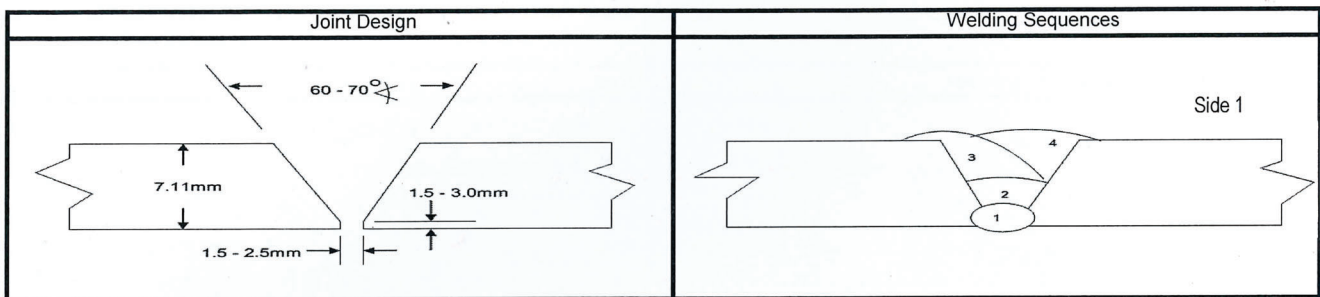


MANUFACTURER'S WELDING PROCEDURE SPECIFICATION (WPS)
BS EN ISO 15609-1:2004

Location :	<u>Shah Alam</u>	Examiner or examining body :	<u>ABS Consulting (M) Sdn Bhd</u>
WPS No :	<u>KT/WPS/SMAW/01/16</u>	Method of Preparation and Cleaning :	<u>Wire Brush & Grinding</u>
Manufacturer :	<u>Kejuruteraan Trisuria Sdn Bhd</u>	Parent Material Specification :	<u>ASTM SA 106 Gr B</u>
Welder's Name :	<u>Spencer Anak Jaweng</u>	Material Thickness (mm) :	<u>3 - 14.22</u>
Welding Process :	<u>Manual Metal Arc Welding (MMAW)</u>	Outside Diameter (mm) :	<u>>3"</u>
Joint Type :	<u>Butt Weld (BW)</u>	Welding Position :	<u>All position except PG</u>

Weld Preparation Details (Sketch)* :



Welding Details

Passes	Welding Process	Filler Ø (mm)	Electrode Classification	Amperage Range (A)	Voltage Range (V)	Typers of Current/ Polarity	Travel Speed (mm/min)	Heat Input KJ/min
Side 1								
Root	MMAW (111)	2.6	E7016	50 - 90	18 - 22	DCEN	30 - 100	1.5 - 2.5
Hot Pass	MMAW (111)	2.6	E7018	60 - 110	19 - 22	DCEP	50 - 130	1.5 - 3.0
Fill & Cap Pass	MMAW (111)	2.6/3.2	E7018	60 - 130	21 - 24	DCEP	75 - 150	1.5 - 3.0

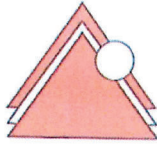
Filler Material Designation and Make :	<u>AWS A5.1 E7016 & AWS A5.1 E7018</u>	Other information *e.g. :	
Any Special Baking or Drying :	<u>150 - 200 °C for 2 hrs</u>	weaving (max. width of run) :	<u>< 15.0 mm</u>
Gas/Flux - Shielding:	<u>N/A</u>	Tungsten Electrode Type/Size :	<u>N/A</u>
Backing :	<u>N/A</u>	Distance contact tube/workpiece :	<u>N/A</u>
Gas Flow Rate - Shielding:	<u>N/A</u>	Details of Back Gouging/Backing :	<u>N/A</u>
Backing :	<u>N/A</u>		
Preheat Temperature :	<u>Ambient</u>		
Interpass Temperature :	<u>< 200°C</u>		
Post Heating :	<u>N/A</u>		
Post-Weld Heat Treatment :	<u>N/A</u>		
(Time, Temperature, Method heating and cooling rates*) :	<u>N/A</u>		

