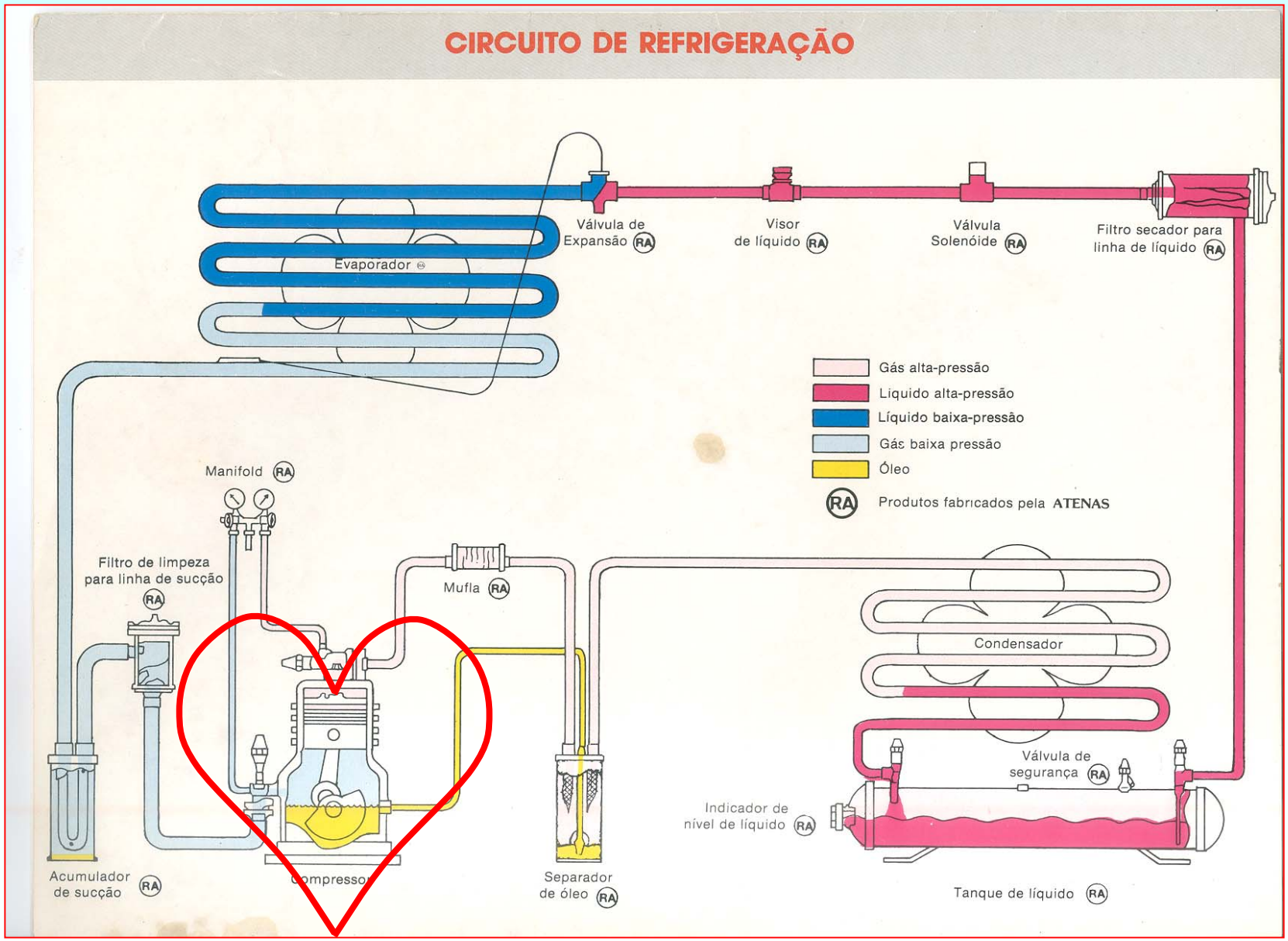
Universidade Federal do Paraná
Setor de Tecnologia
Departamento de Engenharia Mecânica

