

# Schedule

Setsco Services Pte Ltd  
No.18 Teban Garden Crescent  
Singapore 608925

Certificate No. : LA-1993-0067-G  
(Part 1 of 5)

Issue No. : 36

Date : 10 March 2020

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FIELD OF TESTING : Mechanical Testing

ITEMS/ MATERIALS/ PRODUCTS TESTED	TESTS/ MEASUREMENT RANGE OF MEASUREMENT	STANDARD METHODS/ TECHNIQUES/ EQUIPMENT	APPROVED SIGNATORY
<b>A. METALS AND METAL PRODUCTS</b>			
1. Metal & Metal Products	1. Tensile Test (i) Tensile Strength Test (ii) Yield or Proof Strength Test (ii) Elongation	) BS EN 10002-1:2001 ) ASTM A370: 2019e1 ) ASTM E8/ E8M: 2016a ) ISO 6892-1 : 2016 ) AS 1391 : 2007 ) JIS Z 2241 : 1998 ) SS 456 : 1999 ) ASTM B557 : 2015	) YA / CKM / ) NAM / YPS / ) TKC / LCS/ ) CKT / LY / TST ) ) ) )
	2. Impact Test	) ASTM E 23: 2018 ) BS EN ISO 148-1: 2016	) YA / CKM / ) NAM / YPS / ) LCS / CKT / LY ) TST
	3. Hardness Test (i) Brinell  (ii) Vickers  (iii) Rockwell	) ASTM E10: 2018 ) BS EN ISO 6506-1: 2014 ) ISO 6506-1 : 2014 ) BS EN ISO 6507-1: 2018 ) ASTM E92: 2017 ) BS EN ISO 6508-1: 2016 ) ASTM E18: 2019	) YA / CKM / ) NAM / LCS / ) CKT / TST / ) LY / YPS ) ) ) )

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	(iv) Portable Hardness Test - Brinell / Rockwell	) ASTM E110: 2014	) YA / CKM / ) NAM / LCS / ) CKT / LY / ) TST
	4. Coating Measurement		
	(i) Micro-hardness Test	) ASTM E384: 2011e1 ) ASTM B578 : 1987(2015) ) )	) YA / CKM / ) WKW / NKG / ) CKS / NCC / ) LZY
	(ii) Thickness	) ASTM B487 : 1985(2013)  ) BS EN ISO 1463: 2004	) YA / CKM / ) WKW / NKG / ) CKS / NCC / ) LZY  ) WKW / CKS / ) NCC / LZY ) NKG
	(iii) Coating Thickness Measurement for metallic and related Coatings (Magnetic Method)	) ISO 2361 : 1995 ) ISO 2178 : 2016 ) ISO 2177 : 2003 ) ) )	) YA / CKM / ) WKW / CKT / ) CKS / LCS / ) LY / LZY / ) NAM / NCC / ) NKG / TST
	5. Mechanical hydrogen embrittlement (Annex A2 in Air Environment)	) ASTM F519 : 2005 ) )	) YA / CKM ) )
	6. Metallurgical Examination		
	(i) Preparation of Metallographic Samples	) ASTM E3: 2011 (2017)	) YA / CKM / ) WKW / LZY ) NCC / NKG / ) CKS
	(ii) Microetching of Metals & Alloys	) ASTM E 407 : 1999 ) CAAS SAR Chapter 6.5 Appendix 1 (15 Dec 2011)	) YA / CKM / ) WKW / NCC / ) NKG / CKS

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	(iii) Macroetching of Metals & Alloys	) ASTM E340: 2015	) YA / CKM / ) WKW / CKS / ) LZY / NCC / ) NKG
	(iv) Determination of Ave Grain	) ASTM E112: 2013	) YA / CKM / ) WKW / NKG ) NCC / CKS / ) LZY
	(v) Volume Fraction Manual Point Count	) ASTM E562: 2011	) YA / CKM / ) WKW / NKG ) NCC / CKS / ) LZY
	(vi) Corrosion Test - Method A	) ASTM G48: 2011 (2015)	) YA / CKM / ) WKW / CKS / ) LZY / NCC ) NKG
	- Method A	) ASTM G28: 02 (2015)	) WKW / CKS / ) NCC / NKG / ) LZY
	- Method C	) ASTM A923: 2014	) WKW / NCC / ) CKS / LZY / ) NKG
	- Method A & E	) ASTM A262: 2015	) WKW/ CKS / ) NCC / NKG ) LZY
	(vii) In-situ Replica Metallography	) ASTM E1351: 01(2012)	) CKS / LZY ) NCC / NKG ) WKW
	(viii) Decarburization & Carburization Test	) ASTM F2328: 2017 ) ISO 898-1: 2013 (Clause 9.10 & 9.11) ) ASTM A962: 2017	) NCC / NKG ) WKW / CKS ) LZY )

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2. Reinforcement Bar	(ix) Inclusion Content of Steel	) ASTM E45: 2018a	) NCC / NKG ) WKW / CKS ) LZ Y
	(x) Cast Iron Microstructure Classification	) BS EN ISO 945-1: 2018	) NCC/ WKW
	1. Dimensional Measurement	) SS 2 : 1987 ) BS 4449 : 1997,1988, 2005 +A3: 2016	) CKM /NAM / ) TAS )
	2. Tensile Strength Test (Uniform Cross Sectional Area)	) SS 2 : Part 1 : 1999 ) SS 2 : Part 2 : 1999 ) SS 2 : Part 3 : 1987	) ) )
	3. Tensile Strength Test (Variable Cross Sectional Area)	) SS 427 : 1998 ) ASTM A615/A615M: 2015 ) SAA AS/NZS 4671 : 2001	) ) )
3. Steel Fabric	4. Bend Test	) SS 560 : 2010, 2016	) CKM /NAM / ) TAS / LCS / ) YTN / TQZ / ) OJX
	5. Re-bend Test	) MS 146 : 2014	) CKM / TAS / ) YTN / NAM
		) BS EN ISO 15630-1: <del>2010</del> 2019 ) SS 566: 2010	) CKM / NAM / ) TAS / YTN / ) TQZ
	1. Dimensional Measurement	) SS 18 : Part 1 : 1999	) CKM / NAM
	2. Tensile Strength Test	) SS 18 : Part 2 : 1970	) TAS
	3. Reverse Bend	) SS 32 : Part 1 : 1999	)
	4. Weld Shear Test	) SS 32 : Part 2 : 1986 ) BS 4483 : 2005 ) SS 561 : 2010	) ) ) CKM / NAM ) TAS / YTN ) TQZ

