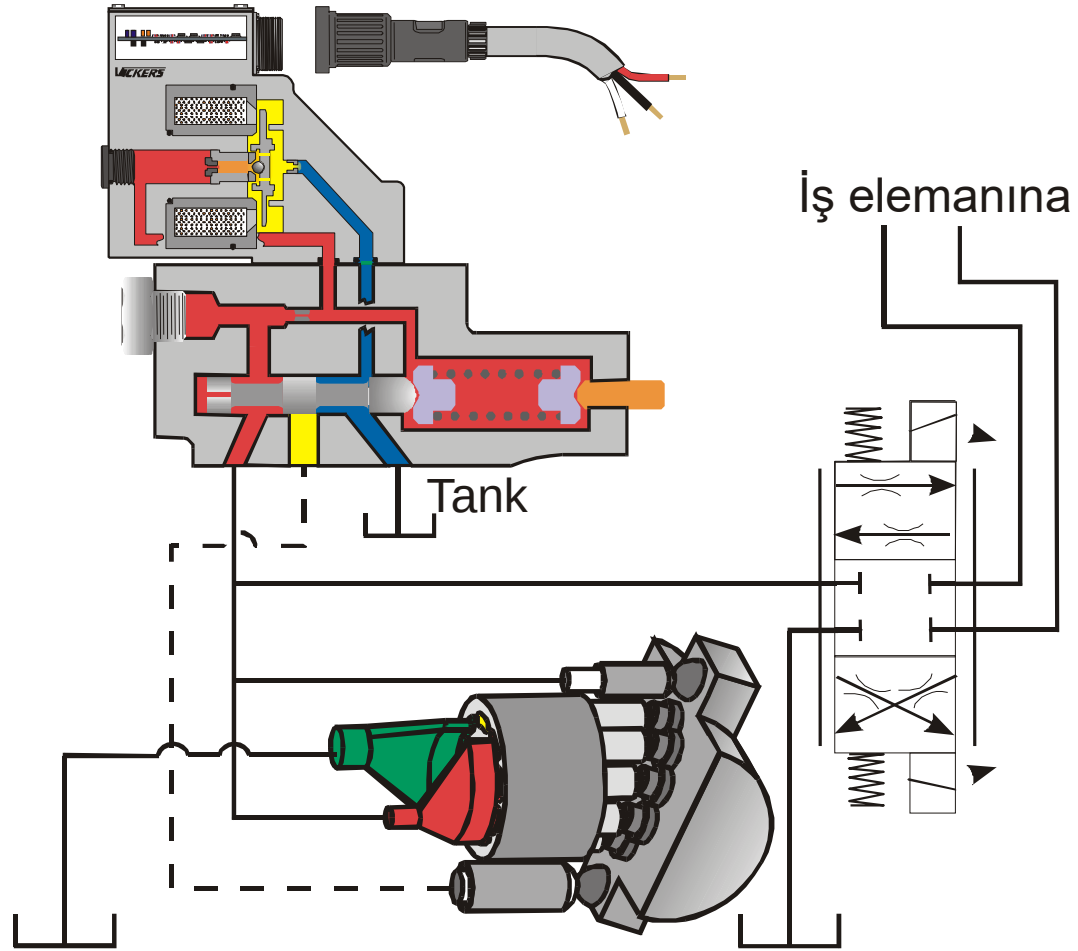


YÜK DUYARLI (LOAD-SENSING) PİSTONLU POMPANIN YAPISI

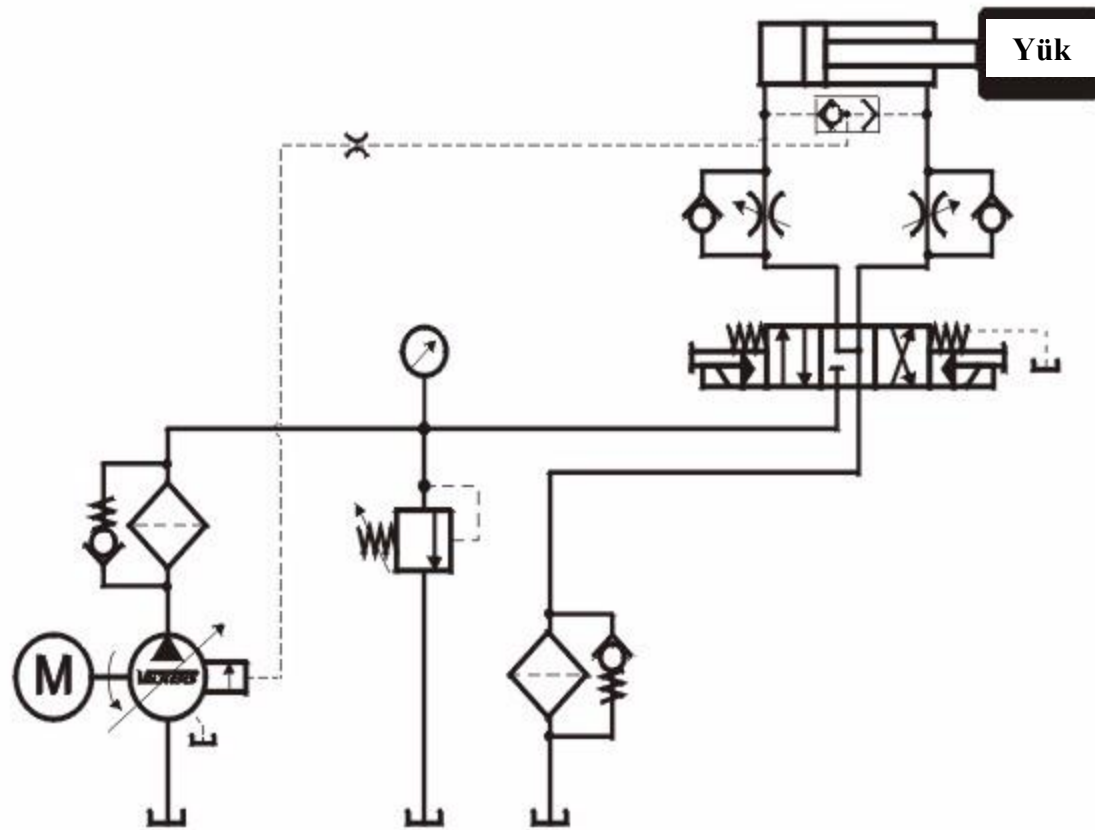


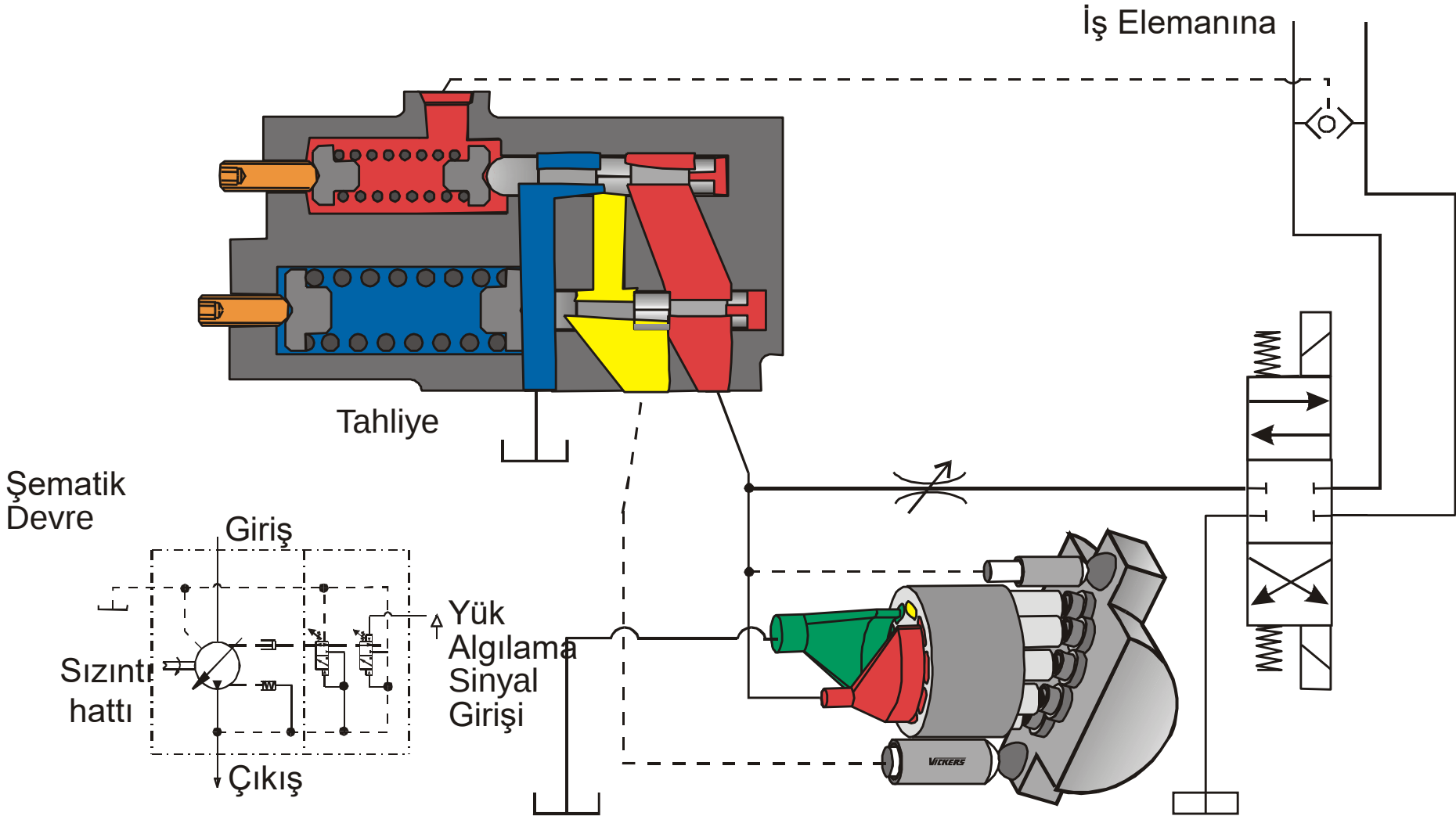
YÜK DUYARLI (LOAD-SENSİNG) POMPA





