

# PRE-QUALIFICATION



[www.hsvvalve.com](http://www.hsvvalve.com)

**HS** HS VALVE CO., LTD  
SINCE 1987

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# Health, Safety and Environment

## ● HSE POLICY

In the area of HSE management, the top priority in all business activities is "Humanism", with respect for human beings.

We will plan, do and check all activities to monitor, implement and enhance of HSE management system.

We actively seek and use our customer's feedback to enhance continuous improvement in our HSE practices.

The health and safety of all employees is of prime importance to HS VALVE CO., LTD.

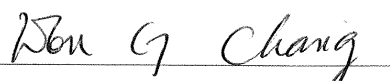
We wish to ensure that the staff is provided with a safe working environment.

Our HSE policy is implemented through the company's strategies, action plans, management commitment and loyal & active employee support.

We carry out the following activities in order to :

- a. To maintain the highest practically achievable standards of safety, occupational health and environmental protection.
- b. To improve continuously on accident and incident prevention by pre-planning, implementation of safety procedures.
- c. To create the necessary safety awareness amongst all staff through training and supervision.
- d. To protect the environment(on land and at sea) from accidental contamination and damage.
- e. Minimize the environmental impact of our operations by conserving natural resources, eliminating waste, reusing and recycling materials, and responsibly managing energy use;

President & C.E.O



## Greetings

Ever since our foundation in 1987, we have produced and supplied various pipeline valves.

As Korea's largest general valve maker, we have constantly developed new products from small-scale circular valves, large-scale circular valves for chemistry, and plant-type valves to achieve high additional value business and quality upgrades.

Therefore, we have acquired international certifications such as KS, EM, ISO, API, cUL, Fire Test and CE by developing and patenting non-conductive ball valves for the first time throughout the world.

We are always putting our best effort to maintain non-defect quality and to observe our quality management idea to follow the requirements of ISO-9001 and API Q1 & 6D, PED as well as the customers and to earn the trusts of our customers with superior qualities.


Also, all employees unify to achieve quality management, production of high quality products for customer satisfaction and the technological improvement of all employees.

Therefore, we are attempting to satisfy the needs of our customers by achieving reasonable quality and prices for the international society and to contribute to the development of Korea's economies.

Following our 21st century visions of Global Marketing and Customer First, we will lead the future as a world-class general valve maker and a more advanced specialist of valves.

**W. G. Chang / President**

# Company Profile

Company Name		HS VALVE CO., LTD	
Brand			
President		MR. Won_Gyu, Chang	
Address	Head Office & Factory I	2003-33, Bisan7-dong, Seo-gu, Daegu, South Korea Tel : 82-53-353-5789 Fax : 82-53-352-1179	
	Factory II	1187-1, Sinsang-ri, Jillyang-eup, Gyeongsan-si, Gyeongsangbuk-do, South Korea Tel : 82-53-857-5789 Fax : 82-53-857-5785	
	Seoul Office	Tel : 82-2-895-5352 Fax : 82-2-895-5352	
	Busan Office	Tel : 82-51-816-5093 Fax : 82-51-816-5095	
	Gwangju Office	Tel : 82-62-946-2247 Fax : 82-62-946-2249	
E-mail	<a href="mailto:master@hsvalve.com">master@hsvalve.com</a>	Homepage	<a href="http://www.hsvalve.com">http://www.hsvalve.com</a>
Output		USD 50 million (Yr 2008)	
Bank		Bank of Daegu	
Employed		200	



## Brief History

### 1987-1990

- 1987.03 Established HS VALVE CO.,LTD.
- 1987.04 HS VALVE CO. LTD incorporated.

### 1991-2000

- 1997.11 Received president's award
- 1998.09 Designated prospective medium size from daegu bank
- 1999.03 **Acquired ISO9001, API-6D**
- 1999.09 Venture enterprise
- 1999.09 Acquired cUL(SA12071-210999)
- 1999.10 Received president's award
- 1999.11 Received mayor's award
- 2000.02 Designated excellent technical competition enterprise
- 2000.03 **Listed in KOSDAQ**

### 2001-2009

- 2001.03 **Acquired fire tests for ball valve(API 607)**
- 2001.10 Superiority technology enterprise selection technique  
- Korea Technology Credit Guarantee Fund -
- 2001.11 Received president's award
- 2003.03 Awarded a model taxpayer
- 2003.06 Received a men of merit's award
- 2004.01 **Acquired CE(CE0036-Tuv Sudddeutschland)**
- 2004.07 Selected of World Leading SME appointed by Gyeongsangbuk-do
- 2004.12 **Acquired fire tests for ball valve(API 607, API 6FA, BS 6755)**
- 2006.05 Acquired ISO 9001:2000[0588] - API(American Petroleum Institute)
- 2006.05 Acquired ISO/TS 29001[TS-0125] - API(American Petroleum Institute)
- 2006.05 Acquired API Spec Q1[Q1-0319] - API(American Petroleum Institute)
- 2006.11 Awarded the Order of Industrial Service Merit of Silver Tower
- 2007.12 The head office building Purchase/Move
- 2008.09 **Acquired GOST R, HYGIENIC**
- 2009.06 **Acquired GOST RTN**

# Financial Statement

## ● FINANCIAL STATUS

The 22st(Present) From 01.April. 2008 To 31. May. 2009		
	Accounts	Amounts of money
Balance Sheet (Unit:won)	<b>Assets</b>	
	I .Current Assets	26,486,583,476
	II .Non-current Assets	9,167,264,373
	<b>Total Assets</b>	<b>35,653,847,849</b>
	<b>Liabilities</b>	
	I .Current Liabilities	7,196,319,858
	II .Non-current Liabilities	6,390,608,965
	<b>Total Liabilities</b>	<b>13,586,928,823</b>
	<b>Stockholders Equity</b>	
	I . Capital Stock	3,640,000,000
	II .Capital Surplus	1,973,288,139
	III.Retained Earnings	17,758,345,123
	IV.Capital Adjustments	-1,304,714,236
	V.Total Stockholders Equity	<b>22,066,919,026</b>
	<b>Total Liabilities and Stockholders Equity</b>	<b>35,653,847,849</b>
Income Statement (Unit:won)	Accounts	Amounts of money
	I .Sales Revenue	50,287,166,009
	II .Costs of Goods and Services Sold	38,628,292,743
	III.Gross Profit or Loss	11,658,873,266
	IV.Selling and Administrative Expenses	7,170,393,477
	V.Operating Income or Loss	4,488,479,789
	VI.Non-Operating Revenues	502,195,523
	VII.Non-Operating Expenses	623,640,041
	VIII.Income Before Income Tax Expenses	4,367,035,271
	IX.Income Taxes Expenses	1,297,619,611
	<b>X.Net Income or Loss</b>	<b>3,069,415,660</b>

## ● SALES REVENUE

Years	2006	2007	2008
Sales Revenue (Unit:won)	35,797,386,372	43,344,747,075	50,287,166,009

유효기간 2009-09-22 ~ 2010-09-21

# 기업 신용 등급

## 기업 프로필

기업명	(주)화성
대표자	장원규 외 1명
법인등록번호	170111-0030958
사업자등록번호	503-01-08664
본사주소	(703-040) 대구 서구 비산동2003-27
업종	(C29133) 테, 발브 및 유사장치 제조업
기업형태	중기업

## 신용등급

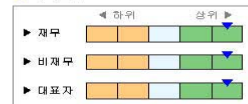
# A+

평가일자 : 2009-09-21

## 신용등급 이력

평가기준일	재무기준일	신용등급	변동
2009-09-21	2009-03-31	A+	—
2009-04-02	2008-03-31	A+	—
2007-08-07	2007-03-31	A+	↻

## 평가요소



## 신용등급 분포현황



## 평가의견

(주)화성은 1987년 04월 대구시 서구 비산동 2003-33번지에서 가스충분분 제조 등을 목적으로 한 대표이사 장병호에 의해 남일자본금 59억만 원으로 설립된 후, 2000년 03월 기업공개하였으며, 2000년 11월 대표이사 장원규 취임 및 주주회의 차분한 증가율 거쳐 2004년 03월 3,640억만 원으로 자본금 증가하여 현재까지 사업영위종단 2009년 03월말(3월말 결산법인) 현재 총자산 35,653백만원, 상시종업원 190명 규모의 중소 제조업체로 코스닥증권시장 상장기업(2000년 3월 상장)임.

등사는 최근 3개년 매출액 꾸준히 상승하고 있으며 영업이익률도 증가하고 있고 순이익이 누적됨에 따라 자기자본 증가하고, 차입금 감소하여 부채비율도 업계평균보다 크게 낮은 수준으로 양호한 재무안정성을 보유하고 있음. 다만, 등사는 매출채권, 재고자산이 유동자산의 93%이상 차지하고 있는 내 경기회계 및 환경변화에 따라 대손 및 재고자산 평가관련 손실이 발생할 가능성 있는점 등을 감안하여 'A+' 등급으로 결정함.

## I. 신용평가 요약

### 1. 주요 현황 및 재무

#### 주요 주주 및 관계회사 현황

주요 주주	(%)	관계회사	(%)
경병호	16.3	보선방등공업사	0.0
이승자(妻)	1.9	HS 테크(주)	0.0
장원규(子)	19.3		

#### 주요 거래처

주요 구매처	(%)	주요판매처	(%)
HS 테크(주)	21.35	에스케이비엔텍(주)	1.58
(주)중앙 대구영업소	9.39	에너브산업	4.89
삼영테크	1.12	부원기업(주)	1.26

#### 주요 재무상황

구 분	2007.03.31	2008.03.31	2009.03.31
총자산	26,781	32,352	35,653
부채총계	8,883	12,249	13,586
자본총계	17,898	20,102	22,066
매출액	35,797	43,344	50,287
영업이익	2,324	3,164	4,488
순이익	1,633	2,404	3,069

#### 주요 재무비율

구 분	2007.03.31	2008.03.31	2009.03.31
영업이익률	6.49	7.29	8.92
자기자본이익률	9.56	12.65	14.55
부채비율	49.63	60.93	61.57
매출채권회전률	3.58	3.63	3.75
매출액증가율	12.46	21.08	16.01
총자산증가율	17.11	20.80	10.20

#### 요약 현금흐름분석

구 분	2007.03.31	2008.03.31	2009.03.31
현금영업이익	2,306	1,657	6,285
경상활동후 현금흐름	1,030	1,408	4,087
투자활동후 현금흐름	556	-1,896	-2,240
재무활동후 현금흐름	556	-336	-73

