



# SPJOINT

The Leader of Stainless Steel Double Ring Press Joint  
**Stainless Power Joint**

## DASUNG

Dasung Tech Co., Ltd. was established to play a part in the development of Korea's installation field, by dramatically improving the constructability of the stainless steel pipe joints.

We are aiming for advanced buildings and ships that are more luxurious, safer and longer-lasting in line with today's economic development and improved income level.

To this end, Dasung Tech Co., Ltd. has safely and economically improved the construction method of double ring crimping-type joints that join without welding, among hygienic stainless steel pipe joints that are rust-free, long-lasting and hygienic.

Dasung Tech Co., Ltd. will constantly research and develop to provide 'eternal satisfaction' with 'one-time construction', as well as continuing to implement customer satisfaction campaigns, and always do our best to be a reliable and trusted company.

**CEO** Myeong-Yong Lee



<b>Head office</b>	195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea (255-1, Ichi-ri)
<b>Sales Division</b>	No. 2801-2, 126, Bulmal-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea (Gwanyang-dong, Obiz Tower)
<b>Busan Sales Office</b>	221-114, West Busan Distribution Complex 2, 3138-1, Daejeo 2-dong, Gangseo-gu, Busan, Korea
<b>Contact</b>	T.82-31-633-1117    F.82-31-633-3160
<b>Scale</b>	Factory_5,523.00m <sup>2</sup> / Manufacturing Facilities_1,323.28m <sup>2</sup>
<b>Date of establishment</b>	May 4, 2006 (111 employees)
<b>Production capacity</b>	50 billion won per year (Including partners)
<b>Capital</b>	830 million won
<b>Main Products</b>	Stainless Steel Pipe Joint (SP-JOINT) and Crimping Tools



The Leader of Stainless  
Steel Double Ring Press Joint

# SPJOINT

## Stainless Power Joint

- 2 Company History
- 3 Certificate
- 4 Product structure and specifications
- 5 Features of protective cap and films
- 6 Standard item
- 16 Special item
- 27 Fire piping item
- 30 Crimping tool
- 31 Stainless steel pipe
- 32 Specifications
- 34 Compatibility with other pipes
- 35 Precautions for groundwater work
- 36 Construction image
- 37 Approvals and certificate



SP-JOINT Character 'Epi'  
(short for SP)

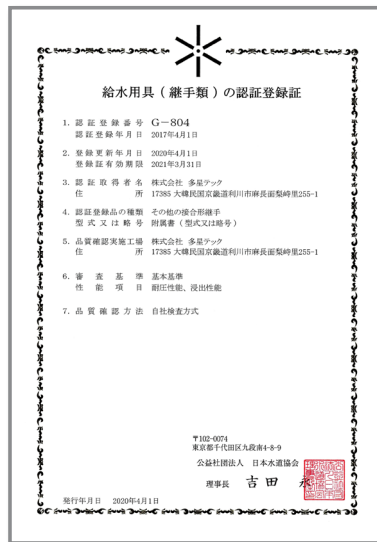
# HISTORY

- 
- 2006** 05 Dasung Tech Co., Ltd. established / business registration(Registration number : 126-81-94866)  
11 Acquired ISO 9001 certification(No : JK-12071) International Industrial Certification Co., Ltd.
- 2007** 09 Acquired certification from Korea Water and Wastewater Association, first in the field of stainless steel pipe joints(No. KWWA 07-003)  
10 Certified as a venture company
- 
- 2008** 10 Moved the factory(Own factory : 573, Gwan-ri, Majang-myeon, Icheon-si, Gyeonggi-do)
- 2009** 10 Established Dasung Technology Research Center(No. 2009111964)  
11 Certified as INO-BIZ(Technology Innovation SME) (No. 9081-2287)
- 
- 2010** 01 Certified as a parts and materials specialist(No. 7368)  
11 Certified as an excellent technology company by the Korea Technology Finance Corporation(NO 1828)
- 2011** 07 Acquired the Korean Register of Shipping Certificate(KR Certification) (SEL26944-PE001)  
12 Acquired Korea Sanitation Safety Standard Certificate (KCW-2011-0290)
- 
- 2012** 03 Registered 13 patents(3 international patents), 23 designs, 4 trademarks  
11 Moved the factory(Own factory : 255-1, Ichiri, Majang-myeon, Icheon-si, Gyeonggi-do)  
12 Acquired ISO 14001 certificate(No : JEK-22280) International Industrial Certification Co., Ltd.
- 2013** 12 Won Gold Prize at the Korea Steel Association's Stainless Steel Excellent Product Contest
- 
- 2014** 11 Awarded presidential citation for venture, entrepreneurship promotion  
03 Established local sales office(Busan)
- 2016** 05 Declared responsible management for customer satisfaction  
03 Awarded citation by the Ministry of Economy and Finance
- 
- 2017** 02 Signed exclusive agency contract with WAYSUN of Taiwan  
04 Acquired Japan Waterworks Association Certificate(JWWA)  
06 Won Ji Seokyoung award, the Patent Technology Award of the first half of 2017(Jungang Daily, Patent Office)  
09 Established the 2nd factory(Own factory), GP-JOINT commercialized
- 2019** 05 Excellent Technology Evaluation Company Certificate T-3(Best) [NICE Information Service Co., Ltd.]  
07 Selected as an export-promising SME  
Won Grand Prize at Product Safety Management Award(Korea Product Safety Association)

# CERTIFICATES



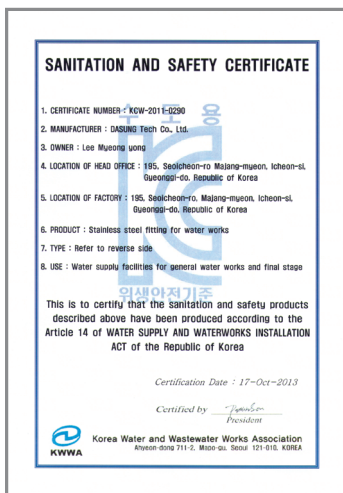
Korea Water and Wastewater Association(KWWA) Certificate



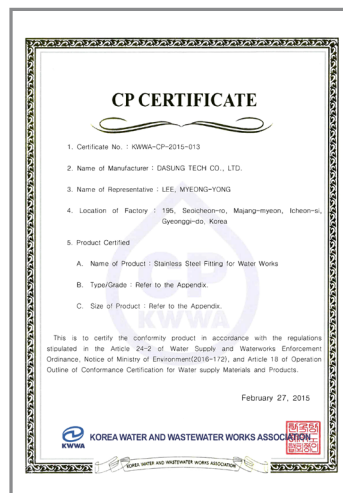
Japan Waterworks Association(JWWA) Certificate



ISO 9001 Certificate



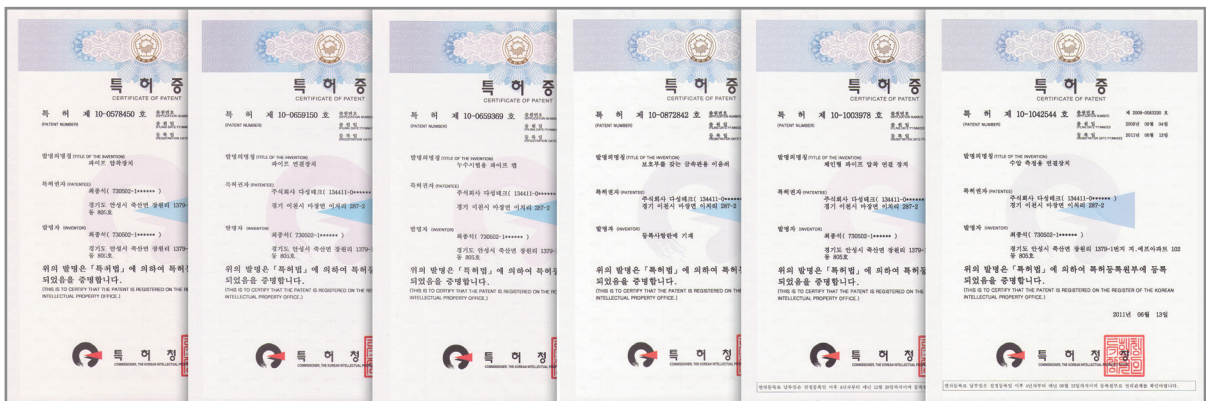
Korean Hygiene Safety Standard(KC) Certificate



Korea Waterworks Suitability(CP) Certificate



Korean Register of Shipping(KR) Certificate

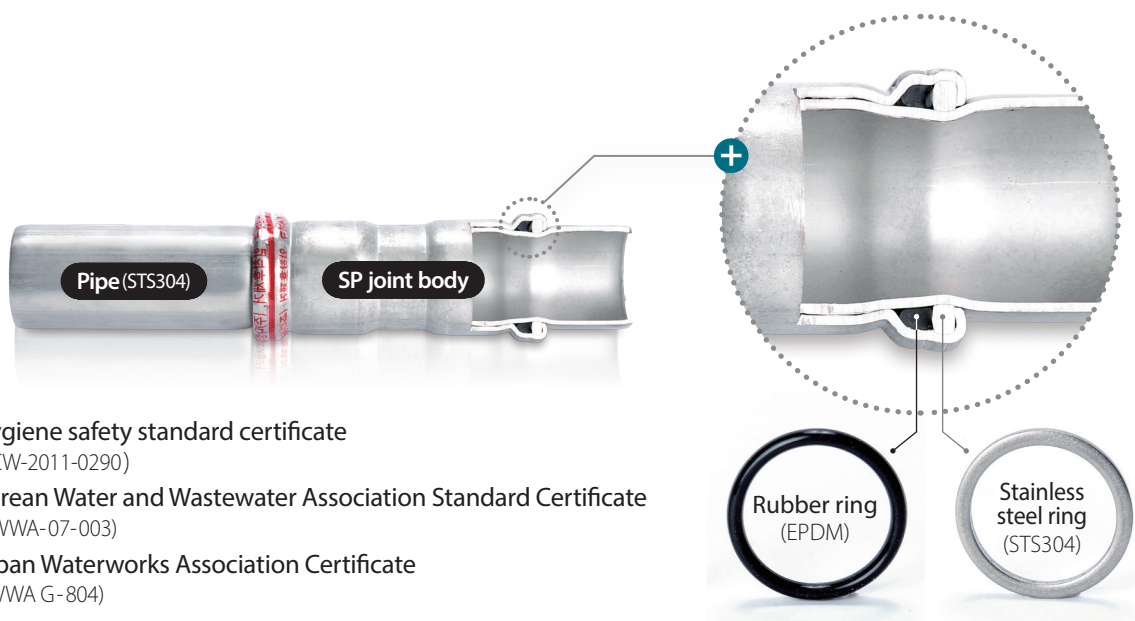


Registered crimping tool patent No. 10-0578450 and 13 other patents(3 international patents), 23 designs, and 4 trademarks



# Stainless Power Joint

## Product structure



- Hygiene safety standard certificate (KCW-2011-0290)
- Korean Water and Wastewater Association Standard Certificate (KWWA-07-003)
- Japan Waterworks Association Certificate (JWWA G-804)

## Product specifications

▶ A product that dramatically improved(developed) the construction method of double-ring stainless steel piping ◀

Application	<ul style="list-style-type: none"> <li>• Water supply, hot water supply, heating piping</li> <li>• Piping of various other machinery and equipment</li> <li>• Ship piping</li> <li>• Fire-fighting pipes</li> <li>• Cold/hot water piping</li> <li>• Water supply underground piping</li> </ul>
Usable Temperature	<ul style="list-style-type: none"> <li>• Water temperature: 0~120 °C</li> <li>• Temperature usable for rubber ring(EPDM) : -40 ~+140 °C (When continuously used at 80 °C_45 years / at 70 °C_114 years)</li> </ul>
Specifications and material	<ul style="list-style-type: none"> <li>• KS D 3595(=JIS G 3448) Stainless steel pipe for general piping(STS 304, 316L) 13S~100SU</li> <li>• KS D 3576(=JIS G 3459) Stainless steel pipe for piping, SCH5 80~100A</li> </ul>
Features	<ul style="list-style-type: none"> <li>• High-quality steel pipe (Stainless steel pipe)</li> <li>• Most economical piping (30~40% cheaper than copper pipe)</li> <li>• The most convenient piping (Welding-free piping and convenience of tools)</li> <li>• Seismic test (Safety guaranteed against vibration)</li> <li>• Suitable for joining the seismic separation of double-ring press type joints (Passed the screening of the suitability for seismic separation joints conducted by the fire department in 2019)</li> <li>• 360° angle change (Angle can be changed after compression by circular compression)</li> <li>• Reduced labor costs (30~50% labor reduction in welding piping)</li> <li>• Convenience of thermal insulating construction and finishing work (Convenient thermal insulating construction with less protrusion of the compressing part)</li> <li>• Safe piping against vibration and land subsidence (Passed 1 million vibration tests and flexure test at 22.28 °)</li> </ul>

## Features of protective cap and film

### Cap for preventing the influx of foreign substances

(Patent application : 10-2008-0035723)

The protective cap is fitted in the pipe insert part to prevent the influx of foreign substances.



Protective cap



Remove the cap before inserting the pipe

### Compression verification film

Easy to verify uncompressed work and completed work by removing the film after pressing.



Verification film

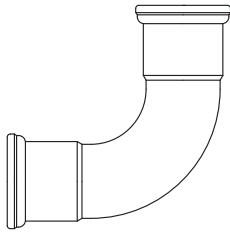


Remove the film after pressing

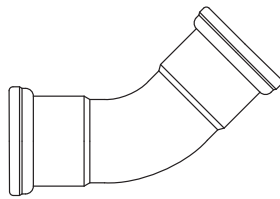


Check the condition of the film before and after pressing

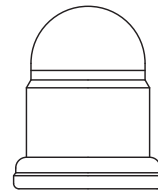
## SP-JOINT



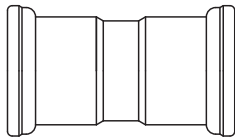
90° ELBOW\_8P



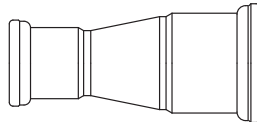
45° ELBOW\_8P



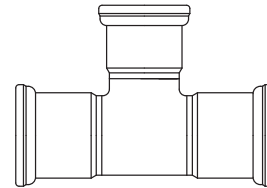
CAP\_8P



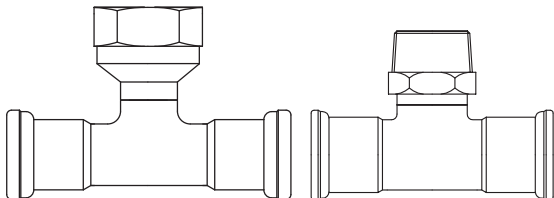
SOCKET\_8P



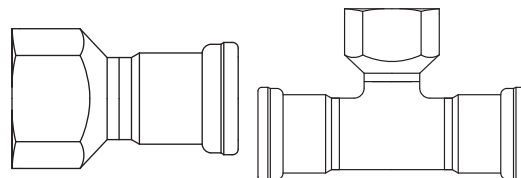
REDUCER\_9P



TEE\_9P



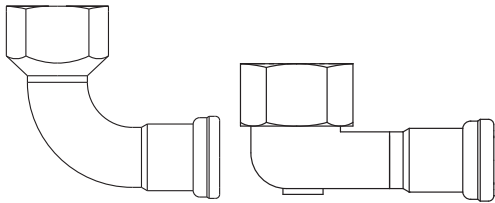
ADAPTER TEE(FEMALE·MALE)\_10P



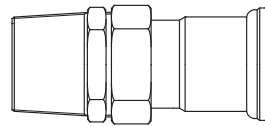
WATER TYPE SOCKET·TEE\_10P



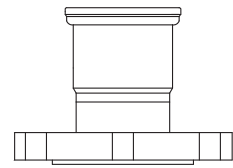
## Standard Item



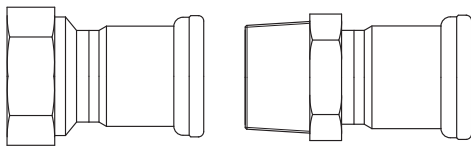
WATER TYPE ELBOW\_11P



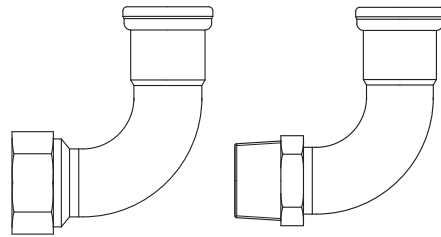
SP-UNION(HUB)\_11P



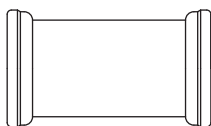
SP-FLANGE\_12P



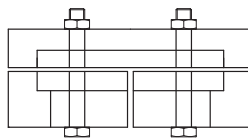
ADAPTER SOCKET(FEMALE·MALE)\_12P



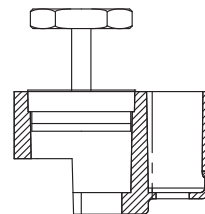
ADAPTER ELBOW(FEMALE·MALE)\_13P



BEAR SOCKET\_13P

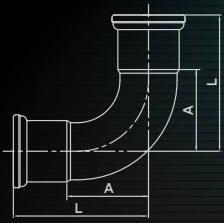


WATER PRESSURE TEST CAP\_13P



MULTI WATER PRESSURE TEST CAP\_14P

## 90° ELBOW

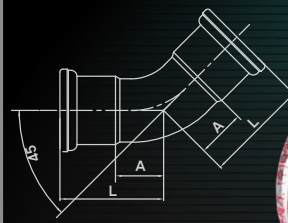


### ▶ 90° EL

(Unit: mm)

