Memberikan keselamatan dan keamanan bagi Masyarakat di Dunia

FUJIBOLT MANUFACTURING Co., Ltd.

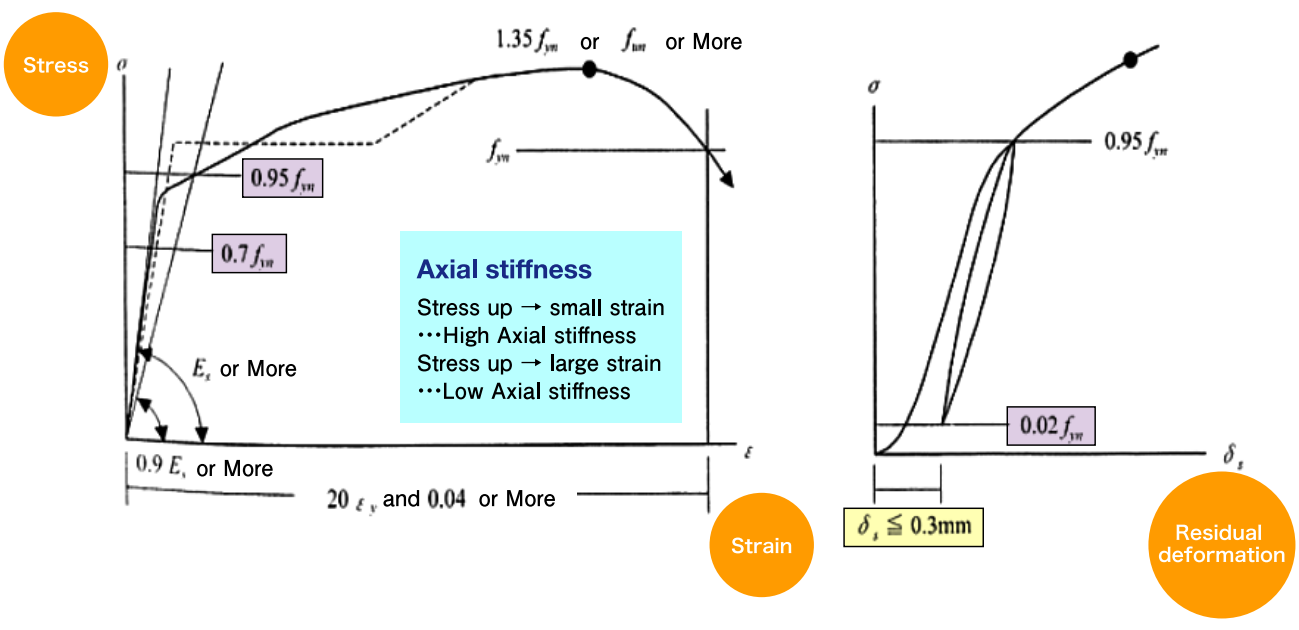
Japan Society of Civil Engineering-Steel Coupler Guidelines (2007 Edition)

This translation from Japanese to English is made by Fujibolt Manufacturing.
It is not the original official English version of Japan Society of Civil Engineering-Steel Coupler Guidelines (2007 Edition).
Therefore it is used for your reference purpose only.

1. one-way tensile test (static proof test)
2. one-way repetitive test (high stress load repetitive strength test)
3. Elastic range two-direction (tention and compression) repetitive test
4. Plastic range two-direction (tention and compression) repetitive test
5. Elastic and Plastic range two-direction (tention and compression) repetitive test (both range at the same time)