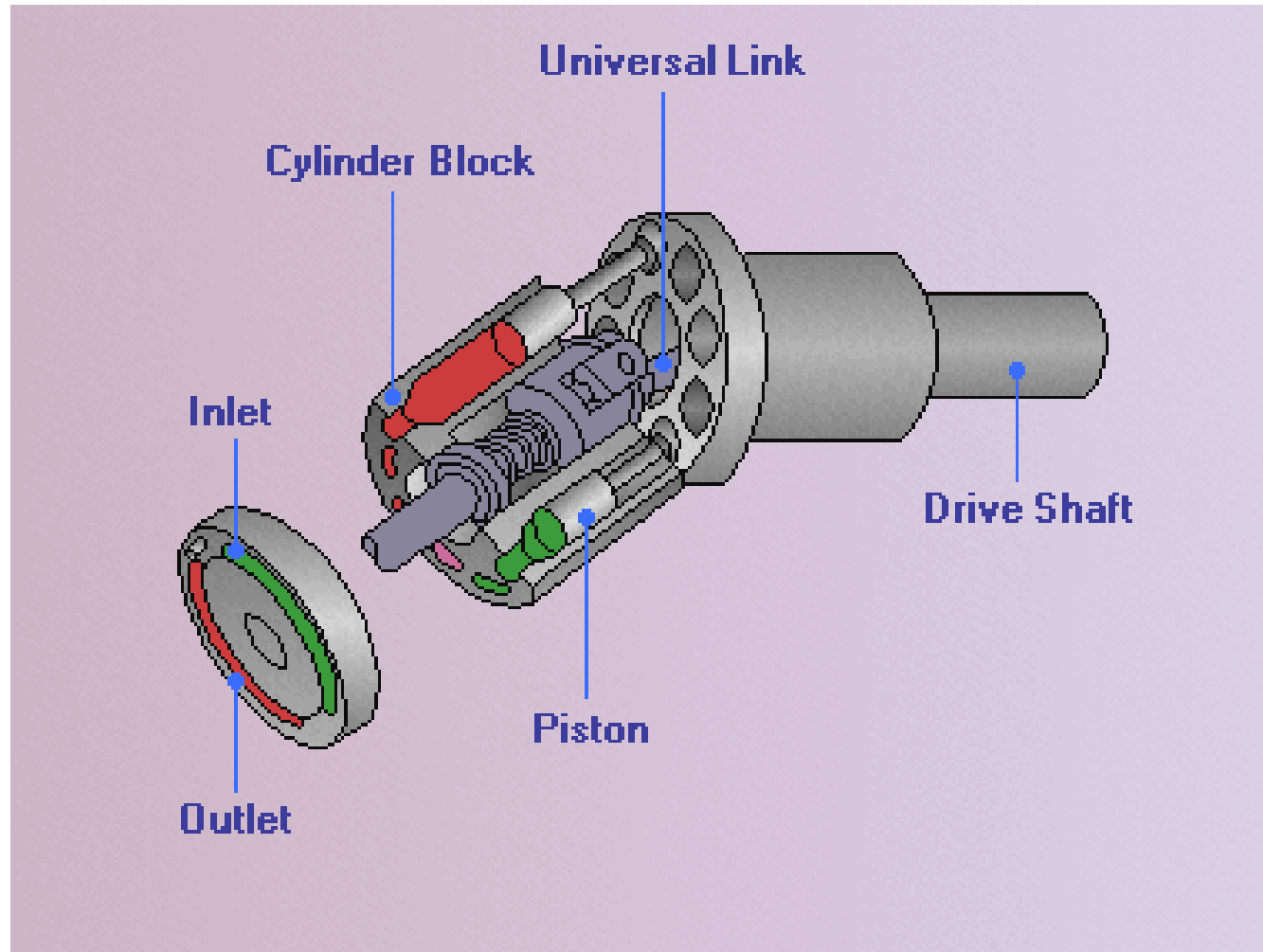
Elektrohidrolik deplasman kontrolü



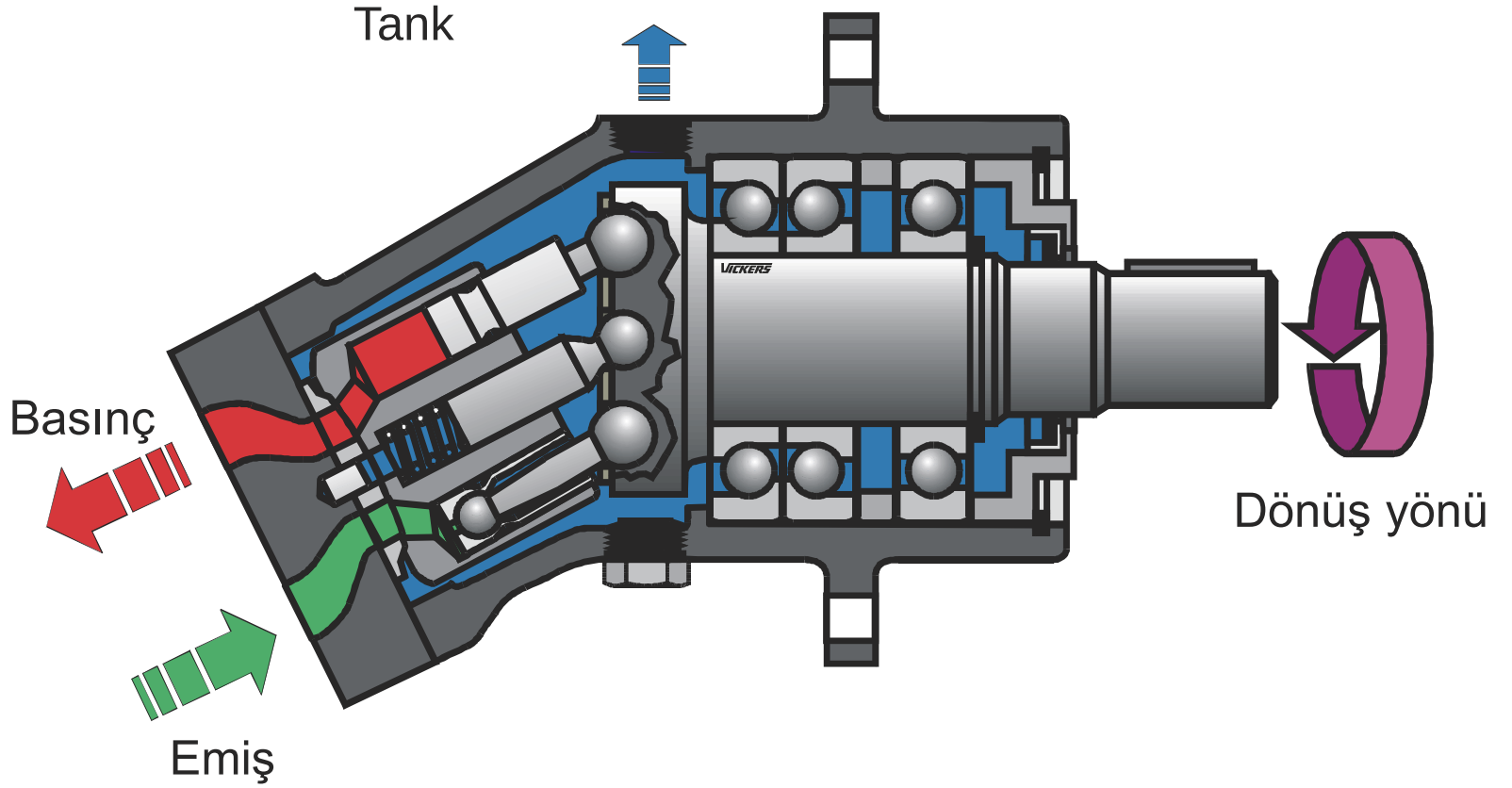


Yük duyarlı basınç kompensatörlü pompa

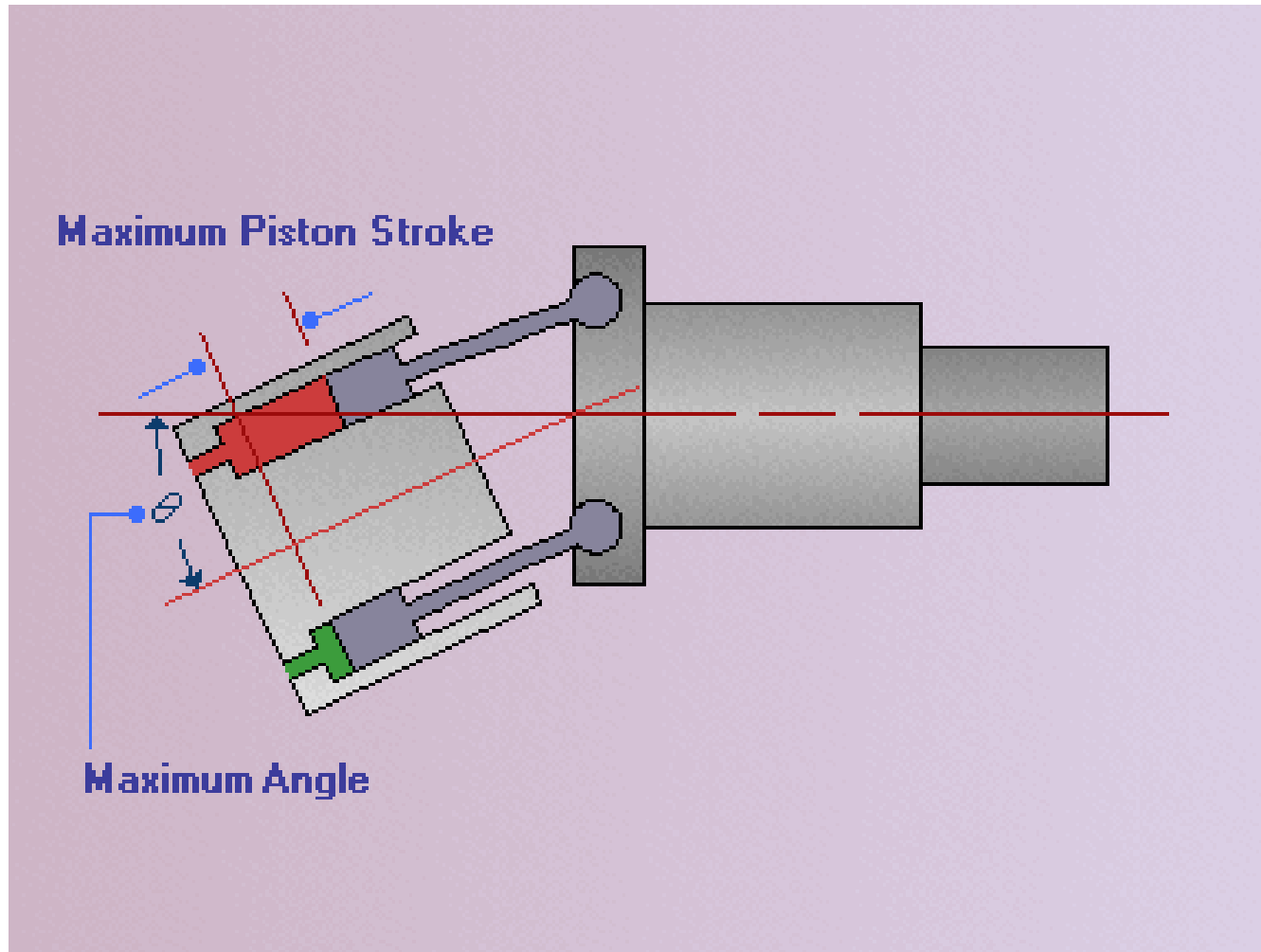