#### 현금흐름등급

CR-1

현금흐름상충능력이 매우 양호하며 안정적임

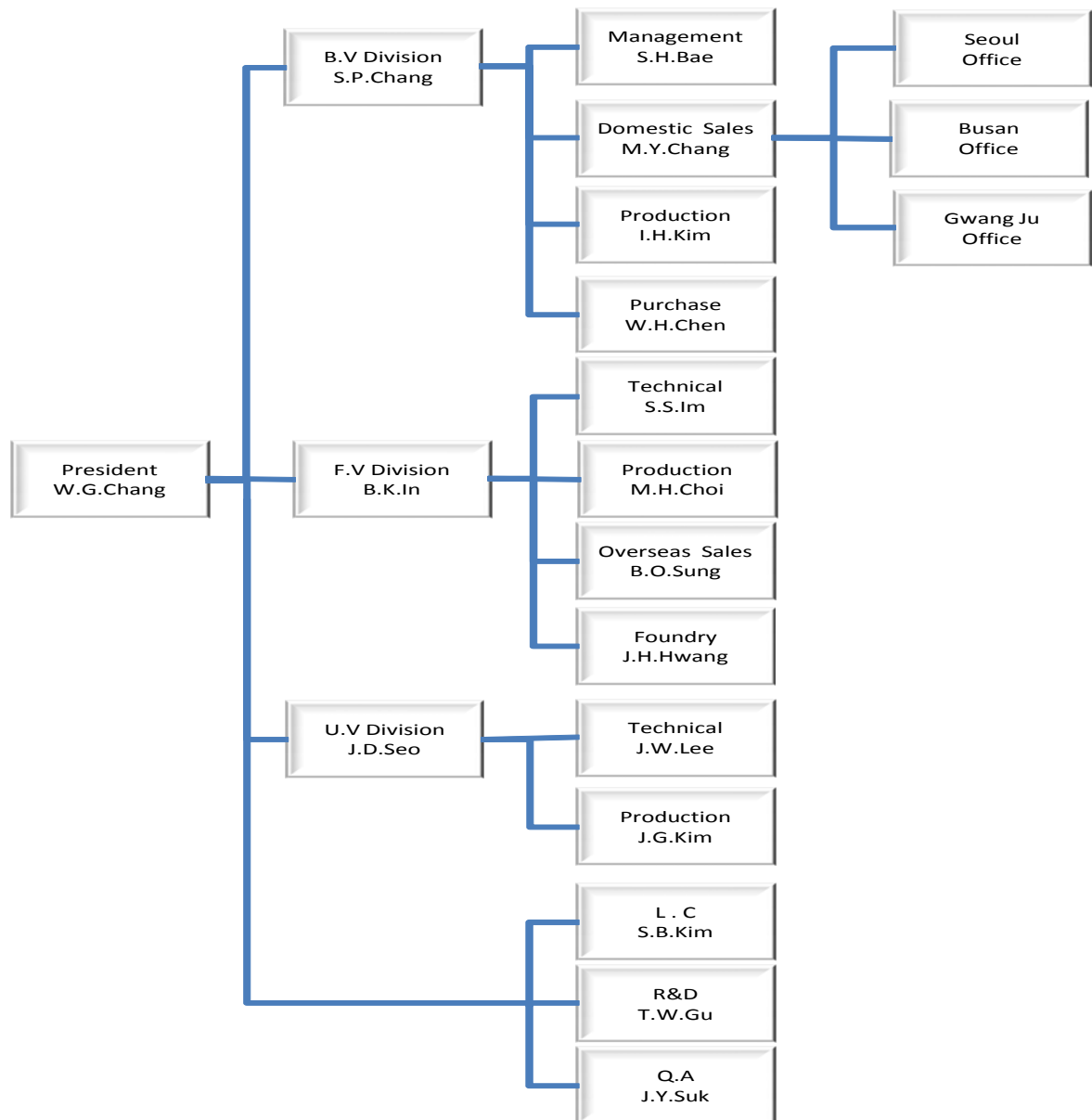
재무기준일 : 2009-03-31      등급내용 : 매우양호 (CR1: 매우양호 ~ CR6: 미흡)

#### 신용정보 요약

구 분	최종발생일자	등록건수(내역)	등록금액(천원)
채무부이행	기업		
	대표자		
주요 관련정보	소송정보		
	류폐업		
당좌거래경지			



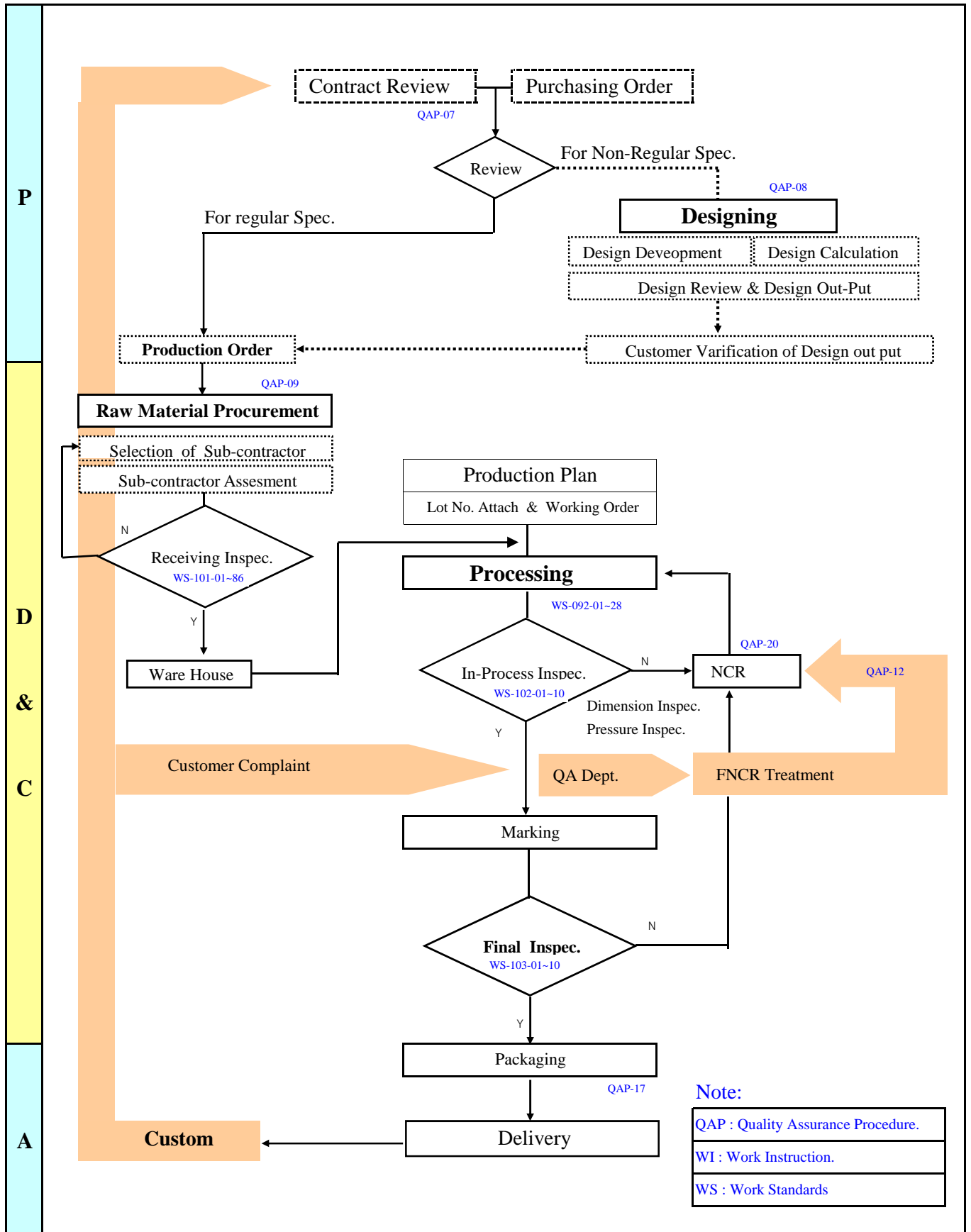
# Organization Chart



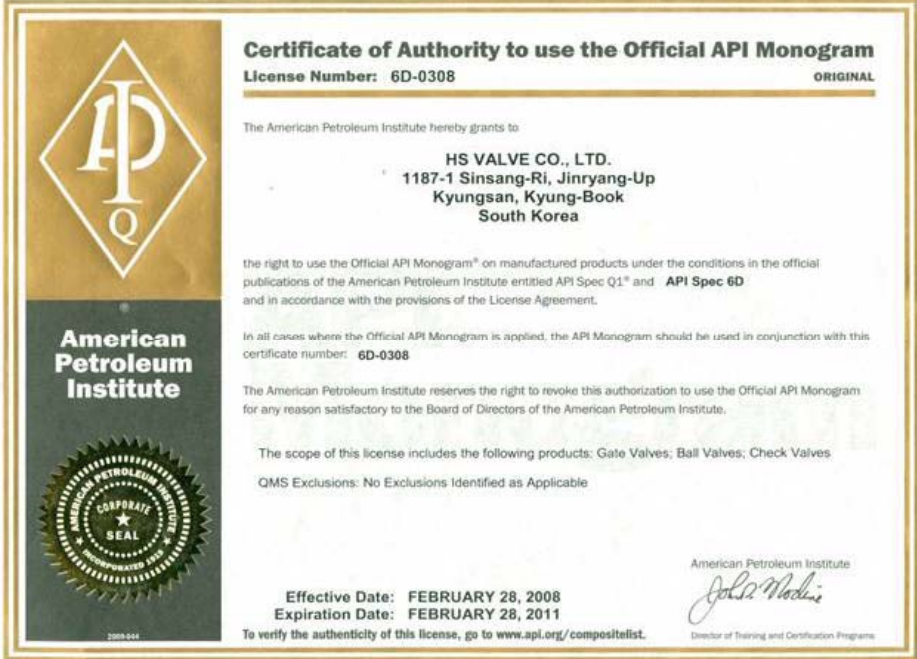
# Manpower Status

Division	Administrator	Technician	QA/QC	Engineer	Total
Head office & Fatory I	18	11	4	105	138
Fatory II	4	4	5	35	48
Total	22	15	9	140	186

# Quality System



# Certificates



**Certificate of Authority to use the Official API Monogram**  
**License Number: 6D-0308** **ORIGINAL**

The American Petroleum Institute hereby grants to

**HS VALVE CO., LTD.**  
**1187-1 Sinsang-Ri, Jinryang-Up**  
**Kyungsan, Kyung-Book**  
**South Korea**

the right to use the Official API Monogram® on manufactured products under the conditions in the official publications of the American Petroleum Institute entitled API Spec Q1® and **API Spec 6D** and in accordance with the provisions of the License Agreement.

In all cases where the Official API Monogram is applied, the API Monogram should be used in conjunction with this certificate number: **6D-0308**

The American Petroleum Institute reserves the right to revoke this authorization to use the Official API Monogram for any reason satisfactory to the Board of Directors of the American Petroleum Institute.


The scope of this license includes the following products: Gate Valves; Ball Valves; Check Valves

QMS Exclusions: No Exclusions Identified as Applicable

American Petroleum Institute  
*John S. Modica*  
 Director of Training and Certification Programs

**Effective Date: FEBRUARY 28, 2008**  
**Expiration Date: FEBRUARY 28, 2011**  
 To verify the authenticity of this license, go to [www.api.org/compestelists](http://www.api.org/compestelists).

