



Carter Ground Fueling Division
Argo-Tech Corporation - Costa Mesa

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**APPLICABLE TO HYDRANT COUPLERS PART NUMBERS:
3" x 4" API – 64800, 64801, 64802, 64804 AND 4" x 4" API –
60700-1, 61525, 64702, 64900 ALL SERIAL NUMBERS
PRODUCED TO DATE AND THE COMMON REPLACEMENT
LOWER HALF PART NUMBER 44665 AND 47245**

**SB016070560
July 5, 2006**

**CARTER 4" API HYDRANT COUPLERS REPORTED
EJECTION WHEN INSTALLED TO "RIGID PIPING
ASSEMBLIES" MANUFACTURED BY HYDRANT
SERVICER BUILDERS**

Since the release of API/IP1584 in April 2001 Carter Ground Fueling has been working on a redesign of the lower coupler's breakaway feature. Carter's original design (still in use today) provides for a clean breakaway from the hydrant valve during flow when a pulling or pushing force is exerted at the centerline of the coupler outlet equal to between 5500 and 6500 pounds or approximately 5500 to 6500 foot/pounds.

The third edition of API/IP1584 requires this force to be between 4000 and 5000 pounds, a 25% reduction. Although this criteria was easily met by changing the lug material, Carter did not release the new design to production due to concerns of the effects of long term wear of the lugs, the coupler lower housing, and/or the top of the hydrant valve. Test Couplers were put into the field for testing, and after almost one year of testing a lower coupler failure did occur. Testing was stopped even though it was found that the top of the hydrant valve that the coupler was attached to had been "resurfaced" to dimensions well below those set forth in API/IP1584. Carter strongly prohibits any resurfacing of the API interface.

Carter went back to the drawing board and redesigned the lugs again, going back to the original material and providing a machined undercut through the pivot hole on each lug. This design met all "in-housing" testing requirements and was again put into the field for testing. These tests have yielded no failures to-date and show promise for a long term solution and compliance to the third edition.

However, Carter has recently had a few reports of couplers being ejected and inspection revealed broken lugs in all cases. Coupler ejections do occur and can always be explained as the result of "an external force" (either being hit or pulled off the hydrant valve). However, with these recent reports that was believed not to be the case. Further inspection of the accidents and the equipment involved revealed that "Rigid Piping Assembly" was directly connected to the Couplers outlet without any hydrant hose.



One example of a "Rigid Piping Assembly" showing an incorrect installation.

As I am sure everyone understands, these "Rigid Arms" create a moment (lever) arm that amplifies any force applied on one end of the arm is then multiplied times the distance. (Example: a 400 pound force applied 10 foot away, creates a 4000 foot/pound force at the coupler interface.)

In these cases it was concluded that these failures were the result the "Rigid Piping Assembly" amplifying a relatively small force at one end of the Assembly into a breakaway force at the coupler interface.

These "Rigid Piping Assemblies" are the result of Hydrant Servicer builders that are trying to resolve buyer/users ergonomic requirements to prevent or limit job related injuries. Both requirements are important, however, some builders have not considered the effect of these "Assemblies" on the interface breakaway requirements.

This bulletin does want to acknowledge that it is equally important for builders/buyers/users to consider ways to deal with the manual handling factors of a hydrant coupler and attached hose. They should consider other suitable alternative devices to the "Rigid Piping Assemblies" to ease the strain for an operator while connecting and disconnecting the coupler without interfering with the coupler's breakaway feature.

Carter requires a minimum of 3 feet of approved aviation hydrant hose be installed between our Coupler and any "Rigid Piping Assembly." Many Hydrant Servicer builders already build within this requirement. However, failure to do so could result in a Carter Coupler's ejection and the related fuel spillage and/or personal injury that could occur. Failure to comply with this requirement also voids our warranty and limits our product liability.



An example of a correct installation of a Hydrant coupler.

PIT BARRIERS / IGLOOS



Lastly, Argo-Tech Corporation - Carter Ground Fueling Division's official position on the use of pit barriers (igloos) is as follows. Our Couplers are and have always been designed to breakaway cleanly from the hydrant valve if they are either struck by another ramp vehicle or pulled off by the hydrant server. The use of any type of barrier can only further complicate and/or prevent the free breakaway of the coupler and are therefore NOT RECOMMENDED.