

JTEKT's **bearing resistant to hydrogen environments "EXSEV-H₂[®]"** fulfills the following requirements:

Want to improve the **bearing life in hydrogen environments**

Want to improve **corrosion resistance of bearings**

and will contribute to the realization of hydrogen energy based society by **improving reliability** of FCEV!

Features of bearing resistant to hydrogen environments “EXSEV-H₂®”

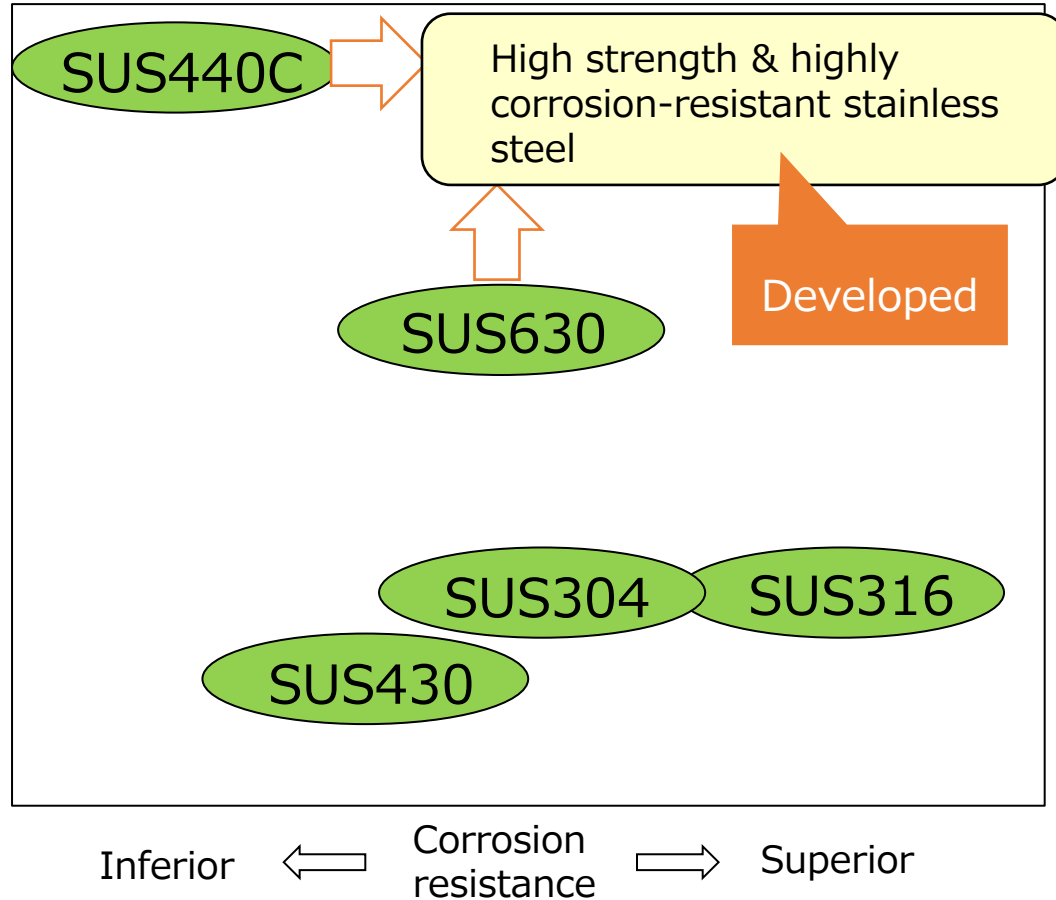


Improves **bearing life in hydrogen environments**

Improves **corrosion resistance of the bearings**

by applying high strength & highly corrosion-resistant stainless steel.

Corrosion resistance and strength of high strength & highly corrosion-resistant stainless steel



Mechanism to improve hydrogen embrittlement resistance

- ① Improved corrosion resistance by adding a relatively large amount of nitrogen
⇒ Prevented hydrogen permeation from corroded parts.
- ② Hydrogen trapping effect by adding trace alloy elements
⇒ Suppressed concentration of hydrogen that had permeated into the steel.

