

# Vakuové ventily

Dělení podle různých principů

Podle funkčnosti

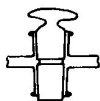
- oddělovací
- napouštěcí
- zavzdušňovací
- omezení čerpací rychlosti

Ovladání

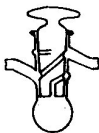
- ruční
- pneumatický
- elektromagnetický

Oblast použití

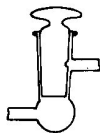
- hrubé vakuum
- HV vakuum
- UHV, XHV vakuum



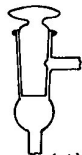
(a)



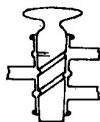
(b)



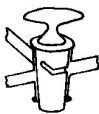
(c)



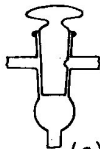
(d)



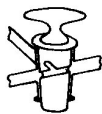
(e)



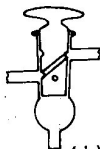
(f)



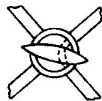
(g)



(h)

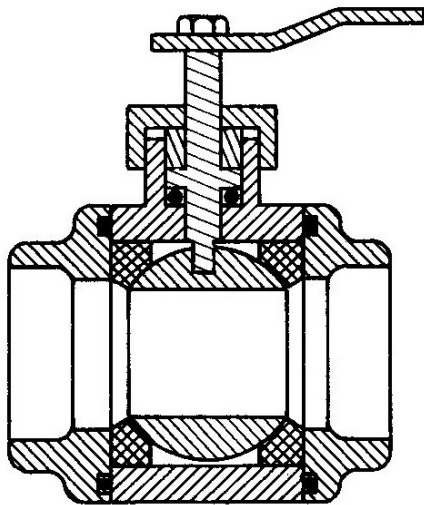


(i)

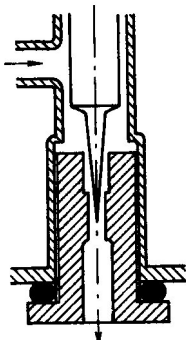


(j)

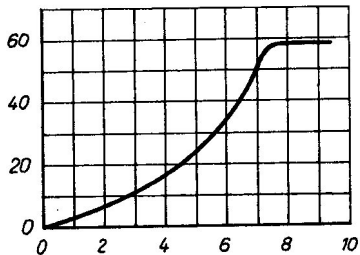
# Kulový ventil



# Jehlový ventil

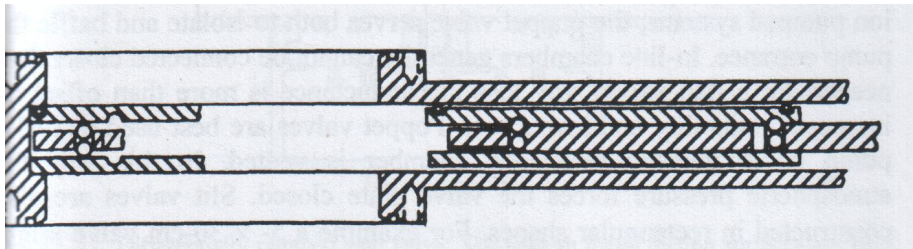


$I_N (\text{cm}^3(\text{NTP})\text{s}^{-1})$



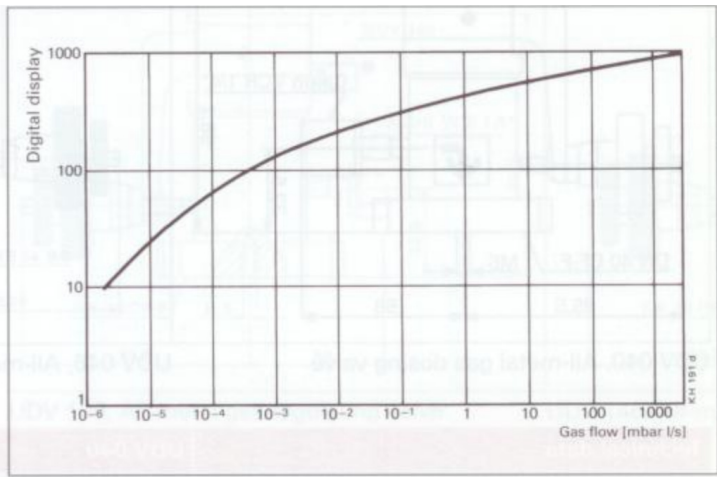
J. Groszkowski: Technika vysokého vakua, SNTL, Praha 1981

