

ILLINOIS CYLINDER HEAD BOLTS, THE PROFESSIONAL REPAIR



To fasten correctly, always replace the cylinder head bolts.

Bolts of block and head joints must be systematically replaced after each dismantling. The fastening requirements of the new concepts in engines require the cylinder head bolts to work over the "plastic zone".

The strength and traction applied on this selection, together with the thermal deflection, modify the original structure and the properties of the product.



WHY BOLTS SHOULD NOT BE USED AGAIN?

While fastening by Kg., the force applied on the bolt is found within the flexible limits of the product; it means that when the applied force is taken away, the bolt goes back to its initial length. In this case, the bolts do not suffer distortions (deflections), and they could be used again.

Using angular fastening, the bolt goes through considerable strain that leads to plastic deformations (work over the "plastic zone"); meanwhile, the variable temperatures regime of modern engines expands the values of thermal elongation. Stretching within "plastic zone" is accumulative. When working on that section, **bolt loses memory of its initial length** when the force is withdrawn when it is

dismantled. This is why the reuse becomes impossible, as the fastening capacity does not match the requirements of a proper block-head union. **Proper engine repair can only be guaranteed if you're using brand-new bolts.**

Would you risk the success of the repair? ILLINOIS strict quality controls guarantee the safety of bolts, according to the technical specifications of each type of engine.

BOLT ELONGATION OVER THE PLASTIC ZONE.



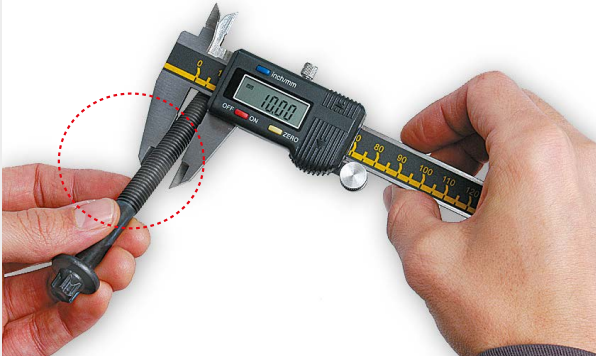
ILLINOIS®

BOLTS MEASUREMENT

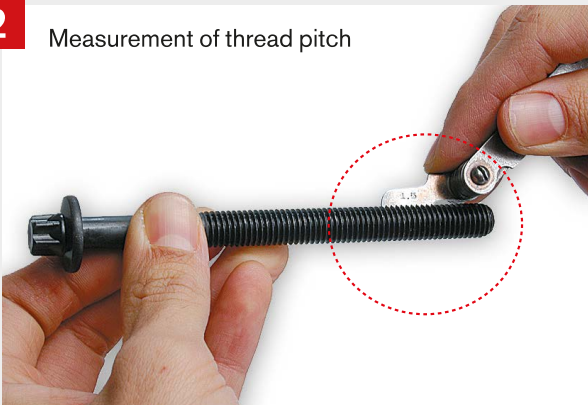
Example: **M10** x **1.5** x **117**

1 **2** **3**

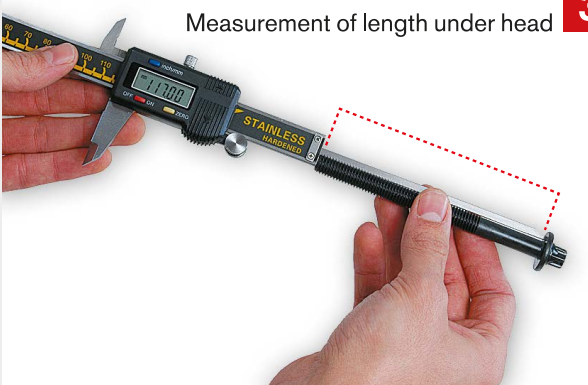
1 Measurement of bolt diameter



2 Measurement of thread pitch



3 Measurement of length under head



REMEMBER!!!

For angular fastening, it is essential to change the bolts every time you open the engine. The consequences of not changing the Cylinder Head Bolts are far more expensive than replacing them.

TYPE OF HEADS

-  **HEXAGON**
-  **HEXAGON WITH NECK**
-  **HEXAGON WITH WING**
-  **HEXAGON WITH WING AND NECK**
-  **HEXAGON WITH FLANGE**
-  **COUNTERSUNK HEXAGON**
-  **COUNTERSUNK HEXAGON WITH WING**
-  **COUNTERSUNK SPLINE ROUND**
-  **COUNTERSUNK SPLINE ROUND WITH NECK**
-  **COUNTERSUNK SPLINE ROUND WITH WING**
-  **COUNTERSUNK SPLINE ROUND WITH FLANGE**
-  **COUNTERSUNK TORX**
-  **COUNTERSUNK TORX WITH NECK**
-  **COUNTERSUNK TORX WITH WING**
-  **EXTERNAL TORX WITH WING**
-  **EXTERNAL TORX WITH WING AND NECK**
-  **EXTERNAL TORX WITH FLANGE**
-  **COUNTERSUNK DODECAGON**
-  **COUNTERSUNK DODECAGON WITH NECK**
-  **COUNTERSUNK DODECAGON WITH WING**
-  **COUNTERSUNK DODECAGON WITH FLANGE**
-  **COUNTERSUNK DODECAGON WITH WING**

VERY IMPORTANT!!!

Follow carefully the recommendations in the reports which come together with each of our products, since the evolution in engines, materials and technological changes have left certain procedures and some customary practices out of date and they are no longer valid at present.

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