**API 6D - 0308**



energy **API** REGISTRATION NO. **Q1-0319**

**Certificate of Registration**

The American Petroleum Institute certifies that the quality management system of

**HS VALVE CO., LTD.**  
**1187-1 Sinsang-Ri, Jinryang-Up**  
**Kyungsan, Kyung-Book**  
**South Korea**

has been assessed by the American Petroleum Institute and found to be in conformance with the following:

**API Specification Q1**

The scope of this registration and the approved quality management system applies to the:

**Design, Manufacture and Service of Industrial and API Pipeline Valves**

API approves the organization's justification for excluding:

**No Exclusions Identified as Applicable**

**Effective Date: June 30, 2008**  
**Expiration Date: February 28, 2011**  
**Registered Since: May 22, 2006**

*Gerardo Oliva*  
 Manager of Operations, APIQR

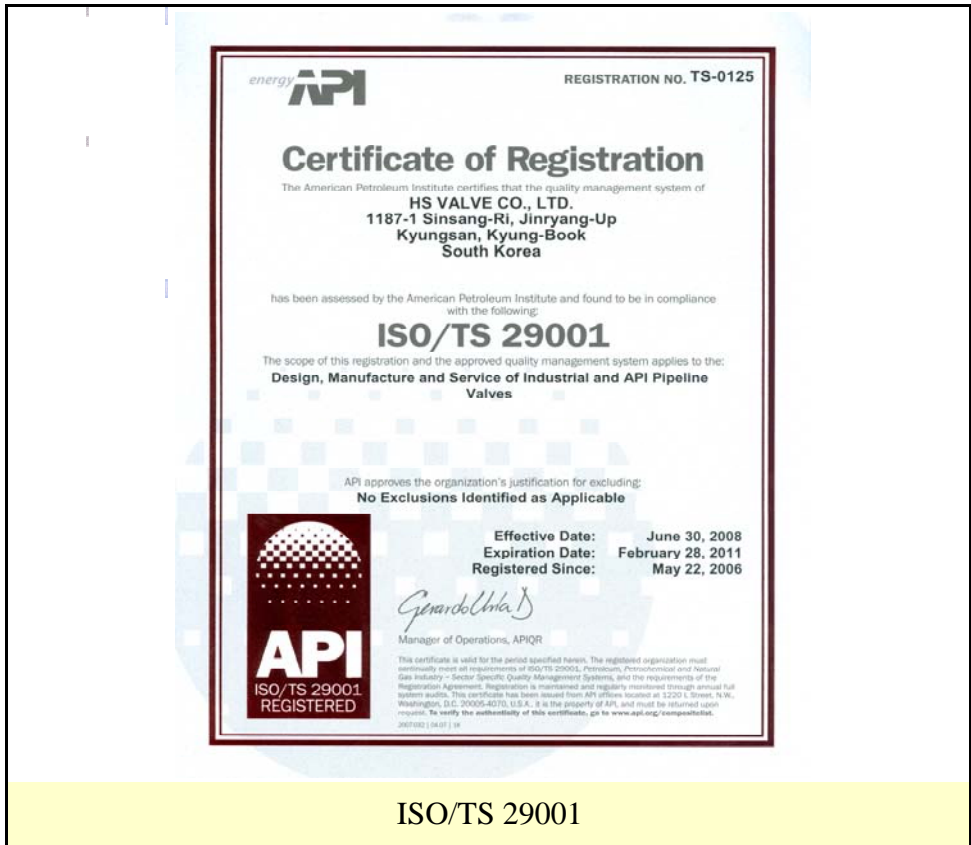
**Q1**  
**API Spec Q1**  
**Registered**

This certificate is valid for the period specified herein. The registered organization must continually meet all requirements of API Spec Q1, Specification for Quality Programs for the Petroleum, Petrochemical and Natural Gas Industry, and the requirements of the Registration Agreement. Registration is maintained and regularly monitored through annual full system audits. This certificate has been issued from API offices located at 1220 L Street, N.W., Washington, D.C. 20005-4070, U.S.A., it is the property of API and must be returned upon request. To verify the authenticity of this certificate, go to [www.api.org/compestelists](http://www.api.org/compestelists).

**API Specification Q1**



ISO 9001:2000



ISO/TS 29001

ZERTIFIKAT ◆ CERTIFICATE ◆ 證書 ◆ CERTIFICADO ◆ CERTIFIKAT ◆ CERTIFICADO ◆ CERTIFICAT



## CERTIFICATE

The Certification Body of  
TÜV SÜD Industrie Service GmbH  
(a Pressure Equipment Directive Notified Body)  
certifies that

HS VALVE CO., LTD.

1187-1 Sinsang-Ri, Jinryang-Up, Gyeongsan-Si,  
Gyeongsangbook-Do, Korea

has implemented, operates and maintains a  
quality assurance system as described in the Pressure Equipment  
Directive (97/23/EC) Annex III, Module H

for the scope of

Design, Development and Manufacturing of  
Industrial Valves  
(Ball Valve, Gate Valve, Check Valve and Globe Valve)

Evidence that the quality assurance system satisfies the PED  
requirements is documented in the Assessment Report No.:  
IS-DDB-KOR-07-02-002(H)-01.

The manufacturer is authorized to provide the pressure equipment  
manufactured within the scope of the assessed quality assurance system  
with the below listed Notified Body Identification Number (following the  
product's CE marking as illustrated):

CE 0036

Certificate No.: DGR-0036-QS-549-07  
valid until February 23, 2010


Mannheim, February 24, 2007

TÜV SÜD Industrie Service GmbH Tel.: +49 621 39 52 33  
Dudenstraße 28 Fax: +49 89 5155 1090  
68167 Mannheim e-mail: gerhart.buendel@tuv-sued.de  
Germany

Notified Body No.: 0036  
Member of  
CONFEDERATION EUROPEEN  
**CEOC**  
D'ORGANISMES DE CONTROLE


TÜV SÜD Industry Services - PED-QA-Certification Body - 68167 Mannheim - Germany

CE 0036



VELOSI  
KOREA

THE WORLDWIDE INSPECTION, EXPEDITING AND PROCUREMENT SPECIALISTS



WAY


We Are You

### FIRE TEST CERTIFICATE


Certification No. : FTC071201-BV08RENEWAL

This is to certify that the following materials have been inspected on random basis by Velosi Korea and found to be satisfactory in the Fire Test in accordance with API 6D, twentieth edition / API 607, fifth edition / ISO 10497 : 2004(E), Second edition.

Manufacturer	: HS VALVE CO., LTD.
Location	: #1187-1, Sinsang-Ri, Jinryang-Eup, Kyungsang City, Kyungsangbuk-Do, Korea
Product	: Ball Valve
Material Description	: Body - Cap - A216-WCB, A352-LCB & LCC, A351-CF8, CF8M & CF3M, A105, A350-LF2, A182-F304, F316 & F316L, A351-CF8, CF8M & CF3M, A276-304, 316 & 316L
	: Ball - Stem - A351-CF8, CF8M & CF3M, A276-304, 316 & 316L
	: Seat - RTFE
	: Coil Spring - INCONEL - X750 (8")
	: Flat Spring - Tool Steel + ENP Plating (2" & 4")
	: O-Ring - VITON, HSN
Type of End	: Raised Face Flange, Ring Type Joint, Butt Weld
Operation Method	: Lever / Gear
Size of Tested	: 2", 4", 8"
Class of Tested	: #150
Other Valves Qualified:	: (2") - 2" and below, 2-1/2", 3", 4" (4") - 4", 5", 6", 8" (8") - 8" and larger
According to Size	
Other Valves Qualified:	: #150 - #150, #300
Pressure Ratings	
Date of Test	: from November 12, 2004 to November 27, 2004
Validity	: 1st of December 2007 - 30th of November 2010



Velosi International - Korea  
Date : 1st of December 2007



Hee-Hyun, Kim  
President

The issue of this certificate shall not relieve the Supplier or Manufacturer from any responsibility or such guarantees as may be arranged, nor no interpreted so as in any way to imply acceptance of such goods. Neither shall Velosi Korea be held responsible in any way whatsoever for the technical accuracy and contents of the purchase order.

<p>VELOSI KOREA Seoul Office #02-2696-1000 Seoul-Korea</p>	<p>VELOSI EUROPE UK Office</p>	<p>VELOSI AMERICA USA Office</p>	<p>VELOSI CERTIFICATION UAE Office Kuwait Office Oman Office</p>	<p>VELOSI MALAYSIA Malaysia Office Singapore Office</p>
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Fire Test Certificate (API 607, API 6FA, BS 6755)

**СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р  
ГОССТАНДАРТ РОССИИ**

**СЕРТИФИКАТ СООТВЕТСТВИЯ**

№ РОСС КРАИ50.В13106  
Срок действия с 23.09.2008 по 22.09.2011  
**7993307**

**ОРГАН ПО СЕРТИФИКАЦИИ** рег. № РОСС RU.0001.11АН50  
ОС ПРОДУКЦИИ АВТОНОМНАЯ НЕКОММЕРЧЕСКАЯ ОРГАНИЗАЦИЯ "АКАДЕММАШ"  
РФ, 115404, г. Москва, П-м Рахматова, 2, оф. 213, тел. (495) 775-76-66, факс (495) 775-76-66,  
www.akademash.ru, e-mail: info@akademash.ru

**ПРОДУКЦИЯ** Запорная арматура торговой марки «HS Valve» (см. приложение  
на 1 листе, бланк № 1911757)  
Серийный выпуск

код ОК 005 (ОКП):  
**37 4220**

**СООТВЕТСТВУЕТ ТРЕБОВАНИЯМ НОРМАТИВНЫХ ДОКУМЕНТОВ**  
ГОСТ 12.2.002-91; ГОСТ 256-80; ГОСТ 12.2.062-81; ГОСТ 2544-93; ГОСТ 28343-89  
(за искл. п.р. 2, 3)


код ТН ВЭД, Россия:  
**8481 80 109 0**

**ИЗГОТОВИТЕЛЬ** "HS Valve Co., Ltd."  
1187-1 Sinsang-Ri, Jiryang-Up, Gyeongsang-Si, Gyeongsangbook-Do, Korea, Республика Корея

**СЕРТИФИКАТ ВЫДАН** "HS Valve Co., Ltd."  
1187-1 Sinsang-Ri, Jiryang-Up, Gyeongsang-Si, Gyeongsangbook-Do, Korea, Республика Корея

**НА ОСНОВАНИИ** протокола сертификационных испытаний № 1909-03/2008 А от 19.09.2008 г. ГП - ИИ  
"СТАНКОТЕСТ", рег. № РОСС RU.0001.21ММ10 от 15.06.2006, адрес: г. Иваново, ул. Станкостроителей, 1;  
сертификата системы менеджмента качества ISO/TS 29001 № ТХ0125 от 28.02.2011 г., выданного ОС "АРГ";  
сертификата системы менеджмента качества ISO 9001:2000 № 0588 от 28.02.2011 г., выданного ОС "QMS  
Registered"

**ДОПОЛНИТЕЛЬНАЯ ИНФОРМАЦИЯ** Место нанесения знака соответствия: знак соответствия по  
ГОСТ Р 50460-02 наносится на корпус изделия и (или) в эксплуатационную документацию  
Схема сертификации А

М.П.  **И.И. Ешков**  
Руководитель органа  
Эксперт **А.И. Лукьянов**  
Место нанесения знака соответствия: знак соответствия по ГОСТ Р 50460-02 наносится на корпус изделия и (или) в эксплуатационную документацию

Сертификат имеет юридическую силу на всей территории Российской Федерации

GOST -R

**ФЕДЕРАЛЬНАЯ СЛУЖБА  
ПО ЭКОЛОГИЧЕСКОМУ, ТЕХНОЛОГИЧЕСКОМУ И АТОМНОМУ НАДЗОРУ**

**РАЗРЕШЕНИЕ** № РРС 00-34730

На применение  
Оборудование (техническое устройство, материал):  
Запорная арматура согласно перечню в приложении  
к настоящему разрешению.

Код ОКП (ТН ВЭД): Согласно приложению.

Изготовитель (поставщик): Компания "HS Valve Co., Ltd." (Корея).

Основание выдачи разрешения: Техническая документация, заключение  
экспертизы промышленной безопасности АНО СП "АКАДЕММАШ"  
№ 08-ТУ-0114-2009.

Условия применения:  
1. Обеспечение соответствия поставляемых технических устройств  
требованиям национальных стандартов, норм, правил, руководящих  
документов, инструкций в области промышленной безопасности,  
действующих в Российской Федерации.  
2. Применение поставляемых технических устройств на объектах  
нефтяной и газовой промышленности в соответствии с технической  
документацией, руководством по эксплуатации и паспортом.