TM-182 REFRIGERAÇÃO E CLIMATIZAÇÃO

Prof. Dr. Rudmar Serafim Matos

5. COMPRESSORES



5. COMPRESSORES

TIPOS

COMPRESSORES VOLUMÉTRICOS

- ALTERNATIVOS
  - ABERTO
  - SEMI-HERMÉTICO
  - HERMÉTICO
- ROTATIVOS
- DE PARAFUSO
- SCROLL

COMPRESSORES TURBO

- CENTRÍFUGOS DE UM ESTÁGIO
- CENTRÍFUGOS DE VÁRIOS ESTÁGIOS

5. COMPRESSORES

5.1 COMPRESSORES ALTERNATIVOS

ABERTO

SEMI-HERMÉTICO

HERMÉTICO

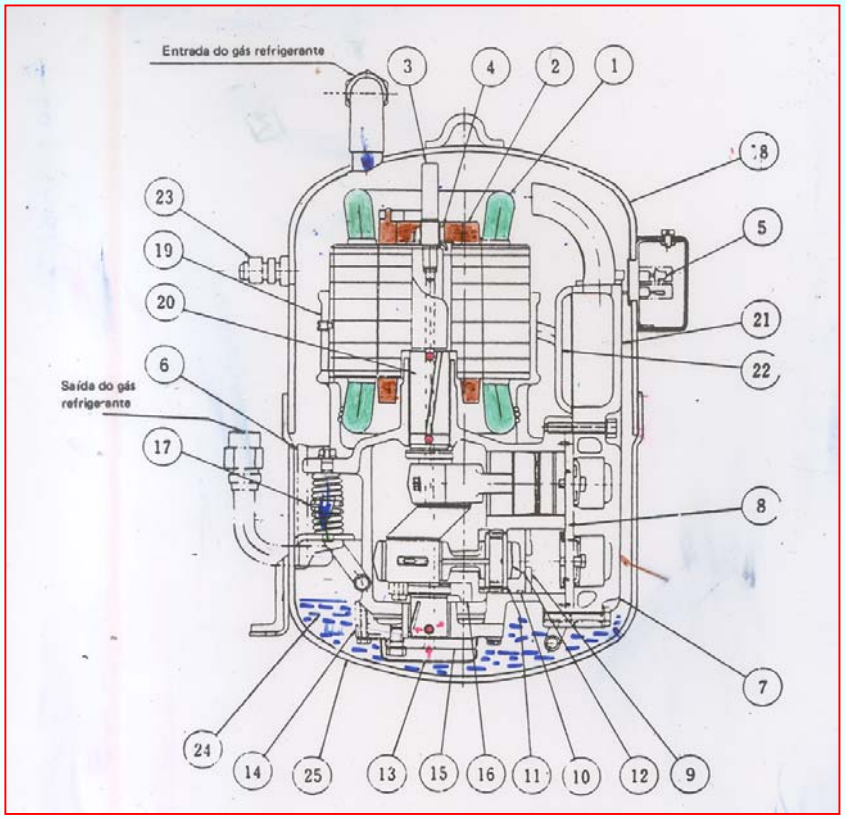
5. COMPRESSORES

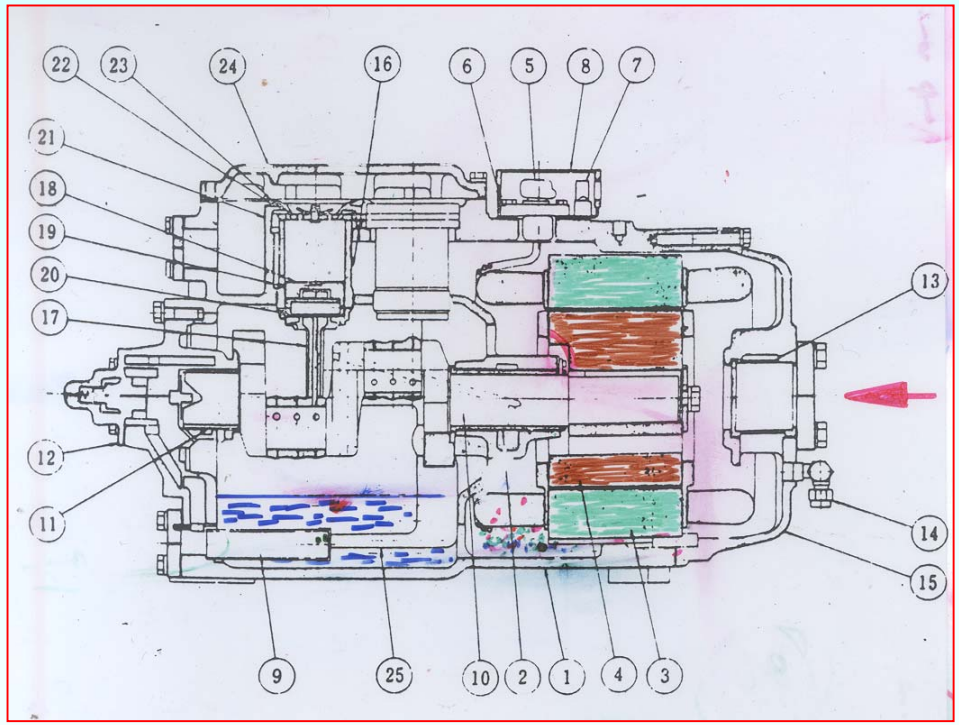
5.1 COMPRESSORES ALTERNATIVOS

UNIDADE CONDENSADORA

5. COMPRESSORES

5.1 COMPRESSORES ALTERNATIVOS





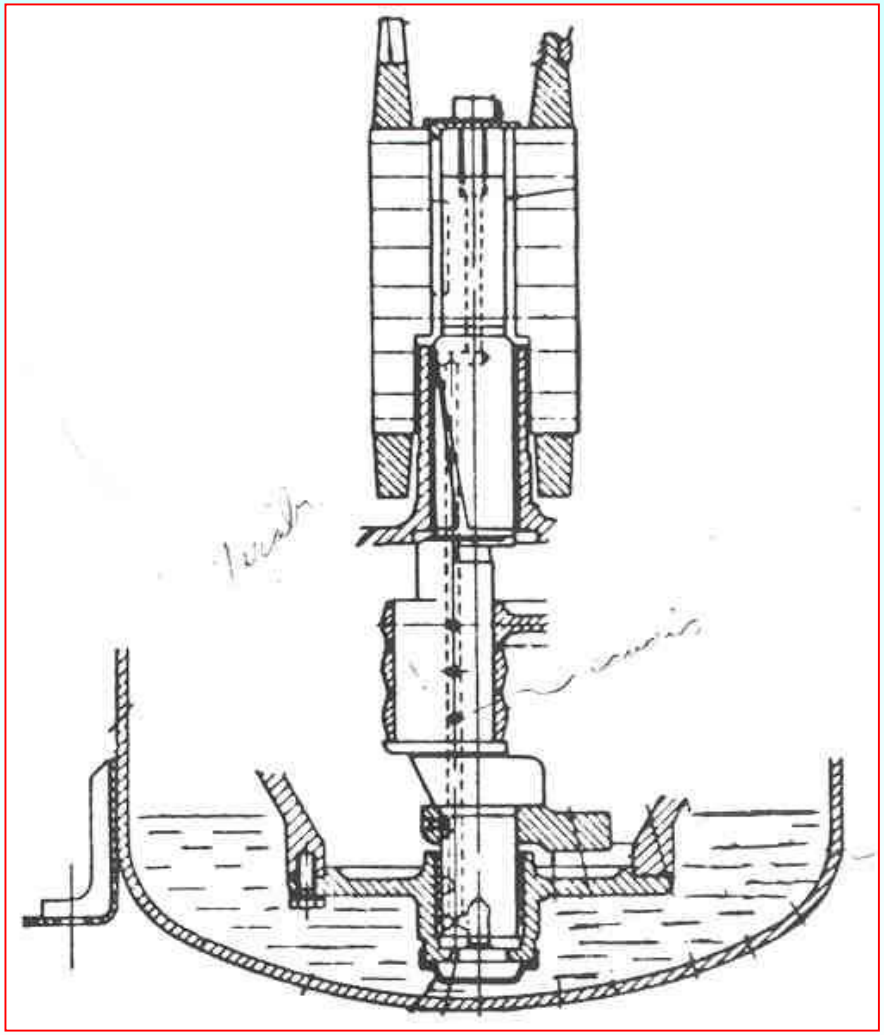
HERMÉTICO

