

Ny utgave 2011

Vg2 elektro

Teori med
praktiske
øvinger

Kunnskaps-
løftet

Frank Fosbæk

Automatiserte anlegg

Vg2 automatisering

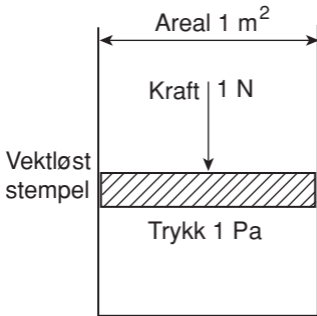
ELFORLAGET

Illustrasjoner til Automatiserte anlegg Vg2 automatisering

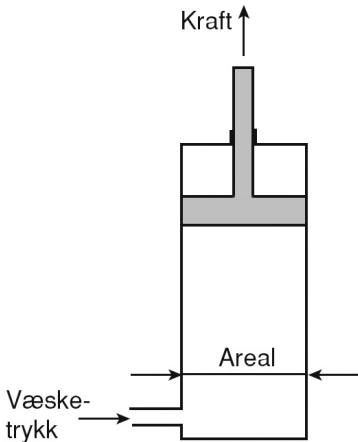
Kapittel 16

Illustrasjonene kan brukes fritt i undervisningen

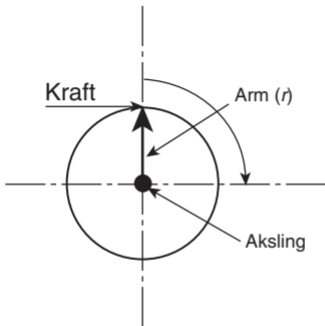
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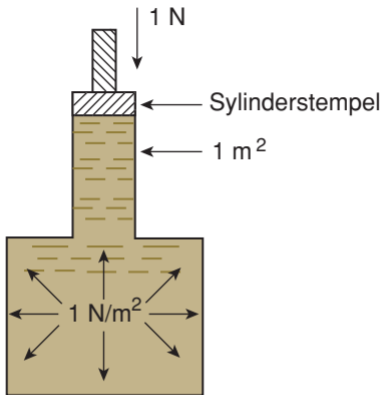
Figur 16.1 Hydraulisk sylinder



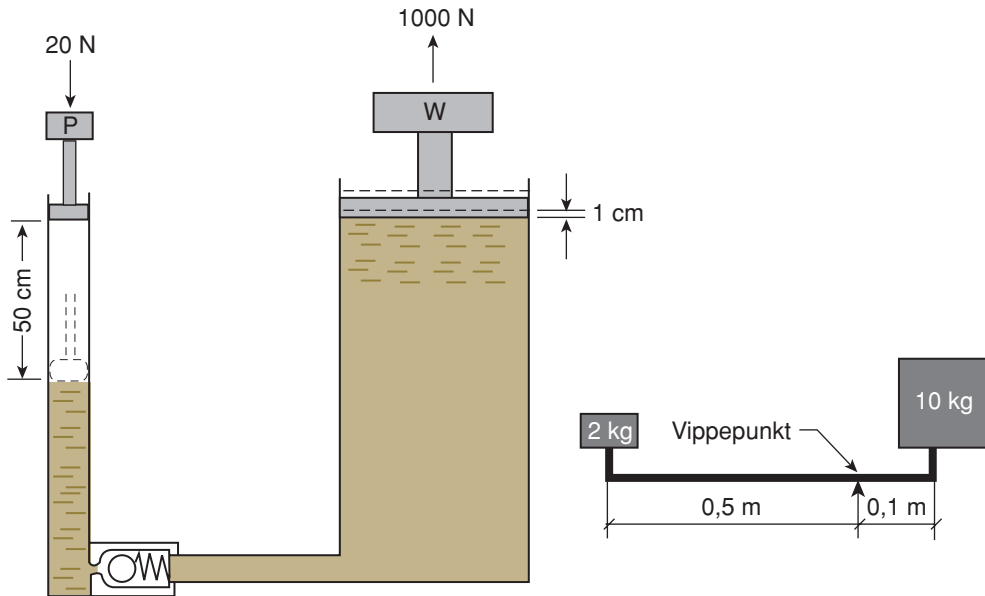
Figur 16.2 Hydraulisk sylinder med et stempel som påvirkes av et hydraulisk oljetrykk