Specification	L	A	Tolerance
13SU	50	28	±3
20SU	60	35	±3
25SU	69	44	±3
30SU	88	54	±3
40SU	100	64	±3
50SU	115	72	±3
60SU	138	89	±5
75SU	153	81	±5
80SU	174	93	±5
100SU	202	120	±5

## 45° ELBOW



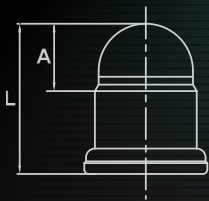
### ▶ 45° EL

(Unit: mm)

Specification	L	A	Tolerance
13SU	39	17	±3
20SU	45	20	±3
25SU	49	24	±3
30SU	65	30	±3
40SU	70	35	±3
50SU	81	38	±3
60SU	95	45	±5
75SU	115	44	±5
80SU	128	49	±5
100SU	140	60	±5

※Other angles can also be produced(Inquire with factory)

## CAP

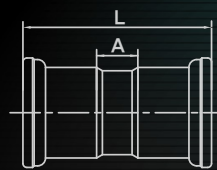


### ▶ C

(Unit: mm)

Specification	L	A	Tolerance(L)
13SU	37	15	±3
20SU	44	19	±3
25SU	45	20	±3
30SU	58	24	±3
40SU	68	33	±3
50SU	76	33	±3
60SU	84	38	±5
75SU	127	53	±5
80SU	136	57	±5
100SU	138	58	±5

## SOCKET



### ▶ S

(Unit: mm)

Specification	L	A	Tolerance(L)
13SU	58	13	±3
20SU	64	14	±3
25SU	64	14	±3
30SU	93	25	±3
40SU	96	25	±3
50SU	112	25	±3
60SU	128	29	±5
75SU	178	30	±5
80SU	192	35	±5
100SU	196	36	±5

## REDUCER



► RED

(Unit : mm)

Specification	L	A	Tolerance(L)
20X13	68	20	±3
25X13	86	37	±3
25X20	70	19	±3
30X13	101	43	±3
30X20	97	36	±3
30X25	88	27	±3
40X13	113	60	±3
40X20	108	45	±3
40X25	109	47	±3
40X30	104	32	±3
50X13	131	64	±3
50X20	127	57	±3
50X25	124	54	±3
50X30	131	51	±3
50X40	116	35	±3
60X13	168	95	±5
60X20	152	76	±5
60X25	146	70	±5
60X30	154	68	±5
60X40	141	54	±5
60X50	133	38	±5
75X30	221	113	±5
75X40	222	113	±5
75X50	230	113	±5
75X60	190	65	±5
80(80A)X40	195	79	±5
80(80A)X50	237	113	±5
80(80A)X60	244	114	±5
80(80A)X75	220	65	±5
100(100A)X50	219	91	±5
100(100A)X60	258	124	±5
100(100A)X75	290	134	±5
100(100A)X80	250	87	±5

※80X40, 100X50 or less can be produced

## TEE



► T

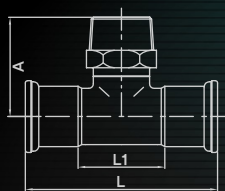
(Unit : mm)

Specification	L	L1	A	A1	Tolerance
13X13	80	36	42	20	±3
20X13	96	46	45	23	±3
20X20	96	46	48	23	±3
25X13	106	56	50	28	±3
25X20	106	56	53	28	±3
25X25	106	56	53	28	±3
30X13	132	63	61	40	±3
30X20	132	63	57	33	±3
30X25	132	63	57	33	±3
30X30	132	63	68	34	±3
40X13	146	75	68	46	±3
40X20	146	75	64	40	±3
40X25	146	75	64	40	±3
40X30	146	75	74	41	±3
40X40	146	75	76	41	±3
50X13	138	51	71	49	±3
50X20	138	51	67	42	±3
50X25	138	51	67	42	±3
50X30	156	69	77	43	±3
50X40	156	69	79	43	±3
50X50	156	69	87	43	±3
60X13	168	68	74	53	±5
60X20	168	68	71	47	±5
60X25	168	68	71	47	±5
60X30	168	68	82	47	±5
60X40	202	102	85	49	±5
60X50	202	102	92	48	±5
60X60	202	102	98	52	±5
75X30	270	122	86	50	±5
75X40	270	122	87	50	±5
75X50	270	140	95	50	±5
75X60	270	140	102	50	±5
75X75	270	140	130	58	±5
80X40	254	95	93	58	±5
80X50	288	129	101	58	±5
80X60	288	129	109	60	±5
80X75	288	140	140	65	±5
80X80	288	129	145	66	±5
100X50	286	124	114	71	±5
100X60	286	124	121	72	±5
100X75	324	159	153	76	±5
100X80	324	162	158	79	±5
100X100	324	162	160	80	±5

※75X30, 80X40, 100X50 or less can be produced



## ADAPTER TEE(MALE)



### ▶ AT(M)

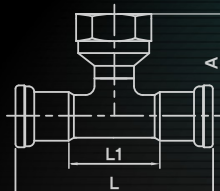
(Unit : mm)

Specification	Thread PT	L	L1	A	Tolerance
13X1/2	1/2"	80	36	46	±3
20X1/2	1/2"	96	46	48	±3
20X3/4	3/4"	96	46	51	±3
25X1/2	1/2"	106	56	53	±3
25X3/4	3/4"	106	56	56	±3
25X1	1"	106	56	59	±3
30X1/2	1/2"	132	63	57	±3
40X1/2	1/2"	146	45	64	±3
50X1/2	1/2"	138	51	67	±3
60X1/2	1/2"	168	70	65	±5

※ Products other than the above standard can also be produced(Inquire with factory)

※ Length can be adjusted

## ADAPTER TEE(FEMALE)



### ▶ AT(F)

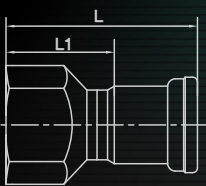
(Unit : mm)

Specification	Thread PT	L	L1	A	Tolerance
13X1/2	1/2"	80	36	37	±3
20X1/2	1/2"	96	46	39	±3
20X3/4	3/4"	96	46	41	±3
25X1/2	1/2"	106	56	44	±3
25X3/4	3/4"	106	56	46	±3
25X1	1"	106	56	48	±3
30X1/2	1/2"	132	63	48	±3
40X1/2	1/2"	146	45	55	±3
50X1/2	1/2"	138	51	58	±3
60X1/2	1/2"	168	70	62	±3

※ Products other than the above standard can also be produced(Inquire with factory)

※ Length can be adjusted

## WATER TYPE SOCKET



### ▶ WS

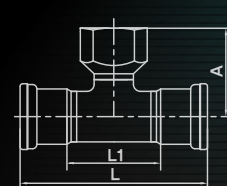
(Unit : mm)

Specification	Thread PS	L	L1	Tolerance(L)
13X1/2	1/2"	56	33	±3
20X1/2	1/2"	61	34	±3
20X3/4	3/4"	61	34	±3
25X1/2	1/2"	62	35	±3
25X3/4	3/4"	62	36	±3
25X1	1"	66	39	±3

※ The faucet thread part is a common parallel thread of KS B 0221

※ The adapter thread part is a common taper thread of KS B 0222

## WATER TYPE TEE



### ▶ WT

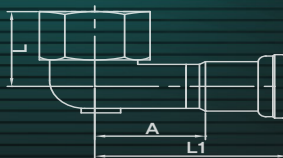
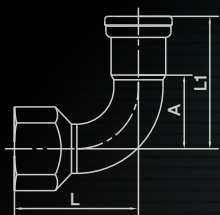
(Unit : mm)

Specification	Thread PS	L	L1	A	Tolerance
13X1/2	1/2"	80	36	41	±3
20X1/2	1/2"	96	46	45	±3
20X3/4	3/4"	96	46	45	±3
25X1/2	1/2"	106	56	48	±3
25X3/4	3/4"	106	56	50	±3
25X1	1"	106	56	53	±3
30X1/2	1/2"	132	62	52	±5
40X1/2	1/2"	146	74	59	±5
50X1/2	1/2"	138	50	62	±5
60X1/2	1/2"	168	70	65	±5

※ Products other than the above standard can also be produced(Inquire with factory)

※ Length can be adjusted

## WATER TYPE ELBOW



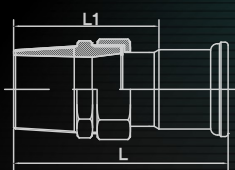
### WE

(Unit : mm)

Specification	Thread PS	L	L1	A	Tolerance
13X1/2	1/2"	51	50	28	±3
20X1/2	1/2"	56	60	35	±3
20X3/4	3/4"	56	60	35	±3
25X1/2	1/2"	64	69	44	±3
25X3/4	3/4"	65	69	44	±3
25X1	1"	69	69	44	±3
13X1/2"(Short)	1/2"	27	55	31	±2
20X3/4"(Short)	3/4"	35	60	35	±2
20X1/2"(Short)	1/2"	30	58	33	±2

※ (Short) is a short type

## SP-UNION(HUB)



### SP-U

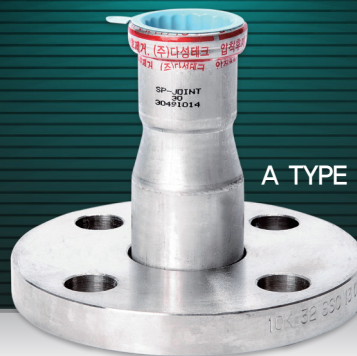
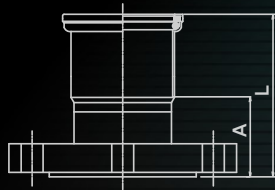
(Unit : mm)

Specification	Thread PT	L	L1	Tolerance
13X1/2	1/2"	80	57	±3
20X3/4	3/4"	85	59	±3
25X1	1"	100	75	±3
30X1 1/4	1 1/4"	105	69	±3
40X1 1/2	1 1/2"	110	73	±3
50X2	2"	125	80	±3

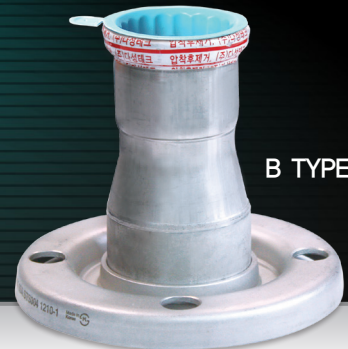
※ No separate socket required for installation



## SP-FLANGE



A TYPE



B TYPE

### SP-F

(Unit: mm)

Specification	Thread PS	LAPJOINT SIZE	L	A	Tolerance(L)
13SU	15A-10kg/cm <sup>2</sup>	15A	66	44	±3
20SU	20A-10kg/cm <sup>2</sup>	20A	68	43	±3
25SU	25A-10kg/cm <sup>2</sup>	25A	95	70	±3
30SU	32A-10kg/cm <sup>2</sup>	32A	110	73	±3
40SU	40A-10kg/cm <sup>2</sup>	40A	114	77	±3
50SU	50A-10kg/cm <sup>2</sup>	50A	124	79	±3
60SU	65A-10kg/cm <sup>2</sup>	65A	152	101	±5
75SU	65A-10kg/cm <sup>2</sup>	65A	139	67	±3
80SU	80A-10kg/cm <sup>2</sup>	80A	146	65	±5
100SU	100A-10kg/cm <sup>2</sup>	100A	148	66	±5

※ KS B 1506 stainless steel flange used

※ 20kg/cm<sup>2</sup> can also be produced (20kg/cm<sup>2</sup> KS product ordered separately)

## ADAPTER SOCKET(MALE)



### AS(M)

(Unit: mm)

Specification	Thread PT	L	L1	Tolerance(L)
13X1/2	1/2"	61	37	±3
20X3/4	3/4"	67	41	±3
25X1	1"	70	44	±3
30X1 1/4	1 1/4"	82	47	±3
40X1 1/2	1 1/2"	85	49	±3
50X2	2"	100	56	±3

※ Products other than the above standard can also be produced (Inquire with factory)

## ADAPTER SOCKET(FEMALE)



### AS(F)

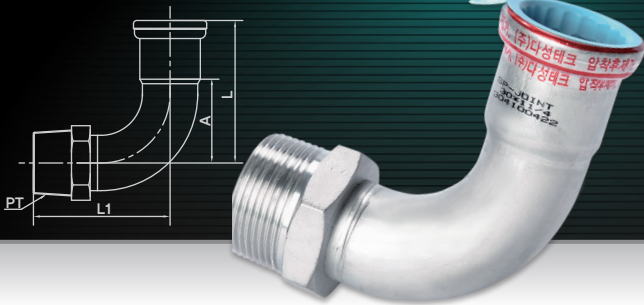
(Unit: mm)

Specification	Thread PT	L	L1	Tolerance(L)
13X1/2	1/2"	52	29	±3
20X3/4	3/4"	57	31	±3
25X1	1"	59	33	±3
30X1 1/4	1 1/4"	73	37	±3
40X1 1/2	1 1/2"	74	37	±3
50X2	2"	85	40	±3

※ Products other than the above standard can also be produced (Inquire with factory)



## ADAPTER ELBOW(MALE)



### ▶ AE(M)

(Unit: mm)

Specification	Thread PT	L	L1	A	Tolerance
13X1/2	1/2"	50	53	28	±3
20X3/4	3/4"	60	63	35	±3
25X1	1"	69	75	44	±3
30X1 1/4	1 1/4"	88	84	54	±3
40X1 1/2	1 1/2"	100	96	64	±3
50X2	2"	115	112	72	±3

※ Products other than the above standard can also be produced(Inquire with factory)

