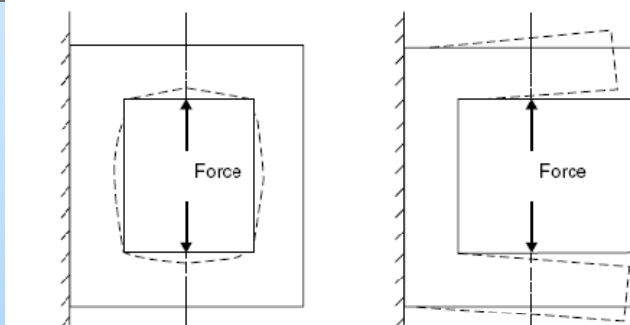


TAKIM TEZGAHLARI

0654332 TAKIM TEZGAHLARI

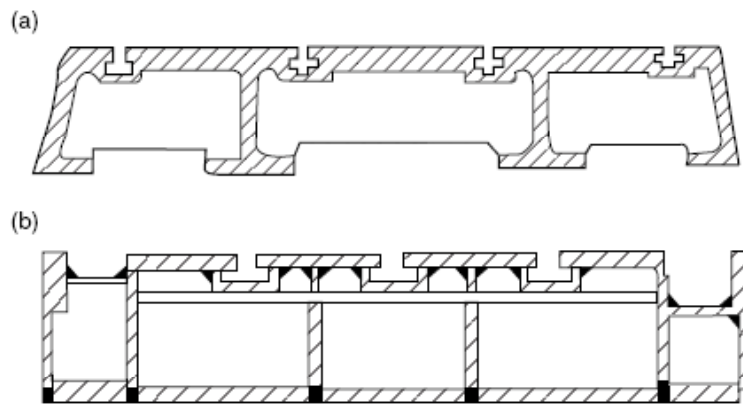
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Deformation in open and closed frames.

0654332 TAKIM TEZGAHLARI

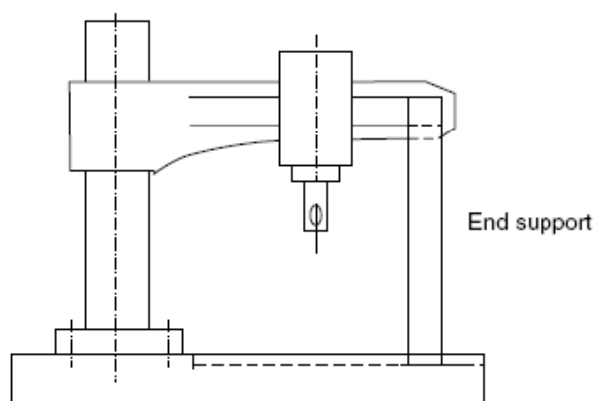
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Cast and fabricated structures: (a) cast and (b) welded machine tool bases.

0654332 TAKIM TEZGAHLARI

3

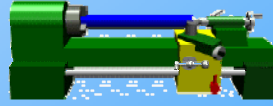


Radial drilling machine with end support.

0654332 TAKIM TEZGAHLARI

4

Torna Tezgahı



0654332 TAKIM TEZGAHLARI

5

TORNA TEZGAHLARI

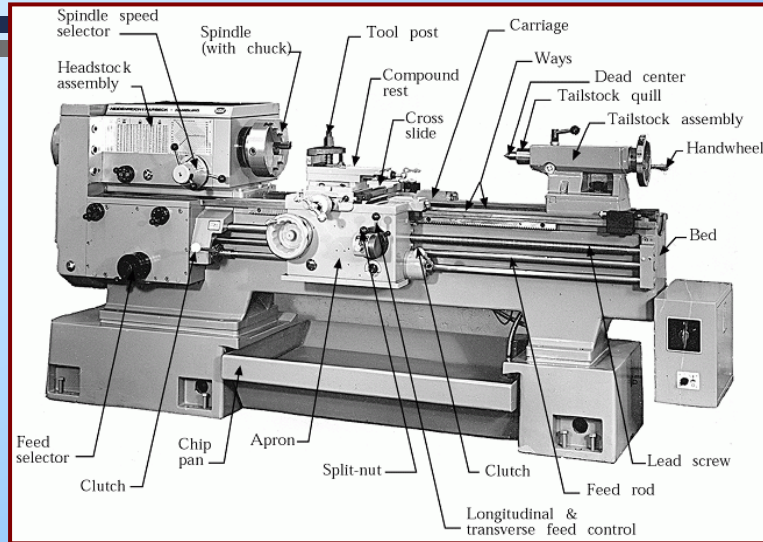
- Üniversal Torna Tezgahları
- Revolver Torna Tezgahları
- Otomat Torna Tezgahları
- Diğer Torna Tezgahları
 - CNC Torna Tezgahları
 - Düşey İş Milli Torna Tezgahları
 - Plan Torna Tezgahları
 - Kopya Torna Tezgahları
 - Ağır İş Torna Tezgahları
 - Masa Üstü Torna Tezgahları



0654332 TAKIM TEZGAHLARI

6

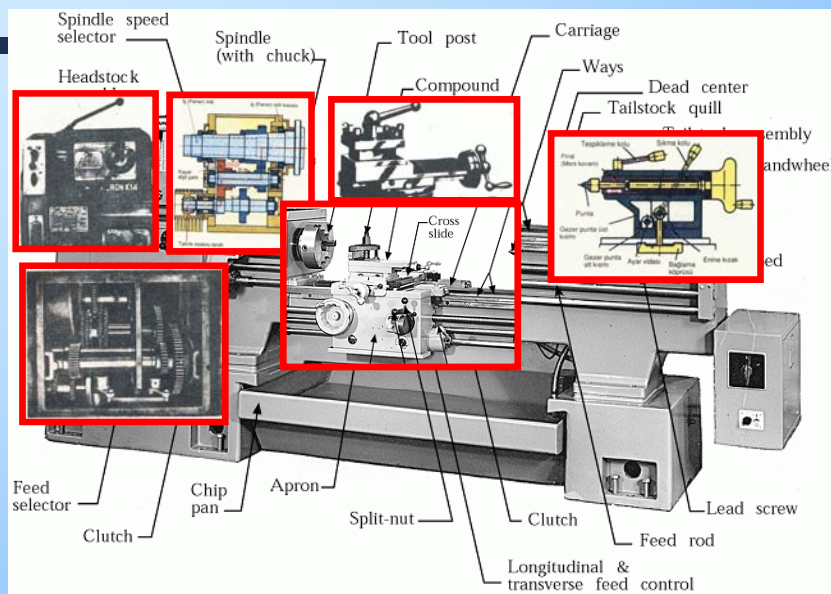
Üniversal Torna Tezgahı



0654332 TAKIM TEZGAHLARI

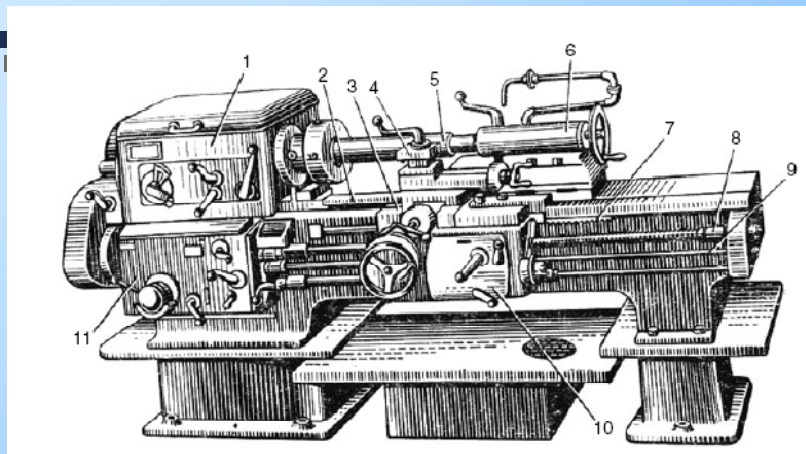
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TORNA TEZGAHININ ANA KISIMLARI



0654332 TAKIM TEZGAHLARI

8



0654332 TAKIM TEZGAHLARI

9

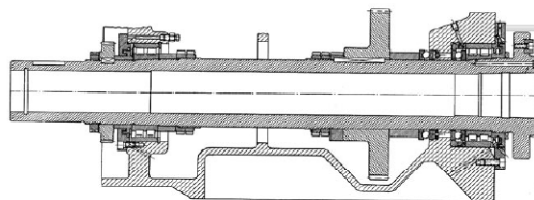


FIGURE 2.23 Typical machine tool spindle. (From Koenigsberger, F., *Berechnungen, Konstruktionsgrundlagen und Bauelemente spanender Werkzeugmaschinen*, Springer, Berlin, 1961. With permission.)

