

# TORQUEMETERS

The World's Best  
Torquemeters Since 1960



## S.HIMMELSTEIN & COMPANY

www.himmelstein.com 800-632-7873

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## Overload vs. Overrange: Everything You Need to Know

Have you ever wondered exactly what overload and overrange are? Tech memo "Overload vs. Overrange, What's the Difference?" is for you! Learn about the differences between the two, how overload applies in torque sensor specifications and how overrange relates to the sensors' electrical output signal.

Questions? We're here to help: 1-847-843-3300

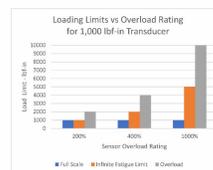


### Overload/Overrange What's the Difference?

Two easily overlooked, yet extremely critical parameters when evaluating and specifying torque transducers are – Mechanical Overload Rating and Electrical Overrange. Each is important, but often confused and misunderstood.

Overload – represents a mechanical safety factor for the sensor element. Normally expressed as a percentage of the sensor full scale rating, it is the maximum load limit of the sensor before yield or physical deformation. S. Himmelstein and Company products are available in a variety of overload ratings – typically either 200%, 400% or even 1,000%. The sensors are designed for infinite fatigue life for operation at or below one-half of full mechanical overload rating. The overload region – from one-half the overload rating up to the full overload rating – should be reserved as safety factor for occasional unexpected events. Operation in the overload region will not immediately damage the unit, but repeated operation or frequent cycles into the overload region will decay the fatigue life to a finite value and may eventually lead to a fatigue failure. Operation above the full overload rating may result in physical deformation or yielding of the sensor element or strain gages. This loading will not cause a catastrophic failure but will be evidenced by a significant permanent zero offset.

By way of example, a 1,000 lbf-in (113 Nm) sensor with a 400% overload rating, will have a maximum overload of 4,000 lbf-in (452 Nm). The infinite fatigue life loading limit would be one-half of overload rating, or 2,000 lbf-in (226 Nm). Operation between 2,000 lbf-in (226 Nm) and 4,000 lbf-in (452 Nm) will not damage the unit but will start to decay the fatigue life. Loading above 4,000 lbf-in may result in a permanent zero offset.



## Hollow Flanged Reaction Torque Transducers

When you don't want to insert a rotating mass between the driving and driven elements, a hollow flange reaction torque sensor is your best choice. [Learn more.](#)

## New Video for You

View our Company information in [video](#) form. Topics include Himmelstein's history, improvements, torque sensor options, calibration services, key contacts, references, and more. It's a quick way to have all our information at your disposal. Please let us know if you have any questions.



## Himmelstein Celebrates 60!

A lot has changed since we first opened our doors in 1960, but we've adapted, survived, and thrived thanks to our wonderful customers and hard-working employees. We look forward to providing you with the best torque measurement equipment and customer service for another 60 years. New technology is on the horizon. Stay tuned!



*Designing and Making the Worlds Best  
Torque Instruments Since 1960*

**www.himmelstein.com** 800-632-7873  
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Focused exclusively on torque sensors since 1960, [Himmelstein](http://www.himmelstein.com) designs and makes the world's best torque sensors, transfer standard, and instrumentation. Products include rotating and reaction sensors from 10 ozf-in to 22,000,000 lbf-in in virtually every mechanical configuration. All are calibrated CW and CCW to full capacity in our ISO/IEC17025:2017 accredited laboratory.

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