DID YOU KNOW?

NAPA® Echlin® VVT Sprocket Comparison Analysis

A Commitment to Design and Testing for Real-World Conditions

We supply professional techs with the premium quality that is critical for this high-tech category.

NAPA® Echlin®-manufactured VVT solenoids & sprockets undergo extensive measurement and life testing plus a full spectrum of environmental analysis that includes thermal shock, thermal cycling, salt spray, vibration, storage tests, and more.

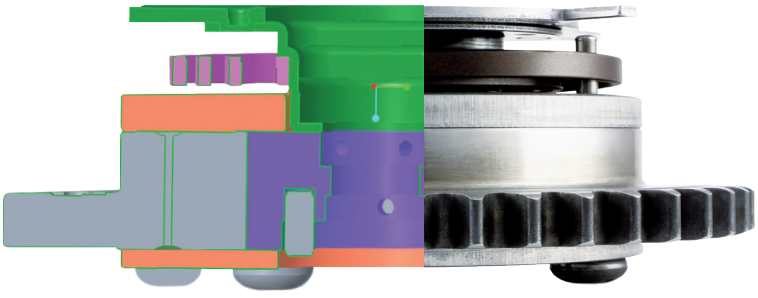
This unwavering commitment to quality ensures that every NAPA® Echlin® VVT component measures up to real-world conditions.

QUALITY IATF 16949 CERTIFIED

Superior Quality

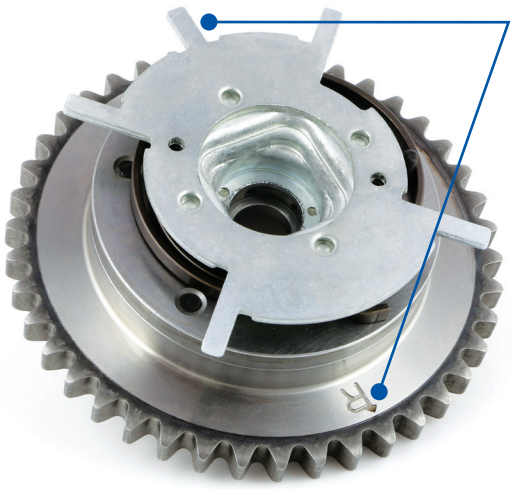
NAPA® Echlin® engineers have designed numerous improvements into our most popular VVT Sprocket for enhanced performance and long lasting durability.

- Larger contact area – no friction between sprocket and rotor
- Design improvements virtually eliminate component wear – less oil loss
- Advanced coil spring and locking pin
- Better performance in timing phase response
- Overall a better performing and longer lasting VVT Sprocket



DID YOU KNOW?

Trigger Wheel Angle Comparison



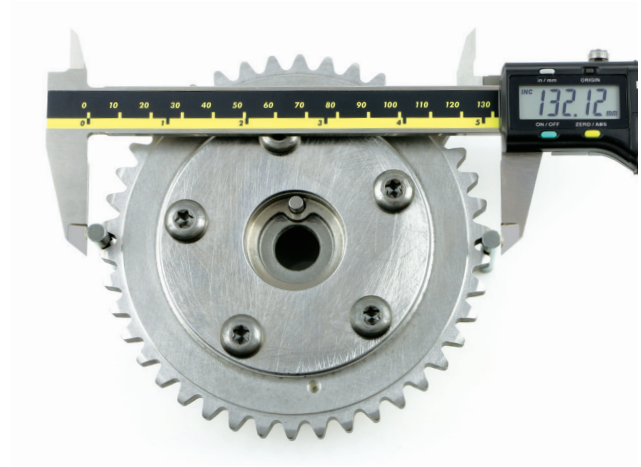
The angle between timing mark and trigger wheel

Manufacturer	Angle	Difference
OE (Ford) 3R2Z6A257DA	2.16°	–
NAPA® Echlin® ECP1100	2.08°	0.08°
Competitor D “Improved”	1.97°	0.19°

Source: NAPA® Echlin® Testing Lab, 2020

Analysis: The NAPA® Echlin® VVT sprocket trigger wheel angle is a close match to the OE, ensuring proper alignment and operation. Competitor D’s “improved” sprocket is significantly smaller than the OEM which may cause improper alignment and signal deviation leading to faulty operation.

Sprocket Over Pin Diameter Comparison



Sprocket Over Pin Diameter comparison

Manufacturer	OPD (mm)	Difference (mm)
OE (Ford) 3R2Z6A257DA	132.12	–
NAPA® Echlin® ECP1100	132.14	0.02
Competitor D “Improved”	132.35	0.23

Source: NAPA® Echlin® Testing Lab, 2020

Analysis: The NAPA® Echlin® VVT sprocket’s Over Pin Diameter (OPD) is virtually identical to the original, ensuring proper fit and performance. Competitor D’s “improved” sprocket has a significantly larger OPD than the OEM which may create multiple issues including the stretching of the timing chain that will result in potential cylinder and engine damage.

