

# Crosby/Bullard Golden Gate® Hook Assembly Inspection Criteria

AERO-MOTIVE COMPANY

W A Woodhead Industries, Inc. Subsidiary

## Safety

Please read this manual carefully and follow its instructions. Improper use or failure to follow these instructions could result in serious injury, death or property damage. Operators should be instructed in the safe and proper use and maintenance of this product. Keep this manual for future reference.

The following safety precautions call attention to potentially dangerous conditions



### WARNING:

Warnings are used when hazards exist which could result in serious injury, death or property damage if proper precautions are not taken.



### CAUTION:

Cautions are used as reminders of safety hazards which could result in personal injury or property damage if proper precautions are not taken.



### WARNING:

Regular inspection and maintenance of all balancer subsystems will reduce the possibility of operational failure. However, ***always ensure adequate secondary support is supplied.***



### CAUTION:

Regular inspection of all balancer subsystems, like those on hoists and other overhead equipment, is required to ensure safe operation. Refer to OSHA or other applicable standards for hoists and overhead equipment for general guidelines



### WARNING:

Consult Crosby/Bullard Golden Gate® Hook Warning and Application Instructions for important safety information regarding use, inspection and maintenance of the hook and gate.

**NOTE:** Always inspect cable assembly, cable connections, upper hook assembly and secondary support systems whenever performing routine balancer service. Balancer disassembly, e.g. for spring replacement, should always include a complete hook assembly inspection (see II Secondary Evaluation below).

**NOTE:** Procedure applies to all JA, KA, and LA series balancers with upper Bullard Hook option.

## I. INITIAL EVALUATION

### Feeler Gauge

This evaluation is intended to screen clearly operational assemblies. The feeler gauge is designed to function while the complete balancer assembly is installed in its normal application.

While the balancer is hanging by the bullard hook, align the hook with the mounting block to create a uniform space between the gate and mounting block. (see Figure A)

It is not necessary to add or remove load to/from the balancer unless it interferes with the orientation of the hook with the block.

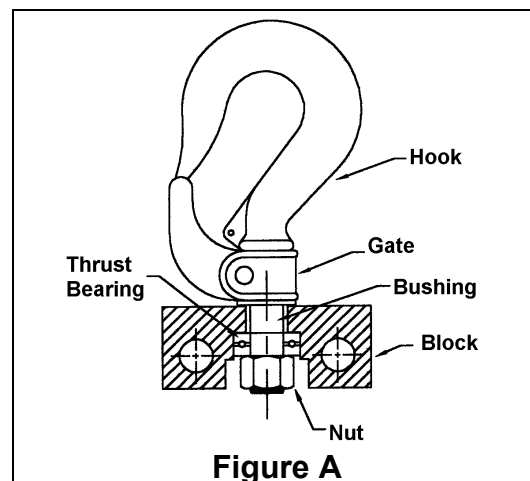


Figure A

### System Go

If the feeler gauge does not easily slide between the bottom of the gate and the block, then hook passes the initial screening and does not require further evaluation. (see Figure B)

### Suspect System

If the feeler gauge (Part# M92000001) slides under the gate such that the slot straddles and completely seats against the bronze bushing flange, then the system should be considered suspect. (see Figure C)

**NOTE:** Suspect systems do not necessarily need to be replaced. Proceed to secondary evaluation step to determine if replacement is necessary. If hook passes the 2<sup>nd</sup> review, then monitor hook on a more frequent basis.

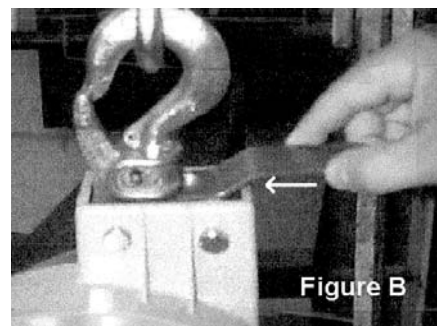


Figure B

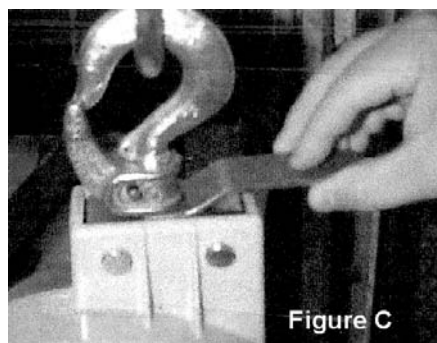


Figure C

## II. SECONDARY EVALUATION

This evaluation is intended to be performed on units identified as suspect from initial evaluation above or on units disassembled for routine services -such as power spring replacement. The wear modes to be evaluated are as follows:

### Nut/Shaft Weld

**NOTE:** Newer hooks are pinned instead of welded. In those cases, this inspection step is not needed

The weld is solely intended to keep the nut from unscrewing during the twisting and turning motion of normal operation. This motion can, in some extreme cases, cause the weld to fatigue. The evidence of a fatigued weld is a cracking along any part of the weld (see Figure D). Use of a dye penetrant is recommended. Any evidence of a fatigued weld should result in replacement of the system. Any indication that (a) the weld has separated from any section of the nut or the shaft or (b) the nut has rotated relative to the shaft is also cause for replacement.