SEMI-HERMÉTICO

ESTRUTURA INTERNA DOS COMPRESSORES ALTERNATIVOS

5. COMPRESSORES

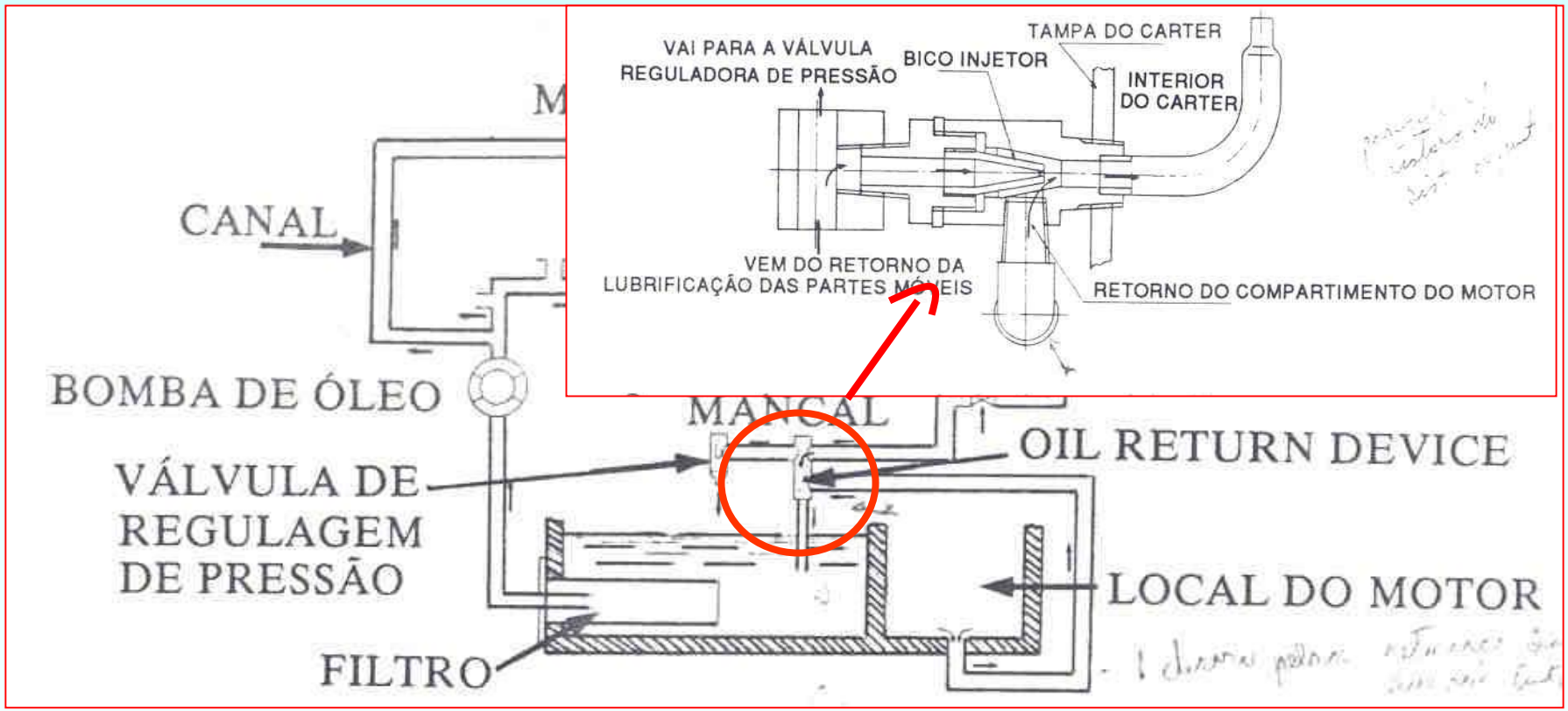
5.1.1 Sistemas de Lubrificação



LUBRIFICAÇÃO POR SALPICOS

5. COMPRESSORES

5.1.1 Sistemas de Lubrificação

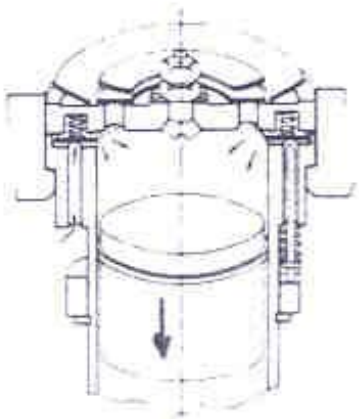


LUBRIFICAÇÃO FORÇADA

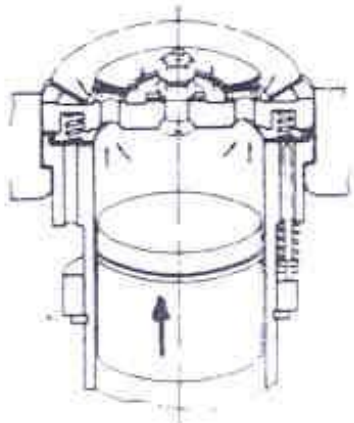
5. COMPRESSORES

5.1.2 Sistemas de Controle de Capacidade

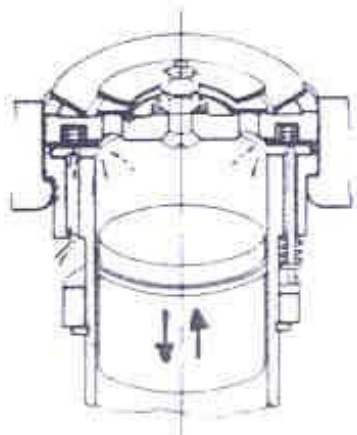
- ✓CONTROLE TUDO OU NADA (ON-OFF)
- ✓CONTROLE POR DESCARGA DOS CILINDROS



SUCÇÃO



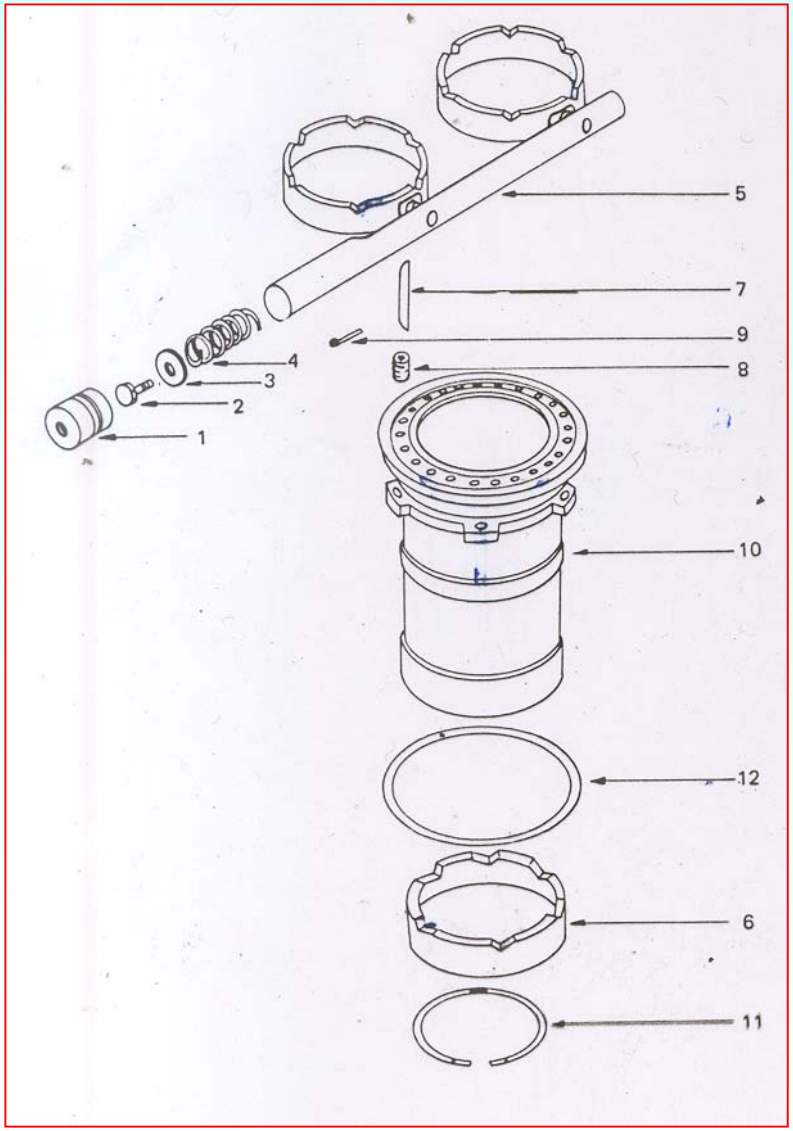
DESCARGA

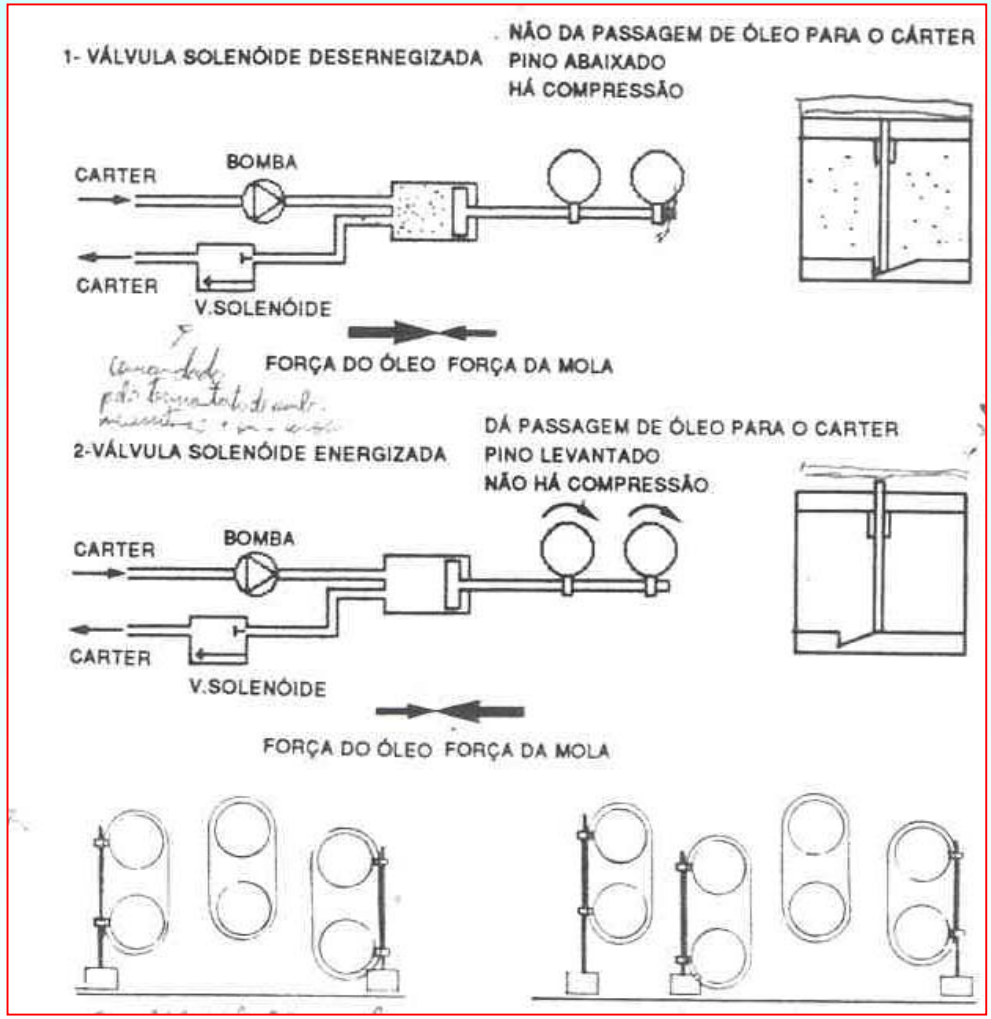


DESCARREGANDO (BY-PASS)

