

December 21, 2001

Documents Control Desk  
United States Nuclear Regulatory Commission  
Washington, DC 20555

SUBJECT: Potential Manufacturing Problem With Certain Limit Switch Assemblies Used in  
ASCO General Controls Hydramotor<sup>®</sup> Actuators.

Gentlemen:

We enclose information relating to certain Limit Switch assemblies used in ASCO General Controls Hydramotor<sup>®</sup> actuators. As you will see from the enclosed materials, there is the possibility of a manufacturing deficiency with certain of these assemblies, which may affect the operation of the Hydramotor<sup>®</sup> actuators. ASCO was alerted to this problem upon examination of a limit switch, recently returned to ASCO, which had failed during post installation tests at the Palo Verde Nuclear Power Station. This condition may result in the failure of the actuator piston to retract when the Hydramotor<sup>®</sup> is powered. A complete list of any potentially affected actuators, along with their purchasers, is being assembled and will be forwarded to you when complete.

ASCO does not have adequate knowledge of the actual installation and operating conditions of these actuators to determine whether their malfunction could create a "substantial safety hazard" as defined in 10CFR21.3. We are likewise unable to conduct the evaluation necessary to make such a determination. Nevertheless, we furnish this information to keep you apprised of our investigation.

Our investigation of this potential problem is continuing. We are in the process of identifying purchasers of limit switch kits, controller kits, and complete actuators in which these assemblies may be used. We will notify these purchasers as soon as possible.

Should you wish to discuss this further, or obtain any additional information, please let us know. Should any additional information become available we will forward it to you.

Very truly yours,  
ASCO VALVE, Inc.



Clark Hale  
President ASCO Valve - Domestic

GB:vep  
Enclosure

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**POTENTIAL MANUFACTURING PROBLEMS WITH  
LIMIT SWITCH ASSEMBLIES USED IN ASCO GENERAL CONTROLS  
HYDRAMOTOR® ACTUATORS**

**1. NAME AND ADDRESS OF INDIVIDUAL INFORMING THE COMMISSION:**

Clark Hale  
President ASCO Valve - Domestic  
ASCO VALVE, Inc.  
50-60 Hanover Road  
Florham Park, NJ 07932

**2. IDENTIFICATION OF THE ITEMS SUPPLIED:**

A still to be determined number of ASCO General Controls Limit Switch Assemblies sold separately or as part of Hydramotor® actuators.

**3. NATURE OF THE FAILURE AND POTENTIAL SAFETY HAZARD:**

During post-installation testing of an ASCO General Controls Hydramotor® actuator assembly at Palo Verde Nuclear Power Station, the Hydramotor® actuator failed to operate correctly, resulting in no output when power was applied. The Limit Switch Assembly was removed from the actuator and returned to the ASCO facility in Aiken, South Carolina.

Analysis of the returned Limit Switch Assembly (see attachment 1) revealed that the shaft on which the position sensing lever operates was not secured tightly to the plate, causing wobble of the shaft. This wobble may result in the rotation of the lever past its actuation point, which would leave the switch contacts in the normally open (N.O.) position. This condition will result in the failure of the actuator piston to retract when the Hydramotor® is powered. The shaft is staked to the plate assembly. Manufacturing instructions for this assembly defines the maximum pressure to be applied for the staking press, but no minimum value. This led to variation of the staking process, which resulted in inconsistent and incomplete attachment of the shaft to the plate. (See attachment 2). In addition to the field return, Asco has found several limit switch assemblies in our inventory with this condition.