Срок действия разрешения: до 29.06.2014

Дата выдачи: 29.06.2009

 **Б.А. Красных**  
Заместитель руководителя

11 027249

GOST RTN

# Product Range & Capacities

## ● PRODUCT RANGE

Product	Type	Class	Size	Materials		End Connect.	Remarks	
				Body	Seats			
Ball Valves	Floating	150# ~ 300#	1/2"~8"	A216 WCB A352 LCC A351 CF8/8M A351 CN7M A890 4A/6A & Etc.	RPTFE NYLON DEVLON METAL PEEK & Etc.	Flanged Welded Screwed	API 6D ASME B16.34 API 598 ISO 17292 API 607 API 6FA & Etc.	
		600#	2"~6"					
		800#	1/2"~2"					
	Trunnion	150# ~ 600#	2"~24"	A105 A350 LF2 A216 WCB A352 LCC A351 CF8/8M A351 CN7M A890 4A/6A & Etc.				
		900#	2"~16"					
		1500#	2"~16"					
		2500#	2"~12"					A105 A182 F304 A182 F316 A350 LF2

※ REFERENCE (GATE, GLOBE & CHECK VALVE)

Product	Type	Class	Size	Materials		End Connect.	Remarks
				Body	Seats		
Gate Valves	OS & Y / Bolted Bonnet	150# ~ 600#	2"~24"	A216 WCB A352 LCC A351 CF8/8M & Etc.	API Trim No.	Flanged Welded Screwed	API 6D API 600 API 603 BS 1414
		800#	1/2"~2"	A105 A182 F304 A182 F316 A350 LF2			
Globe Valves	OS & Y / Bolted Bonnet	150# ~ 600#	2"~24"	A216 WCB A352 LCC A351 CF8/8M & Etc.	API Trim No.	Flanged Welded Screwed	API 600 BS 1873
		800#	1/2"~2"	A105 A182 F304 A182 F316 A350 LF2			
Check Valves	Swing / Bolted Cover	150# ~ 600#	2"~24"	A216 WCB A352 LCC A351 CF8/8M & Etc.	API Trim No.	Flanged Welded Screwed	API 6D API 600 BS 1873
	Lift / Bolted Cover	800#	1/2"~2"	A105 A182 F304 A182 F316 A350 LF2			
Butterfly Valves	Rubber Seat	150#	1½"~20"	A216 WCB A351 CF8/8M	EPDM NBR	Wafer	API 594



※ REFERENCE (Etc.)

Product	Type	Class	Size	Materials		End Connect.	Remarks
				Body	Seats		
Welded Ball Valves (1Piece)	Floating	20K	50A ~100A	A105 A216 WCA SCPH1	RPTFE	Flanged Welded	KGS Code ASME B16.34 API 598 API 607 & Etc.
	Trunnion	20K	125A ~800A				
Carbon & Stainless Steel Ball Valve	Floating	10K, 20K	8A ~300A	SCPH2 SSC13 SSC14 GCD Bronze	PTFE RPTFE	Flanged Screwed	KS B 2308
	Trunnion	10K, 20K	200A ~400A				
Bronze Gate, Globe Valve	OS & Y / Bolted, Screwed Bonnet	5K, 10K	15A ~50A	Bronze	METAL	Screwed	KS B 2301
Bronze Check Valves	Swing, Lift / Bolted, Screwed Cover						
Carbon Steel Gate, Globe Valve	OS & Y / Bolted Bonnet	10K, 20K	50A ~600A	SCPH2	METAL	Flanged	KS B 2361
Bronze Gas Valves	Floating	10K	15A ~20A	Bronze	PTFE	Screwed	KS B 6029
LPG Cylinder Valves	-	20K, 50K	-	Bronze	METAL	Screwed	KS B 6212
High Pressure Cylinder Valves	-	250K	O <sub>2</sub> , N <sub>2</sub> , H <sub>2</sub>	Bronze	METAL	Screwed	KS B 6214
Butterfly Valves	Rubber Seat	10K	40A ~500A	GC	EPDM NBR	Wafer	KS B 2813
Dielectric Ball Valves	Floating	10K	20A ~80A	Bronze GCD	PTFE	Screwed Flanged	EM 1996-160
Gate, Globe Valves	OS & Y / Bolted Bonnet	10K, 20K	15A ~300A	A105 SSC13	METAL	Flanged Welded Screwed	-
Check, Y-Strainer Valves	Swing / Bolted, Screwed Cover	10K, 20K	15A ~300A	A105 SCPH2 SSC13	METAL	Flanged Welded Screwed	-
Pan Check Valves	Lift Spring	16K, 40K	15A ~250A	Bronze, SSC13	METAL	Screwed Wafer	-
Gas Filters	-	10K	25A ~150A	Aluminum	-	Screwed Flanged	-
Never Flow Over Ball Valves	-	10K	15A ~80A	Bronze SSC13	PTFE	Screwed	-

● CAPACITIES

**FACTORY I**

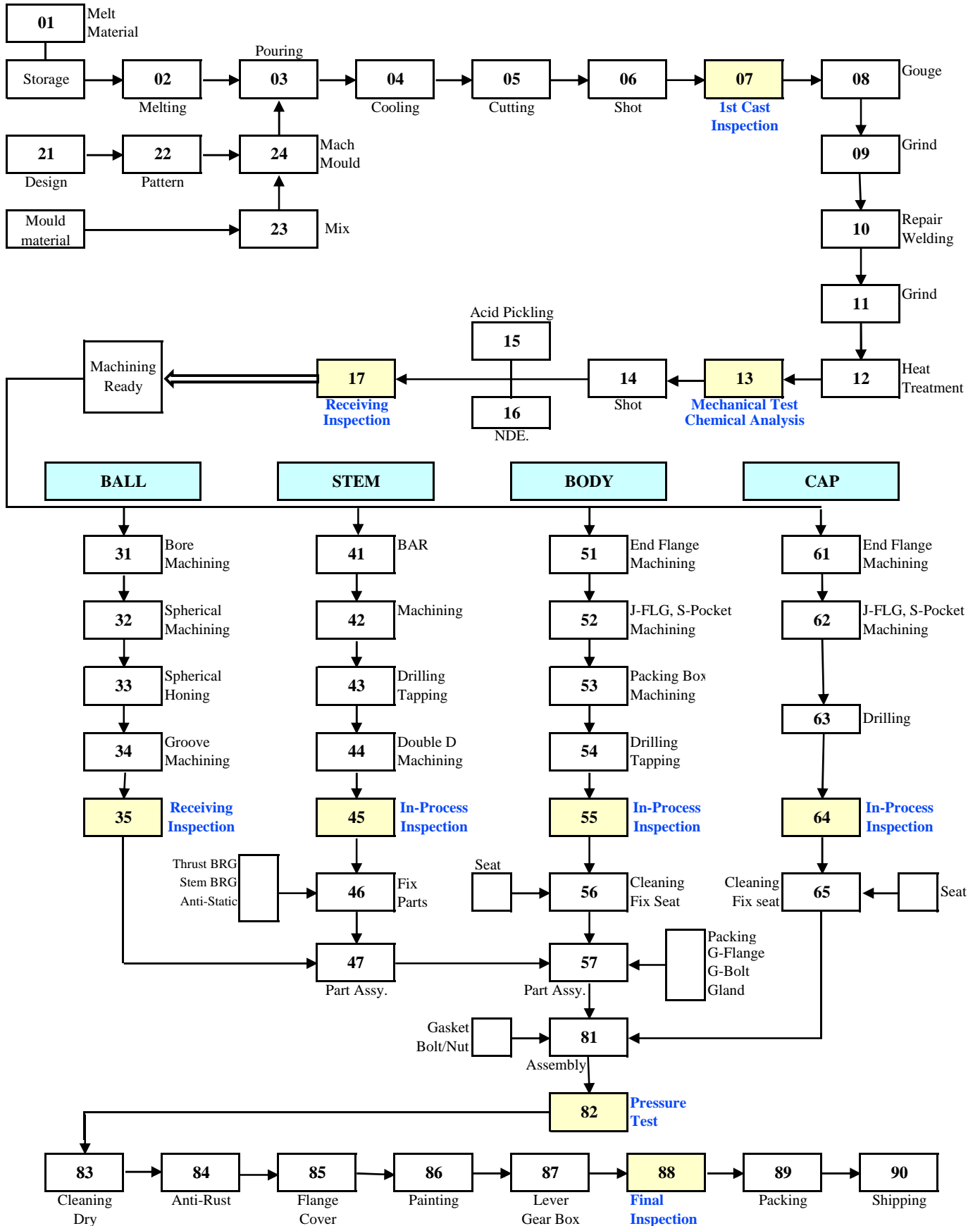
Items		Monthly Capacity / Stock(EA)	Yearly Capacity(EA)	Remark
Bronze Valves	Gate Valves	4,500/5400	54,000	
	Globe Valves	2,800/3,360	33,600	
	Check Valves	2,300/2760	27,600	
Ball Valves		236,000/283,200	2,832,000	
LPG Cylinder Valves		95,000/11,400	1,140,000	
High Pressure Cylinder Valves		15,000/18000	180,000	
Gas Valves		2,900/3480	34,800	

**FACTORY II**

Items		Monthly Capacity / Stock(EA)	Yearly Capacity(EA)	Remark
Ball Valves	10K, 20K / SCPH2,GCD	8,700/10,440	104,400	
	10K,20K / SSC	5,500/6,600	66,000	
	150#, 300#,600# / WCB	1000/1200	12,000	
	150#, 300#,600# / CF8,8M	1000/1200	12,000	
Gate Valves	10K, 20K / SCPH2	500/600	6,000	
	10K / SSC	200/240	2,400	
	150#, 300# / WCB	100/120	1,200	
	600#, 800# / A105	1500/1800	18,000	
Globe Valves	10K, 20K / SCPH2	300/360	3,600	
	10K, 20K / SSC	100/120	1,200	
	150#, 300# / WCB	100/120	1,200	
	600#, 800# / A105	1700/2040	20,400	
Check Valves	10K, 20K / SCPH2	100/120	1,200	
	10K, 20K / SSC	100/120	1,200	
	150#, 300# / WCB	100/120	1,200	
	600#, 800# / A105	700/840	8,400	
Welded Ball Valves	20K / A105	240/380	2,880	
Butterfly Valves	10K / GC200	2,300/2,760	27,600	
Y-Strainers	10K / SCPH2/GCD	200/240	2,400	
	10K / SSC	100/120	1,200	