EĞİK EKSENLİ PİSTONLU POMPA



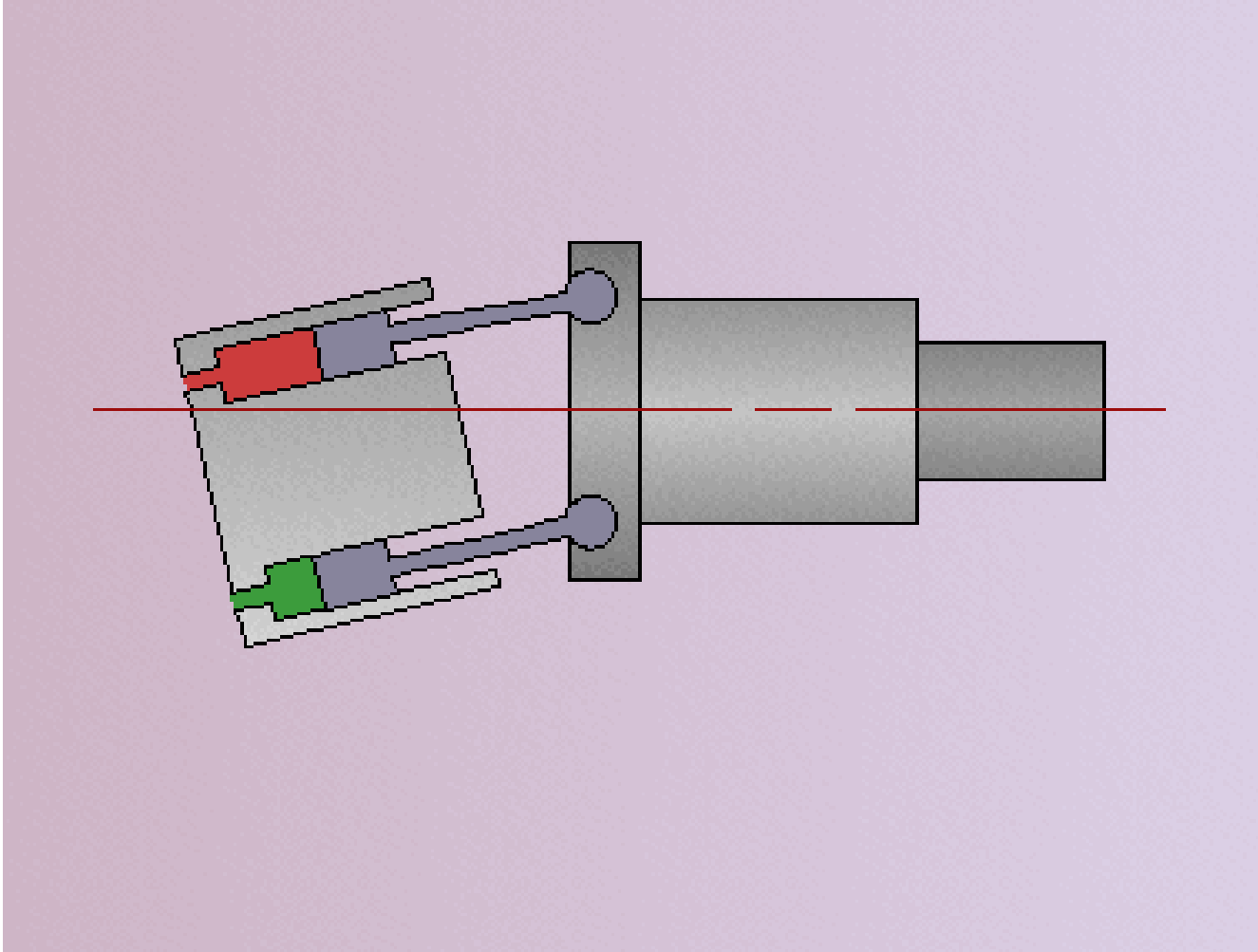
EĐIK EKSENĐİ PİSTONLU POMPA



EĞİK EKSENLİ PİSTONLU POMPA

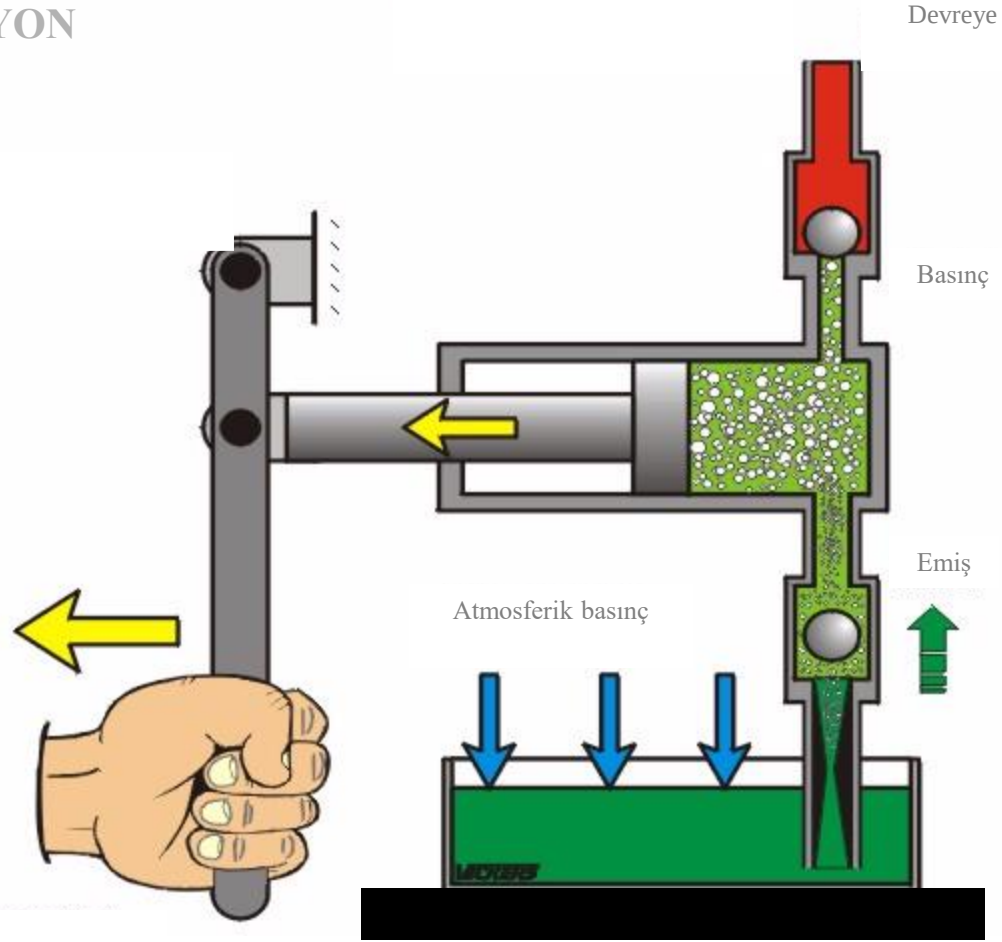


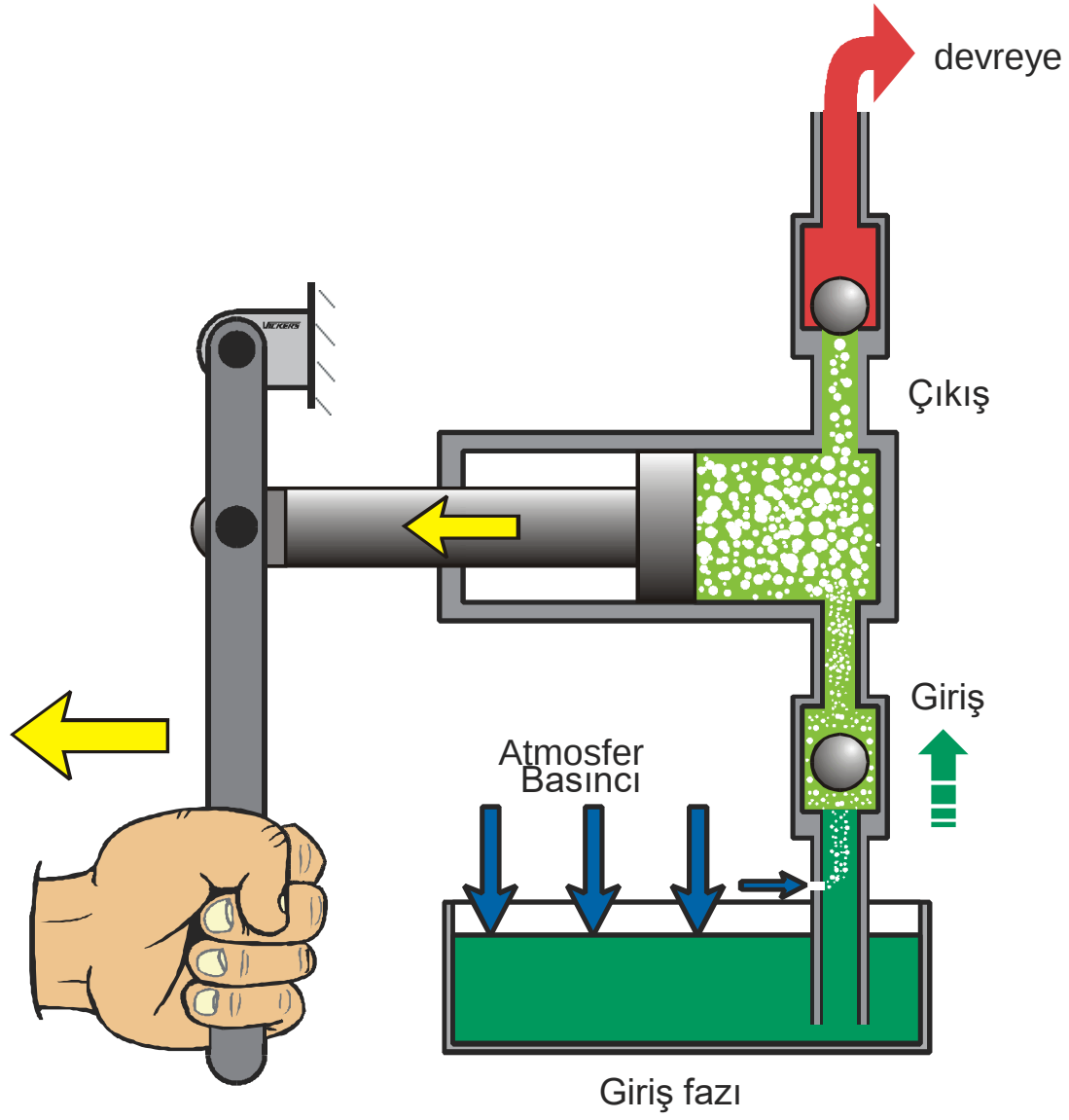