5. COMPRESSORES

5.1.2 Sistemas de Controle de Capacidade



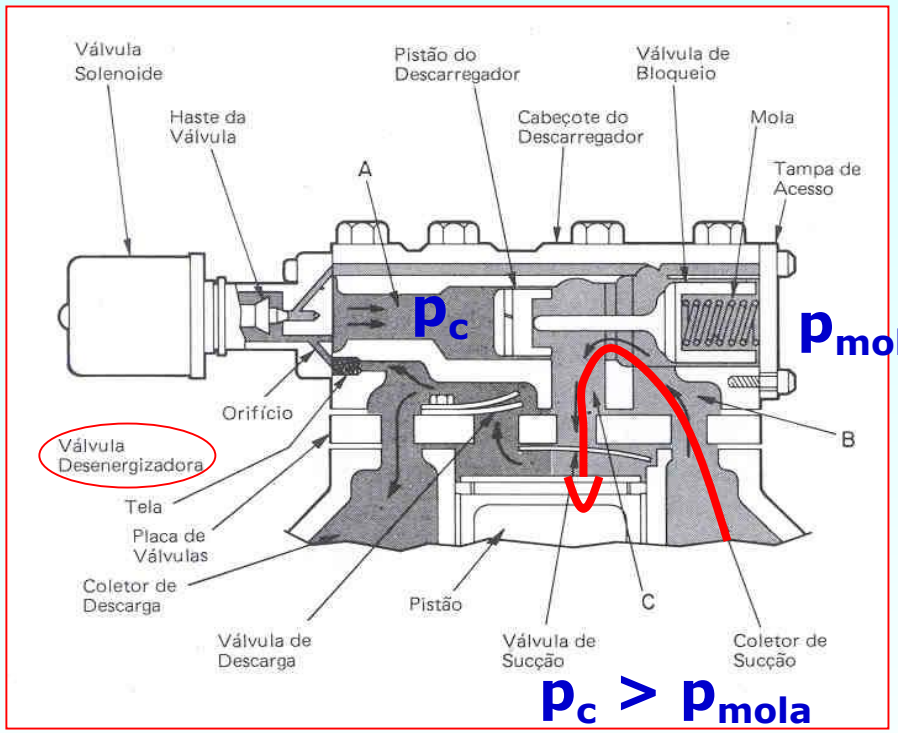


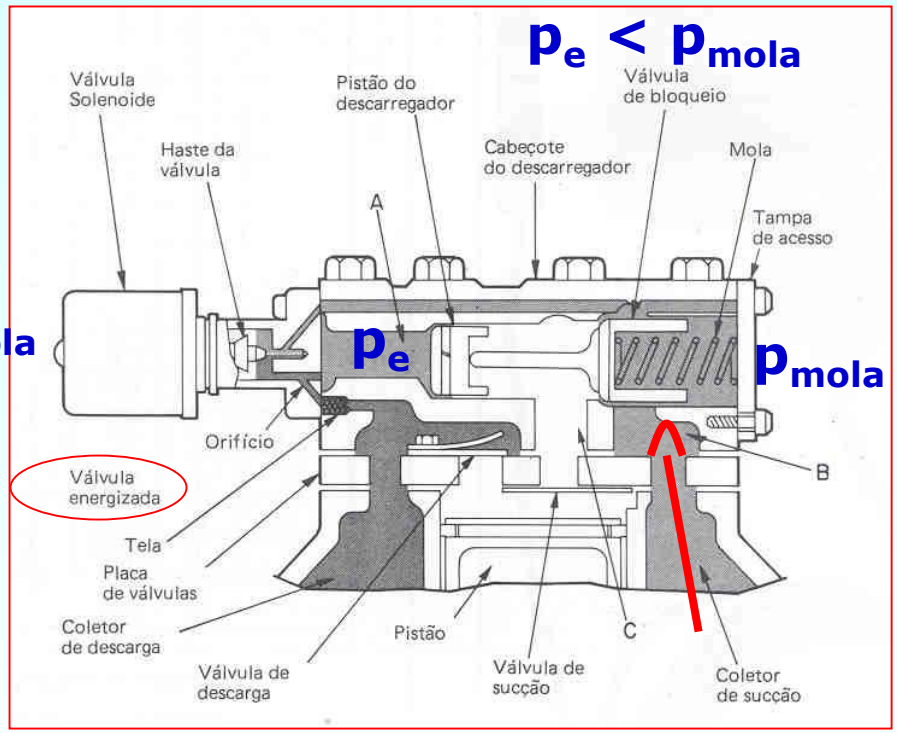
MECANISMO DE ATUAÇÃO DO DESCARREGAMENTO DO CILINDRO

5. COMPRESSORES

5.1.2 Sistemas de Controle de Capacidade

MECANISMO DE ATUAÇÃO DO DESCARREGAMENTO DO CILINDRO (CARRIER)





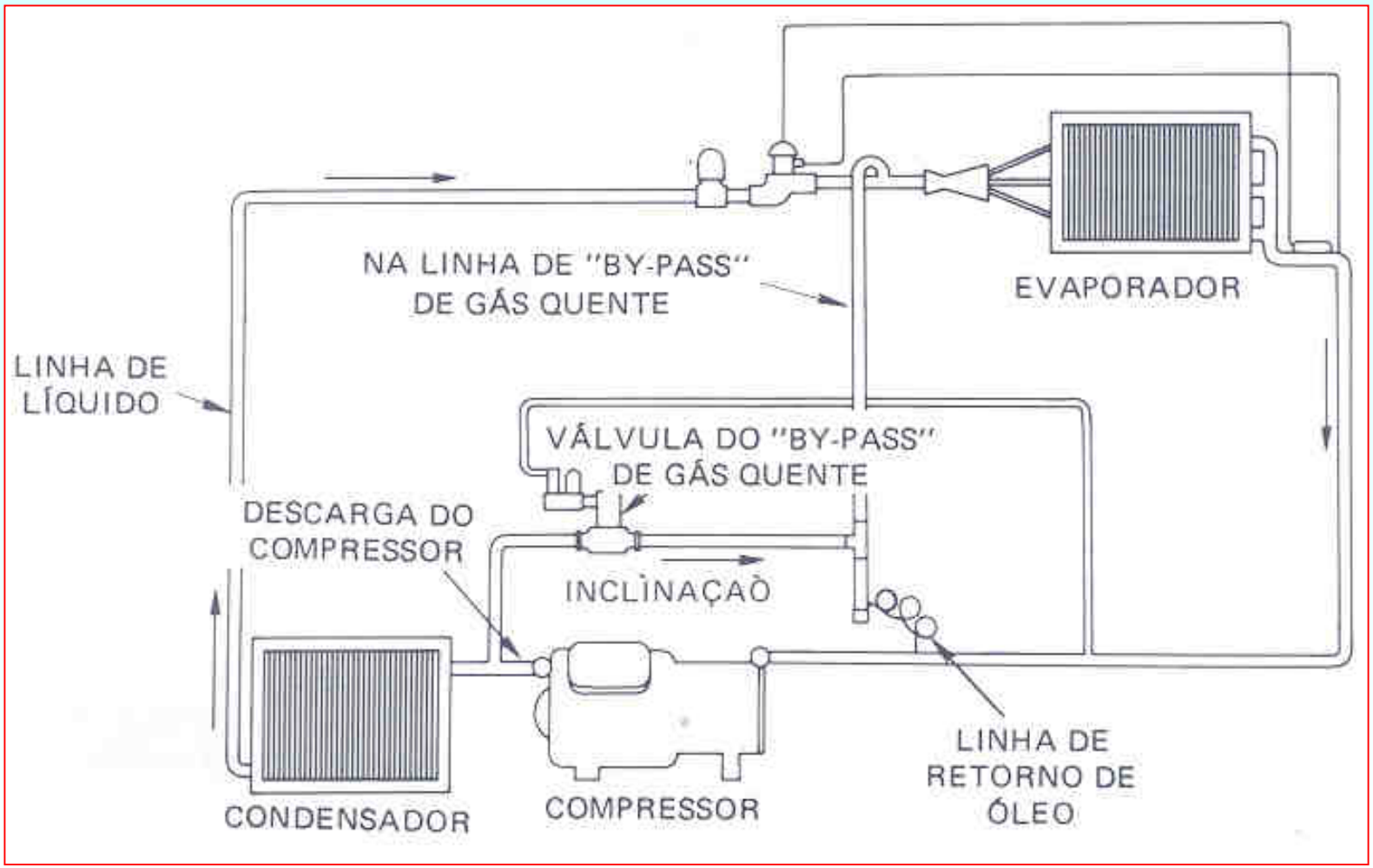
CABEÇOTES DE CILINDROS EM CARGA

CABEÇOTES DE CILINDROS DESCARREGADO

5. COMPRESSORES

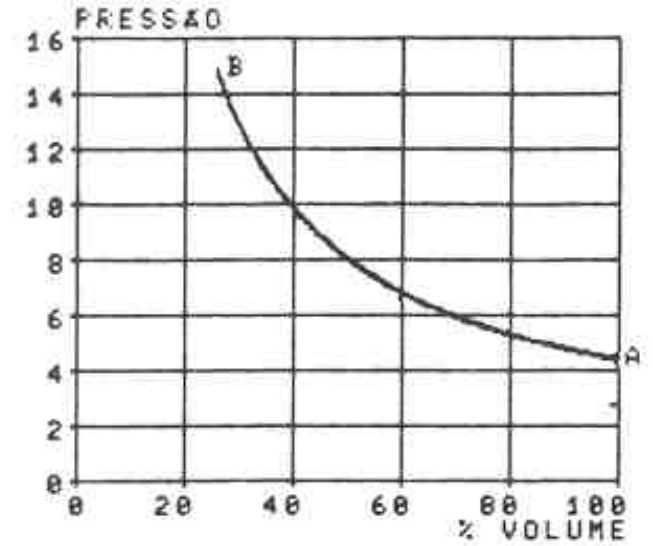
5.1.2 Sistemas de Controle de Capacidade

