

SERVICE REPORT FOR MV TYCOON



SERVICE REPORT

Vessel Name: TYCOON

IMO No: 9215543

Port of attendance: GUANGZHOU

Job Description: ME MAN B&W 5S60MC -C No.3 crank pin repair

Our Reference No: 18M01-033

Introduction

Metalock Qingdao workshop was ordered to carry out repair of MAN B&W 5S60MC -C Engine Crankshaft on board of m/v Tycoon.

According to the information, received by the Metalock engineers' inspection report at Zhuhai, the vessel suffered a crankshaft damaged issue and needed repair.

Metalock service team boarded the vessel in port Zhuhai on 18th of January 2018. Then service engineers come back and prepare tools. Grinding equipment was mobilized and delivered on board by first two service engineers on 23rd Jan 2018. The second team joined on 26th Jan, 2018.

This report contains list of works done on board and measurement results. Number of photographs are included in the report for easy reference.

1. Initial Inspection of Damaged Crankshaft and Connecting Rods

a. Crank pin initial inspection report pls see table below. The value of No.3 crank pin's measurement not good, need machine on site. MPI test, found a small crack. Hardness test, result ok.

船名 Vessel Name:	Tycoon	机型 Type Engine:	B&W 5S60MC -C	港口 Port:	zhuhai	日期 Date:	2018/1/19
客户 Client Name:	Delek Transport Agency Inc.	工号 Job No.:		直径 Crankpin			

曲柄销 测量 Crank pin Measurement							基本数据 Basic Data	
Crank Pin	No.1	No.2	No.3	No.4	No.5	No.6		
A	a		-0.4				曲柄销 Crankpin	720.00
	b		-0.25				主轴径 M Journal	
	c		-0.25				过渡圆角 Radius	
B	a		-0.25				轴径宽度 Width	
	b		-0.30					
	c		-0.32					
Ovality								
Vibration								

b. Connecting rods

Connecting rods twisted approx 2mm, measurement as below:

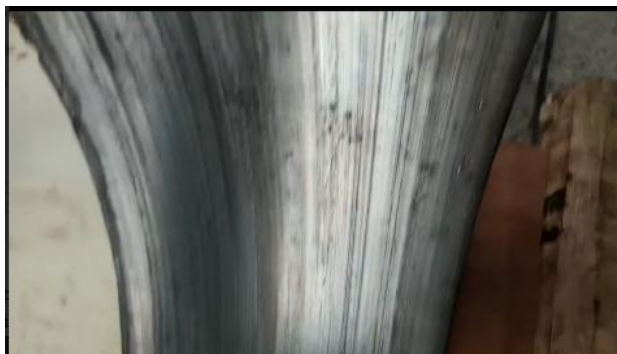
Vessel:	Delek Transport Agency Inc.	Engine type:	B&W 5S60MC -C	Date:	2018/2/1
Client:	Delek Transport Agency Inc.	Job No.		Order ref.	

Inspection Report For Connecting Rod Big End without Bush/检查报告									
Dimension Report (All dimensions in MM)/尺寸报告									
编号 NO.	大端孔径 BIG END	测量方向 MEASUREMENT	前端 FORE	后端 AFT	编号 NO.	大端孔径 BIG END	测量方向 MEASUREMENT	修理前公差 INITIAL INSPECTION	修理后公差 FINAL INSPECTION
3#	φ756	A-A	+1.5	+1.77			A-A		
		B-B	+1.12	+1.14			B-B		
		C-C	+0.78	+0.86			C-C		
		D-D	+0.06	+0.065			D-D		
		E-E	+0.07	-0.05			E-E		
		F-F					F-F		
Con rod big end PS direction twisted 0.05mm,FA direction twisted 0.24mm. Work plan: 1. Loosen the bolt, 2.According to our calibration report, TB direction ovality of big end pocket1.77mm, PS direction ovality of big end pocket 0.13mm. Lower part surface which contacted with upper part grind off 2mm.3. Then machine the big end pocket, final diameter φ756									

c. Crank pin bearing

Used crank pin bearing upper part worn seriously, also need machine.