EĐİK EKSENİLİ PİSTONLU POMPA



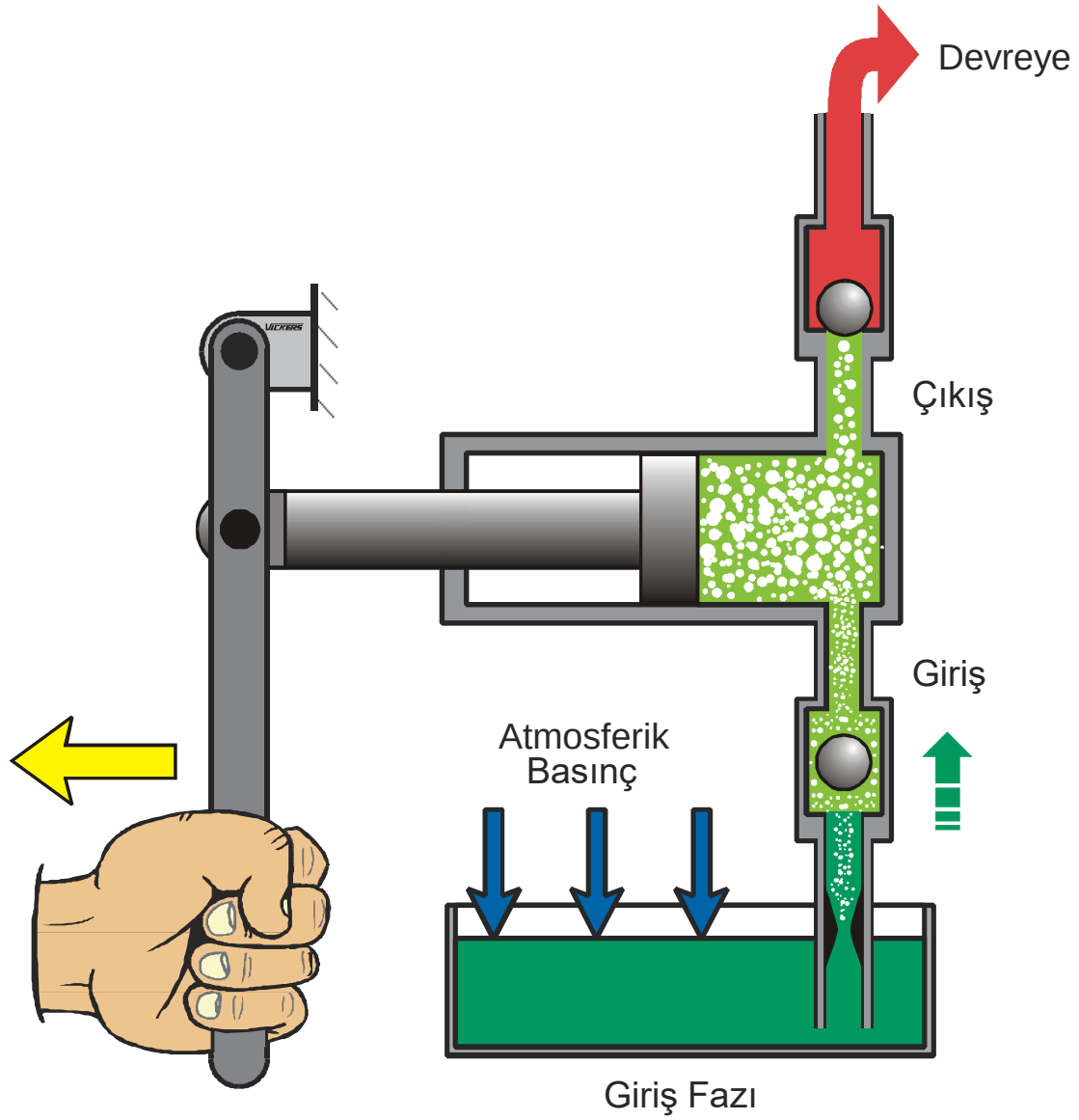
POMPADA MEYDANA GELEN ARIZALAR

KAVİTASYON





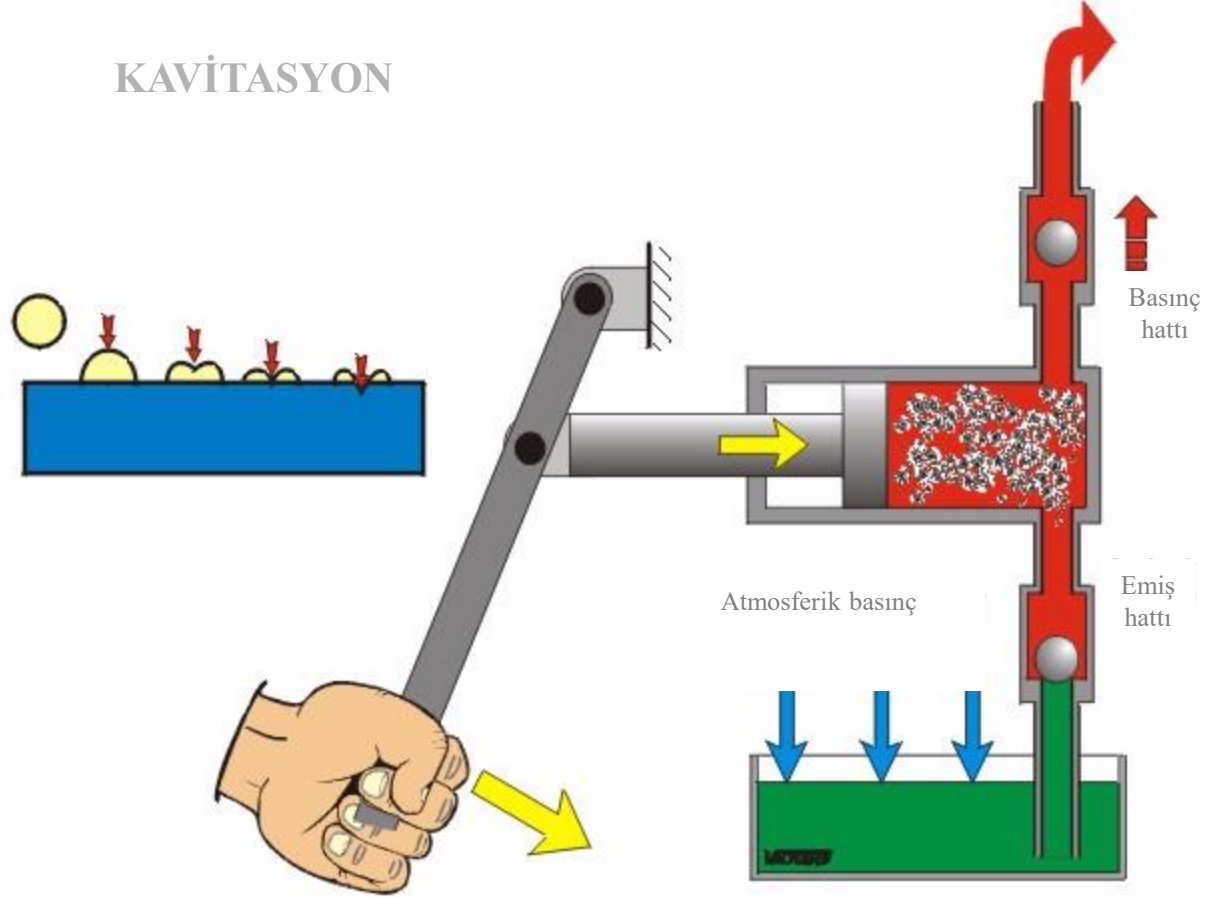
İç hava sızıntısı nedeniyle oluşan havalandırılmış akışkan

