



# Electro - Mechanical Repair Report

Customer

Date

Order Number

Job No

Description 900 Kw AC Motor

Make ABB

Frame 450 L

Model M3BP 450LB 2 B3

Power (Kw) 900

Speed (rpm) 2873

Voltage (v) 415

Current (A) 1460

Freq (Hz) 50

Mounting Foot B3

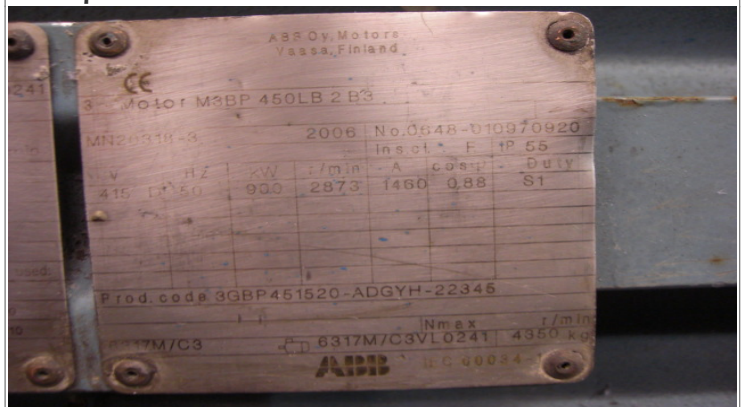
Outgoing Photo



## Reported Faults / Customer Observations

Higher than normal vibration on the motor non-drive end

Nameplate



# Inspection / Test Run

## Conformance Check Results

900 KW - Incoming Test Run							
Position	Direction	Band 1	Band 2	Band 3	Band 4	Band 5	Band 6
1	H	0.126	3.07	0.090	0.296	0.107	0.025
	V	0.152	2.26	0.018	0.218	0.164	0.025
	A						
2	H	0.034	0.648	0.056	0.159	0.162	0.043
	V	0.016	2.03	0.042	0.199	0.160	0.028
	A	0.036	1.35	0.063	0.063	0.104	0.107

## Comments

Vibration on band 2 (Rotational freq) is higher than the customer allowed amplitude levels. Most noticeable on position 1 (NDE) motor.

Bearing defect frequency amplitude band 5 levels high on DE & NDE

## Incoming Photo



## Stripdown report

Externally the motor was dusty and internally it was relatively clean.

The NDE bearing housing is oversize @ 180.100 mm (@ 23 Deg C) tolerance for this fit is 180.000 - 180.025mm

The cooling fan motor is beyond an economical repair (worn housings)

## Failure Photo



## Failure Analysis

The NDE bearing housing was found to be worn and measured above top tolerance by 0.075 mm.