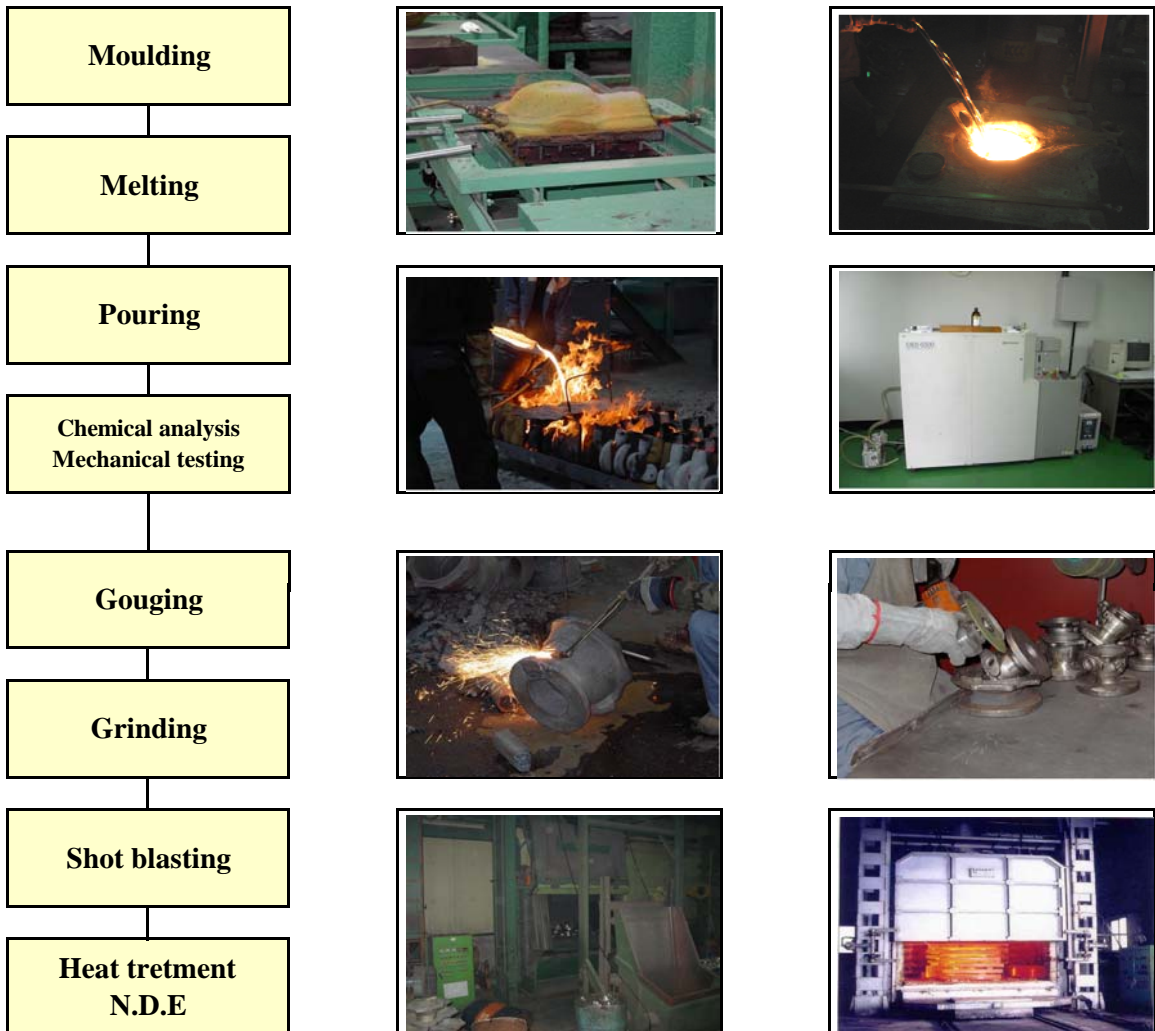
# Manufacturing Process

## ● MANUFACTURING, TEST & INSPECTION PROCESS FLOW CHART



## ● MAIN MANUFACTURING PROCESS

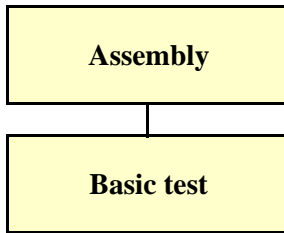
### CASTING PROCESS



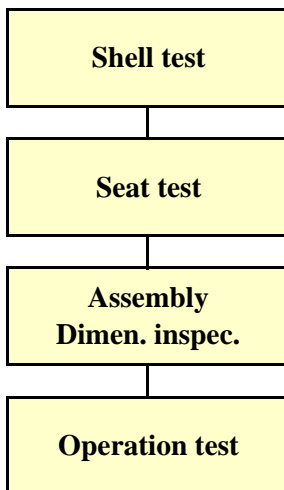
### MACHINING PROCESS



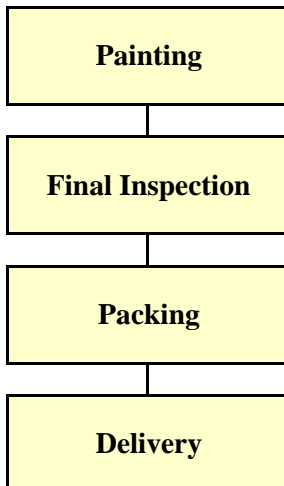
## ASSEMBLY PROCESS



## TEST PROCESS



## PACKING & DELIVERY



# Manufacturing & Inspection Equipment

## ● MANUFACTURING EQUIPMENT

Descriptions	Capacity	Q'ty	Remarks
Machining Center	25HP	1	TNL-80V-2
CNC lathe	15HP	15	PUMA 10, Etc.
Multi-spindle drilling machine	5HP	8	HSM - 370, Etc.
Drilling machine	3HP	4	KRD - 860, Etc.
Radial drilling machine	7HP	2	NSR - 1200, Etc.
Tapping machine	2HP	8	HTD - 360A, Etc.
Welding machine	50A - 600A	12	AWL250A, Etc.
A wide use lathe	900×3000	5	PROTEC, Etc.
Milling machine	15HP	2	TMVH - 2, Etc.
Moulding installation	50~100Kg	7	Self-Made
Electric induction	175KW & 250KW	2	175-10R, Etc.
Cutter	15 HP	5	NHC-14D, Etc.
Bench grinder	3 HP×2	1	AGF-10000
Gouging Machine	2000 A	1	NSG-800A
Short circuit device	1 TON	3	SKCH-30, Etc.
Painting installation	1300×1800	1	Self-Made
Hoister	2.8 t	3	HYUNDAEHOIST
Blower	30HP(350m <sup>2</sup> /min)	1	Self-Made
Forklift	3 TON	3	D30S-3, Etc.
Grinder	1/2 HP	2	SAMJI
A multipurpose tool grinder	6,200RPM	1	KM - 40S
Welding rod dry route	7kg~14kg	1	YCH-5K(10K)
Compressor	MAX 9.9kgf/cm <sup>2</sup>	1	NH-20

● INSPECTION EQUIPMENT

Descriptions	Capacity	Q'ty	Remarks
Pressure Tester	0 ~ 250kgf/cm <sup>2</sup>	11	Self-Made
Chemical analysis instrument	20 ch.	1	SHIMADZU
Shore hardness tester	0~140(Hs)	1	TOGOSHI
Rubber hardness tester	0~100(HD)	2	KORI, Etc.
Brinell hardness tester	500~3000kgf	1	SAMIL
All-purpose material tester	30Ton	1	DAEYOUNG
Torque wrench	0~140kg	9	TOHNICHI, Etc.
Thermo-hygrostat	-20~150℃	1	OSUNG
Endurance Tester	50K	1	Self-Made
Ball roundness measuring instrument	Φ280mm	1	MITUTOYO
Withstanding Voltage Test	10mA, 5KVA	1	HWASHIN
Precision Granite Surface Plate	the zero class	1	NAMDO
Block gauge	the first class	1	MITUTOYO
Height gauge	0~600mm	2	MITUTOYO
Micrometer	0~300mm	2	MITUTOYO
Dial Caliper Gage	0~100mm	5	MITUTOYO
Dial gauge	0~10mm	3	PEACOCK
Cylinder gauge	18~400mm	6	MITUTOYO
Vernier calipers	0~1000mm	17	MITUTOYO
Depth gauge	0~300mm	2	MITUTOYO
Digital Coating Thickness Gauge	0~4mm	1	ELCOMETER

# Overseas Supply Records

## ● BALL VALVE

1 of 2

Classification	Customer	Item	Period	Q'ty	Remarks
Oil & Gas	Iran-Posco E&C	#150,#300 Ball valves	2003 ~2004	6,010	Tavazon P/J, Iran
	Iran-Esco	#150,#300 Ball valves	2004	5,549	Tavazon
	Iran-GIG	U/G Ball A105 RF 300# 8"-10"	2004	26	GIG P/J
	Trans-Thailand Malaysia	#150, #600 Ball valves	2004	271	Songkhla GSP # P/J
	Iranian Central Oil Fields Co. Ltd	Ball 900#-20"	2005	4	Tehran Iran
	Petro Canada	#150, #300, #600 Ball valves	2005	124	Canada Edmonton
	Nal Resources	#1500 Ball valves	2005	140	Canada Edmonton
	Univer Canada	#150, #300, #600 Ball valves	2005	34	Canada Vancouver
	Mgv Energy	#150, #300, #600 Ball valves	2005	24	Canada Edmonton
	Central Valve Inc.	#150,#300 Ball valves	2006	305	Canada Edmonton
	HS Valve Canada	#150,#300, #600, #900, #1500 Ball valves	2006	188	Canada Edmonton HS-061215
	Conoco Phillips	#300, #600 Ball valves	2007	206	Canada Edmonton HS-070205
	Cnrl	#1500 Ball valves	2007	29	Canada Edmonton PO. 10365
	Aclaim Energy	#150, #300, #600 Ball valves	2007	120	Canada Edmonton PO. 10375
	Provident Enregy	#600#, #900, #1500 Ball Valves	2007	110	Canada Edmonton HS-070205
	Artmis Exploration	#600 Ball Valves	2007	103	Canada Edmonton HS-070205
	Panex Oil ans Gas	#150, #300, #600 Ball valves	2007	129	Canada Edmonton HS-070309
	Apache Canada	#150, #300, #600 Ball valves	2007	128	Canada Edmonton HS-070327
	Northrock Petroleum	#150, #300 Ball valves	2007	972	Canada Edmonton HS-070514
	Pro Ex	#900, #1500 Ball valves	2007	220	Canada Edmonton HS-070619
Keyera	#600,#1500 Ball valves	2007	83	Canada Edmonton HS-070828	
Nal Resources	#600, #150 Ball valves	2007	129	Canada Edmonton PO.10368	



Classification	Customer	Item	Period	Q'ty	Remarks
Oil & Gas	Husky Oil	#150, #300 Ball valves	2007	91	Canada Edmonton HS-070726
	Petro Canada	#150 Ball valves	2008	92	Canada Edmonton HS-081210
	Nal Resources	#600, #150 Ball valves	2008	129	Canada Edmonton HS-071120
	A & L Valve	#150, #300, #600 Ball valves	2007	320	USA HS-070825
	Univer Canada	#150, #300, #600 Ball valves	2008	120	Canada Edmonton HS-080722
	Mgv Energy	#150, #300, #600 Ball valves	2008	122	Canada Vancouver
	Charlot Energy	#150, #300, #600 Ball valves	2008	124	Canada HS-080507Q
	Ddt Ener	#150, #300, #600 Ball valves	2008	52	Canada Edmonton HS-081104
	Pan Global	#600 Ball Valves	2008	75	Canada Edmonton HS-081108
	A & L Valve	#150, #300, #600 Ball valves	2008	389	USA HOUSTON HS-090407
	Oil City Valve	#150, #300, #600 Ball valve	2008	208	USA HOUSTON HS-090409
	Imfluid Ltda	#150, #300 Ball valve	2008	132	CHILE HS-090803P
	Calpine	#150, #300, #600 Ball valves	2009	64	Canada HS-090310 Vancouver
	Imfluid Ltda	#150, #300 Ball valve	2009	1310	CHILE HS-090817Q
	Oil City Valve	#150, #300, #600 Ball valves	2009	526	USA LA HS-090421
	BP Canada	#1500 Ball valves	2009	241	Canada Edmonton HS-090325
	Prime West	#150, #300, #600 Ball valves	2009	235	Canada Vancouver HS-090508
	A & L Valve	#600, 1500# Ball valve	2009	210	USA HOUSTON HS-090420
	A & L Valve	#1500 Ball valve	2009	10	USA HOUSTON HS-090708
	Aclaim Energy	#600, #900 Ball Valves	2009	23	Canada Vancouver HS-090508Q
A & L Valve	#600, #900, #1500 Ball Valves	2009	140	USA HOUSTON HS-090406	
Hyundai Eng. & Const. Co., Ltd..	#150, #300, #600 Ball Valves	2009	120	ALKHALIJ 4x350 MW Power Plant	

