

Vakuové ventily

Dělení podle různých principů

Podle funkčnosti

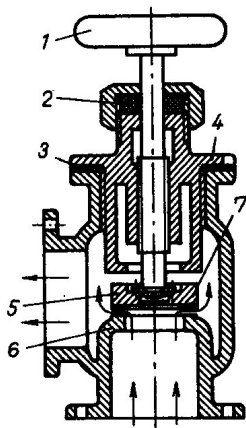
- oddělovací
- napouštěcí
- zavzdušňovací
- omezení čerpací rychlosti

Ovladání

- ruční
- pneumatický
- elektromagnetický

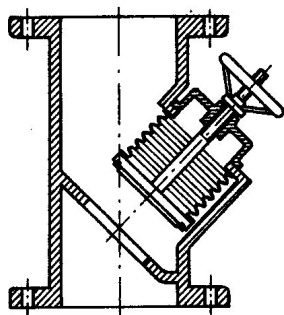
Oblast použití

- hrubé vakuum
- HV vakuum
- UHV, XHV vakuum

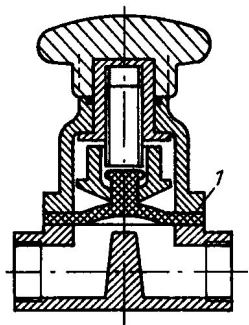


Obr. 6.27. Ventil s talířkem přitlačovaným šroubem

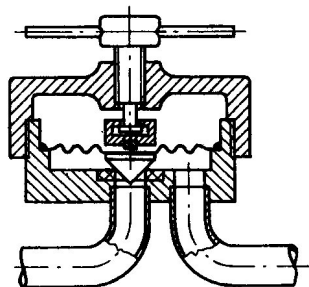
1 – rukojeť; 2 – těsnění; 3 – těsnící kroužek; 4 – horní příruba; 5 – talířek; 6 – dolní příruba; 7 – těsnění talířku



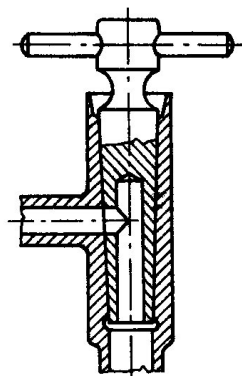
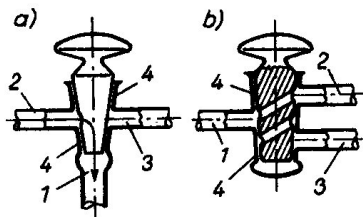
Obr. 6.28. Ventil těsněný vlnovcem

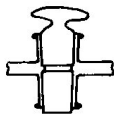


Obr. 6.32. Ventil pro nízké vakuum s membránovým těsněním (firma Leybold)

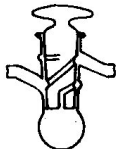


Obr. 6.33. Řez ventilu s kuželovým čepem a membránovým těsněním pro ultravysoké vakuum

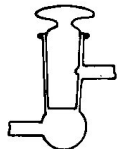




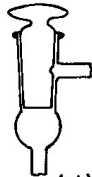
(a)



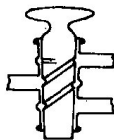
(b)



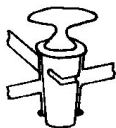
(c)



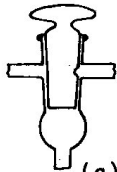
(d)



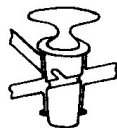
(e)



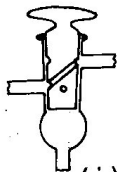
(f)



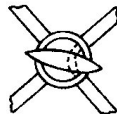
(g)