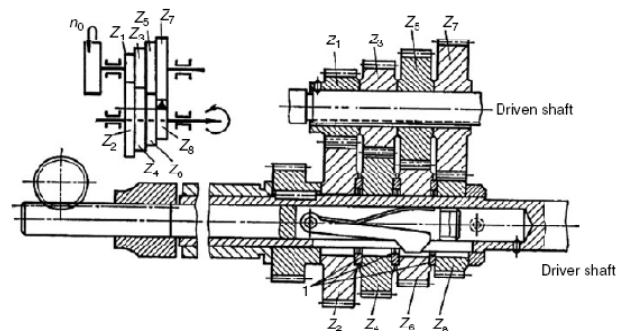


FIGURE 2.36 Feed gearbox with sliding gears.

0654332 TAKIM TEZGAHLARI

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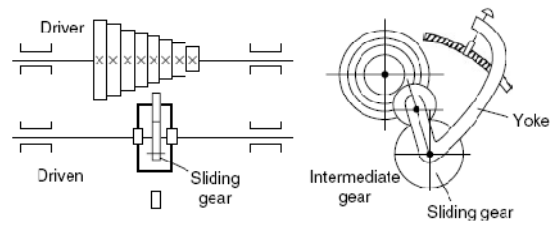
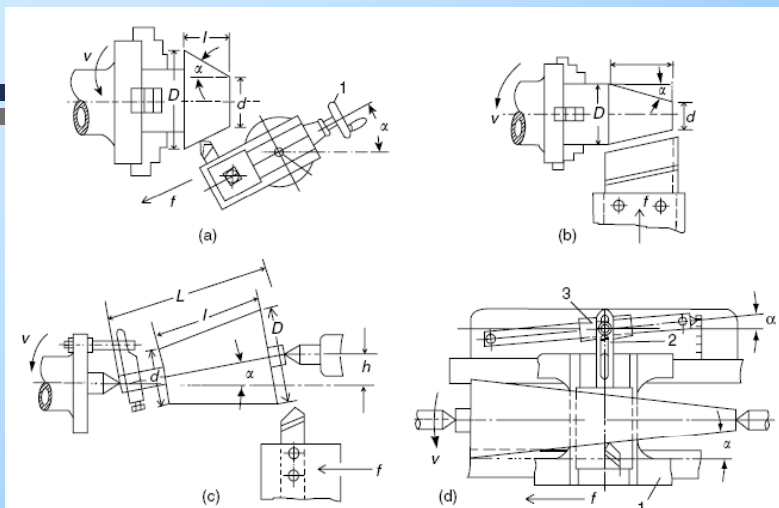
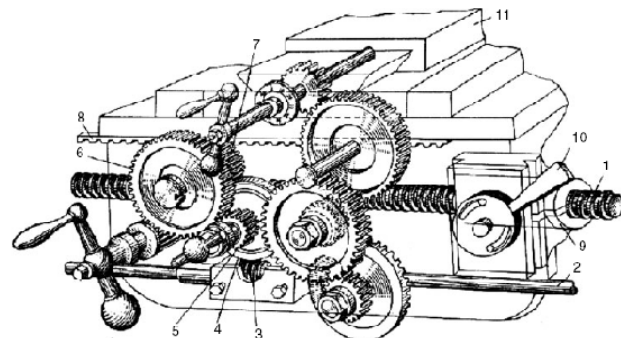


FIGURE 2.37 Norton gearbox.



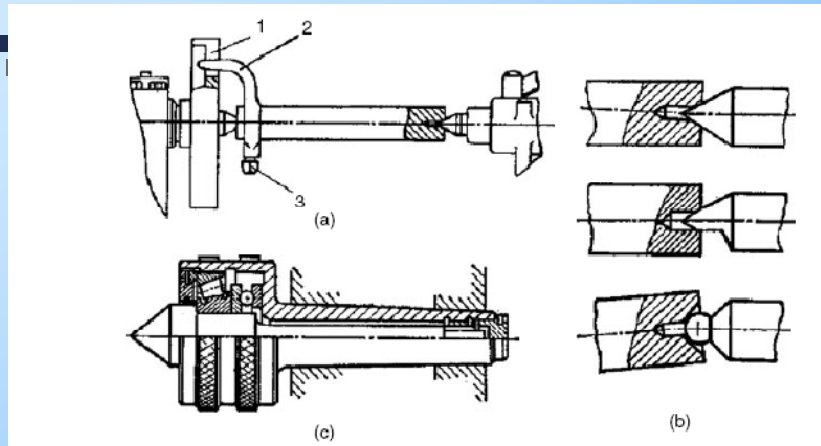


FIGURE 3.8 Holding the work between centers: (a) Dog plate, (b) dead centers, (c) live centers.

0654332 TAKIM TEZGAHLARI

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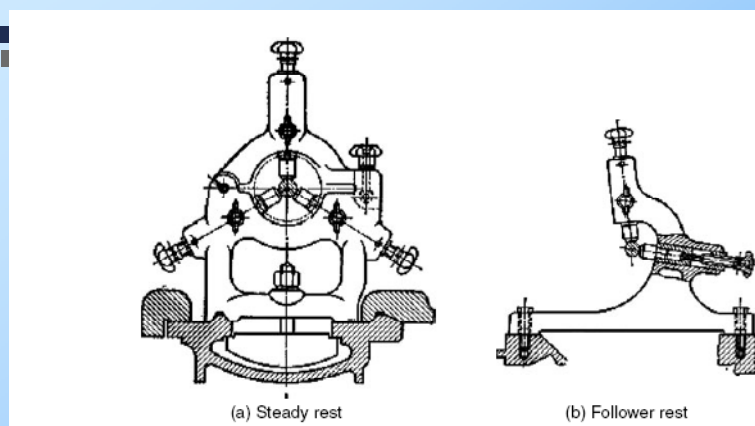
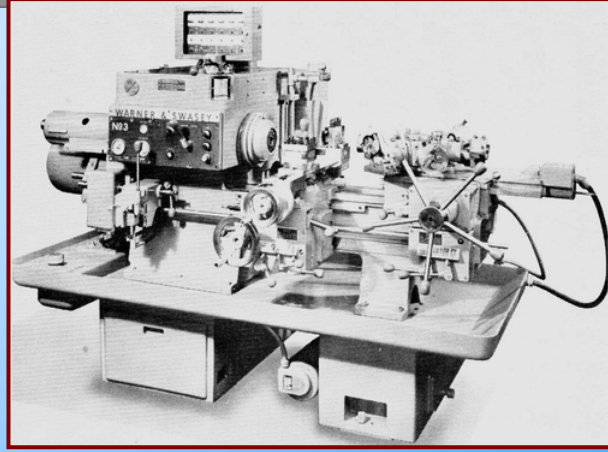


FIGURE 3.9 Steady and follower rest of an engine lathe.

0654332 TAKIM TEZGAHLARI

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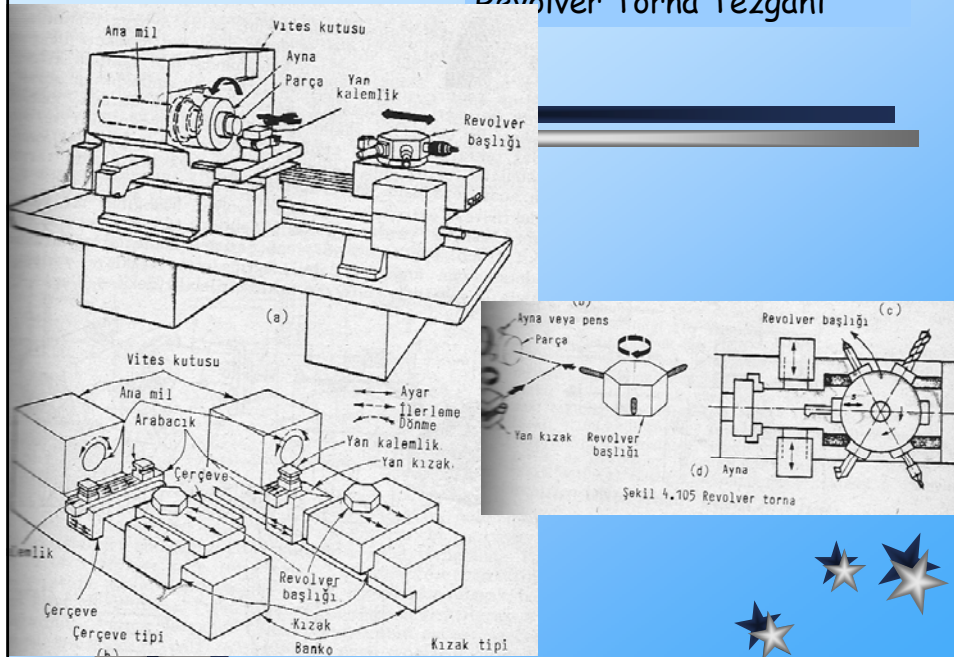
Revolver Torna Tezgahı