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4. Seven Wire Steel Strands	1. Dimensional Measurement 2. Tensile Strength Test	) BS 5896 : 1980, 2012 ) ASTM A416 / A416M: 2016 ) BS EN 10218-1: 1994	) YA / CKM / ) TAS / LL ) YTN
5. Structural Steel	1. Dimensional Measurement 2. Tensile Strength Test 3. Bend Test	) ASTM A20 / A20M: 2019 ) *ASTM A36 / A36M: 2019 ) ASTM A500/A500M:2018 ) *ASTM A516/A516M: 2017 ) BS EN 10025 Part 1 : 2004 ) BS EN 10025 Part 2 : 2019 ) *BS EN 10210-1 : 2006 ) BS EN 10002-1 : 2001 ) ASTM A307 : 2014 ) BS EN ISO 7438: 2016 (excludes 6.2 (b) & (c)) ) GB 2975 : 1998 ) GB 228 : 2010 ) GB 232 : 2010	) YA / CKM / ) NAM / LCS / ) CKT / LY )
6. Bolts & Nuts	1. Tensile Strength Test (Bolts) 2. Yield Strength Test (Bolts) 3. Hardness Test 4. Proof Load Test  5. Tensile/Yield Strength Test 6. Proof Load Test 7. Single Shear Test	) BS 3692 : 2014 ) BS 4395 : 1969 ) BS EN 10029 : 2010 ) BS EN 10034 : 1993 ) *ASTM A325: 2014 ) *ASTM A490/A490M: 2014 ) BS EN ISO 898-1: 2013 ) ASTM F606/F606M : 2016 ) BS EN ISO 898-2 : 2012  ) ISO 3506-1: 2009 ) ISO 3506-2: 2009 ) ASTM F606/F606M : 2016  ) *BS 4190: 2014	) YA / CKM / ) NAM / LCS / ) CKT / LY / ) TST )
7. Welded Plates / Pipes	1. Tensile Strength Test 2. Bend Test 3. Macroscopic Examination 4. Nick Break Test 5. Fracture Test	) ASME Section IX: 2017, 2019 ) AWS D1.1 / D1.1M : 2015 ) BS 4872 : Part 1 : 1982 ) BS 2633 : 1987 ) API STD 1104: Sep 2013 (21st ed.)	) CKM / NAM ) LCS / LY / ) CKT ) ) )

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		) BS EN 287-1 : 2004 ) BS EN ISO 9606-1: 2017 ) BS EN ISO 9018 : 2015 ) BS EN 910 : 1996 ) BS EN ISO 5173: 2010 + A1:2011 ) BS EN 895 : 1995 ) BS EN ISO 4136: 2012 ) BS EN 1320 : 1997 ) BS EN ISO 9017: 2018 ) CAAS SAR Chapter 6.5 Appendix 1 (15 Dec 2011) ) AWS D17.1/D17.1M: 2017AMD2	) ) ) ) ) ) CKM / NAM ) LCS / LY / ) CKT ) )
8. Manhole Covers Road Gully Grating and Frame for Drainage Purpose	1. Dimensional Measurement 2. Load Test 3. Permanent Set	) SS 30 : 1999 ) BS EN 124 : 2015 ) BS 5834-2: 2011	) YA / CKM / ) NAM / YPS ) )
9. Reinforcement Steel with Coupler	1. Tension Load Test and Permanent Set Measurement	) BS 8110 : Part 1 : 1997 Clause 3.12.8.16.2 ) BS EN 1992-1-1: 2004 + A1: 2014	) YA / CKM ) NAM /TAS )
10. Metal Scaffolds	1. Dimensional Measurement 2. Vertical Frame a. Load Test on Horizontal Tubes - Appendix C1 b. Compression Test on Vertical Tubes (Standard or Leg) - Appendix C2 3. Horizontal Frame a. Deflection and Bending Test - Appendix E1 b. Load Test on Clamp (Hook) - Appendix E2 4. Cross Brace a. Load Test - Appendix D	) SS 280-1 : 2006 ) ) ) ) ) SS 280-1 : 2006 ) ) ) SS 280-1 : 2006 ) ) ) ) SS 280-1 : 2006 )	) YA / CKM ) TKC / YTN ) ) ) ) ) ) ) ) ) ) ) )

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	5. Treadboard (Catwalk) / Metal Decking		)
	a. Deflection Bending Test		)
	- Appendix F1	) SS 280-1 : 2006	)
	- Appendix E2	) SS 280-2 : 2009	)
	6. Treadboard (Catwalk) / Metal Decking		) YA / CKM
	b. Deflection Bending Test		) TKC
	- Appendix F1	) SS 280-1 : 2006	)
	- Appendix E2	) SS 280-2 : 2009	)
	c. Load Test on Clamp (Hook)		)
	- Appendix F2	) SS 280-1 : 2006	)
	- Appendix E2	) SS 280-2 : 2009	)
	d. Deflection and Punching Test on Expanded Metal		)
	- Appendix F3	) SS 280-1 : 2006	)
	- Appendix E3	) SS 280-2 : 2009	)
	7. Wall Tie		)
	a. Tensile Test		)
	- Appendix I1	) SS 280-1 : 2006	)
	- Appendix F1	) SS 280-2 : 2009	)
	b. Compression Test		)
	- Appendix I2	) SS 280-1 : 2006	)
	- Appendix F2	) SS 280-2 : 2009	)
	8. Jack Base		)
	a. Load Test		)
	- Appendix G	) SS 280-1 : 2006	)
	- Appendix C	) SS 280-2 : 2009	)
	9. Cross Brace Pin	) SS 280-1 : 2006	) YA / CKM /
	a. Load Test - Appendix K	)	) TKC / LCS
	10. Material Test	) SS 311 : 2005	)
	a. Tensile Test	)	)





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	4. Shear Test	)	)
		)	)
	5. Moisture Content	)	)

\* Product Specification

#### Approved Signatories

Mr Yusooof Aynuddin	YA	Mr Tan Kok Chuan	TKC	Mr Ng Chang Chong	NCC
Mr Cheng Kwang Meng	CKM	Mr Lim Chin Seong	LCS	Mr Ye Tun Naing	YTN
Mr Ng Aik Miu	NAM	Mr Tan Ah Siong	TAS	Mr Choo Kok Siong	CKS
Mr Yap Pa Sun	YPS	Mr Wong Kok Wah	WKW	Mr Chew Keng Tiong	CKT
Mr Lawrence Lim	LL	Mr Ng Kian Guan	NKG	Mr Low Zheng Yang	LZY
Mr Liu Yang	LY	Mr Tee Seng Thiam	TST	Mr Toh Qi Zheng	TQZ
Mr Ong Jian Xiang	OJX	Mr Chen Yu	CY	Mr Mohd Azam	MA

#### Note :

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid test results. The **management system requirements** in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001.

**SINGAPORE LABORATORY  
ACCREDITATION SCHEME**



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Setsco Services Pte Ltd  
No.18 Teban Garden Crescent  
Singapore 608925

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ITEMS/ MATERIALS/ PRODUCTS TESTED	TESTS/ MEASUREMENT RANGE OF MEASUREMENT	STANDARD METHODS/ TECHNIQUES/ EQUIPMENT	APPROVED SIGNATORY
<b>A. TAPS AND MIXERS</b>			
1. Taps and Combination Tap Assemblies	1. Dimensional Measurement 2. Water Tightness Test 3. Pressure Resistance Characteristics 4. Hydraulic Characteristics 5. Mechanical Strength 6. Endurance Test Delay Action 7. Backflow Prevention	) BS 5412 : 1996 ) ) BS EN 200 : 1989, 2008 ) ) ) ) ) )	) YA / CKM / ) CY / MA ) YA / CKM / ) CY / MA/ ) HWC ) ) ) )
	1. Dimension Measurement 2. Watertightness Characteristics 3. Hydraulic Test 4. Endurance Test 5. Pressure Resistance Test 6. Backflow Prevention 7. Thermal Shock Resistance 8. Salt Spray Test	) SS 448 : 1-4 : 1998 ) BS EN 248 : 2002 ) ) ) ) ) ) ) ISO 9227 : 2006, 2012, ) 2017	) YA / CKM / ) CY / MA ) ) ) ) ) ) ) YA / CKM / NCC ) NKG / WKW
2. Mechanical Mixer	1. Leaktightness Characteristics 2. Sensitivity 3. Flow Rate 4. Mechanical Strength Characteristics 5. Pressure Resistance Characteristics	) BS EN 817 : 2008 ) ) ) ) ) )	) YA / CKM / ) CY / MA ) ) ) ) )

