



# ECHLIN<sup>®</sup>

## VVT SPROCKETS & SOLENOIDS



**DELIVERING PREMIUM QUALITY VVT  
COMPONENTS WITH IMPROVEMENTS  
OVER THE ORIGINAL**

**LOOKS RIGHT. FITS RIGHT. PERFORMS RIGHT.**

# MANUFACTURED FOR REAL-WORLD CONDITIONS

**NAPA® Echlin® delivers premium quality VVT solenoids and sprockets with improvements over the original.**

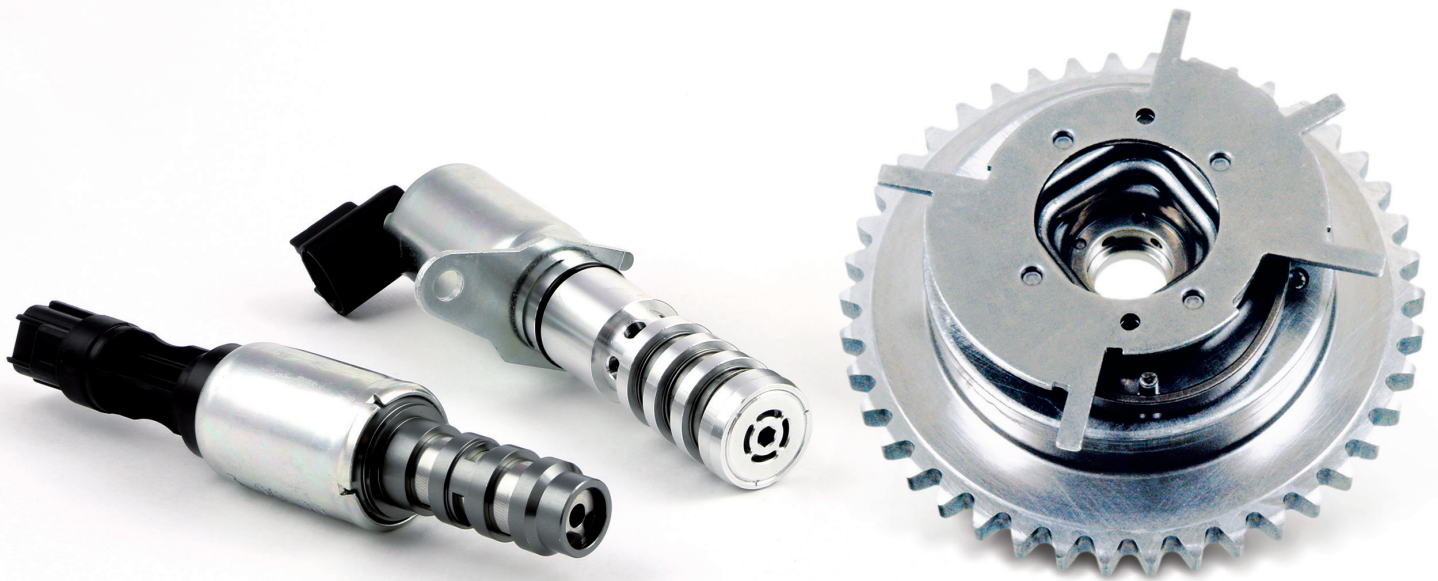


**ECHLIN®**

NAPA® Echlin® variable valve timing solenoids and sprockets feature design improvements over the OE, delivering a line of high-quality, long-lasting VVT components manufactured for superior performance under real-world conditions.

## Aftermarket-Leading VVT Coverage

The NAPA® Echlin® line offers more than 500 premium VVT components covering more than 95% of all domestic and import applications. That's top in the industry!