## ADAPTER ELBOW(FEMALE)



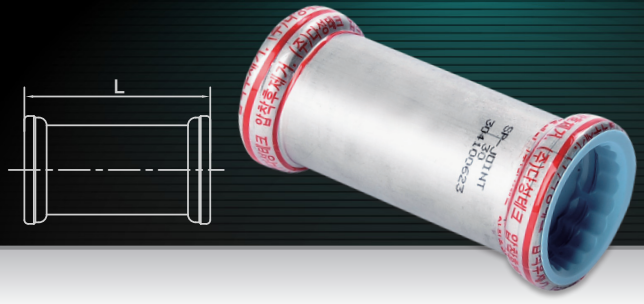
### ▶ AE(F)

(Unit: mm)

Specification	Thread PT	L	L1	A	Tolerance(L)
13X1/2	1/2"	50	46	28	±3
20X3/4	3/4"	60	55	35	±3
25X1	1"	69	66	44	±3
30X1 1/4	1 1/4"	88	78	54	±3
40X1 1/2	1 1/2"	100	88	64	±3
50X2	2"	115	99	72	±3

※ Products other than the above standard can also be produced(Inquire with factory)

## BEAR SOCKET



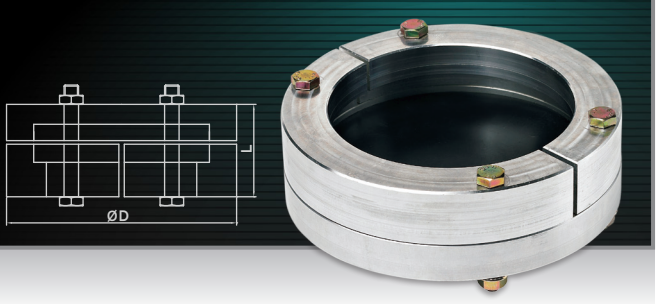
### ▶ B.S

(Unit: mm)

Specification	L	Tolerance(L)
13SU	119	±3
20SU	132	±3
25SU	132	±3
30SU	93	±3
40SU	96	±3
50SU	112	±3
60SU	128	±5
75SU	178	±5
80SU	193	±5
100SU	196	±5

※ Other repair products can also be produced(Inquire with factory)

## WATER PRESSURE TEST CAP

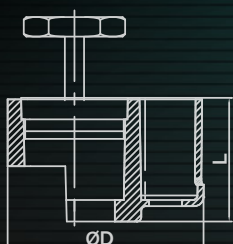


### ▶ SP WC

(Unit: mm)

Specification	L	ΦD	Tolerance(L)
13SU	40	25	±3
20SU	50	25	±3
25SU	55	25	±3
30SU	65	27	±3
40SU	75	28	±3
50SU	85	28	±3
60SU	46	108	±3
75SU	51	127	±3
80SU	51	142	±3
100SU	51	168	±3

## SP MULTI WATER PRESSURE TEST CAP



## SP MULTI HYDRAULIC TEST CAP



### ► SP MWC

(Unit : mm)

Specification	L	ΦD	Tolerance(L)
25SU	80	128	±3
30SU	80	128	±3
40SU	85	128	±3
50SU	85	128	±3

※ Can use from 25su to 50su with one

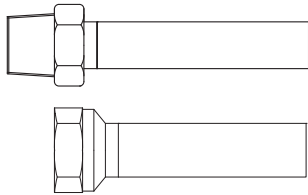
※ Separate production available for pressure gauges(Inquire with factory for ordering)



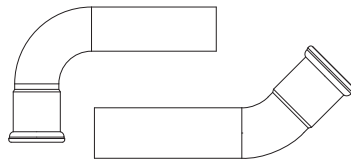
# DASUNG



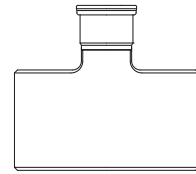
# SP-JOINT



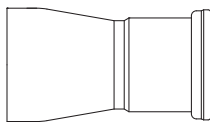
**HALF SOCKET ADAPTER  
(FEMALE·MALE)\_18P**



**90°·45° HALF  
SOCKET ELBOW\_18P**



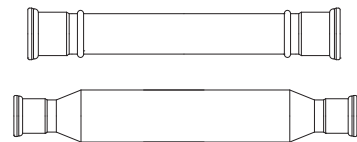
**RALLICA TEE\_19P**



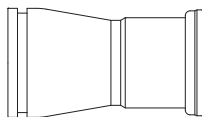
**RALLICA REDUCER\_19P**



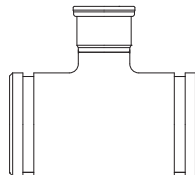
**RALLICA SOCKET\_19P**



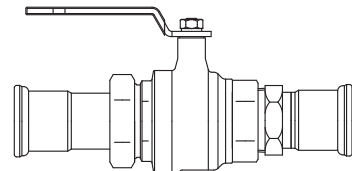
**NO WELDING·ANCHOR  
SOCKET\_20P**



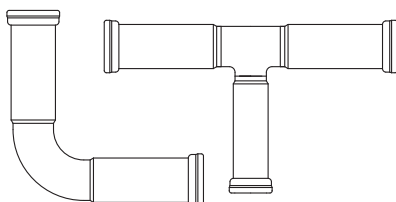
**SP HOME REDUCER\_20P**



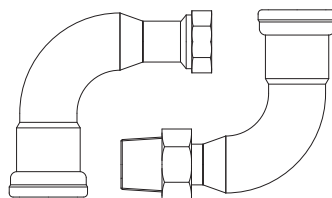
**SP HOME TEE\_20P**



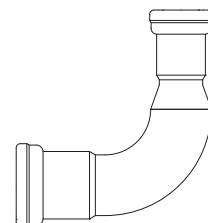
**SP UNION VALVE\_21P**



**BEAR ELBOW·TEE\_21P**



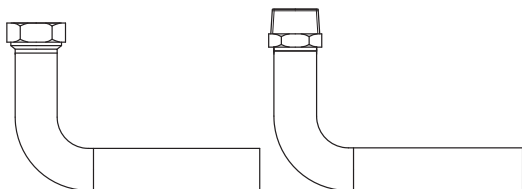
**90°REDUCING ADAPTER  
ELBOW(FEMALE·MALE)\_22P**



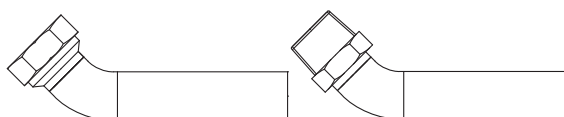
**90°REDUCING ELBOW\_22P**



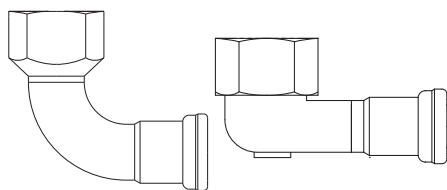
## Special Item



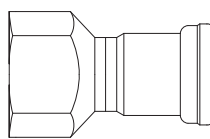
**90° ADAPTER HALF ELBOW  
(FEMALE · MALE) \_22P**



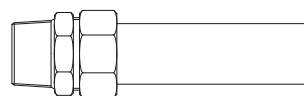
**45° ADAPTER HALF ELBOW  
(FEMALE · MALE) \_23P**



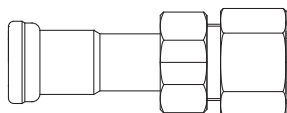
**WATER TYPE ELBOW  
BRACKET \_23P**



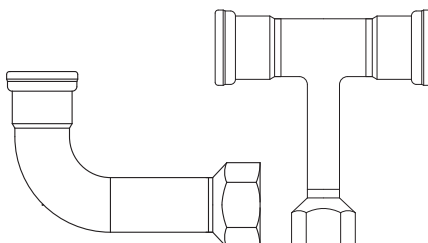
**WATER TYPE SOCKET  
BRACKET \_23P**



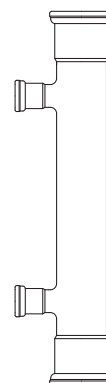
**K-UNION \_24P**



**SP UNION VALVE \_24P**



**LONG WATER TYPE  
ELBOW · TEE \_24P**



**2 MULIT-TEE \_25P**

## HALF SOCKET ADAPTER(MALE)



### ► AHS(M)

(Unit:mm)

Specification	Thread PT	L	L1	Tolerance
13X1/2	1/2"	132	100	±3
20X3/4	3/4"	135	100	±3
25X1	1"	138	100	±3
30X1 1/4	1 1/4"	240	200	±3
40X1 1/2	1 1/2"	242	200	±3
50X2	2"	248	200	±3

※ L1 SIZE can be produced in the unit of 10mm(Inquire with factory)

## HALF SOCKET ADAPTER(FEMALE)



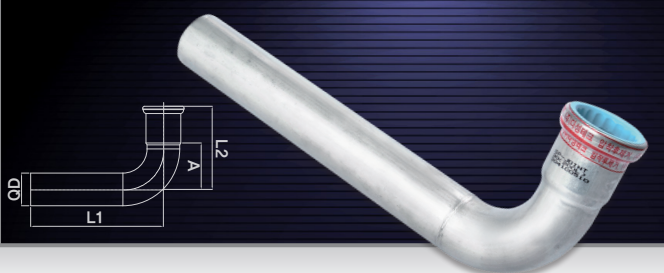
### ► AHS(F)

(Unit:mm)

Specification	Thread PT	L	L1	Tolerance(L)
13X1/2	1/2"	123	100	±3
20X3/4	3/4"	125	100	±3
25X1	1"	127	100	±3
30X1 1/4	1 1/4"	228	200	±3
40X1 1/2	1 1/2"	230	200	±3
50X2	2"	232	200	±3

※ L1 SIZE can be produced in the unit of 10mm(Inquire with factory)

## 90° HALF SOCKET ELBOW

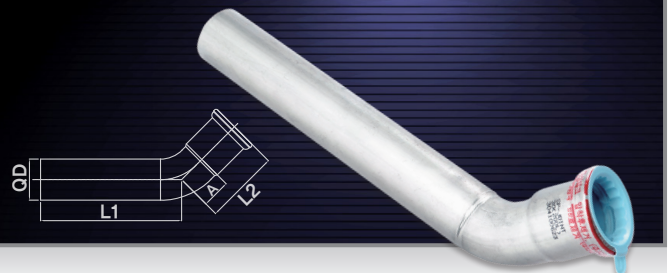


(Unit:mm)

N/D	ΦD	L1	L2	A	Tolerance
13SU	15.88	123	50	28	±3
20SU	22.22	128	60	35	±3
25SU	28.58	135	69	44	±3
30SU	34.00	243	88	54	±3
40SU	42.70	255	100	64	±3
50SU	48.60	262	115	72	±3
60SU	60.50	280	138	89	±5
75SU	76.30	264	153	81	±5
80SU	89.10	276	174	93	±5
100SU	114.3	302	202	120	±5

※ L1 SIZE can be produced in the unit of 10mm(Inquire with factory)

## 45° HALF SOCKET ELBOW



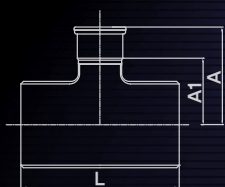
(Unit:mm)

### ► 45° SE

N/D	ΦD	L1	L2	A	Tolerance
13SU	15.88	110	39	17	±3
20SU	22.22	113	45	20	±3
25SU	28.58	117	49	28	±3
30SU	34.00	222	65	30	±3
40SU	42.70	226	70	35	±3
50SU	48.60	229	81	38	±3
60SU	60.50	236	95	45	±5
75SU	76.30	226	115	70	±5
80SU	89.10	232	128	49	±5
100SU	114.3	242	140	60	±5

※ L1 SIZE can be produced in the unit of 10mm(Inquire with factory)

## RALLICA TEE



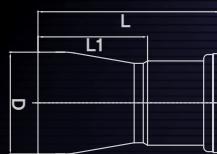
### ► RA-T

(Unit: mm)

Specification	A	A1	L	Tolerance
60X40	87	50	152	±3
65X50	95	51	152	±3
80X50	101	59	170	±3
80X60	109	60	170	±3
100X60	121	72	210	±3
100X80	158	79	210	±3
125X80	170	94	248	±5
125X100	172	95	248	±5
150X80	182	107	286	±5
150X100	184	108	286	±5
200X80	208	133	356	±5
200X100	212	134	356	±5

※ Products other than the above standard can also be produced(Inquire with factory)  
 ※ Produced with SCH10(Welding)

## RALLICA REDUCER



### ► RA-R

(Unit: mm)

Specification	L	L1	D	Tolerance
60X40	133	97	76.3	±3
65X50	141	98	76.3	±3
80X50	141	98	89.1	±3
80X60	148	99	89.1	±3
100X60	122	73	114.3	±3
100X80	198	119	114.3	±3
125X80	223	114	139.8	±5
125X100	225	145	139.8	±5
150X80	236	157	165.2	±5
150X100	238	158	165.2	±5
200X80	189	110	216.3	±5
200X100	250	170	216.3	±5

※ Products other than the above standard can also be produced(Inquire with factory)

## RALLICA SOCKET



### ► RA-S

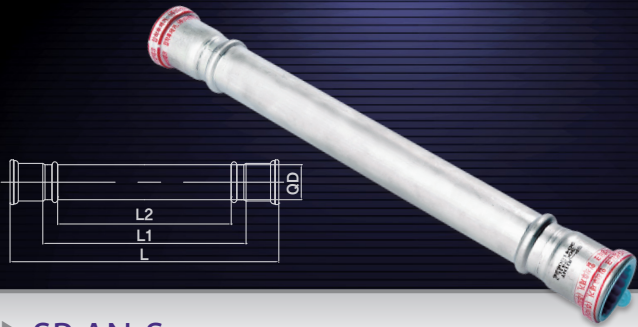
(Unit: mm)

Specification	L	L1	Tolerance(L)
13SUX15A	136	100	±3
20SUX20A	138	100	±3
25SUX25A	145	100	±3
30SUX32A	159	100	±3
40SUX40A	164	100	±3
50SUX50A	174	100	±3
60SUX65A	202	100	±5
75SUX65A	189	100	±5
80SUX80A	196	100	±5
100SUX100A	198	100	±5

※ PIPE KSD 3595(General piping) can also be produced.  
 ※ KSD 3595(General piping) / KSD 3576(Welding)



## NO WELDING ANCHOR SOCKET



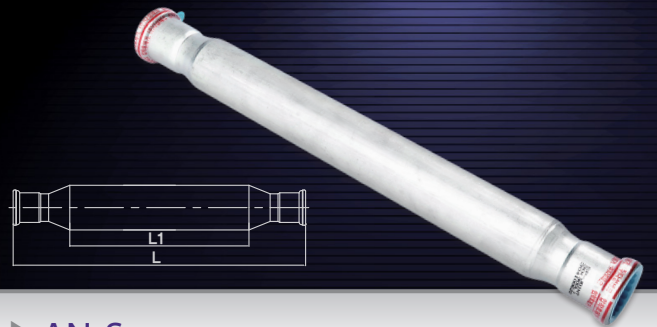
### ► SP AN-S

(Unit: mm)

Specification	L	L1	L2	QD	Pipe shoe
25SU	360	310	240	34.0	25A
30SU	355	287	240	34.0	25A
40SU	358	286	240	42.7	32A
50SU	374	288	240	48.6	40A
60SU	388	290	240	60.5	50A
75SU	448	304	240	76.3	65A
80SU	462	304	240	89.1	80A
100SU	466	306	240	114.3	100A
公差	±3	±3	±2	±1%	-

※ L1, L2 SIZE adjustable(Inquire with factory)