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3. Thermomixing Valves	6. Mechanical Endurance Characteristics	) BS 5412 : 1996 )	) YA / CKM / ) CY / MA
	7. Backflow Prevention	) SS 448 : 1-4 : 1998	)
	1. Dimensional Characteristics (inlet thread)	) BS EN 1287 : 1999 ) BS EN 1111 : 1999	) YA / CKM / ) CY / MA
	2. Leaktightness Characteristics	)	) HWC
	3. Hydraulic Operating Characteristic	) )	) )
	4. Mechanical Performance under Pressure	) )	) )
	5. Mechanical Endurance Characteristics	) )	) )
	6. Torsional Resistance Characteristics	) )	) )
	1. Torque Test	) AS 4032.1: 2005	) YA / CKM /
	2. Watertightness at ambient temperature	) )	) CY / MA ) HWC
3. Endurance Test	)	)	
4. Shower Head	1. Leaktightness Characteristics	) BS EN 1111 : 2017	) YA / CKM /
	2. Hydraulic Operating Characteristic – Flow Rate	) )	) CY / MA ) HWC
	3. Pressure Resistance	)	)
	4. Torsional Resistance Characteristics	)	)
5. Washing Machine	1. Flow Rate	) AS/NZS 3662: 2005, 2013	) YA / CKM /
	2. Spray Force	)	) CY / MA
	3. Spray Coverage	)	) HWC
5. Washing Machine	1. Water Consumption Test	IEC 60456 Edition 5.0 (2010-02) Clause 8.6 and PUB Requirement	) YA / CKM / ) CY / MA ) )

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6. Coating Thickness Measurement	1. Measurement of coating thickness - Coulometric method by anodic dissolution	) BS EN ISO 2177: 2004 ) )	) YA / CKM / ) CY / MA ) NCC
7. Automatic Diverter	1. Vacuum Test	) BS EN 14506: 2005 )	) YA / CKM / ) CY / MA ) HWC
<b>B. PIPES AND FITTINGS</b>			
1. uPVC Pipes and Fittings	1. Tensile Strength Test 2. Heat Reversion Test 3. Impact Test 4. Hydrostatic Pressure Test 5. Stress Relief 6. Dimensional Measurement 7. Opacity	) SS 141 : 1976, 2013 ) SS 213 : 1998 (1979) ) SS 272 : 1983, 2012 ) BS 4514 : 2001 ) BS 3506 : 1969 ) BS EN 1452-1 to 2 : 2000 )	) YA / CKM ) ) ) ) ) )
2. Polypropylene Pipes	1. Dimensional Measurement 2. Surface Finish 3. Creep Strength 4. Heat Reversion 5. Ovality 6. Long-term hydrostatic strength test 7. Opacity test	) DIN 8077 : 1999 ) DIN 8078 : 1996, 2008 ) DIN 16962-1 to 13 : 1989 ) BS EN ISO 15874-2: 2003, 2013 ) BS EN ISO 15874-3: 2003, 2013 )	) YA / CY / ) MA / CKM ) ) ) ) ) )
3. Acrylonitrile Butadiene Styrene (ABS) Pipes and Fittings for Pressure Applications	1. Dimension 2. Heat Reversion 3. Impact 4. Short Term Hydrostatic 5. Heat Ageing	) AS 3518.1 : 1988 ) ) ) )	) YA / CKM ) ) ) )
4. Polybutylene (PB) Pipes and Associated Fittings	1. Dimension 2. Short Term Hydrostatic (20°C) 3. Short Term Hydrostatic (95°C) 4. Short Term Hydrostatic – Assembled Pipes (20°C)	) BS 7291-2 : 2001, 2010 ) ) ) )	) YA / CKM / ) MA / CY ) ) )

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5. Crosslinked Polyethylene (PE- X) Pipes and Associated Fittings	1. Dimension 2. Coil Diameter 3. Short Term Hydrostatic (20°C) 4. Short Term Hydrostatic (95°C) 5. Short Term Hydrostatic – Assembled Pipes (20°C)	) BS 7291-3 : 2001, 2010 ) ) ) ) ) )	) YA / CKM ) MA / CY ) ) ) )
6. Chlorinated Polyvinyl Chloride (PVC-C) Pipes and Associated Fittings and Solvent Cement	1. Opacity 2. Dimensions 3. Longitudinal Reversion 4. Short Term Hydrostatic(20°C) 5. Short Term Hydrostatic(82°C) 6. Short Term Hydrostatic – Assembled Pipes (20°C)	) BS 7291 : Part 4 : 1990 ) ) ) ) ) ) )	) YA / CKM ) ) ) ) ) ) )
7. Epoxy Coated Galvanized Iron/Malleable Iron Pipe Fittings	1. Jointing Threads 2. Visual Inspection 3. Leak Tightness Test 4. Coating Thickness Measurement	) BS 143 & 1256 : 2000 ) ) ) ) )	) YA / CKM ) ) ) ) )
8. Constant Flow Regulator	1. Constant Flow Measurement	) BS EN 246 : 2003 )	) YA / CKM / ) CY / MA
9. Flexible Tube	1. Heat Aging 2. Watertightness 3. Endurance Test  1. Watertightness 2. Preparation of samples 3. Tensile stress resistance 4. Hydraulic strength test 5. Resistance to pressure jumps 6. Bending test	) AS/NZS 3499 : 1997 ) ) )  ) AS/NZS 3499 : 2006 ) ) ) ) ) ) )	) YA / CKM / ) CY / MA ) )  ) ) ) ) ) ) )
10. Line Pipe	1. Flattening Test	) API SPEC 5L: 2004, 2012 ) 2018	) YA / CKM