# Domestic Supply Records

## ● BALL VALVE

Classification	Customer	Item	Period	Q'ty	Remarks
Oil & Gas	KDHC Gangwon Boiler	#150 Ball valve	2001 ~2003	200	Yongin, Korea
	KDHC DB Heavy Ind.	#150,#300 Ball valve	2003	186	Suji, Korea
	China-Hyosung	10K,20K Ball valve	2002 ~2003	8,700	China
	KDHC DB Heavy Ind.	#150,#300 LNG Ball valve	2000	89	Seoul, Korea
	KDHC Hwasung	#150,#300 LNG Ball valve	2003	105	Gimhae, Korea
	LG Engineering co.	#150,#300 Ball valve	2002	440	Seoul, Korea
	Solid Supply inc.	#150,#300 Ball valve	2001 ~2003	12,000	Canada
	KDHC DB Heavy Ind.	3P Ball v/v, CS Ball v/v Pneumatic Ball v/v	2003	250	Suwon, Korea
	KDHC Gangwon Boiler	2P Ball v/v, CS Ball v/v Pneumatic Ball v/v	2005	98	Seoul, Korea
	KDHC Sungchang	3P Ball v/v, CS Ball v/v Pneumatic Ball v/v	2004	250	Yongsan, Korea
	KDHC Darim	#150 Ball v/v	2005	32	KangNam, Korea
	KDHC Korea Boiler Tech	#150 LNG Ball valve	2006	85	Daegu, Korea
	KDHC Korea Boiler Tech	#150 ON-OFF Ball valve	2006	23	Daegu, Korea
	KDHC Dongbo / Hana	#150 ON-OFF LNG Ball valve	2006	21	Hwasung, Korea
	Korea East-West Power Co.,Ltd	#300 & #600 Ball valve	2007	9	Bugok, Korea
	Korea Midland Power Co.,Ltd	#300 & #900 Ball valve	2007	22	Incheon, Korea
	KDHC	#300 & #900 Ball valve	2007	88	Hwasung, Korea
Power Plant	Posco Pohang	#150,#300 Ball valve	2002 ~2003	569,520	Pohang, Korea
	Posco Gwangyang	#150,#300 Ball valve	2004	426,500	Gwangyang, Korea
	Posco E&C	10K,20K Ball valve Motor Actuator	2005	64	Incheon Int'l Airport
	POSCO E&S, EIC, Jksudo	#150, #300, 10K, 20K Ball valve	2006	4,800	FINEX 1~7 units

※ REFERENCE (GATE, GLOBE & CHECK VALVE)


Classification	Customer	Item	Period	Q'ty	Remarks
Oil & Gas	KDHC DB Heavy Ind.	#150,#300 Gate, Globe & Check valve	2003	296	Suji, Korea
	KDHC DK Machine	#150, Gate, Globe & Check valve, ETC	2003	67	Seoul, Korea
	KDHC DB Heavy Ind.	#150,#300 Gate, Globe & Check valve	2000	59	Seoul, Korea
	KDHC Hwasung	#150,#300 Gate, Globe & Check valve	2003	15	Gimhae, Korea
	KDHC DB Heavy Ind.	#150, Gate, Globe & Check valve, ETC	2003	47	Shiwha, Korea
	KDHC Sungchang	#150, Gate, Globe & Check valve, ETC	2004	124	Yangsan, Korea
	KDHC Gunjong eng	#150, Gate, Globe & Check valve, ETC	2004	82	Yongin, Korea
	KDHC Hwasung	#150, Gate, Globe & Check valve, ETC	2004	24	Yongin, Korea
	KDHC Darim	#150, Gate, Globe & Check valve	2005	11	KangNam, Korea
	KDHC DB Heavy Ind.	#150, Gate, Globe & Check valve, ETC	2005	54	Sangam, Korea
	KDHC DB Heavy Ind.	#150, Gate, Globe & Check valve, ETC	2005	25	Ansan Urban Develop
	Samsung Eng.	#150, Gate, Globe & Check valve, ETC	2005	241	Jeonju incinerator
	KDHC Daewoo	#150, Gate, Globe & Check valve, ETC	2006	155	Hwasung, Korea
	KDHC Daewoo	#150,#600, #1500, #2500 Gate, Globe & Check valve, ETC	2006	340	Hwasung, Korea
	KDHC Hwasung	#150, Gate, Globe & Check valve, ETC	2006	43	Chungju, Korea
	KDHC Sungchang	#150, Gate, Globe & Check valve, ETC	2006	34	Daegu, Korea
	KDHC Dongbo Gangwon	#150, Gate, Globe & Check valve, ETC	2006	105	Gangnam, Korea
	South-east Power Co	#150, #600 Gate, Globe & Check valve, Y-Strainer, Butterfly Valve, ETC	2006	80	Bundang Co-gen
	KDHC Korea Boiler Tech	#150, Gate, Globe & Check valve	2006	15	Daegu, Korea
Power Plant	Posco Pohang	#150,#300 Gate, Globe & Check valve	2002 ~2003	265,900	Pohang, Korea
	Posco Gwangyang	#150,#300 Gate, Globe & Check valve	2004	165,980	Gwangyang, Korea


※ REFERENCE (WELDED BALL VALVE)


Classification	Customer	Item	Period	Q'ty	Remarks
Pipe Line	Kyungnam Tech City Gas	20K BALL, 50A~600A	2004~2007	879	Kyungnam Korea.
	Samchully City Gas	20K BALL, 100A~300A	2004~2007	985	Seoul, Korea
	Daehan City Gas	20K BALL, 50A~600A	2004~2007	552	Seoul, Korea
	Busan City Gas	20K BALL, 50A~500A	2004~2007	385	Pusan Korea
	Daesung Global Network City Gas	20K BALL, 50A~500A	2004~2007	905	Daegu, Korea
	Cheongju City Gas	20K BALL, 50A~300A	2004~2007	441	Cheongju, Korea
	Yesco City Gas	20K BALL, 50A~750A	2004~2007	632	Seoul, Korea
	Choongnam City Gas	20K BALL, 50A~300A	2004~2007	202	Choongnam, Korea
	Incheon City Gas	20K BALL, 50A~500A	2004~2007	412	Incheon, Korea
	Jeju City Gas	20K BALL, 50A~400A	2004~2007	152	Jeju, Korea
	Jungbu City Gas	20K BALL, 50A~600A	2004~2007	189	Jungbu, Korea
	Seohae City Gas	20K BALL, 50A~450A	2004~2007	99	Daejeon, Korea
	Hanjin City Gas	20K BALL, 50A~600A	2004~2007	139	Seoul, Korea
	Hae Yang City Gas	20K BALL, 50A~500A	2004~2007	352	Gwangju, Korea
	Chonnam City Gas	20K BALL, 50A~600A	2004~2007	109	Chonnam, Korea
	Yeongnam Energy Servise City Gas	20K BALL, 50A~600A	2004~2007	101	Kyungbuk, Korea
	Kangwon City Gas	20K BALL, 50A~400A	2004~2007	118	Kangwon, Korea
	Pohang City Gas	20K BALL, 50A~600A	2004~2007	165	Pohang, Korea
	Seorabeol City Gas	20K BALL, 50A~500A	2004~2007	265	Gyeongju, Korea
	Iksan City Gas	20K BALL, 50A~500A	2004~2007	125	Iksan, Korea
	Won-Ju City Gas	20K BALL, 50A~500A	2004~2007	95	Wonju, Korea
	Seoul City Gas	20K BALL, 50A~600A	2004~2007	108	Seoul, Korea
	Chungbuk City Gas	20K BALL, 50A~300A	2004~2007	28	Chungbuk, Korea
	Yongdong City Gas	20K BALL, 50A~300A	2004~2007	103	Gangwon, Korea
	Sokcho City Gas	20K BALL, 50A~400A	2004~2007	65	Sokcho, Korea
	Kangnam City Gas	20K BALL, 50A~400A	2004~2007	55	Seoul, Korea
Kyoungbuk City Gas	20K BALL, 50A~200A	2004~2007	40	Kyungbuk, Korea	
Daewha City Gas	20K BALL, 50A~600A	2004~2007	85	Yeosu, Korea	



# Qualified Vendor List

 <b>HS VALVE CO., LTD.</b>		<b>QUALIFIED VENDOR LIST</b>				Pre'd by	Rev'd by	App'd by
<a href="http://www.hsvalve.com">http://www.hsvalve.com</a>		Classification	Material					
		Doc. No.	HSV-091008-01					
		Date	2009. 10. 8.	Page	1 of 3			
Vendor Name	Registration No.	Registered Date	Items	Description		Remarks		
HS Tech	HS-03	Mar/07/1998	Casting	Personnel	Jang Seong-pil			
				Tel/Fax	82-53-856-5780 / 82-53-856-5785			
				E-mail	yooenmi@nate.com			
				Address	1187-1, Sinsang-ri ,Jillyang-eup ,Gyeongsan-si, Gyeongbuk, Korea			
Il Heung Industry	HS-26	Jan/20/2003	Casting	Personnel	Lee Han-Beom			
				Tel/Fax	82-55-346-0326 / 82-55-346-0347			
				E-mail	ihindco@naver.com			
				Address	842, Naesam-ri ,Juchon-myeon ,Gimhae-si, Gyeongsangnam-do, Korea			
YoungJin Iron Casting's	HS-41	Mar/05/2004	Casting	Personnel	Kim Jeong-Tae			
				Tel/Fax	82-54-954-5201 / 82-54-954-5203			
				E-mail	young-jin815@hanmail.net			
				Address	1438, Songgok-ri ,Dasan-myeon ,Goryeong-gun, Gyeongbuk, Korea			
Daewon Forging	HS-55	Aug/21/2006	forging	Personnel	Ha Myeong-Se			
				Tel/Fax	82-31-434-5578 /			
				E-mail	dwmetal@thol.com			
				Address	2187-6, Jeongwang-dong ,Siheung-si, Gyeonggi-do, Korea			
Jungkwang Industry	HS-57	Jan/25/2008	forging	Personnel	Yoon Sun-Hee			
				Tel/Fax	82-55-342-3178 / 82-55-342-3179			
				E-mail	jkmatal@hanmail.net			
				Address	177-2, Uijeon-ri ,Jinyeong-eup ,Gimhae-si, Gyeongsangnam-do, Korea			
KSP	HS-59	Mar/25/2008	forging	Personnel	Yoon Woo Yeol			
				Tel/Fax	82-51-831-6270 / 82-51-831-6273			
				E-mail	kspvalve@kspvalve.co.kr			
				Address	1658-6, Songjeong-dong ,Gangseo-gu, Busan, Korea			
Hyolim Hi-forging	HS-61	Mar/25/2008	forging	Personnel	Han Moo-Kyeong			
				Tel/Fax	82-55-283-8987 / 82-55-283-8853			
				E-mail	hlhf@hyolimhf.co.kr			
				Address	50, Seongsan-dong ,Changwon-si, Gyeongsangnam-do, Korea			
Jongmin Nitriding	HS-01	Feb/09/1998	Heat treatment	Personnel	Shin Sun-Gi			
				Tel/Fax	82-53-351-2497 / 82-53-351-2498			
				E-mail	sungji54@hanmail.net			
				Address	11-8, Nowon-dong 3-ga ,Buk-gu, Daegu, Korea			

