

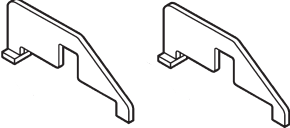
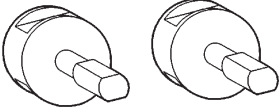
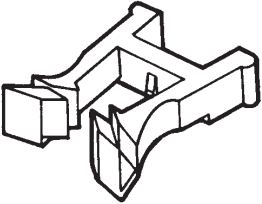
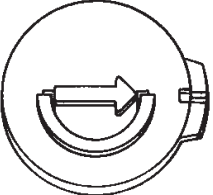
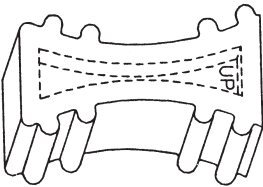
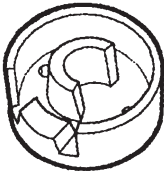
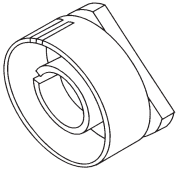
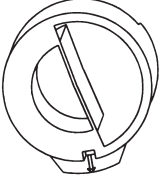
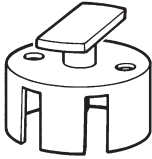
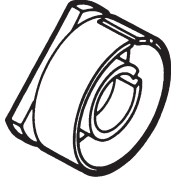
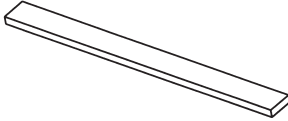
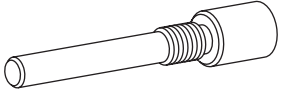
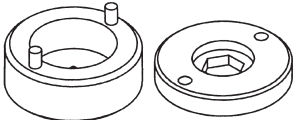
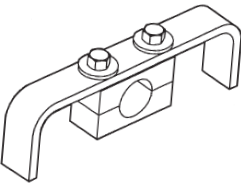
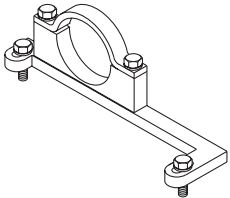
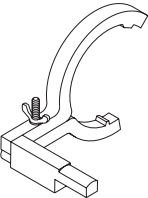
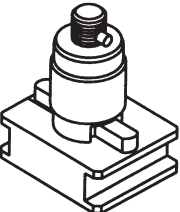
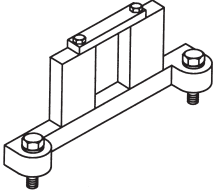
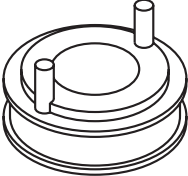
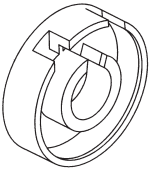
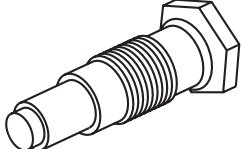
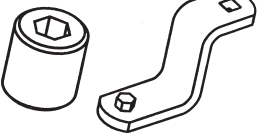


Parts List & Operating Instructions for

**No. 6489**

**Ford**

**Cam and Valve Train Tool Kit**

511532 (6009) 	511555 (6020) 	511533 (6466) 	511534 (6467) 
511535 (6468) 	511536 (6469) 	511537 (6470) 	511538 (6471) 
511539 (6472) 	511540 (6473) 	511541 (6474) 	511542 (6475) 
511543 & 511544 (6476) 	511545 (6477) 	511546 (6478) 	511547 (6479) 
511548 (6480) 	511549 (6481) 	511550 (6482) 	511551 (6483) 
511552 (6484) 	511553 & 511554 (6485) 		

## Ford Tool Application Chart

Year	Model	Engine	Tool Description	Part No.	Ford American Part No.	Ford Global Part No.
1995-1997	Aerostar	3.0L V6	Cam Sensor Synch Tool	6472 (511539)	T95T-12200-A	303-529
1996-1998	Aerostar	4.0L V6	Cam Sensor Synch Tool	6472 (511539)	T95T-12200-A	303-529
1994-2002	Contour	2.0L 4 cyl. VIN 3	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
1997-2002	Contour	2.0L 4 cyl. VIN 3	Crankshaft TDC Timing Pin	6475 (511542)	T97P-6000-A	303-574
1999-2002	Cougar	2.0L VIN 3	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
1997	Cougar	3.8L V6	Cam Sensor Synch Tool	6469 (511536)	T96T-12200-A	303-562
1991-2008	Crown Victoria	4.6L 2V V8	Cam Positioning Tool	6009 (511532)	T91P-6256-A	303-380
1992-2008	Crown Victoria	4.6L 2V V8	Cam Positioning Tool	6020 (511555)	T92P-6256-A	303-413
1997-2002	Crown Victoria	4.6L VIN W	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1997-2008	Econoline	4.2L V6	Cam Sensor Synch Tool	6469 (511536)	T96T-12200-A	303-562
1997-2009	Econoline	4.6L VIN W	Cam Holding Tool	6477 (511545)	T96T-6256-B	303-557
1997-2014	Econoline	4.6L VIN W	Cam Positioning Tool	6020 (511555)	T92P-6256-A	303-413
1997-1998	Econoline	4.6L & 5.4L V8, 6.8L V10	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1997-2002	Econoline	4.6L & 5.4L	Cam Positioning Tool	6476 (511543 & 4)	T96T-6256-AR	303-S568
1997-2002	Econoline	5.4L V8	Cam Holding Tool	6477 (511545)	T96T-6256-B	303-557
1997-2002	Econoline	6.8L V10	Cam Positioning Tool Cam Holding Tool	6476 (511543 & 4) 6477 (511545)	T96T-6256-AR T96T-6256-B	303-S568 303-557
2012-2014	Edge	2.0L VIN 9	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
2001-2004	Escape	2.0L VIN B	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
2013-2014	Escape	2.0L VIN 9	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
2005-2008	Escape	2.3L VIN Z	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2009-2014	Escape	2.5L VIN 7	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2005-2008	Escape Hybrid	2.3L VIN H	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2009-2012	Escape Hybrid	2.5L VIN 3	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
1997-2002	Expedition	4.6L VIN W	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1997-2002	Expedition	5.4L	Cam Positioning Tool Cam Positioning Tool Cam Positioning Tool Cam Holding Tool	6009 (511532) 6020 (511555) 6476 (511543 & 4) 6477 (511545)	T91P-6256-A T92P-6256-A T96T-6256-AR T96T-6256-B	303-380 303-413 303-S568 303-557
2012-2014	Explorer	2.0L VIN 9	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
1996-1998	Explorer	4.0L V6	Cam Sensor Synch Tool	6472 (511539)	T95T-12200-A	303-529
1997-2008	Explorer	4.0L SOHC VIN X	Cam Gear Holding Tool Crankshaft Holding Tool Cam Holding Tool Adapter Cam Holding Tool Cam Gear Holding Tool Adapter Timing Chain Tensioner Tool Cam Gear Bolt Socket & Extension	6478 (511546) 6479 (511547) 6480 (511548) 6481 (511549) 6482 (511550) 6484 (511552) 6485 (511553 & 4)	T97T-6256-B T97T-6303-A T97T-6256-D T97T-6256-C T97T-6256-A T97T-6K254-A T97T-6256-F, -G	303-564 303-573 303-576 303-577 303-578 303-571 303-565, -575