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11. Ductile Iron Pipe & Fitting	<ol style="list-style-type: none"> <li>1. Dimensional Measurement</li> <li>2. Tensile Strength Test</li> <li>3. Hardness Test - Brinell</li> <li>4. Diametral Stiffness</li> <li>5. Abrasion Resistance</li> <li>6. Hydrostatic Pressure Test</li> <li>7. Thickness Measurement on Cement Lining</li> <li>8. Microstructure</li> </ol>	<ul style="list-style-type: none"> <li>) BS EN 545 : 2006, 2010</li> <li>) BS EN 598 : 1995, 2007</li> <li>) + A1:2009</li> <li>)</li> <li>)</li> <li>) BS EN 969 : 1996</li> <li>) ISO 2531 : 1998</li> <li>)</li> <li>)</li> </ul>	<ul style="list-style-type: none"> <li>) YA / CKM</li> <li>) CY/ MA /</li> <li>) WC / WKW</li> <li>) NCC / NKG</li> <li>) CKS / LZY</li> <li>)</li> <li>)</li> <li>) WKW /</li> <li>) NCC / NKG</li> <li>) CKS / LZY</li> </ul>
12. Carbon Pipe Tube Polyethylene (PE- X) Pipes and Associated Fittings	<ol style="list-style-type: none"> <li>1. Dimensional Measurement</li> <li>2. Tensile Strength Test</li> <li>3. Hydrostatic Pressure Test</li> <li>4. Bend Test</li> <li>5. Flattening Test</li> </ol>	<ul style="list-style-type: none"> <li>) BS 3601 : 1987</li> <li>) BS EN 10002-1 : 2001</li> <li>) BS EN 10216-1 : 2002, 2013</li> <li>) BS EN 10217-1: 2002</li> <li>) BS EN ISO 6892-1: 2009</li> </ul>	<ul style="list-style-type: none"> <li>) YA / CKM</li> <li>) CY/ MA/</li> <li>) WC</li> <li>)</li> <li>)</li> </ul>
13. Stainless Steel Tubes and Pipes	<ol style="list-style-type: none"> <li>1. Dimensional Measurement</li> <li>2. Hydrostatic Pressure Test</li> <li>3. Drifting Test</li> <li>4. Flattening Test</li> <li>5. Mechanical Properties at Room Temperature</li> <li>6. Bend Test</li> <li>7. Leak Tightness</li> <li>8. Intergranular Corrosion Test</li> <li>9. Mechanical Properties at Room Temperature</li> <li>10. Flattening Test</li> <li>11. Bend Test</li> <li>12. Weld Bend Test</li> <li>13. Leak Tightness</li> </ol>	<ul style="list-style-type: none"> <li>) BS EN 10312 : 2002</li> <li>) BS EN ISO 8492: 2004, 2013</li> <li>) BS EN ISO 8493 : 2004</li> <li>)</li> <li>) BS EN 10216-5 : 2004, 2013 (exclude clause 11.2.2 on elevated temperature)</li> <li>) BS EN 10217-7: 2005, 2014</li> <li>)</li> <li>) BS EN ISO 3651-2: 1998</li> <li>) BS 3605-1 : 1991</li> <li>) BS 3605-2 : 1992</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> </ul>	<ul style="list-style-type: none"> <li>) YA / CKM /</li> <li>) CY / MA</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> <li>) WKW /</li> <li>) NCC / NKG</li> <li>) CKS / LZY</li> <li>) YA / CKM /</li> <li>) CY / MA</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> </ul>

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14. Screwed and Socketed Steel Tubes and Tubulars	1. Tensile Strength Test 2. Flattening Test 3. Hydrostatic Pressure Test	) BS EN 10255 : 2004 ) )	) YA / NAM / ) YPS / CKM )
15. Copper Tubing	1. Tensile Strength Test 2. Drifting Test 3. Hydrostatic Pressure Test 4. Flanging Test 5. Dimension Measurement 6. Hardness Test 7. Carbon Film Test	) BS EN 1057 : 2006 ) ) ) ) ) ) )	) YA / CKM ) CY/ MA/ ) WC ) ) ) )
16. Corrosion of Metals and Alloys	1. Dezincification Resistance 2. Stress Corrosion Resistance	) BS EN ISO 6509: 1995, 2014 ) ISO 6957 : 1988	) YA / WKW / ) NCC / NKG ) CKS / LZ Y
17. Y-Strainer	1. Mating Dimension & Flange Tolerance 2. Pressure Test/ Temperature Rating	) BS EN 1092-1 : 2002, 2007+A1: 2013, 2018 ) BS EN 1092-2 : 1997 ) BS EN 545 : 2006, 2010 )	) YA / CKM ) ) ) )
18. Steel Flange Adaptor	1. Mating Dimension & Flange Tolerance 2. Pressure Test/ Temperature Rating	) BS EN 1092-1 : 2002, 2007+A1: 2013, 2018 ) BS EN 1092-2 : 1997 ) BS EN 545 : 2006, 2010 )	) YA / CKM ) ) ) )
19. Copper/Copper Alloy or Stainless Steel Mechanical Joining End Connectors	1. Resistance Pull Out 2. Leaktightness under internal hydrostatic pressure while subjected to bending 3. Leaktightness/ Pressure Test  1. Strength of Joint Assembly 2. Resistance to Pull Out of Assembled Joint 3. Method of Determining Compatibility of fittings with pipe	) BS EN 1254-2 : 1998 ) ) ) )  ) AS 3688 : 2005 ) ) ) )	) YA / CKM / ) CY / MA ) ) ) )  ) ) ) ) )

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ITEMS/ MATERIALS/ PRODUCTS TESTED	TESTS/ MEASUREMENT RANGE OF MEASUREMENT	STANDARD METHODS/ TECHNIQUES/ EQUIPMENT	APPROVED SIGNATORY
20. Thermoplastic Pipes and Fittings	1. Opacity	) BS 7291-1 : 2010 )	) YA / CKM / ) CY / MA
21. Fitting	1. Body Pressure Resistance 2. Elongation Resistance 3. Internal Pressure 4. Resistance Repeatability 5. Vibration	JWWA G 116 : 2007 (in general accordance based on translated document in English)	) YA / CKM / ) CY / MA ) ) )
22. Adhesives for thermoplastic piping	1. Resistance Pull Out 2. Internal Pressure 3. Resistance to High Temperature 4. Durability 5. Shelf Life	) BS EN 14814:2016	) YA / CKM / ) CY / MA / ) WC
<b>C. SOLVENT CEMENT</b>	1. Shear Strength Test 2. Film Properties 3. Long Term Hydrostatic Pressure Test	) BS 4346 : Part 3 : 1982 ) ) )	) YA / CKM / ) CY / MA / ) WC )
<b>D. SANITARY WARE</b>			
1. WC Pan	1. Dimension Measurement 2. Flushing Test 3. Quality of Glazing and Visual Exam 4. Warpage 5. Burning Resistance 6. Chemical Resistance 7. Stain Test 8. Load Test for Wall Hung Pan 9. Integral Water Seat Test	) SS 379 : 1996 ) ) ) ) ) ) ) ) ) )	) YA / CKM / ) CY / MA ) ) ) ) ) ) ) )
	1. Flushing Test 2. Load Test for Wall Hung Pan 3. Trap Seal Depth Determination and Restoration Test	) SS 574-2: 2012 ) ) ) )	) YA / CKM / ) CY / MA ) ) )





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	10. Hydraulic Test	) SS 574-1: 2012	) YA / CKM /
	11. Endurance Test (for full & reduced flush)	) )	) CY / MA )
	12. Flushing Tests	)	)
	13. Load Test on Operating Mechanism (for full & reduced flush)	) ) )	) ) )
	14. Flush Button Design	)	)
	15. WC Drainline Transportation Test (For cisterns with full flush volume of less than 3.5 litres/flush)	) ) ) )	) YA / CKM / ) CY / MA ) )
4. Inlet Valve (Float Operated Valve – WC Flushing System)	1. General Dimension	) BS 1212-4: 1991	) YA / CKM /
	2. Inlet Connection	)	) CY / MA
	3. Backnuts	)	)
	4. Float Adjustment	)	)
	5. Discharge Arrangement	)	)
	6. Inlet Shank & Backnuts	)	)
	7. Distortion test	)	)
	8. Static Pressure Test	)	)
	9. Shut-off Pressure and level deflection	) )	) )
	10. Dynamic Pressure	) BS 1212-4: 1991	)
	11. Impact Test	)	)
	12. Backflow	)	)
5. Toilet Seat & Cover	1. Water Absorption	) SS 16 : 1985	) YA / CKM
	2. Rigidity	)	)
	3. Distortion	)	)
6. Sensors of Flushing Devices	1. Requirements	) PUB – Stipulation of Standards for Water Fittings	) YA / CKM ) CY / MA

