

Pole2Flag: Reverse Engineer - Acura NSX Steering Gear

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Reverse Engineering

Part Number: 53040-SL0-A01

Make: Acura/Honda

Model: NSX

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Complete Steering Gear Assembly



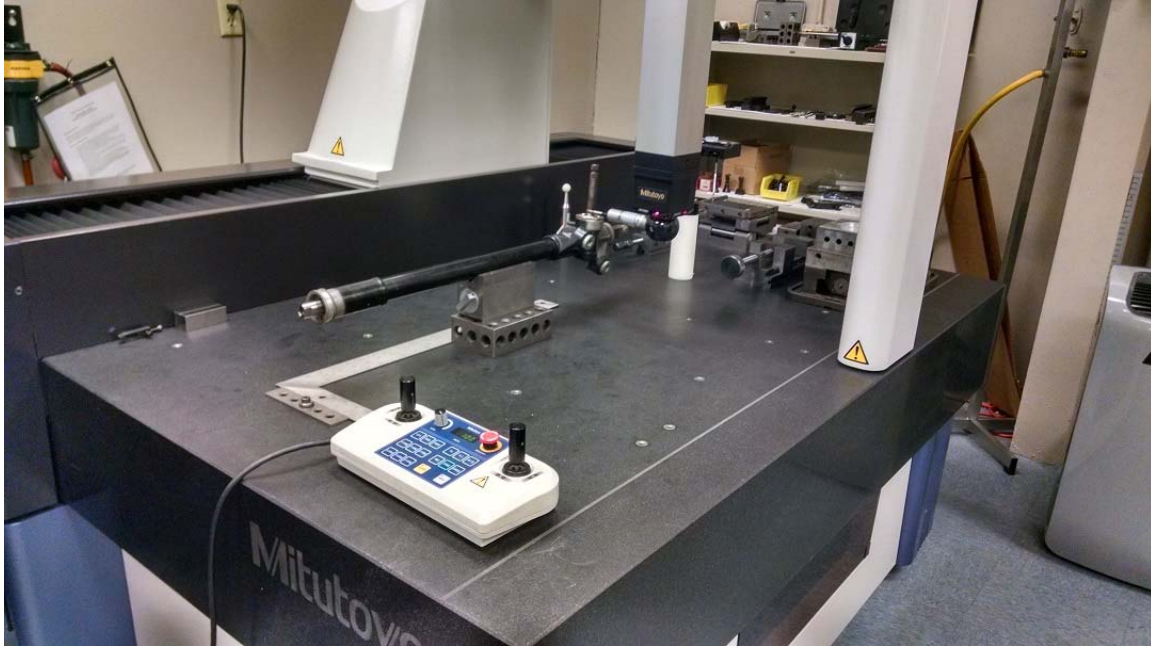
Steering Gear with Bellows Removed

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Short Gear Affixed to CMM



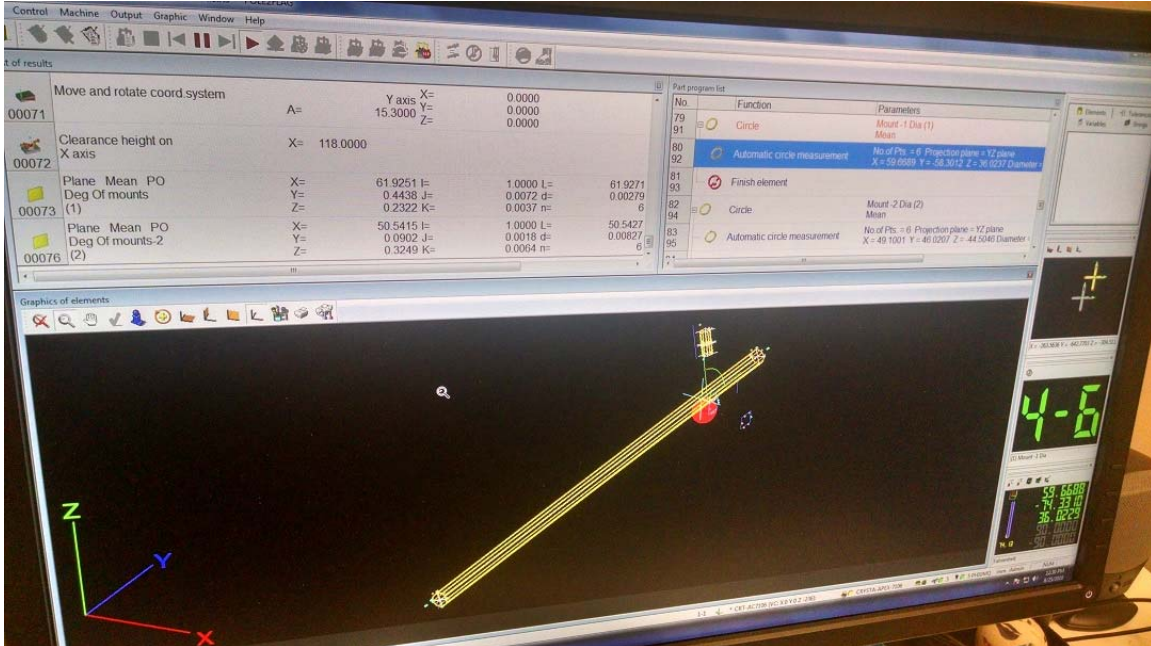
CMM Probe Measuring Point on Pinion Shaft

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CMM Results for Steering Gear Assembly