0654332 TAKIM TEZGAHLARI

15

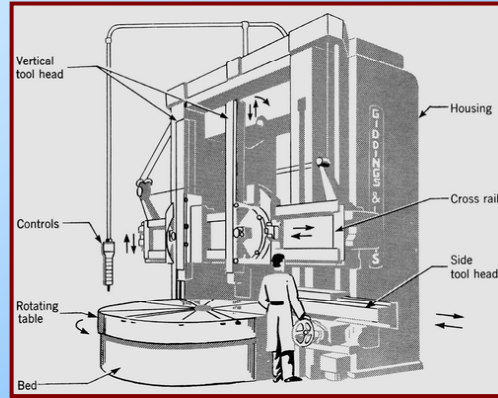
Revolver Torna Tezgahı



0654332 TAKIM TEZGAHLARI

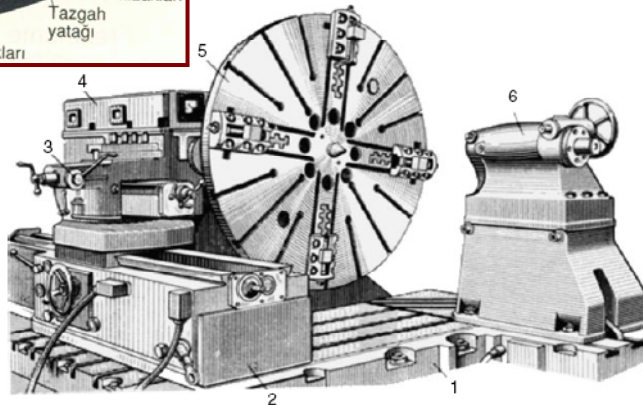
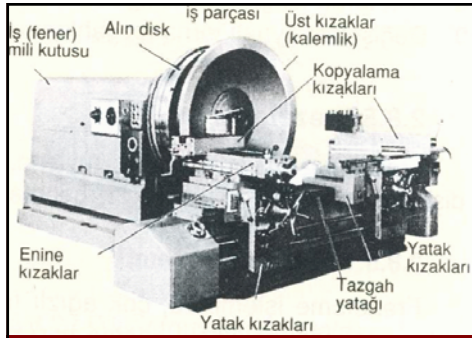
16

Düşey İş Milli Torna Tezgahı



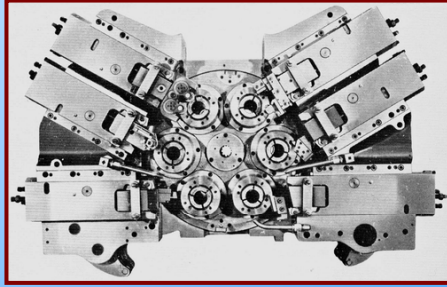
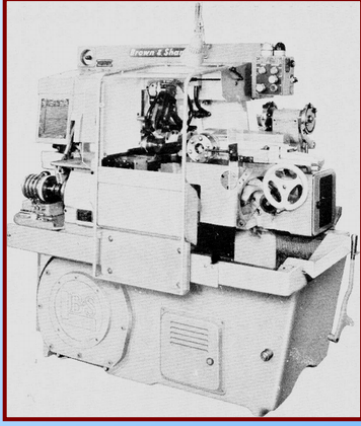
0654332 TAKIM TEZGAHLARI

17



14 Facing lathe.

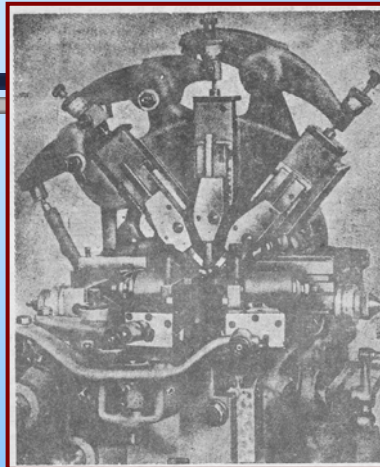
Otomat Torna Tezgahı



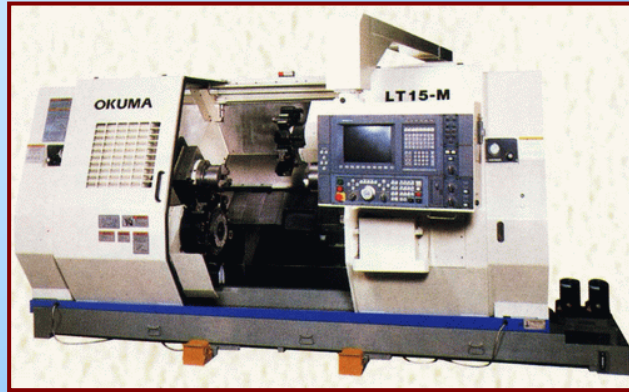
0654332 TAKIM TEZGAHLARI

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Otomat Torna Tezgahı



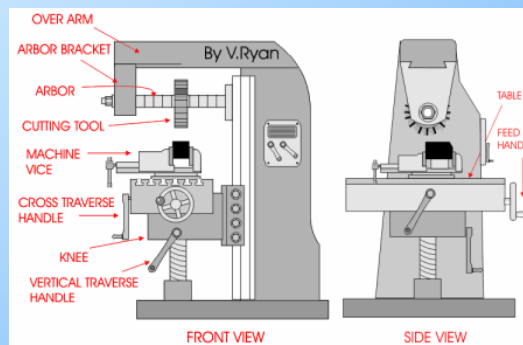
CNC Torna Tezgahı



0654332 TAKIM TEZGAHLARI

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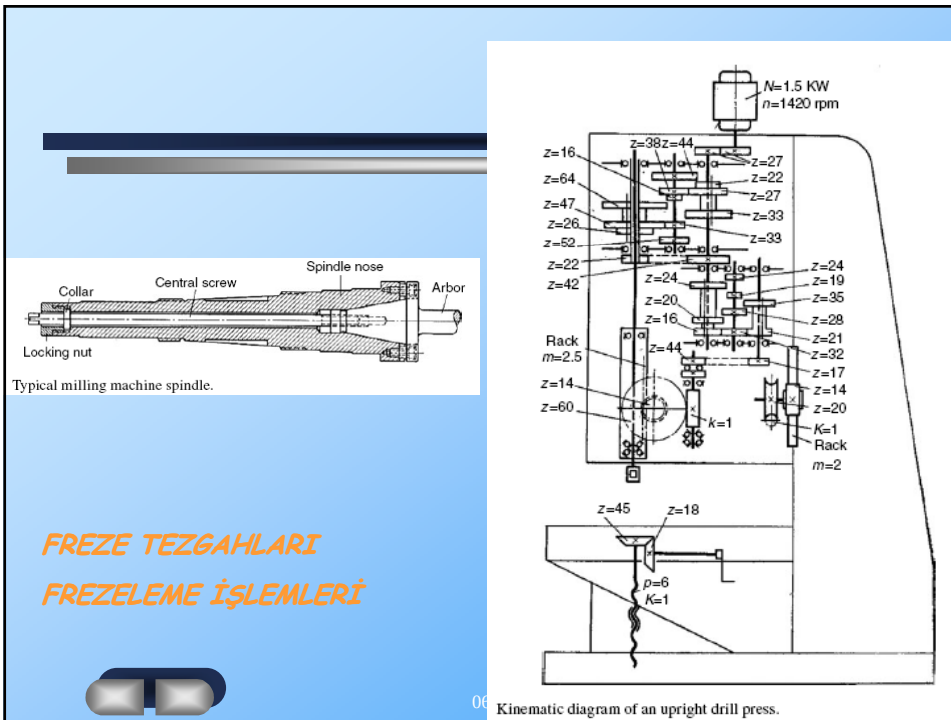
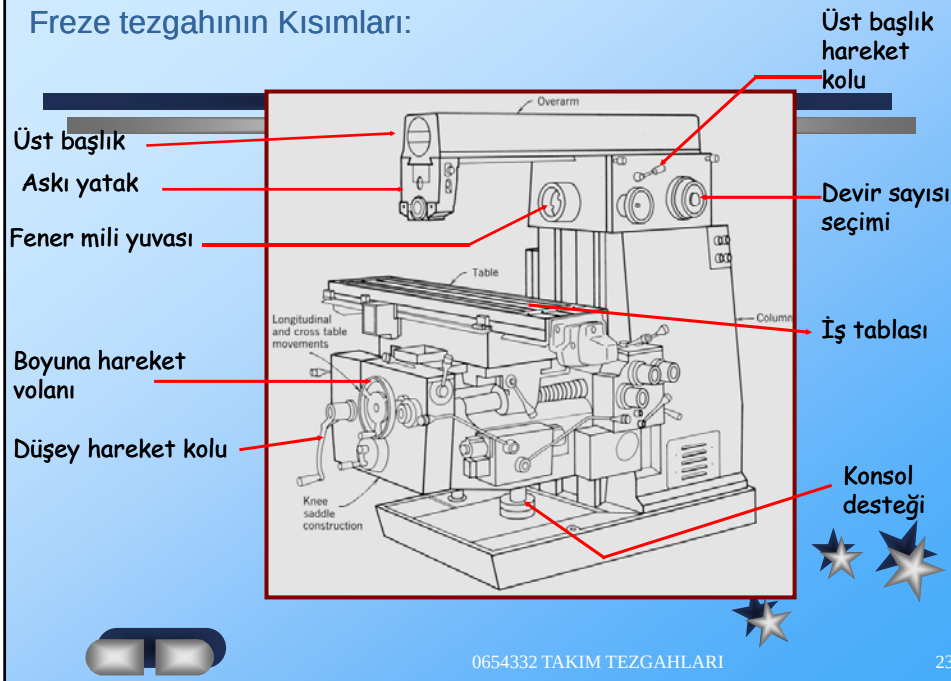
FREZE TEZGAHLARI FREZELEME İŞLEMLERİ