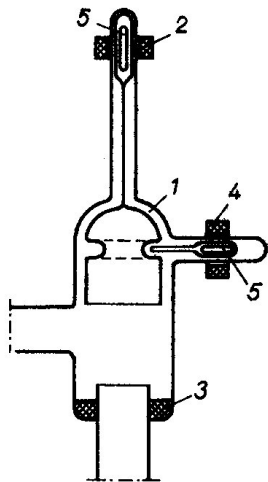
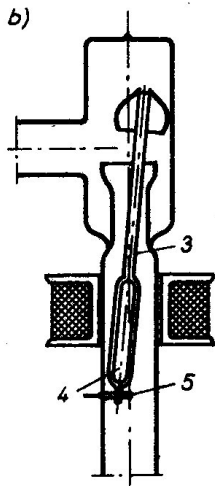
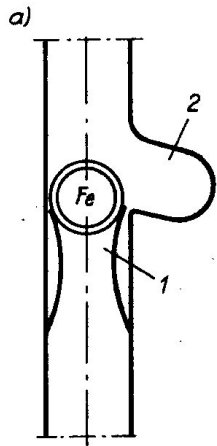
(h)

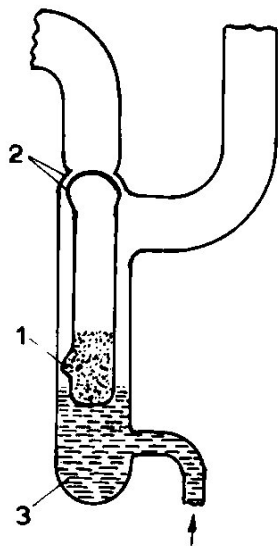


(i)

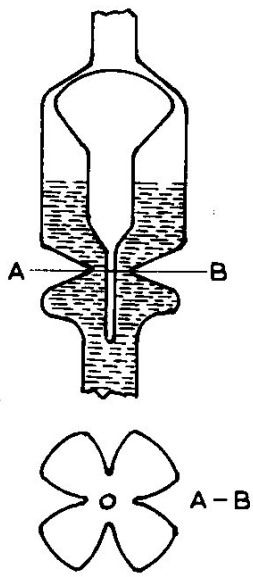


(j)





(a)



(b)

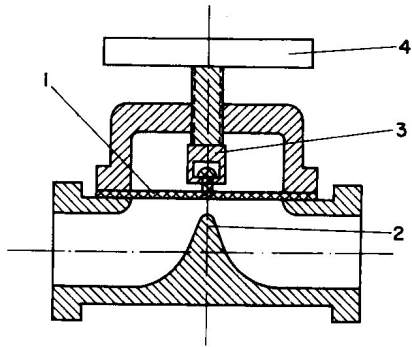
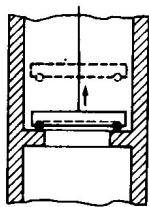
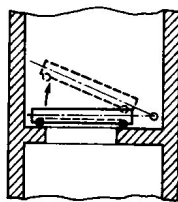


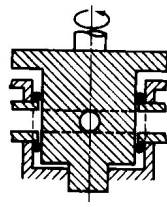
Fig. 7.61 Diaphragm valve.



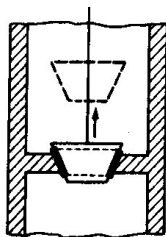
(a)



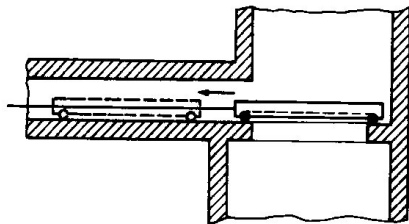
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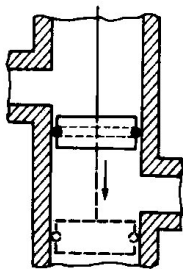
(c)



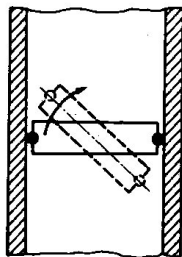
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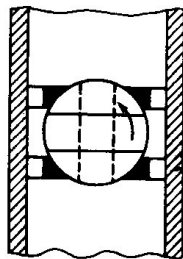
(e)



