

[Appendix 4-1] Required Documents for Technical Review [Cylinders, etc.]

[Appendix 3-1] and [Appendix 3-2] : refer to 'Factory Registration Guide' PDF file

1. General

1.1. Company profile : Name of company and representative, factory address, products etc.

1.2. Qualification : Certificates for Manufacturing Codes (Standards) and Quality (where applicable)

1.3. Manufacturing items and process drawings for application :

The classification, manufacturing codes (standards), and process drawing which will be registered (see [Appendix 3-1])

1.4. Sub-Contractor : If the forming, mechanical test, heat treatment and NDT are conducted by sub-contractor, fill out the following table

<Example of Sub-Contractors status>

Process of Sub-contractor	Company name	CEO name	Address	Distance from Your Company (Km)	Note
Forming	<i>AA Forming</i>	<i>AA.</i>	<i>1234 aaa St.</i>	<i>11</i>	<i>head, shell</i>
	<i>BB Forging</i>	<i>BB.</i>	<i>5678 bbb St.</i>	<i>22</i>	<i>except flange and boss</i>
	<i>CC Casting</i>	<i>CC</i>	<i>9999 ccc St.</i>	<i>33</i>	<i>casting</i>
	<i>DD Bending</i>	<i>DD</i>	<i>3838 ddd St.</i>	<i>44</i>	<i>Bending(U-Tube)</i>
Mechanical Test	<i>AA Mechanical Testing</i>	<i>AA</i>	<i>1111 AA St.</i>	<i>44</i>	<i>tensile, bending, impact, hardness</i>
Heat treatment	<i>BB Heat-Treatment Co.</i>	<i>BB</i>	<i>2222 BB St.</i>	<i>55</i>	<i>furnace, local</i>
NDT	<i>CC NDE Co.</i>	<i>CC</i>	<i>3333 CC St.</i>	<i>66</i>	<i>RT, UT, MT, PT etc</i>

* Required documents for sub-contractor registered in KGS can be replaced with [Overseas supplier registration Certificate].

2. Manufacturing & Inspection Equipment list

- A list of required equipment is prepared by referring to the **2. Manufacturing Facility Standard of each KGS CODE** according to the classification of **[Appendix 3-1]**

Example) In the case of Aluminum alloy Seamless Cylinder(spinning)

- 1) **[Appendix 3-1]** It corresponds to **category 4** and the corresponding code number is **AC212**
- 2) Prepared with reference to **2. Manufacturing Facility Standard** of **KGS AC212**
- 3) In the case of sub-contractor's items, write down name and equipments of the sub-contractor

2. Manufacturing Installation Standard

2.1 Manufacturing Facilities

A person who intends to manufacture cylinders shall be furnished with the following manufacturing facilities (restrictive to the facilities required for the cylinders to be

<2.1 Example of Manufacturing Equipment preparation>

Number	Equipment Classification	Name of Equipment	Specification	Quantity	Note*
(1)	Forging equipments or forming equipments	Forming Press Pipe Cutting Machine	30Ton Max $\Phi 500$	3 2	
(2)	Lower part jointing equipments	Pre-Heating Machine Spinning Machine	1300 $\pm$ 50 $^{\circ}$ C Max $\Phi 500$ * L 1300mm	2 2	
(3)	Heat treatment furnaces and automatically record temperatures in the furnaces	Quenching Furnace Tempering Furnace Temp. Recorder	1300 $^{\circ}$, 6000*2000*4000 500 $^{\circ}$ C, 6000*2000*4000 Thermocouple * 12	1 1 1	
(4)	Cleaning equipments	Acid Cleaning Booth	2000*1000*2000	2	
(5)	Shot blasting equipments and painting equipments	Shot Blasting Room Painting Room	5000*2000*7000 5000*2000*7000	1 1	sub-contractor Company;AAA
(6)	Valve attaching and detaching equipments	Valve Assembly Line	Torque Meter(0~300N·m)	5	
(7)	Cylinder internal dryers and vacuum suction equipments	Drying System Vacuum Pump	- 500W, 70Torr	1 1	
(8)	Other equipments and apparatuses necessary for manufacturing of cylinders	Stamping Machine Crane	- 50Ton	1 3	