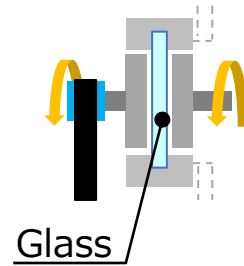
Developed bearings with excellent hydrogen embrittlement resistance

Bearing life tester for hydrogen environments (originally developed by JTEKT)



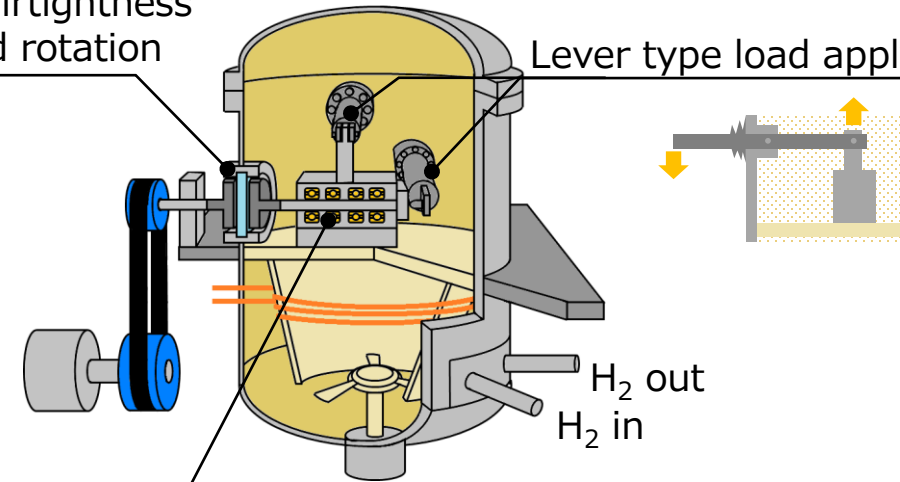
Appearance of the tester

Magnet coupling
that achieves airtightness
and high-speed rotation



Glass

Testing part



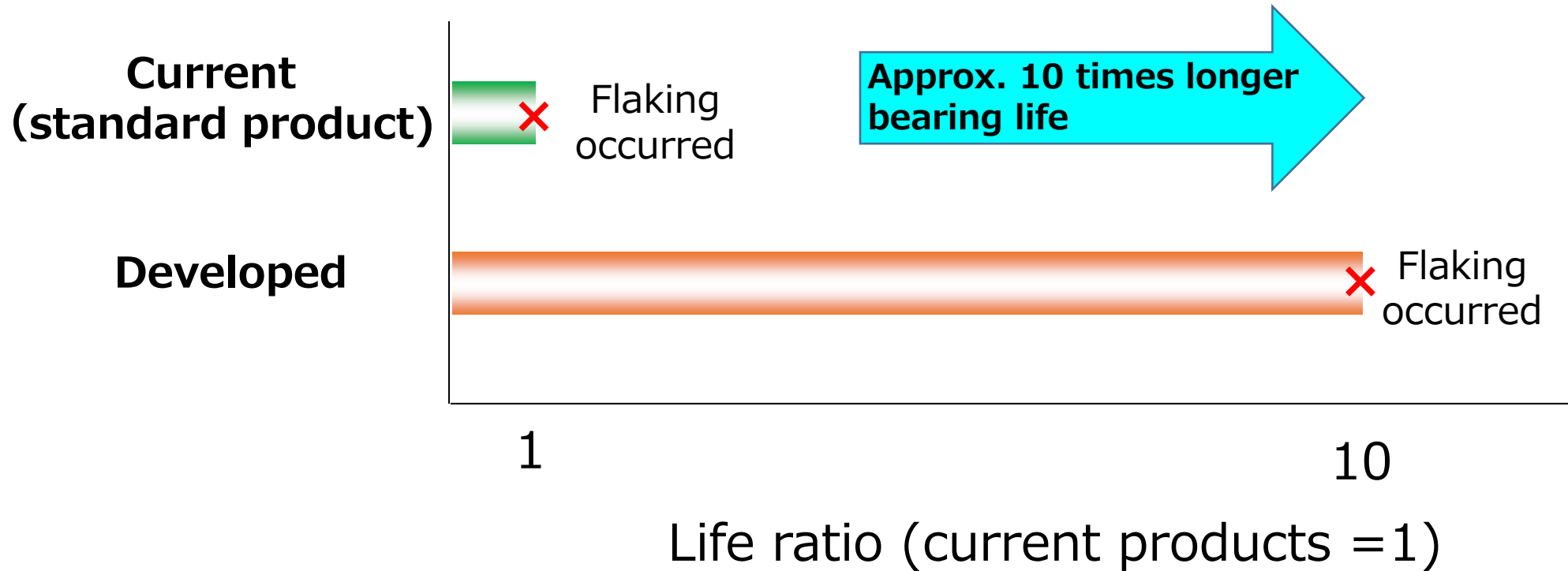
Lever type load applying structure

H₂ out
H₂ in

Outline of the tester



**This tester enabled bearing life testing in
hydrogen environments**

Result of bearing life test in hydrogen environments

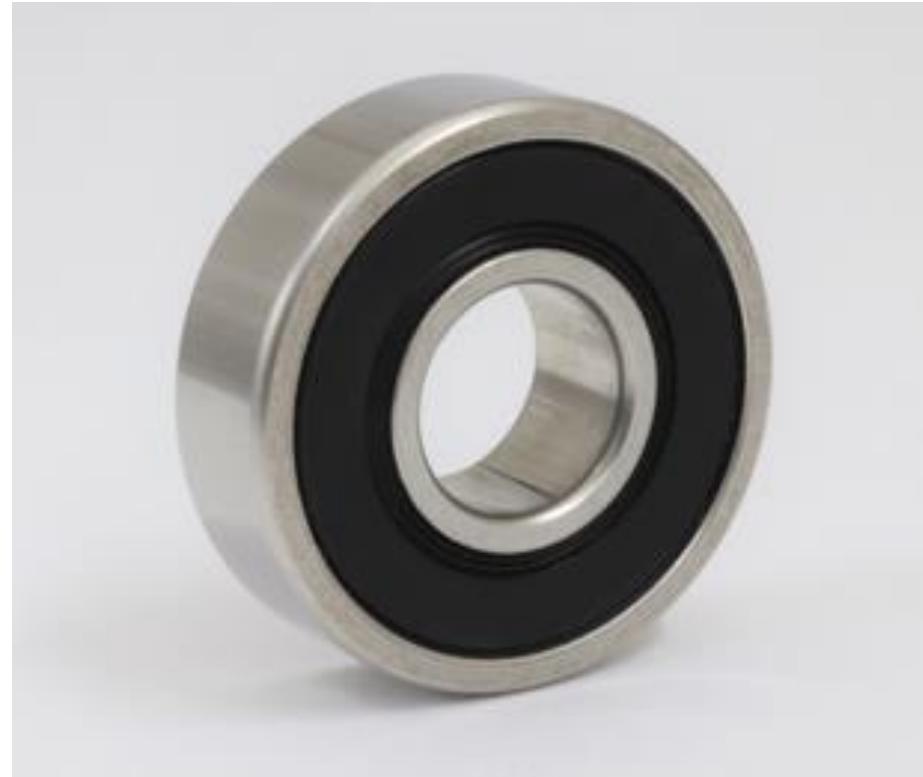


Enabled improvement of bearing life in hydrogen environments

Corrosion resistance of developed bearing (Salt spray test result)

		New	After 48h
Current (SUS440C)	Inner ring		
	Outer ring		
Developed	Inner ring		
	Outer ring		

Improved corrosion resistance of bearings



JTEKT's bearing resistant to hydrogen environments
"EXSEV-H₂[®]" will contribute to the realization of hydrogen energy based
society by **improving reliability** of FCEV!

**Bearing resistant to hydrogen environments
“EXSEV-H₂®”**

JTEKT’s bearing resistant to hydrogen environments “EXSEV-H₂®” made of high strength & highly corrosion-resistant stainless steel will contribute to the realization of hydrogen energy based society.

This bearing features prevention of hydrogen permeation from the bearing surface by improving corrosion resistance and hydrogen trapping effect by adding trace alloy elements, which suppress early flaking of the bearings caused by hydrogen embrittlement.

JTEKT confirmed that this bearing has at least ten times longer bearing life than conventional products (made of bearing steel). This bearing will realize the improvement of durability and reliability of FCEV, and contribute to the promotion of carbon neutrality utilizing hydrogen.