**HYDRAULIC SERVICES WITNESS TESTING**

**HCAA-012 – Hot Water Circulatory Pump Commissioning Sheet**

V2021.01 - April 2021

**GENERAL NOTES:** *This form is to be used for the purpose of witness testing a hydraulic installation by* ***a suitably Qualified Hydraulic Consultant****. Completion of all applicable sections is required. This form should be filed to the relevant project folder within 10 business days after witnessing has occurred.*

*Notes: This series of Hydraulic Testing Procedures have been designed to assist the Hydraulic Services Consultant to carry out suitable witness testing at the end of a project. Each set of procedures details an industry accepted, list of objectives, that the Hydraulic Services Consultant should carry out to fulfil their design commission. The series of procedures will offer the client security in the knowledge that the objectives identified have been based on an Industry standard, endorsed by the HCAA (National), which represents the Professional Industry of Hydraulic Services Consultants.*

|  |  |  |  |
| --- | --- | --- | --- |
| Project: |  | Project Number: |  |
| Prepared By: |  | **Report Date:** |  |
| Plumbing Company: |  | **Consulting Company:** |  |
| Plumbers Name: |  | **Consultant’s name:** |  |
| Plumbers license number |  | **Consultant’s certification n**umber: |  |
| Date of Test/Inspection: |  | **Drawing Revision**: |  |
| Equipment | | | |
| Backflow Test Kit Serial Number |  | Backflow Test Kit Verification Date: |  |
| Flow and Pressure Test Kit Serial Number: |  | Flow and Pressure Test Kit Verification Date: |  |

|  |  |
| --- | --- |
| The hydraulic services elements of the Project have been tested in accordance with: | |
| Number | **Title** |
| NCC Volume 1 | Building Code of Australia 2019 |
| PCA 2019 | Plumbing Code of Australia 2019 |
| AS/NZS 3500.1-2018 | Plumbing and Drainage -Part 1: Water services |

|  |  |  |
| --- | --- | --- |
| Plumbers Declaration | I hereby state that that the information provided in this form is a true and accurate record. | |
| **Signature:** | **Date:** |
| Consultants Declaration | I hereby state that that the information provided in this form is a true and accurate record. | |
| **Signature:** | **Date:** |

**Plumber to provide the following for witness testing:**

* **Pump duty to be provided with pump curve**

**Witness to provide the following for witness testing**

* **Consultant to witness pumps under operation and to be provided with a copy of this document**

**The hydraulic services being tested and recorded in this document are:**

|  |  |
| --- | --- |
| Yes | No |
| 1. Fixture outlet pressure and flow rates |  |  |
| 1. Backflow prevention valve |  |  |
| 1. Water quality generally |  |  |
| 1. Water flushing and sterilisation |  |  |
| 1. BMCS outputs |  |  |
| 1. Post water supply failure system |  |  |
| 1. Validation of design |  |  |

1. **BMCS outputs**

**Work Description:** Review and validate that any services nominated to be connected to the BMS have been connected.

**Suggested tools:** Access to BMCS system and our BMCS outputs list

|  |  |
| --- | --- |
| Water meter validation data |  |
| Tank water float measurements |  |
| Pump fails |  |
| Water main fail |  |
| System flow and return temperature |  |

1. **Validation of pump design**

**Work Description:** Review various hydraulic systems and validate them against the original design

**Suggested Tools:** No tools required, just your eyes.

|  |  |
| --- | --- |
| Yes | No |
| FLOW TEST PUMPS AND DEMONSTRATE PRESSURE AND FLOW IS EQUAL TO THE DESIGN: | | |
| Pumps fail and change over test |  |  |
| Pump closed head park test |  |  |
| Control panel fail and change over test |  |  |
| If exceed demonstrate that all material/components are within safe working pressures and flow rates do not exceed the safe velocity |  |  |
| For tall buildings identify the pump park pressure and demonstrate that all the material/components are within safe working pressures |  |  |
| Demonstrate flow of the filters and filtration ability and validate against design |  |  |
| HOT WATER TANKS: | | |
| TPR valve action |  |  |
| Validate overheat safety features |  |  |
| Isolation valves for 50% partitions work |  |  |
| Fill valve functions and flow rate compared against design |  |  |
| Validate internal tank waves and validate against requirements |  |  |
| SYSTEM STATIC PRESSURE: | | |
| Most disadvantaged static pressure test and validate against design |  |  |
| Most advantaged static pressure test and validate against design and 500kPa |  |  |
| Demonstrate safe working pressures of all material/components are not exceeded |  |  |

|  |  |  |
| --- | --- | --- |
| BALANCING VALVES | | |
| Flow rate through the balancing valve validated against the design |  |  |
| Demonstrate that all flow rates do not exceed the safe design velocity |  |  |
| Temperature at the outlet of the balance valve validated against the design |  |  |
| Temperature at the outlet of each balancing valve validated against the other valves within the system |  |  |
| DEAD LEGS | | |
| Measure dead legs capacity and validate against design and statutory requirements |  |  |

**WARNING:**

**A. Main Isolating Switch is in the OFF position.**

**B. Diesel Isolating Switch is in the ISOLATE position with the key removed.**

**C. The battery leads are disconnected.**

**D. All pump isolating valves are closed.**

1. **PRE START CHECKS**
   1. **GENERAL**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ITEM | DESCRIPTION | PASS | FAIL | COMMENTS |
| 1.1.1 | Equipment is free from damage |  |  |  |
| 1.1.2 | Where vibration mounts are installed ensure they are correctly anchored to the plinth and that anchor bolts are tight |  |  |  |
| 1.1.3 | Check all holding down bolts (base, pump & engine) are tight |  |  |  |

* 1. **PIPEWORK**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ITEM | DESCRIPTION | PASS | FAIL | COMMENTS |
| 1.2.1 | Test/drain valve is fitted, installed in the correct position and piped to waste |  |  |  |
| 1.2.2 | Where a main pump by pass is fitted, ensure the non-return valve is installed so that pump pressure holds it closed |  |  |  |
| 1.2.3 | Pipework is adequately supported |  |  |  |
| 1.2.4 | Water supply is available |  |  |  |

**1.3 CONTROL PANEL**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ITEM | DESCRIPTION | PASS | FAIL | COMMENTS |
| 1.3.1 | Control panel is free from damage |  |  |  |
| 1.3.2 | Power supply is terminated in the main isolating switch |  |  |  |
| 1.3.3 | Power supply is the correct voltage |  |  |  |

1. **OPERATIONAL CHECKS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ITEM | DESCRIPTION | PASS | FAIL | COMMENTS |
| 2.1 | Open main pump suction valve and bleed pump |  |  |  |
| 2.2 | Adjust the pressure tank air charge and records the pressure |  |  |  |
| 2.3 | Set the main pump start pressure switch and record the cut-in pressure |  |  |  |
| 2.4 | Set the pressure sustaining/relief valve and record the setting |  |  |  |
| 2.5 | Start the main pump and set the closed valve speed. Record setting |  |  |  |
| 2.6 | Carry out automatic start check by opening |  |  |  |

**3. FINAL CHECKS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ITEM | DESCRIPTION | PASS | FAIL | COMMENTS |
| 3.1 | Ensure all isolating valves are in the OPEN position |  |  |  |
| 3.2 | Ensure test drain valve is closed |  |  |  |
| 3.3 | Ensure DIESEL START ISOLTATE SWITCH is in the NORM position and the key is removed |  |  |  |
| 3.4 | Ensure ALARM MUTE SWITCH is in the NORM position |  |  |  |