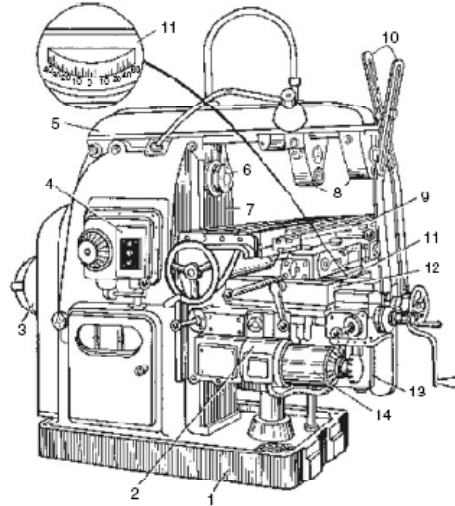
0654332 TAKIM TEZGAHLARI

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Freze tezgahının Kısımları:



FREZE TEZGAHLARI FREZELEME İŞLEMLERİ



Universal horizontal-spindle milling machine.

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FREZE TEZGAHLARI FREZELEME İŞLEMLERİ

Figure 3.42 visualizes the main parts of the horizontal universal milling machine. These are Base (1), column (7), knee (13), saddle (12), table swivel plate with graduation (11), worktable (9), overarm (5), holding bearing bracket (8), main motor (3), spindle (6), speed gearbox (4), feed gearbox (2), feed control mechanism (14), braces (10) to link the overarm with the knee for high-rigidity requirements in heavy-duty milling machines.

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FREZE TEZGAHLARI FREZELEME İŞLEMLERİ

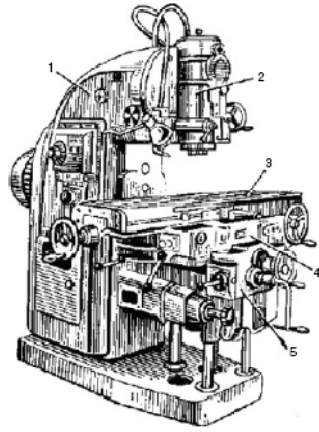


FIGURE 3.43 Vertical milling machine.

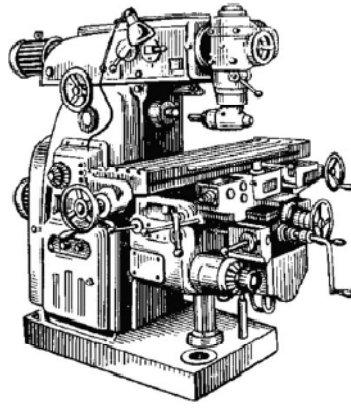
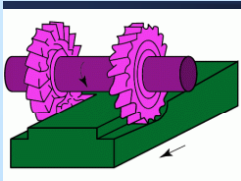


FIGURE 3.44 Ram-head milling machine.

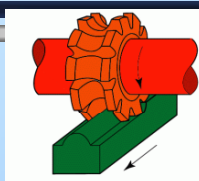
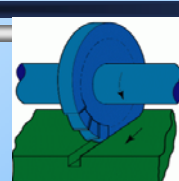
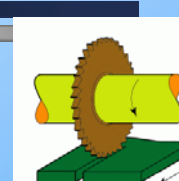
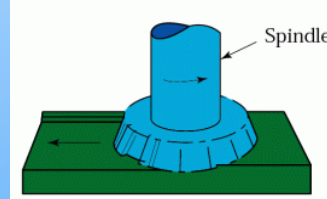
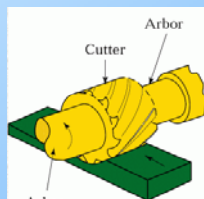
0654332 TAKIM TEZGAHLARI

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Freze Tezgahında Yapılabilen İşlem Örnekleri



Çift Frezeleme

Profil
FrezelemeKanal
FrezelemeTestere
Frezeleme

Düzlem Yüzey Frezeleme

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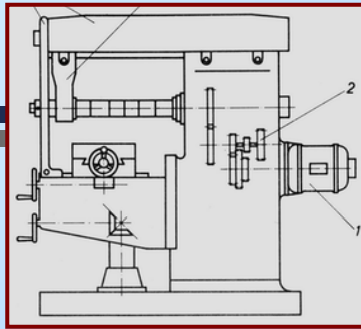
FREZE TEZGAHLARI

- Üniversal Freze Tezgahları
- Yatay Freze Tezgahları
- Dikey Freze Tezgahları
- Çift Sütunlu Freze Tezgahları
- Kopya Freze Tezgahları
- Döner Tablalı Freze Tezgahları
- CNC Freze Tezgahları



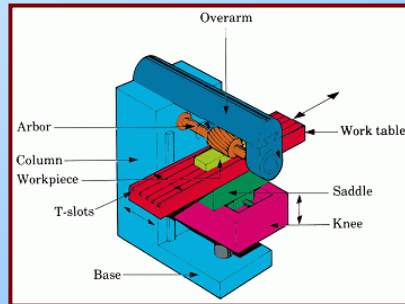
0654332 TAKIM TEZGAHLARI

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Yatay Freze Tezgahı

Freze çakısının bağlandığı tezgah mili ile iş tablası birbirine paralel olan tezgahlardır.

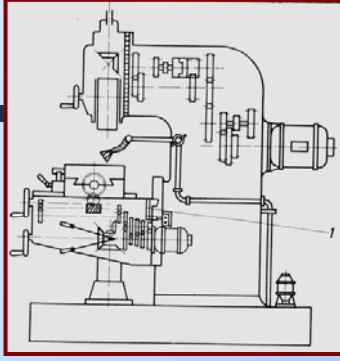


- Düzlem yüzey frezeleme
- Dişli açma
- Helisel kanal açma



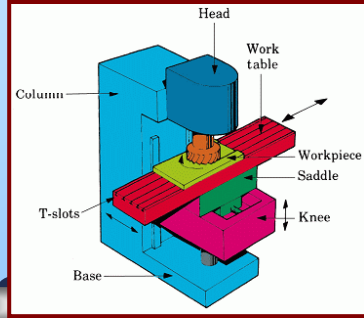
0654332 TAKIM TEZGAHLARI

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Dik Freze Tezgahı

Freze çakısının bağlandığı tezgah milinin iş tablasına dik olan freze tezgahlardır.