2. On board Repairs done for ME Crankshaft:

Our service engineers carried out annealing and follow up machining for No.3 crank pins on board the vessel during calling at Guangzhou anchorage.

No.3 crank pin grinding 2mm, cranks removed.MPI test, no cracks indicated. Hardness test, value in normal side.Final measurement as following:

船 名 Vessel Name:	Tycoon	机 型 Type Engine:	B&W 5S60MC -C	港口: Port:	UANGZHOU	日期: Date:	2018/2/3
客 户: Client Name:	Delek Transport Agency Inc.		工 号: Job No.:		直径: Crankpin		

							基本数据 Basic Data	
Crank pin Measurement								
Crank Pin	No.1	No.2	No.3	No.4	No.5	No.6		
A	a		717.98				曲柄销 Crankpin	
	b		717.98				主轴径 M Journal	
	c		717.975				过渡圆角 Radius	
B	a		717.975				轴径宽度 Width	
	b		717.98					
	c		717.97					
Ovality								
Vibration								

3. Workshop Repairs done for ME Connecting Rod and Bearings:

a. Con rod big end PS direction twisted 0.05mm,FA direction twisted 0.24mm.

1. Loosen the bolt, 2.According to our calibration report, TB direction ovality of big end pocket1.77mm, PS direction ovality of big end pocket 0.13mm. Lower part surface which contacted with upper part grind off 2mm.3. Then machine the big end pocket, final diameter $\phi 756$.

青 岛 万 度 力 工 程 有 限 公 司
METALOCK ENGINEERING (QINGDAO) LTD.

MEInitial & Final Inspection Report

Vessel:	Delek Transport Agency Inc.	Engine type:	B&W 5S60MC -C	Date:	2018/2/1
Client:	Delek Transport Agency Inc.	Job No.		Order ref.	

Inspection Report For Connecting Rod Big End after machining/检查报告

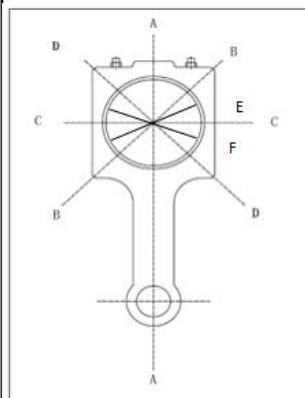
Dimension Report (All dimensions in MM)/尺寸报告

编号 NO.	大端孔径 BIG END	测量方向 MEASUREMENT	前端 FORE	后端 AFT	编号 NO.	大端孔径 BIG END	测量方向 MEASUREMENT	修理前公差 INITIAL INSPECTION	修理后公差 FINAL INSPECTION
3#	φ756	A-A	-0.01	-0.01			A-A		
		B-B	-0.01	-0.01			B-B		
		C-C					C-C		
		D-D	-0.01	-0.01			D-D		
		E-E	0.01	0			E-E		
		F-F	-0.01	-0.01			F-F		

Final inspection for connecting rod big end with bush:

Vessel:	Delek Transport Agency Inc.	Engine type:	B&W 5S60MC -C	Date:	2018/2/1
Client:	Delek Transport Agency Inc.	Job No.		Order ref.	