# Parts List & Operating Instructions

## Ford Tool Application Chart

Year	Model	Engine	Tool Description	Part No.	Ford American Part No.	Ford Global Part No.
1997-2011	Explorer	4.0L SOHC V6 VIN E	Cam Gear Holding Tool Crankshaft Holding Tool Cam Holding Tool Adapter Cam Holding Tool Cam Gear Holding Tool Adapter Timing Chain Tensioner Tool Cam Gear Bolt Socket & Extension	6478 (511546) 6479 (511547) 6480 (511548) 6481 (511549) 6482 (511550) 6484 (511552) 6485 (511553 & 4)	T97T-6256-B T97T-6303-A T97T-6256-D T97T-6256-C T97T-6256-A T97T-6K254-A T97T-6256-F, -G	303-564 303-573 303-576 303-577 303-578 303-571 303-565, -575
1999-2002	Explorer	4.0L Push Rod V6	Cam Sensor Synch Tool	6483 (511551)		303-638
1997-2002	Explorer	4.6L VIN W	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1996-1998	Explorer	5.0L V8	Cam Sensor Synch Tool	6469 (511536)	T96T-12200-A	303-562
1999-2002	Explorer	5.0L V8	Cam Sensor Synch Tool	6470 (511537)		303-630
1997-2004	F-150	4.6L VIN 6	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1997-2010	F-150	4.6L VIN W	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1997-2008	F-Series Truck	4.2L	Cam Sensor Synch Tool	6469 (511536)	T96T-12200-A	303-562
1997-1998	F-Series Truck	4.6L	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1997-2002	F-Series Truck	4.6L	Cam Positioning Tool	6476 (511543 & 4)	T96T-6256-AR	303-S568
1997-2009	F-Series Truck	4.6L VIN W	Cam Holding Tool	6477 (511545)	T96T-6256-B	303-557
1997-2002	F-Series Truck	5.4L	Cam Positioning Tool Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6476 (511543 & 4) 6020 (511555)	T91P-6256-A T96T-6256-AR T92P-6256-A	303-380 303-S568 303-413
1997-2002	F-Series Truck	5.4L	Cam Holding Tool	6477 (511545)	T96T-6356-B	303-557
2012-2014	Focus	2.0L VIN 2	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
2000-2004	Focus	2.0L VIN 3	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
2002-2004	Focus	2.0L VIN 5	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
2005-2011	Focus	2.0L VIN N	Crankshaft TDC Timing Pin	6475 (511542)	T97P-6000-A	303-574
2005-2012	Focus	2.0L VIN N	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2003-2007	Focus	2.3L VIN Z	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2004-2007	Freestar	3.9L VIN 6	Cam Sensor Synch Tool	6470 (511537)		303-630
2004-2007	Freestar	4.2L	Cam Sensor Synch Tool	6469 (511536)	T96T-12200-A	303-562
2013-2014	Fusion	2.0L	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
2006-2009	Fusion	2.3L VIN Z	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2010-2014	Fusion	2.5L VIN A	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2010-2014	Fusion Hybrid	2.5L VIN 3	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
1991-2008	Grand Marquis	4.6L 2V	Cam Positioning Tool	6009 (511532)	T91P-6256-A	303-380
1992-2008	Grand Marquis	4.6L 2V	Cam Positioning Tool	6020 (511555)	T92P-6256-A	303-413
1997-2002	Grand Marquis	4.6L VIN W	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
2005-2008	Mariner	2.3L VIN Z	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2009-2012	Mariner	2.5L VIN 7	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2005-2008	Mariner Hybrid	2.3L VIN H	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2009-2012	Mariner Hybrid	2.5L VIN 3	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2006-2009	Milan	2.3L VIN Z	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2010-2011	Milan	2.5L	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465

### Ford Tool Application Chart

Year	Model	Engine	Tool Description	Part No.	Ford American Part No.	Ford Global Part No.
2010-2012	Milan Hybrid	2.5L VIN 3	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2014	MKT	2.0L	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
2012	MKX	2.0L VIN 9	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2013-2014	MKZ	2.0L	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
2006-2009	MKZ	2.3L VIN Z	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2010-2012	MKZ	2.5L VIN A	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2010-2012	MKZ Hybrid	2.5L VIN 3	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
2004	Monterey	3.9L VIN 6	Cam Sensor Synch Tool	6470 (511537)		303-630
2004-2007	Monterey	4.2L	Cam Sensor Synch Tool	6469 (511536)	T96T-12200-A	303-562
1997-2008	Mountaineer	4.0L SOHC VIN X	Cam Gear Holding Tool Crankshaft Holding Tool Cam Holding Tool Adapter Cam Holding Tool Cam Gear Holding Tool Adapter Timing Chain Tensioner Tool Cam Gear Bolt Socket & Extension	6478 (511546) 6479 (511547) 6480 (511548) 6481 (511549) 6482 (511550) 6484 (511552) 6485 (511553 & 4)	T97T-6256-B T97T-6303-A T97T-6256-D T97T-6256-C T97T-6256-A T97T-6K254-A T97T-6256-F, -G	303-564 303-573 303-576 303-577 303-578 303-571 303-565, -575
1997-2011	Mountaineer	4.0L SOHC V6 VIN E	Cam Gear Holding Tool Crankshaft Holding Tool Cam Holding Tool Adapter Cam Holding Tool Cam Gear Holding Tool Adapter Timing Chain Tensioner Tool Cam Gear Bolt Socket & Extension	6478 (511546) 6479 (511547) 6480 (511548) 6481 (511549) 6482 (511550) 6484 (511552) 6485 (511553 & 4)	T97T-6256-B T97T-6303-A T97T-6256-D T97T-6256-C T97T-6256-A T97T-6K254-A T97T-6256-F, -G	303-564 303-573 303-576 303-577 303-578 303-571 303-565, -575
1999-2002	Mountaineer	4.0L Push Rod V6	Cam Sensor Synch Tool	6483 (511551)		303-638
1997-2005	Mountaineer	4.6L VIN W	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1996-1998	Mountaineer	5.0L V8	Cam Sensor Synch Tool	6469 (511536)	T96T-1220-A	303-562
1999-2002	Mountaineer	5.0L V8	Cam Sensor Synch Tool	6470 (511537)		303-630
1996-1998	Mustang	3.8L V6	Cam Sensor Synch Tool	6469 (511536)	T96T-12200-A	303-562
1999-2004	Mustang	3.8L V6	Cam Sensor Synch Tool	6470 (511537)		303-630
2005-2010	Mustang	4.0L SOHC VIN N	Cam Gear Holding Tool Crankshaft Holding Tool Cam Holding Tool Adapter Cam Holding Tool Cam Gear Holding Tool Adapter Timing Chain Tensioner Tool Cam Gear Bolt Socket & Extension	6478 (511546) 6479 (511547) 6480 (511548) 6481 (511549) 6482 (511550) 6484 (511552) 6485 (511553 & 4)	T97T-6256-B T97T-6303-A T97T-6256-D T97T-6256-C T97T-6256-A T97T-6K254-A T97T-6256-F, -G	303-564 303-573 303-576 303-577 303-578 303-571 303-565, -575
1997-2002	Mustang	4.6L VIN W	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1996-2004	Mustang	4.6L VIN X	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
2003-2004	Mustang	4.6L VIN Y	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1994-2002	Mystique	2.0L 4 cyl. VIN 3	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
1997-2002	Mystique	2.0L 4 cyl. VIN 3	Crankshaft TDC Timing Tool	6475 (511542)	T97P-6000-A	303-574
1998-1999	Navigator	5.4L	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
1998-2002	Navigator	5.4L	Cam Positioning Tool Cam Holding Tool	6476 (511543 & 4) 6477 (511545)	T96T-6256-AR T96T-6256-B	303-S568 303-557
2001-2011	Ranger	2.3L VIN D	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465
1995-1997	Ranger	3.0L V6	Cam Sensor Synch Tool	6472 (511539)	T95T-12200-A	303-529