Disassembled Steering Gear – Rack, Pinion, and Yoke Assembly Removed

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Disassembled Steering Gear – Yoke Screw, Yoke Nut, Yoke Spring, and Yoke



Disassembled Steering Gear – Pinion with Upper Bearing, Pinion Retaining Screw, and Nut

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Y – Form Rack Yoke and Yoke Spring



Pinion

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CMM of Rack Bar



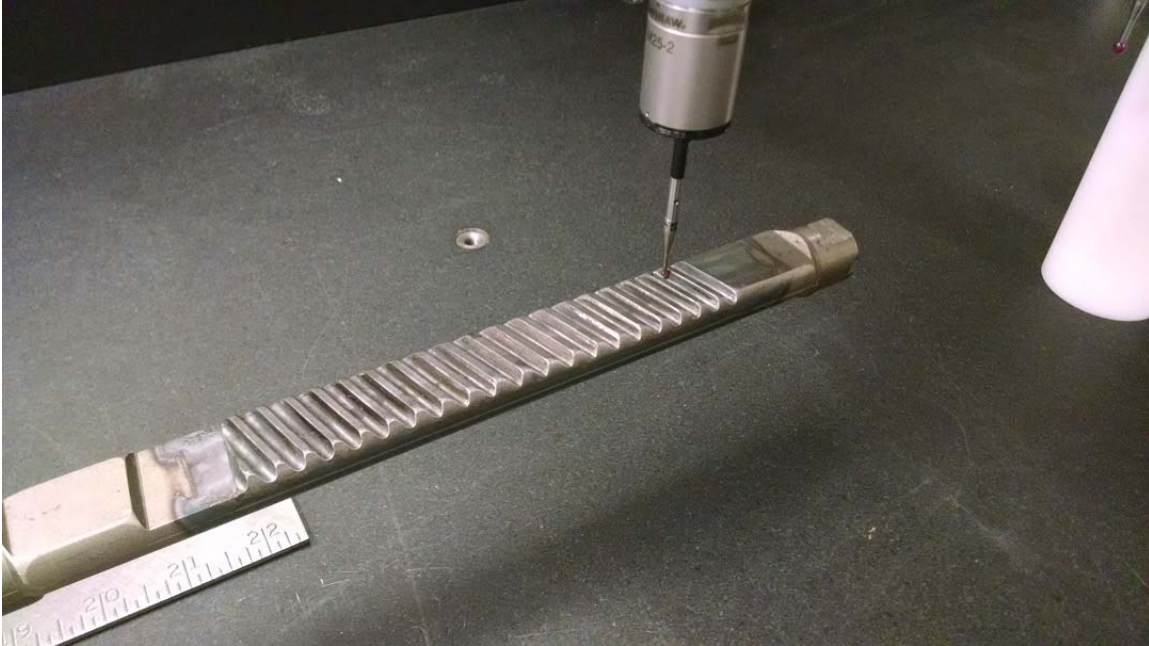
CMM Measurement of Rack Tooth Height to Rack Centerline

