9.9.2 Rotary Swivel Prototype Pressure Testing

The assembled test unit shall be hydrostatically pressure-tested.

The test pressure shall be twice the working pressure for working pressures up to and including 34.5 MPa (5,000 psi). For working pressures above 34.5 MPa (5,000 psi), the test pressure shall be at least 1.5 times the working pressure, but not less than 69 MPa (10,000 psi). The test pressure shall be held for two cycles of 3 min each in accordance with the pressure/time sequence specified in 9.9.3.

9.9.3 Production Pressure-testing

The cast components of the rotary-swivel hydraulic circuit shall be pressure tested in production. The production test pressure shall be shown on the cast member.

The hydrostatic pressure test shall consist of the following four steps:

a) Primary pressure holding period;
b) Reduction of the pressure to zero;
c) Thorough drying of all external surfaces of the components;
d) Secondary pressure holding period.

The production test pressure shall be equal to the prototype test pressure as defined in 9.9.2. The pressure-holding periods shall be not less than 3 min, the timing of which shall not start until the test pressure has been reached and the equipment and pressure-monitoring device have been isolated from the pressure source. During this period, no detectable pressure drop or leakage shall be allowed.
The assembled test unit shall be hydrostatically pressure tested. The individual parts of the unit can be tested separately if the holding fixtures simulate the load condition applicable to the part in the assembled unit.

The test pressure shall be at least twice the working pressure for working pressures up to and including 34.5 MPa (5,000 psi). For working pressures above 34.5 MPa (5,000 psi), the test pressure shall be at least 1.5 times the working pressure, but not less than 69 MPa (10,000 psi). The pressure-holding periods shall be no less than 3 min, the timing of which shall not start until the test pressure has been reached and the equipment and pressure-monitoring device have been isolated from the pressure source. During this period, no visible leakage shall be allowed. Throughout the test, the pressure shall not drop below the specified test pressure, nor shall it change by more than 2.5% of the test pressure or 500 psi, whichever is less.

Washpipes containing mechanical seals (designed to have a controlled leak) are exempt from the ‘no visible leakage shall be allowed’ requirement as described above. The leakage rate shall not exceed the seal manufacturer’s limits.

The hydrostatic pressure test shall consist of the following four steps:

a) primary pressure-holding period;
b) reduction of the pressure to zero;
c) thorough drying of all external surfaces of the components;
d) secondary pressure-holding period.

9.9.3 Rotary Swivel Production Pressure Testing

The cast components of the rotary swivel hydraulic circuit shall be hydrostatically pressure tested in production. The production test pressure shall be shown on the cast member.

The production test and requirements are the same as the prototype test, as defined in 9.9.2.