 <b>HS VALVE CO., LTD.</b>		<b>QUALIFIED VENDOR LIST</b>				Pre'd by	Rev'd by	App'd by
<a href="http://www.hsvvalve.com">http://www.hsvvalve.com</a>		Classification	Machining					
		Doc. No.	HSV-091008-01					
		Date	2009. 10. 8.	Page	2 of 3	/	/	/
Vendor Name	Registration No.	Registered Date	Items	Description		Remarks		
NRT Korea	HS-64	Aug/03/2009	Body, Cap	Personnel	Hwang Kyo-Sik			
				Tel/Fax	82-53-592-2904 / 82-53-592-2905			
				E-mail	nrt@nrtkorea.com			
				Address	202-5 Paho-dong ,Dalseo-gu, Daegu, Korea			
DaeSuk Precision	HS-65	Aug/03/2009	Body, Cap	Personnel	Kang Jeom-Suk			
				Tel/Fax	82-55-755-7495 / 82-55-763-3495			
				E-mail	gat1012@hanmail.net			
				Address	33-123, Sangdae-dong ,Jinju-si, Gyeongsangnam-do, Korea			
Seho Tech	HS-14	Jul/20/1998	Body, Cap	Personnel	Jeong Yeong-Bok			
				Tel/Fax	82-53-854-7031 / 82-53-854-7032			
				E-mail	seho@hanmail.net			
				Address	1187-1, Sinsang-ri ,Jillyang-eup ,Gyeongsan-si, Gyeongbuk, Korea			
NamYong Plant	HS-32	Apr/28/2003	Body, Cap	Personnel	Yu Jong-Gil			
				Tel/Fax	82-53-854-7031 / 82-53-854-7032			
				E-mail	nyplant@hanmail.net			
				Address	1187-1, Sinsang-ri ,Jillyang-eup ,Gyeongsan-si, Gyeongbuk, Korea			
ShinHan Glotech	HS-54	Aug/06/2006	Body, Cap	Personnel	Seong Hwan-Tae			
				Tel/Fax	82-54-931-0682			
				E-mail	shinhangt@paran.com			
				Address	500-1, Doseong-ri ,Seonnam-myeon ,Seongju-gun, Gyeongbuk, Korea			
GyeongBuk Precision	HS-15	Jan/11/1999	Ball	Personnel	Park Hee-Rak			
				Tel/Fax	82-53-583-4440 / 82-53-583-9841			
				E-mail	hrpark322@hanmail.net			
				Address	404-33, Jang-dong ,Dalseo-gu, Daegu, Korea			
DaeSeong Precision	HS-20	Oct/16/2001	Ball	Personnel	Lee Jong-Yul			
				Tel/Fax	82-53-818-0939 / 82-53-818-0940			
				E-mail	xdark1@hanmail.net			
				Address	3335-4, Sinchon-ri ,Amnyang-myeon, Gyeongsan-si, Gyeongbuk, Korea			
PRI Tech	HS-63	Aug/03/2009	Devlon Seat, Retainer, Fitting, Stem	Personnel	Han Seong-Chul			
				Tel/Fax	82-50-2255-0770 / 82-50-2299-0770			
				E-mail	pri3595@paran.com			
				Address	1495, Pyeongni-dong ,Seo-gu, Daegu, Korea			
Taehwa Industry	HS-06	Mar/11/1998	Stem	Personnel	Nam Chyun-Ok			
				Tel/Fax	82-53-351-7478 / 82-53-356-9988			
				E-mail	b7812@hanmail.net			
				Address	2003-27, Bisan 7-dong ,Seo-gu, Daegu, Korea			

 <b>HS VALVE CO., LTD.</b>		<b>QUALIFIED VENDOR LIST</b>				Pre'd by	Rev'd by	App'd by
<a href="http://www.hsvaive.com">http://www.hsvaive.com</a>		Classification	Parts.			/	/	/
		Doc. No.	HSV-091008-01					
		Date	2009. 10. 8.	Page	3 of 3			
Vendor Name	Registration No.	Registered Date	Items	Description		Remarks		
DongYang Flon Tech	HS-56	May/12/2008	Packing, Gasket	Personnel	Shin Won-Sik			
				Tel/Fax	82-51-304-7787 / 82-51-303-7787			
				E-mail	sykim7575@naver.com			
				Address	715-14, Mora-dong, Sasang-gu, Busan, korea			
SamYeong Tecg	HS-16	Mar/17/1999	Teflon	Personnel	U Sang-Su			
				Tel/Fax	82-43-852-2161 / 82-43-851-5401			
				E-mail	1thpoto2121@naver.com			
				Address	183-1, Munsung-ri ,Sinni-myeon ,Chungju-si, Chungbuk, Korea			
Yugong Industry	HS-44	Sep/02/2005	Bolt Nut	Personnel	Na Byeong-Seon			
				Tel/Fax	82-51-304-5599 / 82-51-317-9917			
				E-mail	wwssbn5599@naver.com			
				Address	403-2, Deokpo-dong ,Sasang-gu, Busan, Korea			
DongYang Bolt	HS-17	Aug/20/2000	Bolt Nut	Personnel	Sin Dong-Yeol			
				Tel/Fax	82-53-254-8796 / 82-53-255-2293			
				E-mail	jong8751@hanmail.net			
				Address	85, Ingyo-dong ,Jung-gu, Daegu, Korea			
PRI Tech	HS-63	Aug/03/2009	Spring, O-ring (James Walker)	Personnel	Han Seong-Chul			
				Tel/Fax	82-50-2255-0770 / 82-50-2299-0770			
				E-mail	pri3595@paran.com			
				Address	1495, Pyeongni-dong ,Seo-gu, Daegu, Korea			
SamBo Industry	HS-28	Apr/02/2003	Gear Box	Personnel	Na Mu-Sang			
				Tel/Fax	82-51-316-2882 / 82-51-316-2880			
				E-mail	sambo@sambo21.com			
				Address	569-14, Gwaebeop-dong ,Sasang-gu, Busan, Korea			
KwangDong Metal Industry	HS-10	May/12/1998	Stopper Washer	Personnel	Kim Pan-Gon			
				Tel/Fax	82-53-555-4855 / 82-53-556-4855			
				E-mail	pangon@hanmail.net			
				Address	1076, Jungni-dong ,Seo-gu, Daegu, Korea			
Saemyung Inspection Technology	HS-43	Jul/01/2004	Nondestructive inspection	Personnel	Kim Jin-Gu			
				Tel/Fax	82-53-585-1717 / 82-53-585-2395			
				E-mail	kkk14721472@naver.com			
				Address	1000-77, Igok-dong ,Dalseo-gu, Daegu, Korea			

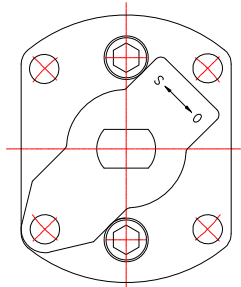


# Engineering Data

## ● MATERIAL COMPARISONS

Classification	ASTM		JIS		Service Temp
	Casting	Forging	Casting	Forging	
<b>HIGH-TEMPERATURE</b>					
Cast Iron	A126-Class B		G5501-FC20		250 °C
Cast Iron	A126-Class C		G5501-FC25		250 °C
Carbon Steel	A216-WCA		G5151-SCPH1		420 °C
Carbon Steel	A216-WCB	A105	G5151-SCPH2	G3202-SFVC 2A	420 °C
½Mo Steel	A217-WC1	A182-F1	G5151-SCPH11	G3203-SFVA F1	500 °C
1¼Cr-½Mo	A217-WC6	A182-F11	G5151-SCPH21	G3203-SFVA F11A	550 °C
2¼Cr-1Mo	A217-WC9	A182-F22	G5151-SCPH32	G3203-SFVA F22A	600 °C
5Cr-½Mo	A217-C5	A182-F5a	G5151-SCPH61	G3203-SFVA F5D	600 °C
9Cr-1Mo	A217-C12	A182-F9		G3203-SFVA F9	650 °C
<b>LOW-TEMPERATURE</b>					
Al Steel	A352-LCB,LCC	A350-LF2	G5121-SCPL1	G3205-SFL2	-46 °C
½Mo Steel	A352-LC1		G5121-SCPL11		-60 °C
2½Ni Steel	A352-LC2		G5121-SCPL21		-73 °C
3½Ni Steel	A352-LC3	A350-LF3	G5121-SCPL31	G3205-SFL3	-101 °C
<b>STAINLESS STEEL</b>					
13Cr-½Mo	A217-CA15	A182-F6a	G5121-SCS1	G4303-410	550 °C
18Cr-8Ni (CO.03)	A351-CF3	A182-F304L	G5121-SCS19A	G3214-SUS F304L	800 °C
18Cr-8Ni (CO.08)	A351-CF8	A182-F304	G5121-SCS13A	G3214-SUS F304	800 °C
18Cr-8Ni-2Mo (CO.03)	A351-CF3M	A182-F316L	G5121-SCS16A	G3214-SUS F316L	800 °C
18Cr-8Ni-2Mo (CO.08)	A351-CF8M	A182-F316	G5121-SCS14A	G3214-SUS F316	800 °C
18Cr-8Ni-Ti		A182-F321		G3214-SUS F321	800 °C
18Cr-8Ni-Cb	A351-CF8C	A182-F347	G5121-SCS21	G3214-SUS F347	800 °C
22Cr-12Ni	A351-CH20		G5121-SCS17		1200 °C
23Cr-19Ni	A351-CK20		G5121-SCS18		1200 °C
19Cr-27Ni-2Mo-3Cu	A351-CN7M		G5121-SCS23		1200 °C

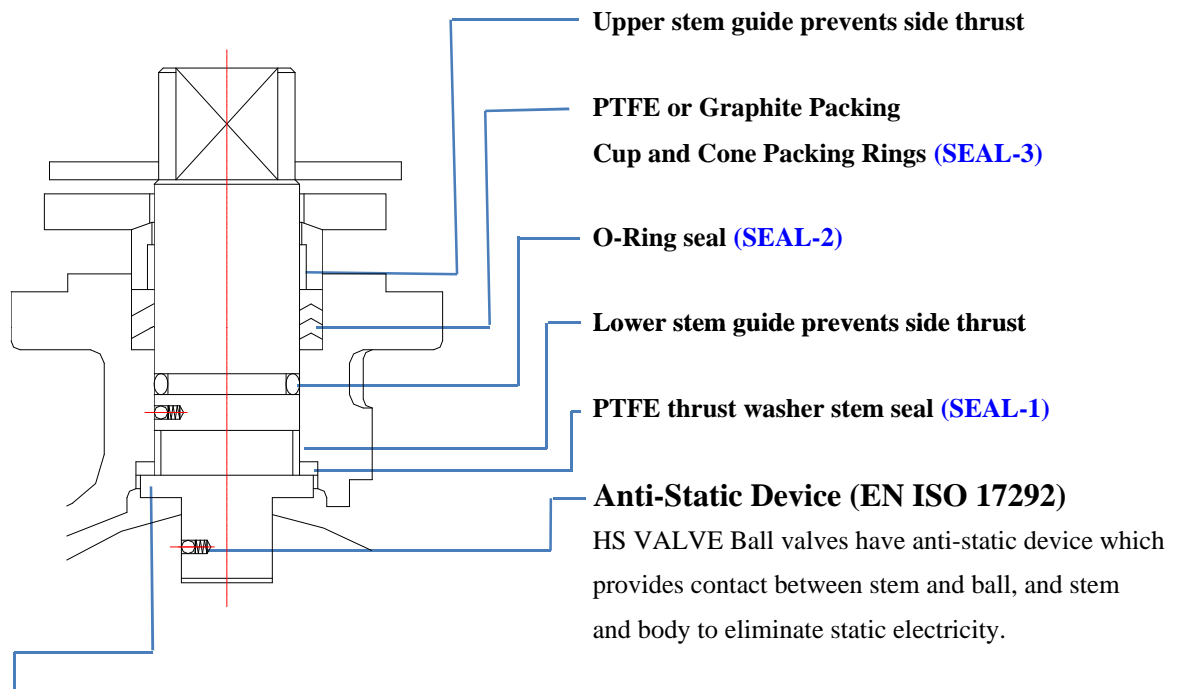
## ● CONSTRUCTION & FUNCTION - 1



### Locking Device

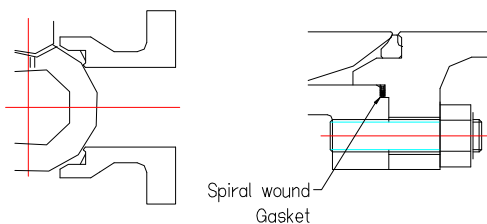
#### Figure 1

HS VALVE are lockable in either full open or closed position



### Blow-Out Proof Stem

All HS VALVE Ball valves have an anti blow out proof stem designed to back seat during any excess line pressure situation that is not higher than the design pressure of the valve and will help prevent product loss during a fire



### Fire Safe Design (API 607 / API 6FA)

In the event of a fire, the valve is required to make a downstream seal. Even after the disintegration of the TEFLON seats, HS BALL Valves provide an excellent metal to metal seal.