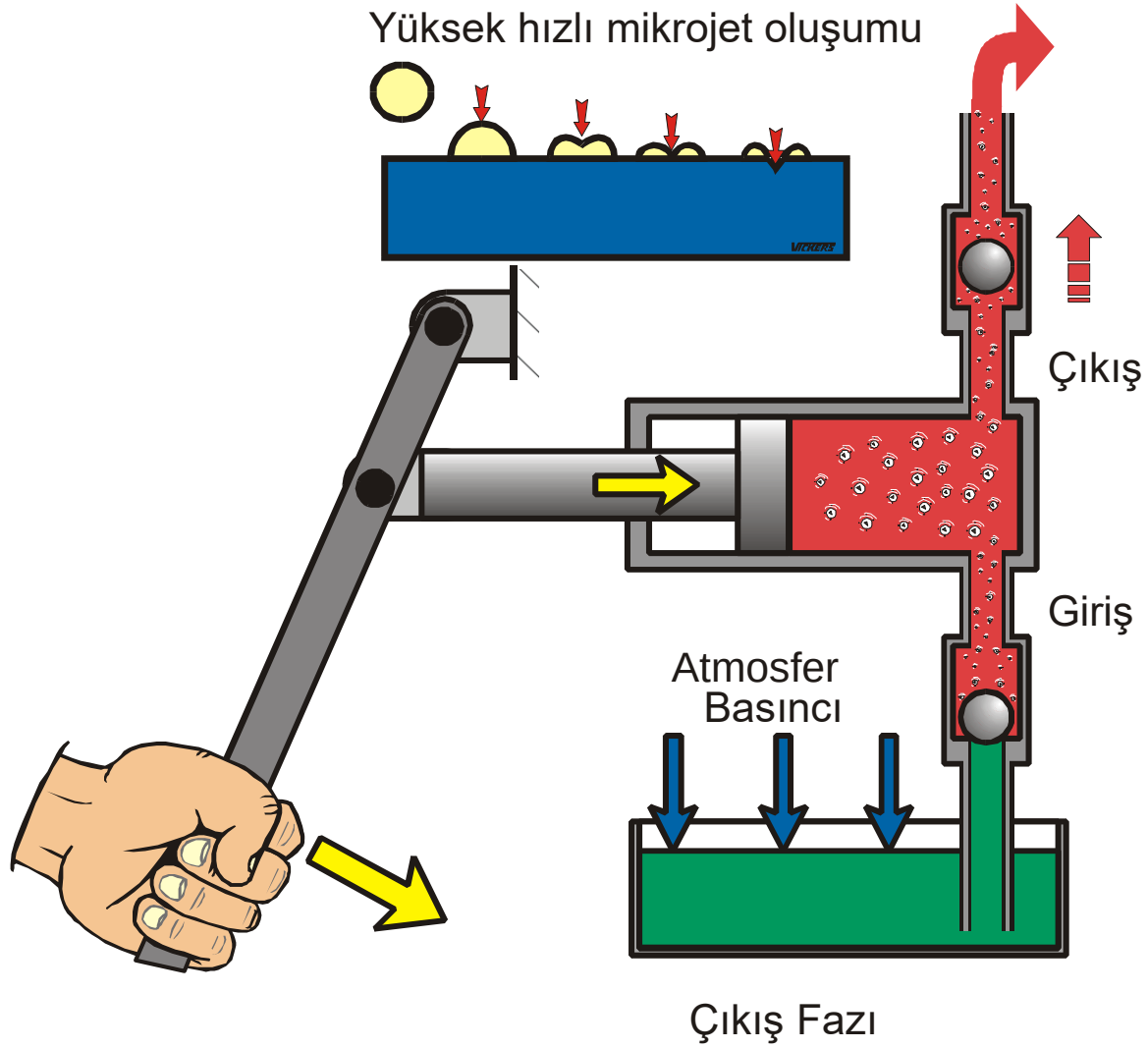


Engellenmiş giriş nedeniyle oluşan baloncuklar

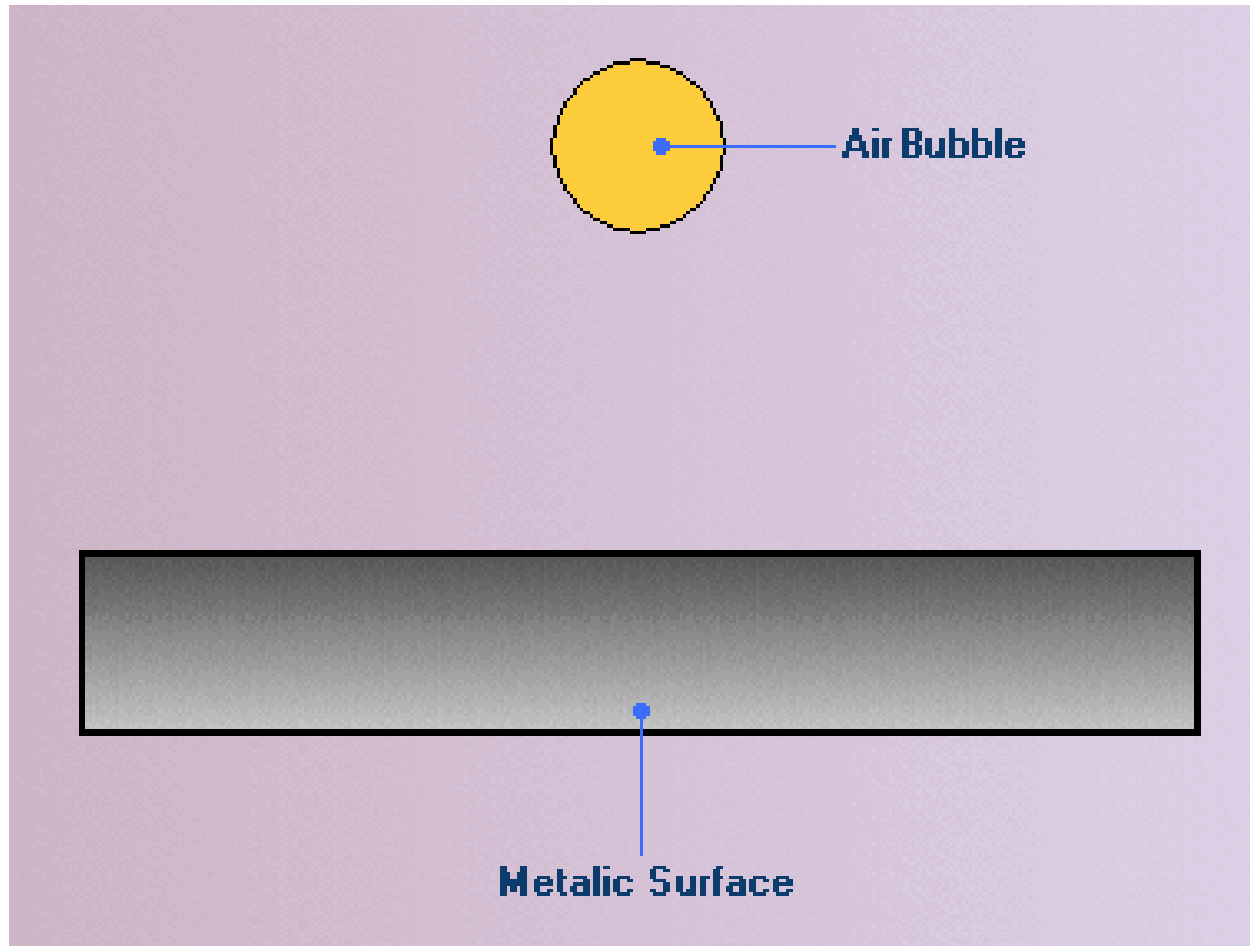
POMPADA MEYDANA GELEN ARIZALAR

KAVİTASYON





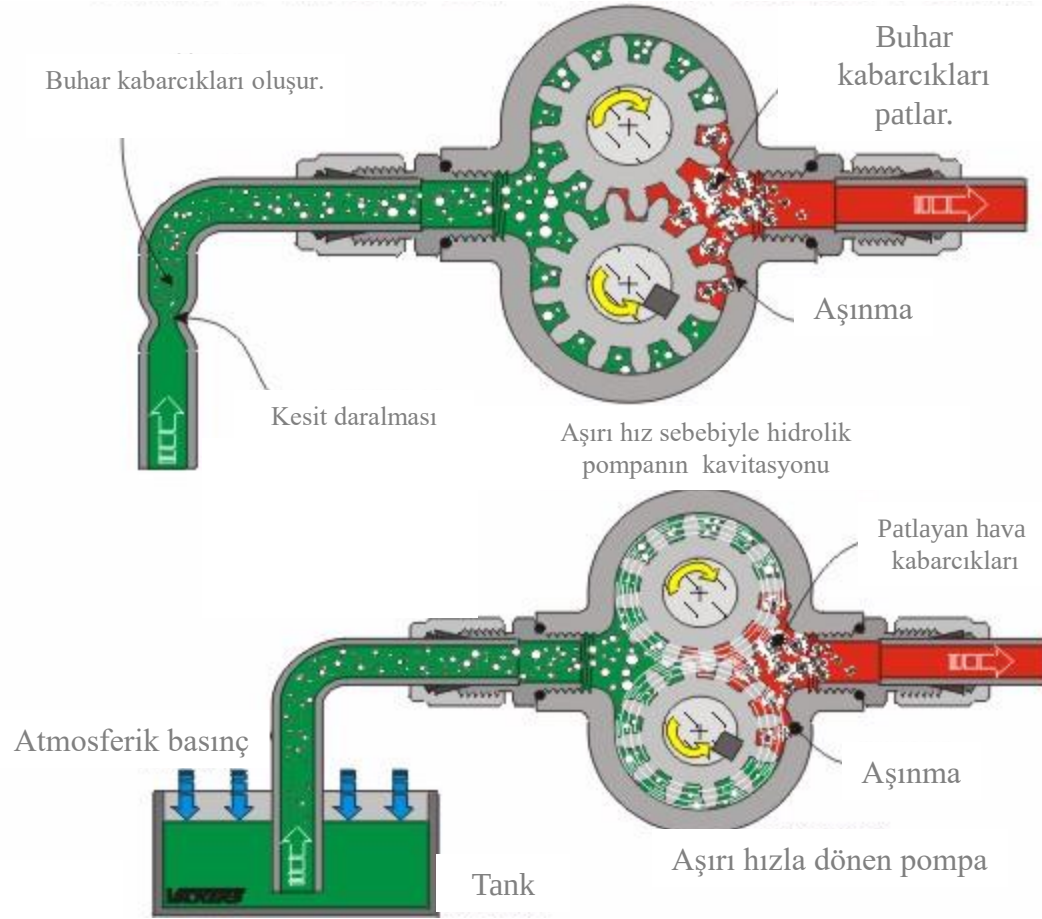
Akışkana basınç uygulamak baloncuk oluşturur



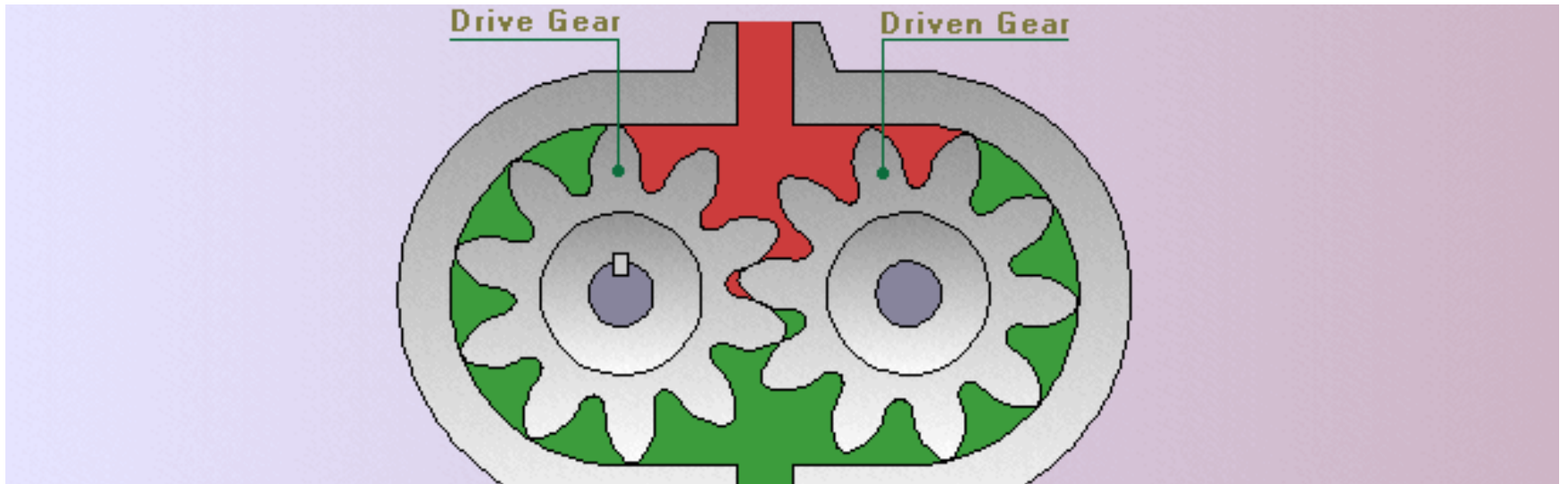
KAVİTASYONUN SEBEPLERİ

- Pompanın yüksek devirde çevrilmesi
- Emiş hattının uzun olması
- Pompanın tanktan uzak olması
- Tıkanmış emiş filtresi
- Emme boru çapının küçük olması
- Emiş tarafında boru kıvrımlarının çok fazla olması
- Yağın viskozitesi çok yüksek
- Yağın viskozitesi çok düşük
- Yağın depoya dönüş hızı çok yüksek