<2.2 Example of Inspection Equipment preparation>

Number	Equipment Classification	Name of Equipment	Specification	Quantity	Note*
(1)	Pressure-proof test systems	Hydrostatic Testing Machine	Max 50MPa	8	
(2)	Gas tightness test systems	Air-Tightness Testing Machine	Max 30MPa	8	
(3)	Thickness gauges such as ultrasonic thickness gauges, thread gauges, vernier calipers, etc.	Ultrasonic Thickness Meter Plug & Ring Gauge Calipers Height Gauge Coating Thickness Gauge	0~50(0.01)mm M28 * 1.5 etc. 0~300(0.01)mm etc. 0~700(0.01)mm 0~1250(0.1) μ m	4 many many 1 1	
(4)	Balances	Electronic Weight	0~200(0.01)kg	1	
(5)	Cylinder accessory performance testers	-	-	-	N/A
(6)	Cylinder overturning stands	-	-	-	N/A
(7)	Internal lighting equipments	Internal Inspection Light	-	5	
(8)	Universal material testing machines	Universal Testing Machine	1000kN	3	
(9)	Valve torque meters	Torque Meter	0~300(1)N·m	4	
(10)	Standard pressure gauges	Standard Pressure Gauge	0~50(0.1)MPa 0~30(0.1)MPa	5 5	
(11)	Standard temperature gauges	Standard Temperature Meter	-30~100(0.1) $^{\circ}$ C	5	
(12)	Other equipments and apparatuses necessary for inspection of cylinders	Flattening Testing Machine Impact Testing Machine NDE Cycling Testing Machine Burst Testing Machine	- ASTM E23 UT, MT, PT Max 50MPa Max 100MPa	1 1 each 1 1 1	

*If there are not applicable or using sub-contractor, please write that on 'Note'tab.

3. Quality Control Manual & Procedure

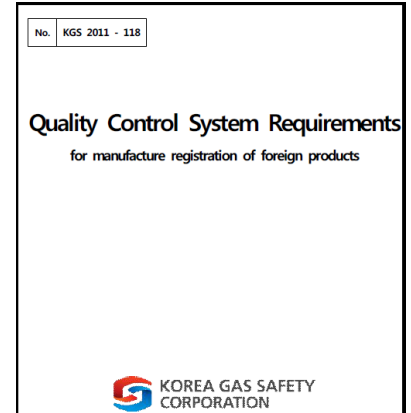
3.1. Quality Control Manual :

Should include all the

[Quality Control System Requirements for manufacture registration of foreign products]

3.2. Procedures :

- In the case of sub-contractor's products, procedures of the sub-contractor can be used
- Limited to the applicable process during manufacturing and inspection
 - 1) Material Control(ex; receiving or incoming inspection)
 - 2) Welding
 - 3) Fabrication(Heads, Shell, and so on)
 - 4) Non-Destructive Testing(Examination)
 - 5) Heat-Treatment
 - 6) Pressure-Proof Test
 - 7) other tests or examination required on standards
 - 8) Calibration
 - 9) Marking, Stamping



4. Strength Calculation and Drawings for Cylinders

- When applying in a foreign standard, it must be only documents recognized by the relevant authorized inspection agency
- For items without strength calculation, it can be submitted as other documents such as thickness calculation formula

5. Application Form for Technical Review

(with original signature by representative of the factory)

[Appendix 4-2] Required Documents for Technical Review [Gas Appliances, etc.]

1. General

1.1 Company profile

- Company, CEO, Address, Phone number etc.
- Manufactured Product Status

1.2 Company Registration Status

- Manufacturing Standard : KGS AB 338, KGS AA 336 etc.
- Quality Certificate : ISO 9001 etc.