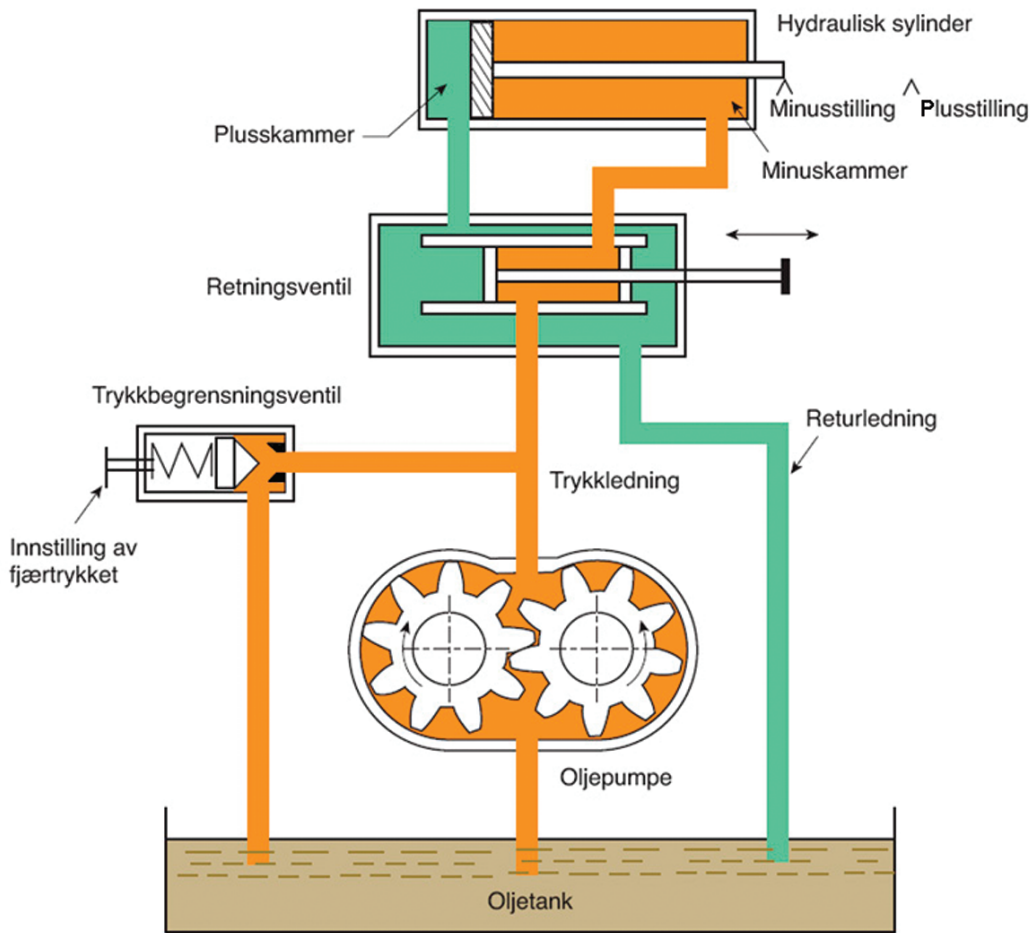
Figur 16.3 Motoraksling med påmontert reimskive



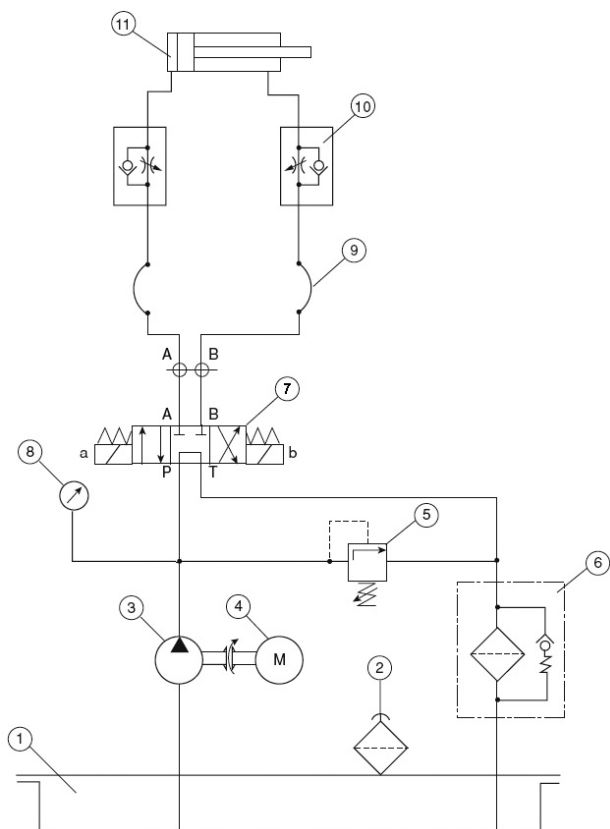
Figur 16.4 I en statisk væske er trykket i et punkt likt i alle retninger