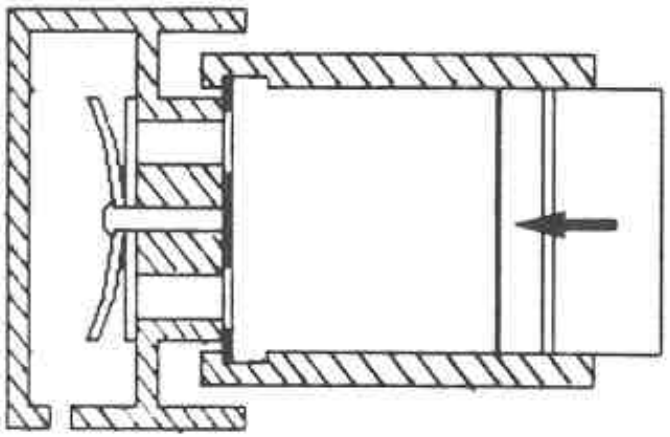
CONTROLE POR DERIVAÇÃO DE GÁS QUENTE

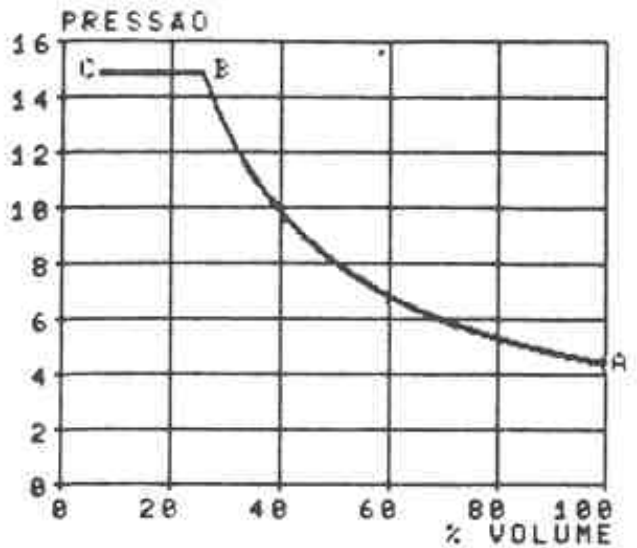


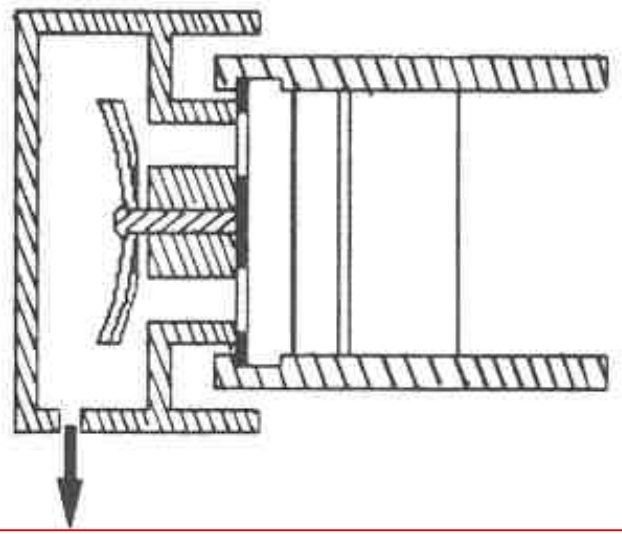
5. COMPRESSORES

5.1.3 Ciclo de Compressão



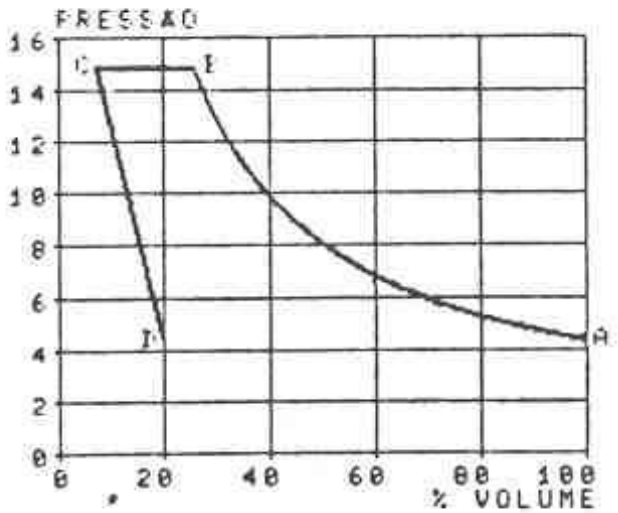


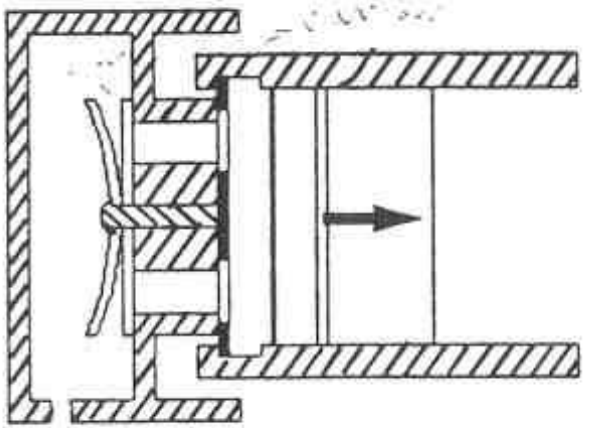


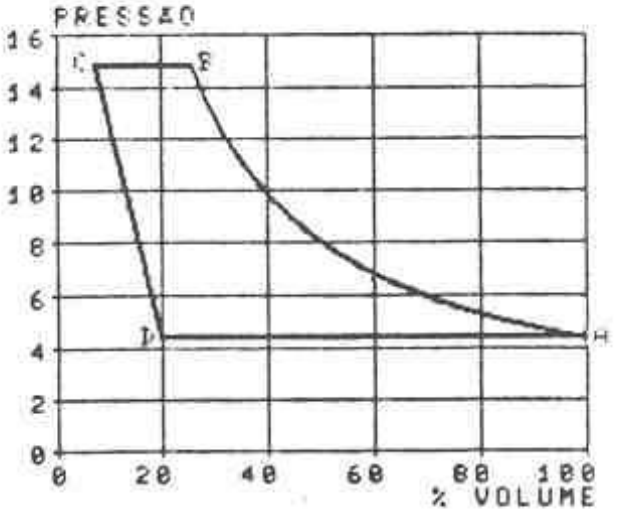


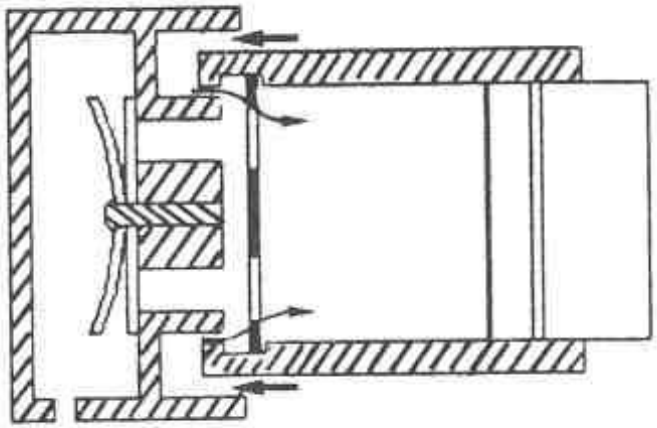
5. COMPRESSORES

