



**IMPORTANT BOLT INSTALLATION INSTRUCTIONS**  
**STEEL RODS ONLY**

**PLEASE READ CAREFULLY!!**

**FAILURE TO FOLLOW ALL INSTRUCTIONS MAY RESULT IN PREMATURE ENGINE FAILURE.**

**DO NOT USE METAL STAMPS** to number rods. Metal stamps may disturb the roundness of the rod bore. Paint toolmaker's layout dye on the rod and cap, then inscribe numbers.

**NEVER** use bolts to draw cap down on rod. Locate cap dowel sleeves into the counter bores of the rod. Then, **CAREFULLY** tap cap into place.

**Clean** all parts thoroughly to remove all dirt and foreign oils. Spread Oliver bolt lube on threads and under head of bolt and tighten per instructions below.

**Stretch:** While the stretch method has become widely accepted as the most accurate method of obtaining proper clamping force, the method of obtaining proper stretch has been confusing. To obtain proper stretch you cannot "as it might be called" chase the stretch, meaning turning the bolt in small steps to come to the recommended stretch. After 50 lb/ft to 60 lb/ft of torque, the clamp load of the threads is getting so great; you are turning the head of the bolt before the threads start to turn. Thus the bolt is not being turned 1 to 1 (head of bolt to threads of bolt). This can result in **TWIST FRACTURING** and / or **TWIST YIELDING** the shank of the bolt leading to premature failure.

**Torque Angle** method has proven to be one of the most effective methods to assure against premature failure within the fasteners load capacity. Using the following example you will achieve maximum strength within the fasteners load capacity

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**Example: Torque Angle Procedure**

Bolt type	Recommended Stretch	Torque Angle
7/16-Oliver/ARP 2000	.0053 to .0057	30ft/lb + 42 deg.

With clean dry threads on rods and bolts apply recommended bolt lubricant to threads in rods and on bolts and under head of bolts.

1. Seat bolt by tightening 2 to 3 times to recommended spec. applying lube each time.
2. Zero stretch gauge on relaxed bolt – no torque
3. Tighten to recommended torque and angle – pull the angle in one full movement.
4. Check Stretch – If stretch comes up short of specification, (.005 from above example) use the following method to obtain proper stretch.
5. Back bolt off and re-lube threads and under head.
6. Reset initial bolt torque.
7. Add 2 degrees of angle to specification making sure to pull in one steady pull.
8. Check stretch – if short of desired spec. repeat steps 5 thru 7.
9. Remember to pull in one full motion. Once you stop; the twisting force to overcome the load on the threads is so great, it may result in a **TWIST FAILURE** to shank of bolt.

<u>Bolt Type</u>	<u>BOLT#</u>	<u>Recommended Stretch</u>	<u>Torque &amp; Angle</u>
3/8 - Oliver/ARP 2000	BLT007	.0050" to .0054"	25 ft lbs + 42 deg
3/8 - Oliver/ARP 3.5	BLT008	.0052" to .0056"	30 ft lbs + 42 deg
7/16 - Oliver/ARP 2000	BLT005	.0053" to .0057"	30 ft lbs + 42 deg
7/16 - Oliver/ARP (WSBX)(L19)	BLT030	.0053" to .0057"	30 ft lbs + 44 deg
7/16 - Oliver/ARP (CA625)	BLT003	.0063" to .0067"	30 ft lbs + 54 deg

**As a final check to make sure no bolts were missed:** Before bolting the oil pan on, set a torque wrench at 50 ft/lb for 7/16 bolt (40 ft/lb for 3/8bolt) and check all rod bolts. If any bolt turns before reaching the preset torque, it has not been properly tightened. You must loosen these bolts and tighten them properly.