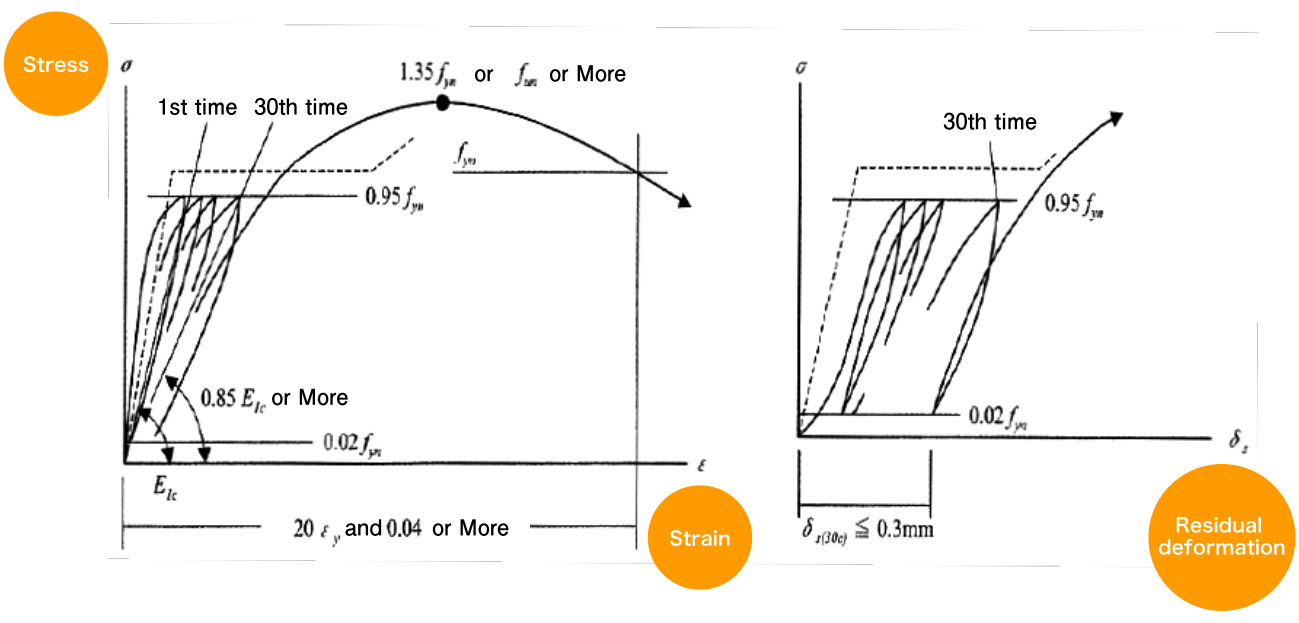
one-way tensile test

Test Overview	One-way tensile test with accurate testing instrument
Objective	Evaluate the axial stiffness and residual deformation equivalent to the rebar itself



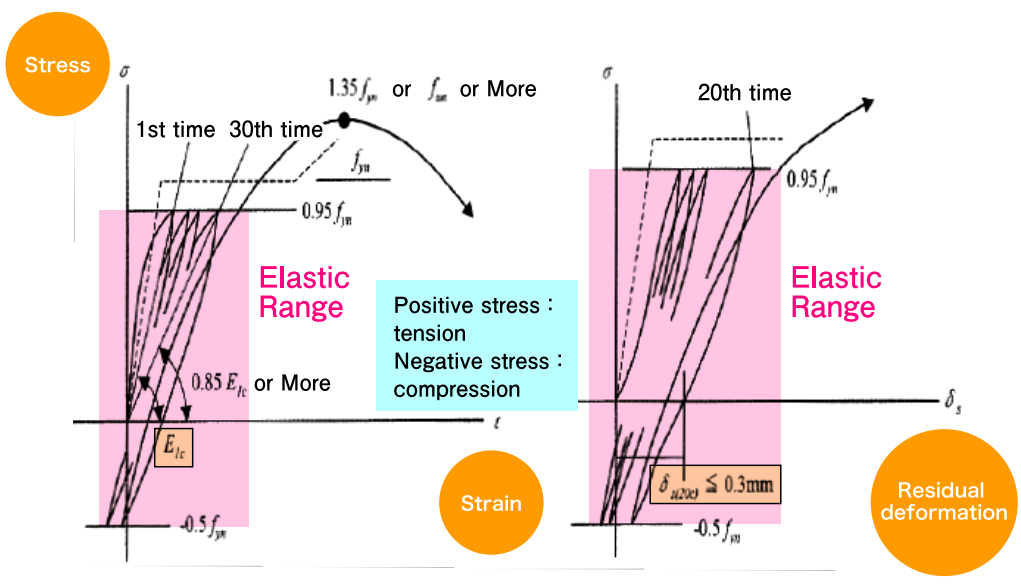
one-way repetitive test

Test Overview	30 times repetitive one-way tensile Test
Objective	Evaluate the Axial stiffness decreasing and residual deformation increase at the range of elastic range