5.1.3 Ciclo de Compressão









5. COMPRESSORES

5.1.4 Deslocamento do Pistão

$$V_c = z \frac{\pi d^2}{4} s\, n \times 60$$

5.1.5 Eficiência Volumétrica

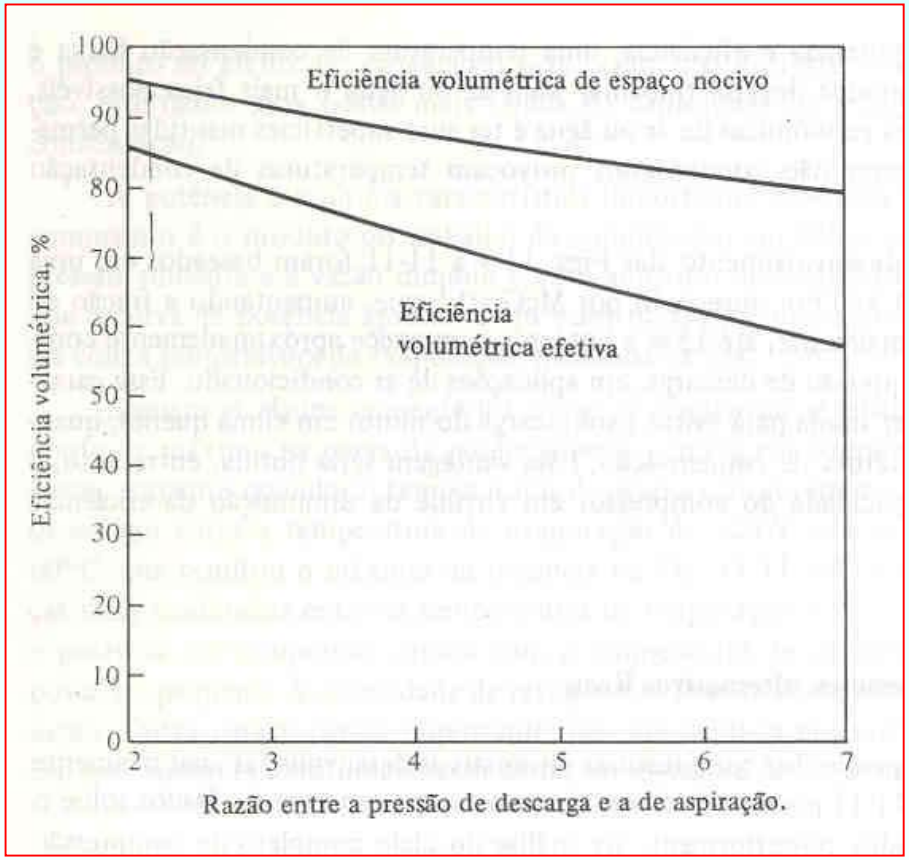
$$\eta_v = \frac{V_a}{V_c}(100)$$

5.1.6 Taxa de Compressão

$$R = \frac{p_a}{p_b}$$

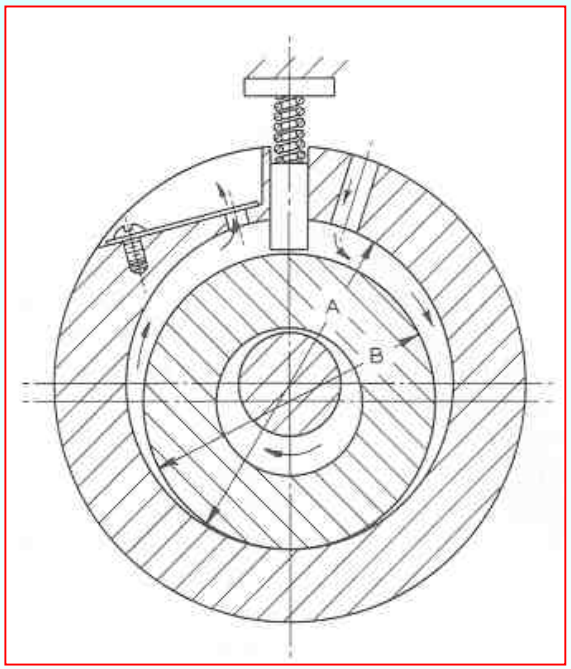
5.1.6 Potência no Eixo

$$P_S = \frac{\dot{W}_{cp}}{\eta_v}(1{,}10)$$

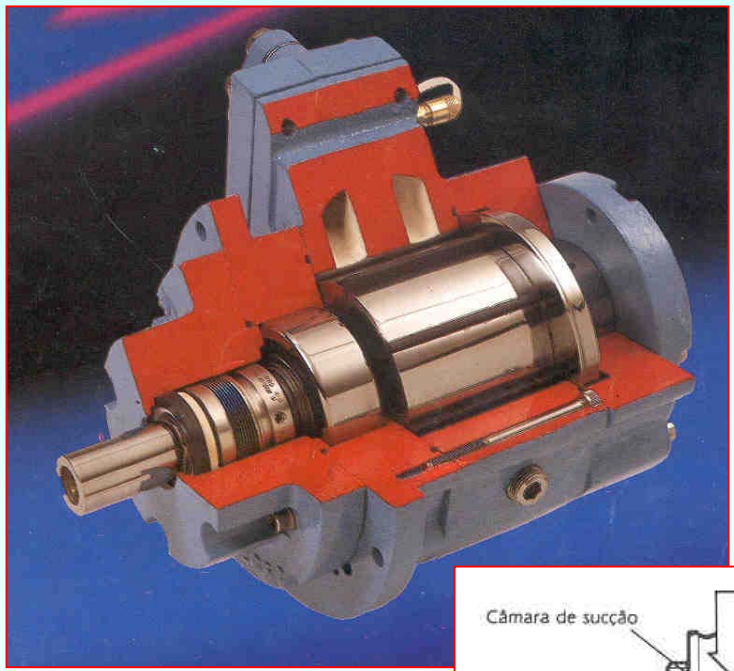


5. COMPRESSORES

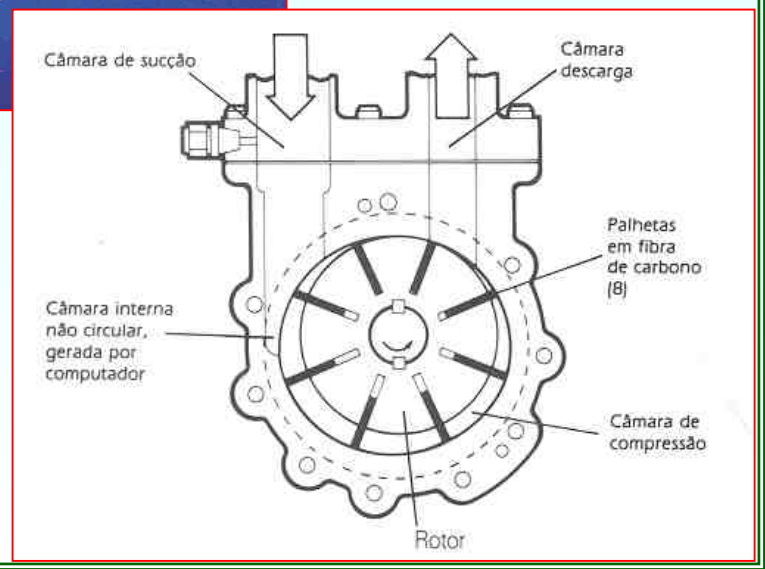
5.2 COMPRESSORES ROTATIVOS



DE PISTÃO DE ROLAMENTO

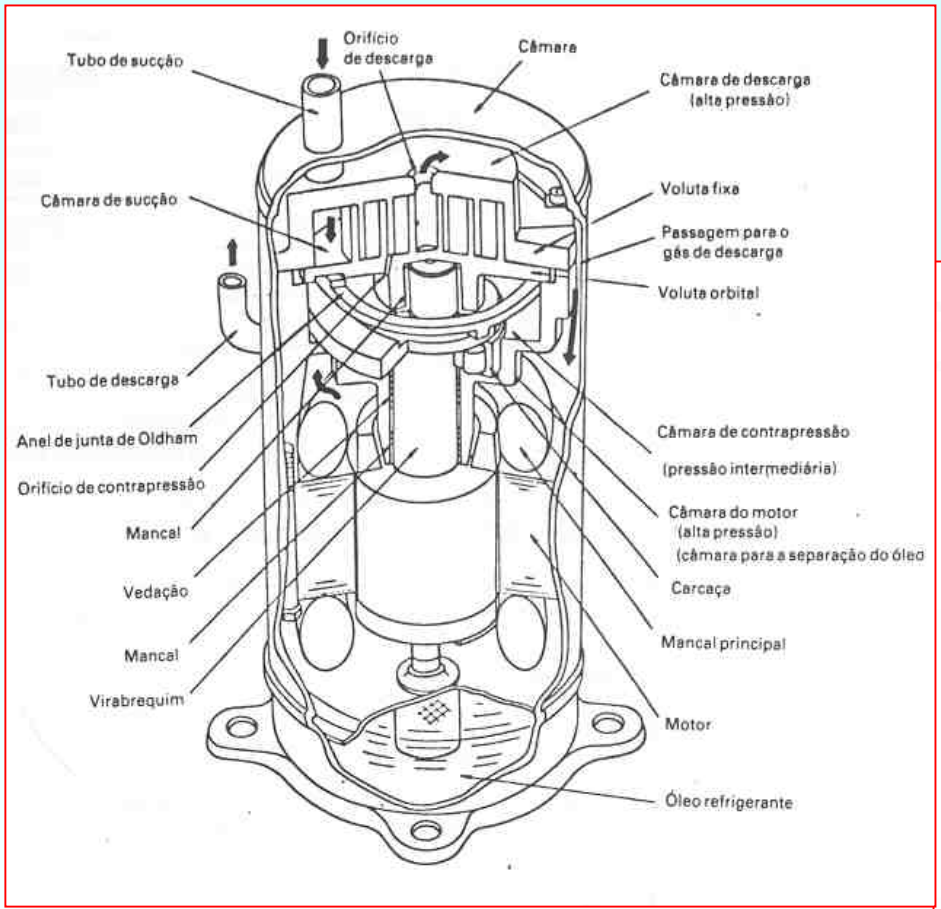


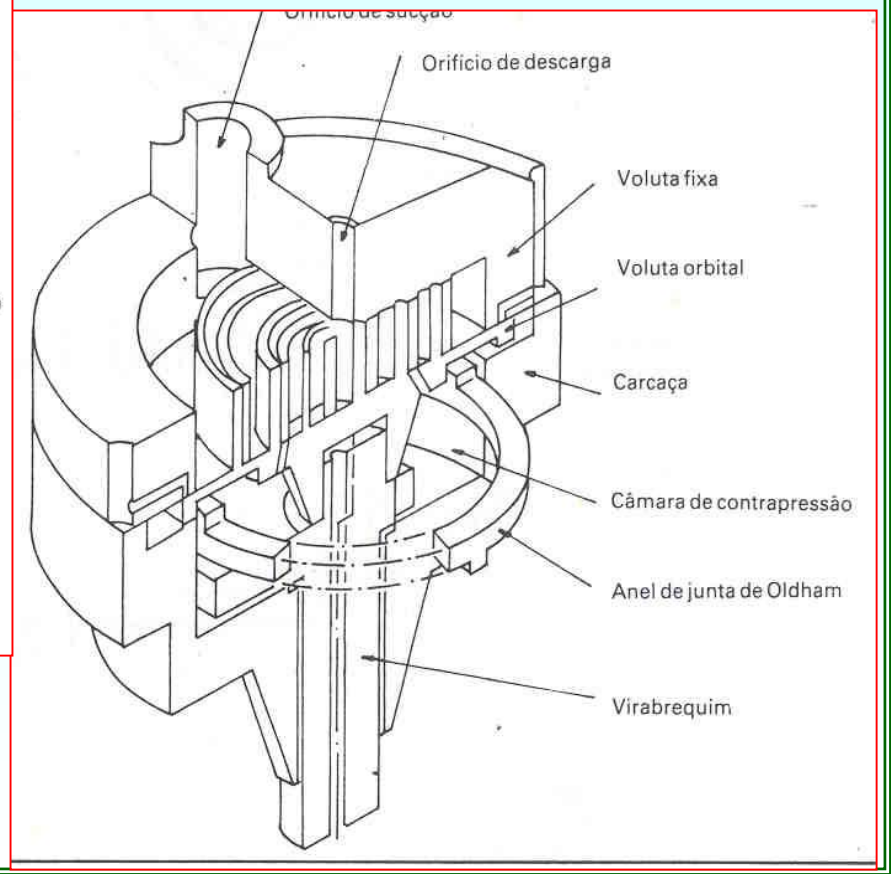
ROTATIVO DE ALETAS



5. COMPRESSORES

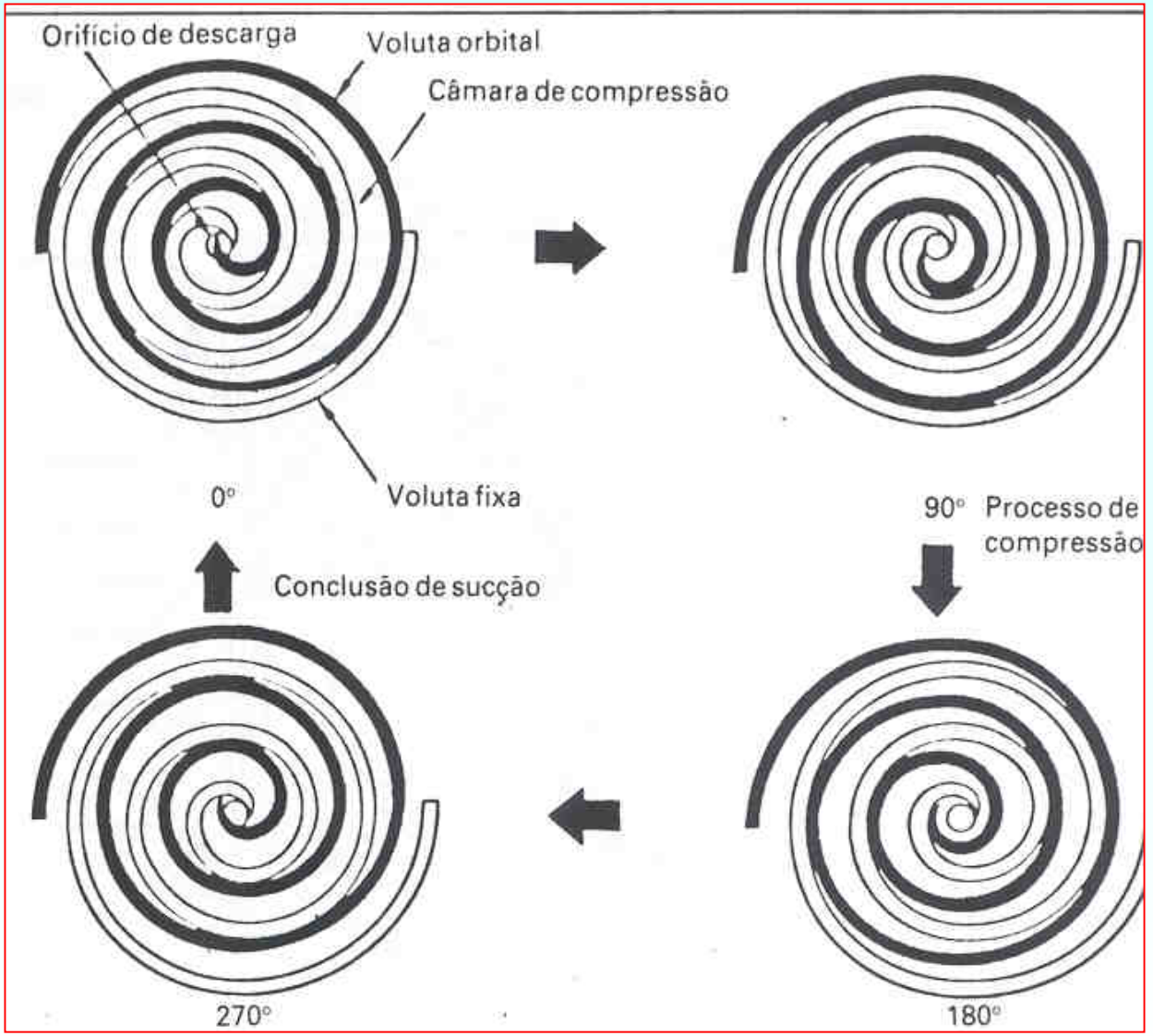
5.2.3 Compressor Rotativo de Voluta (Scroll)