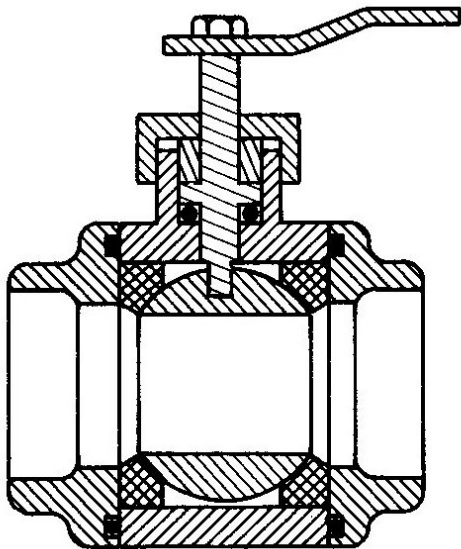
(f)



(g)



(h)



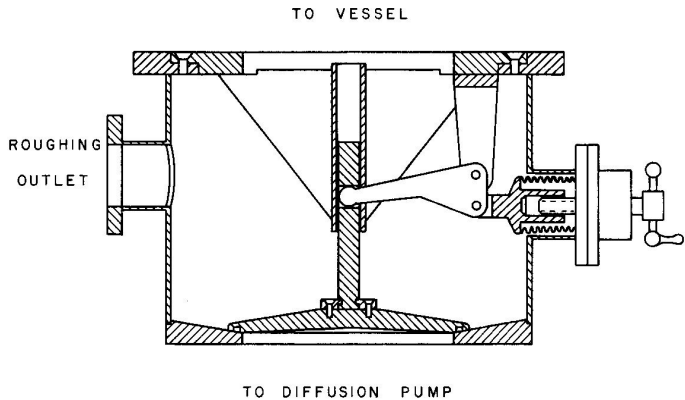


Fig. 2.29. Poppet valve.

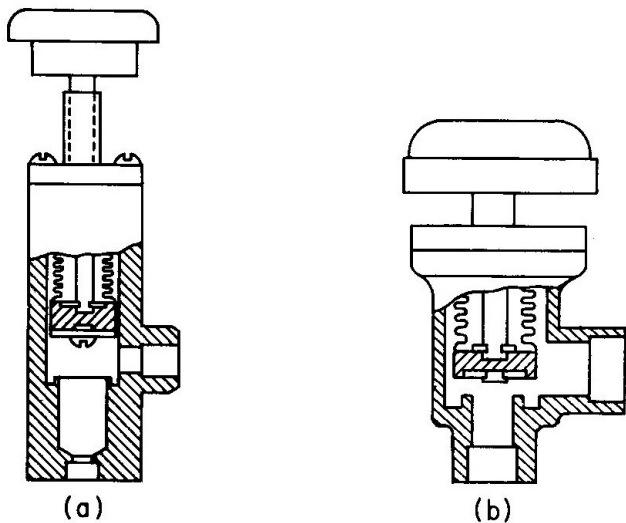


Fig. 2.28. Angle valves. (a) Machined from bar stock. (b) Cast.