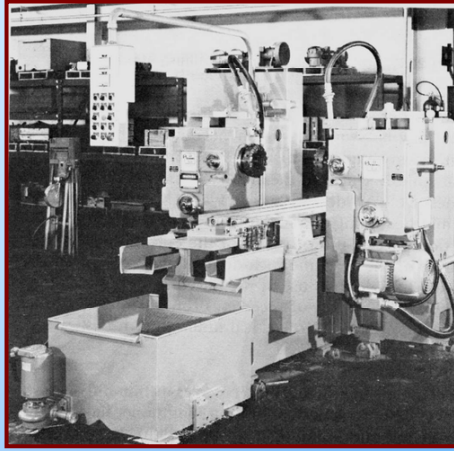
- Düzlem yüzey frezeleme
- Delik ve Kanal frezeleme
- Kama kanalı açma(Yardımcı aparatla)



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Çift Sütunlu Freze Tezgahı



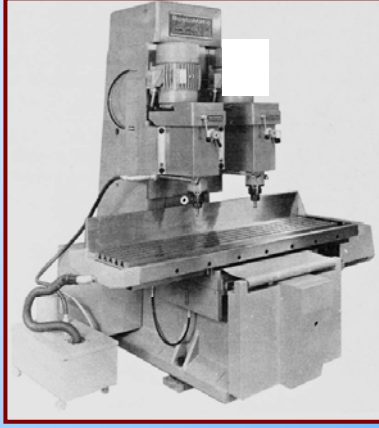
Aynı anda iş parçasının iki farklı yüzeyinden talaş kaldırabilen çift fener miline sahip freze tezgahlarıdır.



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Kopya Freze Tezgahı



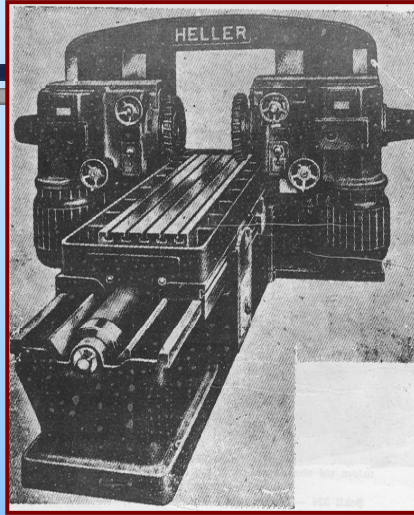
Hazırlanan bir şablon üzerindeki profili iş parçasına aktarmak için kullanılan freze tezgahlarıdır. Daha çok kalıp imalat sanayinde kullanılmaktadır.



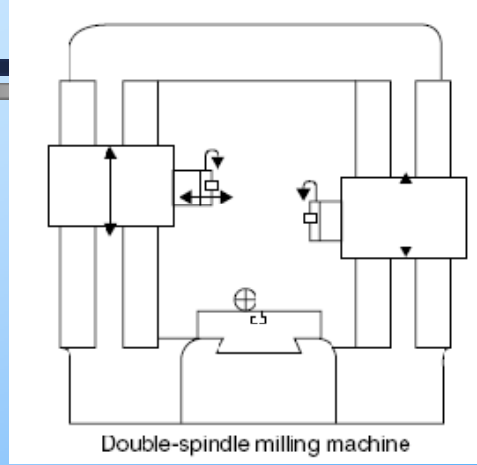
0654332 TAKIM TEZGAHLARI

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Vargel Tipi Freze Tezgahı



Vargel Tipi Freze Tezgahı

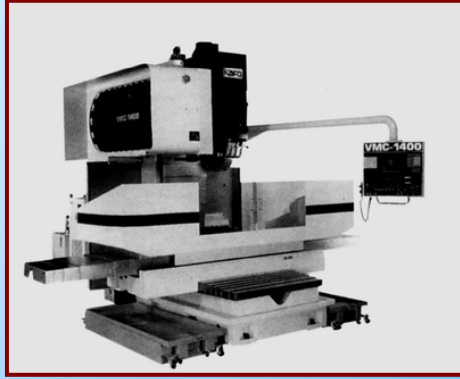


Döner Tablalı Freze Tezgahı



360 derece dönen iş tablası sayesinde delik büyütme ve bir merkez etrafında dairesel kanal açma işlemlerinde kullanılır.

CNC Freze Tezgahı



Bilgisayar kontrollü freze tezgahlarıdır. Bu tip tezgahları İşleme Merkezi olarak da adlandırılmaktadır.



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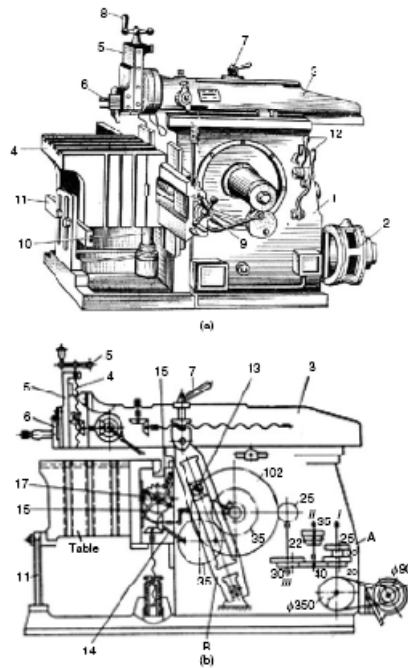


FIGURE 3.68 Typical mechanical shaper: (a) General view and (b) gearing diagram.

Planya - Vargel

Planya - Vargel

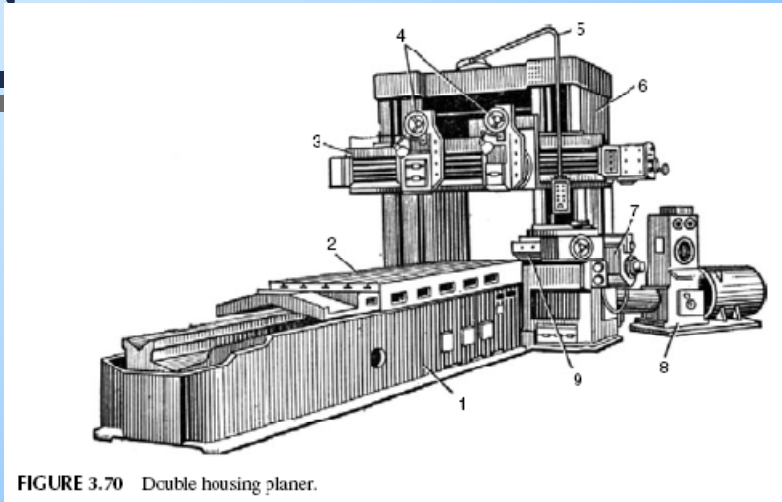


FIGURE 3.70 Double housing planer.