Figur 16.5 Hydraulisk- og mekanisk vektstang

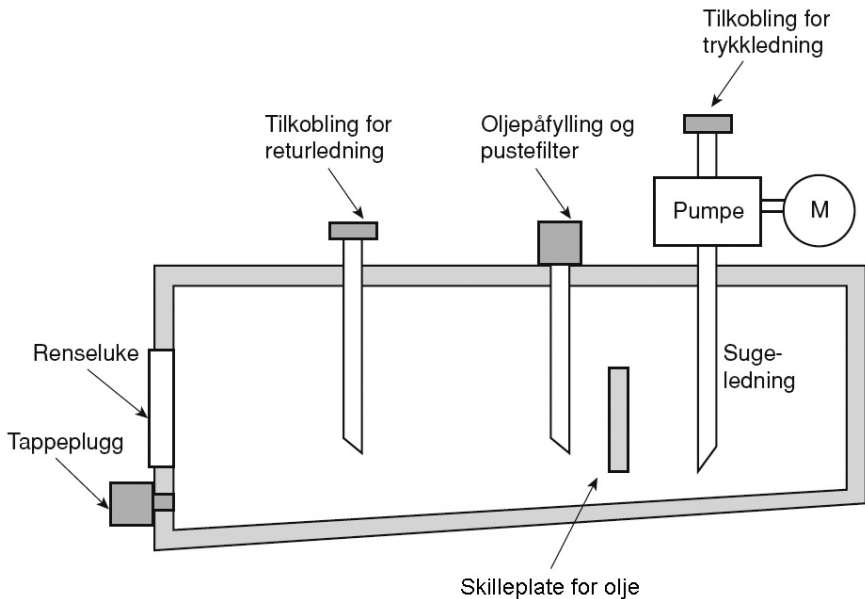


Figur 16.6 Hydraulisk anlegg

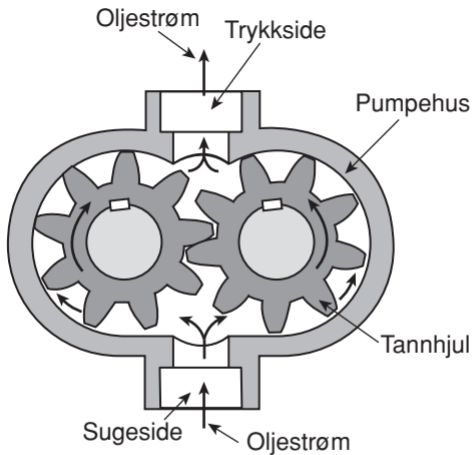


Pos. nr.	Komponentene på figur 16.7
1	Oljetank
2	Påfyllingssil for olje og luftfilter for utluffing av tanken
3	Oljepumpe
4	Elektrisk motor som driver oljepumpa
5	Trykkbegrensningsventil
6	Returfilter (med forbikoblingsventil)
7	Retningsventil
8	Manometer
9	Oljeslange, fleksibel slange
10	Strupetilbakeslagsventil
11	Dobbeltvirkende hydraulisk sylinder

