



## Marine Safety Forum – Safety Flash 09/05

**Issued: 20<sup>th</sup> March 2009**

**Subject: Worn 1.5mmØ Pin Results in Potentially Serious Winch Failure**

Summary:

The vessel is a tug assisting a tanker to berth at an oil terminal. At the start of the manoeuvre, whilst making fast, the towing winch would not veer under hydraulic power from the remote position, and when the veer position was selected the winch started to heave.

Fault finding indicated there to be a problem with the remote operation of the servo controlling the proportional valve.

The cover on the feed back potentiometer was removed by ships staff and the resistance was measured while operating the control valve locally. No change in the potentiometer output was recorded whilst operating the valve.

The feed back potentiometer was removed by the ship staff and the drive pin was found dislocated from the shaft hole. Since no drive existed the electrical potential could not change and this explains why the winch would heave even though it was sent a veer signal from the remote position. The drive pin measuring, 8 mm x 1.5 mm, was reversed in the potentiometer so that an unworn surface was engaged in the drive hole, the system was tested and found to be fully operational and the repair deemed permanent.

The cause of the Failure:

The feed back potentiometer drive pin had freed itself from the drive hole.

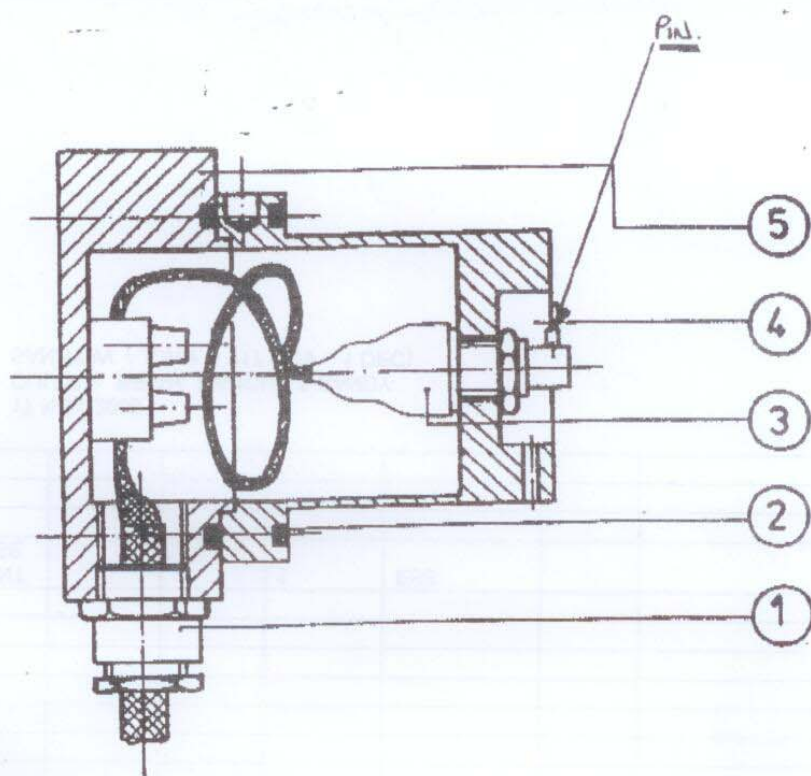
Lessons Learnt:

Although the winch is inspected on a monthly basis, and the winch operation is checked prior to each job, including this one, the potentiometers were not opened as part of these checks/inspections. The potentiometer drive pins have now been added to the vessels, and its sister's, Planned Maintenance System to be opened up and inspected on an annual basis. It was noted that the pin was not on the makers drawings nor mentioned in their maintenance guidance.

Follow up Action:

The forward and aft towing winch control systems on the sister vessel were opened and checked and were found to be in good condition with the drive pins securely seated in place.

Drawing showing location of pin:



11.01.91 87/Lm. 190a, 3 for Ccuba. 618481725 100.0 og art. nr. 800 - 322  
 10.7.00 d. 12. Ulymest. 11.9.86 Patent av. bulvar A.  
 11.01.93 D POS 3 FRA 151-604-04  
 A1/LJG  
 30.04.91 C POS 3 FRA 811-188 TL 151-604-04  
 EILING  
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 A1/LJG  
 30.04.91 C POS 3 FRA 811-188 TL 151-604-04  
 EILING

RUSSISK TEKST: 137-335

1	5	DEKSEL COVER		102 - 596	
1	4	INDIKATORHUS INDICATOR HOUSING		102 - 595	
1	3	POTENSIOETER POTENTIOMETER		240-682	
2	2	O-RING O-RING	49,50 x 300 HS10	801-028-27	
1	1	NIPPEL NIPPLE	HKL Pg 13,5	800 - 284	
ANT. QUAN.	NR. NO.	NAVN, TYPE, DIMENSJON NAME TYPE DIMENSION	MODELL NR./ANN./STD. MODEL NO./NOTE/STD.	TEGN./ART.NR. DRAW/ART NO.	MATERIALE MATERIAL

H. ELL

MANØVERVENTIL MED R8  
CONTROL VALVE WITH R8

SAS

EUROPEAN  
PROJECTION

MÅLSTOKK  
SCALE

TEGN. K.R. 25.6.74  
TRAC.

14.10.96: KX 859 #1, P. 6.13.5