## ANCHOR SOCKET



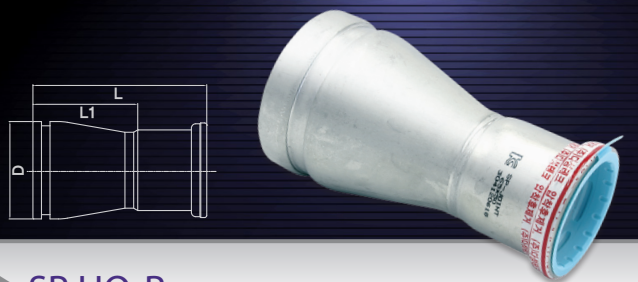
### ► AN-S

(Unit: mm)

Specification	L	L1	Tolerance(L)
15AX13SU	369	300	±3
20AX20SU	373	300	±3
25AX25SU	387	300	±3
32AX30SU	417	300	±3
40AX40SU	425	300	±3
50AX50SU	445	300	±3
65AX60SU	501	300	±5
65AX75SU	475	300	±5
80AX80SU	489	300	±5
100AX100SU	493	300	±5

※ Products other than the above standard can also be produced(Inquire with factory)

## SP HOME REDUCER



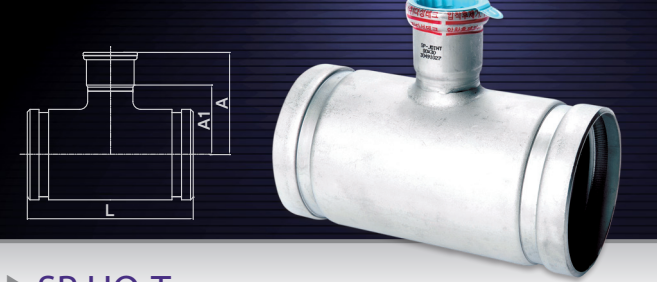
### ► SP HO-R

(Unit: mm)

Specification	L	L1	D	Tolerance
65X40	135	99	76.3	±3
65X50	143	100	76.3	±3
80X50	144	101	89.1	±3
80X60	152	103	89.1	±3
100X60	122	73	114.3	±3
100X80	206	127	114.3	±3
125X80	223	114	139.8	±5
125X100	225	145	139.8	±5
150X80	236	157	165.2	±5
150X100	238	158	165.2	±5
200X80	206	127	216.3	±5
200X100	250	170	216.3	±5

※ Products other than the above standard can also be produced(Inquire with factory)

## SP HOME TEE



### ► SP HO-T

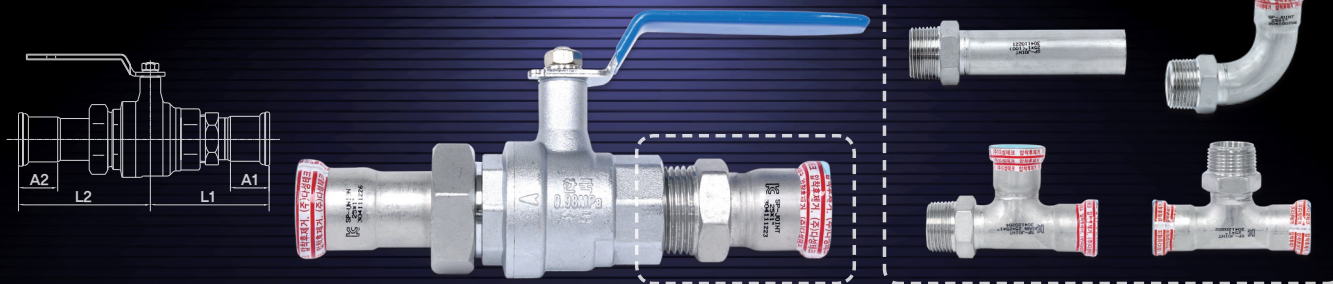
(Unit: mm)

Specification	A	A1	L	Tolerance
65X40	87	50	152	±3
65X50	95	51	152	±3
80X50	101	59	170	±3
80X60	109	60	170	±3
100X60	121	72	210	±3
100X80	158	79	210	±3
125X80	170	94	248	±5
125X100	172	95	248	±5
150X80	182	107	286	±5
150X100	184	108	286	±5
200X80	208	133	356	±5
200X100	212	134	356	±5

※ Products other than the above standard can also be produced(Inquire with factory)



## SP UNION VALVE



### ► SP-UV

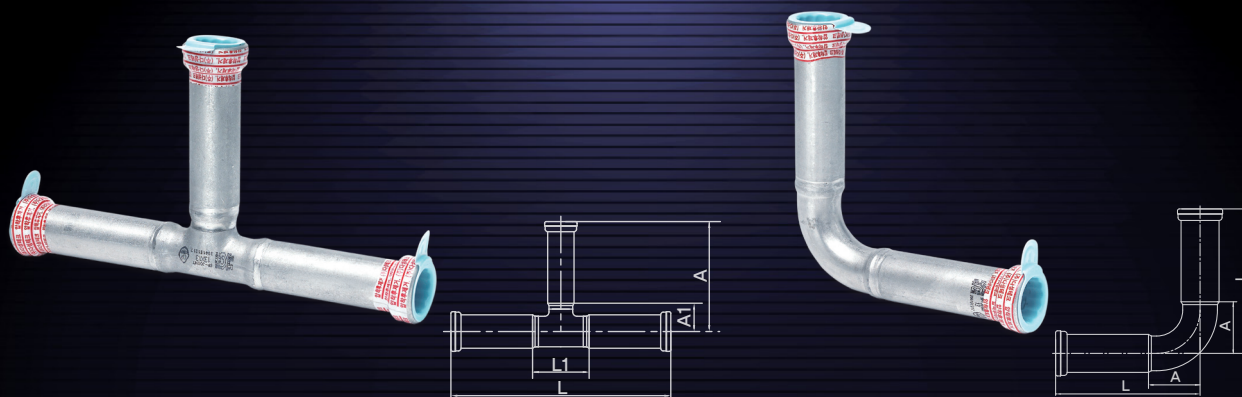
(Unit: mm)

Specification	Thread PT	L1	L2	A1	A2	Tolerance
13X1/2"	1/2"	81	81	22	22	±3
20X3/4"	3/4"	91	88	24	24	±3
25X1"	1"	95	95	24	24	±3
30X1 1/4"	1 1/4"	112	112	34	34	±3
40X1 1/2"	1 1/2"	123	122	35	35	±3
50X2"	2"	143	135	43	43	±3
60X2 1/2"	2 1/2"	200	174	49	49	±5

※ Items can be changed(Inquire with factory)

※ 20kg/cm<sup>2</sup> can be produced

## BEAR TEE·ELBOW



### ► B.T

(Unit: mm)

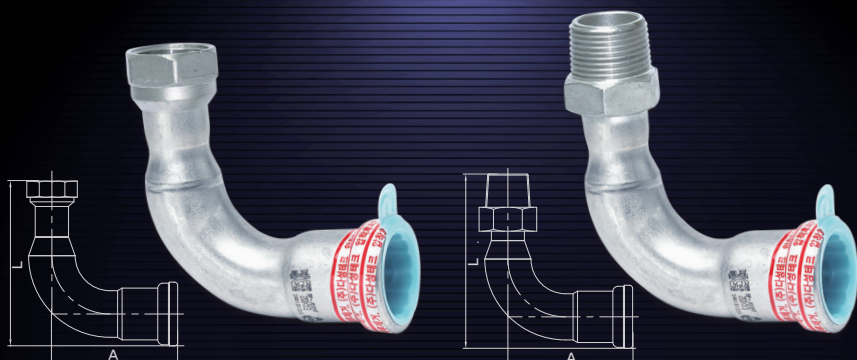
Specification	L	L1	A	A1	Tolerance
13X13	120	40	81	23	±5
20X20	178	50	92	28	
25X25	188	60	96	32	
30X30	223	67	113	35	
40X40	246	80	125	42	
50X50	271	75	143	45	
60X60	330	110	157	47	
75X75	444	130	221	64	
80X80	480	140	245	75	
100X100	517	173	265	93	

### ► B.E

(Unit: mm)

Specification	L	A	Tolerance
13	88	30	±5
20	99	35	
25	109	45	
30	133	50	
40	148	65	
50	173	75	
60	202	92	
75	240	83	
80	267	97	
100	292	120	

## 90°REDUCING ADAPTER ELBOW(MALE·FEMALE)



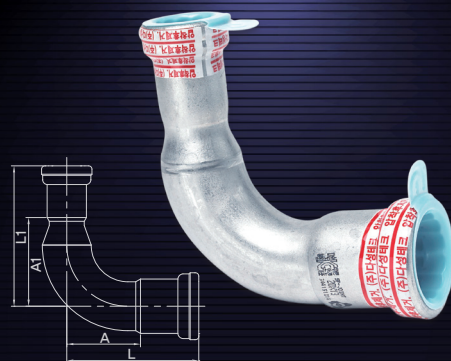
### ► RAE(M·F)

(Unit: mm)

Specification	L	A	Tolerance(L)
20×1/2"			±3
25×3/4"			±3
30×1"	Length can be adjusted	Length can be adjusted	±3
40×1 1/4			±3
50×1 1/2"			±3
60×2"			±5

※ Products other than the above standard can also be produced(Inquire with factory)

## 90° REDUCING ELBOW



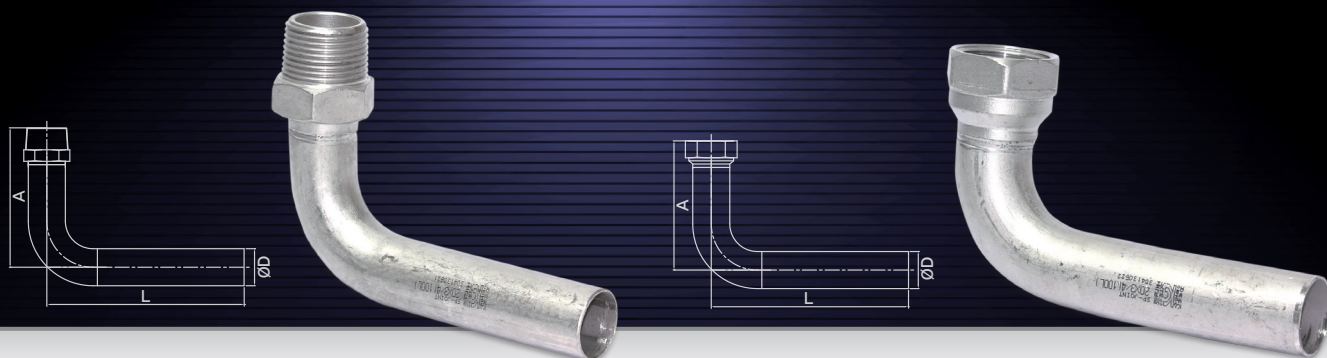
### ► 90° RE

(Unit: mm)

Specification	L	L1	A	A1
20×13	60	67	35	44

※ Products other than the above standard can also be produced  
(Inquire with factory)

## 90°ADAPTER HALF ELBOW(MALE·FEMALE)



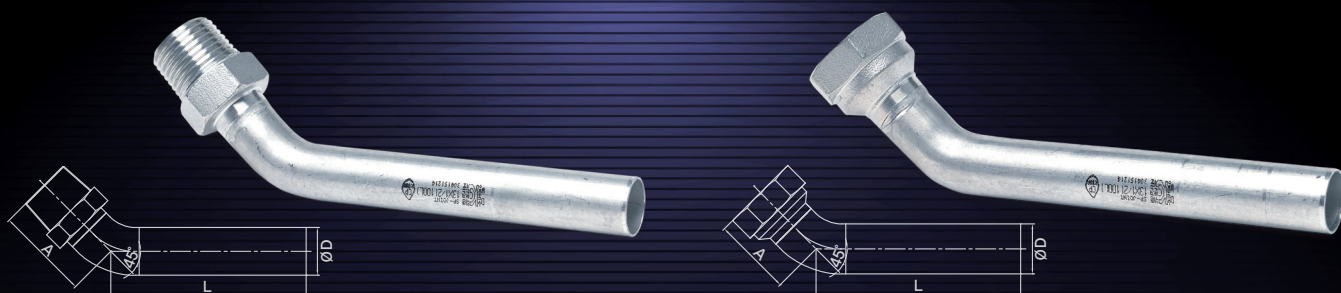
### ► 90°AHE(M·F)

(Unit: mm)

Specification	Thread PT	QD	L	A	Tolerance
13X1/2	1/2"	15.88			±3
20X3/4	3/4"	22.22			±3
25X1	1"	28.58	Length can be adjusted	Length can be adjusted	±3
30X1 1/4	1 1/4"	34.00			±3
40X1 1/2	1 1/2"	42.70			±3
50X2	2"	48.60			±3

※ Products other than the above standard can also be produced(Inquire with factory)

## 45° ADAPTER HALF ELBOW(MALE·FEMALE)



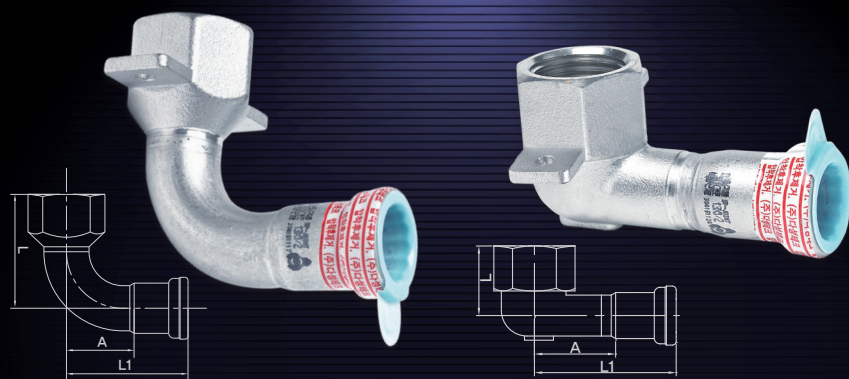
### ► 45° AHE(M·F)

(Unit: mm)

Specification	Thread PT	QD	L	A	Tolerance
13X1/2	1/2"	15,88	Length can be adjusted	Length can be adjusted	±3
20X3/4	3/4"	22,22			±3
25X1	1"	28,58			±3
30X1 1/4	1 1/4"	34,00			±3
40X1 1/2	1 1/2"	42,70			±3
50X2	2"	48,60			±3

※ Products other than the above standard can also be produced(Inquire with factory)

## WATER TYPE ELBOW BRACKET



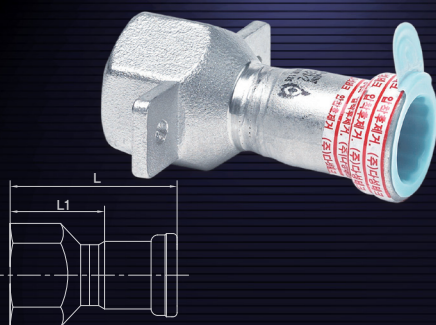
### ► WEB

(Unit: mm)

Specification	Thread PS	L	L1	A	Tolerance
13X1/2	1/2"	50	51	28	±3
13X1/2"(Short)	1/2"	27	55	31	±2

※ (Short) is a short type

## WATER TYPE SOCKET BRACKET



### ► WSB

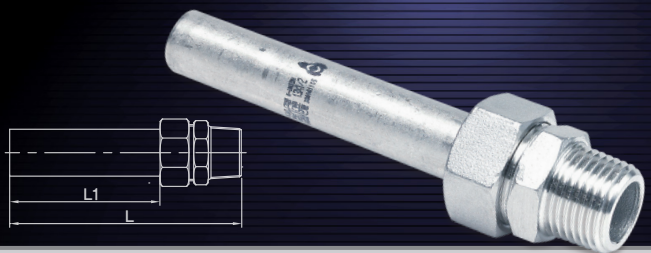
(Unit: mm)