Manufacturer
 Name, date and signature : 14/4/2016
 *if required

Examiner or Test body :
 Name, date and signature



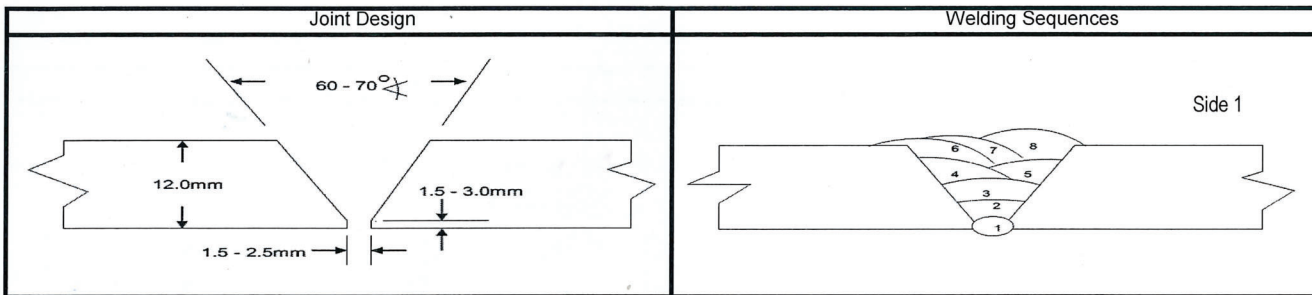
14 APR 2016



MANUFACTURER'S WELDING PROCEDURE SPECIFICATION (WPS)
BS EN ISO 15609-1:2004

Location :	<u>Shah Alam</u>	Examiner or examining body :	<u>ABS Consulting (M) Sdn Bhd</u>
WPS No :	<u>KT/WPS/SMAW/02/16</u>	Method of Preparation and Cleaning :	<u>Wire Brush & Grinding</u>
Manufacturer :	<u>Kejuruteraan Trisuria Sdn Bhd</u>	Parent Material Specification :	<u>ASTM SA 240 316L</u>
Welder's Name :	<u>Sudirman Bin Tukiman (C)</u>	Material Thickness (mm) :	<u>3 - 24</u>
Welding Process :	<u>Manual Metal Arc Welding (MMAW)</u>	Outside Diameter (mm) :	<u>>500 & >150 for PA & PC rotation</u>
Joint Type :	<u>Butt Weld (BW)</u>	Welding Position :	<u>All position except PG & J-L045</u>

Weld Preparation Details (Sketch)* :



Welding Details

Passes	Welding Process	Filler Ø (mm)	Electrode Classification	Amperage Range (A)	Voltage Range (V)	Typers of Current/ Polarity	Travel Speed (mm/min)	Heat Input KJ/min
Side 1								
Root	MMAW (111)	2,5	E316L-16	50 - 90	18 - 22	DCEP	30 - 100	< 2.5
Hot Pass	MMAW (111)	2.5	E316L-16	60 - 110	19 - 22	DCEP	50 - 130	< 2.5
Fill & Cap	MMAW (111)	2.5/3.2	E316L-16	90 - 130	21 - 24	DCEP	75 - 150	< 2.5
Pass								

Filler Material Designation and Make :	<u>ASME SFA 5.4 AWS A5.4 E316L</u>	Other information *e.g. :	<u>< 12.0 mm</u>
Any Special Baking or Drying :	<u>150 - 200 °C for 2 hrs</u>	weaving (max. width of run) :	<u>N/A</u>
Gas/Flux - Shielding :	<u>N/A</u>	Tungsten Electrode Type/Size :	<u>N/A</u>
Backing :	<u>N/A</u>	Distance contact tube/workpiece :	<u>N/A</u>
Gas Flow Rate - Shielding :	<u>N/A</u>	Details of Back Gouging/Backing :	<u>N/A</u>
Backing :	<u>N/A</u>		
Preheat Temperature :	<u>Ambient</u>		
Interpass Temperature :	<u>< 250°C</u>		

Post Heating :	<u>N/A</u>
Post-Weld Heat Treatment :	<u>N/A</u>
(Time, Temperature, Method heating and cooling rates*) :	<u>N/A</u>

Manufacturer Name, date and signature :	<u>HANGI</u> <u>14/4/2016</u> <u>[Signature]</u>	Examiner or Test body Name, date and signature :	<u>[Signature]</u>
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*if required



14 APR 2016