

# Service BULLETIN

APPLICABLE TO 64348, 64349 & 64049  
NOZZLES AS OUTLINED BELOW

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## REVISION TO AUGUST 1, 1998 BULLETIN! NEW TWO-PIECE HANDLE BREAKAGE REPORTED

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### BACKGROUND:

The applicable nozzles have been furnished with three different operating handles or levers during the production of the nozzles. The initial nozzles were furnished with the 220270 Handle. Due to a connection problem with a new USAF airplane a new handle, 220561, was introduced first on the 64349 military nozzle as an option (G). This handle was also put into production on the other two commercial nozzles to make it possible to have only one handle available for all similar nozzles. The change prevented an increase in the price of the nozzle due to more limited production of handles. The 220561 was provided in limited quantities to several customers to "field try" them to see which style was preferred. Overwhelming opinion was with the later 220561. In addition the newer handle also overcame connection problems with a few smaller business jets and some models of the 737 where the original operating handle interfered with the aircraft structure in at least one of the three connecting positions of the nozzle. Both the 220270 and the 220561 Handles were attached to the crank mechanism internally by four screws. The new handle, 220878-1 is affixed to the internal parts of the nozzle by a single outside screw. Since the personnel trying the two older handles preferred the shape and orientation of the 220561 over the 220270 it was decided to rework the tooling of the 220561 when making the new handle, 220878-1. The latest handle was put into production with the approximate serial numbers shown in the table below.

NOZZLE	SERIAL NUMBER – 220878-1 HANDLE IN PRODUCTION	COMMENTS – Pertaining to all nozzles
64348	7800 & higher	Serial number listed was when the factory put them into production. Older nozzles could also have been upgraded upon overhaul. Many upgrade kits have been furnished to accomplish this.
64349	6520 & higher	220878-1 Handles are recognizable by the fact that they are connected to the nozzle with a single screw from the outside in the middle of the shaft portion of the handle.
64049	210 & higher	Both the 220561 and the 220878-1 Handles have the same clocking position in the opened and closed position, 3 at closed & 9 at open. The 220270 is clocked at 6 closed and 12 at open.

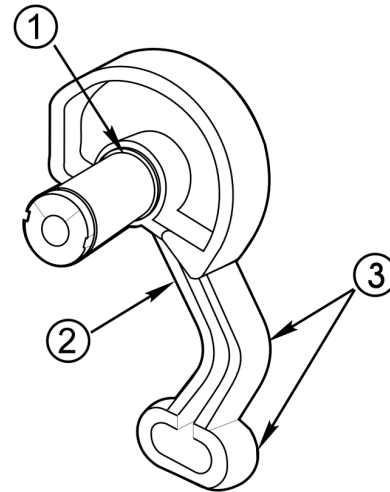
### PROBLEM STATEMENT (As originally published):

It has been reported that several of the newer 220878-1 handles have been broken on nozzles installed on hose reel applications. Reports of leakage from the handle shaft area were initial signs of breakage. Reports of the single screw coming loose were also signs of the breakage. The handle is an integral part of the nozzle interlock system. The breakage, result of mishandling (dropping), has occurred at a machined radius area "1", as shown in Figure 1 on the next page. If not detected, further use can cause

the handle to loosen and overcome the interlock system. The result can then be a possible spill since it can then be possible for the operator to take the nozzle off of the aircraft with the nozzle poppet in the open position. The breakage has been the result of impact on the handle in the areas marked with a "3", Figure 1. The handle first bends until it contacts the carrying handle or sometimes the bolt head attachment of it. The bolt head impact results in an impression in the handle and produces a stress riser in the area marked "2" which may result in the handle breaking at that point. This is a maintenance problem but not a safety issue. Further impacts in the areas marked "2" and "3" can result in the fracture at "1" which is the object of this bulletin. All operators should be provided the following information (instructions) to prevent spills and possible bodily injury from spilled fuel:

1. **No nozzles, to our knowledge, have had a handle breakage problem where they are installed on a deck type application; hence dropping is a major contributor to the problem. Even though it has been done in the past, another caution not to drop the nozzle should be extended to the operators.**
2. **If fuel leakage, no matter how slight, appears from the area of the operating handle do not use the nozzle. Take it out of service immediately. Inspect the handle for evidence of a crack at "1". It may start out as a very minute crack and may be difficult to see with the eye. Replace the handle if not certain.**

**If the handle or attaching screw appear to be loose, DO NOT ATTEMPT TO TIGHTEN THE SCREW, you will only cause the insert in the crank to be damaged. Remove the nozzle from service immediately.**