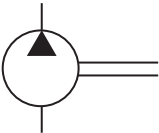
Figur 16.7



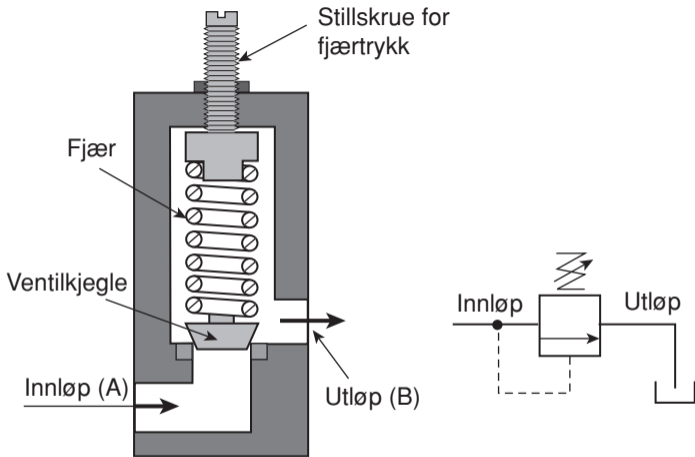
Figur 16.8 Gjennomskåret oljetank



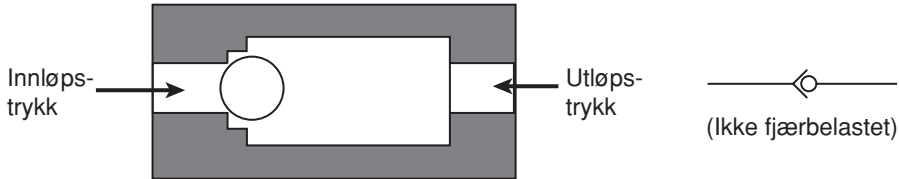
Figur 16.9 Gjennomskåret tannhjulspumpe



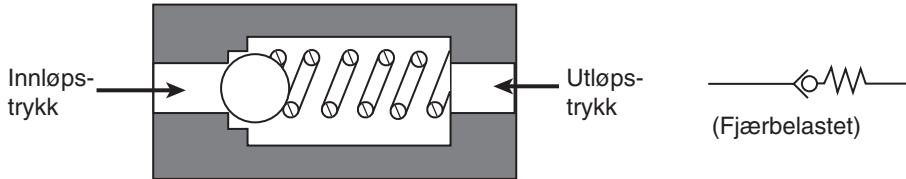
Figur 16.10



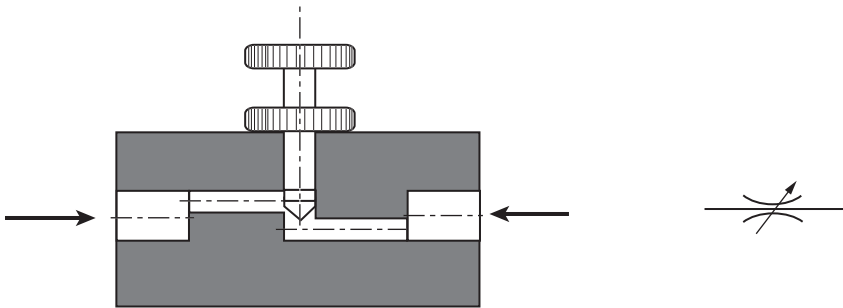
Figur 16.11 Gjennomskåret trykkbegrensningsventil



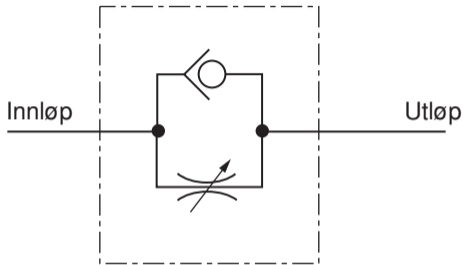
Figur 16.12 Gjennomskåret tilbakeslagsventil



