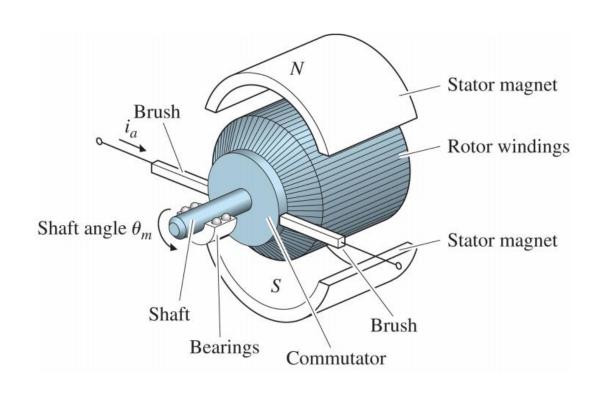
Modeling DC Servo Motor

What is a DC Servo Motor

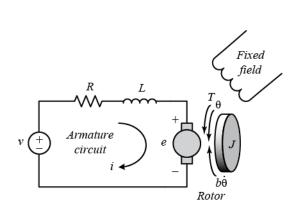
DC Servo Motor = DC Motor + Servo Mechanism

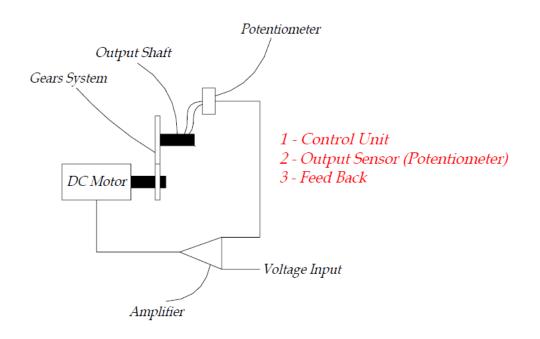


What is a DC Servo Motor

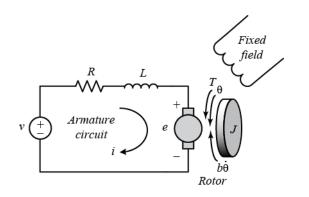


Servo Mechanism





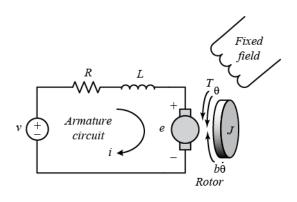
Mathematical Modeling



$$v = iR + Li^{\circ} + e$$
 $e = k_b \theta^{\circ}$
 $T = k_t i$
 $T = i\theta^{\circ \circ} + b\theta^{\circ}$

$$egin{aligned} V &= I[R+sL]+E \ E &= K_b heta^\circ \ T &= k_t I \ T &= heta^\circ [js+b] \end{aligned}$$

Mathematical Modeling



$$egin{aligned} oldsymbol{v} &= oldsymbol{i} R + L oldsymbol{i}^\circ + oldsymbol{e} \ oldsymbol{e} &= oldsymbol{k}_b oldsymbol{ heta}^\circ \ T &= oldsymbol{k}_t oldsymbol{i} \ T &= oldsymbol{j} oldsymbol{ heta}^{\circ\circ} + oldsymbol{b} oldsymbol{ heta}^\circ \end{aligned}$$

$$egin{aligned} oldsymbol{i}^\circ &= rac{1}{L}(oldsymbol{v} - oldsymbol{i} R - oldsymbol{e}) \ T &= oldsymbol{k}_t oldsymbol{i} \ oldsymbol{ heta}^{\circ \circ} &= rac{1}{oldsymbol{j}}(T - oldsymbol{b} oldsymbol{ heta}^{\circ}) \end{aligned}$$

$$e = K_b \theta^{\circ}$$

Assignment Answer

$$egin{aligned} V &= I[R+sL]+E \ E &= K_b heta^\circ \ T &= k_t I \ T &= heta^\circ [js+b] \end{aligned}$$

