Keystone 777 Motor-Operated Butterfly Valve Maintenance

Tank Farm Maintenance Procedure
Effluent Treatment Facility

USQ Not Required – ETF is a <Hazard Category 3 Radiological Facility

| CHANGE HISTORY (≤ LAST 5 REV-MODS) |
|-------------------------------|----------------------------------|
| Rev-Mod | Release Date | Justification | Summary of Changes |
| A-1     | 07/27/2016   | Correct Use Type | Change from continuous use to reference use per document owner’s direction. |
| A-0     | 12/07/2015   | Conversion to WRPS Format | New Procedure; Supersedes ETF-PRO-MN-51458 (EL22022) |

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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for a safe, uniform method for maintaining the Keystone 777 motor-operated butterfly valves.

1.2 Scope

This procedure applies to steps for performing an inspection and for checking and adjusting the travel limit switch. The following valve models are covered by this procedure:

- MV-68B001, MV-68B002
- MV-68C004, MV-68C005.

2.0 INFORMATION

None.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Radiation and Contamination Control

3.1.1 Work in radiological areas will be performed using a radiological work permit following review by Radiological Control per ALARA Work Planning procedure, TFC-ESH-RP_RWP-C-03.

3.2 Environmental Compliance

3.2.1 In the event of a spill/leak/release, notify the SOM/FWS and respond per ETF-ERP-85B-003, Emergency Spill or Release at ETF.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

NOTE - M&TE used to collect acceptance criteria data during performance of this procedure shall meet the following requirements:

- Be within its current calibration cycle as evidenced by an affixed calibration label
- Be capable of desired range
- Accuracy is equal to or greater than M&TE tolerance specified on PM data sheet or is at least four times greater than specified device tolerance.

The following supplies may be needed to perform this procedure:

- CMD.

4.2 Performance Documents

The following documents may be needed to perform this procedure:

- Vendor information: NPG 18-12 Discharge Curves, Yuasa Exide, Inc.
5.0 PROCEDURE

5.1 Inspect Valves MV-68B001, MV-68B002

Inspection

5.1.1 LOOSEN hand wheel hub set screw AND PULL hand wheel from actuator.

5.1.2 PRY OFF yellow position indicator with screwdriver.

5.1.3 REMOVE socket head cap screw and black indicator cap.

5.1.4 REMOVE yellow dust covers exposing cover/base socket head cap screws.

5.1.5 UNSCREW cap screws from base AND REMOVE cover by lifting straight up.

5.1.6 ENSURE fixing screws are secure.

5.1.7 ENSURE wiring quick disconnect terminations are secure on the following:
   • Capacitor
   • Torque switches
   • Travel limit switches.

5.1.8 ENSURE torque and travel limit switch operating cams are secure.

5.1.9 ENSURE cam-fixing set screws are tight.

5.1.10 INSPECT electrical compartment for signs of the following:
   • Excessive dampness
   • Overheating
   • Dirt
   • Other foreign material.

5.1.11 CLEAN compartment.

5.1.12 INSPECT cover O-ring for signs of the following:
   • Proper positioning
   • Damage
   • Distortion.
5.1 Inspect Valves MV-68B001, MV-68B002 (Cont.)

**Inspection (Cont.)**

5.1.13 IF the following is observed, REPLACE O-ring AND DOCUMENT action taken on work package:
- Improper positioning
- Damage
- Distortion.

5.1.14 INSPECT indicator shaft O-ring for signs of the following:
- Proper positioning
- Damage
- Distortion.

5.1.15 IF the following is observed, REPLACE O-ring AND DOCUMENT action taken on work package:
- Improper positioning
- Damage
- Distortion.

5.1.16 ENSURE ground terminal is intact and secure.

**Travel Limit Switch Adjustment**

5.1.17 REPLACE hand wheel AND TIGHTEN set screw.

5.1.18 CLOSE valve by turning hand wheel CW AND OBSERVE where cam lobes trip lower two limit switches (wired in blue).

5.1.19 IF lower two limit switches (wired in blue) have been actuated when valve is in fully closed position, GO TO Step 5.1.17.

5.1.20 ROTATE cam's brass worm screw until cam lobe just trips switch from CW direction.

5.1.21 LOOSEN close travel stop lock nut (Figure 1).
5.1 Inspect Valves MV-68B001, MV-68B002 (Cont.)

Travel Limit Switch Adjustment (Cont.)

5.1.22 **ROTATE** travel stop CW until it touches internal stop lug.

5.1.23 **ROTATE** travel stop \( \frac{1}{2} \) turn CCW.

5.1.24 **LOCK** travel stop in position with lock nut.

5.1.25 **OPEN** valve turning the hand wheel CCW AND **OBSERVE** where cam lobes trip upper two limit switches (wired in red).

5.1.26 **IF** upper two limit switches (wired in red) have been actuated when valve is in fully open position, **GO TO** Step 5.1.32.

5.1.27 **ROTATE** cam’s brass worm screw until cam lobe just trips switch from CCW direction.

5.1.28 **LOOSEN** open travel stop lock nut (Figure 1).

5.1.29 **ROTATE** travel stop CW until it touches internal stop lug.