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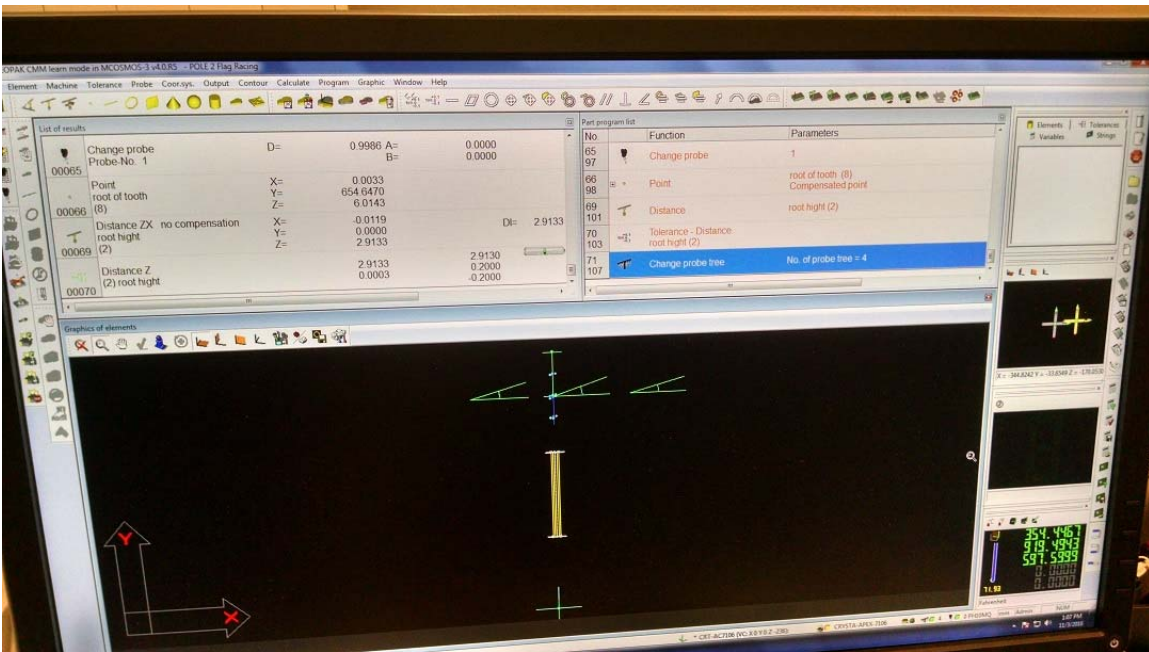
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CMM Measurement of Rack Tooth Skew Angle