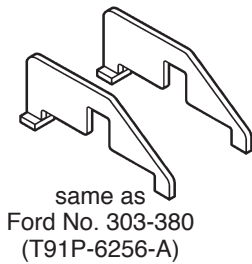
# Parts List & Operating Instructions

## Ford Tool Application Chart

Year	Model	Engine	Tool Description	Part No.	Ford American Part No.	Ford Global Part No.
1998-2008	Ranger	3.0L V6	Cam Sensor Synch Tool	6473 (511540)		303-589
1996-1998	Ranger	4.0L V6	Cam Sensor Synch Tool	6472 (511539)	T95T-12200-A	303-529
1997-2011	Ranger	4.0L SOHC VIN E	Cam Gear Holding Tool Crankshaft Holding Tool Cam Holding Tool Adapter Cam Holding Tool Cam Gear Holding Tool Adapter Timing Chain Tensioner Tool Cam Gear Bolt Socket & Extension	6478 (511546) 6479 (511547) 6480 (511548) 6481 (511549) 6482 (511550) 6484 (511552) 6485 (511553 & 4)	T97T-6256-B T97T-6303-A T97T-6256-D T97T-6256-C T97T-6256-A T97T-6K254-A T97T-6256-F, -G	303-564 303-573 303-576 303-577 303-578 303-571 303-565, -575
1997-2008	Ranger	4.0L SOHC VIN X	Cam Gear Holding Tool Crankshaft Holding Tool Cam Holding Tool Adapter Cam Holding Tool Cam Gear Holding Tool Adapter Timing Chain Tensioner Tool Cam Gear Bolt Socket & Extension	6478 (511546) 6479 (511547) 6480 (511548) 6481 (511549) 6482 (511550) 6484 (511552) 6485 (511553 & 4)	T97T-6256-B T97T-6303-A T97T-6256-D T97T-6256-C T97T-6256-A T97T-6K254-A T97T-6256-F, -G	303-564 303-573 303-576 303-577 303-578 303-571 303-565, -575
2003-2011	Ranger	4.0L SOHC	Cam Gear Bolt Socket & Extension	6485 (511553 & 4)	T97T-6256-F, -G	303-565, -575
1999-2000	Ranger	4.0L Push Rod	Cam Sensor Synch Tool	6483 (511551)		303-638
1996-1997	Sable	3.0L V6 2V	Cam Sensor Synch Tool	6472 (511539)	T95T-12200-A	303-529
1998-2005	Sable	3.0L V6 VIN U	Cam Sensor Synch Tool	6473 (511540)		303-589
1998-2006	Sable	3.0L V6 VIN Z	Cam Sensor Synch Tool	6473 (511540)		303-589
2013-2014	Taurus	2.0L	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
1996-1997	Taurus	3.0L V6 2V	Cam Sensor Synch Tool	6472 (511539)	T95T-12200-A	303-529
1998-2005	Taurus	3.0L V6 VIN U	Cam Sensor Synch Tool	6473 (511540)		303-589
1998-2006	Taurus	3.0L V6 VIN Z	Cam Sensor Synch Tool	6473 (511540)		303-589
1997	Thunderbird	3.8L V6	Cam Sensor Synch Tool	6469 (511536)	T96T-12200-A	303-562
1997-2002	Town Car	4.6L VIN W	Cam Positioning Tool Cam Positioning Tool	6009 (511532) 6020 (511555)	T91P-6256-A T92P-6256-A	303-380 303-413
2010-2013	Transit	2.0L VIN N	Cam Alignment Tool Crankshaft TDC Timing Pin	6474 (511541) 6475 (511542)	T94P-6256-CH T97P-6000-A	303-465 303-574
1995-1997	Windstar	3.0L V6	Cam Sensor Synch Tool	6472 (511539)	T95T-12200-A	303-529
1998-2003	Windstar	3.0L V6 VIN U	Cam Sensor Synch Tool	6473 (511540)		303-589
1996-1998	Windstar	3.8L V6	Cam Sensor Synch Tool	6469 (511536)	T96T-12200-A	303-562
1999-2003	Windstar	3.8L V6	Cam Sensor Synch Tool	6470 (511537)		303-630
2006-2009	Zephyr	2.3L VIN Z	Cam Alignment Tool	6474 (511541)	T94P-6256-CH	303-465

# 511532 (6009) Ford Camshaft Positioning Tool

Application:	1991 – 2008	4.6L 2V	Crown Victoria (V8), Grand Marquis
	1997 – 1998	4.6L & 5.4L	V8, 6.8L V10 Econoline
	1997 – 2002	5.4L	Expedition
	1997 – 2002	4.6L	Expedition, Explorer, Crown Victoria, Grand Marquis, Town Car (VIN W)
	1997 – 2004	4.6L	F-150 (VIN 6)
	1997 – 2010	4.6L	F-150 (VIN W)
	1997 – 1998	4.6L	F-Series Truck
	1997 – 2002	5.4L	F-Series Truck
	1997 – 2005	4.6L	Mountaineer (VIN W)
	1997 – 2002	4.6L	Mustang (VIN W)
	1996 – 2004	4.6L	Mustang (VIN X)
	2003 – 2004	4.6L	Mustang (VIN Y)
	1998 – 1999	5.4L	Navigator



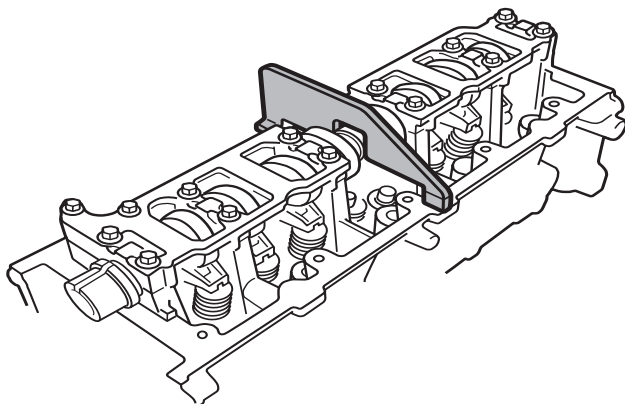
*Note: The 1991 4.6L 2V V8 application does not require the use of tool No. 511555 (6020).*

**CAUTION:** To prevent damage to valves and pistons, do NOT rotate the crankshaft and/or camshaft(s) when removing timing chain(s) and installing cylinder heads. Because this is not a free-wheeling engine, if it has "jumped time," there will be damage to the valves and/or pistons, which will require the removal of the cylinder heads. The cam sprocket should be disassembled from the camshaft only when one of the components must be replaced.

1. Remove all necessary components to access the timing chains.
2. Rotate the engine to No. 1 TDC.
3. Assemble tools :
  - **1991 4.6L 2V V8 :** Refer to Figure 1. Install No. 511532 (6009) on flats of the camshaft to prevent accidental rotation of the camshafts.
  - **All other applications :** Refer to Figure 2. Install No. 511532 (6009) and Cam Positioning Tool No. 511555 (6020) into each camshaft end before removing (or installing) timing chain tensioners and chains—this prevents valve train damage.
4. Perform camshaft service as required.
5. Refer to the vehicle service manual for the correct camshaft-to-crankshaft timing procedure.

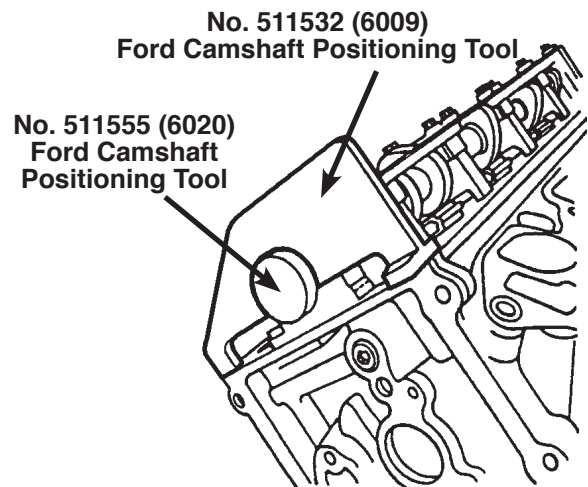


**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.



**Figure 1**

The 1991 4.6L 2V V8 application does not require the use of tool No. 6020.