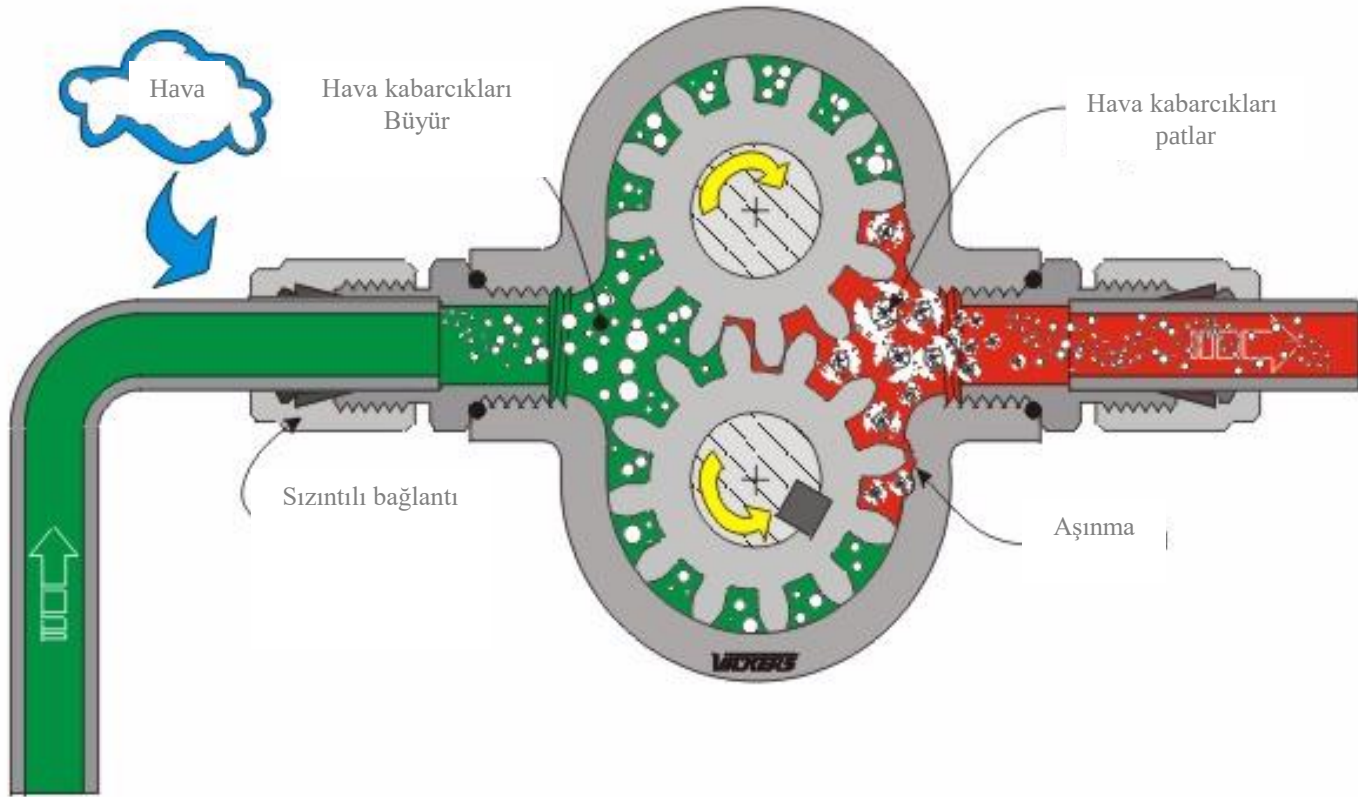
KAVİTASYON



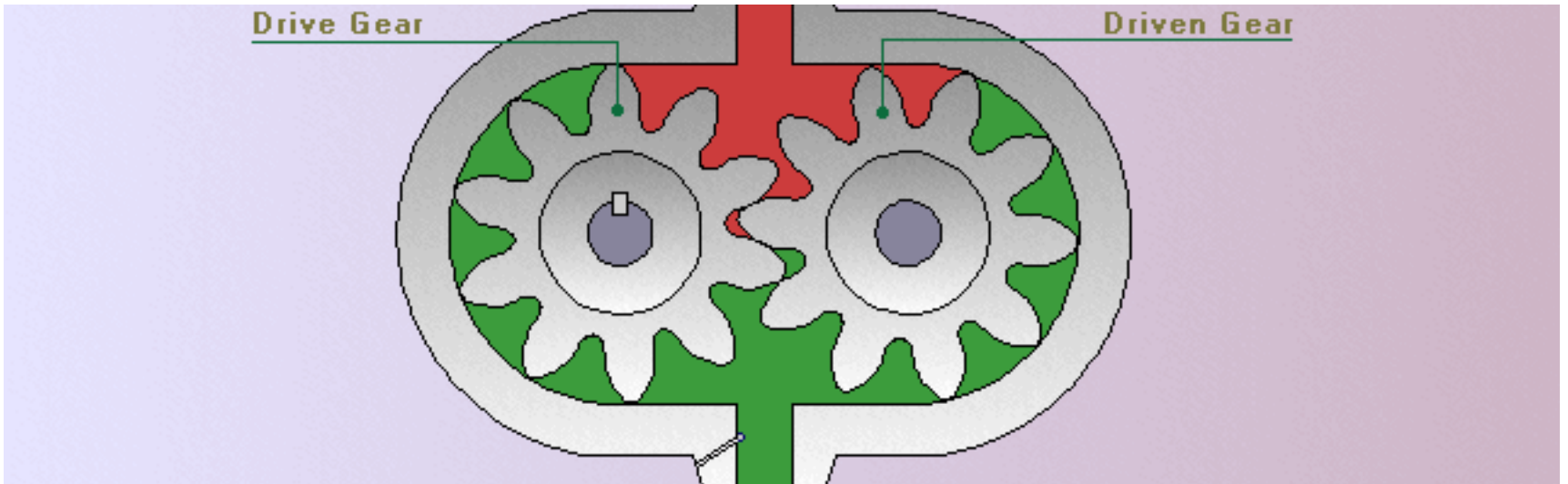
KAVİTASYON



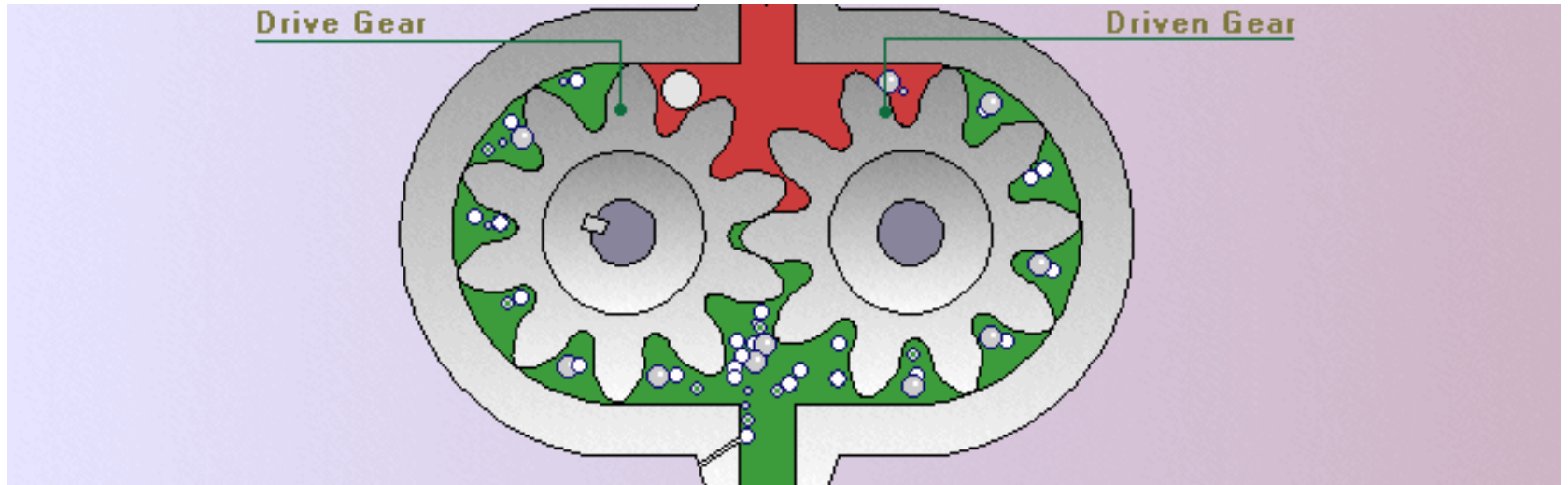
Pompanın Emiř Hattına Hava Girmesi

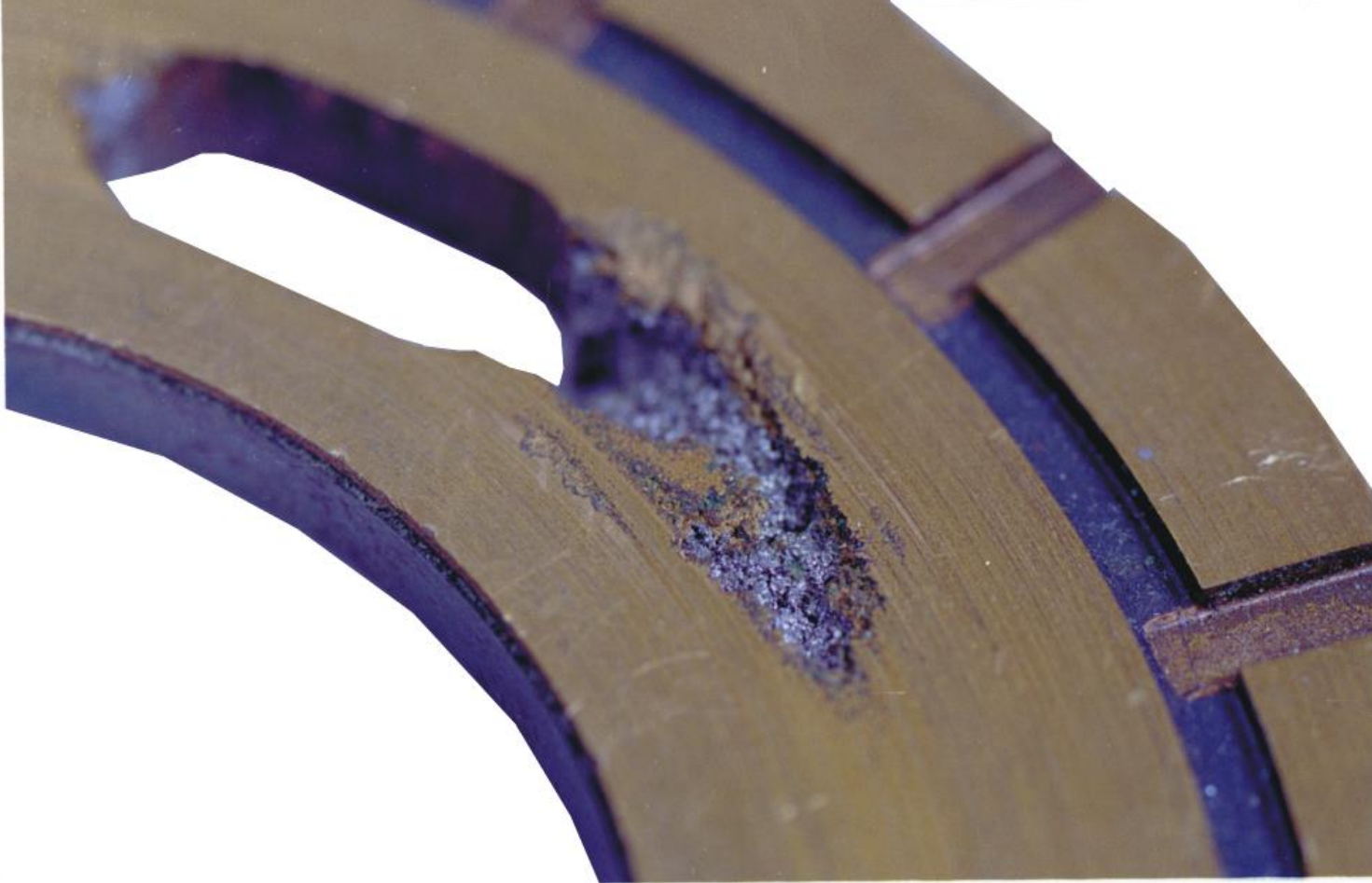


POMPANIN EMİŞ HATTINA HAVA GİRMESİ



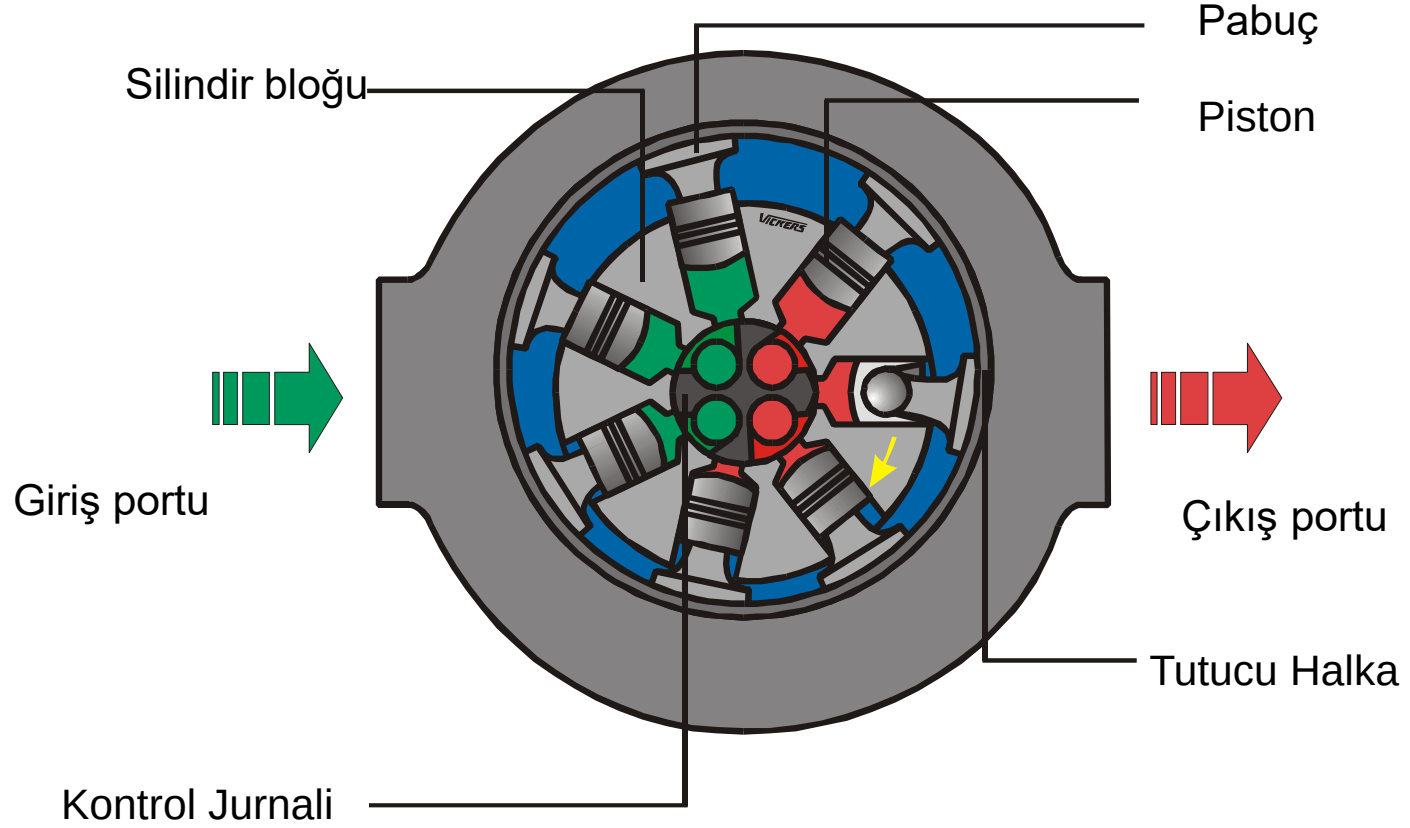