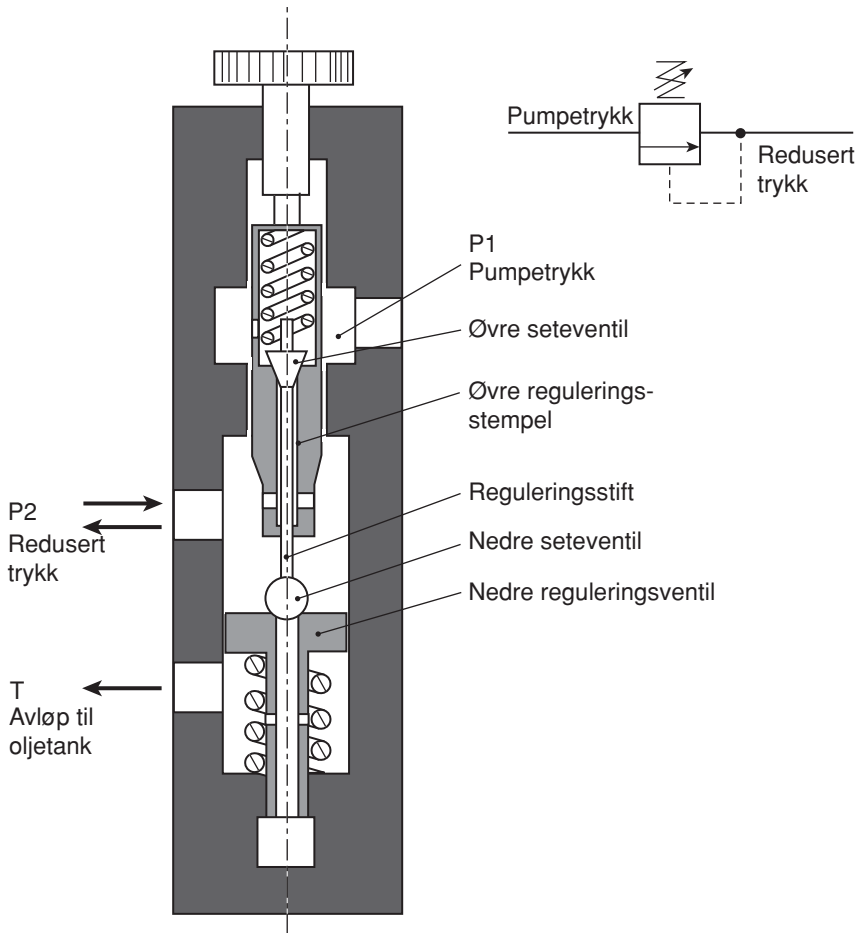
Figur 16.13 Gjennomskåret fjærbelastet tilbakeslagsventil



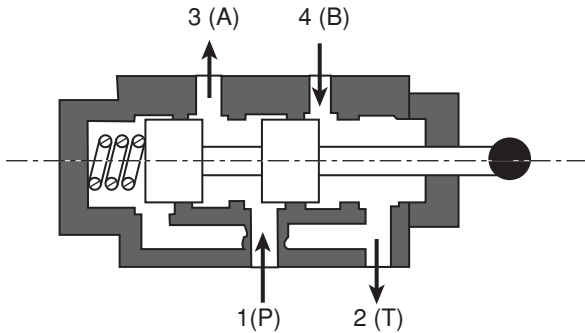
Figur 16.14 Gjennomskåret strupeventil



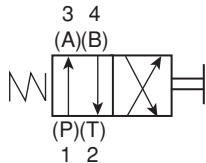
Figur 16.15 Symbolet for en tilbakeslagsventil med struping



