

**PRODUCT NEWS BULLETIN**

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**Product Improvement  
Hardened Wire Swivel Races**

Applicable to All Carter 61154, 64155 and 64254 Dry Break Swivel Quick Disconnects

Since its design inception in 1982, Carter's Model 61154 Dry Break Quick Disconnect has incorporated hardened wire races, part number 207364, (\*item 6 of Figure 2 in Service Manual SM61154) on the male half of the swivel/disconnect to ensure resistance to wear created by the stainless steel latching balls. The more recently developed Model 64254 Low Pressure Drop Dry Break Quick Disconnect and Model 64155 Continuity Dry Break also feature the same hardened wire races (\*item 27 of Figure 3 in the Service Manual SM64254 and item 3 of Figure 3 in SM64155). The material of these wire races was changed in 1989 to 440C per AMS 5630, which is a material with higher yield strength and one that could be heat treated to C58 Rockwell. This improvement resulted in even more resistance to wear but also has a possible down side. It is extremely difficult to control the passivation treatment of parts made from 440C. Passivation is an acid etching process that cleans the exterior surface of any carbon deposit to prevent minor corrosion. Improper passivation treatment can make high carbon grade stainless steel susceptible to hydrogen embrittlement.\*\*

**\*\*Hydrogen embrittlement (or hydrogen grooving)** is the process by which various metals, most importantly high-strength steel, become brittle and crack following exposure to hydrogen.

Due to this known fact, Carter decided not to passivate these rings, which was not a problem, as these rings are outside the flow path of fuel and any minor rust particles would be worn away by the rotation of the swivel. However, there are other ways for hydrogen embrittlement to occur. One of them is exposure to extreme salt air environments.

Hydrogen embrittlement makes the metal very brittle and will manifest itself in wire race rings that are fractured or broken, possibly in several different places. When the race rings are fractured the ball bearings that ride on them will no longer run smoothly, making the swivel difficult to rotate.

Knowing that many airports around the world are located by the sea, Carter has decided to change the material of these wire races to 17-7 pH corrosion resistant steel per AMS 5673 and hardened to C49 Rockwell. These new wire races will be passivated and, due to the high chrome and nickel contents of this high strength stainless steel, they will be less susceptible to hydrogen embrittlement.

Any owner of a 61154, 64254 or 64155 Dry Break Swivel Quick Disconnect less than one year old can obtain, at no charge, a replacement set of wire race rings by providing your local Carter distributor or manufacturer representative with the serial number of your Disconnect(s) in question. The following serial numbers qualify:

61154 - Serial Numbers higher than 11209

64254 – Serial Numbers higher than 101

64155 – Serial Numbers higher than 101

In addition, wear/damage check instructions on the race rings will be added to the "INSPECTION" sections of the respective manuals as follows:

*"Inspect the race rings (\*item xx, fig. xx) for wear or damage. Remove and measure the wire diameter in several places around its circumference. If the wire diameter is found to be less than .104 (2.64 mm) inches the ring should be replaced. Also inspect for cracks, which could result in breaks, by removing the rings from the Adapter. Removal of affected race rings is likely to result in breakage of the rings."*

Additionally, if a disconnect is found to be difficult to swivel, further inspection of these wire race rings should be completed to ensure that the cause is not the result of a worn or broken wire race ring.