# Mechanical Fit Data

## Journal Measurements - NDE

Bearing 6317M/C3 VL0241

Fit K5

Nominal 85 mm

Up Tol 85.018 mm

Lo Tol 85.003 mm

### 8 Point Measurements

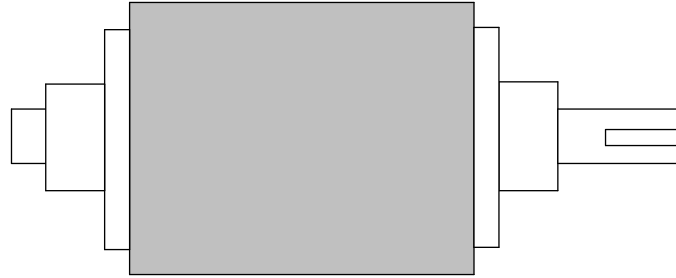
85.003      85.005

85.005      85.005

85.005      85.005

85.005      85.005

Pass  Fail



Shaft size 80.010 mm Pass  Fail

Keyway 22.000 mm Pass  Fail

Shaft run-out 0.010 mm Pass  Fail

Bearing Shoulder run-out Pass  Fail

Bearing Shoulder run-out Pass  Fail

## Journal Measurements - DE

Bearing 6317M/C3

Fit K5

Nominal 85 mm

Up Tol 85.018 mm

Lo Tol 85.003 mm

### 8 Point Measurements

85.005      85.005

85.006      85.006

85.005      85.005

85.005      85.005

Pass  Fail

## Housing Measurements - NDE

Nominal size 180 mm

+ Tol 180.025      - Tol 180.000

### 8 Point Measurements

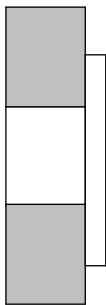
180.100      180.100

180.100      180.100

180.100      180.100

180.100      180.100

Pass  Fail



## Housing Measurements - DE

Nominal size 180 mm

+ Tol 180.025      - Tol 180.000

### 8 Point Measurements

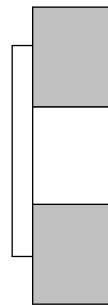
180.015      180.010

180.015      180.015

180.015      180.015

180.010      180.010

Pass  Fail



## Rotor Balance Data

Balance grade **G1.0**  **G2.5**

Balance grade to ISO 1940/1 : 2003 Part 1

Plane	Permitted (g)	Actual (g)	Position (Deg)
NDE	6.58	0.12	111
DE	6.58	0.82	54

## Foot Flatness

0.01	0.00
0.01	

0.02	0.02
	0.02

Motor viewed from above

0.00	
0.00	0.00

	0.01
0.01	0.01

### Comments

Measurements recorded @ 23 Deg C

NDE bearing housing measurement after repair 180.010 mm



## Repair Details / Service Report

This motor has been overhauled to SKF certified specification.

The motor was stripped and all component parts were cleaned. The windings were checked for condition and integrity (Resistance, IR, HI-POT, Baker Surge, Inductance & Ground capacitance). All mechanical fits were measured and the dimensions were recorded. The NDE bearing housing was oversize, this was bored, sleeved and machined to a size of 180.010 mm. All parts were blast cleaned. The rotor was balanced to an enhanced G1.0 balance grade for reduced vibration operation. The bearings were fitted in accordance with SKF fitting procedures, the bearings and grease pipes were filled with fresh lubricant. A new 3Kw force blower motor was supplied and fitted to the cowl. The motor was assembled and test run at 60Hz for an output shaft speed of 3600 rpm (as per customer requirement)  
All electrical and mechanical test measurements were recorded and documented

The motor was spray painted hammerite blue, dust caps were fitted to the grease nipples and the motor was packaged and protected for delivery to customer stores.

### Electrical Data - Static Test

Phase to Phase Resistance	U1 - V1	2.7m Ohms	U1 - W1	2.6m Ohms	V1 - W1	2.7m Ohms
Insulation Resistance (IR)		>999M Ohm	@ 500	V		
Polarisation Index (PI)	1 min	N/A	10 min		PI	
Earth Leakage Test (HI-POT)		0.045	uA	@ 1830	V	
Baker Surge Test		Pass	@ 1830	V		

### Electrical Data - Run Test

#### No load test

Motor Connection  Star  
 Delta

Test Voltage	400	V
Test Frequency	60	Hz
Motor Speed	3600	rpm
Current L1	72.0	A
Current L2	72.0	A
Current L3	72.0	A

#### Load test

Motor Connection  Star  
 Delta

Test Voltage	V
Test Frequency	Hz
Motor Speed	rpm
Current L1	A
Current L2	A
Current L3	A
Measured Output Power	Kw