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7. Sensor Device for Urinal Flush Valve	<ol style="list-style-type: none"> <li>Endurance</li> <li>Determination of Sensing Distance</li> <li>Manual Over-Ride</li> </ol>	) PUB – Stipulation of Standards for Water fittings	) YA / CKM ) CY / MA ) )
8. Urinal Flush Valve	<ol style="list-style-type: none"> <li>Endurance Test</li> <li>Hydraulic Test</li> <li>Volume Discharge</li> <li>Effectiveness of Vacuum Breaker Test</li> </ol>	) PUB – Stipulation of Standards for Water Fittings	) YA / CKM ) CY / MA ) ) )
9. Manual Operated Urinal Flush Valve	<ol style="list-style-type: none"> <li>Endurance Test</li> <li>Hydraulic Test</li> <li>Volume Discharge</li> <li>Effectiveness of Vacuum Breaker Test</li> </ol>	) PUB – Stipulation of Standards for Water Fittings )	) YA / CKM ) CY / MA ) ) )
10. Sensor Device for 4.5 Water Closet Flush Valve	<ol style="list-style-type: none"> <li>Endurance Test</li> <li>Determination of Sensing Distance</li> <li>Manual Over-Ride</li> </ol>	) PUB – Stipulation of Standards for Water Fittings	) YA / CKM ) ) )
11. 4.5 Litre Water Close Flush Valve	<ol style="list-style-type: none"> <li>Endurance Test</li> <li>Hydraulic Test</li> <li>Volume Discharge</li> <li>Flushing Test</li> <li>Effectiveness of Vacuum Breaker Test</li> </ol>	) PUB – Stipulation of Standards for Water Fittings )	) YA / CKM ) ) ) ) )
12. Manual Operated 1.5 Litre Water Closet Flush Valve	<ol style="list-style-type: none"> <li>Endurance Test</li> <li>Hydraulic Test</li> <li>Volume Discharge</li> <li>Flushing Test</li> <li>Effectiveness of Vacuum Breaker Test</li> </ol>	) PUB – Stipulation of Standards for Water Fittings ) )	) YA / CKM ) ) ) ) )

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13. Low Capacity Flushing Cisterns	1. Quality of glazing and visual exam	) BS 3402 : 1969	) YA / CKM / ) CY / MA
	2. Warpage	)	)
	3. Burning/ Staining Resistance	)	)
	4. Dimensional Measurement	)	)
	5. Water Absorption	)	)
	6. Chemical Resistance	)	)
	7. Crazeing	)	)
14. Ceramic Plumbing Fixture	1. Drain Line Transport Characteristics	) ASME A112.119.2 : 2008, 2013	) YA / CKM / ) CY / MA
	2. Dye Test	)	)
15. Toilet Seat with Bidet	1. Wash water temperature test	) JIS A 4422 : 1986	) YA / CKM / ) CY / MA
	2. Warm wind temperature test	)	)
	3. Toilet seat temperature test	)	)
	4. Washing water quantity test	)	)
	5. Anus Douch Capacity Test	) JIS A 4422 : 1986	) YA / CKM / ) CY / MA
	6. Warm wind	)	)
	7. Performance Test	)	)
	8. Insulation Resistance Test	)	)
	9. Moisture Proof Insulation resistance test	)	)
	10. Withstand voltage test	)	)
	11. Ordinary temperature test	)	)
	12. Abnormal Temperature test	)	)
	13. Toilet seat strength test	)	)
	14. Toilet seat cover strength test	)	)
	15. Construction test	)	)
	1. Wash water temperature test	) JIS A 4422 : 2011	) YA / CKM / ) CY / MA
	2. Washing water quantity test	)	)
	3. Warm air temperature test	)	)
4. Warm air volume test	)	)	
5. Heated seat temperature	)	)	

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	6. Pressure withstanding test	) JIS A 4422 : 2011	) YA / CKM /	
	7. Water hammer test	)	) CY / MA	
	8. Backflow prevention & Vacuum breaker test	)	)	
	9. Mechanical strength- seats, bowl covers, installation	)	)	
	10. Endurance – operation, seats and bowl covers	)	)	
	11. Seat endurance test	)	)	
	12. Construction test	)	)	
	13. Water system test	)	)	
	14. Electrical system test	)	) EL	
	<b>E. VALVES</b>			
	1. Copper and Copper Alloys	1. Tensile Test	) BS EN 10002-1 : 2001 ) BS EN ISO 6892-1: 2009	) YA / CKM ) CY / MA
		2. Tensile Test	) *BS EN 1982 : 1999, 2008 ) 2017	) YA / CKM ) CY / MA
		3. Alpha-Phase Determination	) BS EN 1982 : 1999, 2008, ) 2017	) YA/ NCC )
		4. Grain Size Determination	) BS EN ISO 2624 : 1995 ) *BS EN 1982 : 1999, 2008 ) 2017	) YA / WKW / ) NCC )
	5. Dezincification Resistance	) BS EN ISO 6509 :1995, 2014 ) *BS EN 1982 : 1999, 2008 ) 2017 ) *BS EN 12420 : 1999, 2014 ) *BS EN 12163 : 1998, 2011 ) 2016 ) *BS EN 12165 : 1998, 2011 ) 2016	) YA / WKW / ) NCC/ NKG ) ) ) ) )	

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	6. Stress Corrosion Resistance Test	) ISO 6957 : 1988 ) ) *BS EN 12163 : 1998, 2011 ) 2016 ) *BS EN 12420 : 1999, 2014	) YA / WKW / ) NCC/ NKG ) YA / WKW ) )
2. Cast Iron/ Ductile Iron/ Check Valve	1. Pressure Test	) BS 5153 : 1974 )	) YA / CKM ) CY / MA
3. Cast Iron Check Valve	1. Dimension and Tolerance on Body End	) *BS EN 12334 : 2001 ) BS EN 558-1: 1996  ) BS EN 558: 2008+A1:2011 ) BS EN 1092-2 : 1997	) YA / CKM ) CY / MA ) )
	2. Pressure Test	) BS EN 12266-1: 2003, 2012	)
4. Metallic Iron Butterfly Valve	1. Dimension Measurement 2. Pressure Test	) BS EN 593 : 2004 ) BS EN 558-1: 1996  ) BS EN 558: 2008+A1:2011 ) BS EN 558-2 : 1996 ) BS EN 1092-1 : 2002, 2007+A1: 2013 ) BS EN 1092-2 : 1997 ) BS EN 1092-3 : 2003	) YA / CKM ) CY / MA ) ) ) ) ) )
5. Cast Iron/Ductile Iron Gate Valve	1. Dimension Measurement 2. Strength Test 3. Functional Test 4. Pressure Test	) BS 5163 : 1986 ) ) )	) YA / CKM ) CY / MA ) )
6. Solenoid Gate Valve	1. Pressure Test	) *BS 5163-1 & 2 : 2004 ) BS EN 1074-1 : 2000	) YA / CKM ) CY / MA
7. Cast Iron/ Ductile Iron Globe & Check Valve	1. Dimension Measurement 2. Pressure Test	) BS 5152 : 1974 )	) YA / CKM ) CY / MA