**500+**  
**SKUs**

The most comprehensive VVT line in the aftermarket

**PREMIUM  
QUALITY**

Many of our VVTs include value-adds such as gaskets for a trouble-free install

**100%**  
**TESTED**

Our extreme testing regimen ensures precise performance and longevity

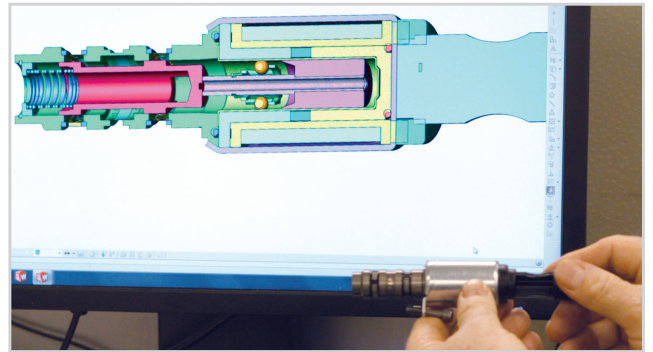
**HIGH  
TECH**

VVT is an extremely high tech category so premium quality is essential

# DELIVERING ADVANCED, EXPERT MANUFACTURING

## NAPA® Echlin® Poland: Engineering, Design, Expert Manufacturing and Testing

Our IATF 16949-certified facility spans 108,000 sq. ft. and employs more than 750 employees – including 60+ resident engineers. NAPA® Echlin® Poland introduces 110+ new products annually and serves as a basic engineering center for our most advanced NAPA® Echlin® VVT components.



## A Real 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.





**ECHLIN®**

**PRECISE ATTENTION TO THE DETAILS**

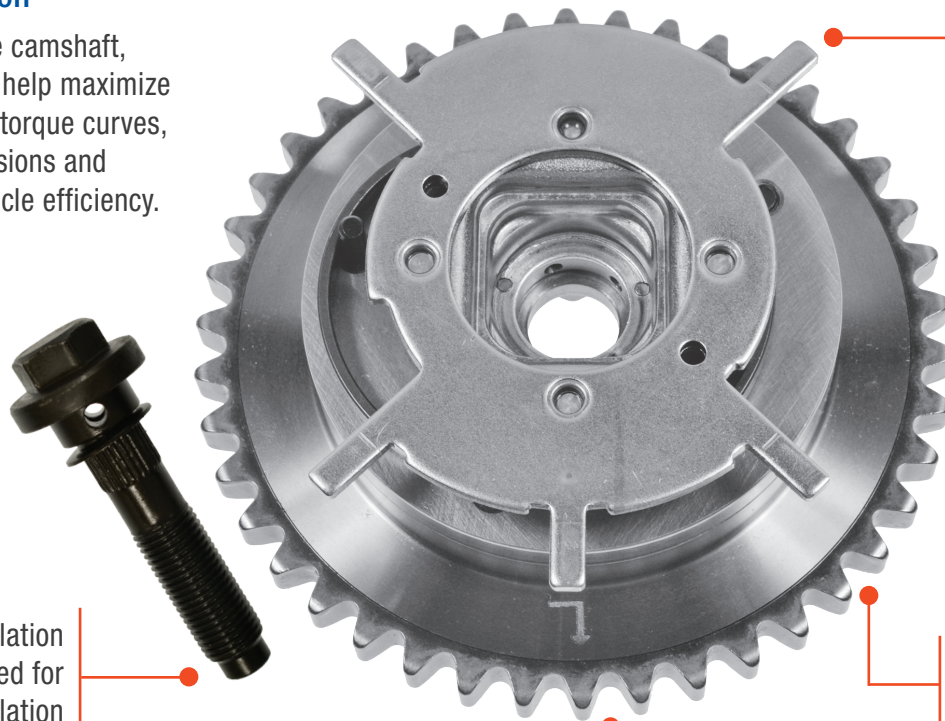
## NAPA® Echlin® Premium Quality VVT Sprockets (Cam Phasers)

NAPA® Echlin® VVT sprockets meet tight dimensional tolerances to improve internal sealing, minimize oil drain back, reduce frequency of PCM correction and deliver optimal performance.

### ECP 1100

#### VIO 3.4 Million

Located on the camshaft, VVT sprockets help maximize horsepower & torque curves, reducing emissions and improving vehicle efficiency.