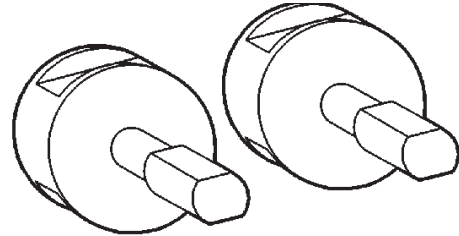


**Figure 2**

All other applications.

### 511555 (6020) Ford Camshaft Positioning Tool

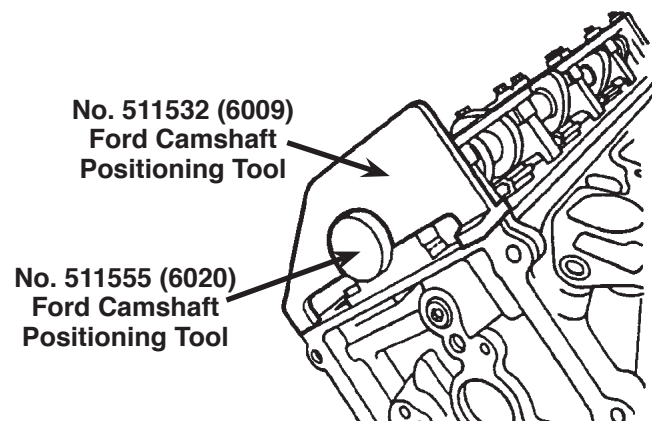
Application:	1992 – 2008	4.6L 2V	Crown Victoria (V8), Grand Marquis
	1997 – 2002	4.6L	Crown Victoria, Expedition, Explorer Grand Marquis, Town Car (VIN W)
	1997 – 1998	4.6L & 5.4L	V8, 6.8L V10 Econoline
	1997 – 2012	4.6L	Econoline (VIN W)
	1997 – 2002	5.4L	Expedition
	1997 – 2004	4.6L	F-150 (VIN 6)
	1997 – 2010	4.6L	F-150 (VIN W)
	1997 – 1998	4.6L	F-Series Truck
	1997 – 2002	5.4L	F-Series Truck
	1997 – 2005	4.6L	Mountaineer (VIN W)
	1997 – 2002	4.6L	Mustang (VIN W)
	1996 – 2004	4.6L	Mustang (VIN X)
	2003 – 2004	4.6L	Mustang (VIN Y)
	1998 – 1999	5.4L	Navigator



*Note: Tool No. 511555 (6020; same as Ford No. 303-413/T92P-6256-A) must be used with tool No. 511532 (6009; same as Ford No. 303-380/T91P-6256-A).*

**CAUTION:** To prevent damage to valves and pistons, **DO NOT** rotate the crankshaft and/or camshaft(s) when removing the timing chain(s) and installing the cylinder heads. Because this is not a free-wheeling engine, if it has "jumped time" there will be damage to the valves and/or pistons, which will require the removal of the cylinder heads. The cam sprocket should be disassembled from the camshaft only when one of the components must be replaced.

1. Remove all necessary components to access the timing chains.
2. Rotate the engine to No. 1 top dead center.
3. **Disassembly:** Install Camshaft Positioning Tool (511555/6020) and Cam Positioning Tool (511532/6009) into each camshaft end, as shown, before removing timing chain tensioners and chains to prevent valve train damage.
4. **Assembly:** Install Camshaft Positioning Tool (511555/6020) and Cam Positioning Tool (511532/6009) into each camshaft end, as shown, before installing timing chains and tensioners to prevent valve train damage.

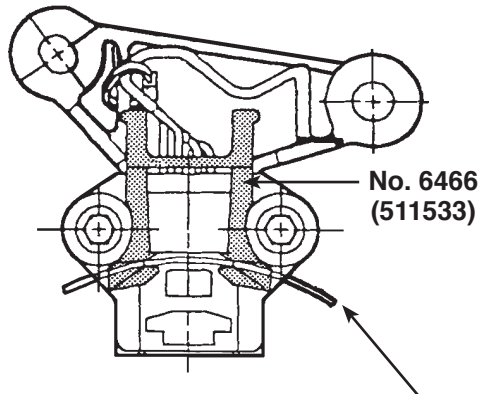


**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

## 511533 (6466) Ford Crankshaft Sensor Positioner

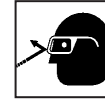
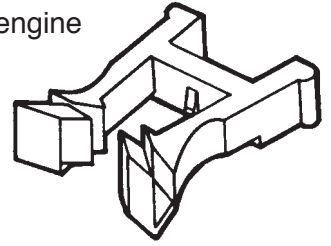
Application: 1989 – 1997 Ford Ranger w/ 2.3L, 4 cyl., dual plug engine

Note: Same as Ford No. 303-354 (T89P-6316-A).



Outer vane of crankshaft pulley hub assembly.

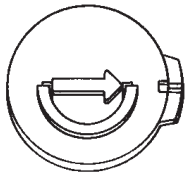
1. Install Crankshaft Sensor Positioner No. 6466 (511533) on sensor as shown.
2. Rotate crankshaft so outer vane on crankshaft pulley hub assembly engages both sides of tool. Tighten sensor assembly retaining bolts to specifications.
3. Rotate crankshaft so vane on crankshaft pulley hub assembly is no longer engaged in tool. Remove tool.



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

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## 511534 (6467) Ford Camshaft Sensor Synchronizer Tool

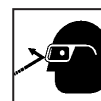
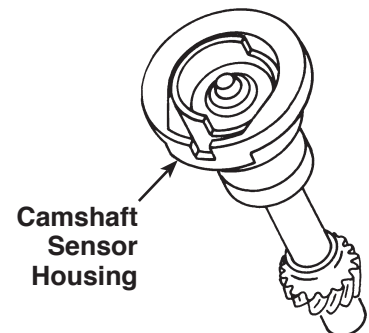


Application: 1990 – 1997 3.8L V6 Thunderbird/Cougar  
1989 – 1995 3.8L V6 Supercharged Thunderbird/Cougar  
1994 – 1998 3.8L V6 Mustang  
1998 3.8L V6 Windstar

Note: Same as Ford No. 303-358 (T89P-12200-A).

**CAUTION:** Before removing the camshaft sensor housing assembly, note the position of the camshaft sensor electrical connector. The connector **MUST** be reassembled in the same position during installation.

1. Rotate crankshaft to set No. 1 cylinder at 26° after top dead center of the compression stroke.
2. Engage camshaft sensor housing vane in slot of tool No. 6467 (511534).
3. Rotate tool on camshaft sensor housing until tool engages housing notch. (Tool should be square and in contact with entire top of housing.)
4. Install camshaft sensor housing and tool assembly into engine according to instructions in the vehicle service manual. Torque fasteners to factory specifications.

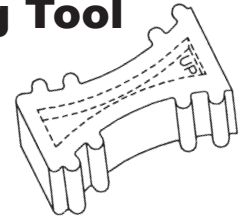


**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

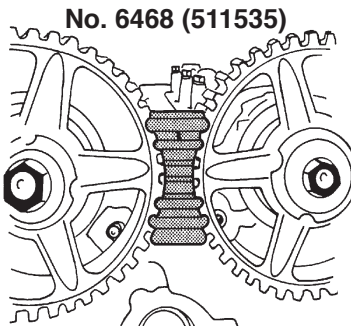
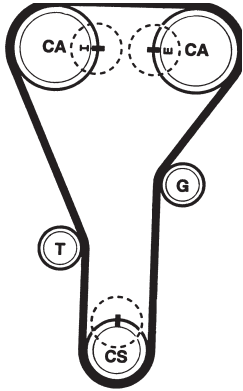


## 511535 (6468) Ford Camshaft Pulley Holding Tool

Application: 1993 – 1997 Ford Probe w/ 2.0L, 4 cyl., engine  
 Note: Same as Ford No. 303-398 (T92C-6256-AH).

