VALLEY FORGE LOAD INDICATING SOLUTION

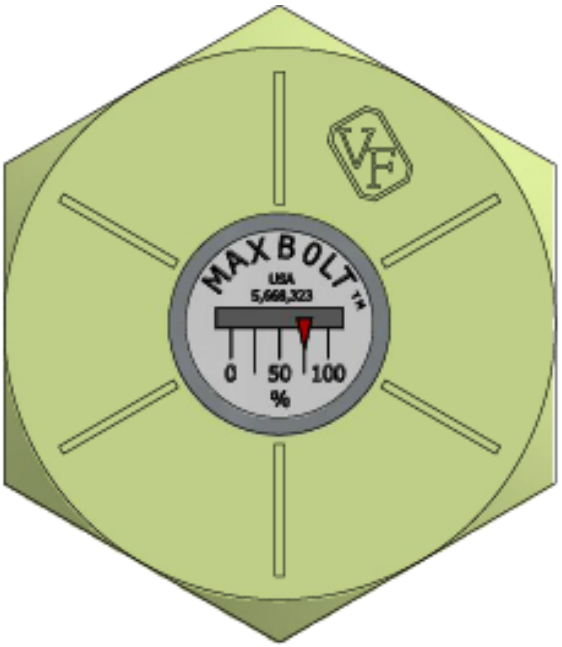
RAIL INDUSTRY

LOCATION: North Dakota, USA

SPECIFIC APPLICATION: Wheel and track sander nozzle bracket bolts.

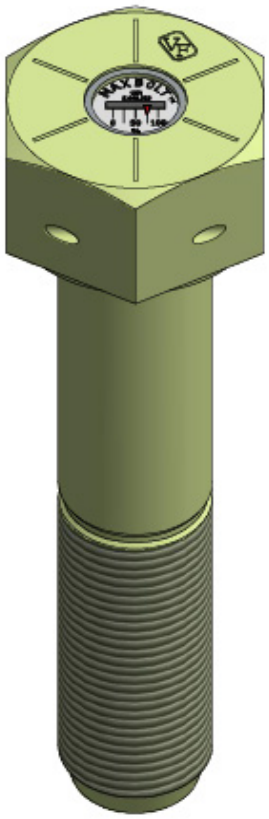
BOLTING ISSUE: Constant loosening from vibration resulting in bolt breakage.

VALLEY FORGE SOLUTION: Maxbolt Load Indicating Fasteners



INSTALLATION:

A bracket was retrofitted to the railcar axle. The assembly consisted of four bolted bracket mounts retrofitted to the axle and the bracket then fastened to the mounts. The whole assembly used a quantity of twelve -- four 3/4" and eight 5/8" Maxbolt, load indicating fasteners. Field Tests were performed by OEM on the Maxbolt load indicating fasteners by gathering data from two brackets bolted on to a right and left, car axle. All twenty four Maxbolt load readings, against railcar miles travelled, were measured during a ten month period, at the time of printing.



OUTCOME:

Proved out bolt load loss during operation which required retorque. After multople retorques, Bolts settled, overcoming mbedment and vibration loss resulting in no more loose or broken bolts.

CONCLUSION:

Specifically with this OEM's railroad bolting assemblies, safety is a first consideration. For this application, Valley Forge's Load Indicator Technology not only assures this safety with an accurate and instantly readable assembly preload, but also ensures quick maintenance, with no further need for routine retorqueing, other than those individual bolts reading low on the Maxbolt dial. Load indicating bolts are not for all applications but their ability to read accurate bolt load at a glance or during tightening, makes it ideal for this critical bolted assembly. The quantitative clamp load readings displayed for this test, would have been by any other method, difficult and extremely expensive, if not impossible to obtain, without the Valley Forge Maxbolt™ Load Indicating System.

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Total Mileage: 8590mi

	Bolt	Size	DIAL READING															
			28-Aug-15		2-Sep-15		26-Oct-15		11-Dec-15		6-Apr-16		11-Apr-16		23-Apr-16		23-Jun-16
	Odometer [mi]		34559		34559		36813		36813		37582		38434		40413		43149
	Dist. Travelled				0		2254		0		769		852		1979		2736
LEFT	1	5/8	75%	Initial installation	75%		75%	All bolts retightened to 75%	75%		75%		-		75%		75%
	2	5/8	75%		75%		70%		75%		75%		-		75%		75%
	3	5/8	75%		75%		75%		75%		75%		-		75%		75%
	4	5/8	75%		75%		50%		75%		75%		-		75%		75%
	5	3/4	75%		75%		50%		75%		75%		-		75%		75%
	6	3/4	75%		75%		75%		75%		75%		-		75%		75%
	7	3/4	75%		75%		60%		75%		75%		-		75%		75%
	8	3/4	75%		75%		50%		75%		75%		-		75%		75%
	9	5/8	75%		75%		70%		75%		75%		-		75%		75%
	10	5/8	75%		75%		75%		75%		75%		-		75%		75%
	11	5/8	75%		75%		50%		75%		75%		-		75%		75%
	12	5/8	75%		75%		50%		75%		75%		-		75%		75%
RIGHT	13	5/8	75%		75%		75%		75%		75%		75%		75%		75%
	14	5/8	75%		75%		75%		75%		75%		75%		75%		75%
	15	5/8	75%		75%		75%		75%		75%		75%		75%		75%
	16	5/8	75%		75%		70%		75%		75%		75%		75%		75%
	17	3/4	75%		75%		70%		75%		75%		75%		75%		75%
	18	3/4	75%		75%		75%		75%		75%		75%		75%		75%
	19	3/4	75%		75%		75%		75%		75%		75%		75%		75%
	20	3/4	75%		75%		75%		75%		75%		75%		75%		75%
	21	5/8	75%		75%		75%		75%		75%		75%		75%		75%
	22	5/8	75%		75%		75%		75%		75%		75%		75%		75%
	23	5/8	75%		75%		75%		75%		75%		75%		75%		75%
	24	5/8	75%		75%		75%		75%		75%		75%		75%		75%