Figur 16.16 Gjennomskåret trykkregulator

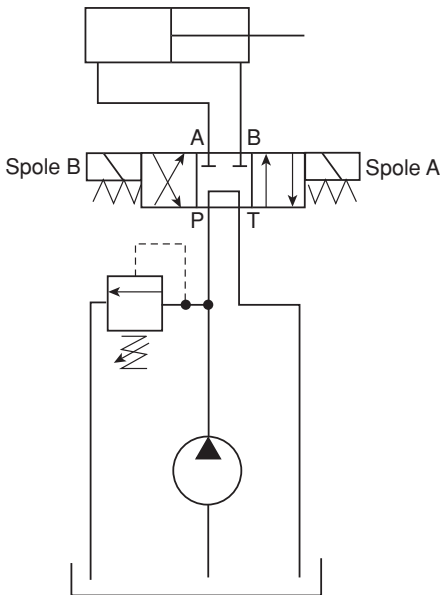


Gjennomskåret 4/2-ventil

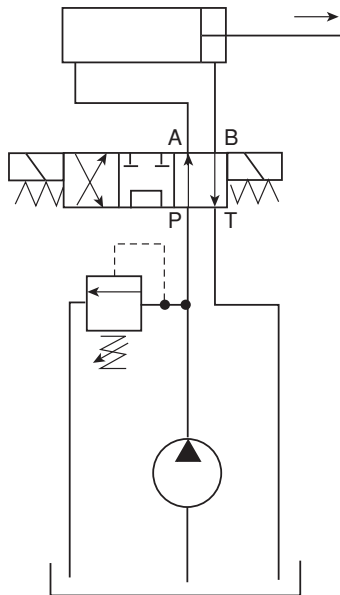


Koblingsbilde for ventilen

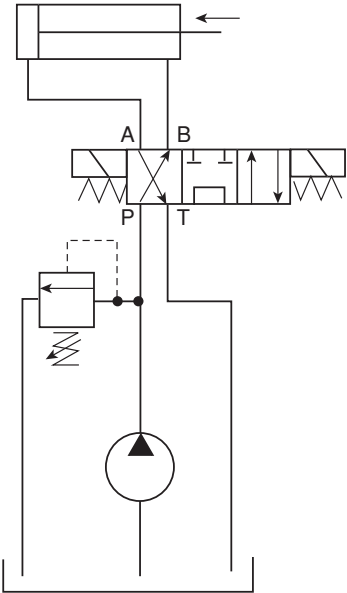
Figur 16.17 Gjennomskåret manuell retningsventil



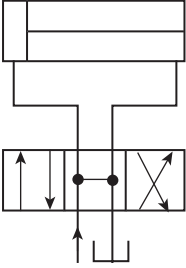
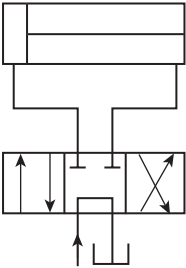
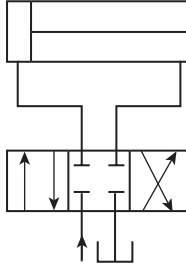
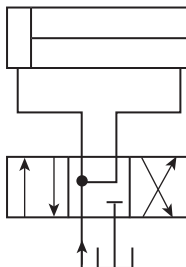
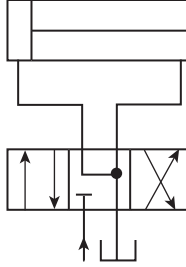
Figur 16.18a



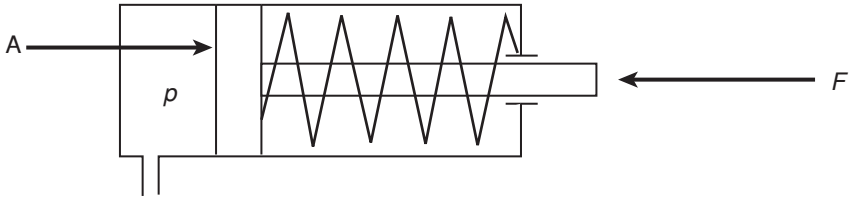
Figur 16.18b



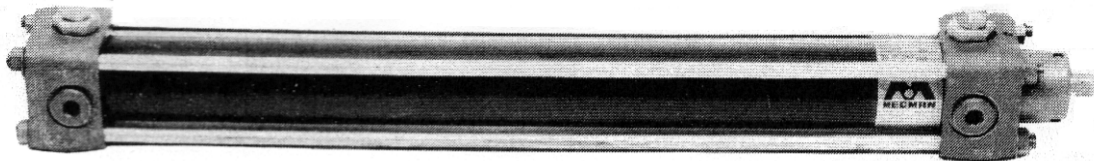
Figur 16.18c

Pos	Symbols framstilling	Beskrivelse av ventilen
1		<p>Pumpa avlastes til tanken. Åpen midtstilling med frikobling av stempelet, det kan føres i minus og plussposisjon av ytre påvirkninger.</p>
2		<p>Pumpa avlastes til tanken. Stempelet er i midtstillingen låst fordi begge portene er stengt.</p>
3		<p>I midtstillingene er alle portene stengt.</p>
4		<p>I midtstilling er ventilen delvis stengt ved at bare porten til tanken er stengt. Pumpa forbindes med sylindrens kamre. Stempelet gjør en langsom plussbevegelse.</p>
5		<p>I midtstilling er ventilen delvis stengt ved at bare porten til pumpa er stengt. Begge sylinderkamrene er forbundet med tanken. Stempelet er frikoblet.</p>

