

# NATIONAL INTERAGENCY FIRE CENTER

3833 South Development Avenue  
Boise, Idaho 83705



9216 NFES (FA240)

February 29, 2008



## NATIONAL FIRE EQUIPMENT SYSTEM CACHE MEMORANDUM NO. 08-3

To: NFES: National Incident Support Caches

From: Paul Naman, NFES Representative - NIFC

Subject: Kocheck Hose Clamp Retrofit



### Introduction

Numerous complaints of field failure and breakage of hose clamps manufactured by Kocheck Co. Inc. were investigated by San Dimas Technology and Development Center (SDTDC). Their investigation determined the majority of hose clamp failures could be attributed to poor pin retention discovered in many Kocheck hose clamps marked with manufacture dates of 2002 or earlier and were not due to operator error. The problem and recommended corrective actions to retrofit existing inventory are described in detail below. The Kocheck hose clamps requiring retrofit are outside of warranty coverage and there is no recall on this item. The retrofit and associated costs are the responsibility of Kocheck hose clamp owners. Continued use of Kocheck hose clamps that have not been retrofitted pose no direct safety or health concerns to operators in the event of clamp failure. The retrofit is not mandatory for the continued use of the Kocheck hose clamps in inventory but is strongly recommended by SDTDC.



### Investigation

SDTDC investigated in detail the cause of the failure and explored possible retrofit options. The Kocheck hose clamp is constructed with three pivot pins (see Figure 1). SDTDC found if pivot pin retention is not sufficient, the pivot pins hinging the two-piece jaws can be easily pushed out.



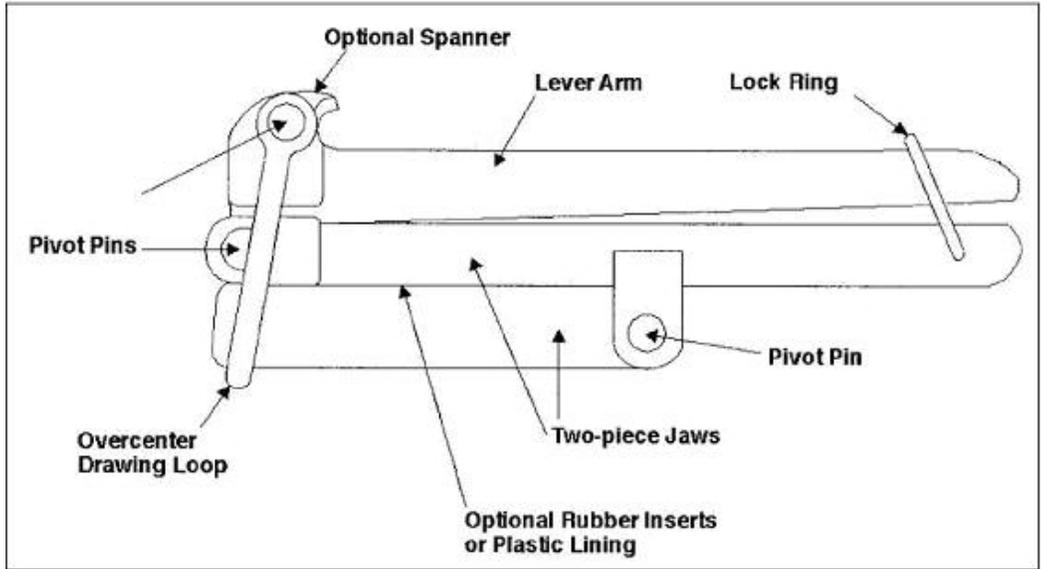


Figure 1

Most field failures are caused by the displacement of the pivot pin from the center arm of the two piece jaws. In the worst case scenario the pin completely separates from the assembly and the clamp falls apart. More often however, the displaced pin causes an impingement with the brass over-center drawing loop. When the handle is pushed down to shutoff water flow in the fire hose, the drawing loop presses against the pin causing the drawing loop to distort or break (see Figure 2)



Figure 2

The most practical solution to correct this condition is to increase the pin retention, thereby eliminating the cause of failure. By substituting the two existing solid pivot pins (hinging the two-piece jaws) with coiled spring pins, pin retention is increased and standardized. Note: The third pin (to which the brass drawing loop is attached) has sufficient retention and does not require replacement (see Figure 3 and Figure 4).