# Deskový ventil



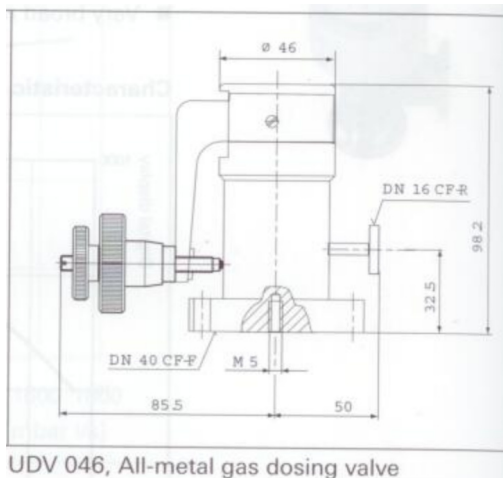
F.OHanlon: A Users Guide to Vacuum Technology, Wiley (2003)

# EVN-116



firemní mat. Pfeiffer

# UDV-046



firemní mat. Pfeiffer min.  $1 \times 10^{-9}$  hPa/s

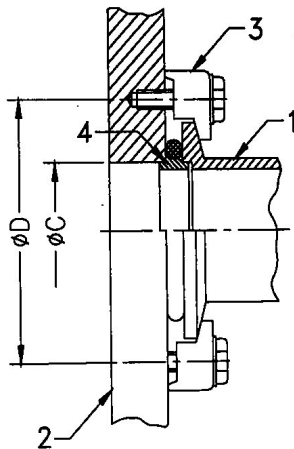
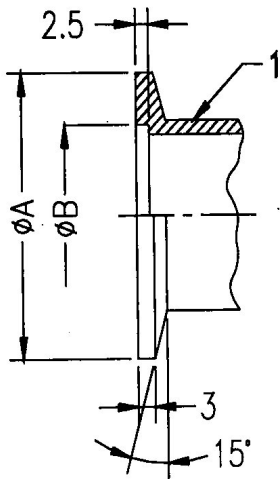
- deskové ventily - při otevírání dif.tlak menší než  $\sim 30$  hPa
- ventily s kovovým těsněním - omezený počet cyklů
- jehlové ventily - nedotahovat silou
- zábrusové ventily - dobře namazat



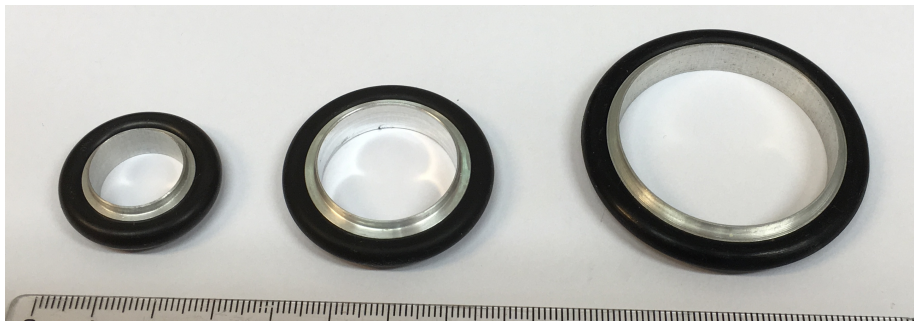
# Rozebiratelné spoje

- zábrusy - zejména skleněné aparatury
- ISO-KF, (NW)
- ISO-K, ISO-F
- CF

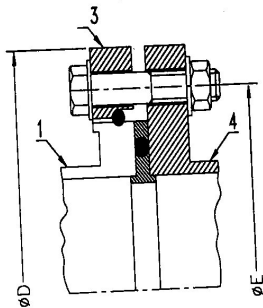
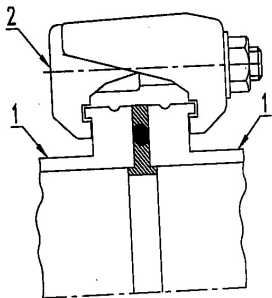
# ISO-KF