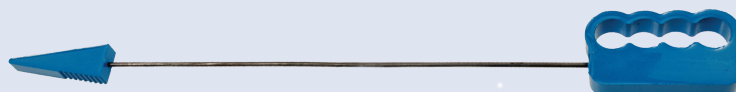
Better performance in timing phase response, oil loss, and working life of locking pin and overall component

OE-style installation bolts included for ease of installation

No friction between sprocket and rotor

Re-engineered coil spring

## Tech Tip: NAPA® Echlin's Innovative Cam Gear Wedge Tool



**ECP101**

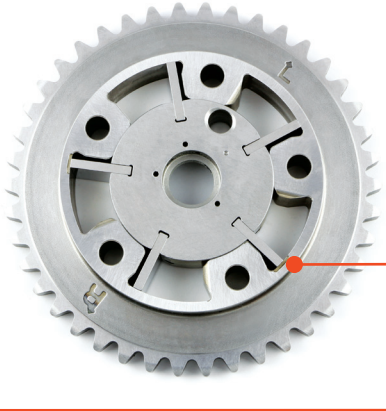
Our custom-designed tool locks the sprocket in place preventing the chain tensioner from collapsing during your VVT repairs. **Tip: Do not remove the wedge tool while the cam gear is out. If the tool comes out, the timing cover will need to be removed and the engine will need to be re-timed.**

# NAPA ECHLIN TAKES ON THE COMPETITION

## NAPA® Echlin® Design Improvements Over the Original

Our all-metal, integrated machined design eliminates paddle inserts while providing a larger contact area. This means improved overall wear as well as proper lubrication and gap. Less friction means our sprocket responds fast at lower pressure delivering optimal performance.

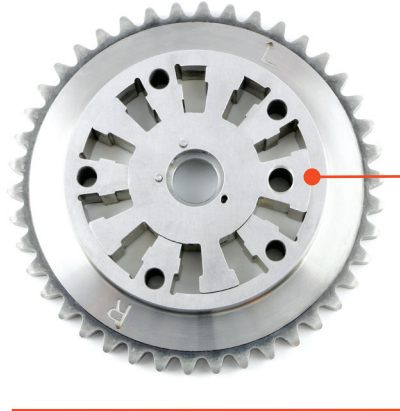
OE



### Original – Metal Paddles

- Inserted metal paddles produce iron shavings
- Paddles wear rapidly
- Impedes performance
- Shortens service life

NAPA® Echlin®



### Best – Integrated Design

- Larger contact area
- No paddle to wear out
- Fast response times
- Improved performance
- Longer service life

Competitor D



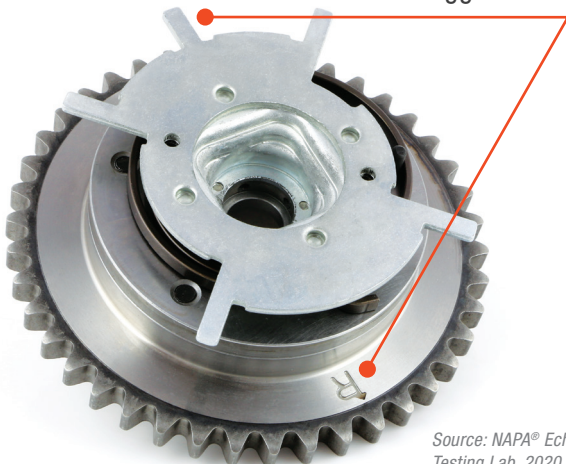
Source: NAPA® Echlin® Testing Lab, 2020

### Inferior – Plastic Paddles

- Chamfered slot and plastic paddle inserts
- Components wear easily
- May not hold up under normal operation

## Trigger Wheel Angle Comparison

Angle between timing mark and trigger wheel



Source: NAPA® Echlin® Testing Lab, 2020

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

The NAPA® Echlin® trigger wheel angle closely matches the OE, ensuring proper alignment and operation. Competitor D’s “improved” sprocket is significantly smaller which may lead to improper alignment, signal deviation and faulty operation.