1.3 Application Items (Type)

- Item : Commercial Gas Burning Appliances (Refer to [Appendix 3-2] for product name to apply)

1.4 Various layouts

- Workplace layout, manufacturing facility layout, inspection facility layout etc.

1.5 Manufacturing process flow chart

1.6 Sub-contractor status

: If the main parts, performance test, forming, non-destructive test, mechanical test, etc. are performed by sub-contractors, the details should be described.

(※ The table below is an example of preparation and should be appropriate for the manufacturing process and inspection method required by the standard for each product)

<Example of Sub-Contractors status >

No.	Process Classification	Company Name	CEO	Address	Name of Process (Name of Parts)	Note(2)*
1	Main parts*	<u>AA. Ltd</u>	<u>AA</u>	<u>1234 aaa ST</u>	Valve body, Cock, Regulator, Burner, Nozzle, Chimney etc	
2	Performance test	<u>BB. Ltd</u>	<u>BB</u>	<u>1234 bbb ST</u>	Durability, Heat resistance, EMC etc	
3	Forming (Cast, Forging)	<u>CC Casting</u>	<u>CC</u>	<u>1234 ccc ST</u>	Valve body, Cover, Burner etc	
4	NDT	<u>DD NDE Co</u>	<u>DD</u>	<u>1234 ddd ST</u>	RT. MT. PT. UT	
5	Mechanical test	<u>EE Mechanical Testing</u>	<u>EE</u>	<u>1234 eee ST</u>	Tensile, Bending, Impact	
6	etc	-	-	-	-	

* (1) **Main Parts** : Parts that significantly affect quality of gas appliances

(2) **Note** : If the applicable product is a certified product (KS, CE), or registered to [Overseas Supplier Quality Registration], enter the certification details, etc.

※ Required documents for sub-contractor registered in KGS can be replaced with [Overseas supplier registration Certificate].

2. Manufacturing and Inspection Equipment Status

2.1 Manufacturing Equipment Status

- Fill out the form below to reflect **the 2.1 manufacturing facilities of each KGS CODE** of the product being manufactured.

(※ The form below is an **example of preparation** and should be appropriate for the manufacturing equipment required by the standard for each applicable product)

<Examples of manufacturing facilities>

No.	Equipment Classification	Equipment Name	Equipment Spec	Quantity	Note
1	Manufacturing Equipment	Perforator	30Ton Max Φ500	1	
		Press	100Ton	2	
		Pipe Bending M/C	MaxΦ500 30Ton	3	
		Cutting M/C	30Ton	4	
		Forming Equipment	CASTING/FORGING	1	Using Sub-contractor
		Etc			
2	Polishing/Painting Equipment	Polishing Booth	2000*2000*3000mm	1	
		Painting Booth	2000*2000*3000mm	2	
		Etc			
3	Washing Equipment	Ultrasonic Washing Equipment	1000*1000*500mm	1	Using Sub-contractor
		Pneumatic Washing Equipment	1000*1000*500mm	2	
		Hydraulic Washing Equipment	1000*1000*500mm	3	
		Etc			
4	Assembly Equipment	Welding M/C	SMAW / GTAW(TIG)	1	
		Power Assembly Jig	-	2	
		Assembly Workbench (Line)	-	2	
		Air Driver, Air Wrench	-	1	
		Air Compressor	Max 1MPa	1	
		Etc	-		
5	Other facilities/ equipment				

2.2 Inspection Equipment Status

- Fill out the form below to reflect **the 2.2 inspection facilities of each KGS CODE** of the product being manufactured.