firemní materiály firmy Pfeiffer

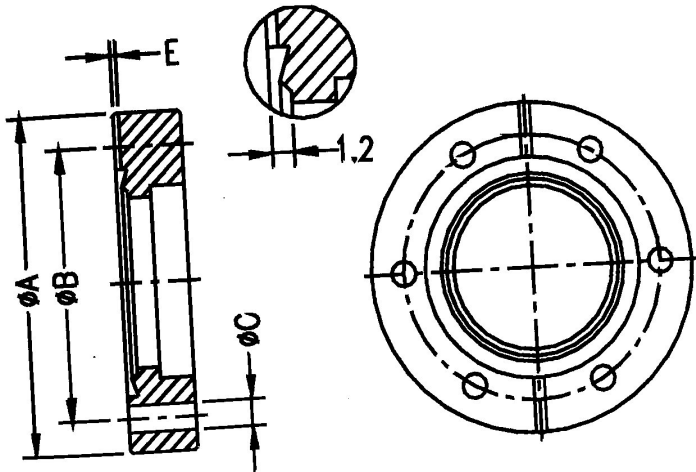


# ISO-K, ISO-F



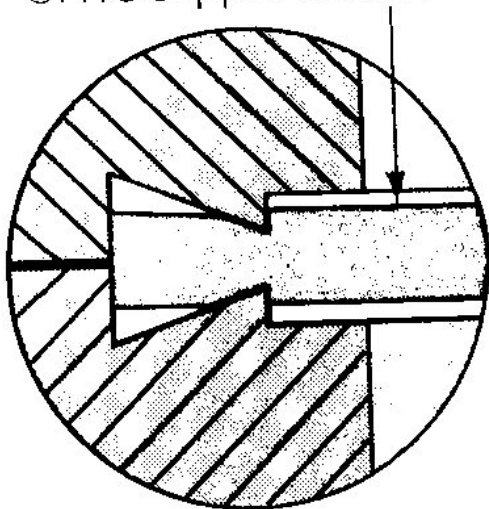
firemní materiály firmy Pfeiffer

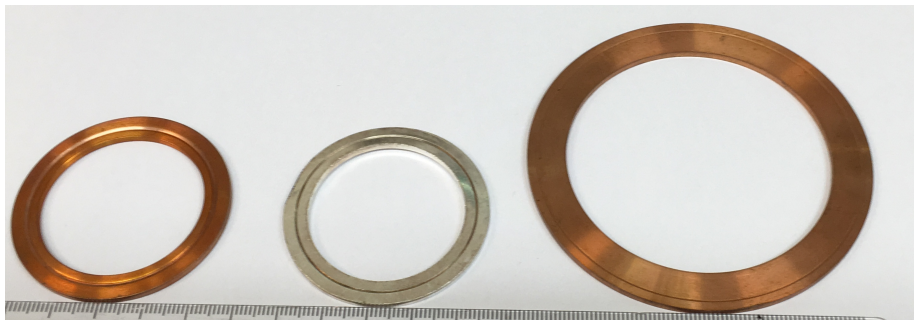
CF



firemní materiály firmy Pfeiffer

# OFHC Copper Gasket





těsnění	min. tep [ °C]	max. tep. [ °C]
<b>elastomer</b>		
FKM	-15	150
NBR	-25	120
CR	-5	120
EPDM	-50	130
silikon	-55	200
<b>kov</b>		
Cu	-196	200
Cu + Ag	-196	450
Al	-196	150
In	-196	60