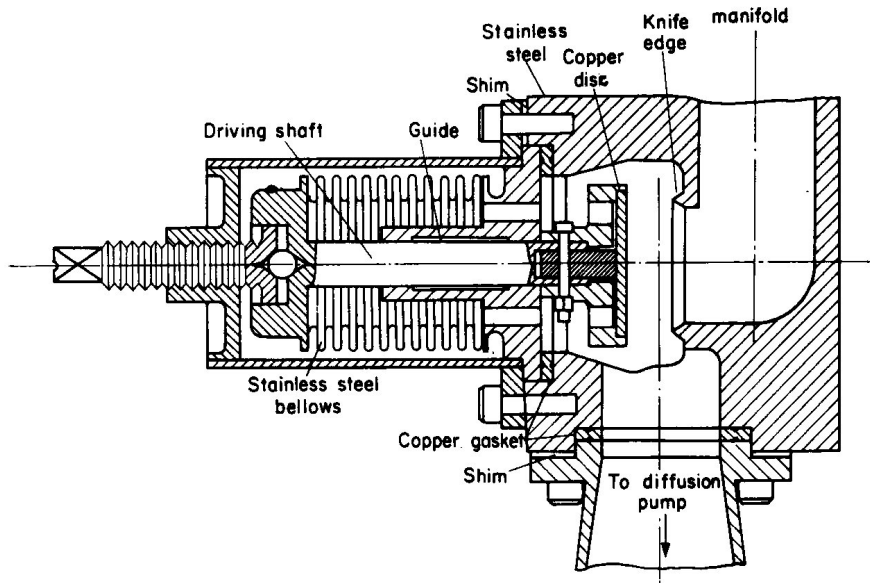


Fig. 7.65 Ultra-high vacuum valve. After Baker (1962).

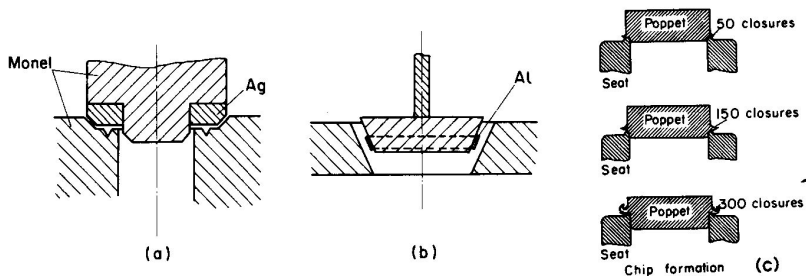
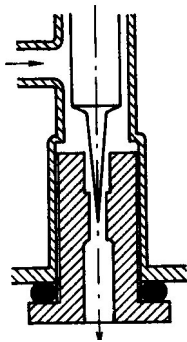
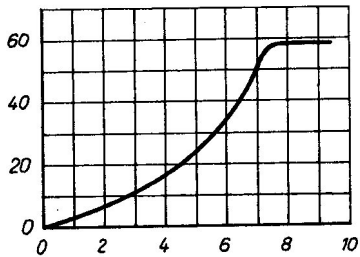


Fig. 7.63 Closing systems of all-metal valves; (a) with flat silver ring (Bills and Allen, 1955); (b) with aluminum conical ring (Kienel and Lorenz, 1960); (c) with copper poppet (Parker and Mark, 1961).



$I_N (\text{cm}^3(\text{NTP})\text{s}^{-1})$



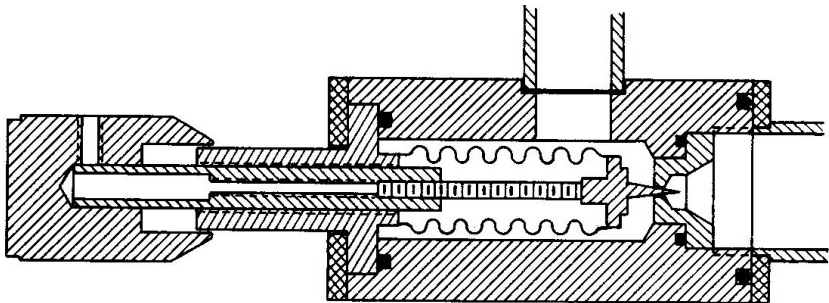


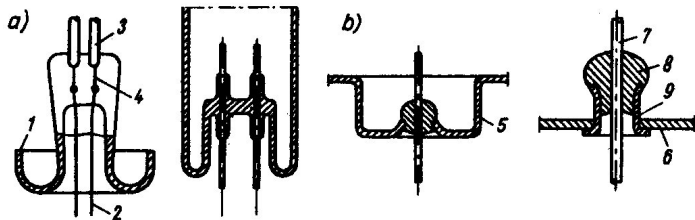
Fig. 2.31. Needle valve.