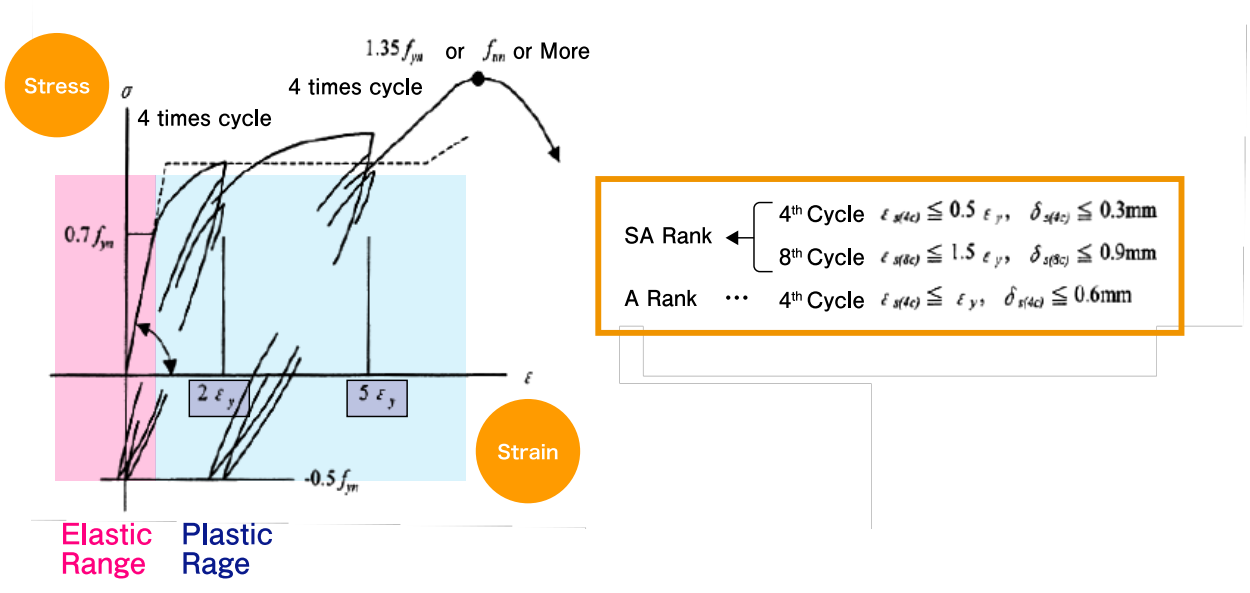
Elastic range two-direction (tension and compression) repetitive test

Test Overview	Evlauate the 20 cycle stiffness/ 1cycle stiffness with loading Tension and compression
Objective	Measurement the decrease of axial stiffness in the elastic range



Plastic range two-direction (tention and compression) repetitive test

Test Overview	Perform 4 cycle reputation (tension and compression) at the stress of Twice larger than Yield strain and perform 4 cycle reputation at the stress of fifth larger than Yield strain
Objective	Measurement of the slippage (Residual deformation)



