Computer Controlled High Strength Bolt Torsion Testing Machine

1, General introduction

TBW series bolt torsion testing machine is mainly used to check the material performance of bolts nuts, double-screw bolts etc., fastener and connection pairs of various grade 12.9, 10.9, 9.8, 8.8. Can measure the preload, fastening axial force F, yield fastening axial force, yield clamp force, limit clamp force, safety load, breaking load, torque T, angle etc., Conform with standard: DIN2510/5, DIN2510/6, ASME/ASNIB18.2.2, ASTM.A320/A320M, ASTM A325, ASTM A354.

Can get the 3 kinds data curve report: torsion angle - torque, torque – lock force, extension rate – lock force, torque curve, according the measuring data, can calculate to get the torque coefficient and friction coefficient.

2, Application

Fasteners include: Friction type high strength bolt, bearing type high strength bolt, tensile bolt with high strength, torsional shear type high strength bolt, High-strength big hex bolt, stud bolt, coach bolt, friction type high strength prestressed bolt connect sets, bearing type high strength prestressed bolt connect sets.

3, Related standard

ISO 16047: Fasteners -- Torque/clamp force testing

EN 14399-2: High-strength structural bolting assemblies for preloading.

DIN 2510-5: Bolted connections with reduced shank hexagon nuts.

DIN 2510-6: Cap nuts for use with bolts with waisted shank.

ASTM A320 / A320M: Standard Specification for Alloy-Steel and Stainless Steel Bolting for

Low-Temperature Service;

ASTM A325: Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength;

ASTM A354: Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners.

4, Structure
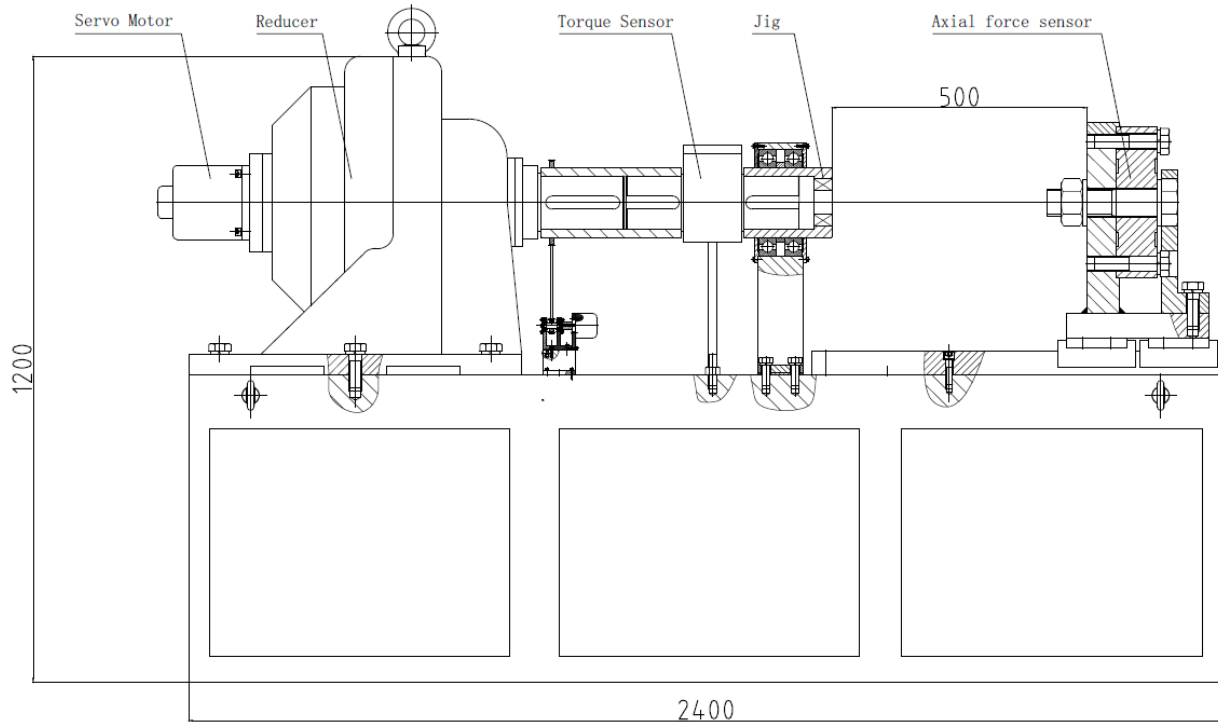
5, Main technical specification

Model	TBW series
Max. torque	3000N.m, 5000N.m, 1000N.m, 20000N.m
Torque measuring range	2%---100% F.S
Torque indication accuracy	±1%
Torque resolution	±1/200000
Max. bolt force	1000KN
Force accuracy	±1%
Effective test space	0~650mm (stepless adjustable)
Height of main shaft	≥100mm
Loading speed	0.05 ~ 2Rpm
Angle accuracy	≤±0.20
Power supply	50Hz, 220V, 4Kw

6. Main accessories

Frame	1 set
Fully digital AC servo motor	1 set
AC servo driving system	1 set
High accuracy torque sensor 5000N.m	1 set
Load cell 1000KN	1 set
Dual channel data sampling card (T813A)	1 set
Bolt torsion fixture (HRC45~50)	1 set
High strength bolt connect set jaws: (M12, M14, M16,M18,M20, M22, M30, M36)	Each 1 set
Computer (HP)	1 set
Printer (HP)	1 set
Documents (Manual, packing list, certificate)	

7, Structure introduction

1), Frame: horizontal structure, frame welded construction, can ensure the high stiffness. Test fixtures made of high quality alloy steel (JRC45~50), ensure long working life.

2), Driving system: Fully digital AC servo control system, with feature of wide adjusting range, loading uniformly, stable and accurate.

3), Measuring system: load cell to measure the bolt load **P**, high accuracy torque sensor to get torque **T**, Photoelectric encoder to measure shafting displacement (or torsion angle). Computer to display the value and curve, can set force F, or torque T, control the running, stop etc., and report below test result:

*** Bolt connect set torque coefficient K;

*** Yield tight blot force F_{fy}

*** Yield tight torque T_{fy}

*** Limitation tight blot force F_{fu}

4), Computer control, and Computer display test result.

5), Curve can random choose the coordinate axis, free zoom in, zoom out. Can display multi kinds curve like torque-time, torque-angle, angle-time etc.,

6), Main test software operation, function, curve, data real time display on the main window, easy operation, can display torque-torsion angle, torque-corner, torque-time, torsion angle-time etc. curve;

7), Multi-protection function, overload, over current, over voltage etc., Sample breaking safety, emergency stop function etc.