- deskové ventily - při otevírání dif.tlak menší než ~ 30 mbar
- ventily s kovovým těsněním - omezený počet cyklů
- jehlové ventily - nedotahovat silou
- zábrusové ventily - dobře namazat

Elektrické průchodky

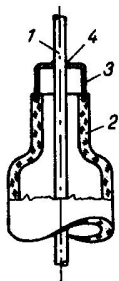
Vakuum v rozsahu tlaků 1-5000 Pa je velmi špatný elektrický izolant.
Průchodky vybíráme podle:

- napětí
- proudu
- frekvence

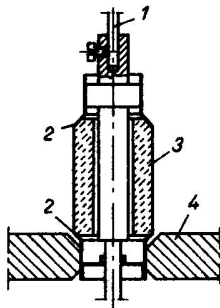


Obr. 6.47. Elektrické průchodky pro slabé proudy

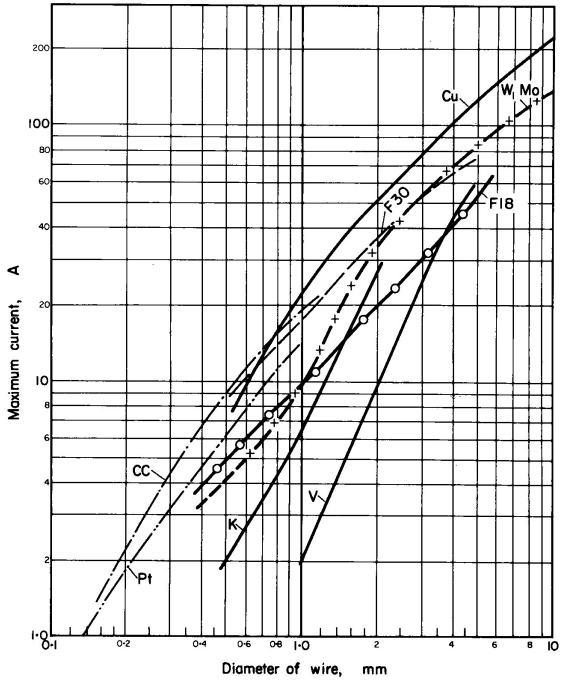
a) vodič z plášťového nebo platinovaného drátku zataveného ve skle, b) průtav skleněnou perličkou zatavenou do otvoru v kovové stěně



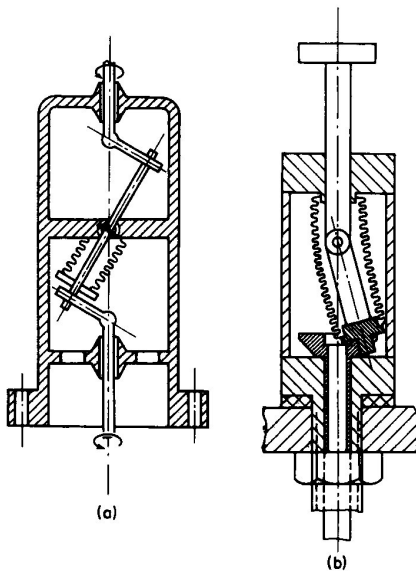
Obr. 6.48. Silnoproudá průchodka skleněnou trubicí
 1 – průtav; 2 – sklo; 3 – kovarová čepička; 4 – pájka