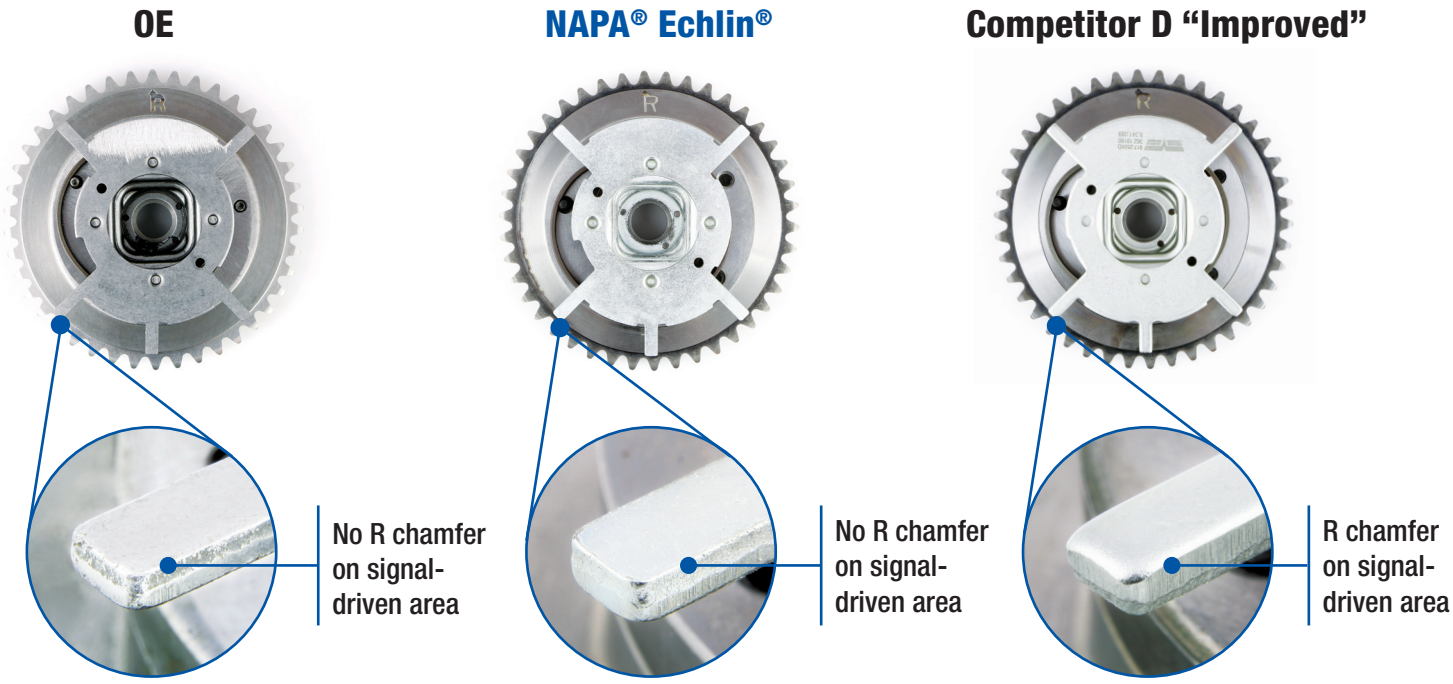
Oil Loss Comparison

Manufacturer	Oil Loss	Difference
OE (Ford) 3R2Z6A257DA	0.10L/min	–
NAPA® Echlin® ECP 1100	0.10L/min	0.00
Competitor D “Improved”	0.21L/min	0.11L/min

Source: NAPA® Echlin® Testing Lab, 2020

Analysis: NAPA® Echlin® matches the original for oil loss tolerance. Competitor D’s clearance is greater than the original which may result in oil seepage, a drop in pressure, excessive wear and premature failure.

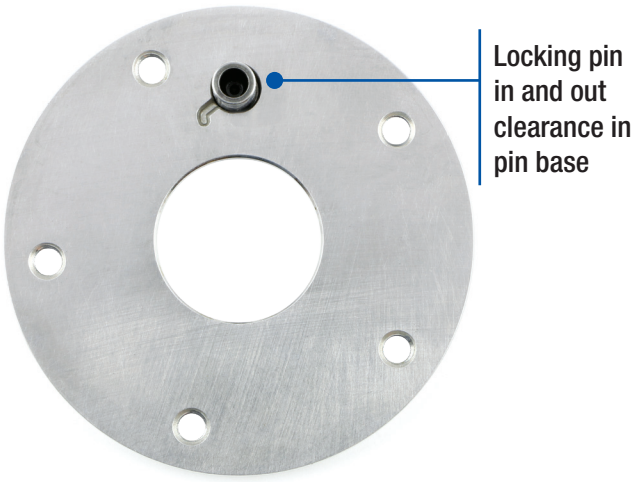
Signal-Driven Area of Trigger Wheel Comparison



Source: NAPA® Echlin® Testing Lab, 2020

Analysis: The OE and NAPA® Echlin® have no "R" chamfer on the signal-driven area of the trigger wheel, while Competitor D's uses an "R" chamfer design. Competitor D's rounded edge may affect the timing signal as the leading edge goes in slower and the trailing edge comes out faster making it more difficult for their sprocket to receive the proper vertical signal.