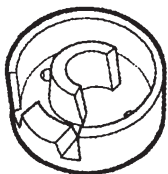


1. Rotate engine to align camshaft timing marks with crankshaft timing marks.
2. Insert No. 6468 (511535) between intake and exhaust cam pulleys. The tool will fit correctly only one way. The side of tool marked UP must be facing the technician and top of engine.
3. Follow vehicle service manual procedure to service timing belt as required. Remove tool when finished.



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

## 511536 (6469) Ford Camshaft Sensor Synchronizer Tool



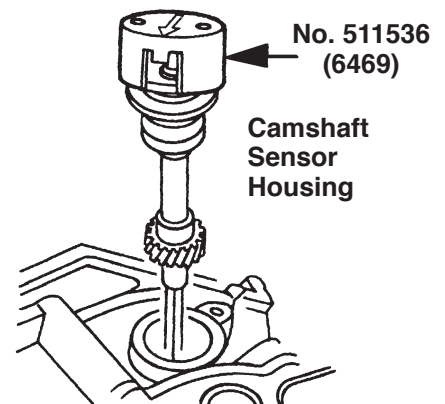
Application:

1997	3.8L V6 Cougar, Thunderbird
1997 – 2008	4.2L V6 Econoline, F-Series Truck
1996 – 1998	5.0L V8 Ford Explorer, Mercury Mountaineer
2004 – 2007	4.2L Freestar, Monterey
1996 – 1998	3.8L V6 Mustang, Windstar

Note: Same as Ford No. 303-562 (T96T-12200-A).

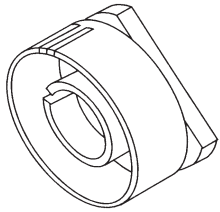
**CAUTION:** Before removing the camshaft sensor housing assembly, note the position of the camshaft sensor electrical connector. To prevent equipment damage, the connector **MUST** be reassembled in the same position during installation.

1. Rotate crankshaft to set No. 1 cylinder at top dead center of the compression stroke.
2. Engage camshaft sensor housing vane in slot of tool No. 511536 (6469).
3. Rotate tool on camshaft sensor housing until tool engages housing notch. (Tool should be square and in contact with entire top of housing.)
4. Install camshaft sensor housing and tool assembly into engine according to instructions in the vehicle service manual. Torque fasteners to factory specifications.



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

## 511537 (6470) Ford Camshaft Sensor Synchronizer Tool

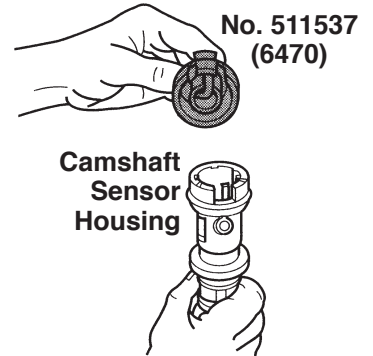
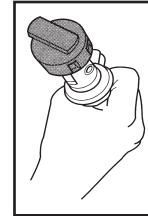


Application: 1999 – 2002 5.0L V8 Explorer, Mountaineer  
2004 – 2007 3.9L Freestar (VIN 6)  
2004 3.9L Monterey (VIN 6)  
1999 – 2004 3.8L V6 Mustang  
1999 – 2003 3.8L V6 Windstar

*Note: Same as Ford No. 303-630.*

**CAUTION:** Before removing the camshaft sensor housing assembly, note the position of the camshaft sensor electrical connector. To prevent equipment damage, the connector **MUST** be reassembled in the same position during installation.

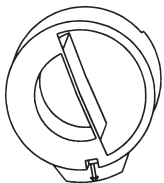
1. Rotate crankshaft to set No. 1 cylinder at top dead center of compression stroke.
2. Engage camshaft sensor housing vane in slot of tool No. 511537 (6470).
3. Rotate tool on camshaft sensor housing until tool engages housing notch. (Tool should be square and in contact with entire top of housing.)
4. Install camshaft sensor housing and tool assembly into engine according to instructions in the vehicle service manual. Torque fasteners to factory specifications.



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

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## 511538 (6471) Ford Camshaft Sensor Synchronizer Tool

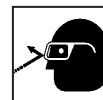
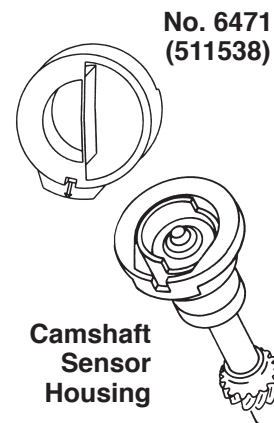


Application: 1993 – 1995 3.0L V6 Ford Taurus/Mercury Sable

*Note: Same as Ford No. 303-453 (T93P-12200-A).*

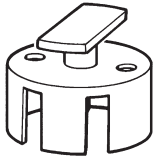
**CAUTION:** Before removing the camshaft sensor housing assembly, note the position of the camshaft sensor electrical connector. The connector **MUST** be reassembled in the same position during installation.

1. Rotate crankshaft to set No. 1 cylinder at top dead center of compression stroke.
2. Engage camshaft sensor housing vane in slot of tool No. 6471 (511538).
3. Rotate tool on camshaft sensor housing until tool engages housing notch. (Tool should be square and in contact with entire top of housing.)
4. Install camshaft sensor housing and tool assembly into engine according to instructions in the vehicle service manual. Torque fasteners to factory specifications.



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

### 511539 (6472) Ford Camshaft Positioning Tool Set



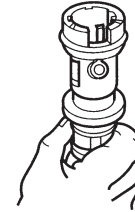
Application: 1995 – 1997 3.0L V6 Aerostar, Ranger, Windstar  
1996 – 1998 4.0L V6 Aerostar, Explorer, Ranger  
1996 – 1997 3.0L V6 2V Sable, Taurus

**CAUTION:** Before removing the camshaft sensor housing assembly, note the position of the camshaft sensor electrical connector. To prevent equipment damage, the connector **MUST** be reassembled in the same position during installation.

1. Rotate crankshaft to set No. 1 cylinder at TDC of compression stroke.
2. Engage camshaft sensor housing vane in slot of tool No. 511539 (6472).
3. Rotate tool on camshaft sensor housing until tool engages housing notch. (Tool should be square and in contact with entire top of housing.)
4. Install camshaft sensor housing and tool assembly into engine according to instructions in the vehicle service manual. Torque fasteners to factory specifications.

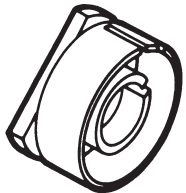


No. 511539  
(6472)



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

### 511540 (6473) Ford Camshaft Sensor Synchronizer Tool



Application: 1998 – 2008 3.0L V6 Ranger  
1998 – 2005 3.0L V6 Sable, Taurus (VIN U)  
1998 – 2006 3.0L V6 Sable, Taurus (VIN Z)  
1998 – 2003 3.0L V6 Windstar

*Note: Same as Ford No. 303-589.*

**CAUTION:** Before removing the camshaft sensor housing assembly, note the position of the camshaft sensor electrical connector. To prevent equipment damage, the connector **MUST** be reassembled in the same position during installation.

1. Rotate crankshaft to set No. 1 cylinder at top dead center of compression stroke.
2. Engage camshaft sensor housing vane in slot of tool No. 511540 (6473).
3. Rotate tool on camshaft sensor housing until tool engages housing notch. (Tool should be square and in contact with entire top of housing.)
4. Install camshaft sensor housing and tool assembly into engine according to instructions in the vehicle service manual. Torque fasteners to factory specifications.