(※ The form below is an **example of preparation** and should be appropriate for the inspection equipment required by the standard for each applicable product)

Ex) In case of manufacturing of Commercial Gas Burning Appliances : Applicable code KGS AB 338 2.2 Inspection equipment standards and 3. Manufacturing technology standards

<Example of creating inspection equipment>

No.	Equipment Classification	Equipment Name	Equipment Spec	Quantity	Note*
1	Dimension Measuring Equipments	Vernier Calipers	0~300mm	1	Self
		Micro Meter	0~50mm	2	
		Screw Gauge	M8* 1.25	3	
		Pin Gauge	1.10~1.70mm	4	
		Etc			
2	Material Testing Equipments	Gas Resistance testing Equipment (Constant temperature bath, precision scale, etc.)	CH ₄ , C ₃ H ₈	1	
		Corrosion performance test equipment (Salt spray test facility)	500*500*1000mm	1	Contract of Equipments
		Heat resistance performance measuring equipment (Electric Furnace)	500*500*500mm Max 2000°C	1	
		Etc			
3	Performance Testing Equipments	Pressure test equipment (pressurization device, pressure gauge, compressor etc.)	Max 50MPa	1	
		Gas tightness equipment (air compressor, pressure gauge, gas leak detector)	Max 30MPa(kPa)	1	
		Gas consumption measurement equipment (Pressure gauge, thermometer, gas meter, etc.)	50kPa 0~500°C 5m ³ /h	1	
		Surface temperature measurement equipment (Surface thermometer)	-30~500°C	1	
		CO/CO ₂ analyzers	0~10,000ppm	1	
		Insulation resistance testers	0~2000V 0~ MΩ	1	
		Withstand voltage testers	0~2000V	1	
		Leakage current	0~100mA	1	
		Power consumption watt meters	0~100W	1	
		Torque meter	0~300N·m	1	
		Electromagnetic compatibility	-	1	Authorized inspection agency
		Fire safety device performance (timer)	-	1	
		Etc		1	
4	Safety device operation test Equipments	Backwind prevention device	-	1	
		Overheating prevention device	0~300°C	1	
		Etc			
5	Durability test Equipments	Valve durability tester	10~20/min	1	
		Vibration resistance tester	10~20/min	1	
		Etc			
6	Test gas supply Equipments	LNG supply equipment	LNG SUPPLY LINE	1	
		LPG supply equipment	LPG VESSEL	1	
7	Other necessary inspection Equipments	AAA			
		BBB			

*Marking by divide into Itself, Authorized inspection agency or Equipment rental(equipment contract) according to the equipment name for each process

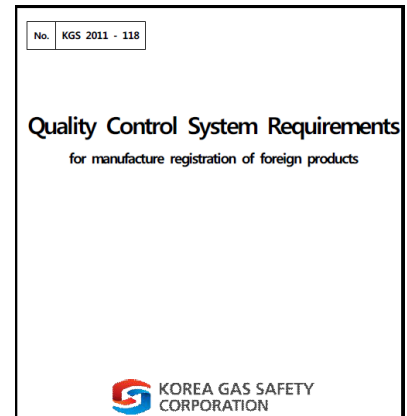
3. Quality Control Manual and Procedure

3.1. **Quality Control Manual** : Should include all the **[Quality Control System Requirements for manufacture registration of foreign products]**

1. Quality Control System
2. Management responsibility
3. Resource Management
4. Product Realization
5. Measurement analysis and improvement

3.2 Procedure

- Limited to the applicable process during manufacturing and inspection
- 1. Material Management(Incoming Inspection)
- 2. Welding
- 3. Forming(Valve Body, Cover. etc)
- 4. NDE
- 5. Heat Treatment
- 6. Pressure Test
- 7. Test, Inspection Procedure Management (Requirements by manufacturing standards)
- 8. Calibration of measuring and testing equipment
- 9. Product labeling (nameplate, etc.)



4. Product and parts drawings

5. Thickness calculation (Applicable to Valves for pipes only)

6. Product User Manual, Brochure (Catalog)

7. Application form for Technical Review (CEO signature needed)