Specification	Thread PS	L	L1	Tolerance(L)
13×1/2	1/2"	56	33	44

※ The faucet thread part is a common parallel thread of KS B 0221  
 ※ The adapter thread part is a common taper thread of KS B 0222



## K-UNION



### ► K-U

(Unit : mm)

Specification	L	L1	Tolerance
13×1/2"	115	80	±3
20×3/4"	127	90	±3
25×1"	142	100	±3
30×11/4"	146	100	±3
40×11/2"	150	100	±3
50×2"	155	100	±3

※ Products other than the above standard can also be produced(Inquire with factory)

## STEEL PIPE UNION



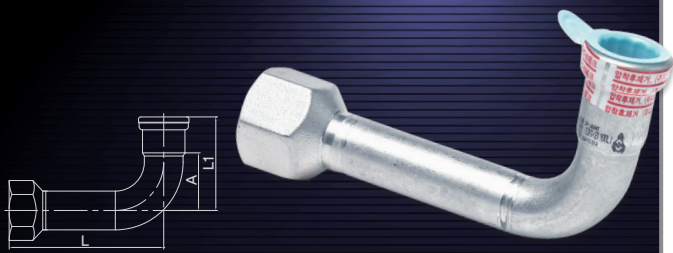
### ► STEEL PIPE UNION

(Unit : mm)

Specification	L	L1	Tolerance
13×1/2"	77	53.5	±3
20×3/4"	82	55.5	±3
25×1"	92	65.5	±3
30×11/4"	102	65.9	±3
40×11/2"	112	74.5	±3
50×2"	125	79.5	±3

※ Products other than the above standard can also be produced(Inquire with factory)

## LONG WATER TYPE ELBOW



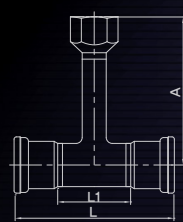
### ► LWE

(Unit : mm)

Specification	Thread PS	L	L1	A	Tolerance
13X1/2	1/2"	Length can be adjusted	51	28	±3
20X1/2	1/2"		56	35	±3
20X3/4	3/4"		56	35	±3
25X1/2	1/2"		69	44	±3
25X3/4	3/4"		69	44	±3
25X1	1"		69	44	±3

※ Products other than the above standard can also be produced(Inquire with factory)

## LONG WATER TYPE TEE



### ► LWT

(Unit : mm)

Specification	Thread PS	L	L1	A	Tolerance
13X1/2	1/2"	80	36	Length can be adjusted	±3
20X1/2	1/2"	96	46		±3
20X3/4	3/4"	96	46		±3
25X1/2	1/2"	106	56		±3
25X3/4	3/4"	106	56		±3
25X1	1"	106	56		±3
30X1/2	1/2"	132	63	Length can be adjusted	±3
40X1/2	1/2"	146	75		±3
50X1/2	1/2"	138	51		±3
60X1/2	1/2"	168	68		±5

※ Products other than the above standard can also be produced(Inquire with factory)



## STANDING PIPING 2 MULIT-TEE



### L2 Length

- **A** type : 200L
- **B** type : 140L



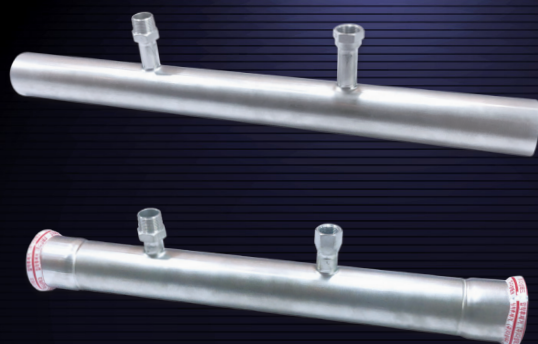
Construction image

(Unit : mm)

Specification	A	A1	L	L1	L2	
					A type	B type
25X13X13	58	35	324	271	200	140
30X13X13	61	38	345	273		
40X13X13	65	42	348	273		
50X13X13	68	45	364	273		
60X13X13	69	46	400	298		
25X20X20	54	28	324	271		
30X20X20	57	30	345	273		
40X20X20	61	35	348	273		
50X20X20	64	38	364	273		
60X20X20	66	39	400	298		

※ Products other than the above standard can also be produced(Inquire with factory)

## THERMOMETER AND PRESSURE GAUGE(CUSTOM-MADE)



※ Products other than the above standard can also be produced(Inquire with factory)

## DISTRIBUTOR MULTI-TEE(CUSTOM-MADE)



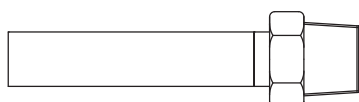
※ Products other than the above standard can also be produced(Inquire with factory)

**DASUNG**



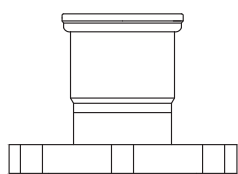
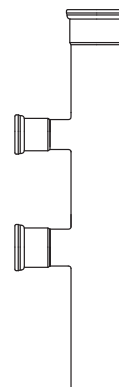
# SP-JOINT

## Fire Piping Item

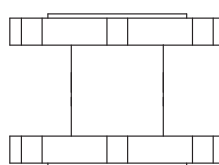


HALF SOCKET ADAPTER(MALE) \_28P

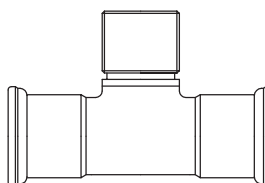
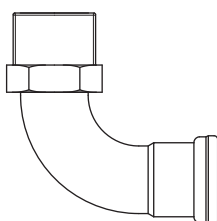
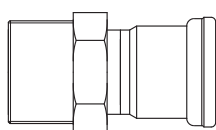
FIRE-FIGHTING HYDRANT BOX  
2 MULTI-TEE \_28P



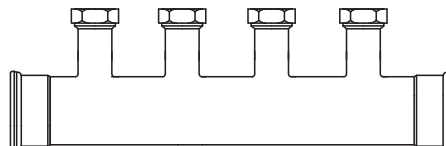
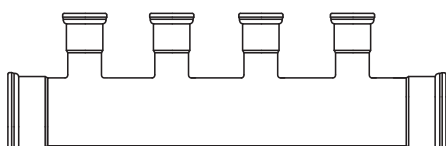
SP-FLANGE \_28P



SP-DOUBLE FLANGE \_28P



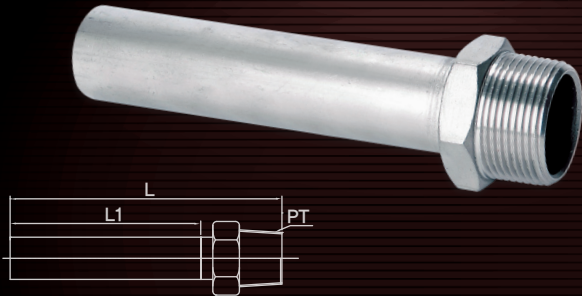
ASM·AEM·ATM \_29P



CUSTOMIZED MULTI-TEE \_29P



## SINGLE SOCKET ADAPTER(MALE) ANGLE VALVE



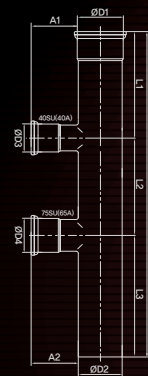
### ▶ AHS(M)

(Unit: mm)

Specification	Thread PT	L	L1	Tolerance
40X1 1/2 (40A)	1 1/2"	241	200	±3
75X2 1/2 (65A)	2 1/2"	265	200	±5

※ L1 SIZE can be produced in the unit of 10mm(Inquire with factory)

## FIRE-FIGHTING HYDRANT BOX 2 MULTI-TEE(CUSTOM-MADE)

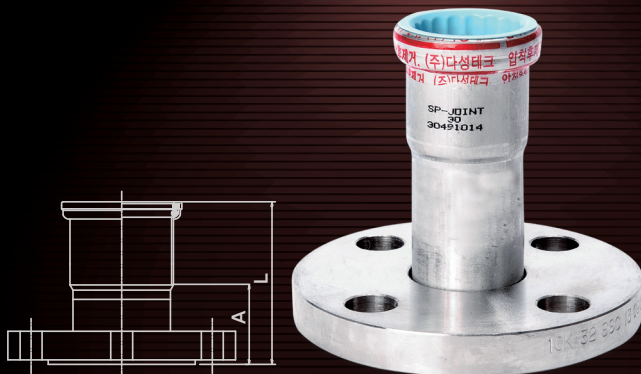


(Unit: mm)

Specification	L	L1	L2	L3	A1	A2	QD1	QD2	QD3	QD4
Refer to drawings	Length can be adjusted						75~100SU	40SU	75SU	

※ Products other than the above standard can also be produced(Inquire with factory)

## SP-FLANGE



### ▶ SP-F

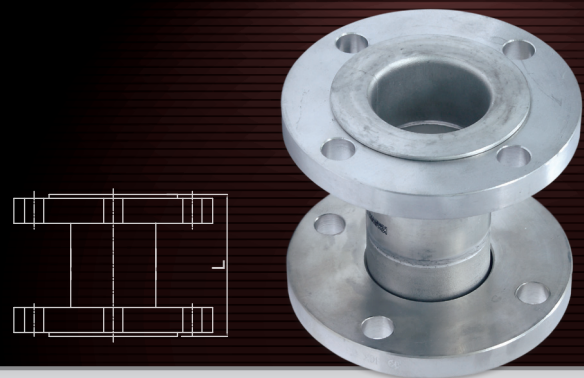
(Unit: mm)

Specification	FLANGE SIZE	LAPJOINT SIZE	L	A	Tolerance(L)
75SU	65A-10kg/cm <sup>2</sup>	65A	139	67	±3
80SU	80A-10kg/cm <sup>2</sup>	80A	146	68	±5
100SU	100A-10kg/cm <sup>2</sup>	100A	148	68	±5

※ KS B 1506 stainless steel flange used

※ 20kg/cm<sup>2</sup> can also be produced(20kg/cm<sup>2</sup> KS product ordered separately)

## SP-DOUBLE FLANGE



### ▶ SP-DF

(Unit: mm)

Specification	FLANGE SIZE	LAPJOINT SIZE	L	Tolerance(L)
65A	65A-10kg/cm <sup>2</sup>	65A	150	±5
80A	80A-10kg/cm <sup>2</sup>	80A	150	±5
100A	100A-10kg/cm <sup>2</sup>	100A	150	±5

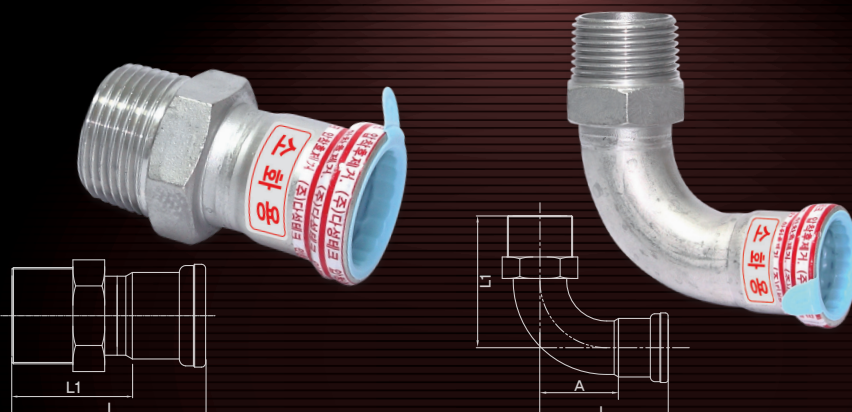
※ Flange board of 20kg/cm<sup>2</sup> can be produced.

※ Flange board of 10kg / cm<sup>2</sup> x 20kg / cm<sup>2</sup>(Mixed production) is available

※ Products other than the above standard can also be produced(Inquire with factory)



## ASM·AEM (THREAD PF)



### ▶ ASM·AEM

(Unit: mm)

Specification	Thread PF	L	L1	Tolerance(L)
25X1"	1"	59	33	±3

※ Products other than the above standard can also be produced(Inquire with factory)

## ATM (THREAD PF)



### ▶ ATM

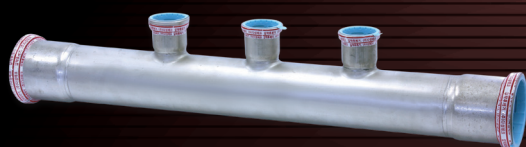
(Unit: mm)

Specification	Thread PF	L	L1	A	Tolerance
25X1"	1"	106	53	59	±3
40X1"	1"	146	75	72	±3
50X1"	1"	138	51	75	±3

※ Products other than the above standard can also be produced(Inquire with factory)

## CUSTOMIZED MULTI TEE

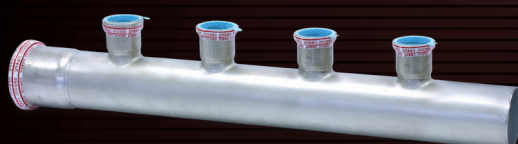
### ▶ 3 MULTI-TEE (HUB)



### ▶ 3 ADAPTER MULTI-TEE (FEMALE)



### ▶ 4 MULTI-TEE (HUB)



### ▶ 4 ADAPTER MULTI-TEE (FEMALE)



Specification	L	L1	L2	L3	L4	L5	L6	A	ØD1	ØD2	ØD3	ØD4	ØD5	ØD6	ØD7
Refer to drawings															
	Size and length can be adjusted														

※ Customized products other than the above items can also be produced after discussion on the drawings(Inquire with factory T. 8231-341-0005)

※ 2 adapter multi-tee(Female) to 6 adapter multi-tee(Female) can be produced

※ KS D 3576(SCH10) can be produced upon order

※ Total L length of less than 1,500mm can be produced.