No. 511540  
(6473)

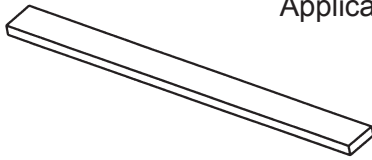


Camshaft  
Sensor  
Housing



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

# 511541 (6474) Ford Camshaft Alignment Tool



Application:	1994 – 2002	2.0L 4 cyl.	Contour, Mystique (VIN 3)
	1999 – 2002	2.0L	Cougar (VIN 3)
	2012 – 2014	2.0L	Edge, Explorer (VIN 9)
	2001 – 2004	2.0L	Escape (VIN B)
	2013 – 2014	2.0L	Escape (VIN 9), Fusion, MKZ, Taurus
	2005 – 2008	2.3L	Escape, Mariner (VIN Z)
	2009 – 2014	2.5L	Escape (VIN 7)
	2005 – 2008	2.3L	Escape Hybrid, Mariner Hybrid (VIN H)
	2009 – 2012	2.5L	Escape Hybrid, Mariner Hybrid (VIN 3)
	2012 – 2014	2.0L	Focus (VIN 2)
	2000 – 2004	2.0L	Focus (VIN 3)
	2002 – 2004	2.0L	Focus (VIN 5)
	2005 – 2012	2.0L	Focus (VIN N)
	2003 – 2007	2.3L	Focus (VIN Z)
	2006 – 2009	2.3L	Fusion, Milan, MKZ, Zephyr (VIN Z)
	2010 – 2014	2.5L	Fusion (VIN A)
	2010 – 2014	2.5L	Fusion Hybrid (VIN 3)
	2009 – 2012	2.5L	Mariner (VIN 7)
	2010 – 2011	2.5L	Milan
	2010 – 2012	2.5L	Milan Hybrid, MKZ Hybrid (VIN 3)
		2014	2.0L MKT
		2012	2.0L MKX (VIN 9)
	2010 – 2012	2.5L	MKZ (VIN A)
	2001 – 2011	2.3L	Ranger (VIN D)
	2010 – 2013	2.0L	Transit (VIN N)

## Note:

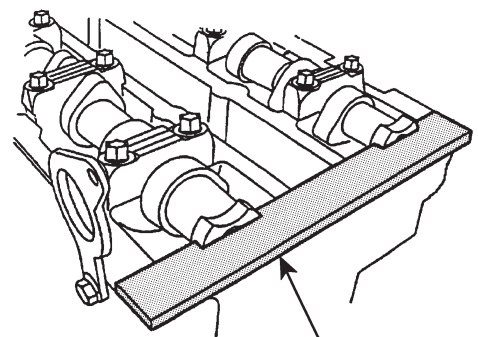
- Same as Ford No. 303-465 (T94P-6256-CH).
- The camshaft timing slots are offset. If the camshaft alignment timing tool cannot be installed, rotate the crankshaft one complete revolution clockwise to correctly position the camshafts.

**CAUTION: The Camshaft Alignment Tool is for camshaft alignment only. Using this tool to prevent rotation can result in engine damage.**

1. Rotate engine to top dead center on the No. 1 cylinder.
2. Align camshafts by installing tool No. 511541 (6474) into the slots at the rear of the camshafts as shown.
3. Service the timing belt as required according to instructions in the vehicle service manual.
4. Torque fasteners to factory specifications.
5. Remove the tool.



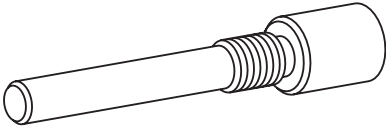
**WARNING: Wear eye protection that meets ANSI Z87.1 and OSHA standards.**



**No. 511541  
(6474)**

### 511542 (6475) Ford Crankshaft TDC Timing Pin

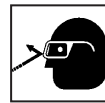
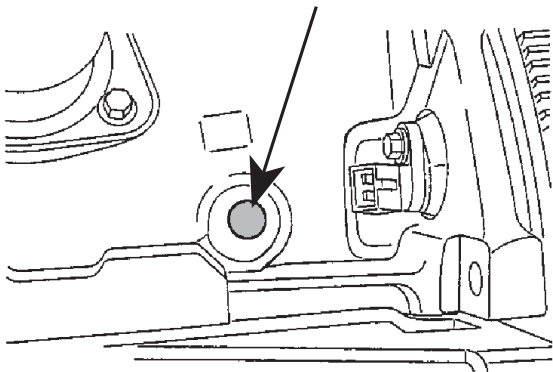
Application: 1997 – 2002 2.0L 4 cyl. Contour, Mystique (VIN 3)  
1999 – 2002 2.0L Cougar (VIN 3)  
2012 – 2014 2.0L Edge, Explorer (VIN 9)  
2001 – 2004 2.0L Escape (VIN B)  
2013 – 2014 2.0L Escape (VIN 9), Fusion, MKZ, Taurus  
2012 – 2014 2.0L Focus (VIN 2)  
2000 – 2004 2.0L Focus (VIN 3)  
2002 – 2004 2.0L Focus (VIN 5)  
2005 – 2011 2.0L Focus (VIN N)  
2014 2.0L MKT  
2010 – 2012 2.0L Transit (VIN N)



**CAUTION:** To prevent damage to the engine, remove the No. 511542 (6475) timing pin from the engine and reinstall the access plug **BEFORE** cranking the engine.

1. Rotate crankshaft to set No. 1 cylinder on TDC of compression stroke.
2. Remove the access plug from the engine and install tool No. 511542 (6475) timing pin as shown. (The pin will completely thread into the hole when the engine is at TDC on the No. 1 cylinder.)
3. Service the timing belt as required according to vehicle service manual procedures.
4. Torque fasteners to factory specifications.

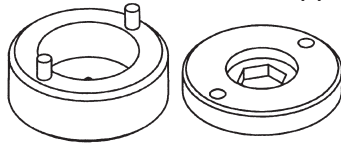
**No. 6475  
(511542)**



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

# 511543 / 511544 (6476) Ford Camshaft Positioning Tool Set

Application: 1997 – 2002 4.6L Econoline, F-Series Truck (VIN W)  
1997 – 2002 5.4L Econoline, Expedition, F-Series Truck  
1997 – 2002 6.8L V10 Econoline  
1998 – 2002 5.4L Navigator



511543

511544

**Note:**

- 511543 is the same as Ford No. 303-569 (T96T-6256-AR1) and 511544 is the same as Ford No. 303-570 (T96T-6256-AR2).
- This tool is used with No. 6477 (511545) Ford Camshaft Holding Tool.

**1. Two-hole Camshaft Sprocket:**

Use No. 511543 to position the camshaft sprocket (2-hole) on the engine as shown.

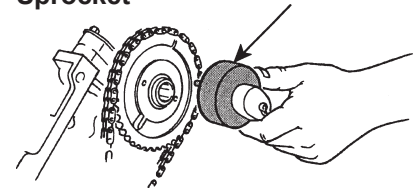
**18 mm Hex Hd. Camshaft Sprocket:**

Use No. 511543 with No. 511544 to position the camshaft sprocket (18 mm hex hd.) on the engine as shown.

2. Service the timing chain as required according to procedures in the vehicle service manual.
3. Torque the fasteners to factory specifications.