Figure 3

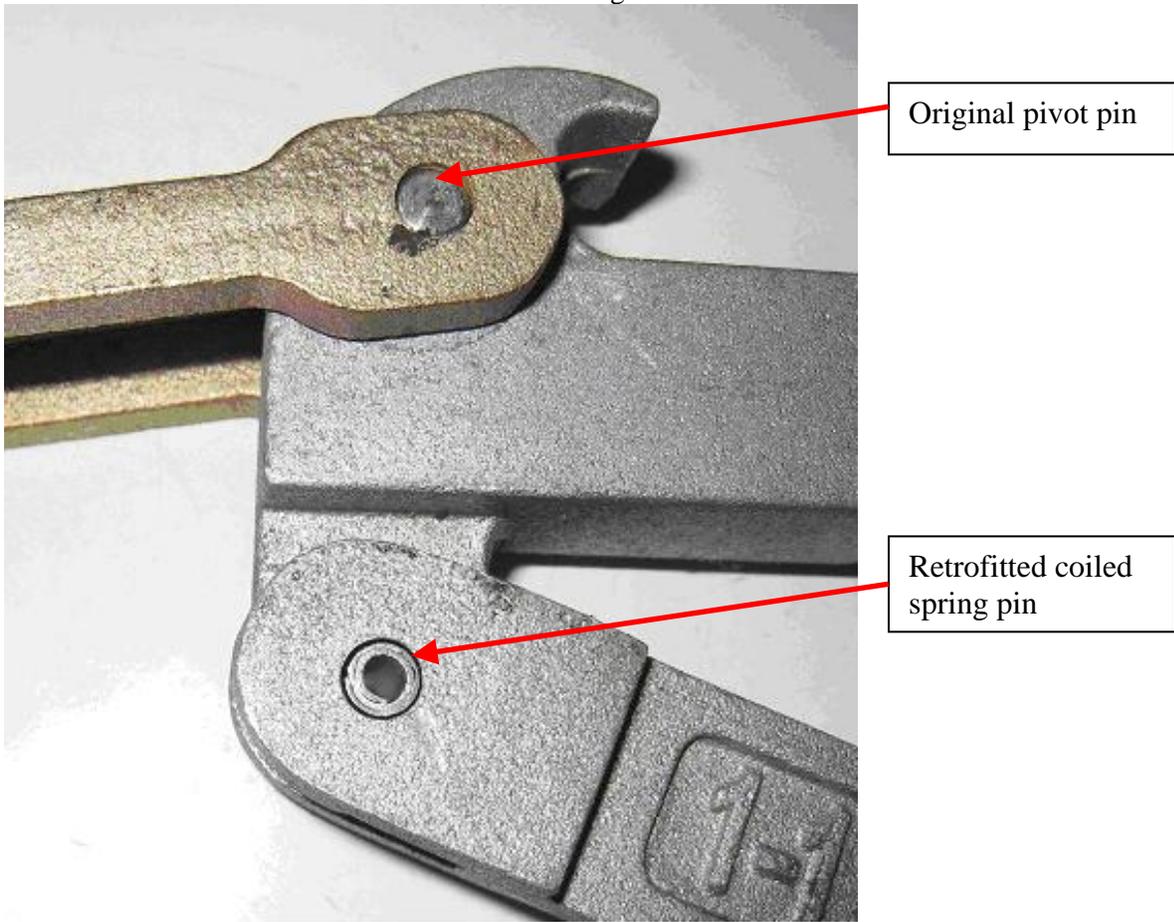


Figure 4

**Identification**

There is not an easy visual test that can determine whether or not the pin retention for any particular clamp is sufficient for the rigors of field use. It is SDTDC’s recommendation – based on failure rates of Kocheck hose clamps tested in the lab - that all Kocheck hose clamps with the cast manufacture date “2002” and earlier be retrofitted with coiled spring pins.

**Consolidation**

Field units may consider the consolidation of retrofit parts to reduce administrative costs associated with procurement. Retrofit is the responsibility of local organizations.

**Retrofit Requirements**

Appendix A is provided for application to the procurement of local retrofit programs.

Retrofit is the alternative to scraping and re-procurement of new hose clamps.

In addition to Appendix A, the vendor should be provided with a copy of this Cache Memo for the purposes of understanding the inspection/acceptance requirements.