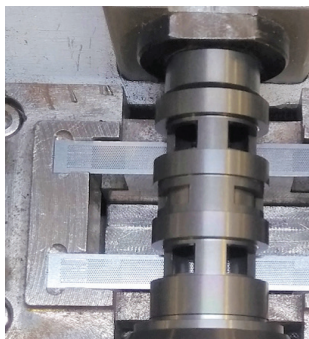
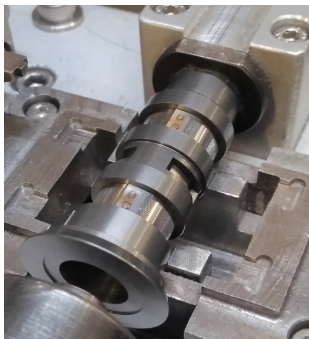
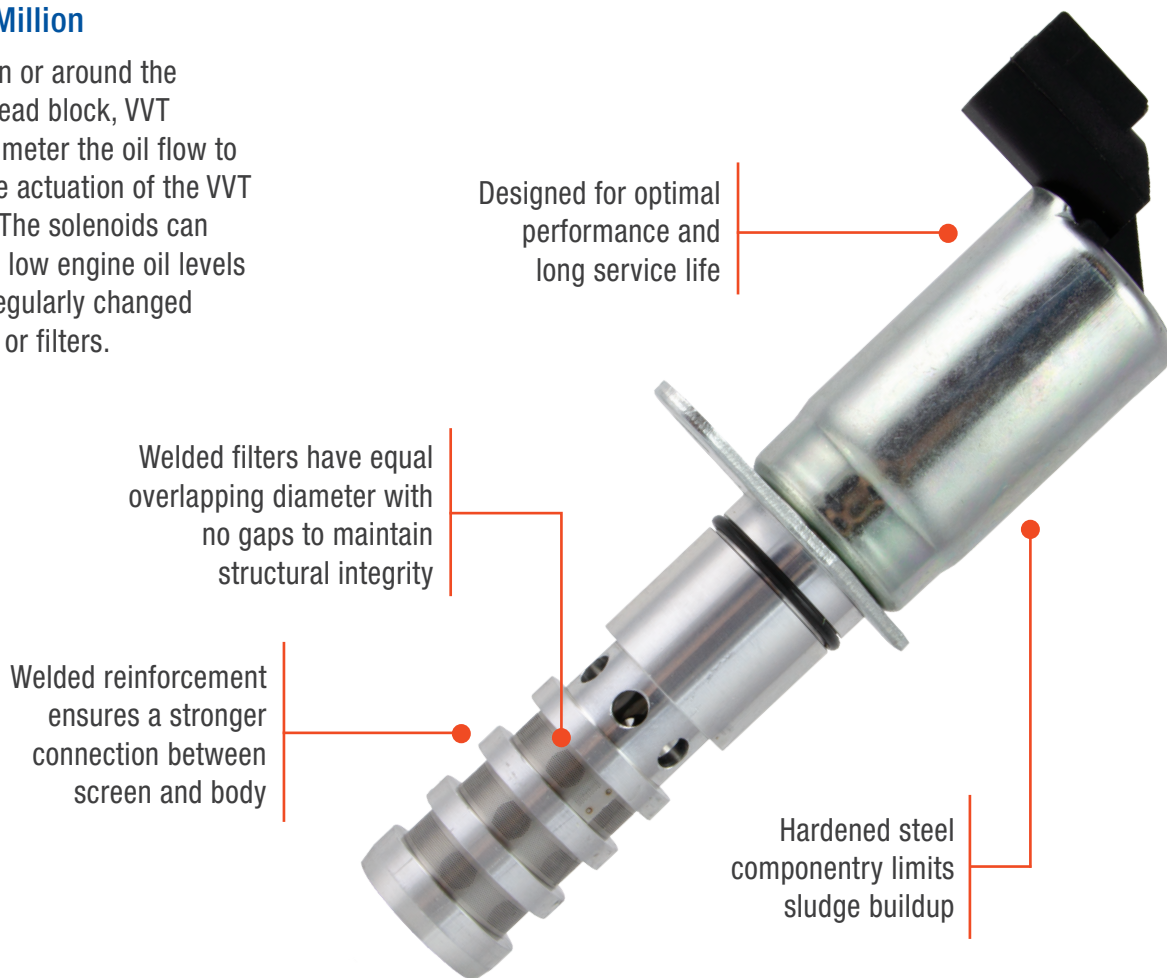
# THE NEW BENCHMARK FOR VVT SOLENOIDS

## NAPA® Echlin® Premium Quality VVT Solenoids

As a high-quality replacement, NAPA® Echlin® VVT solenoids feature hard anodized components to ensure proper performance, precise operation, and long service life.

### VVS1101 VIO 2.5 Million

Located on or around the cylinder head block, VVT solenoids meter the oil flow to control the actuation of the VVT sprocket. The solenoids can fail due to low engine oil levels and/or irregularly changed engine oil or filters.