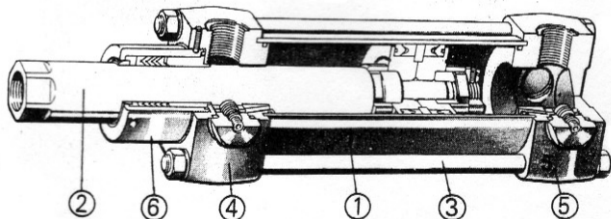
Figur 16.19



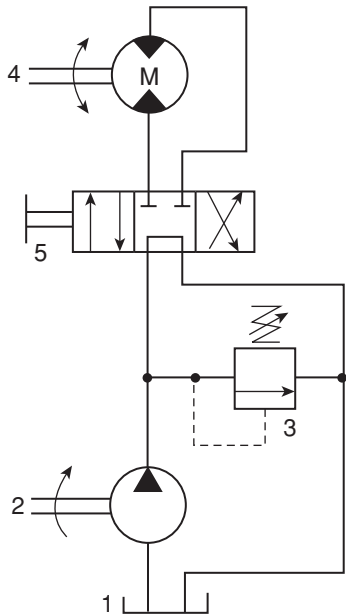
Figur 16.20 Gjennomskåret enkeltvirkende sylinder



- 1 Sylinderrør
- 2 Stempel/stempelstang
- 3 Trekkstang
- 4 Framgavl
- 5 Bakgavl
- 6 Stempelstangføring