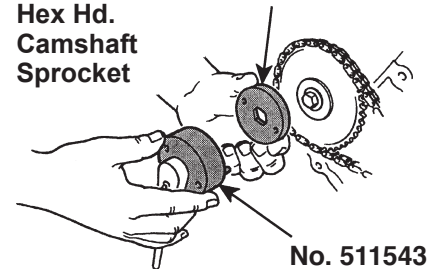
**2-Hole  
Camshaft  
Sprocket**

No. 511543



**18 mm  
Hex Hd.  
Camshaft  
Sprocket**

No. 511544



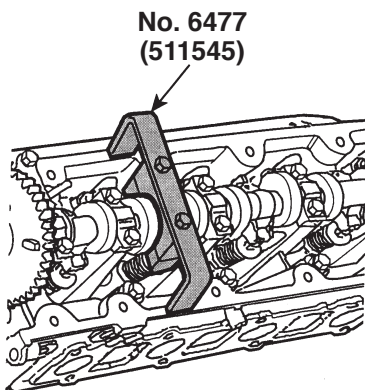
**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

## 511545 (6477) Ford Camshaft Holding Tool

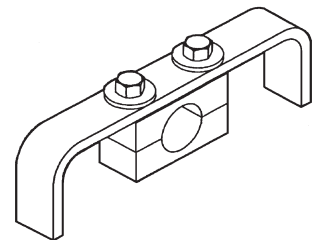
Application: 1997 – 2009 4.6L Econoline, F-Series Truck (VIN W)  
1997 – 2002 5.4L Econoline (V8), Expedition, F-Series Truck  
1997 – 2002 6.8L V10 Econoline  
1998 – 2002 5.4L V8 Navigator

**Note:**

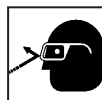
- Same as Ford No. 303-557 (T96T-6256-B).
- This tool is used with No. 6476 (511543 & 511544) Ford Camshaft Positioning Tool Set.



No. 6477  
(511545)



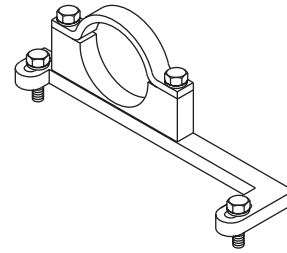
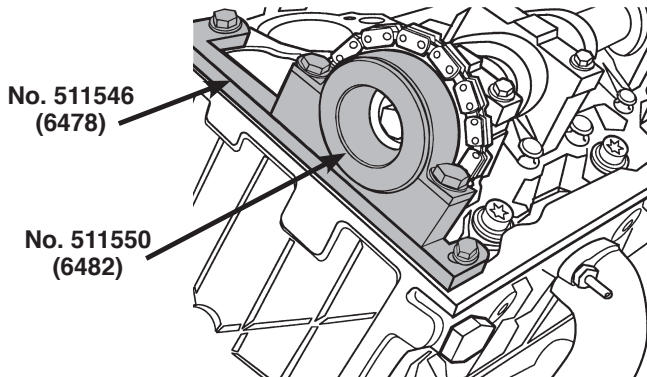
1. Install tool No. 511545 (6477) on the camshaft as shown.
2. Torque hex hd. bolts at 20 ft. •lbs. to ensure correct clamping force. *Note: Each bolt must be engaged by the same number of threads in the bottom clamp to ensure correct clamp alignment.*
3. Repair the engine as required according to instructions in the vehicle service manual.



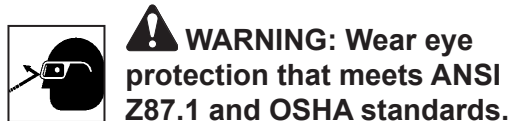
**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

### 511546 (6478) Ford Camshaft Gear Holding Tool

Application: 1997 – 2011 4.0L SOHC Explorer (V6), Mountaineer (V6), Ranger (VIN E)  
1997 – 2008 4.0L SOHC Explorer, Mountaineer, Ranger (VIN X)  
2005 – 2010 4.0L SOHC Mustang (VIN N)

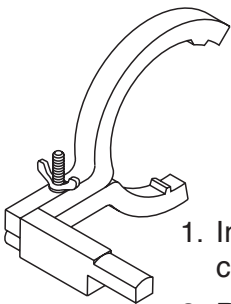


1. Install tool Nos. 511546 (6478) and 511550 (6482) on the camshaft as shown.
2. Secure tool No. 511546 (6478) to the cylinder head.
3. Service the timing chain as required according to instructions in the vehicle service manual.
4. Torque fasteners to factory specifications.



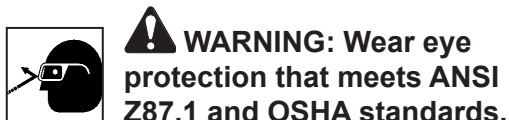
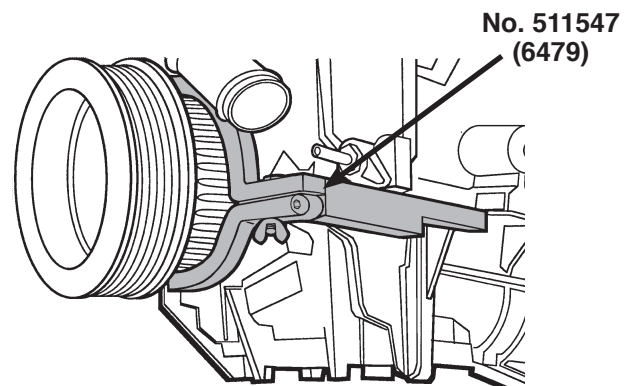
### 511547 (6479) Ford Crankshaft Holding Tool

Application: 1997 – 2011 4.0L SOHC Explorer (V6), Mountaineer (V6), Ranger (VIN E)  
1997 – 2008 4.0L SOHC Explorer, Mountaineer, Ranger (VIN X)  
2005 – 2010 4.0L SOHC Mustang (VIN N)



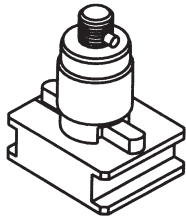
*Note: Same as Ford No. 303-573 (T97T-6303-A).*

1. Install tool No. 511547 (6479) on the crankshaft damper.
2. Rotate the engine counterclockwise (CCW) until the tool stops against the engine block.
3. Service the timing chain as required according to instructions in the vehicle service manual.
4. Torque fasteners to factory specifications.



## 511548 (6480) Ford Camshaft Holding Tool Adapter

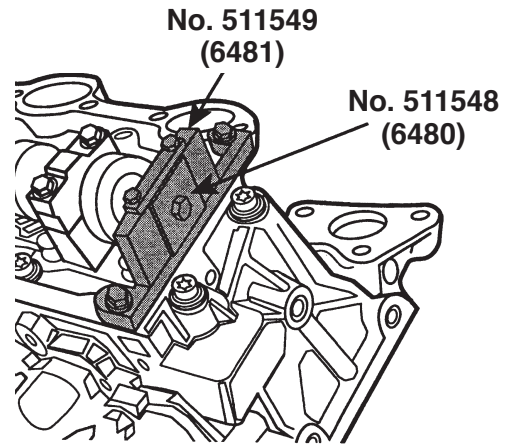
Application: 1997 – 2011 4.0L SOHC Explorer (V6), Mountaineer (V6), Ranger (VIN E)  
1997 – 2008 4.0L SOHC Explorer, Mountaineer, Ranger (VIN X)  
2005 – 2010 4.0L SOHC Mustang (VIN N)



**Note:**

- Same as Ford No. 303-576 (T97T-6256-D).
- This tool is used with No. 511549 (6481) Ford Camshaft Holding Tool.

1. Install tool Nos. 511548 (6480) and 511549 (6481) on the camshaft as shown.
2. Secure tool No. 511549 (6481) to the cylinder head.
3. Service the timing chain as required according to instructions in the vehicle service manual.
4. Torque fasteners to factory specifications.

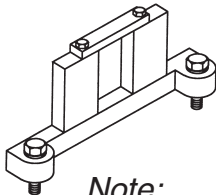


**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

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## 511549 (6481) Ford Camshaft Holding Tool

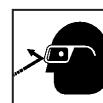
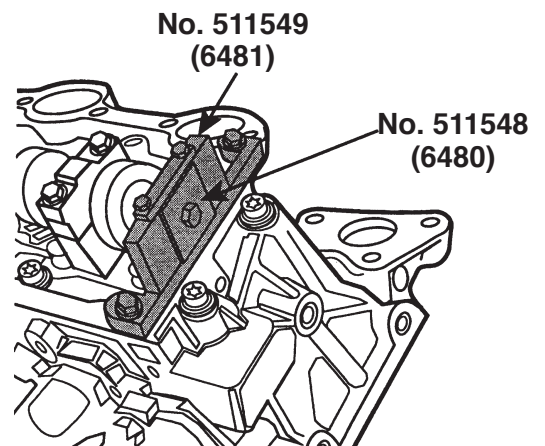
Application: 1997 – 2011 4.0L SOHC Explorer (V6), Mountaineer (V6), Ranger (VIN E)  
1997 – 2008 4.0L SOHC Explorer, Mountaineer, Ranger (VIN X)  
2005 – 2010 4.0L SOHC Mustang (VIN N)



**Note:**

- Same as Ford No. 303-577 (T97T-6256-C).
- This tool is used with No. 511548 (6480) Ford Camshaft Holding Tool Adapter.