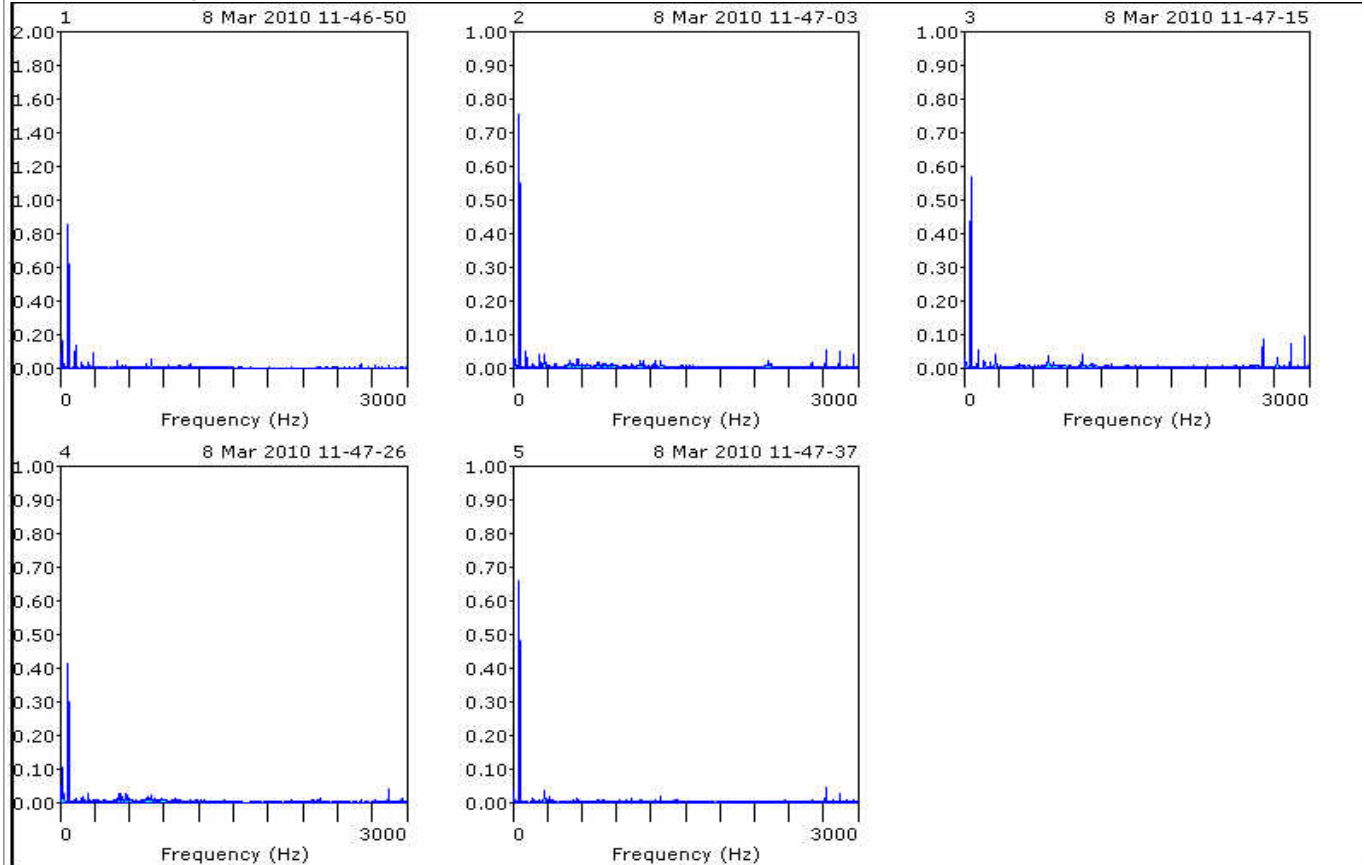


# Final Test Run - Mechanical Conformance Results & Vibration Analysis

## Conformance Check Results

61287FML									
Position	Direction	Sub-synchronous (mm/s)	Rotational (mm/s)	2 x Rotational (mm/s)	Bearing Defect (mm/s)	Bearing Defect (mm/s)	Bearing Defect (mm/s)	Acceleration (g)	ISO 10816-3 (mm/s)
1	H	0.030	0.914	0.443	0.183	0.046	0.027	0.085	1.04
	V	0.027	1.01	0.187	0.144	0.048	0.052	0.099	1.04
	A								
2	H	0.044	0.432	0.103	0.081	0.034	0.013	0.038	0.474
	V	0.039	0.614	0.080	0.043	0.028	0.028	0.055	0.626
	A	0.024	0.460	0.038	0.033	0.034	0.017	0.037	0.479

## Vibration Analysis



## Comments

Customer specific vibration band data.

All results within specified limits



## Further Analysis / Information

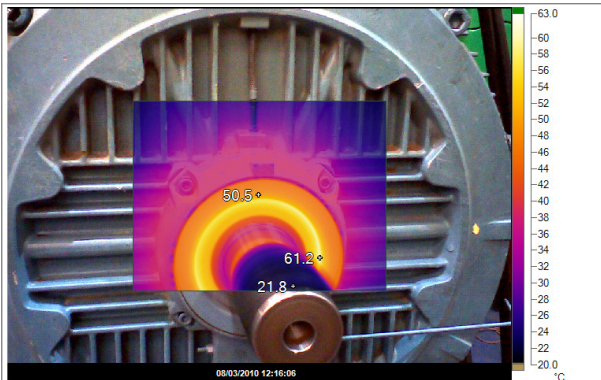
### Photo



### Description

Fretting seen on NDE bearing housing (oversize on inspection)

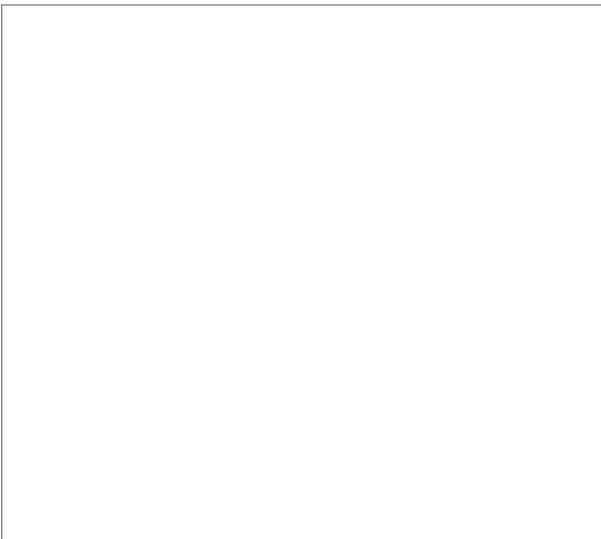
### Photo



### Description

Bearing temperature plateau reached after 36 minutes operation 50.5 Degrees C

### Photo



### Description

