- Brezzi's Theorem 2.4 also yields existence, uniqueness and apriori-estimates provided that the standard assumptions (2.3) hold:

  1) $F \in X^*$, $G \in \Lambda^*$ (...)
  2) $a(\cdot,\cdot)$, $b(\cdot,\cdot)$ ✓ (...)
  3) LBB-condition $\longrightarrow$ Lemma 3.9 (↓)
  4) $V(0) = \mathrm{Ker}\, B = \mathrm{Ker}\, b(\cdot,\cdot)$ - ellipticity is trivial since $a(\cdot,\cdot)$ is even elliptic on X:
  $a(\sigma,\sigma) = (D^{-1}\sigma,\sigma)_0 \geq \lambda_{min}(D)\,\|\sigma\|_0^2 = \alpha_1 \|\sigma\|_X^2 \;\forall\sigma$

  Therefore, all results of Theorem 2.4 are valid.

- <u>Lemma 3.9:</u> (LBB-condition)

<u>Ass.:</u> Let the assumption of Lemma 3.6 (2nd KORN's inequality) be fulfilled.

<u>St.:</u> Then the LBB-condition

$$(15)\qquad \sup_{\tau\in X}\frac{b(\tau,v)}{\|\tau\|_X} = \sup_{\tau\in L_2^{sym}(\Omega)}\frac{(\tau,\varepsilon(v))_0}{\|\tau\|_0} \geq \beta_1 \|v\|_1$$

is valid $\forall v \in \Lambda = \mathbb{H}_0^1(\Omega)$ with $\beta_1 = c_{K2}$.

<u>Proof:</u>

$$\sup_{\tau\in L_2^{sym}(\Omega)}\frac{(\tau,\varepsilon(v))_0}{\|\tau\|_0} \geq \frac{\|\varepsilon(v)\|_0^2}{\|\varepsilon(v)\|_0} = \|\varepsilon(v)\|_0 \geq c_{K2}\|v\|_1$$

↑

$\tau = \varepsilon(v) \in L_2^{sym}(\Omega)$ for $v \in \mathbb{H}_0^1(\Omega)$

for all $v \in \mathbb{H}_0^1(\Omega)$ ■