1. Install tool Nos. 511548 (6480) and 511549 (6481) on the camshaft as shown.
2. Secure tool No. 511549 (6481) to the cylinder head.
3. Service the timing chain as required according to instructions in the vehicle service manual.
4. Torque fasteners to factory specifications.



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

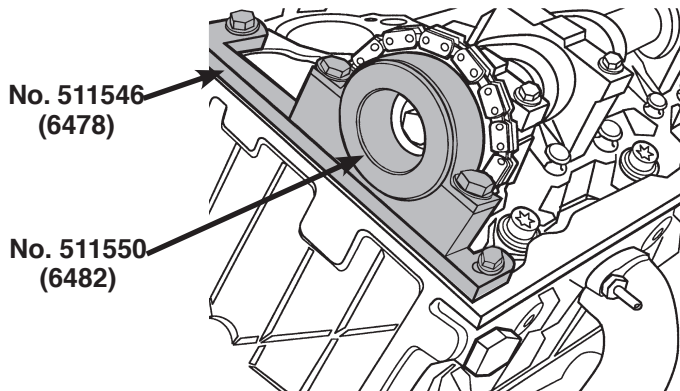
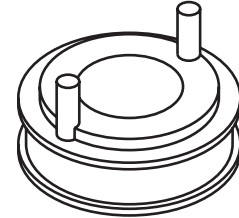


### 511550 (6482) Ford Camshaft Holding Tool Adapter

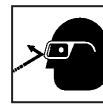
Application: 1997 – 2011 4.0L SOHC Explorer (V6), Mountaineer (V6), Ranger (VIN E)  
1997 – 2008 4.0L SOHC Explorer, Mountaineer, Ranger (VIN X)  
2005 – 2010 4.0L SOHC Mustang (VIN N)

**Note:**

- Same as Ford No. 303-578 (T97T-6256-A).
- This tool is used with No. 511546 (6478) Ford Camshaft Gear Holding Tool.



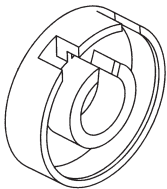
1. Install tool Nos. 511546 (6478) and 511550 (6482) on the camshaft as shown.
2. Secure tool No. 511546 (6478) to the cylinder head.
3. Service the timing chain as required according to instructions in the vehicle service manual.
4. Torque fasteners according to factory specifications.



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

### 511551 (6483) Ford Camshaft Synchronizer Tool

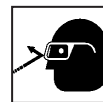
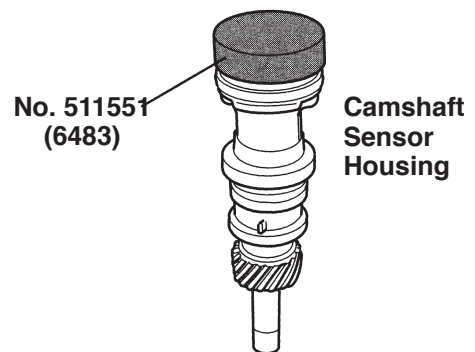
Application: 1999 – 2002 4.0L Push Rod Explorer, Mountaineer  
1999 – 2000 4.0L Push Rod Ranger



*Note: Same as Ford No. 303-638.*

**CAUTION:** Before removing the camshaft sensor housing assembly, note the position of the camshaft sensor electrical connector. To prevent equipment damage, the connector **MUST** be reassembled in the same position during installation.

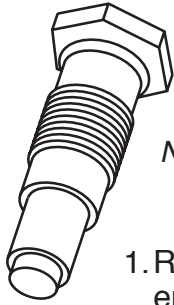
1. Rotate crankshaft to set No. 1 cylinder at top dead center of compression stroke.
2. Engage camshaft sensor housing vane in slot of tool No. 511551 (6483).
3. Rotate tool on camshaft sensor housing until tool engages housing notch. (Tool should be square and in contact with entire top of housing.)
4. Install camshaft sensor housing and tool assembly into engine according to instructions in the vehicle service manual.
5. Torque fasteners to factory specifications.



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

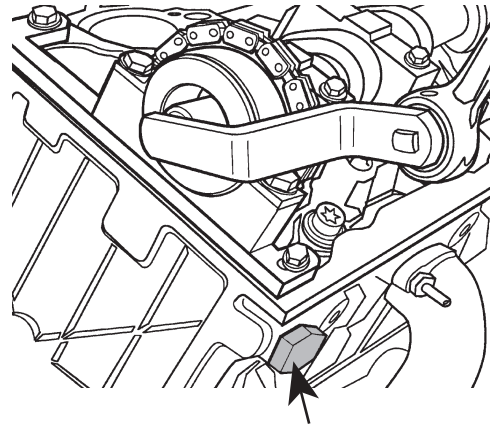
## 511552 (6484) Ford Timing Chain Tensioner Tool

Application: 1997 – 2011 4.0L SOHC Explorer (V6), Mountaineer (V6), Ranger (VIN E)  
1997 – 2008 4.0L SOHC Explorer, Mountaineer, Ranger (VIN X)  
2005 – 2010 4.0L SOHC Mustang (VIN N)



*Note: Same as Ford No. 303-571 (T97T-6K254-A).*

1. Remove the hydraulic chain tensioner from the engine.
2. Install tool No. 511552 (6484) into the engine to hold pressure on the timing chain during the cam timing procedure.
3. Adjust camshaft timing according to instructions in the vehicle service manual.
4. Torque fasteners to factory specifications.



**No. 511552  
(6484)**



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.

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## 511553 / 511554 (6485) Ford Camshaft Gear Bolt Socket Extension

Application: 1997 – 2011 4.0L SOHC Explorer (V6), Mountaineer (V6), Ranger (VIN E)  
1997 – 2008 4.0L SOHC Explorer, Mountaineer, Ranger (VIN X)  
2005 – 2010 4.0L SOHC Mustang (VIN N)  
2003 – 2011 4.0L SOHC Ranger

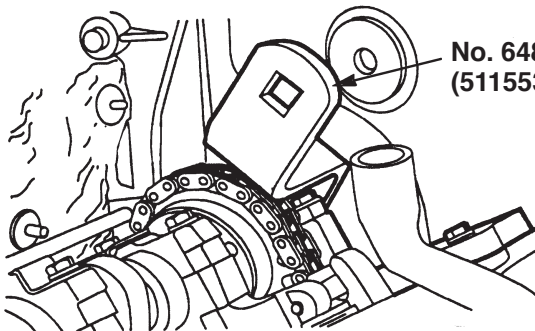
*Note: 511553 is the same as Ford No. 303-565 (T97T-6256-G)  
and 511554 is the same as Ford No. 303-575 (T97T-6256-F).*



**No. 511554  
Extension**

**No. 511553  
Camshaft Gear  
Bolt Socket**

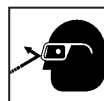
**No. 6485  
(511553 & 511554)**



1. Assemble the No. 6485 (511553 & 511554) socket and extension on the camshaft gear bolt as shown.

**Removal:** Use a ratchet or breaker bar to loosen and remove the bolt from the camshaft.

**Assembly:** Use a torque wrench to tighten the bolt on the camshaft. Refer to the vehicle service manual for the correct torque specifications.



**WARNING:** Wear eye protection that meets ANSI Z87.1 and OSHA standards.