※ L1 ~ L5 of more than 150mm can be produced

※ Multi-tee order form file can be downloaded from the Reference Room of the Dasung Tech website ([www.spjoint.com](http://www.spjoint.com))

## Crimping tool

Category	Hinge type (Charged electric type)	Chain type (Charged electric type)	Large size (Electric or charged electric type)
Product image			
Specifications	13~25 SU	13~60 SU	75~100 SU
Features	<ul style="list-style-type: none"> <li>• Beautiful appearance with a slim design</li> <li>• Easy for small size ceiling piping such as school, university dormitory, and building</li> <li>• Easy for apartment, officetel standing piping and underground drain piping</li> </ul>		
Common features	<ul style="list-style-type: none"> <li>• Easy for one-person work and handling when pressing, by using a clamping tool after fitting the jaw head to the accessory.</li> <li>• Reduces the fatigue of workers during moving work thanks to lightweightness.</li> <li>• Convenient to work in a narrow space due to angle rotation of the gun and the clamping tool</li> </ul>		
Jaw, clamping tool	<p>Can be used with the existing hydraulic electric pumps</p> <div>    </div> <div> <p>Hinge type jaw (13, 20, 25 SU)</p> <p>Chain type jaw (13, 20, 25, 30, 40, 50, 60, 75, 80, 100 SU)</p> <p>Chain type clamping tool (Medium, large)</p> </div>		
Other equipment	<div> <p><b>SP cutting machine</b></p> <p>No extra trimming to remove external burr needed</p>  </div> <div> <p><b>Charger insulated storage box (For winter)</b></p>  </div> <div> <p><b>Hydraulic electric pump</b></p>  </div>		

## Stainless steel pipe and press-type estimating standards

Nominal diameter		Stainless steel pipe for general piping [KS D 3595(=JIS G 3448)]					Nominal diameter		Stainless steel pipe for piping [KS D 3576(=JIS G 3459)]				
SU	Inch	Outer diameter (mm)	Thickness (mm)	Inner diameter (mm)	Commercial pressure (kgf/cm <sup>2</sup> )	Flow (see below)	A	Inch	Outer diameter (mm)	Thickness(mm)		Inner diameter(mm)	
										5S	10S	5S	10S
13	1/2	15.88	0.8	14.28	111.3	5	15	1/2	21.7	1.65	2.1	18.4	17.5
20	3/4	22.22	1.0	20.22	99.4	13	20	3/4	27.2	1.65	2.1	23.9	23.0
25	1	28.58	1.0	26.58	77.4	27	25	1	34.0	1.65	2.8	30.7	28.4
30	1 1/4	34.00	1.2	31.6	78.0	42	32	1 1/4	42.7	1.65	2.8	39.4	37.1
40	1 1/2	42.70	1.2	40.3	62.1	80	40	1 1/2	48.6	1.65	2.8	45.3	43.0
50	2	48.60	1.2	46.2	54.6	120	50	2	60.5	1.65	2.8	57.2	54.9
60	2 1/2	60.50	1.5	57.5	54.8	210	65	2 1/2	76.3	2.1	3.0	72.1	70.3
75	—	76.30	1.5	73.3	43.4	380	80	3	89.1	2.1	3.0	84.9	83.1
80	3	89.10	2.0	85.1	49.6	510	100	4	114.3	2.1	3.0	110.1	108.3
100	4	114.30	2.0	110.3	38.6	860							

### Reference


- Flow rate and flow velocity less than 1.3M/secFriction loss 30mmAg/M
- Stainless steel does not generate “rust lumps” of internal corrosion, making it secure sufficient flow even by using a small diameter pipe below 1RANK or 2RANK compared to ordinary steel pipes.
- Cooper Pipes facilitate corrosion due to the occurrence of ERROSION when the flow velocity is about 1.5M/SEC or higher. However, stainless steel pipes have flexible design conditions without any problems even if the flow rate is increased by raising the flow velocity.
- The flow velocity increases with the limit of P point, and the friction loss becomes smaller as the pipe diameter increases with the limit of P point.
- P point DETAIL [1.5M/SEC = 30mm Ag/M].
- Stainless steel pipe for piping (KS D 3576) is based on SCH10

### Permissible tolerance of the outer diameter of the stainless steel pipe for general piping [KS D 3595 (= JIS G 3448)]

Specifications(SU)	Outer diameter(mm)	Permissible tolerance(mm)	Thickness(mm)
13	15.88	−0.37	0.8
20	22.22	−0.37	1.0
25	28.58	−0.37	1.0
30	34.00	±0.34	1.2
40	42.70	±0.43	1.2
50	48.60	±0.49	1.2
60	60.50	±0.60	1.5
75	76.30	±1%	1.5
80	89.10	±1%	2.0
100	114.30	±1%	2.0



## Specifications

Applicable standard	<ul style="list-style-type: none"> <li>Stainless steel pipe for general piping [KS D 3595 (= JIS G 3448)] 13~100SU</li> <li>Stainless steel pipe for piping [KS D 3576 (= JIS G 3459)] SCH5 80~100A</li> </ul>
Applicable standard	<ul style="list-style-type: none"> <li>Water supply, hot water for buildings and ships, cooling and heating pipes using water, fire-fighting pipes, water supply underground pipes, etc.</li> </ul>
Materials and quality	<ul style="list-style-type: none"> <li>Stainless steel pipe for general piping[KS D 3595(= JIS G 3448)], STS304, 316L</li> <li>Certified by Korea Water and Wastewater Association(No. KWWA-07-003)</li> <li>Certified by Japan Waterworks Association Certification(JWWA G-804)</li> <li>Certified by hygiene safety standard(KCW-2011-0290)</li> <li>Certified for water use by Korea Water and Wastewater Association(No. KWWA-CP-2015-013)</li> </ul>
Inspection and Test	<ul style="list-style-type: none"> <li><b>Inspection</b> Visually inspected whether it is pressed in a circular shape or a circular groove is clearly shown, and when not pressed, inspect by using a verification jig or vernier calipers (Check the dimension table after pressing).</li> <li><b>Test</b> After the construction is completed, the test is conducted with the pressure specified in the design book or 25kgf / cm<sup>2</sup>, and if there is no separate regulation, it is verified if there is a water leakage with 2~3 times the on-site water pressure in use.</li> </ul>
Precautions	<ul style="list-style-type: none"> <li>► <b>Prevention of EPDM rubber ring damage</b> <ul style="list-style-type: none"> <li>When cutting pipes, a cutter for SP must be used. If unavoidable, and when using a saw or a wheel cutter, be sure to remove the burr of outer and inner parts of the cutting surface before trimming to prevent damage to the EPDM rubber ring, and the end of the original must also be trimmed.</li> </ul> </li> <li>► <b>Prevention of the corrosion in crevices by foreign substances</b> <ul style="list-style-type: none"> <li>Foreign substances may enter when the protective cap is removed in advance, so be sure to insert the pipe after removing it before pressing. If foreign substances (Iron powder, dust, dirt) are on the surface, clean them before use.</li> <li>When placing concrete in the upper layer after the standing piping, the compression should be completed within a short period of time to prevent contamination by foreign substances. (If not possible to press straight away, prevent contamination by using blue tape.</li> <li>Apply grease once a day before and after using the tools to prevent rust caused by moisture and dust, reduce the friction of the insert sliding surface of the jaw, and remove foreign substances (Dust) for smooth compression.               <ul style="list-style-type: none"> <li>* The spray grease should be thoroughly shaken to be applied between the insert of the jaw.</li> </ul> </li> </ul> </li> <li>► <b>Prevention of uncompression and erroneous construction</b> <ul style="list-style-type: none"> <li>When pressing, align the jaw head and the bumpy part (Film part) well, and then press the pipe and the jaw head at right angles. (To prevent diagonal compression)</li> <li>After pressing, remove the film to show a clear distinction between before and after pressing.</li> <li>After removing the film, inspect whether the compression area is evenly pressed in a circular shape with the naked eye or by using the verification jig.</li> <li>The compression must be carried out using our company's tools, and we are not responsible for any faults caused by pressing with the tools of other companies.</li> </ul> </li> </ul> <div data-bbox="1141 1238 1455 1615"> <p><b>Photo example</b> Corrosion of iron powder caused by the use of wheel cutter</p>  <p><b>Use of SP cutter is strongly recommended.</b></p> </div>



## Construction method



After cutting the pipe, mark the line with an oil pen.



Cut the pipe using a special SP cutter.



Remove the protective cap of the joint.



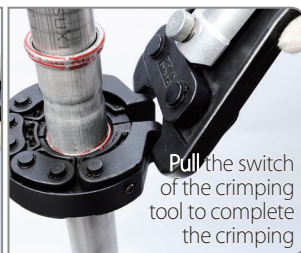
Naturally insert the cut pipe and joint openings in a straight line.



Mount the crimping tool to the bumpy part (Film part) of the opening.



Mount the crimping tool to the jaw head



Pull the switch of the crimping tool to complete the crimping

Complete the construction using the crimping tool.



Remove the film.



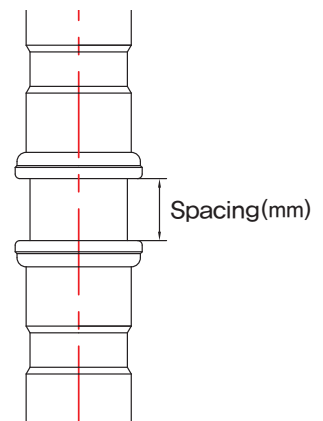
Check if the crimping is properly done using the verification jig.

### Dimension table after crimping

Specifications	Before crimping	After crimping	Permissible tolerance
13SU	22,9	21,2	±0,3
20SU	30,4	28,3	±0,3
25SU	37,1	34,5	±0,3
30SU	45,1	42,1	±0,3
40SU	55,8	51,9	±0,4
50SU	62,1	57,2	±0,4
60SU	76,8	70,6	±0,4
75SU	95,6	88,2	±0,4
80SU	111	104	±0,5
100SU	137	128,6	±0,5

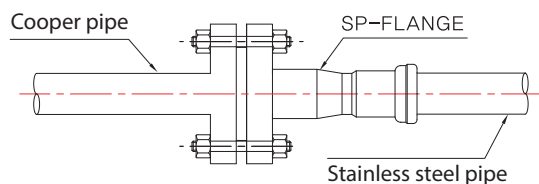
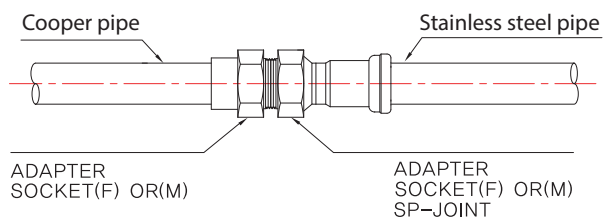
### Minimum spacing between products

Specifications	Spacing(mm)
13SU	15
20SU	15
25SU	15
30SU	25
40SU	25
50SU	25
60SU	25
75SU	30
80SU	30
100SU	30

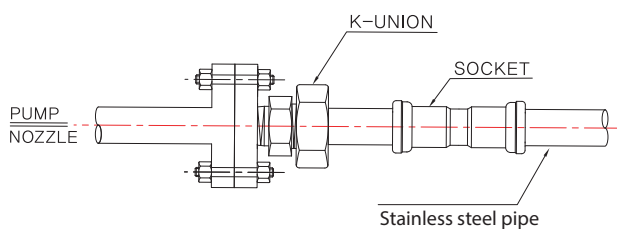
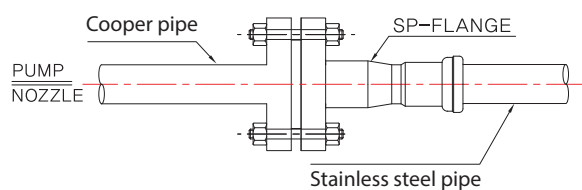


# Join with other pipes

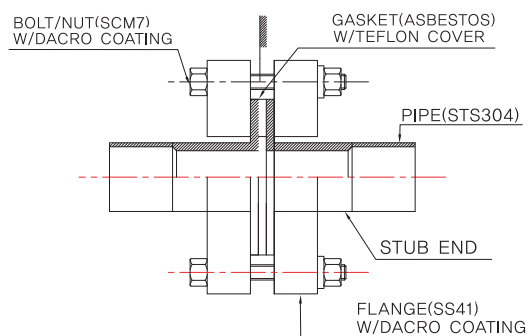
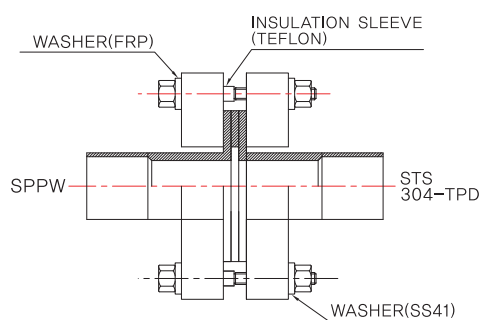
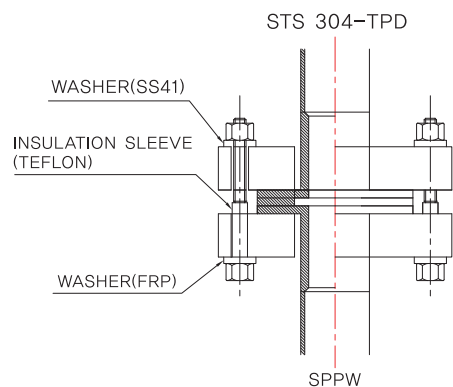
## Join with copper pipes method



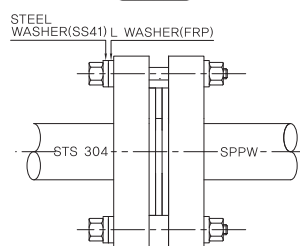
## Connect with equipment such as pumps



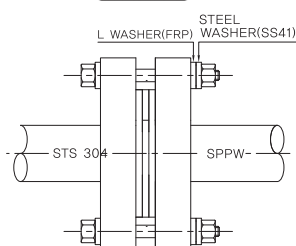
## Join with flange



### Possible



### Impossible



### **Precautions when using groundwater (natural water)** (applied to steel pipe, copper pipe, stainless steel pipe, etc.)

With the expansion of the city, the development of groundwater is increasing, causing contamination to increase. In addition, there is an increased concern about contamination, such as surface water flowing in due to poor treatment of the abandoned wells. Therefore, if the water is filled in the pipe for a long time after conducting the hydraulic test with contaminated groundwater at some sites, microorganisms increase in the water in the pipe, and MIC (Microbially induced corrosion) is caused in the steel pipe, the copper pipe, and the stainless steel pipe by the excrement. Therefore, the following precautions are required.

- ▶ **Time of occurrence** : Early May to mid-September (Pre-fill the water for a long time. High risk in high temperature and high humidity)
- ▶ **Conditions of occurrence** : MIC occurs in the weld, pipe connection, or pipe body in the environment that is favorable for the growth and the reproduction of microorganisms, in other words, the environment where microorganisms can grow easily.
- ▶ **Measures** : The occurrence of MIC can be controlled by sterilizing microorganisms, preventing contamination of components that make microorganisms grow easily, and making the reproduction of microorganisms difficult. The method is as follows.
  - ① Use of water supply and treated water
  - ② Drain the water within 3 days after the leakage test and dry the inside of the pipe.
  - ③ Do not leave the water in the pipe for a long time but circulate and pass water.

### **General precautions for the hydraulic test** (applied to steel pipe, copper pipe, stainless steel pipe, etc.)

- ① **The water for the hydraulic test should use tap water in principle.**  
When natural water (Groundwater, stream water, etc.) is used inevitably, a thorough measure should be taken for corrosion caused by microorganisms.
- ② **Water for the hydraulic test must be discharged after a leakage check.**  
While working on the pipes, the water in the pipe may be contaminated and have a corrosive effect on the piping material, due to foreign substances, various wastes and contaminants caused during pipe cutting. When using natural water, in particular, these contaminants become food for microorganisms, facilitating the corrosion of microorganisms. It is desirable to discharge completely within 3 days after filling the pipe with water.
- ③ **When discharging the water for the hydraulic test, discharge it after confirming that the slope of the pipe is not drooping.**  
In the winter, freezing may occur due to the water remaining in the pipe, and contaminated water remaining in the pipe may cause corrosion.
- ④ **Check the strainer after draining the water for the hydraulic test.**  
Check the strainer net, and if there are foreign substances caught in the net, wash it with clean water and re-install it.
- ⑤ **In particular, if the pipe needs to be filled with natural water (Groundwater, river water, etc.) for more than 3 days (Stagnant), careful measures must be taken against the corrosion caused by microbial effects.**  
To prevent the reproduction of microorganisms in the water, chlorine for sterilization used in the water purification plant should be regularly injected, and more careful management is required in the high temperature and humidity around June to August when microorganisms are actively reproduced. After completion, before normal operation, the water filled for the hydraulic test (mostly contaminated water such as foreign substances and oil occurred during piping) should be completely discharged, and the pipe is washed with clear water before passing the water.