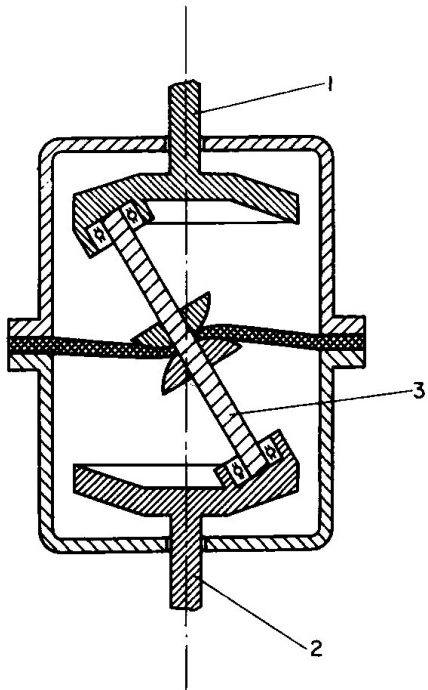


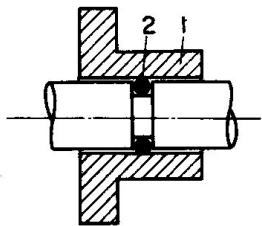
Obr. 6.49. Silnoproudá průchodka kovovou stěnou s keramickým izolátorem
 1 – průtav; 2 – spoj kovu s keramikou; 3 – keramika; 4 – stěna vakuového systému



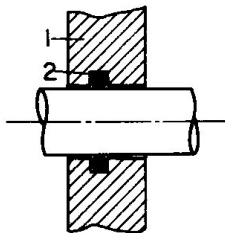
Přenos rotace do vakua



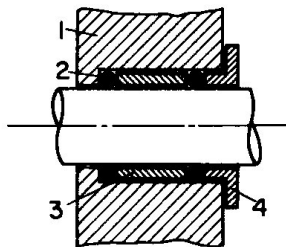
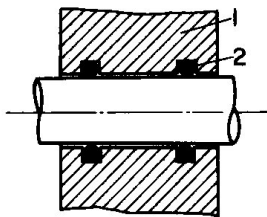


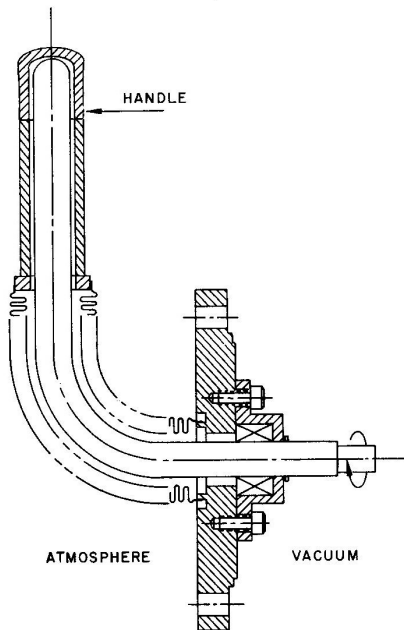


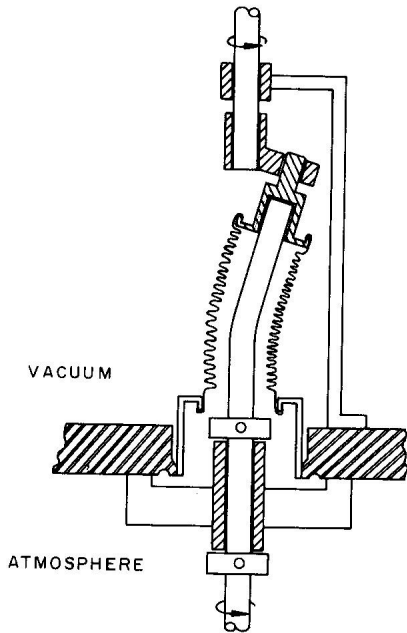
(a)



(b)







Ohebné spoje

- připojení primárních vývěv
 - kovové vlnovce
 - bellows - změna délky při změně tlaku
 - flexible metal hose
 - tlustostěnné hadice
 - hadice s kovovou spirálou