CMM Results Rack Bar Measurement

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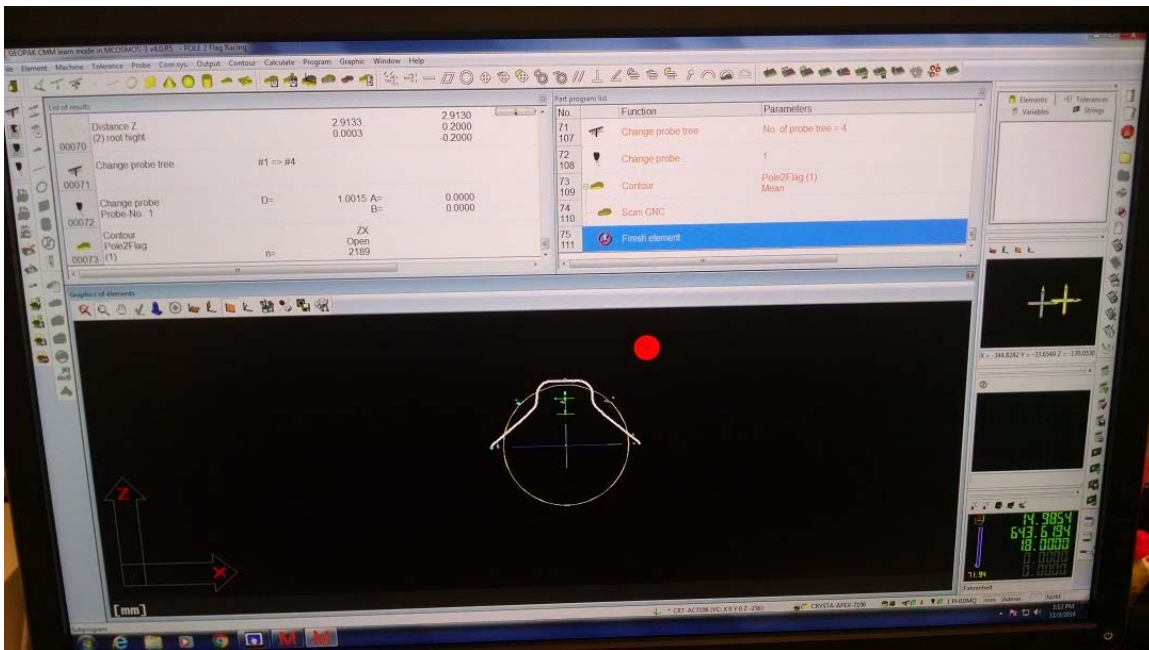
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CMM Profile Trace of Y-Form Rack Bar



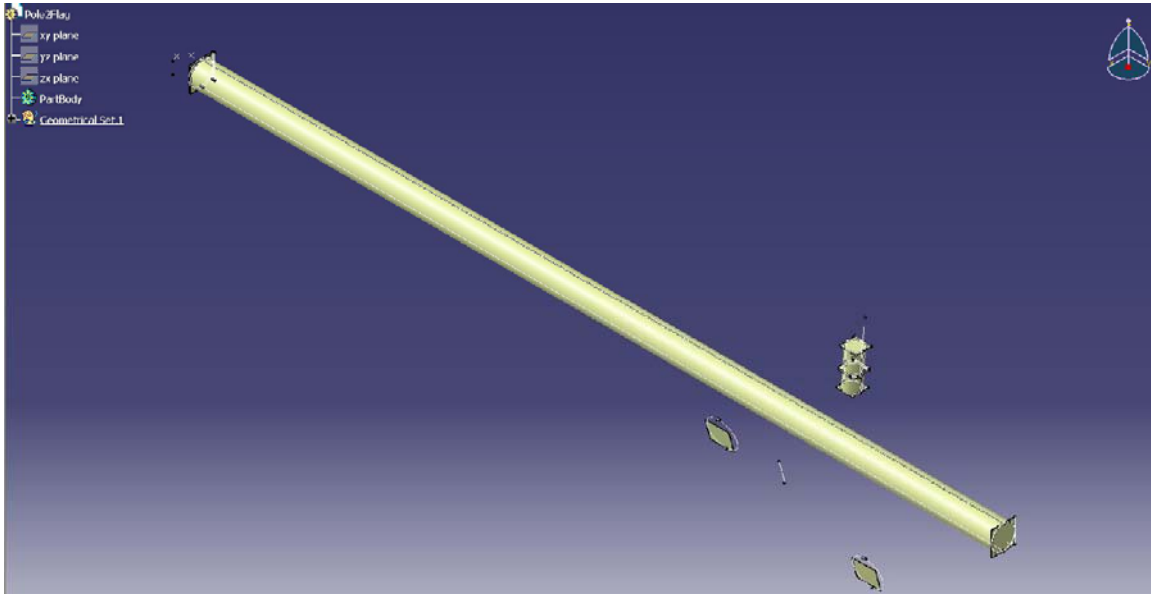
CMM Profile Trace of Y-Form Rack Bar Results

