




Client Ref. : --

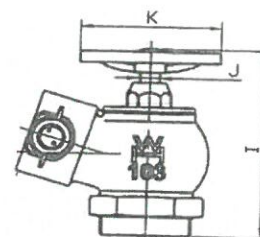
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## REPORT ON TESTING OF HYDRANT VALVE

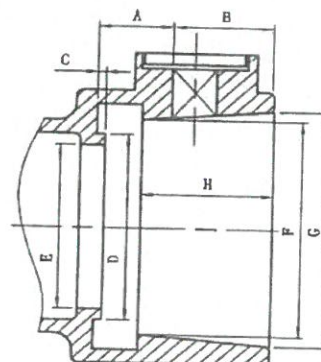
### Information Supplied by Client

Client : Wah Hung Fire Prevention Equipment Co., Limited  
 Address : G/F, No.129, Tai Nan Street, Prince Edward, Kowloon, Hong Kong  
 Sample Description : 80mm Copper alloy single outlet hydrant valve, 3" BSP male inlet and 2 1/2" female instant outlet.  
 Brand : WAH HUNG  
 Country of Origin : China  
 Model : WH006  
 Body Marking :  80 BS5041/1  
 Manufacturer : Wah Nan Fire Fighting Equipment Co., Ltd.



### Laboratory Information

Lab. Sample I.D. : PC200277/4  
 Date Received : 21 September 2020, 06 October 2020 & 28 November 2020  
 Date Test Started : 21 September 2020  
 Date Test Completed : 02 December 2020  
 Test Method : BS 5041: Part 1 : 1987 : BS336 : 2010 ,  
 BS EN 1982 : 2008 & BS EN 12164 : 2016



### Test Results

#### 1. DIMENSIONS

(Cause 9 Figure 5a of 336 : 2010)

		Sample (mm)	BS Requirement (mm)	Remark
Nominal size (mm)		80	-	--
Diameter of handwheel (K) (mm)		135	-	
Height of valve (I)	fully open (mm)	224	-	
	fully closed (mm)	203	-	
Minimum wall thickness (mm)		4.5	min.3.1 (BS5154 PN16)	Pass
Stem diameter		19.05	min.19 (BS5041)	

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	Results	BS Requirement	Remark
A (mm)	22.10	22±0.25	Pass
B (mm)	29.10	29±0.25	
C (mm)	3.0	3±0.25	
D (mm)	60.1	60±0.25	
E (mm)	53.0	53max.	
F (mm)	71.15	71.1±0.1	
G (mm)	74.8	74.8±0.1	
H (mm)	37.0	37±0.25	

## 2. Water Flow Rate and Outlet Pressure Test

(BS5041 part 1 clause 22)

	Flow Rate (l/s)	Inlet pressure (bar)	Outlet pressure (bar)	Remark
Sample	8.5	4.7	4.2	Pass
BS Requirement	8.5	4.7	≥ 4	--

## 3. Hydraulic pressure test

(BS5041 part 1 clause 19)

	Body Test			Seat Test		
	Test Pressure (bar)	Duration (min)	Remark	Test Pressure (bar)	Duration (min)	Remark
Sample	22.5	2	Pass	16.5	2	Pass
BS Requirement for low pressure valve	22.5	2	-	16.5	2	-

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#### 4. Chemical Composition (Body)

(BS 5041 : Part 1 : 1987 clause 8)

Testing items	Results	Specification according to BS EN 1982 : 2008 Grade CC491K castings
1. Copper (Cu) content, %	85.6	83.0 - 87.0 <sup>1)</sup>
2. Nickel (Ni) content, %	0.28	2.0 max.
3. Phosphorus (P) content, %	<0.03	0.10 max.
4. Lead (Pb) content, %	5.0	4.0 - 6.0
5. Tin (Sn) content, %	5.0	4.0 - 6.0
6. Zinc (Zn) content, %	4.3	4.0 - 6.0
7. Aluminium (Al) content, %	<0.01	0.01 max.
8. Iron (Fe) content, %	<0.04	0.3 max.
9. Sulfur (S) content, %	<0.04	0.10 max.
10. Antimony (Sb) content, %	0.06	0.25 max.
11. Silicon (Si) content, %	<0.01	0.01 max.