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	1. Dimension Measurement	) * BS EN 13789: 2010	) YA / CKM /
	2. Pressure Test	)	) CY / MA
	3. Design	)	)
	a) Material	)	)
	b) Pressure/ Temperature Rating	)	)
	c) Dimension	)	)
	4. Functional Characteristics	)	)
	a) Functional Characteristics	)	)
	b) Shell Design Strength	)	)
	c) Flow Characteristics	)	)
	d) Allowable Differential Pressure	)	)
	e) Seat Tightness	)	)
	f) Sizing Operating Element	)	)
	5. Designation	)	)
	6. Marking	)	)
	8. Cast Iron Globe Valve	1. Dimension and Tolerance on Body End	) *BS EN 13789 : 2002 ) BS EN 588-1: 1996 ) BS EN 1092-2 : 1997
	2. Pressure Test	) BS EN 12266-1: 2003, 2012	)
9. Copper Alloy/Cast Iron/Ductile Iron Float Operated Valve (Diaphragm)	1. Construction & Dimension	) BS 1212-2 : 1990	) YA / CKM
	2. Hydraulic Pressure	)	) CY / MA
	3. Shut-Off	)	)
	4. Backnut Distortion	)	)
	5. Backflow Prevention	)	)
	6. Jointing Method	)	)
	7. Float Shape	) BS 1968: 1953	)
	8. Dimension & Weight	)	)
	9. Immersion	)	)
	10. Marking	)	)
	11. Mating Dimensions	) BS 4504-3 Sect.3.2 : 1989	)
	12. Flange Thickness	) BS EN 1092-2 : 1997	)

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ITEMS/ MATERIALS/ PRODUCTS TESTED	TESTS/ MEASUREMENT RANGE OF MEASUREMENT	STANDARD METHODS/ TECHNIQUES/ EQUIPMENT	APPROVED SIGNATORY
	13. Elastomeric Seal - a. Tensile Properties b. Compression Test c. Elongation at Break d. Hardness e. Stress Relaxation f. Water Absorption g. Ozone Test h. Accelerated Aging	) SS 270 : 1996 , 2015 ) ) ) ) ) ) ) ) )	) YA / CKM / ) CY/ MA ) ) ) ) ) ) )
	1. Hardness Test 2. Aging Test 3. Constant Strain Test 4. Water Absorption test	) BS 3457: 1973 ) ) )	) YA / CKM / ) CY/ MA ) )
10. Copper Alloy/ Cast Iron/ Ductile Iron Float Operated Valve (Piston)	1. Construction & Dimension 2. Performance 3. Jointing Method 4. Float Shape 5. Dimension & Weight 6. Immersion 7. Marking 8. Mating Dimensions 9. Flange Thickness	) BS 1212-1 : 1990 ) ) BS 1968: 1953 ) ) ) ) ) BS 4504-3 Sect.3.2 : 1989 ) BS EN 1092-2 : 1997	) YA / CKM ) CY/ MA ) ) ) ) ) ) )
11. Cast Iron/ Ductile Iron Water Pressure Reducing Valve	1. Pressure Strength & Tightness of Body 2. Tightness between Inlet & Outlet Chamber 3. Set Point Flange for Adjustable/ Non-Adjustable Valves	) BS EN 1567 :1999 ) ) ) ) ) )	) YA / CKM ) CY / MA ) ) ) ) )
12. Copper Alloy Gate, Globe and Check Valves, Solenoid Valve	1. Dimension Measurement 2. Pressure Test	) BS 5154 : 1991 ) )	) YA / CKM ) CY / MA )



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ITEMS/ MATERIALS/ PRODUCTS TESTED	TESTS/ MEASUREMENT RANGE OF MEASUREMENT	STANDARD METHODS/ TECHNIQUES/ EQUIPMENT	APPROVED SIGNATORY
	<ol style="list-style-type: none"> <li>1. Dimension Measurement</li> <li>2. Pressure Test</li> <li>3. Design                             <ol style="list-style-type: none"> <li>a) Material</li> <li>b) Pressure/ Temperature Rating</li> <li>c) Dimension</li> <li>d) Operating</li> <li>e) Auxiliary Connection</li> </ol> </li> <li>4. Functional Characteristics                             <ol style="list-style-type: none"> <li>a) Shell Design Strength</li> <li>b) Obturator Design Strength</li> <li>c) Shell Tightness</li> <li>d) Seat Tightness</li> <li>e) Flow Characteristics</li> <li>f) Sizing Operating Element</li> </ol> </li> <li>5. Designation</li> <li>6. Marking</li> </ol>	<p>) * BS EN 12288: 2010</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p>	<p>) YA / CKM /</p> <p>) CY / MA</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p>
13. Copper Alloy Gate Valve	<ol style="list-style-type: none"> <li>1. Dimension and Tolerance on Body End</li> <li>2. Pressure Test</li> </ol>	<p>) * BS EN 12288 : 2003</p> <p>) BS EN 558-1: 1996</p> <p>)</p> <p>) BS EN 558: 2008+A1:2011</p> <p>) BS EN 1092-3: 2003</p> <p>) BS EN 12266-1: 2003, 2012</p>	<p>) YA / CKM</p> <p>) CY / MA</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p>
14. Copper Alloy Stopcock, Ball Stopvalves and Stopvalves	<ol style="list-style-type: none"> <li>1. Dimension Measurement</li> <li>2. Pressure Test</li> <li>3. Pressure Resistance Test</li> <li>4. Bending Moment Test</li> <li>5. Leaktightness Test</li> <li>6. Torque Test</li> <li>7. Endurance Test</li> <li>8. Flow Capacity</li> </ol>	<p>) SS 75-2 : 1978</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>) BS EN 1213 : 2000</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p>	<p>) YA / CKM</p> <p>) CY / MA</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p>
15. Compression & Capillary Pipe Fittings	<ol style="list-style-type: none"> <li>1. Dimension</li> <li>2. Leak Tightness/ Pressure Test</li> </ol>	<p>) BS EN 1254-1 &amp; 2 : 1998</p> <p>)</p>	<p>) YA / CKM /</p> <p>) CY / MA</p>