Special attention has been paid to the mechanical strength and sealing efficiency of the central flanged joint of the valve body & cap. Heavy casting & graphite

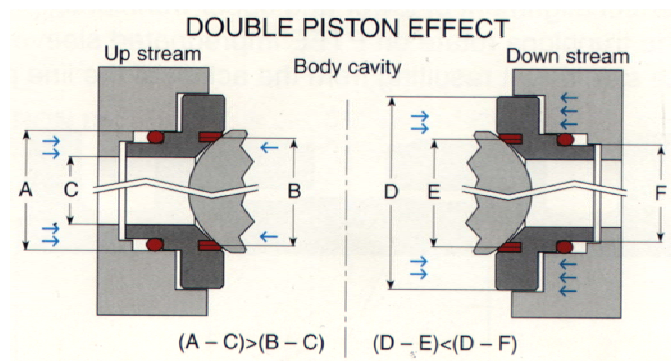
## ● CONSTRUCTION & FUNCTION - 2

### Design And Test

All **HS valves** are designed, constructed and tested according to API-6D standards.

### Double Block And Bleed Integrity.

All trunnion mounted type ball valves employ a sealing principle that facilitates all services requiring double block and bleed integrity.

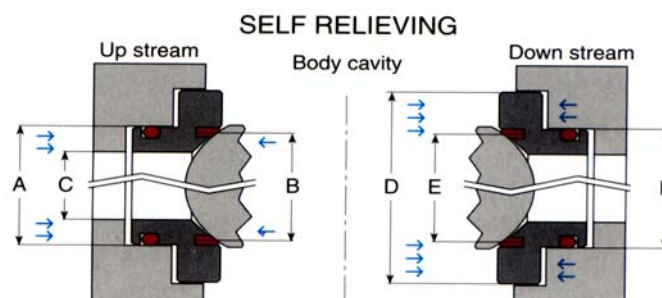


### Double Piston Effect

On request the seat rings design may be modified to perform the **Double Piston Effect** action.

In this case the pressure acting on both the external and internal side of the seat rings, results in a force pushing the gate against the ball, Therefore each seat rings grants the required tightness even if the pressure is applied in the body cavity.

This feature adds an extra sealing feature to the valve, but to release the possible over pressure developed into the body cavity it is necessary to use an external safety relief valve.

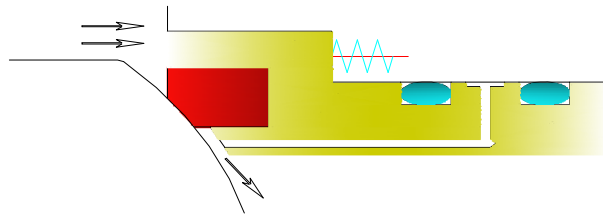


## ● CONSTRUCTION & FUNCTION - 3

### Sealing Principle

All model trunnion mounted type ball valves are supplied with spring-loaded seats to ensure that the seats are always in contact with the ball. This design provides a very efficient seal even at low line pressure.

As the line pressure increases, the seat is forced into tighter contact with the ball providing a positive shut-off.

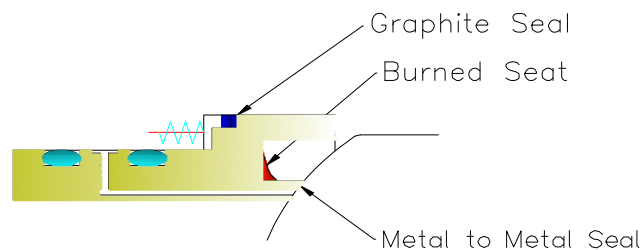


### Fire Safe Construction

The secondary metal seat is provided to contact between the seat and ball in the event the primary non-metallic seat is destroyed by fire all trunnion mounted type ball valves are fire-safe designed. The double body and cap seals provide maximum security.

**HS valves** are fitted with special graphite seals so as to effectively preclude leakage in the event of fire.

All **HS trunnion mounted ball valves** have been tested to API-607 and API-6FA



## ● CONSTRUCTION & FUNCTION - 4

### Actuator Mounting ISO 5211

All **HS flanged end products** shall have an integrally cast(ISO) actuator mounting pad.

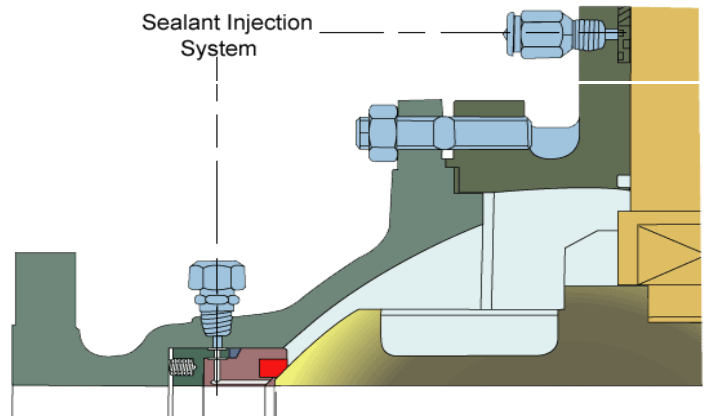
This feature provides for direct mount of gear operators or electric actuators.

### Secondary Seat And Stem Sealing Option

All model trunnion mounted type ball valves are designed to provide high integrity shut off.

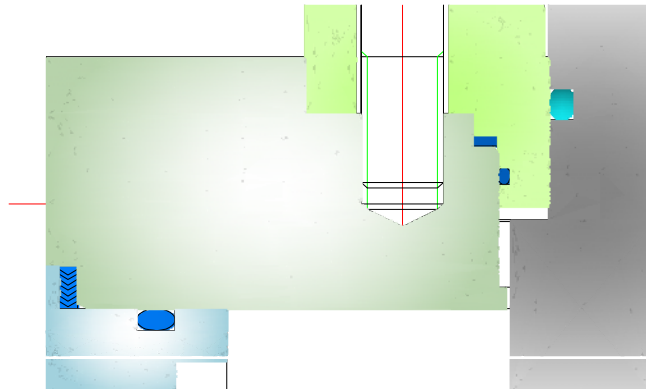
Upon request, sealant lubrication fittings are installed. In the event of seat insert or stem seal damage, external or internal leakage can occur.

Emergency sealant injection can save the integrity of the valve by incorporating a sealant seal around the stem or between the seat and the ball until such time the valve may be properly serviced.



### Double Seal at All Joints

The trunnion mounted ball valves employ a double sealing design incorporating a spiral wound gasket ensure positive sealing.



# ● **INSTALLATION & MAINTENANCE MANUAL** **for FLOATING BALL VALVE**

## **1. CONSTRUCTION**

- 2-Piece body, Full & Reduced Bore.
- Floating Ball.
- Fire Safe Design.
- Anti-static Device.
- Locking Device.
- Blow-out Proof stem.
- ISO 5211 Mounting Pad.
- Cavity Relieving seats.
- Pressure balance hole in ball.

## **2. INSTALLATION**

- a. Do not remove flange covers until ready to install valve.
- b. Clean weld slag, dust and other materials in pipeline.
- c. Installation sequence
  - 1) Remove flange covers.
  - 2) Fasten bolts and nuts After inserting designated the gasket.
  - 3) The bolting shall be fastened by equal torque to diagonal direction.
  - 4) After installing valve, perform leakage test for connection parts.

## **3. REPAIR & MAINTENANCE**

- a. When repairing, we recommend that You must replace seats, packing, o-ring and gasket.
- b. Disassembly sequence
  - 1) Remove lever.
  - 2) Unfasten bolts/nuts.
  - 3) Separate body/cap and remove the gasket.
  - 4) Carefully remove ball from body.
  - 5) Separate stopper, gland bolts and gland.
  - 6) Pull out the stem from inside body.
  - 7) Remove packing parts.
  - 8) Remove seats from body and cap
- c. Re-assemble using the reverse order of the steps outlined above.
- d. The reassembled valve shall be tested in accordance with applicable standards.

# ● INSTALLATION & MAINTENANCE MANUAL for TRUNNION MOUNTED BALL VALVE

## 1. CONSTRUCTION

- 2 & 3Piece body, Full & Reduced Bore.
- Trunnion Ball.
- Fire Safe Design.
- Anti-static Device.
- Locking Device.
- Blow-out Proof stem.
- ISO 5211 Mounting Pad.
- Double Seal Design.
- Double Block And Bleed.
- Pressure Relieving Seats.
- Pressure Balance hole in ball.

## 2. INSTALLATION

- a. Do not remove flange covers until ready to install valve.
- b. Clean weld slag, dust and other materials in pipeline.
- c. Installation sequence
  - 1) Remove flange covers.
  - 2) Fasten bolts and nuts After inserting designated the gasket.
  - 3) The bolting shall be fastened by equal torque to diagonal direction.
  - 4) After installing valve, perform leakage test for connection parts.
- d. When installling the heavy valve, apply to suitable support or leg to prevent bending of pipeline.

## 3. REPAIR & MAINTENANCE

- a. When repairing, we recommend that You must replace seats, packing, o-ring and gasket.
- b. Disassembly sequence
  - 1) Remove lever.
  - 2) Unfasten bolts/nuts.
  - 3) Separate body/cap and remove the gasket.
  - 4) Carefully remove ball from body.
  - 5) Separate stopper, gland bolts and gland.
  - 6) Pull out the stem from inside body.
  - 7) Remove packing parts.
  - 8) Remove seats from body and cap
- c. Re-assemble using the reverse order of the steps outlined above.
- d. The reassembled valve shall be tested in accordance with applicable standards.

## 4. REGULAR INSPECTION

Items	Description
Operating test	· Open and close 2~3 times
Visual inspection	· Repair of exterior damage and painting.
Leakage inspection	· Leak of connection part between valve and pipeline. · Leak of packing and gasket parts.
Actuator inspection	· Repair of exterior damage and painting. · Smooth operation check · If necessary, replacement of lubricants

● **FIGURE NUMBER SYSTEM for HS BALL VALVES**

ex) Ball Valve, Trunnion Ball, RF Flanged, Gear oper. Nace

A216 WCB Body, 316SS Ball & Stem, RPTFE Seat, Class 300, Size 8"