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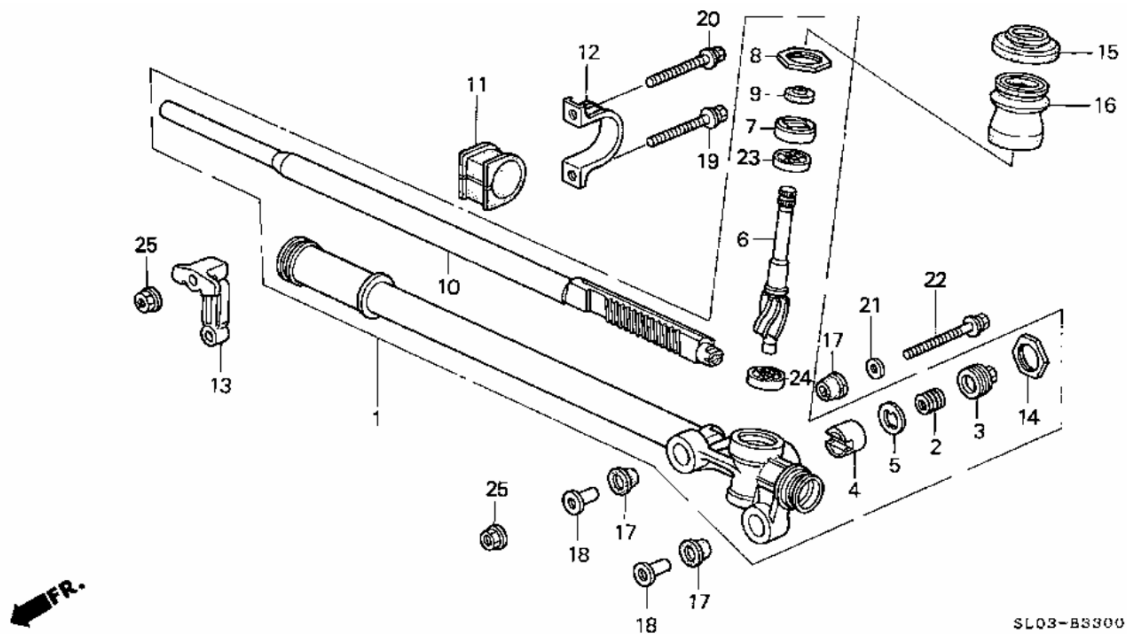
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CAD Data of Geometric Reference Points



OEM Manufacturer Parts Diagram

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OEM Steering Gear Specifications

	Steering Gear Type:	Manual (No Assist)
	Hand of Steering Gear:	LHD
A	Installation Angle (deg):	5.021 (CMM)
B	Pinion Inclination Angle (deg):	105.292 (CMM)
C	Half Rack Travel (mm):	46.7
D	Box Center Distance (mm):	15.342 (CMM)
E	Rack Bar Diameter (mm):	22
F	Overall Rack Length (mm):	779.25 (CMM)
G	Rack End to Yoke Center - Short Side (mm):	128.6 (CMM)
H	IBJ to Yoke Center- Short Side (mm)	NA
I	Distance between Inner Ball Joints (mm):	NA
	Turns Lock-to-Lock:	1.91
	Rack Gain (mm/rev):	38.5