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16. Ductile Iron Gate Valve	<ol style="list-style-type: none"> <li>1. Max. Operating Torque for Operation &amp; Leak Tightness</li> <li>2. Hydraulic Characteristics</li> <li>3. Resistance of Valves to Bending</li> </ol>	<p>) BS EN 1074-1: 2000                      ) BS EN 1074-2 :2000                      )                      )                      )</p>	<p>) YA / CKM /                      ) CY / MA                      )                      )                      )</p>
17. Copper Alloy Stainless Steel Ball Valve	<ol style="list-style-type: none"> <li>1. Operating Torque Test</li> <li>2. Torque and Bending Test</li> <li>3. Mechanical Resistance Test (stops &amp; spindle)</li> <li>4. Hydraulic Test</li> <li>5. Endurance Test</li> </ol>	<p>) BS EN 13828 : 2003                      )                      )                      )                      )</p>	<p>) YA / CKM /                      ) CY / MA                      )                      )                      )</p>
18. General Valves	<ol style="list-style-type: none"> <li>1. Pressure Test</li> <li>2. Flange Mating Dimension and Thickness</li> <li>3. Face-to-Face Dimension</li> </ol>	<p>) BS EN 12266-1: 2012                      ) BS EN 12266-2: 2012                      ) BS EN 1092-2: 1997                      ) BS EN 1092-1: 2018                      ) BS EN 558: 2017</p>	<p>) YA / CKM /                      ) CY / MA                      )                      )                      )</p>

## Approved Signatories

Mr Yusooif Aynuddin	YA	Mr Mohd Azam	MA
Mr Cheng Kwang Meng	CKM	Mr Wang Chao	WC
Mr Wong Kok Wah	WKW	Mr Ng Kian Guan	NKG
Mr Ng Chang Chong	NCC	Mr Chen Yu	CY
Mr Ho Wan Chong	HWC	Mr. Edwin Leong Heng Fatt	EL

\* Product Specification

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## Note :

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025. A laboratory's fulfilment of the requirements of ISO/IEC 17025 means the laboratory meets both the technical competence requirements and **management system requirements** that are necessary for it to consistently deliver technically valid test results. The **management system requirements** in ISO/IEC 17025 are written in language relevant to laboratory operations and operate generally in accordance with the principles of ISO 9001.

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Setsco Services Pte Ltd  
No.18 Teban Garden Crescent  
Singapore 608925

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<p><b>A. FIRE PROTECTION PRODUCTS</b></p> <p>1. Fire Hose Reel</p>	<p>1. Dimension Measurement and Design Observation</p> <p>2. Opening of manual inlet stop valve</p> <p>3. Opening of automatic inlet stop valve</p> <p>4. Resistance to external corrosion on coated parts</p> <p>5. Resistance to corrosion of waterways</p> <p>6. Ageing tests for plastic materials</p> <p>7. Resistance to impact, for shut-off nozzle</p> <p>8. Operating torque, for shut-off nozzle</p> <p>9. Measurement of spray angle</p> <p>10. Minimum flow rate</p> <p>11. Effective throw range</p> <p>12. Endurance - Rotating</p> <p>13. Endurance - Swinging</p> <p>14. Unwinding load</p> <p>15. Dynamic braking</p> <p>16. Resistance to impact and load</p> <p>17. Resistance to internal pressure</p> <p>18. Strength</p>	<p>) BS EN 671-1 : 2012</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p>	<p>) CKM /</p> <p>) CY / MA</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p> <p>)</p>

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2. Fire Fighting - Semi Rigid Hoses for Fixed Systems	1. Inside Diameter and Maximum Mass 2. Hydrostatic Pressure Test a. Deformation under Maximum Working Pressure b. Deformation under Proof Pressure c. Maximum Burst Pressure Test 3. Kink Pressure Test	) BS EN 694 : 2001, 2014 ) ) ) ) ) ) ) ) ) )	) CKM / ) CY / MA ) ) ) ) ) ) ) ) )
3. Landing Valve (Wet Riser)	1. Dimensional Measurement 2. Hydrostatic Pressure on Body 3. Hydrostatic Pressure on Seat 4. Spring Strength (refer to BS 336)	) BS 5041-1 : 1987 ) ) ) )	) CKM / ) CY / MA ) ) )
4. Inlet Breeching (Dry Riser)	1. Dimensional Measurement 2. Hydrostatic Pressure on the Body 3. Hydrostatic Pressure on seat 4. Material Test a. Tensile Strength Test b. Microstructure	) BS 5041-3 : 1975 ) ) ) ) ) ) )	) CKM / ) CY / MA ) ) ) ) ) )
5. Layflat Delivery Hose and Hose Assembly	1. Construction 2. Dimension 3. Mass 4. Hydrostatic tests 5. Moisture absorption 6. Flexibility 7. Coupling	) BS 6391 : 1983, 2009 ) ) ) ) ) ) )	) CKM / ) CY / MA ) ) ) ) ) )

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6. Portable Fire Extinguisher	1. Weight of extinguisher	) SS 232 Part 1 to 6 : 1999	) CKM /
	2. Duration of operation	) SS EN 3 Part 7 to 9 : 2012	) CY / MA
	3. Residual charge	)	)
	4. Commencement of discharge	)	)
	5. Tightness	)	)
	6. Controlled discharge – self-closing valve	)	)
	7. Operation position	)	)
	8. Hose assembly	)	)
	9. Closures	)	)
	10. Force measurement	)	)
	11. Horns for carbon dioxide extinguisher	)	)
	12. Filling opening	)	)
	13. Mounting bracket	)	)
	14. Bursting Disk	)	)
	15. Hose and Coupling System	)	)
	16. Crushing Test	)	)
	17. Pressure Test	)	)
	18. Bursting Test	)	)
	19. Safety Device Force Measurement	)	)
	20. Discharge from Water Base Extinguisher	)	)
	21. Charges and Filling Tolerances	)	)
	22. Resistance to Impact	) SS EN 3 Part 8 to 9 : 2012	)
	23. Macroscopic Examination	) BS EN 1320 : 1997	) CKM / NCC
7. Fire hose couplings and Ancillary Equipment	1. Plunger Springs	) BS 336 : 1989, 2010	) CKM /
	2. Dimension Measurement	)	) CY / MA