POMPANIN EMİŞ HATTINA HAVA GİRMESİ



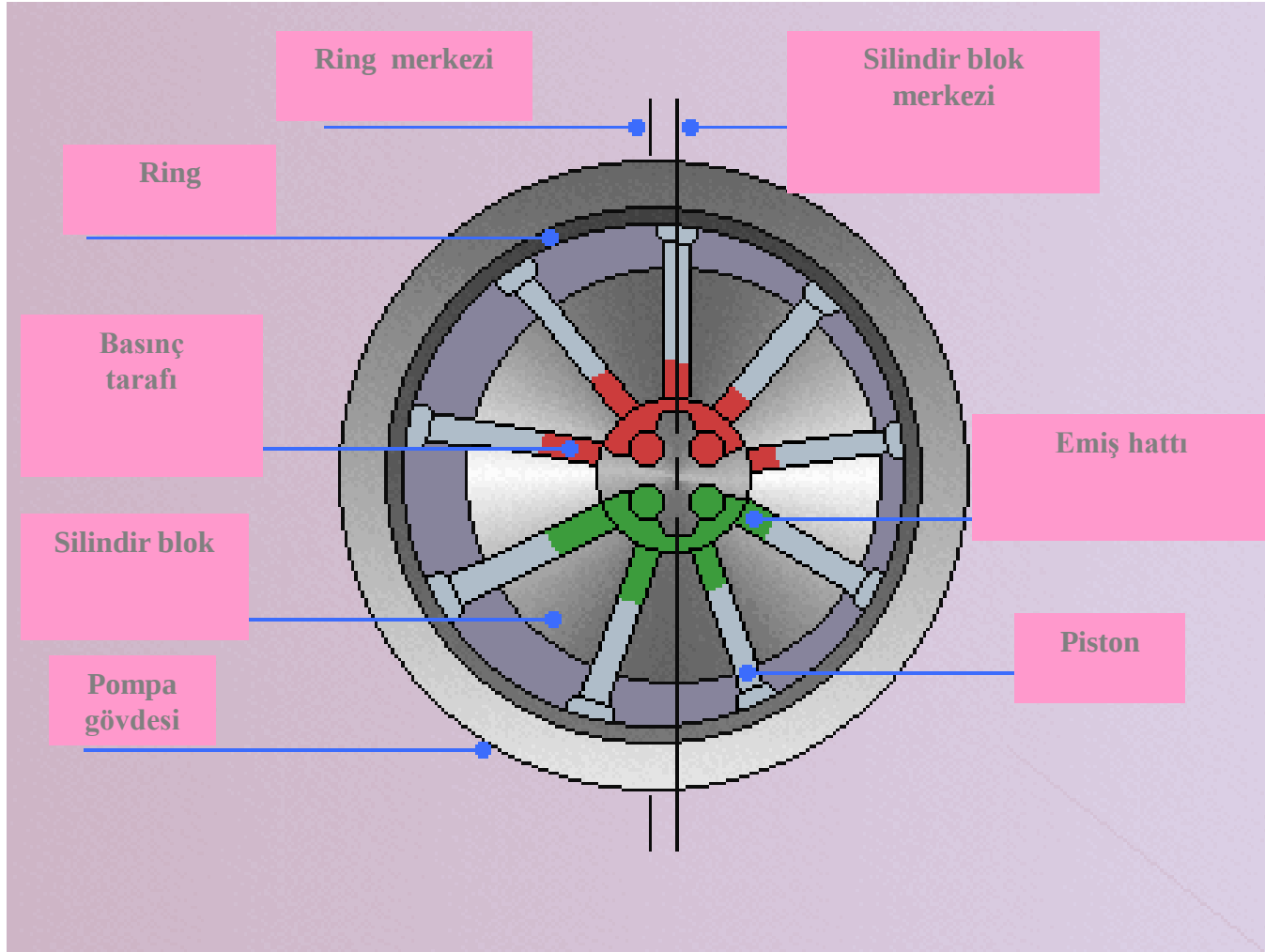


Hava alma ya da kavitasyon nedeniyle oluşan pistonlu pompa valf plakası aşınması

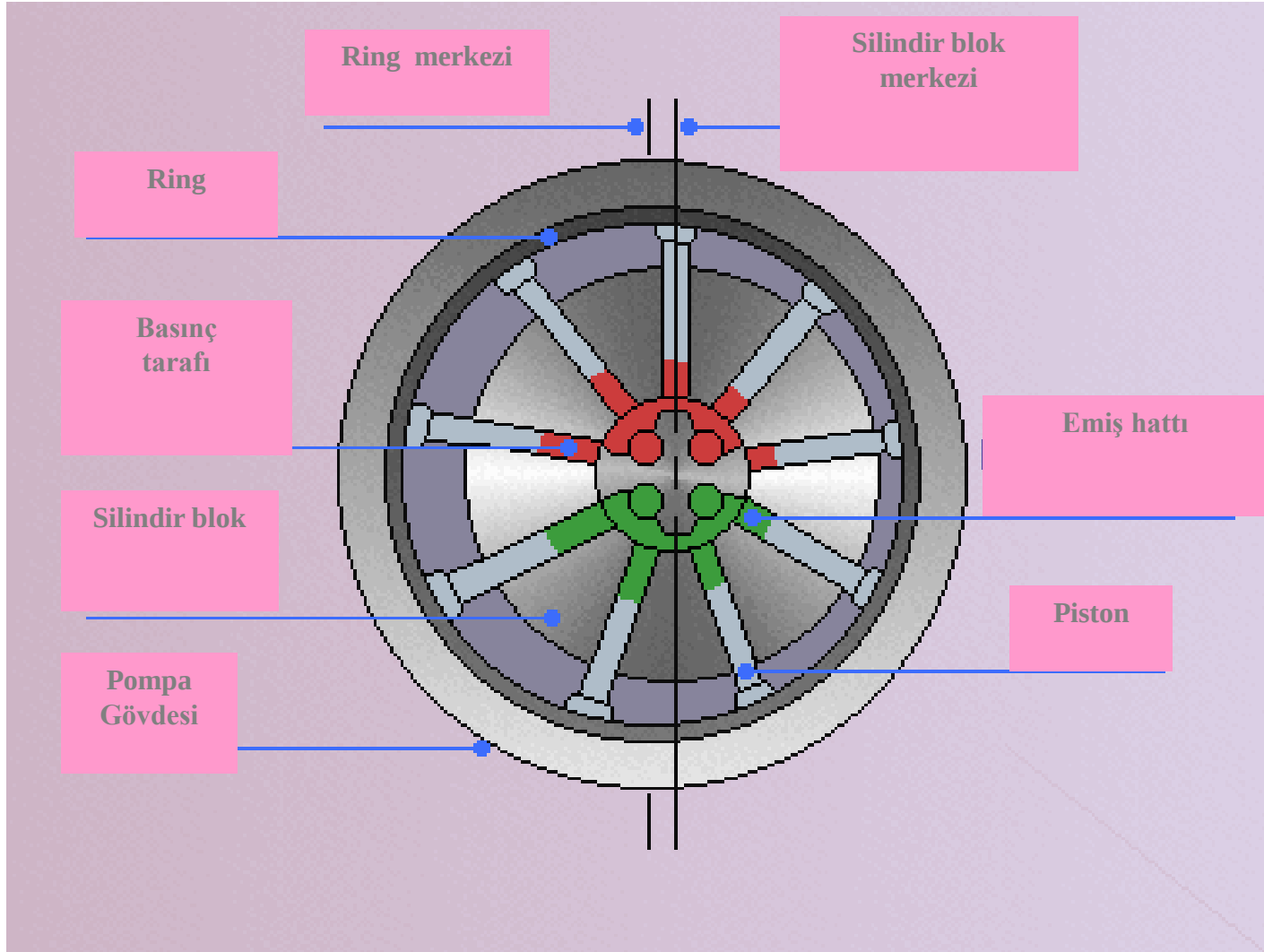
RADYAL PİSTONLU POMPA



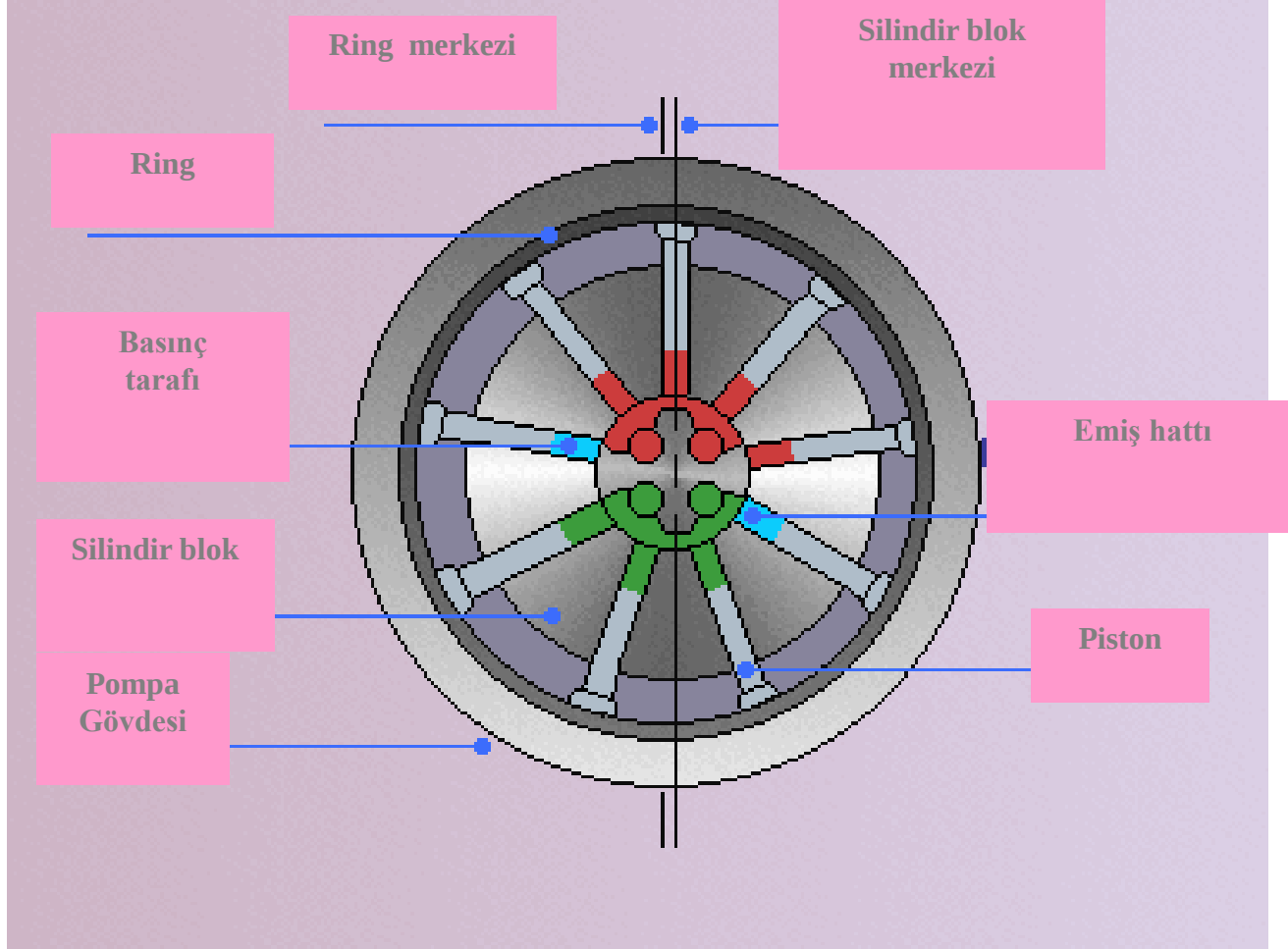