**Field Inspection and Acceptance**

Field personnel should visually inspect the retrofitted hose clamp for quality and ensure that certain conditions are met. The telling mark of a retrofitted hose clamp is easily distinguished by the coiled spring pins. Field personnel should verify that the retrofitted pins are seated in the holes on both sides and not protruding in a manner that can cause impingement with the over-center drawing loop.

If the retrofit of hose clamps is contracted outside of the cache, sample inspections must be conducted to ensure quality. Not every part needs to be inspected. Field personnel should use Table 1, Sample Size and Reject Criteria. To use this table, the number of parts in the lot is counted. Based on that quantity, a sample size is determined from the table. A random sample of parts is then selected from the delivered lot. This sample is visually examined for the correct replacement pins and seating of said pins. A count of the number of issues found in violation of the requirements is maintained. Upon completing the inspection, if the quantity of accumulated issues is in excess of the number shown in Table 1 the lot is rejected. The vendor may resubmit the lot after it is rejected. Field personnel shall use the same process for the resubmitted lot.

Table 1 – Sample Size and Reject Criteria

Number of parts (Quantity up to)	Sample Size	Reject all parts after finding more than this many major issues in the sample size
8	2	0
15	2	0
25	3	0
50	5	0
90	5	0
150	8	0
280	13	1
500	20	1
1200	32	1
3200	50	2

Example: Suppose the quantity of hose clamps needing retrofit is 65. According to table 1 the sample size for inspection should be 5; 65 is greater than 50, but less than 90. From the total lot of hose clamps (65) a sample size of 5 of random hose clamps would be taken. The parts would then be inspected for the new spiral coil pins and its seating within the casting, keeping count of the number of occurrences where the parts did not meet the requirements of the contract. When all of the hose clamps from the sample have been inspected, if the total number of issues (occurrence of non conformance with the contract requirements) is greater than 0, then the entire lot of hose clamps is not accepted and the vendor is to rework or replace them for no additional cost.

For additional information or questions on this Cache Memorandum please contact Sam Wu, USDA Forest Service, San Dimas Technology & Development Center at (909) 599-1267 ext. 292.

/s/ Paul E. Naman

cc:

State Fire Management Officers - BLM  
Regional Directors Fire and Aviation Management - USFS  
Technology Development Centers - San Dimas, Missoula  
Agency Directors - NIFC  
Logistics Center - NICC  
Bill Hicks - GSA  
Tory Henderson - USFS



## Appendix A

### Pivot Pin Retrofit

Purpose: In response to the investigative findings of SDTDC, these instructions are provided. The Government has in its inventory many fire hose clamps whose pins are not securely fixed in the casting. As such, the Government is interested in the retrofit of these items. This Statement of Work (SOW) defines the requirements for this retrofit test.

### Statement of Work

Government fire hose clamps shall be retrofitted to the following requirements:

1. Two (2) coiled spring pins shall replace the original solid pivot pins in the two-piece jaws.
  - a. The coiled spring pins shall be 0.25" nominal diameter and 0.75" in length.
  - b. The coiled spring pins shall be of stainless steel AISI302 / SAE 30302.
2. Press out the original solid pins in the two-piece jaws using an arbor press.
  - a. Pressing out original pins shall not damage the original pivot hole or cause excessive wear on the hole.
  - b. Note: the pivot pin attaching the brass over-center drawing loop to the casting is not to be replaced.
3. Using an arbor press, replacement pins shall be pressed in as to center the pin within the casting. There shall be no portion of the pin extruding past the outer surface of the casting.

#### Note

Do not hammer out original pivot pins or hammer in new replacement coiled spring pins. This can cause excessive wear on the pivot hole and reduce pin retention.

Coiled Spring Pins can be purchased with SPIROL (<http://www.spirol.com>) under the following search criteria:

Rapid Search for Coiled Spring Pins	
<i>To find a standard part, please select the following specifications in the order they appear.</i>	
Part Code: <b>(Inches) cldp 0.25 x 0.75 M D K</b>	
Inch/Metric	Inches ▾
Nominal Diameter	0.25 ▾
Length	0.75 ▾
Duty	(M) Standard Duty ▾
Material	(D) Nickel Stainless Steel SAE 30302/30304 - Work hardened ▾
Finish	(K) Plain, oiled ▾
<b>Start Again</b>	<b>Request a quote for this item</b>

**End of Statement of Work.**