**FIGURE 1**

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## **SOLUTION TO THE PROBLEM (As originally published):**

It is very clear to us all by the condition of many nozzles, that they must have been subjected to dropping and dragging, however inadvertent. Many stations strive to prevent this in the interests of maintenance costs. In designing any new nozzle or a part of the nozzle this fact is taken into consideration. A series of drop tests from 6 feet onto a steel plate with the nozzle installed on a hose are conducted on all new designs. The tests are designed to prevent problems in the field. Then the new design of either a nozzle or the component, in this case the operating handle, are field tested for several months at stations that will cooperate by reporting the results. The 220561, physically the same as the 220878-1 Handle was put through these same series of development tests. The results of our drop tests showed that the handle would bend until it was supported by the carrying handle but no breakage was ever detected after a minimum of 10 straight drops upon the operating handle. No breakage problems were reported by the field testing stations either. Obviously we were not fortunate enough to pick the correct stations during our tests.

The design of the handle does not allow for any other type of manufacturing (within cost limits) than die-casting. The material of all three types of handles, although much stronger than an aluminum die casting, has minimum ductile properties (properties that allow bending rather than breakage). The solution to the problem therefore is to change to a more ductile material that will allow for severe bending but no breakage within the physical limits of the geometry of the handle installation. This will prevent the potential spills now apparently possible. When the handle is bend beyond use (and does not break) then it will have to be replaced. Preventing the operator from dropping the nozzle will minimize the maintenance costs greatly. If a hose end regulator is also used then the installation of a drag ring will also prevent the handle from being damaged. Ask your Carter distributor for more information on this possibility. The drag ring, as it is apply named, is a sacrificial part that prevents wear from dragging the nozzle while rewinding the hose reel.

The new more ductile material will be available shortly. It will easily be identified since it will be black in color in lieu of the normal gray aluminum color of the existing one. The part number will remain the same and all future production nozzles will be fitted with the new handle. Return any broken handles (in the area marked "1" only) to your Carter distributor for a free replacement kit to upgrade the nozzle. Replacement kits, KD64349-12, will be used to replace the broken handles. The kit will contain the parts needed to replace the handle and attaching parts only. All future orders for 220878-1 Handles will be filled with the newer material.

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## **PROBLEM STATEMENT (Not previously published):**

**We have discovered another problem related to this two-piece operating handle that has to be corrected as noted within the following paragraphs. Since several spills and near spills have just recently been reported we need to stress that notification of your direct customers is essential so please do take all efforts needed to notify them at once.**

The new handle is made up of two pieces that are joined in a set of “teeth” or “gear” type connection. The connection is designed to be tightly fit. In the manufacturing process it appears that there are some irregularities in the sides of the teeth that when joined stop the teeth from fully becoming engaged. The joint is held together with a single screw installed from the outside. During assembly of the screw it is normally torqued to 60 in-lbs. This is not sufficient to overcome the irregularities of the sides of the teeth. After a few cycles of operation metal creep or fatigue causing the joint to loosen changes the interference of these irregularities. This is exhibited by a loosening of the screw. On the first production handles (made of ZA-12, which is gray in color) the improper joining of the teeth also reduces the strength of the joint. The result can be a structural failure of the teeth hence no connection with the inner part and the outer part of the handle. This results in overcoming the interlock part of the nozzle and an open poppet causing a spill of fuel when the nozzle is disconnected. The newer stronger (black coated) handle, although it will exhibit the same loosening effect will most likely not break but to be sure we offer the solution to the problem below.

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## **SOLUTION TO PROBLEM ABOVE:**

This solution should be applied to all handles as noted below.

### **Gray ZA-12 Handles:**

1. Torque the screw in the outer portion of the handle to  $115 \pm 5$  inch pounds.
2. This is only a temporary solution designed to make the nozzle safe. Notify your Carter Distributor immediately of the number of gray two-piece handles you have in use. (Carter Distributors – Order the number needed of replacement Kit KD64348-12 at no charge immediately. If your records are such that you can identify the nozzles shipped from your store by the serial number you can order the correct number immediately without asking your customer for the number. This will only cover new nozzles shipped from the factory with the new handles. You will still have to ask about any upgraded nozzles that you may have replaced with the KD64348-12 previously.)

**New Black Handles (although it is not likely that any of these have reached the field yet, we offer the solution as well. It should be used when overhauling the nozzle as well.):**

1. Torque the screw in the outer portion of the handle to  $125 \pm 5$  inch pounds.
2. When installing the new handles replacing the above gray handles, torque to  $125 \pm 5$  inch pounds, loosen the screw and retorqued to  $125 \pm 5$  inch pounds.