## Construction image





## Approvals and Certificates

### Stainless Power Joint

38	About Us
39	Business Registration
40	Factory registration certificate(Application)
41	Patent certificate
45	ISO 9001 Certificate
46	Korea Water and Wastewater Association(KWWA) Certificate
47	Japan Waterworks Association(JWWA) Certificate
48	Korean Hygiene Safety Standard(KC) Certificate
49	Korea Waterworks Suitability(CP) Certificate
50	Korea Fire Equipment Inspection Corporation(KFI) certificate
51	Korean Register of Shipping(KR) Certificate
52	Taiwan CNS(TPL) Experiment Certificate
56	Taiwan SGS Certificate
58	KWWA certification test method
60	Test report

### DASUNG

<b>Head office</b>	195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea (255-1, Ichi-ri)
<b>Sales Division</b>	No. 2801-2, 126, Bulmal-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea (Gwanyang-dong, Obiz Tower)
<b>Busan Sales Office</b>	221-114, West Busan Distribution Complex 2, 3138-1, Daejeo 2-dong, Gangseo-gu, Busan, Korea
<b>Contact</b>	T.82-31-633-1117 F.82-31-633-3160
<b>Scale</b>	Factory_5,523.00m <sup>2</sup> / Manufacturing Facilities_1,323.28m <sup>2</sup>
<b>Date of establishment</b>	May 4, 2006(111 employees)
<b>Production capacity</b>	50 billion won per year(Including partners)
<b>Capital</b>	830 million won
<b>Main Products</b>	Stainless Steel Pipe Joint(SP-JOINT) and Crimping Tools

Original verification



### Main products of stainless steel pipe joint (Product name : SP-JOINT)

Product Name	Specifications (SU)	Other (Special Item)
Socket	13~100	
Tee	13~100	
Cap	13~100	• Rallica Tee
Elbow (45°, 90°)	13~100	• Rallica Reducer
Reducer	13~100	• 45° · 90° single socket elbow
Female, male elbows	13~60	• Single socket reducer
Female, male adapter socket	13~60	• Fixed anchor socket
K Union	13~60	• Single socket adapter (Female, male)
Faucet Tee	13~60	• SP flange
Hydraulic test cap	13~60	• Single tee adapter (Female, male)
Faucet elbow, socket	13~25	• Other order products

We have newly developed the piping method of the conventional double-ring crimp joint by securing excellent technical manpower and facilities, and are doing our best to realize customer satisfaction by creating products of the highest quality.



( 1 / 1 )

발 급 번 호 Issuance number	사 업 자 등 록 증 명 Certificate of Business Registration ( 법인사업자 ) ( Corporate Taxpayer )		처 리 기 간 Processing time
1613-847-5119-339			즉 시 Immediately
상 호 ( 법 인 명 ) Name of company	주식회사 다성테크 DASUNG TECH CO., LTD		
사 업 자 등 록 번 호 Business registration number	126-81-94866		
성 명 ( 대 표 자 ) Name of representative	이명용 MYEONG-YONG LEE		
주 민 ( 법 인 ) 등 록 번 호 Resident(Corporation) registration number	134411-0031764		
사 업 장 소 제 지 Business Address	경기도 이천시 마장면 서이천로 195 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Republic of Korea		
개 업 일 Date of business commencement	2006년(Year) 05월(Month) 12일(Day)		
사 업 자 등 록 일 Date of business registration	2006년(Year) 05월(Month) 16일(Day)		
업 태 Business type	제조업/부동산 Manufacturing/Real estate activities and renting and leasing		
종 목 Business item	배관자재 Manufacture of stainless steel fittings for stainless steel piping system 임대 Renting of Non-Residential Buildings		
공 동 사 업 자 Joint business owner	성명(법인명) Name(Name of company)	주민(사업자)등록번호 Resident(Business) registration No.	
	해당사항 없습니다 (No Data)		
<p>위와 같이 증명합니다.</p> <p>I certify that above information is true and correct to the best of my knowledge and belief.</p> <p>※ 위 내용은 발급일 현재 상황으로서 추후 변경될 수 있습니다. This information is true as of the issuance date of this certification and but maybe subject to change in the future.</p>			
접 수 번 호 Receipt No.	501833858913	2020 년 4 월 20 일 Year Month Day	
담 당 부 서 Department	민원봉사실 Taxpayer Service Center		
담 당 자 Staff in Charge	김안순 KIM AN SOON	이 천 세 무 서 장 (인) Head of Icheon District Tax Office (Stamp)	
연 락 처 Telephone No.	031-644-0224		



- \* 본 증명의 위·변조 여부는 발급일로부터 90일 이내 「국세청 홈택스(www.hometax.go.kr) 또는 모바일 홈택스 > 민원증명(증명발급) > 민원증명 원본확인」에서 발급번호로 확인, 또는 문서 하단의 바코드로 확인이 가능합니다.  
(공문서를 위·변조하거나 행사한 자는 10년 이하의 징역에 처할 수 있습니다.)
- \* 본 증명은 홈택스(www.hometax.go.kr)에서 대민 온라인 서비스를 통해 발급된 증명서입니다.



# Factory registration certificate (Application)

Form No. 8-2

Also available online: [www.femis.go.kr](http://www.femis.go.kr)

## Plant Registration Certification Form

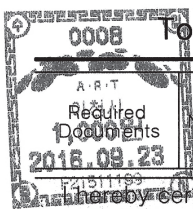
Reference No.	Date Received	Processing Time	Immediate
Company Information	Name of Company Dasung Tech Co., Ltd.	Tel. (Tel : ( 031 ) 633-1117)	
	Name of Chairperson Myeong-Yong Lee	Date of Birth (Corporate Registration No.) 134411-0031764	
	Address of Chairperson (Address of Company) 195,Seoicheon-ro,Majang-myeon,Icheon-si,Gyeonggi-do		
Plant Information	Address of Plant 195,Seoicheon-ro,Majang-myeon,Icheon-si,Gyeonggi-do	Land Category Factory site	Property Status Owned [ <input checked="" type="checkbox"/> ] , Rented [ ]
	Plant Registration Date 2002-01-14	Start Date of Business 2006-05-12	No. of Employees Male: 70 Female: 30
	Business Line (Classification Code) Manufacture of Taps, Valves and Similar Products 29133		
	Area of Site 5,523.000 m <sup>2</sup>	Area of Manufacturing 1,313.280 m <sup>2</sup>	Area of Other Facilities 2,480.330 m <sup>2</sup>
Registration Conditions			
Changes (Including Dates)			

I hereby apply for a Plant Registration Certificate in accordance with Article 12-3 of the *Industrial Cluster Development and Factory Establishment Act*.

2016 Year 9 Month 23 Day

Applicant

Myeong-Yong Lee (Signature or Stamp)



To Gyeonggi-do Icheon-si

I hereby certify that the above plant is registered in accordance with Article 16-1/16-2/16-3 of the *Industrial Cluster Development and Factory Establishment Act*.

2016 Year 9 Month 23 Day

Gyeonggi-do Icheon-si

210 mm × 297 mm [Paper 70g / m<sup>2</sup> (Recycled)]



이천시청 / 9월23일 09:58





## URKUNDE

Es wird hiermit bescheinigt, dass für die in der Patentschrift beschriebene Erfindung ein europäisches Patent für die in der Patentschrift bezeichneten Vertragsstaaten erteilt worden ist.

## CERTIFICATE

It is hereby certified that a European patent has been granted in respect of the invention described in the patent specification for the Contracting States designated in the specification.

## CERTIFICAT

Il est certifié qu'un brevet européen a été délivré pour l'invention décrite dans le fascicule de brevet, pour les Etats contractants désignés dans le fascicule de brevet.

Europäisches Patent Nr.

European patent No.

Brevet européen n°

**1974836**

Patentinhaber

Proprietor of the patent

Titulaire du brevet

**Dasung Tech Co., Ltd.**  
**287-2, IChi-ri, MaJang-myeon**  
**Icheon-si, Gyeonggi-do**  
**467-813/KR**

**Benoît Battistelli**

Präsident des Europäischen Patentamts  
 President of the European Patent Office  
 Président de l'Office européen des brevets

München, den  
 Munich,  
 Fait à Munich, le

**14.07.10**

证书号第 626136 号



## 发明专利证书

发明名称: 导管挤压连接装置

发明人: 崔钟锡; 李明镛

专利号: ZL 2008 1 0006158.4

专利申请日: 2008 年 02 月 15 日

专利权人: 株式会社多星泰克

授权公告日: 2010 年 06 月 02 日

本发明经过本局依照中华人民共和国专利法进行审查, 决定授予专利权, 颁发本证书并在专利登记簿上予以登记。专利权自授权公告之日起生效。

本专利的专利权期限为二十年, 自申请日起算。专利权人应当依照专利法及其实施细则规定缴纳年费。本专利的年费应当在每年 02 月 15 日前缴纳。未按照规定缴纳年费的, 专利权自应当缴纳年费期满之日起终止。

专利证书记载专利权登记时的法律状况。专利权的转移、质押、无效、终止、恢复和专利权人的姓名或名称、国籍、地址变更等事项记载在专利登记簿上。





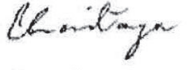


局长

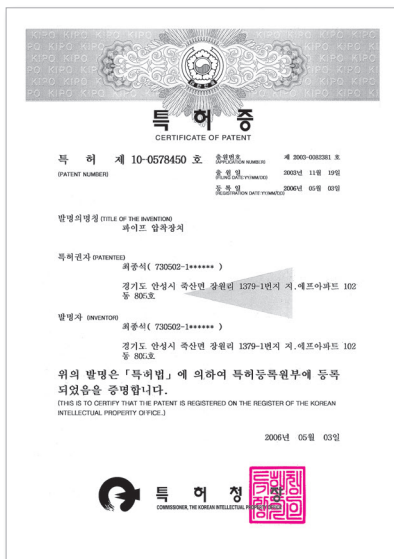
田力普



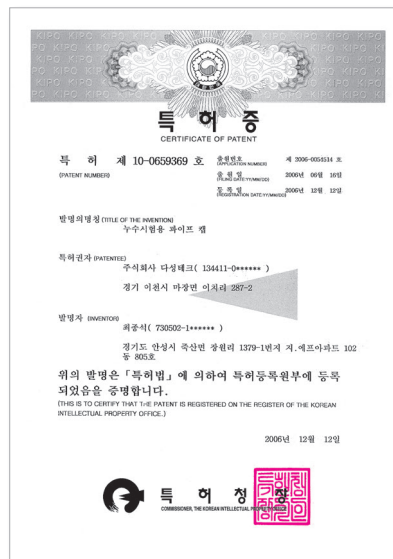
第 1 页 (共 1 页)

क्रमांक : SI. No. :	<div style="border: 1px solid black; padding: 2px; display: inline-block;">011 023625</div>	 सत्यमेव जयते	 <b>INTELLECTUAL PROPERTY INDIA</b> PATENTS   DESIGNS   TRADE MARKS GEOGRAPHICAL INDICATIONS								
		<b>भारत सरकार</b> <b>GOVERNMENT OF INDIA</b> <b>पेटेंट कार्यालय</b> <b>THE PATENT OFFICE</b> <b>पेटेंट प्रमाणपत्र</b> <b>Patent Certificate</b> <i>(Rule 74 of Patents Rules)</i>									
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Patent Number</td> <td style="width: 50%;">: 264470</td> </tr> <tr> <td>Application Number</td> <td>: 2697/DEL/2007</td> </tr> <tr> <td>Date of Filing</td> <td>: 24/12/2007</td> </tr> <tr> <td>Patentee</td> <td>: DASUNG TECH CO., LTD.</td> </tr> </table>				Patent Number	: 264470	Application Number	: 2697/DEL/2007	Date of Filing	: 24/12/2007	Patentee	: DASUNG TECH CO., LTD.
Patent Number	: 264470										
Application Number	: 2697/DEL/2007										
Date of Filing	: 24/12/2007										
Patentee	: DASUNG TECH CO., LTD.										
<p>It is hereby certified that a patent has been granted to the patentee for an invention entitled PRESS-CONNECTING APPARATUS FOR PIPES as disclosed in the above mentioned application for the term of 20 years from the 24 day of DECEMBER 2007, in accordance with the provisions of the Patent Act 1970.</p>											
 Controller of Patents		 Controller General of Patents, Designs & Trademarks									
Date of Grant: 31/12/2014											
<div style="border: 1px solid black; padding: 5px;"> <p><b>Note:</b> The fees for renewal of this patent, if it is to be maintained, will fall/has fallen due on 24 day of DECEMBER 2009 and on the same day in every year thereafter.</p> </div>											

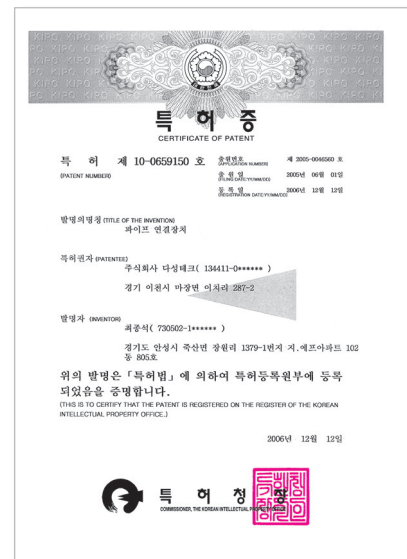
# Domestic patent certificate



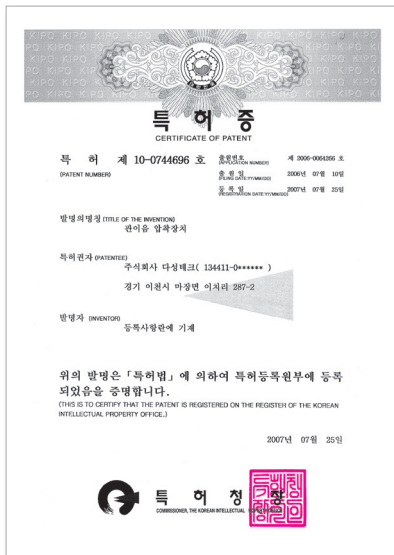
Pipe crimping device



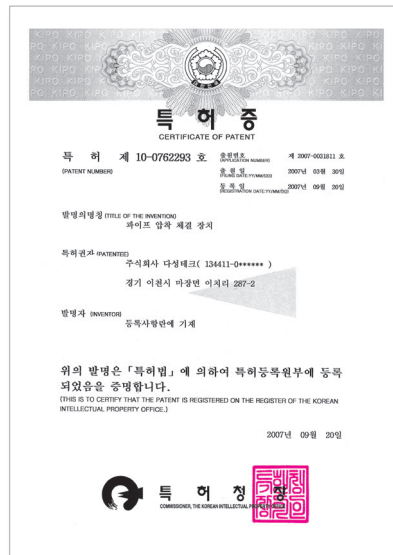
Pipe cap for leakage test



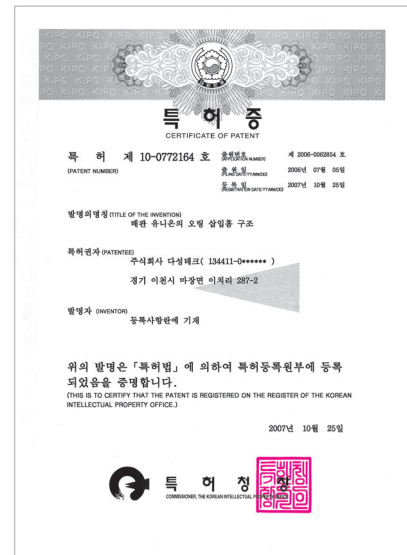
Pipe connection device



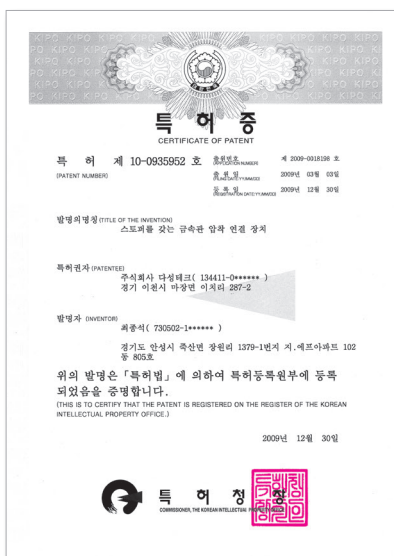
Pipe joint crimping device



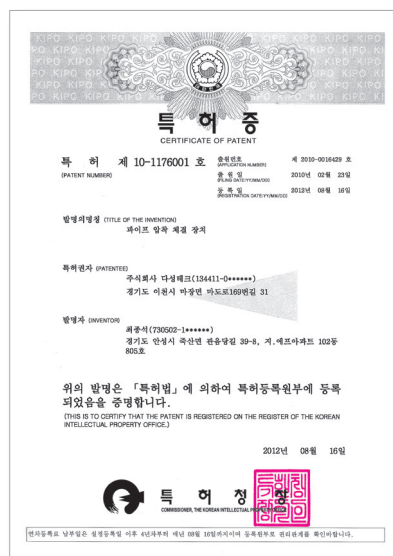
Pipe crimping joint device



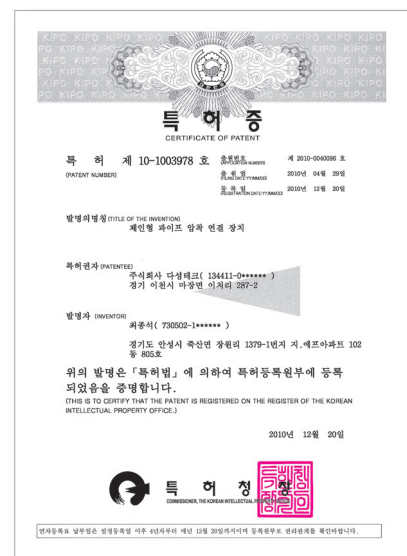
O-ring insertion groove structure of pipe union