Planya - Vargel

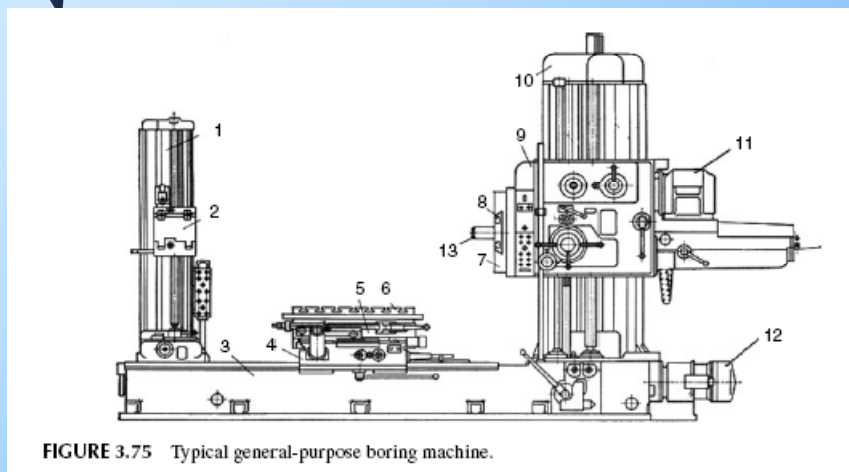
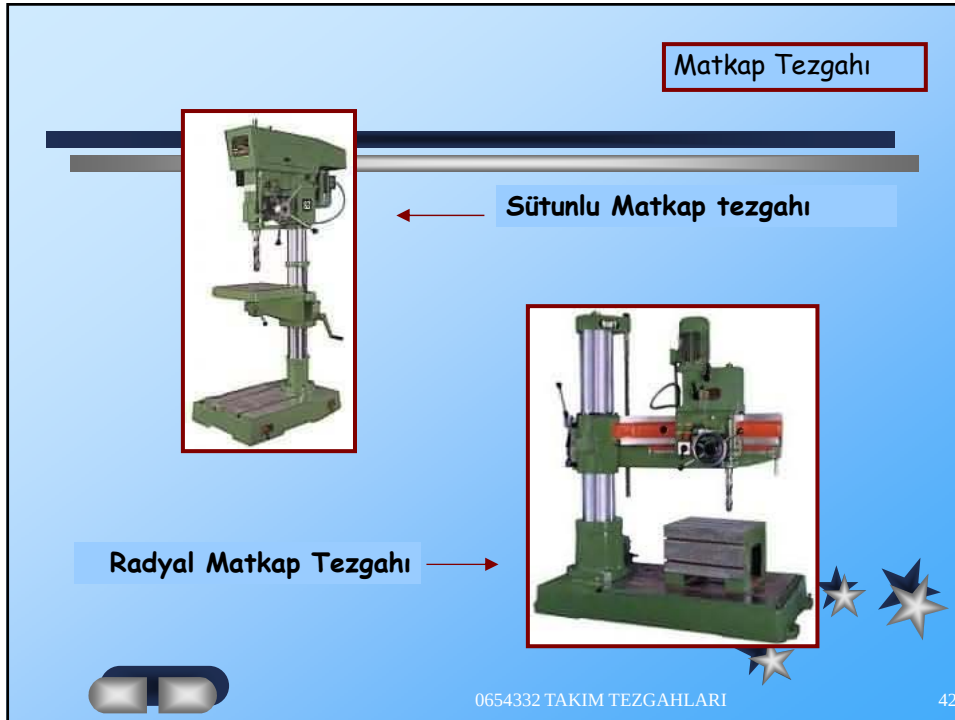
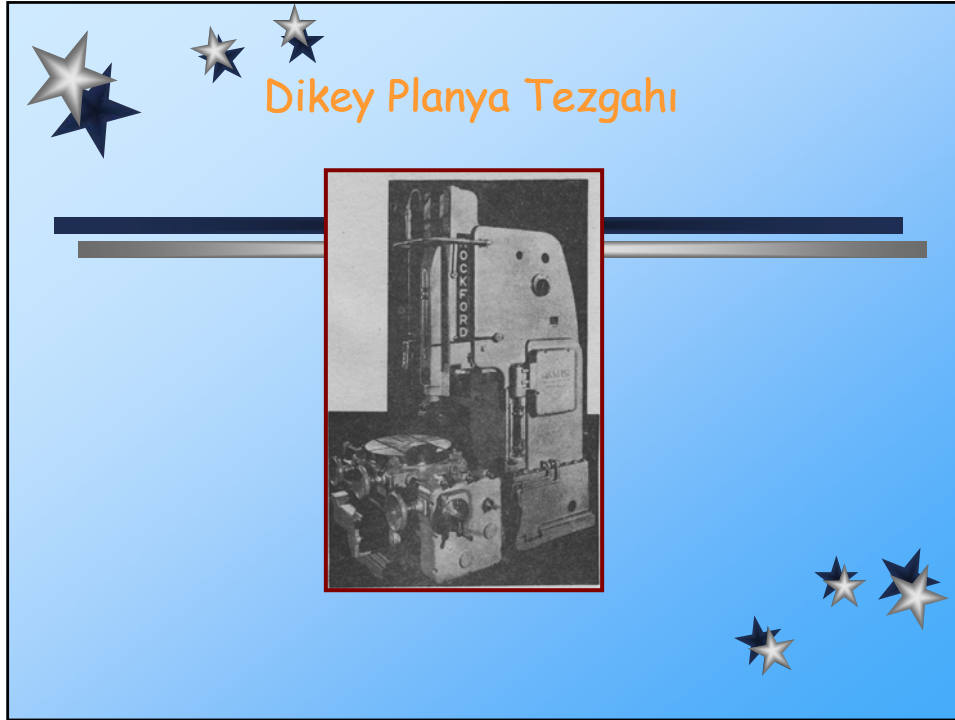
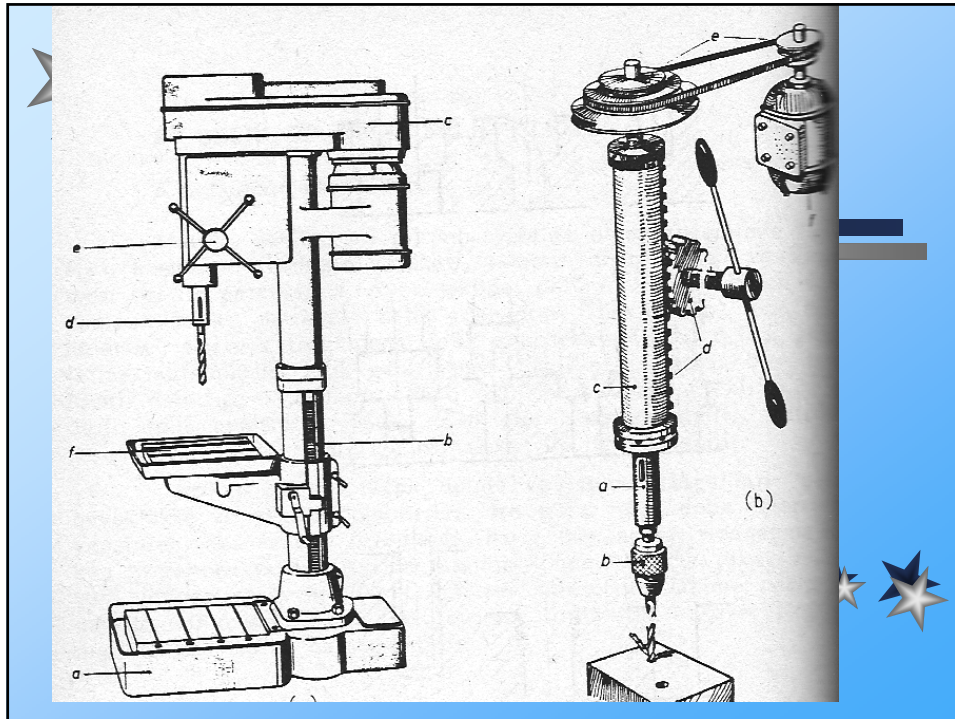
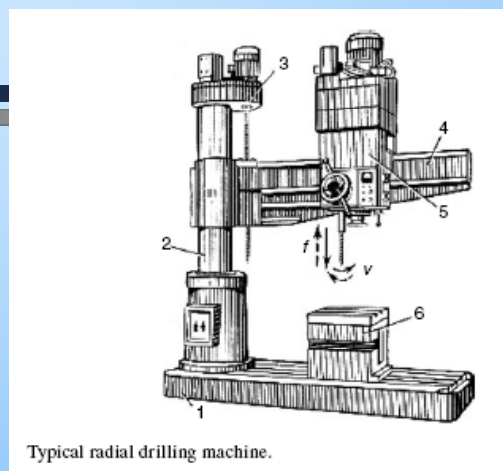


FIGURE 3.75 Typical general-purpose boring machine.



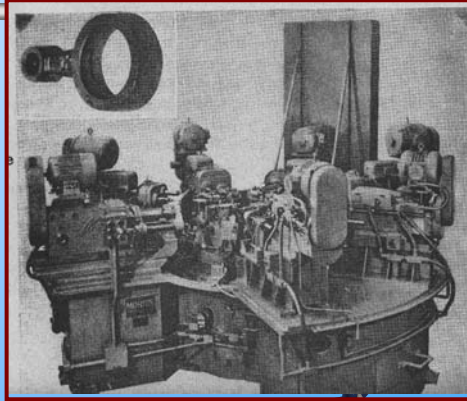
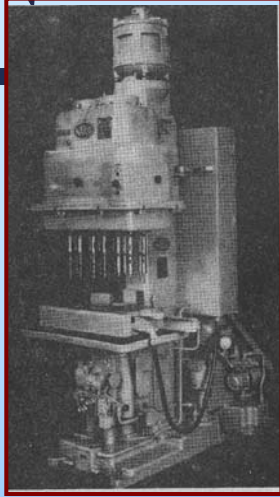


Delik İşleme Tezgahı

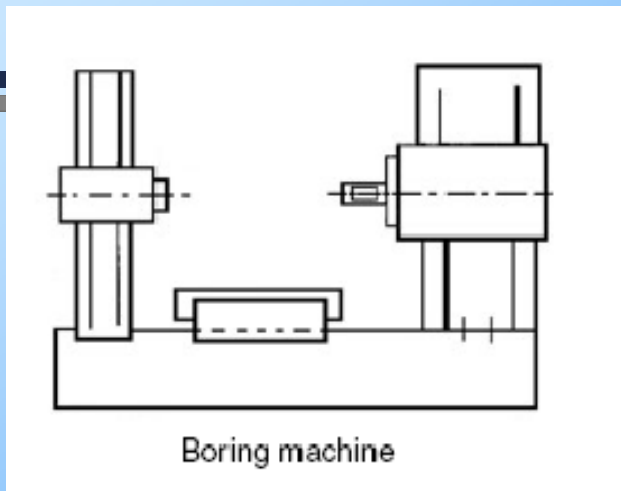


Typical radial drilling machine.

