* Formerly known as Tribol 943AW-32



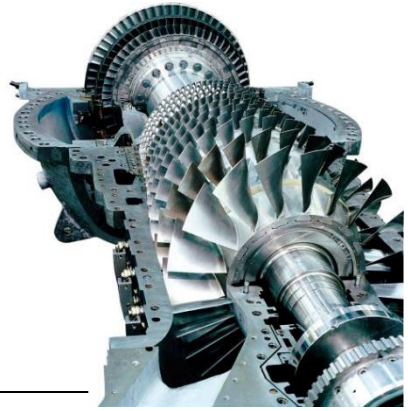
# Tribol HM 943 Hydraulic Oil Eliminates Pump Failures

## AEROSPACE (USA)

### Turbine Manufacturing

### Castrol Tribol® HM 943-32 Hydraulic Oil*

### ANNUAL SAVINGS: $14,196



## THE SITUATION

A major turbine manufacturer experienced two pump failures per year in their JMA LaPointe broaches. Hydraulic pump is radial 10-piston pump manufactured by Rexroth with commodity type hydraulic oil in use. Hydraulic system pressure is 400 bar (5800 psi).

The cost of a new pump is $3,948 with a delivery of 10-12 weeks. Time to replace pump is 6 hrs (12 man-hrs). Most of the pumps are rebuilt due to the very long delivery time. The cost to rebuild with a pump refurbish kit is $3,198. Time to rebuild pump is 2-3 weeks (approx. 40 man-hours) at $75/hr.

A recently failed pump was sent to an independent shop for repair. According to this shop: “All ten pistons are damaged where the cylinder seals on the hemispherical element. The elements are also damaged. Probable cause of failure: incorrect oil”.

## BEFORE

- **Two pump failures per year**
- Cost of parts to rebuild - $6,396
- Cost of labor to rebuild - $6,000
- Cost of labor to replace - $1,800
- Downtime associated with pump failure is 12 hours
- Total cost of pump replacement (not including downtime) is **$14,196**

## AFTER

- **No pump failures** after changeover to Tribol HM 943
- Cost of parts to rebuild - $0
- Cost of labor to rebuild - $0
- Cost of labor to replace - $0
- No downtime due to pump failures
- Total cost of pump replacement - **$0**

## THE SOLUTION

Castrol Application Engineer inspected second failed pump at the plant maintenance shop. Pump inspection results were in agreement with independent repair shop: (See pictures)

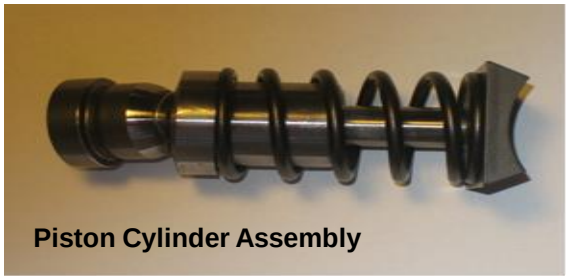
- Significant scoring of the hemispherical elements and of the corresponding cylinder area indicating metal-to-metal contact of these parts and wear due to the low antiwear protection properties of the previous oil.
- Contributing factor to pump failures is use of commodity type hydraulic oil with maximum pressure limited to 4500 psi in an application where actual pressure may exceed 5800 psi.

- Castrol Tribol HM 943 hydraulic and circulating oils were developed to meet the demands of the most severe hydraulic applications.
- Excellent FZG rating
- Excellent 4-ball wear
- Passes all major pump wear tests with flying colors
- Pump components appear as new after the rigorous test!

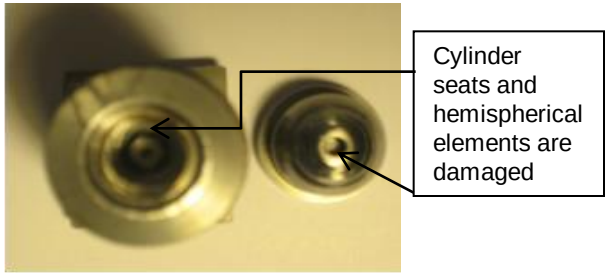
# Tribol HM 943 Hydraulic Oil Eliminates Pump Failures

## RECOMMENDATIONS

Castrol Tribol HM 943-32 high performance hydraulic oil was recommended. This oil has the highest wear protection properties for hydraulic oils which is comparable to wear protection provided by gear oils and is capable to work at 7000+ psi.



**Piston Cylinder Assembly**



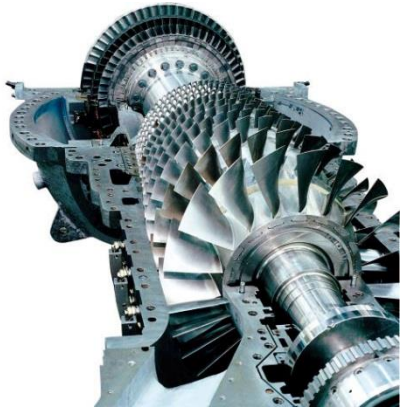

## CONCLUSION

After conversion to Castrol Tribol HM 943-32 high performance hydraulic oil:

- Pump failures and cost to rebuild were completely eliminated.
- No downtime associated with pump failures.

**Total annual cost savings is $14,196.**

Note: This estimate does not include downtime savings.



## OTHER POTENTIAL APPLICATIONS

Castrol Tribol HM 943 high performance, ashless (zinc-free), multi-service oil can extend service life for uninterrupted machine availability and production in any high load and high pressure hydraulic systems.