Locking Pin In and Out Clearance Comparison



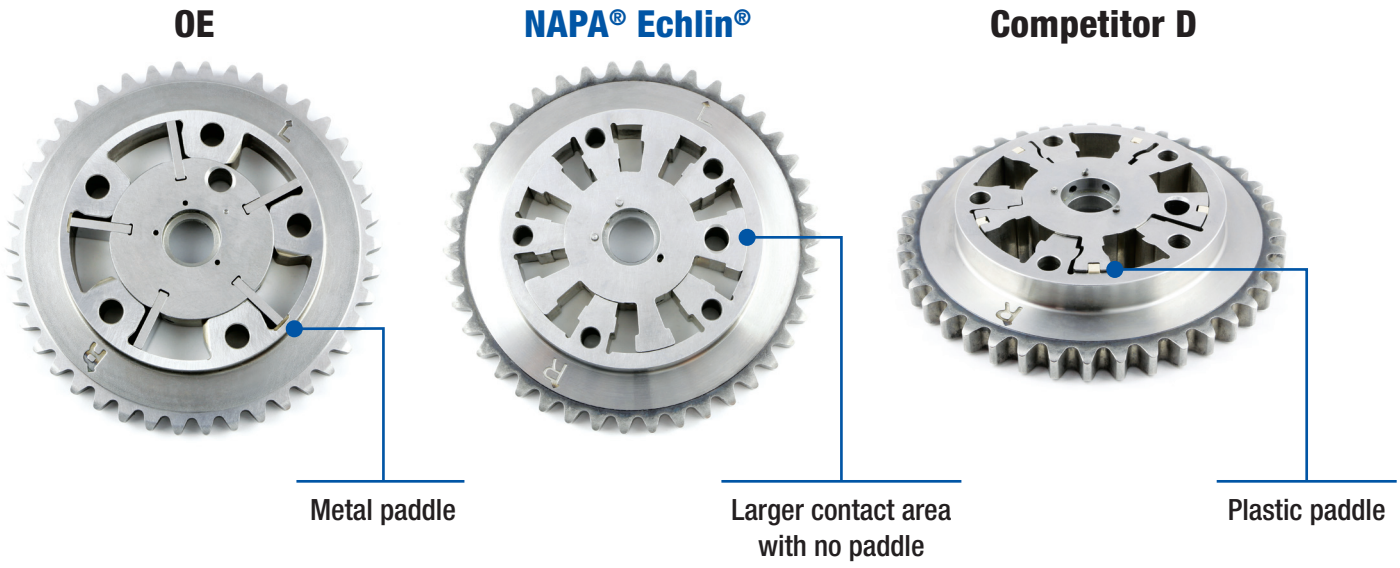
Manufacturer	Locking Pin In & Out Clearance	Difference
OE (Ford) 3R2Z6A257DA	0.55°	–
NAPA® Echlin® VVT500	0.55°	0.00°
Competitor D "Improved"	1.04°	0.49°

Source: NAPA® Echlin® Testing Lab, 2020

Analysis: NAPA® Echlin® matches the original locking pin clearance. Competitor D's clearance is significantly larger than the original, which may create an improper fit that results in their locking pin rattling and jiggling after installation.

NAPA® Echlin® Design Improvements Over the Original

Analysis: NAPA® Echlin® has improved on the original using all-metal in an integrated machined design. The NAPA® Echlin® sprocket does not use paddle inserts, and our integrated design provides a larger contact area – improving overall wear, as well as maintaining proper lubrication and gap. Less friction means our VVT sprocket responds fast at lower pressure delivering better performance in the timing phase, peak operation, and a long service life. The OE design, uses inserted metal paddles that may produce iron shavings during use eventually impeding performance and shortening sprocket wear. Competitor D's "improved" design has a chamfered slot and uses plastic paddle inserts that wear easily and may not hold up under normal operation.



Source: NAPA® Echlin® Testing Lab, 2020

Conclusion

NAPA® Echlin® matches the original in all key tolerances and improves on the OE unit with advanced engineering for an enhanced sprocket design. Competitor D's "improved" part, which was developed to overcome their initial part's flaws, still falls short in design, performance, and durability. The NAPA® Echlin® sprocket is superior to the competition delivering a more durable, better performing, and longer lasting, VVT sprocket.