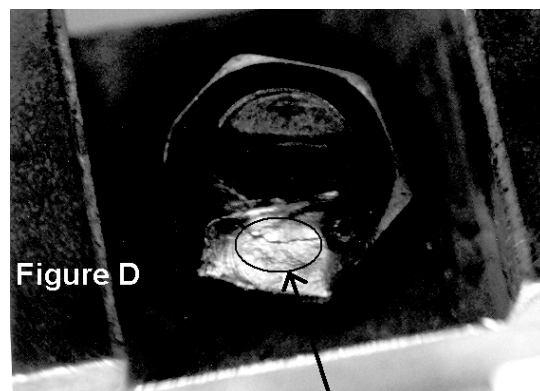


Figure D

### Thrust Bearing

Extreme wear or failure of the thrust bearing will ultimately cause a system failure. As the bearing ceases to perform normally, the nut will turn relative to the bearing case causing case deterioration, shank fretage and/or nut fretage. (see Figure E). Any evidence of extreme thrust bearing wear or failure should result in system replacement. Prior to reassembly, free rotation of the bearing (when the assembly is in its normal position - hook up) should be confirmed. Evidence of binding or impeded rotation is a likely precursor to failure. Consequently, in this situation the complete hook assembly should be replaced.

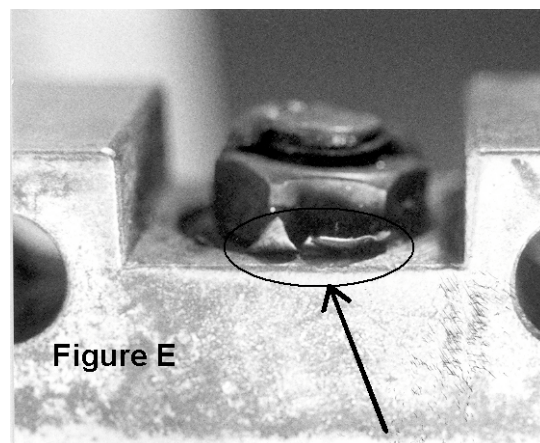


Figure E

### Bronze Bushing Flange

If the cylindrical section (sleeve) of the bushing has worn significantly, the shaft and gate will tilt relative to the bushing under the twisting and turning motion of normal operation. This, in turn, will result in wear of the bushing flange. While the wear of the flange itself is not a direct threat to the operation or safety of the unit, the implication of a worn sleeve is significant. A worn sleeve will result in a non-uniform load on the thrust bearing by the nut. This situation will in turn hasten weld fatigue and/or thrust bearing wear discussed above. Evidence of a flange worn to a thickness of less than 1/32" (0.031) should result in system replacement. (see Figure F)

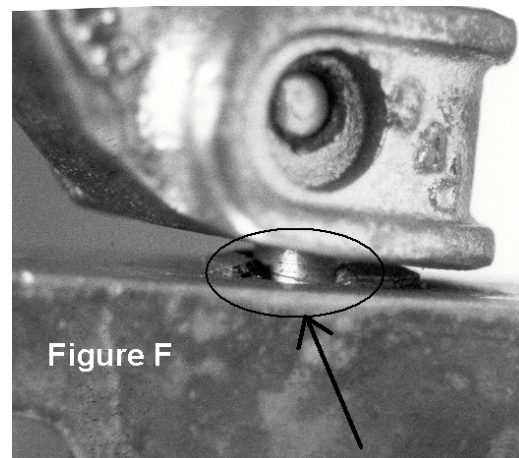


Figure F

### Axial Slack

The combined effects of slightly worn bushing sleeve, thrust bearing can result in fretting on the nut corners during the twisting and turning motion of normal operation. Any indication of excess axial slack or extreme wear on the corners of the nut should result in system replacement. (see Figure G)

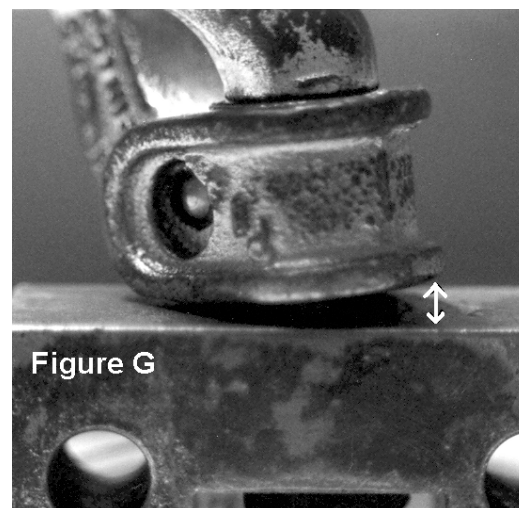


Figure G

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