

NTPC	LMI	LARA
TITLE	Operation Requirement for the care & Maintenance of Large Butterfly Valves in CW system	
REF. NO.	LMI 01-R0/OGN/OPS/MECH-008	

**LARA SUPER THERMAL POWER PROJECT
LOCAL MANAGEMENT INSTRUCTION**

LMI 01-R0/OGN/OPS/MECH-008

***Operation Requirement for the care & Maintenance of
Large Butterfly Valves in CW system***



All locations are required to comply with this Directive

Approved for Implementation by

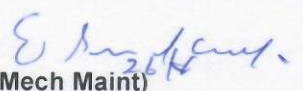
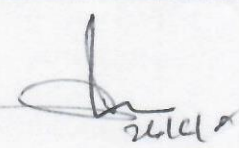
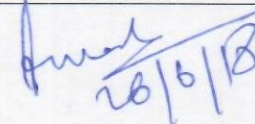
HOP(LARA)

Date :

Enquiries to : AGM(MM)

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OPERATION REQUIREMENT FOR THE CARE & MAINTENANCE OF LARGE BUTTERFLY VALVES IN CW SYSTEM

1.0 INTRODUCTION

There are large butterfly valves in Cooling Water Systems of LARA STPS (05 nos. of 2800 dia Hydraulic operated). The outage of valves will lead to the loss of generation. Hence proper care and maintenance of these valves are required. This guidance note (LMI) is prepared for the same.

2.0 SPECIFICATION

GENERAL

- i) Name of Manufacturer: Kirloskar Brothers Limited
- ii) Type: Double Eccentric, Double flanged BFV
- iii) Country of Origin: India
- iv) Size: 2800mm
- v) Number: 05 Nos.
- vi) Valve Design Code: BSEN 593
- vii) Location: CW Duct Interconnection Line (Outside Pump House)

TECHNICAL PARTICULARS

- i) Flange details: BSEN 1092-1, PN6 (Flat Faced)
- ii) Flow Cu. m/hr. (Maximum): 55000
- iii) Normal Working Pressure: 2.85 Kg/cm²
- iv) Maximum Working Pressure: 5.28 Kg/cm²
- v) Design Pressure: 5.28 Kg/cm²
- vi) Maximum expected leakage if any, at shut off conditions, lit/hr.: No Leakage
- vii) Opening time from full closed to Full open position: 60 to 90 Seconds (Adjustable)
- viii) Closing time from full open to Full closed position: 30 to 60 Seconds (Adjustable) (Will be corrected as per transient analysis, if required)

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- ix) Limit switches: 05 Nos. (02NO + 2NC Contacts) NEMA4 x standard
- x) Distance, face to face: 1120mm +/-6mm
- xi) Weight of Butterfly valve with Hydraulic actuator: 25000 Kg Approx.
- xii) Standard to which the valve conforms: BSEN 593 (Generally)

3.0 SUPERSEDED DOCUMENTS - NIL

4.0 REFERENCE DOCUMENT:

Approved Drawing 9548-133-PVM-B-016-03

5.0. SCOPE

This Guidance Note applies to the care and maintenance of all large butterfly valves in main CW systems. The recommendations made should not be considered sufficient to enable isolation of the valve for man access behind the valve or to enable isolation from other dangers. The intent of the document is to prevent damage to the valve from sudden movement.

6.0. REQUIREMENT

- i) Check free movement between the blade and actuating gear.
- ii) Free movement should be limited to 5 deg.
- iii) The cause of any free movement greater than 5 deg. Should be investigated and rectified.
- iv) Carry out internal inspection of CW discharge valves during every unit overhauls.
- v) Butterfly valves have preferred sealing direction and should be checked during installation.

7.0. CHECK LIST FOR PREVENTIVE MAINTENANCE OF BFV

Normal Closing-

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Press Valve Close push button then solenoid valve S3 will get energized. Oil is drained through pilot operated check valve and valve starts closing.

When valve closes by 90% limit switch LS1 gets operated or signal from feedback transmitters and Solenoid valve S5 gets energized and will drain oil through additional flow control valve, thus reducing speed of the cylinder.

When valve is fully closed, the close limit switch LS3 will be operated or valve close feedback from feedback transmitters and solenoid valve S3 & S5 will get de-energized.

Valve Normal Closing Time: 30 to 60 Sec. adjustable

Responsibility: DGM(MM)
DGM(C&I)

Emergency Closing-

Whenever CW Pump trips / reverse rotation is detected for any reason, then remote command is given from CW pump circuit to close the valve Solenoid valve S2 or S1 picks up based on the selector switch position. Whether solenoid valve S1 is kept standby or S2 is kept standby.

E.g. If solenoid valve S1 is standby, solenoid valve S2 picks up due to remote command and oil starts draining through pilot operated check valve. All other functions are similar to Normal Closing.

When valve closes by 90% limit switch LS1 gets operated or signal from feedback transmitters and Solenoid valve S5 gets energized and will drain oil through additional flow control valve, thus reducing speed of the cylinder. If the valve does not close by 90% in the (20 Sec) specified time, then the timer gets activated, solenoid valve S1 is energized to close the valve. Once valve closed fully all solenoids gets de energized.

Valve Emergency Closing Time: 30 Sec.

Responsibility: DGM(MM)
DGM(C&I)

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Valve Creep-

If the valve creeps due to leakage in the hydraulic cylinder or leakage in the hydraulic hose /piping, a limit switch LS4 by 95% open gets activate indication valve creep. At the same time solenoid S4 gets energized and valve pushed back to full open position through accumulator oil. When valve fully opens, limit switch LS2 or feedback transmitters gets activated, and solenoid S4 gets de-energized.

Responsibility: DGM(MM)
DGM(C&I)

Oil Tank Level Checking – DGM(Oprn)

Oil Top up - DGM(MM)

Oil Level switch (Measured from top of tank) -

L1 - 72 mm High Level &

L2- 252 mm Low Low Level

Accumulator capacity: one cycle of operation without AC power.

Limit Switches

LS1 90% Valve Close

LS2 100% Valve Open

LS3 100% Valve Close

LS4 95% Valve Open

LS5 Intermediate Position

(80% Valve Close)

OR

Signal derived from feedback transmitters. (Two nos of feedback transmitters are provided for each butterfly valve.

DGM(C&I)

8.0. REVIEW

HOD (Mech. Maint.) will be responsible for reviewing this Directive on a 2 yearly basis.

9.0 DISTRIBUTION LIST

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SL. NO.	DATE OF ISSUE	ISSUED TO
1.		GGM(LARA)
2.		GM(O&M)
3.		GM(O)
4.		GM(MAINT.)
5.		DGM(MM-BOP)
6.		Lara Intranet

10.0 LMI REVIEW RECORDS

ANNEXURE-1

PREVENTIVE MAINTENANCE CHECKLIST

BUTTERFLY VALVES IN CW SYSTEM

EQP

DATE OF INSPECTION:

S.NO. CHECKPOINT REMARKS

- 1 Free movement between blade and actuating gear
- 2 Free movements should be limited to 5deg.
- 3 Cause for free movement greater than 5deg
- 4 Internal inspections of disc and seat (rubber seal & shear pin) during p/p o/h or open cycle

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5 Preferred direction of sealing in case of replacement

Checked by:

Sign:

Name:

Reviewed by:

Sign:

Name:

