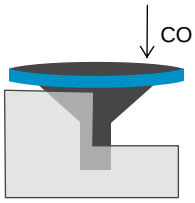
Summary of the most commonly used test methods

Part 6A – Total Knee Replacement (TKR)



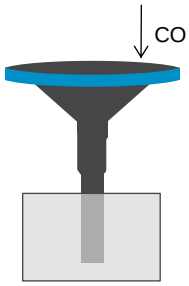
☐ Dynamic compression (D-CO)

ISO 14879-1 (ASTM F1800)

Implants for surgery - Total knee-joint prostheses - Part 1: Determination of endurance properties of knee tibial trays

Scope

Determining the endurance properties of tibial trays used in knee-joint prostheses to support and secure the plastics articulating surface



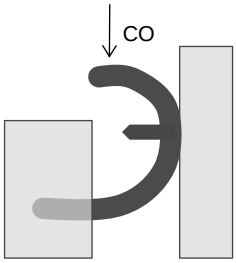
☐ Dynamic compression (D-CO)

S-05

Fatigue testing of extension elements of tibial trays

Scope

Determining the endurance properties of the extended tibial tray



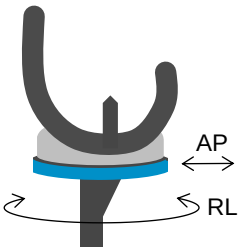
☐ Dynamic compression (D-CO)

S-06

Fatigue testing of femoral components of total knee joint prostheses

Scope

Determining the endurance properties of femoral components



☐ Anterior-Posterior Draw (S-AP)
☐ Medio-Lateral Shear (S-ML)
☐ Rotary Laxity (S-RL)
☐ Valgus-Varus (S-VV)
☐ others

ASTM F1223

Standard test method for determination of total knee replacement constraint

Scope

Total knee replacement motion characteristics

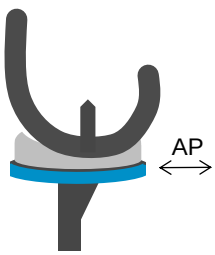
☐ Cyclic Torsion (C-TO)

ASTM F2722

Evaluating mobile bearing knee tibial baseplate rotational stops

Scope

Method for evaluating the mechanical performance of rotational stops



☐ Cyclic Anterior-Posterior Shear (C-AP)

ASTM F2723

Evaluating mobile bearing knee tibial baseplate / bearing resistance to dynamic disassociation

Scope

Method for evaluating the potential for mobile bearing knee tibial baseplate / bearing disassociation under repeated forces

For further information also regarding additional test methods not covered by this summary please contact:

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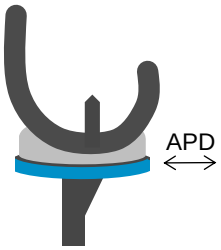
February 2018

Summary of the most commonly used test methods

Part 6B - Total Knee Replacement (TKR)



☐ Anterior-Posterior Dislocation (S-APD)

ASTM F2724

Standard test method for evaluating mobile bearing knee dislocation

Scope

Method to determine the dislocation resistance of mobile bearing knee designs

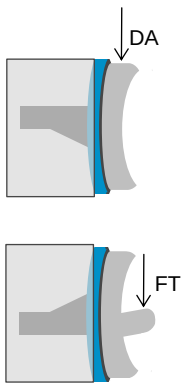
☐ Cyclic Axial Compression (C-CO)

ASTM F2777

Evaluating knee bearing (tibial insert) endurance and deformation under high flexion

Scope

Method for determining the endurance properties and deformation of ultra high molecular weight polyethylene tibial bearing components



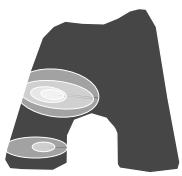
☐ Assembly (S-AS)
☐ Disassembly (S-DA)
☐ Cyclic Fatigue (D-FT)

ASTM F1814

Standard guide for evaluating modular hip and knee joint components

Scope

Procedure to assist the developer of a modular joint replacement implant in the choice of appropriate tests



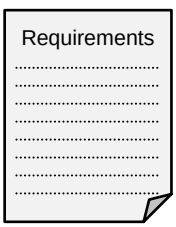
☐ Finite Element Analysis (FEA)

ASTM F3161

Standard test method for finite element analysis (FEA) of metallic orthopaedic total knee femoral components under closing conditions

Scope

Requirements and considerations for the numerical simulation of metallic orthopaedic total knee femoral components using Finite Element Analysis techniques for the estimation of stresses and strains



ISO 21536

Non-active surgical implants — Joint replacement implants — Specific requirements for knee-joint replacement implants

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