## Commitment to Continuous Improvement

Our dedication to continuous improvement practices in design, engineering and manufacturing allows us to make enhancements to the OE design, while maintaining complete control over each NAPA® Echlin® VVT component.

# THE NAPA® Echlin® VVT ADVANTAGE

## NAPA® Echlin® Engineers Have Improved on the Original

Our improved screen stamp and welded reinforcement are the result of the NAPA® Echlin® commitment to high-quality design and rigorous testing.

### OE



OE and NAPA® Echlin® feature a reinforced plunger and spring

### Uses Plastic

OE uses plastic which often fails to hold the screen to the body

### NAPA® Echlin®



### Reinforced

NAPA® Echlin® has improved screen stamp plus welded reinforcement

### Competitor D



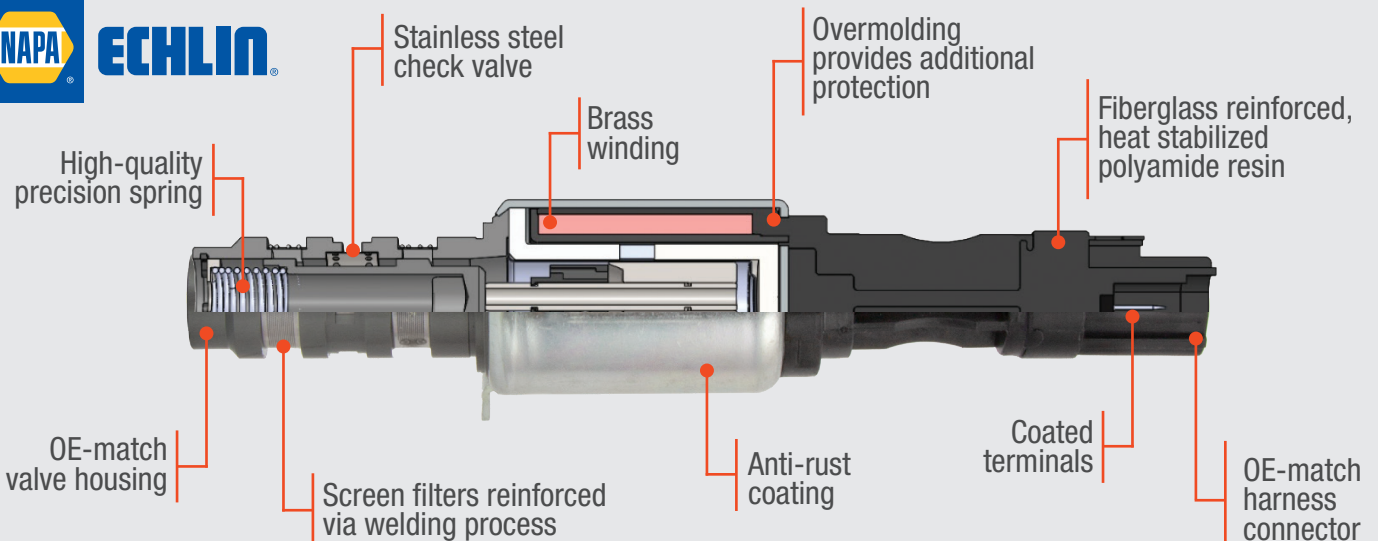
Competitor design has no reinforcement



### Doesn't Match

Competitor has shorter solenoid length & minimal screen reinforcement

Source: NAPA® Echlin® Testing Lab, 2020



# EVER-EXPANDING VVT COVERAGE

## The Best Keeps Getting Better

The NAPA® Echlin® line continues to expand coverage for this important category. Here's a small sample of our VVT solenoid and sprocket coverage.



**VVS1100**  
Ford / Lincoln Cars  
& Trucks (2014-04)



**VVS1101**  
GM (2012-02)



**VVS1512**  
Honda (2009-02)



**VVS1746**  
OGM/GMC (2017-04)



**VVS1754**  
GM (2017-06)



**VVS1755**  
GM (2017-06)



**VVS1814**  
Chrysler/Dodge, Jeep,  
Dodge Trucks (2020-09)



**ECP1100**  
Ford/Lincoln Cars  
& Trucks (2014-04)



**ECP1734**  
Toyota (2008-98)