Remark : <sup>1)</sup> Include nickel

Note : Based on the test results of the submitted sample, it is found that the sample complies with the chemical composition specification of BS EN 1982 : 2008 Grade CC491K castings

The chemical composition results are obtained from our test report no. 205153EN202858(2)

#### 5. Chemical Composition (Bonnet)

Testing items	Results	Specification according to BS EN 12164 : 2016 Grade CW617N
1. Aluminum (Al) content, %	<0.01	0.05 max.
2. Copper (Cu) content, %	57.3	57.0 - 59.0
3. Nickel (Ni) content, %	<0.08	0.3 max.
4. Lead (Pb) content, %	1.8	1.6 - 2.5
5. Tin (Sn) content, %	0.11	0.3 max.
6. Zinc (Zn) content, %	40.5	Remainder
7. Iron (Fe) content, %	0.17	0.3 max.
Hence, others content, %	<0.2	0.2 max.

Note : Based on the test results of the submitted sample, it is found that the sample complies with the chemical composition specification of BS EN 12164 : 2016 Grade CW617N.

The chemical composition results are obtained from our test report no. 205153EN203033.



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## 6. Chemical Composition (Disc)

Testing items	Results	Specification according to BS EN 12164 : 2016 Grade CW617N
1. Aluminum (Al) content, %	<0.01	0.05 max.
2. Copper (Cu) content, %	57.6	57.0 – 59.0
3. Nickel (Ni) content, %	<0.08	0.3 max.
4. Lead (Pb) content, %	1.9	1.6 – 2.5
5. Tin (Sn) content, %	0.11	0.3 max.
6. Zinc (Zn) content, %	40.1	Remainder
7. Iron (Fe) content, %	0.17	0.3 max.
Hence, others content, %	<0.2	0.2 max.

Note : Based on the test results of the submitted sample, it is found that the sample complies with the chemical composition specification of BS EN 12164 : 2016 Grade CW617N.

The chemical composition results are obtained from our test report no. 205153EN203033.

## 7. Chemical Composition (Stem)

Testing items	Results	Specification according to BS EN 12164 : 2016 Grade CW614N
1. Aluminium (Al) content, %	0.02	0.05 max.
2. Copper (Cu) content, %	58.7	57.0 – 59.0
3. Nickel (Ni) content, %	<0.08	0.3 max.
4. Lead (Pb) content, %	2.6	2.5 – 3.5
5. Tin (Sn) content, %	0.18	0.3 max.
6. Zinc (Zn) content, %	38.2	Remainder
7. Iron (Fe) content, %	0.16	0.3 max.
Hence, others content, %	<0.2	0.2 max.

Note : Based on the test results of the submitted sample, it is found that the sample complies with the chemical composition specification of BS EN 12164 : 2016 Grade CW614N.

The chemical composition results are obtained from our test report no. 205153EN203033.

**FUGRO TECHNICAL SERVICES LIMITED**

Fugro Development Centre  
5 Lok Yi Street, Tai Lam  
Tuen Mun, NT  
Hong Kong

Client Ref. : --

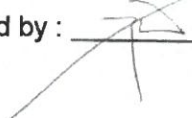

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**8. Summary of Results**

Dimension	-- Pass
Water Flow Rate and Outlet Pressure Test	-- Pass
Hydraulic pressure test	-- Pass
Chemical Composition (Body)	-- Pass
Chemical Composition (Bonnet)	-- Pass
Chemical Composition (Disc)	-- Pass
Chemical Composition (Stem)	-- Pass

Remarks : The test results relate only to the samples tested.

Checked by :  Date : - 8 DEC 2020 Certified by :  Date : - 8 DEC 2020  
Ng Shu Shing Chris  
Assistant Manager (Plumbing Components)

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Test Sample



Body Marking



Body Marking

**\*\*End of Report\*\***