5.1.30 **ROTATE** travel stop \( \frac{1}{2} \) turn CCW.

5.1.31 **LOCK** travel stop in position with lock nut.

5.1.32 **LOOSEN** hand wheel hub set screw AND **PULL** hand wheel off actuator.

5.1.33 **REPLACE** cover AND **SECURE** with cap screws.

5.1.34 **REPLACE** yellow dust covers on cover/base socket head cap screws.

5.1.35 **REPLACE** the following:
- Socket head cap screw
- Black indicator cap.

5.1.36 **REPLACE** yellow position indicator.

5.1.37 **REPLACE** hand wheel AND **TIGHTEN** set screw.
5.2 Inspect Valves MV-68C004 and MV-68C005

**Inspection**

5.2.1 **REMOVE** yellow dust covers exposing cover/base socket head cap screws.

5.2.2 **UNSCREW** cap screws from base AND **REMOVE** cover by lifting straight up.

5.2.3 **ENSURE** fixing screws are secure.

5.2.4 **ENSURE** wiring quick disconnect terminations on the following are secure:
- Capacitor
- Torque switches
- Travel limit switches.

5.2.5 **ENSURE** torque and travel limit switch operating cams are secure.

5.2.6 **INSPECT** electrical compartment for signs of the following:
- Excessive dampness
- Overheating
- Dirt
- Other foreign material.

5.2.7 **CLEAN** compartment.

5.2.8 **INSPECT** cover O-ring for signs of the following:
- Proper positioning
- Damage
- Distortion.

5.2.9 IF the following is observed, **REPLACE** O-ring AND **DOCUMENT** action taken on work package:
- Improper positioning
- Damage
- Distortion.

5.2.10 **INSPECT** indicator shaft O-ring for signs of the following:
- Proper positioning
- Damage
- Distortion.
5.2 Inspect Valves MV-68C004 and MV-68C005 (Cont.)

**Inspection (Cont.)**

5.2.11 IF the following is observed, REPLACE O-ring AND DOCUMENT action taken on work package:
- Improper positioning
- Damage
- Distortion.

5.2.12 ENSURE ground terminal is intact and secure.

**Travel Limit Switch Check**

5.2.13 CLOSE valve from ETF Control Room AND OBSERVE where cam lobes trip lower two limit switches (wired in blue).

5.2.14 IF lower two limit switches (wired in blue) have been actuated when valve is in fully closed position, GO TO Step 5.2.16.

5.2.15 IF lower two limit switches (wired in blue) have not been actuated when valve is in fully closed position, GO TO Section 5.3.

5.2.16 OPEN valve from ETF Control Room AND OBSERVE where cam lobes trip upper two limit switches (wired in red).

5.2.17 IF upper two limit switches (wired in red) have been actuated when valve is in fully open position, GO TO Step 5.2.19.

5.2.18 IF upper two limit switches (wired in red) have not been actuated when valve is in fully open position, GO TO Section 5.3.

5.2.19 REPLACE cover AND SECURE with cap screws.

5.2.20 REPLACE yellow dust covers on cover/base socket head cap screws.

5.2.21 REPOSITION selector switch on control panel to NORMAL position.
5.3 Travel Limit Switch Adjustment

Closed Limit Switch Adjustment

5.3.1 "ROTATE cam's brass worm screw until cam lobe just trips switch from CW direction.

5.3.2 "LOOSEN close travel stop lock nut (Figure 1).

5.3.3 "ROTATE travel stop CW until it touches internal stop lug.

5.3.4 "ROTATE travel stop ½ turn CCW.

5.3.5 "LOCK travel stop in position with lock nut.

5.3.6 "RETURN TO Step 5.2.16.

Open Limit Switch Adjustment

5.3.7 "ROTATE cam's brass worm screw until cam lobe just trips switch from CCW direction.

5.3.8 "LOOSEN open travel stop lock nut (Figure 1).

5.3.9 "ROTATE travel stop CCW until it touches internal stop lug.

5.3.10 "ROTATE travel stop ½ turn CCW.

5.3.11 "LOCK travel stop in position with lock nut.

5.3.12 "RETURN to Step 5.2.19.
5.4 Restoration

5.4.1 RESTORE to as-found conditions.

5.4.2 INFORM SOM test is complete and instrument/equipment/system may be returned to service.

5.5 Acceptance Criteria

Acceptance criteria has been met when steps in this procedure have been satisfactorily performed and results are recorded on the data sheet(s).

5.6 Review

5.6.1 INFORM FWS test is complete.

5.6.2 (FWS) REVIEW AND ENSURE the following

- Completed data sheets meet the acceptance criteria
- Comments sections are filled out appropriately
- Work requests needed as a result of this procedure are identified and generated
- Work request number(s) of any work documents generated as a result of this procedure, are recorded in the Comments/Remarks section of the data sheet.

5.7 Records

The performance of this procedure generates no records. However PM/S data sheets associated with the procedure are records and are maintained in the work package as record material.

The record custodian identified in the Company Level Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
Figure 1– Location of Travel Stops

Open Travel Stop

Close Travel Stop