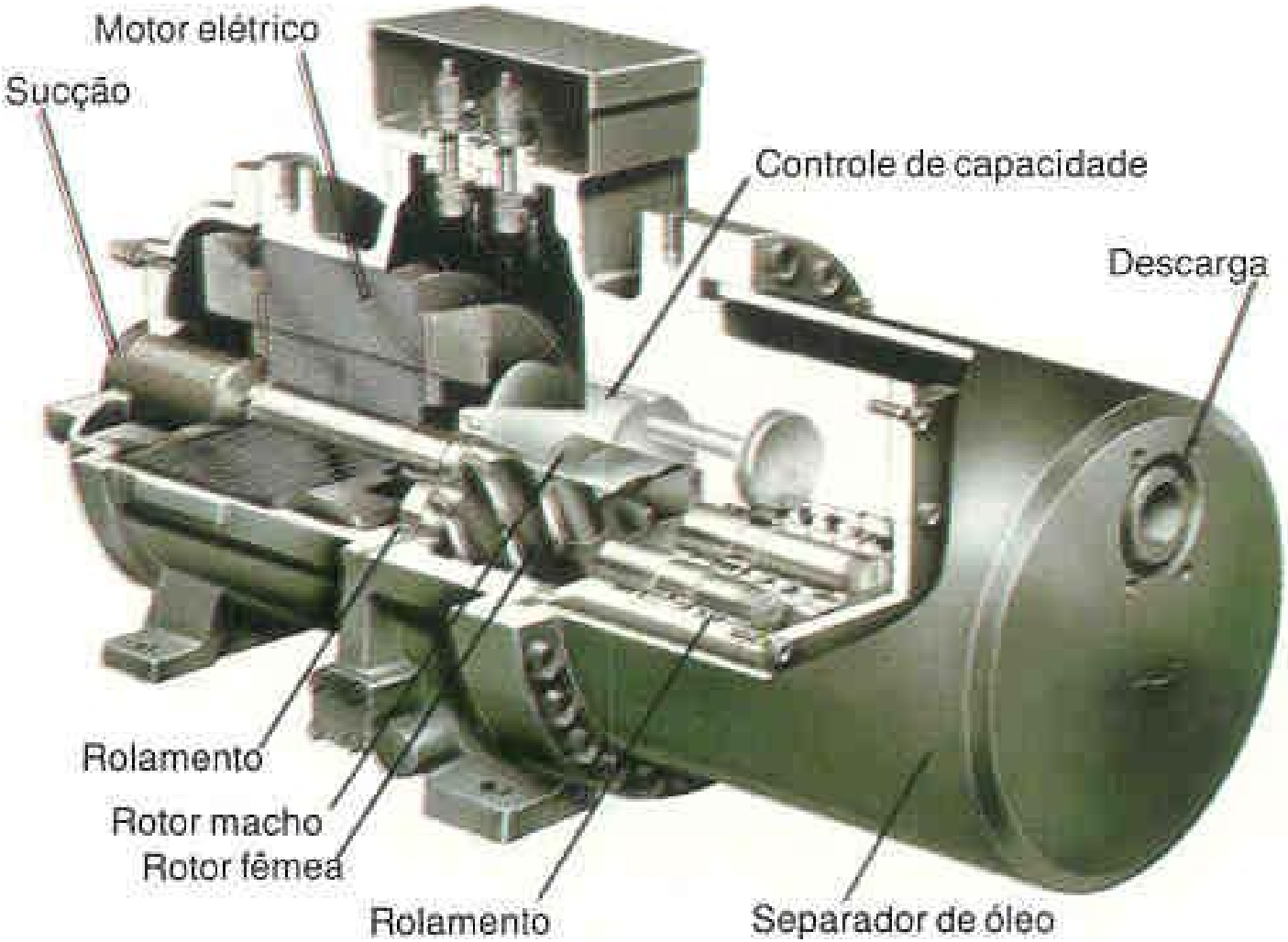
5. COMPRESSORES

5.2.3 Compressor Rotativo de Voluta (Scroll)



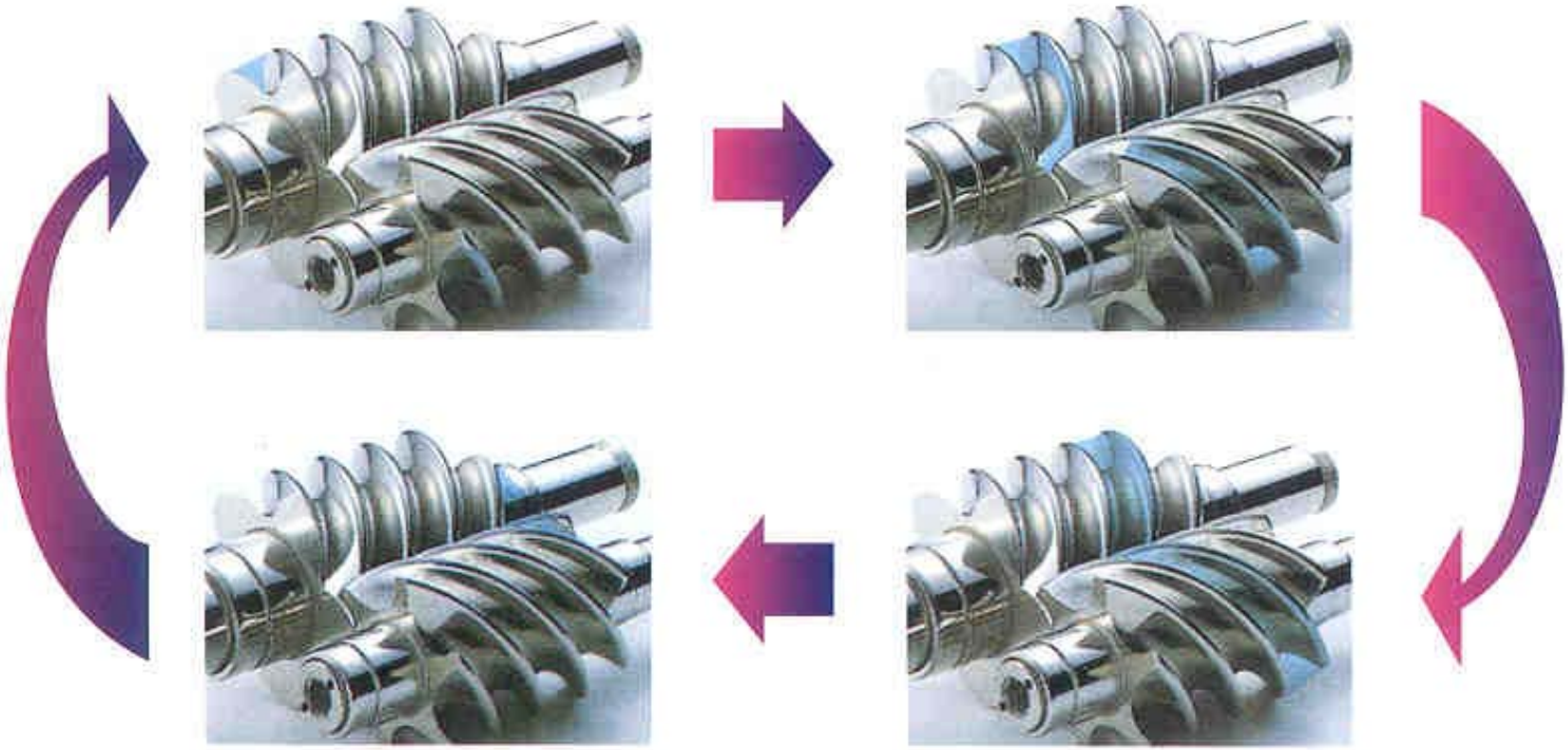
5. COMPRESSORES

5.2.4 Compressores de Parafuso



5. COMPRESSORES

5.2.4 Compressores de Parafuso



5. COMPRESSORES

5.3 COMPRESSORES CENTRÍFUGOS