

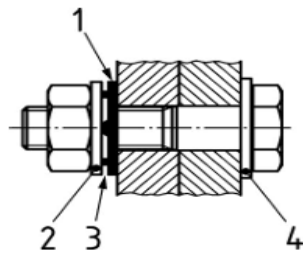
LOYAL ENTERPRISE (LOADSTAR) HSFG BOLT TIGHTENING PROCEDURE

EN 14399-3 System HR Assembly – M16,20,22,24,30 Property Class 8.8HR

Assembly Arrangement:

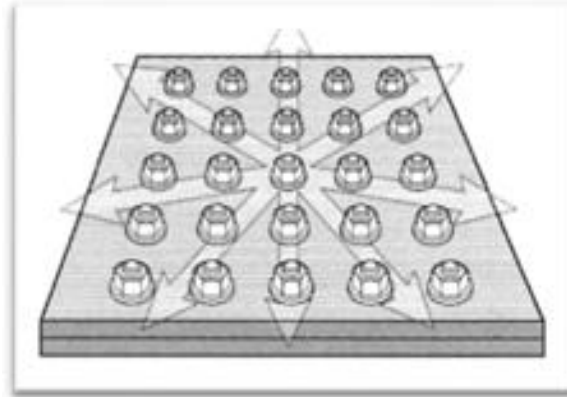
Bolt + Connected Plates + DTI Washer (Bumps Facing Outward) + HN Washer + Nut

- 1. Surface Preparation:** Clean all plates, holes, bolts, nuts and DTI washers. Remove oil, grease, rust, dust, paint particles and moisture.



(b) Under Nut fitting

1. Direct Tension Indicator
2. Nut face washer
3. Gap
4. washer according to EN 14399-6 (not required for property class 8.8)



2. Assembly Orientation: Install DTI washer under nut bearing face with protrusions facing outward. HN washer shall be between DTI & nut side. No plain washer under bolt head for 8.8HR assembly.

3. Bolt Insertion: Insert bolts by hand through aligned holes. Ensure minimum one thread pitch projection beyond nut face.

4. Snug Tightening: Carry out snug tightening Rotation of Nut in star/cross sequence using hand spanner or low torque impact wrench.

5. Snug Tight Check: Verify plates are fully seated and 0.25 mm feeler gauge does not enter between connected plates.

6. Initial Final Tightening: Apply initial trial torque to M16 Bolt-**260Nm**, M20 Bolt-**500Nm**, M22 Bolt-**680Nm**, M24 Bolt-**860Nm**, M30 Bolt-**1700Nm**. On minimum 10 assemblies following star sequence.

7. DTI Compression Check: Check DTI gap using 0.25 mm NO-GO feeler gauge refusal insertion as per EN 14399-9.

8. Torque Adjustment: If DTI is not compressed properly, increase torque in steps of 30-50 Nm and re-check.

9. Approved Torque: Record the torque value at which DTI passes acceptance criteria.

10. Production Tightening: Apply the approved torque uniformly to all remaining assemblies in star sequence.