Additional Technical Requirements

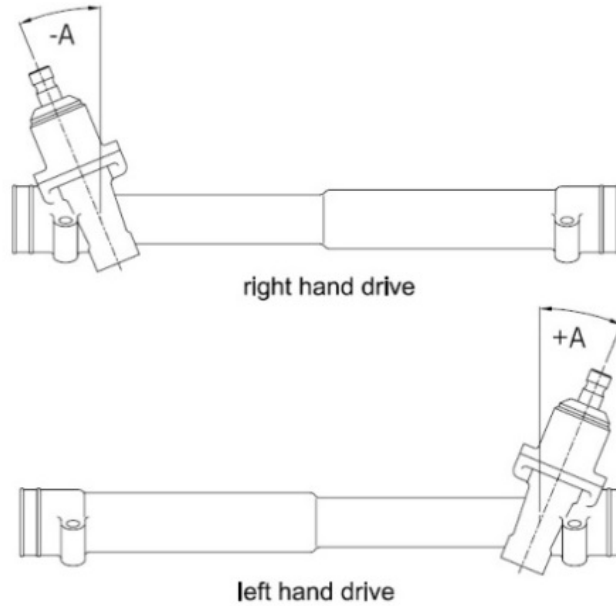
- *Y-rack
- *19mm flats on rack ends
- *21mm flats on crimped lock washer for inner tie rod to rack jam nut
- *Lock washer prong style that expand into rack notches
- *Pinion shaft OD = 14.8mm
- *Rack tube OD = 34.1mm
- *Rack Centerline to Top of Rack Teeth = 8.95mm (8.825 & 9.076 from CMM)
- *Distance from End of Rack to Center Tooth = 128.58mm (CMM - Tooth on Center)
- *Skew on Center = 18.369° (CMM)
- *Skew at Teeth End = 15.405° (15.224 & 15.5859 from CMM)
- *Height of Rack Tooth = 2.9133mm

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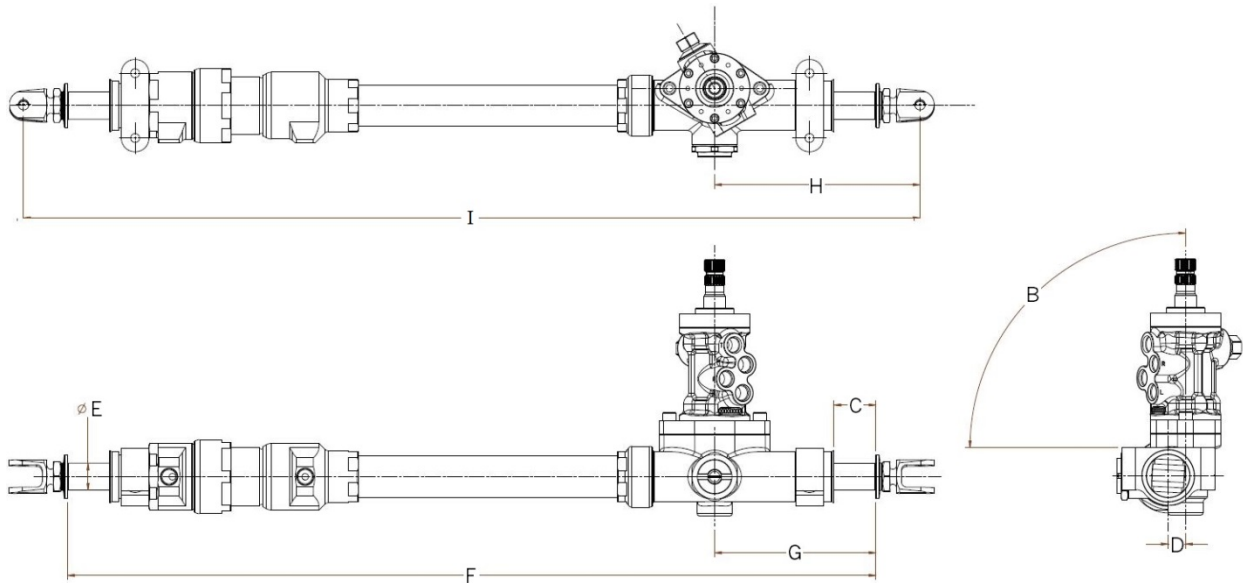
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Steering gear assembly "hand" direction is determined by pinion location, not driver position.



Reference drawing to Steering Gear Specifications Table