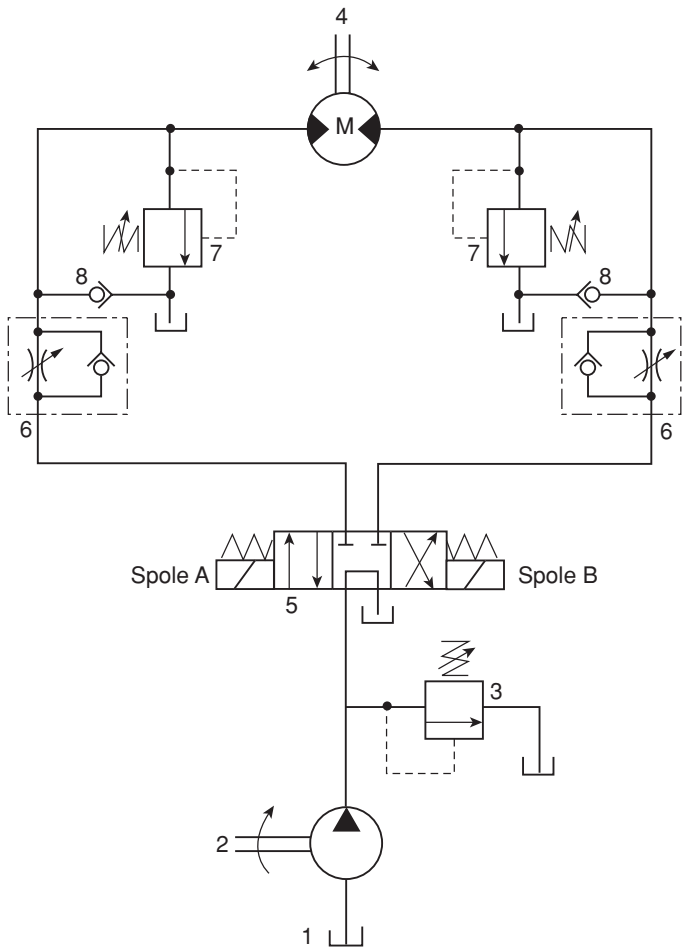


Figur 16.21 Dobbeltvirkende sylinder

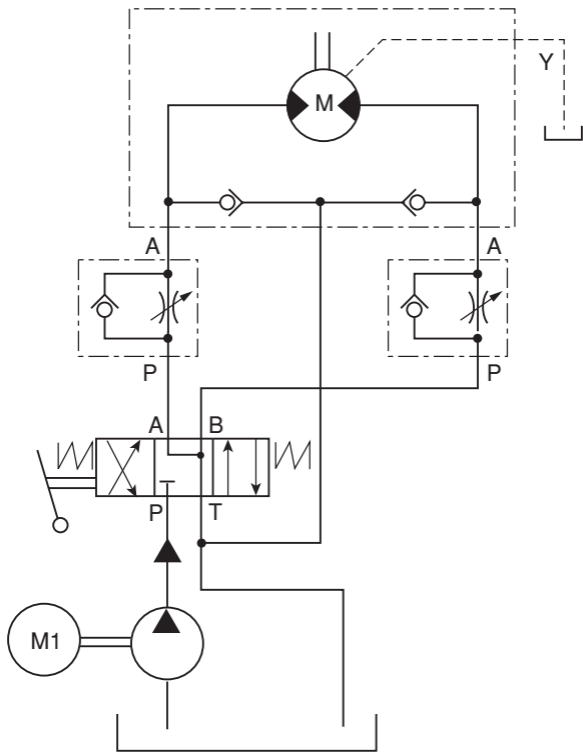


Komponentnummer	Utstyr, komponent
1	Oljetank
2	Oljepumpe
3	Trykkbegrensningsventil
4	Hydraulisk motor
5	Retningsventil, manuelt styrt 4/3-ventil

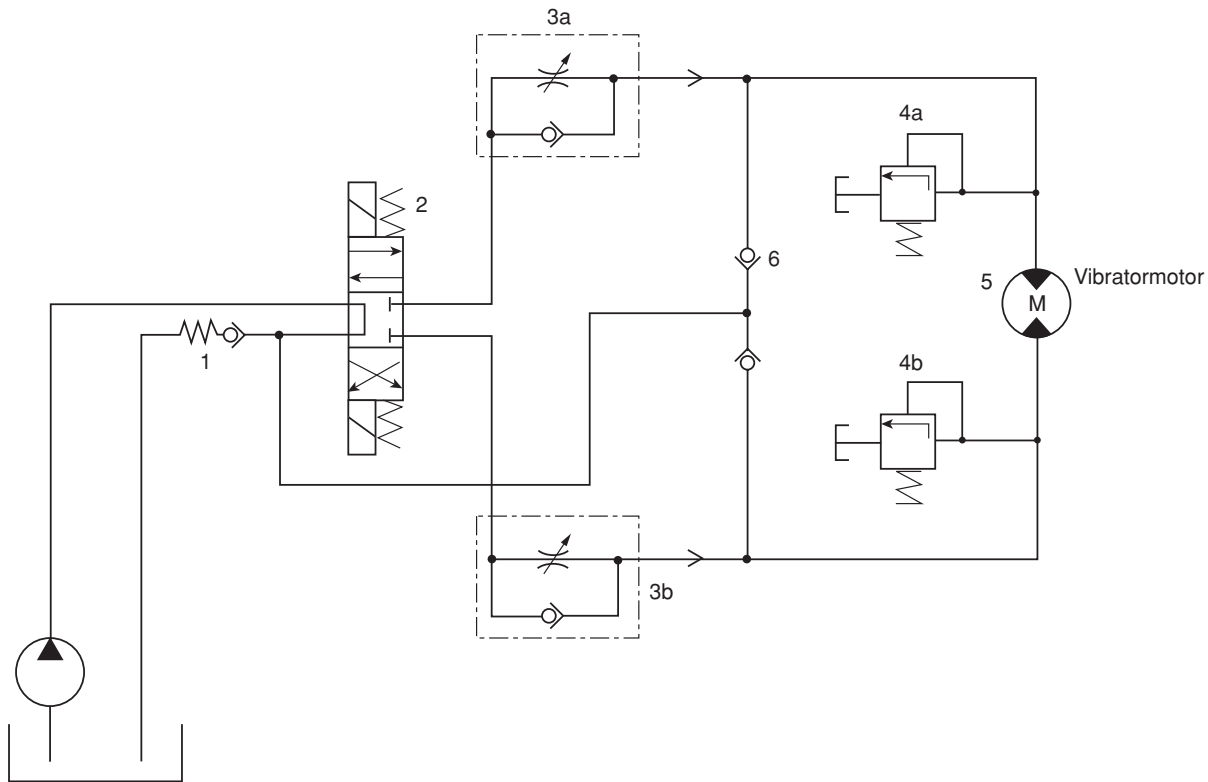
Figur 16.22



Figur 16.23 Regulering av motorens utgangseffekt



Figur 16.24 Styling av hydraulisk motor



Figur 16.25 Koblingskjema for hydraulikkmotor