Delik İşleme Tezgahı

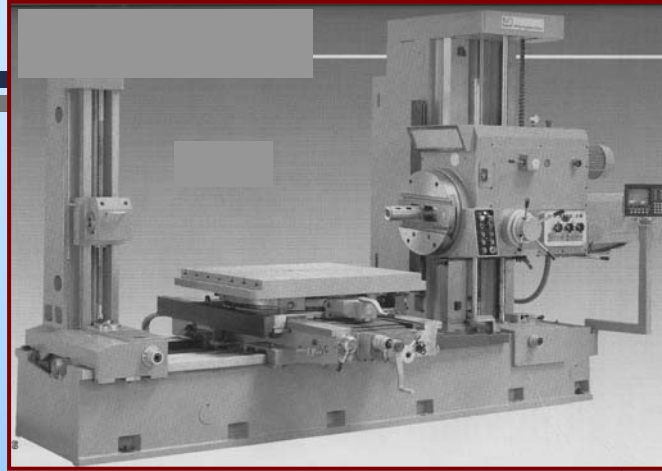


Borwerk Tezgahı

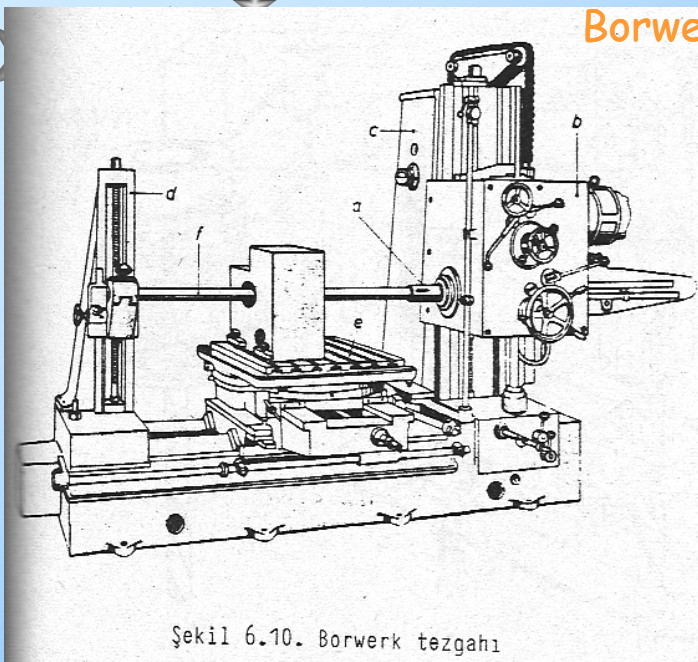


Boring machine

Borwerk Tezgahı

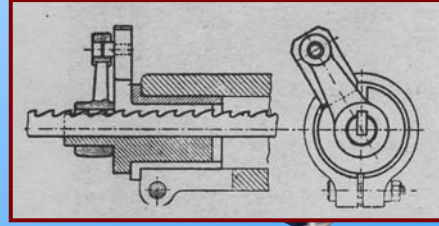
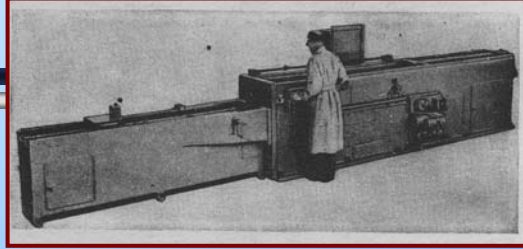
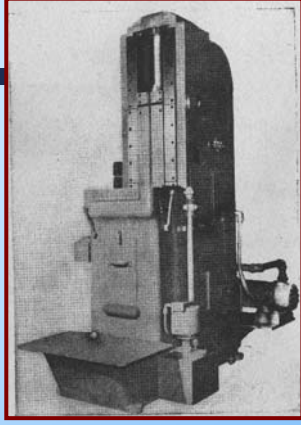


Borwerk Tezgahı

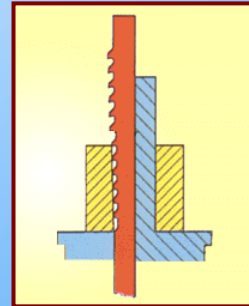
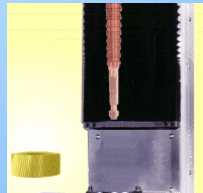
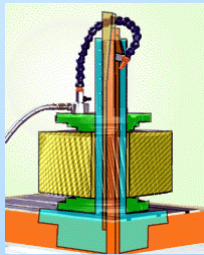