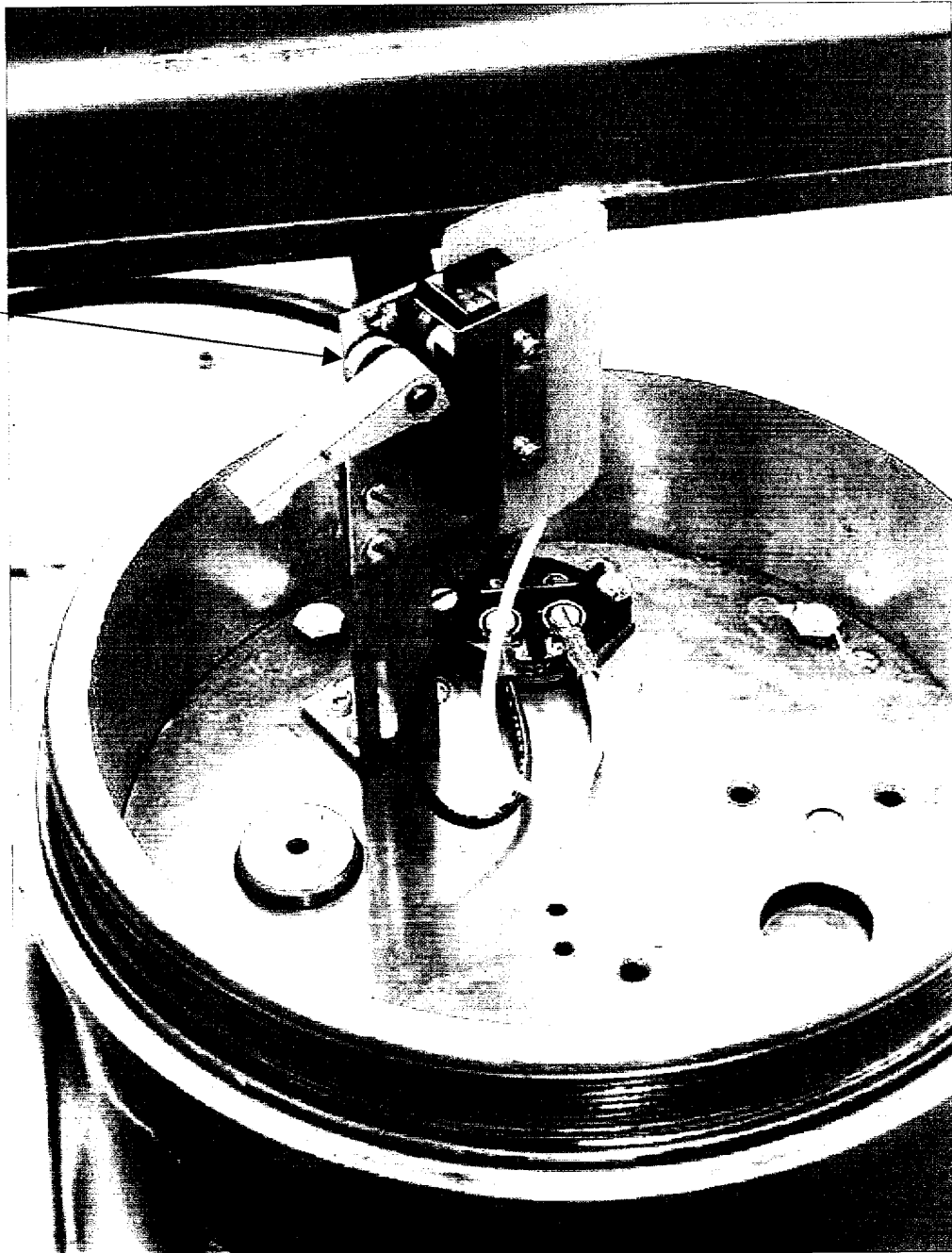
The rotation of the lever past its actuation point will result in the failure of the actuator piston to retract when the Hydramotor® is powered. We believe that in most, if not all, cases the return of the piston to the spring-extended position is considered the fail-safe condition for the Hydramotor® actuator. As such, the described failure of the Limit Switch assembly would result in the unit moving to the fail-safe condition. Depending on the nature of the application, the utility should determine what the fail-safe mode of the Hydramotor® is.

**4. THE CORRECTIVE ACTION WHICH IS BEING TAKEN:**

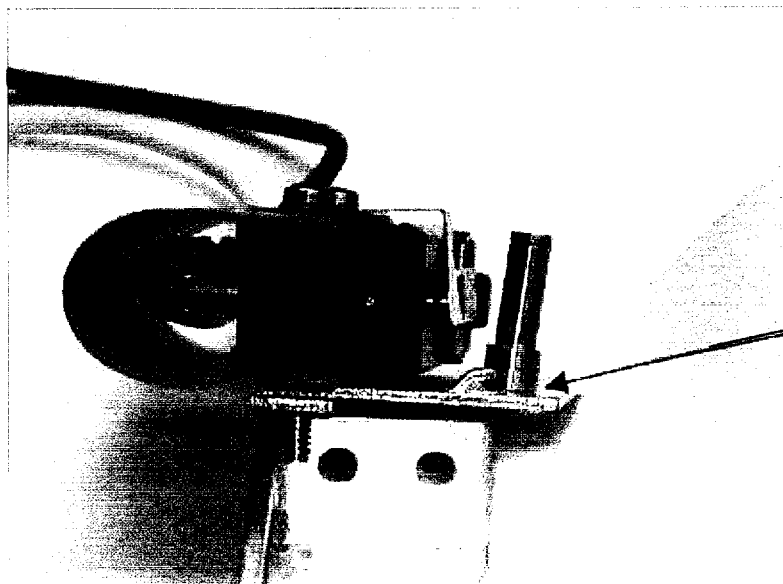
ASCO will notify all purchasers of affected product of the potential problem. If the affected product is not in service, ASCO will offer to rework it at our factory at no charge. If the product is in service, ASCO will offer retrofit kits at no charge with complete instructions for installation of new limit switch assemblies. The method of forming this staked joint is being revised to ensure complete and consistent assembly of the shaft to the plate. In addition, the manufacturing instructions are being revised to fully define the parameters of this process as well as the testing necessary to confirm the reliability of the shaft-to-plate joining process.

ASCO General Controls

Limit Switch  
Assembly

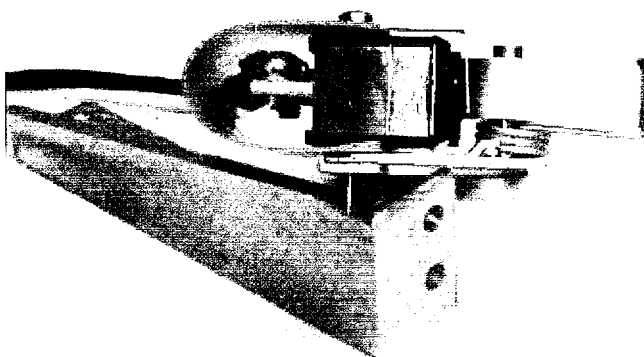


TYPICAL INSTALLATION  
NH95 LIMIT SWITCH ASSEMBLY



POINT OF  
FAILURE

VIEW SHOWING ANGULATION CONDITION  
OF FAILED SHAFT JOINT



VIEW SHOWING LIMIT SWITCH ASSEMBLY  
WITH PROPERLY SWAGED SHAFT