# Schedule



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## Approved Signatories

Mr Cheng Kwang Meng	CKM
Mr Chen Yu	CY
Mr MohdAzam	MA
Mr Ng Chang Chong	NCC

## Note :

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ITEMS/ MATERIALS/ PRODUCTS TESTED	TESTS/ MEASUREMENT RANGE OF MEASUREMENT	STANDARD METHODS/ TECHNIQUES/ EQUIPMENT	APPROVED SIGNATORY
2. Industrial Safety Helmet	<ol style="list-style-type: none"> <li>1. Design and construction</li> <li>2. Penetration resistance</li> <li>3. Flame resistance</li> <li>4. Chinstrap anchorage</li> <li>5. Electrical properties</li> <li>6. Shock absorption / Force Transmission</li> <li>7. Lateral deformation</li> </ol>	<ol style="list-style-type: none"> <li>) SS 98 : 2005, 2013</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> </ol>	<ol style="list-style-type: none"> <li>) CKM /</li> <li>) CY / MA /</li> <li>) SA</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> </ol>
3. Ceiling Fan	<ol style="list-style-type: none"> <li>1. Mechanical Strength</li> <li>2. Suspension System</li> <li>3. Installation</li> </ol>	<ol style="list-style-type: none"> <li>) SS 360: 1992</li> <li>) Clause 5.7</li> <li>) SS 360: 1992</li> <li>) Clause 5.7</li> </ol>	<ol style="list-style-type: none"> <li>) CKM /</li> <li>) CY / MA /</li> <li>) SA</li> <li>)</li> </ol>
4. Personal Fall-Arrest System			
i. Full-Body Harnesses	<ol style="list-style-type: none"> <li>1. Buckle shake test</li> <li>2. Dynamic performance test</li> <li>3. Static suspension angle test for class AE FBH</li> <li>4. Static Strength</li> </ol>	<ol style="list-style-type: none"> <li>) SS 528: Part 1:2006(2014)</li> <li>) ISO 10333-1: 2000</li> <li>)</li> <li>)</li> </ol>	<ol style="list-style-type: none"> <li>) CKM /</li> <li>) CY / MA</li> <li>) SA</li> <li>)</li> </ol>
ii. Lanyard & Energy Absorbers	<ol style="list-style-type: none"> <li>1. Dynamic test of energy when supplied as component</li> <li>2. Dynamic test of FBH with integral energy absorbers</li> <li>3. Elevated temperature conditioning</li> <li>4. Wet conditioning</li> <li>5. Cold conditioning</li> <li>6. Wet and cold conditioning</li> <li>7. Static Strength</li> </ol>	<ol style="list-style-type: none"> <li>) SS 528 Part 2: 2006(2014)</li> <li>) ISO 10333-2: 2000</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> </ol>	<ol style="list-style-type: none"> <li>) CKM /</li> <li>) CY / MA</li> <li>) SA</li> <li>)</li> <li>)</li> <li>)</li> <li>)</li> </ol>
iii. Connectors with self-closing and self-locking gates	<ol style="list-style-type: none"> <li>1. Gate-face resistance test</li> <li>2. Gate side load resistance test</li> <li>3. Static strength test</li> </ol>	<ol style="list-style-type: none"> <li>) SS 528: Part 5: 2006</li> <li>) ISO 10333-5: 2001</li> <li>)</li> </ol>	<ol style="list-style-type: none"> <li>) CKM /</li> <li>) CY / MA</li> <li>) SA</li> </ol>

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iv. System performance	1. Performance test for A (anchor device) + EAL (energy absorbing lanyard or other lanyard energy absorber combination) + FBH (full body harness) type PFAS (Personal fall arrest system)	) SS 528: Part 6: 2006 ) ISO 10333-6: 2004 ) ) ) ) ) )	) CKM / ) CY / MA ) SA ) ) ) )
5. Restraint Belt	1. Material and Construction 2. Webbing strength 3. Static strength for lanyard 4. Static strength for metal components 5. Performance test 6. Salt spray test for metal components	) SS 541: 2008 ) ) ) ) ) )	) CKM / ) CY / MA/ ) SA ) ) )

## Approved Signatories

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Mr Au Gei Keong, Sam SA

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# Schedule

Setsco Services Pte Ltd  
No.18 Teban Garden Crescent  
Singapore 608925

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FIELD OF TESTING : Mechanical Testing

ITEMS/ MATERIALS/ PRODUCTS TESTED	TESTS/ MEASUREMENT RANGE OF MEASUREMENT	STANDARD METHODS/ TECHNIQUES/ EQUIPMENT	APPROVED SIGNATORY
<b>A. GLAZING MATERIALS</b>			
1. Safety Glass	1. Impact Resistance	SS 341 : 2001 AS/NZS 2208 : 1996 (1999) BS 6206 : 1981	) THC / RT ) ) )
	2. Boil Test	SS 341 : 2001 AS 2208 : 1996 (1999)	) )
	3. Fragmentation Test	BS 6206 : 1981 SS 341 : 2001 AS/NZS 2208 : 1996 (1999)	) THC / OJW / ) ACT / RT ) )
	4. Non-Destructive Photo-Elastic Measurement for Surface Compressive Stress using Glazing Angle Surface Polarimeter	ASTM C 1279 : 2013 (2019) SS 341 : 2001	) ) ) )
	5. Thickness	SS 341 : 2001 AS/NZS 2208 : 1996 (1999)	) OJW / ACT / ) RT ) )
	6. Size Tolerances, Flatness & Squareness Rectangular Panels	SS 341 : 2001 AS/NZS 2208 : 1996 (1999) ASTM C1048 : 2012e1	) ) ) )



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ITEMS/ MATERIALS/ PRODUCTS TESTED	TESTS/ MEASUREMENT RANGE OF MEASUREMENT	STANDARD METHODS/ TECHNIQUES/ EQUIPMENT	APPROVED SIGNATORY
	10. Heavyweight anchorage (wash Basin) eccentric downward loading test (Annex K)	) ) ) ) )	) ) ) ) )
	11. Heavyweight anchorage (high level wall cupboard) eccentric downward loading (Annex L)	) ) ) )	) ) ) )
<b>C. BUILDING MATERIALS</b>	1. Non-combustibility	BS 476 Part 4: 1970 BS EN ISO 1182:2010	) THC / SS / JS ) ) )
	2. Limited Combustibility / Heat Emission	BS 476 Part 11: 1982	)
<b>D. INSULATION MATERIALS / FAÇADE / ROOFING MATERIALS / COATINGS</b>	1. Thermal Conductivity	ASTM C518: 2017	THC / SS / JS
	2. Daylight Reflectance / Solar Reflectance	ASTM E903: 2012 ASTM C1549: 2016	) THC ) ) )
	3. Solar Reflectance Index	ASTM E1980: 2011(2019)	) ) ) )
	4. Emittance	ASTM C1371: 2015	)
<b>E. RUBBER</b>	1. Tensile Strength and Elongation at Break	ASTM D412: 2016 ISO 37: 2017 DIN 53504: 2009	) SL / SS ) ) )
	2. Shore A & D Hardness	ASTM D2240: 2015e1 ISO 48 Pt 4: 2018	) ) ) )
	3. Compression Set	ASTM D395: 2018 (Method B) ISO 815 Pt 1: 2014	) ) ) )
	4. Tear Resistance	ASTM D624: 2000(2012) ISO 34-1: 2015	) ) ) )

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<b>F. PLASTICS</b>	1. Tensile Strength and Elongation at Break	ASTM D638: 2014 ISO 527 Pt 2: 2012 DIN 53455: 1981 BS 2782 Pt 3 Method 320E: 1976	) SL / SS ) ) ) )
	2. Shore A & D Hardness	ASTM D2240: 2015e1 ISO 868: 2003	) ) )
	3. Izod Impact Resistance	ASTM D256: 2010 ISO 180: 2000	) ) )
	4. Compressive Strength	ASTM D695: 2015	) )
	5. Barcol Hardness	ASTM D2583: 2013a BS 2782 Pt 10 Method 1001: 1977	) ) )
	6. Flexural Strength	ASTM D790: 2017 BS 2782 Pt 3 Method 335A: 1993 ISO 178: 2010	) ) ) )
	7. Density	ASTM D792: 2013 BS 2782 Pt 6 Method 620A to 620D: 1991 ISO 1183 Pt 1: 2019	) ) ) )
	8. Shear Strength	ASTM D732: 2017 BS 2782 Pt 3 Method 340A & 340B: 1978	) ) )
	9. Abrasion Resistance	CTD/TP/09 -2012	)

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## Approved Signatories

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Mr Raymond Tan (RT)

Mr Salim Suwignjo (SS)

Mr Ong John Wei (OJW)

Ms Shirley Lim Sui Di (SL)

Mr Jasbeer Singh (JS)

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