Şekil 6.10. Borwerk tezgahı

Broşlama Tezgahı



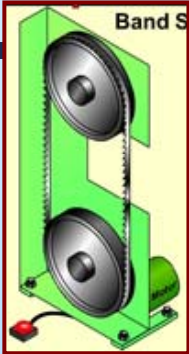
Broşlama Tezgahı



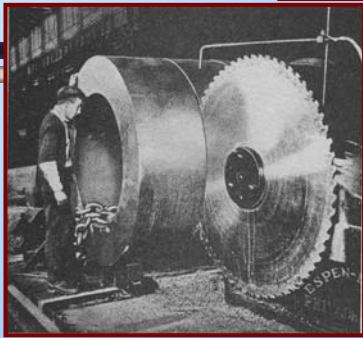
0654332 TAKIM TEZGAHLARI

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Testere Tezgahı



Şerit Testere





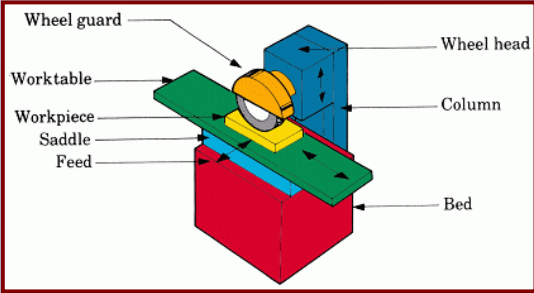
Daire Testere Tezgahı

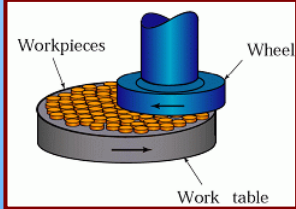


0654332 TAKIM TEZGAHLARI

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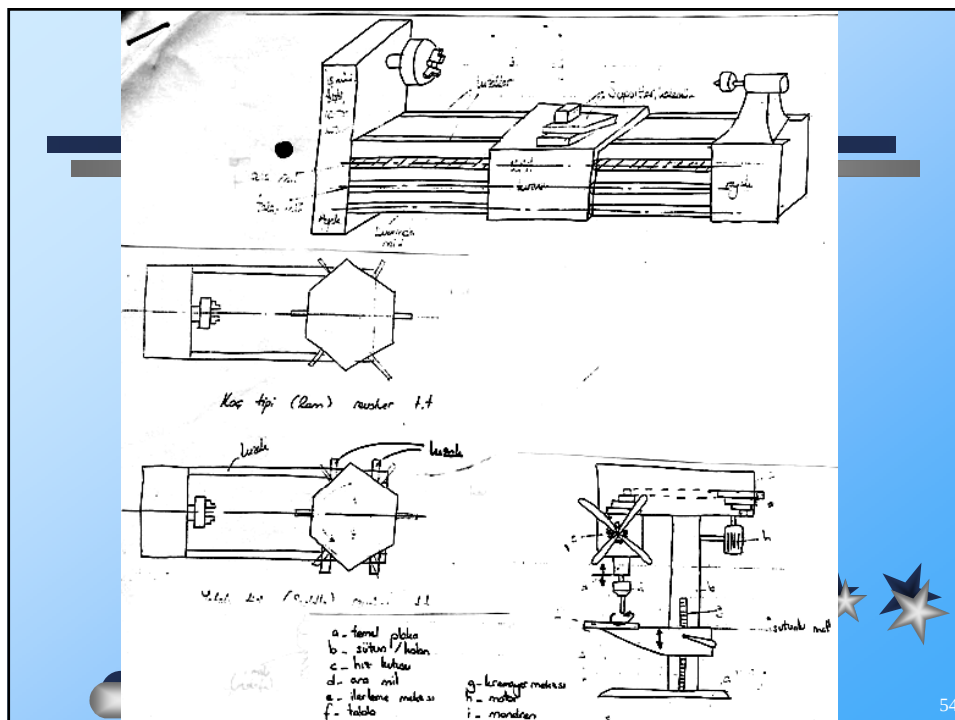
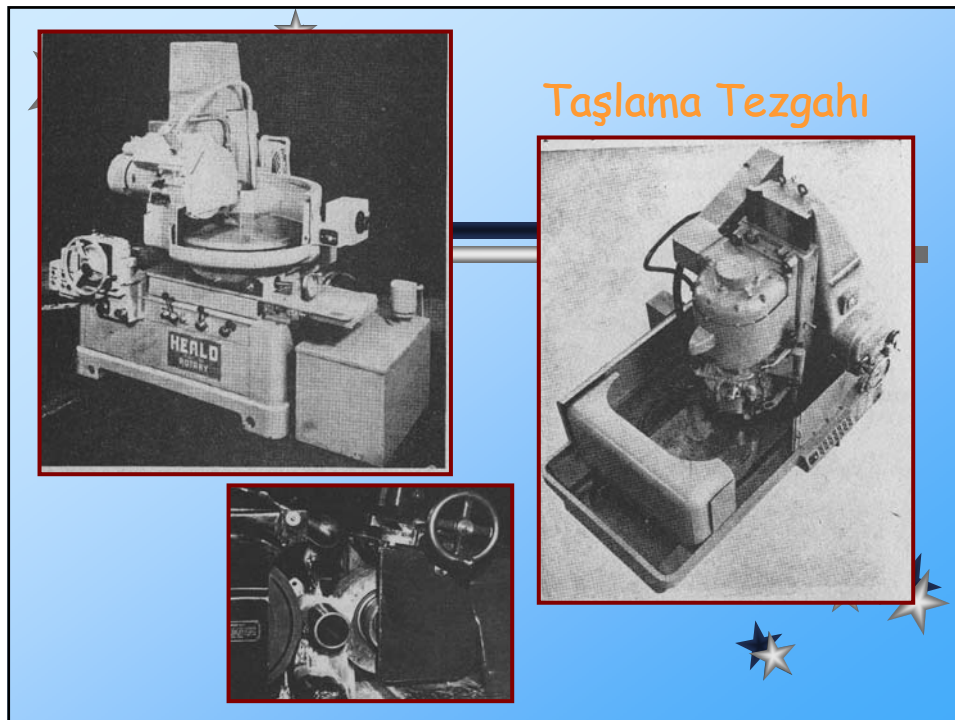
Taşlama Tezgahı

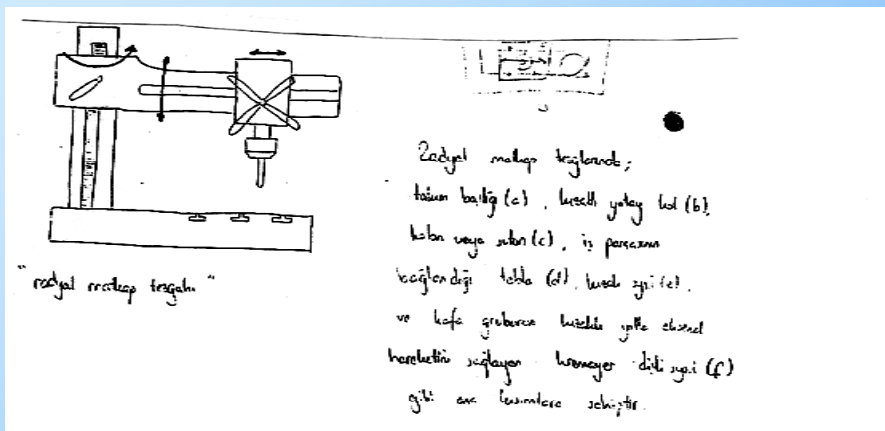




0654332 TAKIM TEZGAHLARI

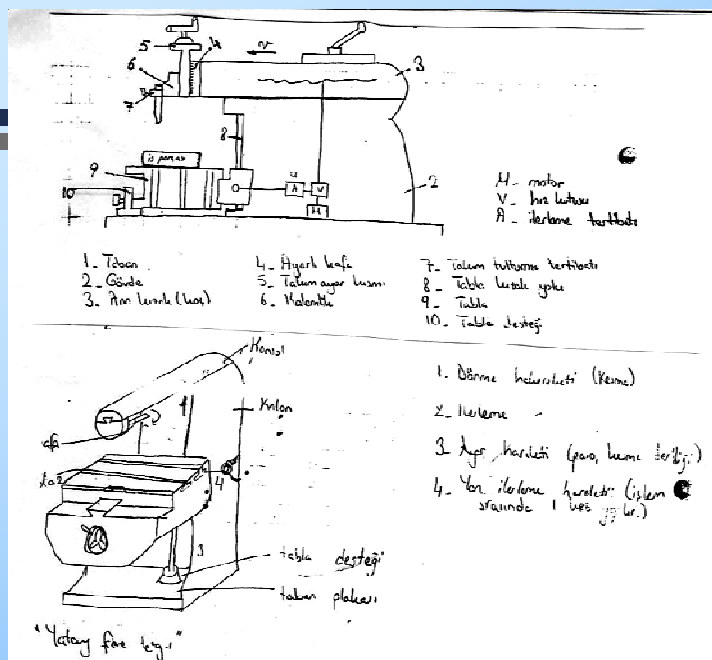
52





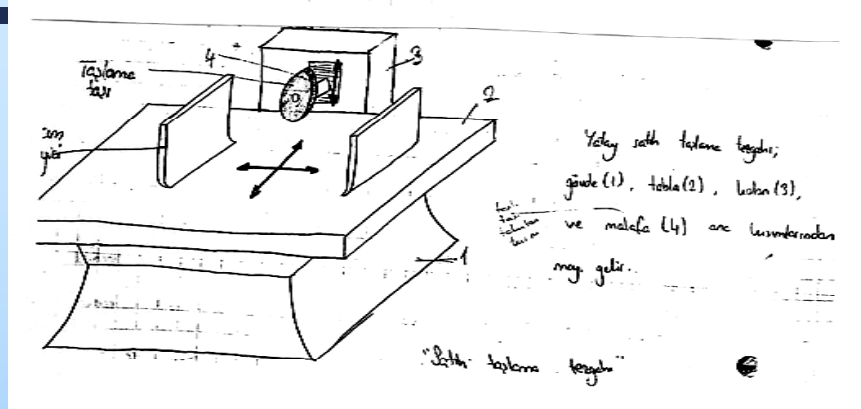
0654332 TAKIM TEZGAHLARI

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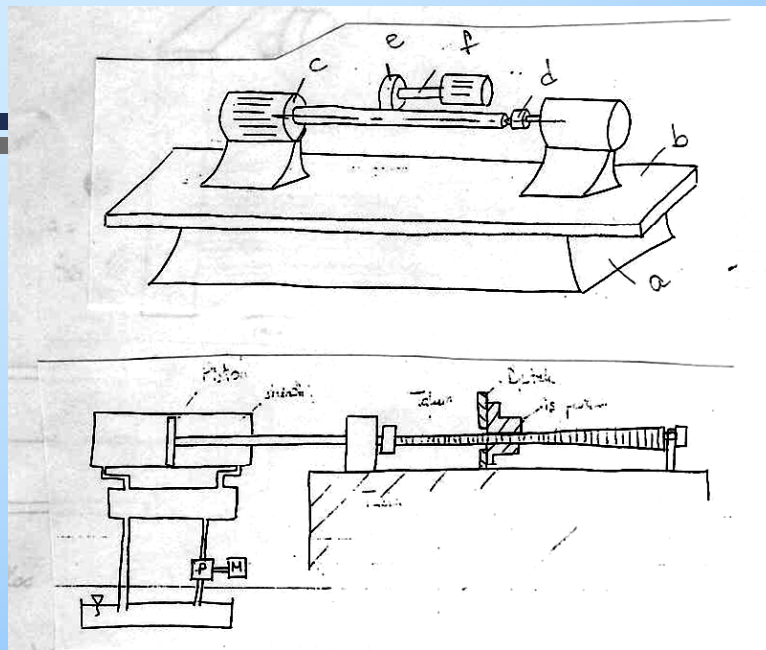
0654332 TAKIM TEZGAHLARI

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0654332 TAKIM TEZGAHLARI

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0654332 TAKIM TEZGAHLARI

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