performance evaluations using simple substance tests

		SA RANK	A RANK	B RANK	C RANK
one-way tensile test (static proof test)	Tensile Strengh		$f_j \geqq 1.35 f_{yn}$ or f_{un}		$f_j \geqq f_{yn}$
	Axial Stiffness	$E_{0.7fyn} \geqq E_s$ $E_{0.95fyn} \geqq 0.9E_s$	$E_{0.7fyn} \geqq 0.9E_s$ $E_{0.95fyn} \geqq 0.7E_s$	$E_{0.5fyn} \geqq 0.9E_s$ $E_{0.95fyn} \geqq 0.5E_s$	$E_{0.5fyn} \geqq 0.9E_s$ $E_{0.7fyn} \geqq 0.5E_s$
	Measured Strain	$\varepsilon_u \geqq 20\varepsilon_y$ and $\varepsilon_u \geqq 0.04$	$\varepsilon_u \geqq 10\varepsilon_y$ and $\varepsilon_u \geqq 0.02$	$\varepsilon_u \geqq 5\varepsilon_y$ $\varepsilon_u \geqq 0.01$	—
	Residual deformation	$\delta_s \leqq 0.3$ mm	$\delta_s \leqq 0.3$ mm	—	—
one-way repetitive test (high stress load repetitive strength test)	Tensile Strengh		$f_j \geqq 1.35 f_{yn}$ or f_{un}		—
	Axial Stiffness	$E_{30c} \geqq 0.85E_{1c}$	$E_{30c} \geqq 0.5E_{1c}$	$E_{30c} \geqq 0.25E_{1c}$	—
	Measured Strain	$\varepsilon_u \geqq 20\varepsilon_y$ and $\varepsilon_u \geqq 0.04$	$\varepsilon_u \geqq 10\varepsilon_y$ and $\varepsilon_u \geqq 0.02$	$\varepsilon_u \geqq 5\varepsilon_y$ $\varepsilon_u \geqq 0.01$	—
	Residual deformation	$\delta_{s(30c)} \leqq 0.3$ mm	$\delta_{s(30c)} \leqq 0.3$ mm	—	—
Elastic range two-direction repetitive test	Tensile Strengh		$f_j \geqq 1.35 f_{yn}$ or f_{un}		—
	Axial Stiffness	$E_{20c} \geqq 0.85E_{1c}$	$E_{20c} \geqq 0.5E_{1c}$	$E_{20c} \geqq 0.25E_{1c}$	—
	Residual deformation	$\delta_{s(20c)} \leqq 0.3$ mm	$\delta_{s(20c)} \leqq 0.3$ mm	—	—
Elastic range two-direction repetitive test	Tensile Strengh	$f_j \geqq 1.35 f_{yn}$ or f_{un}		—	—
	Residual deformation	$\varepsilon_{s(4c)} \leqq 0.5\varepsilon_y$ $\delta_{s(4c)} \leqq 0.3$ mm $\varepsilon_{s(8c)} \leqq 1.5\varepsilon_y$ $\delta_{s(8c)} \leqq 0.9$ mm	$\varepsilon_{s(4c)} \leqq \varepsilon_y$ $\delta_{s(4c)} \leqq 0.6$ mm	—	—

f_{yn} : specified yielding point of rebar
f_{un} : specified Tensile Strength of rebar
f_j : tensile Strength of spliced rebar
δ_s : amount of slippage deformity in spliced rebar
E_s : secant stiffness of rebar at 70% of specified rebar yielding point
$E_{0.5fyn}$, $E_{0.7fyn}$, $E_{0.95fyn}$: secant stiffness of spliced rebar at strength of 0.5fyn yo, 0.7fyn yo 0.95fyn respectively
E_{1c}, E_{20c}, E_{30c} : secant stiffness of spliced rebar at strength of 0.96fyn yo,at times of first, twentieth and thirtieth processing respectively
$\varepsilon_{s(4c)}$, $\varepsilon_{s(8c)}$: slippage strain during fourth and eighth processing respectively
$\delta_{s(4c)}$, $\delta_{s(8c)}$, $\delta_{s(20c)}$, $\delta_{s(30c)}$: slippage amount during fourth, eighth twentieth and thirtieth processing respectively
ε_y : yielding strain of spliced rebar
ε_u : ultimate strain of spliced rebar
ε_s : slippage strain of spliced rebar

Source: Japan Society of Civil Engineering-Steel Coupler Guidelines (2007 Edition)