RADYAL PİSTONLU POMPA



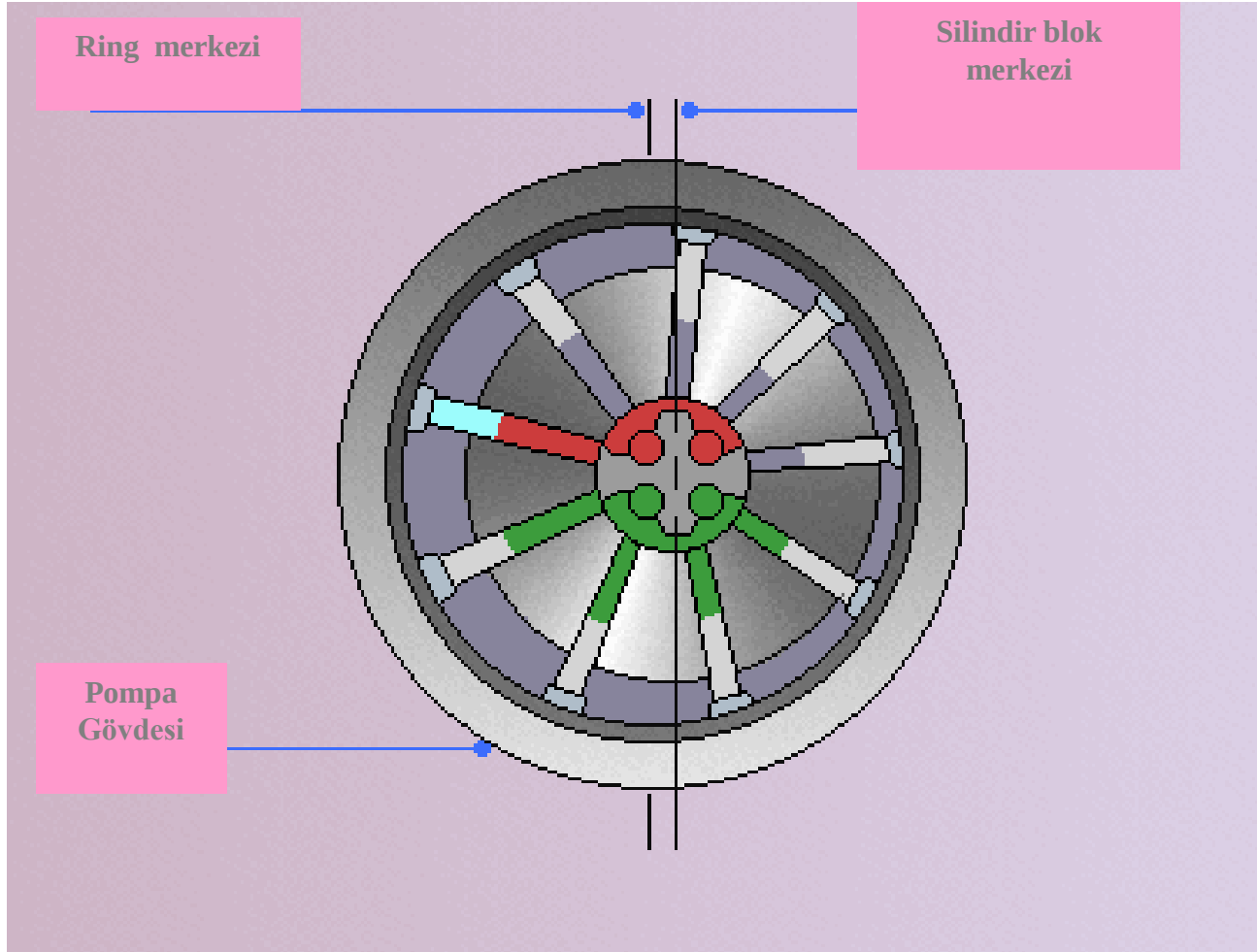
RADYAL PİSTONLU POMPA



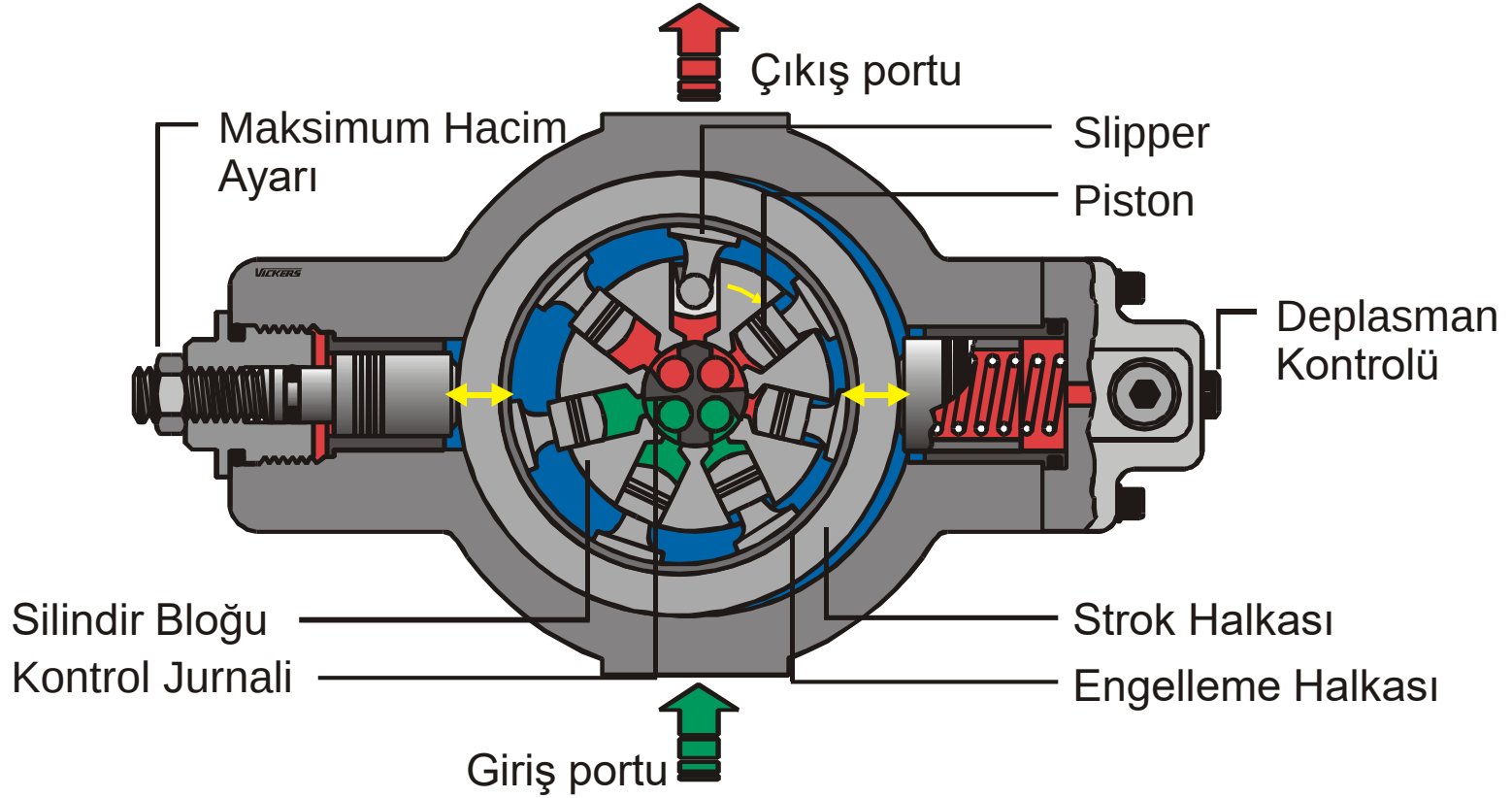
RADYAL PİSTONLU POMPA

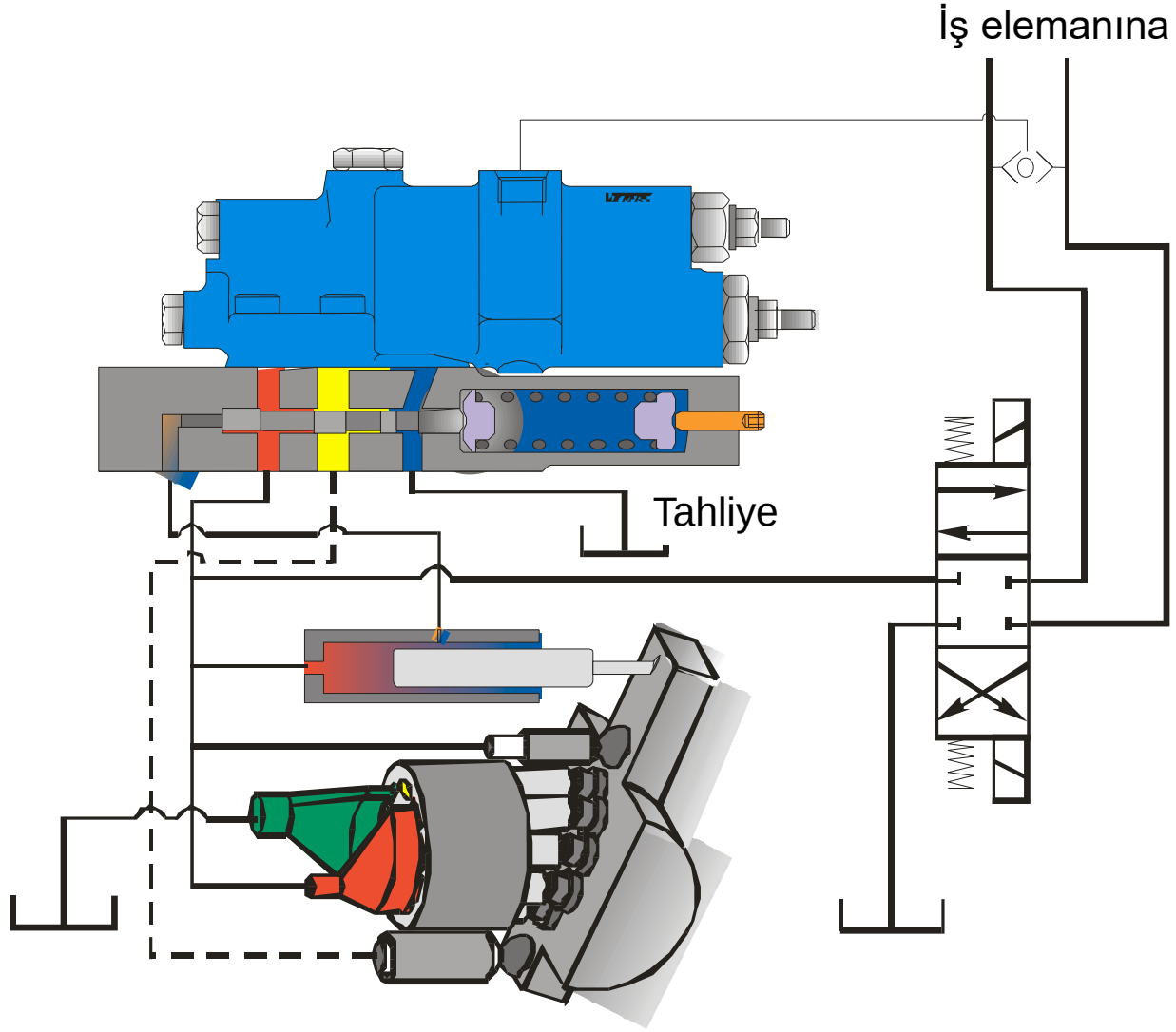


RADYAL PİSTONLU POMPA



DEĞİŞKEN DEPLASMANLI RADYAL PİSTONLU POMPA





Tork limitleyici dengeleme operasyonu