Inspection Report For Connecting Rod Big End after machining with Bush 检查报告



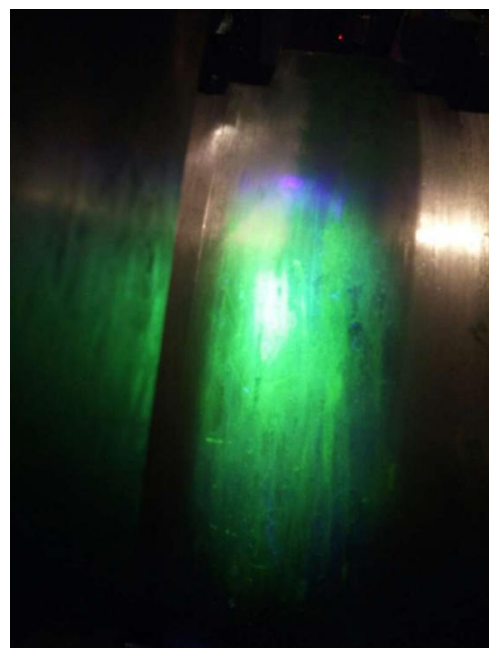
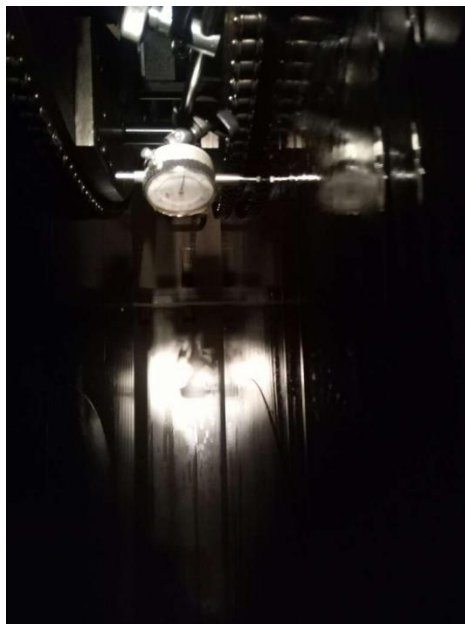
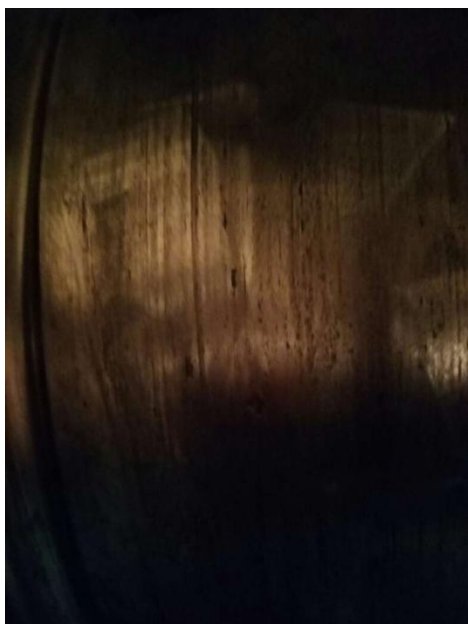
Dimension Report (All dimensions in MM)/尺寸报告

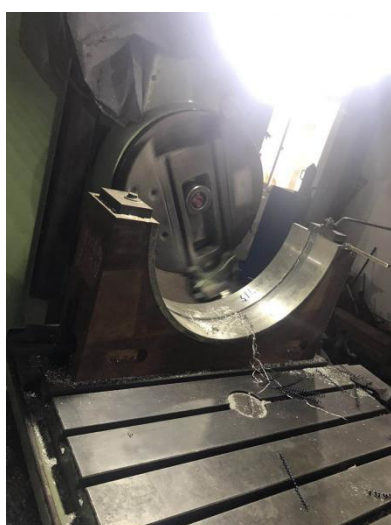
编号 NO.	大端孔径 BIG END	测量方向 MEASUREMENT	前端 FORE	后端 AFT	编号 NO.	大端孔径 BIG END	测量方向 MEASUREMENT	修理前公差 INITIAL INSPECTION	修理后公差 FINAL INSPECTION
3#	φ718	A-A	+0.42	+0.41			A-A		
		B-B	+0.41	+0.42			B-B		
		C-C	+0.57	+0.60			C-C		
		D-D	+0.42	+0.42			D-D		
		E-E					E-E		
		F-F					F-F		

Standard clearance: 0.40-0.64mm

b. 2 sets of main bearings undersize 2mm with NDT test, found OK.

IMAGE RECORDS





Connecting rod recondition procedure

1. Cleaning
2. Work bench measurement for bending, twisting of connecting rods;
3. Ovality readings of bearing housing;
4. Losen the bolt
5. According to our calibration report, TB direction oveality of big end pocket 1.77mm, PS direction oveality of big end pocket 0.13mm. Lower part surface which contacted with upper part grind off 2mm.
6. Fasten the bolt.
7. Re-milling of bearing housing into new original size ϕ 756