Metal pipe crimping connection device with stopper



Pipe crimping joint device



Chain-type pipe crimping connection device





# CERTIFICATE OF REGISTRATION

Accreditation No. M2361101KS at [www.jas-anz.org/register](http://www.jas-anz.org/register)

## DASUNG TECH CO., LTD.

195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

*This is to certify that the Quality Management System and the scope of the certification of the above mentioned company meets the requirement of*

## ISO 9001 : 2015 / KS Q ISO 9001 : 2015


*For the following scope of registration*

**Design, Development, Manufacture and Servicing of Stainless Power Joint("Light gauge stainless steel pipe fittings for ordinary piping"), Stainless Power joint Exclusive Compression Tool, Grooved Joint Coupling and Fittings**

IAF: 17, 18

SIC: 27.22, 29.43

Certificate Number: JK-12071  
 Date of Initial Approval: 26 October 2006  
 Re-issued Date: 23 October 2018  
 Expiry Date: 23 October 2021

Approved by   
 Hyoung Jong Han, President



Page 1/1

*This management system certificate applies to the operations of the address shown above and not transferable. It remains the property of International Industrial Certification Co., Ltd. accredited by JAS-ANZ a signatory of IAF MLA and is valid only if regulatory surveillance audit is conducted within the required time.*

JAS-ANZ



International Industrial Certification  
 (Gayang Technotown No. 803-2), 217, Heojun-Ro, Gangseo-Gu, Seoul, Korea  
 Tel: +82 (0)2 6097 9001 • Fax: +82 (0)2 6097 9005  
[www.iicregistrar.com](http://www.iicregistrar.com)



# KWWA CERTIFICATE

*This is to certify that the Korea Water and Wastewater Works Association Standard(KWWA) Mark of :*

**DASUNG Tech. Co., Ltd.**

195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea  
*Myeong-Yong, Lee*

*has been approved by KWWA to the following KWWA Standard*

**KWWA D 100-2**  
***Stainless steel fitting for water works***

- Type, Grade and Size :
- Press type(Double ring)
- Socket, Elbow, Tee, Cap / 13~100 mm

*in accordance with the Korean Industrial Standardization Act and  
KWWA Standard Certification Regulations.*

Certification Date : 18-Sep-2007

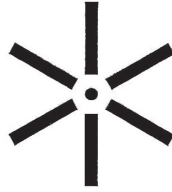
Certificate Number : KWWA-07-003



**KOREA WATER AND WASTEWATER WORKS ASSOCIATION**



KOREA WATER AND WASTEWATER WORKS ASSOCIATION



## 給水用具（継手類）の認証登録証

1. 認証登録番号 G-804  
認証登録年月日 2017年4月1日
2. 登録更新年月日 2020年4月1日  
登録証有効期限 2021年3月31日
3. 認証取得者名 株式会社 多星テック  
住 所 17385 大韓民国京畿道利川市麻長面梨峙里255-1
4. 認証登録品の種類 その他の接合形継手  
型式又は略号 附属書（型式又は略号）
5. 品質確認実施工場 株式会社 多星テック  
住 所 17385 大韓民国京畿道利川市麻長面梨峙里255-1
6. 審査基準 基本基準  
性能項目 耐圧性能、浸出性能
7. 品質確認方法 自社検査方式

〒102-0074  
東京都千代田区九段南4-8-9

公益社団法人 日本水道協会

理事長 吉田 永



発行年月日 2020年4月1日



## SANITATION AND SAFETY CERTIFICATE

1. CERTIFICATE NUMBER : KGW-2011-0290
2. MANUFACTURER : DASUNG Tech Co., Ltd.
3. OWNER : Lee Myeong yong
4. LOCATION OF HEAD OFFICE : 195, Seoicheon-ro Majang-myeon, Icheon-si,  
Gyeonggi-do, Republic of Korea
5. LOCATION OF FACTORY : 195, Seoicheon-ro, Majang-myeon, Icheon-si,  
Gyeonggi-do, Republic of Korea
6. PRODUCT : Stainless steel fitting for water works
7. TYPE : Refer to reverse side
8. USE : Water supply facilities for general water works and final stage

This is to certify that the sanitation and safety products  
described above have been produced according to the  
Article 14 of WATER SUPPLY AND WATERWORKS INSTALLATION  
ACT of the Republic of Korea

*Certification Date : 17-Oct-2013*

*Certified by*

*Parvinder*  
President



**Korea Water and Wastewater Works Association**  
Ahyeon-dong 711-2, Mapo-gu, Seoul 121-010, KOREA



## CP CERTIFICATE

1. Certificate No. : KWWA-CP-2015-013
2. Name of Manufacturer : DASUNG TECH CO., LTD.
3. Name of Representative : LEE, MYEONG-YONG
4. Location of Factory : 195, Seoicheon-ro, Majang-myeon, Icheon-si,  
Gyeonggi-do, Korea
5. Product Certified
  - A. Name of Product : Stainless Steel Fitting for Water Works
  - B. Type/Grade : Refer to the Appendix.
  - C. Size of Product : Refer to the Appendix.

This is to certify the conformity product in accordance with the regulations stipulated in the Article 24-2 of Water Supply and Waterworks Enforcement Ordinance, Notice of Ministry of Environment(2016-172), and Article 18 of Operation Outline of Conformance Certification for Water supply Materials and Products.

February 27, 2015



KOREA WATER AND WASTEWATER WORKS ASSOCIATION



KOREA WATER AND WASTEWATER WORKS ASSOCIATION





Certificate No. 201500385

## **CERTIFICATE of PERFORMANCE ACCREDITATION**

**Applicant** : LEE MYEOUNG YONG

**Company** : DASUNG Tech co.,LTD

**Address** : 195, Seoisheon-ro, Majang-myeon, Icheon-Si, Gyeonggi-do, Korea

This is to certify that the following item has been approved in accordance with the provisions of Article 39 (1) of Installation, Maintenance, And Safety Control Of Fire-Fighting Systems Act and Article 17 (1), Article 18 (2) of Regulation On Quality Control, Etc. Of Fire-Fighting Appliances.

1. **Item** TBP(T-Branched Pipe)
2. **Type** Light gauge stainless Steel Pipes for ordinary piping(Expanding Type), Length(0.3~6.0) m, Norminal Size 30×(25), 40×(30,25), 50×(40~25), 60×(50~25)
3. **Type Approval No.** 분기15-5
4. **Limitation** -

*Choi, Ung-Gil*  
President

Date : 13 May. 2015

Korea Fire Institute



FOUNDED 1960



## TYPE APPROVAL CERTIFICATE

**Certificate No.** : SEL26944-PE001 **Initial Approval** : 14th July, 2011.  
**Product** : Compression Couplings (SP-JOINT)  
**Manufacturer** : Da Sung Tech. Co., Ltd.  
 573 Gwan-li, Majang-myeon, Icheon City, Gyeonggi, Korea

**Product Description** : 90° Elbow, 45° Elbow, Socket, Bear Socket, Reducer, Tee, Cap, Adapter Elbow, Adapter Socket, Water Type Tee, Water Type Elbow, Water Type Socket, K-Union

- Design Pressure (MPa) : 1.0 ~ 2.0

- Design Temp. (°C) : 100

" See Appendix 1 & 2 "

**Approval Condition** : 1) This approval is granted on the basis of submitted technical data, test report, approved documents.  
 2) The Product Certificate is not required and these compression couplings are not to be used for Class I, II piping systems.  
 3) The product is to be marked with manufacturer name and type designation on a suitable position.

**THIS IS TO CERTIFY** that the above-mentioned product has been approved in accordance with the relevant requirement of this Society's Rules and / or of the recognized standards as follows and entered in the "List of Approved Manufacturers and Type Approved Equipment".

Pt. 5, Ch. 6, Sec. 104 of the Rules for Classification, Steel Ships.

This Certificate is valid until 13th July, 2016.

Issued at Daejeon, Korea on 14th July, 2011.



KOREAN REGISTER OF SHIPPING

*General Manager of  
Materials and Equipment Team*

*Note : 1 : The approval will be automatically suspended and the Certificate become invalid from the expiry date of the Certificate in the event that the extension has not been granted or the renewal of the Certificate is not underway.*

*2 : The manufacturer should notify this Society of any modification or changes that may affect the validity of this Certificate.*

AC-2A(2011.06)



## 台灣衛材開發與測試研究所 試驗報告表

TAIWAN PLUMBING RESEARCH &amp; TESTING LABORATORIES

檢測編號：F1221169-C

收件日期：2016.12.21

測試日期：2016.12.23

報告簽署人：



檢驗員：



注意：(1) 本報告僅對送檢樣品負責。(2) 本報告未經書面許可，不得複製或摘錄。

1. 委託者：多星 TECH 株式會社 韓國京畿道利川市麻長面梨峙里 255-1

2. 取樣者：多星 TECH 株式會社

3. 委託事項：

委託事項	測試項目	試驗說明
CNS 14645 B 2811	氣密試驗	氣壓 6.1 kgf/cm <sup>2</sup> , 持續 5 秒
	耐壓試驗	水壓 25 kgf/cm <sup>2</sup> , kgf/, 持續 2 分鐘
	負壓試驗	減壓至絕對壓力 40mmHg, 持續 2 分鐘
	水壓試驗	水壓 25 kgf/cm <sup>2</sup> , kgf/, 持續 2 分鐘

4. 樣品來源：多星 TECH 株式會社 韓國京畿道利川市麻長面梨峙里 255-1

5. 被測試件名稱：

樣品名稱	代表測試件
SP-JOINT 30su SOCKET	SP-JOINT 30su SOCKET No. 1, No. 2, No. 3, No. 4

6. 本測試所有過程均在金屬工業研究發展中心測試實驗室內，由相關測試人員完成。

檢測編號：F1221169-C

版 次：0

Page 1 of 4

金屬工業研究發展中心  
METAL INDUSTRIES RESEARCH & DEVELOPMENT CENTRE

407 台中市工業區 37 路 25 號 TEL:886-4-235-2169 FAX:886-4-23501174



## 7.測試結果：

## 7.1 氣密試驗：

測試件耐氣壓  $6.1 \text{ kgf/cm}^2$ ，放入水中，持續 5 秒鐘。

## 7.1.1 測試要求：

測試過程中測試件不得有任何洩漏情形產生。

## 7.1.2 實際測試結果：

樣品編號	實際測試條件	測試結果	判定
NO.1	氣壓 $6.45 \text{ kgf/cm}^2$ ，5 秒鐘	無洩漏	Passed

## 7.2 耐壓試驗：

測試件耐水壓  $25 \text{ kgf/cm}^2$  持續 2 分鐘。

## 7.2.1 測試要求：

測試過程中測試件不得有任何洩漏情形產生。

## 7.2.2 實際測試結果：

樣品編號	實際測試條件	測試結果	判定
NO.2	水壓 $26 \text{ kgf/cm}^2$ ，2 分鐘	無洩漏	Passed

## 7.3 負壓試驗：

將測試件之內部壓力減壓至絕對壓力  $40 \text{ mmHg}$ ，持續 2 分鐘。

## 7.3.1 測試要求：

測試過程中測試件須保持絕對壓力，不得有任何洩漏情形產生。

## 7.3.2 實際測試結果：

樣品編號	實際測試條件	測試結果	判定
NO.3	絕對壓力 $40 \text{ mmHg}$ ，2 分鐘	無洩漏	Passed



## 7.4 水壓試驗：

測試件施以水壓 25kgf/cm<sup>2</sup>，持續 2 分鐘。

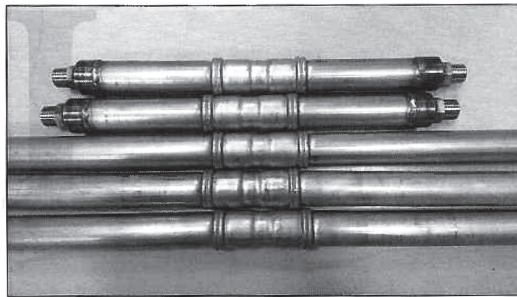
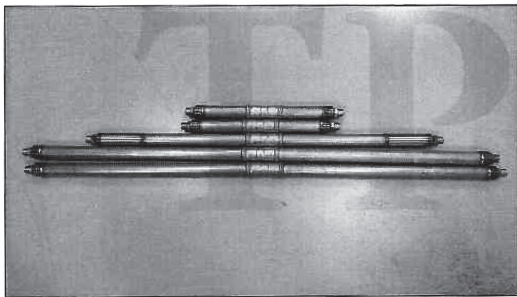
## 7.4.1 測試要求：

測試過程中測試件不得有任何洩漏情形產生。

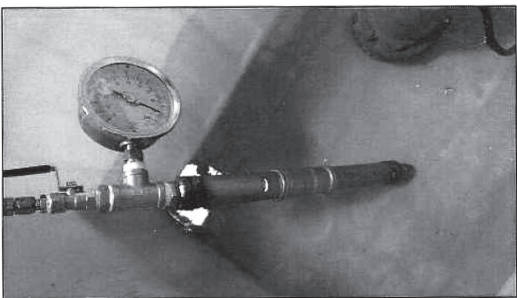
## 7.4.2 實際測試結果：

樣品編號	實際測試條件	測試結果	判定
NO.4	水壓 25.5 kgf/cm <sup>2</sup> ，2 分鐘	無洩漏	Passed

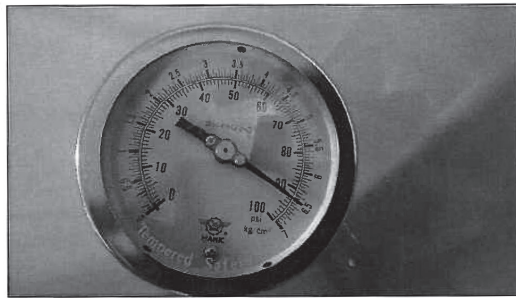
測試樣品照片



測試過程與壓力表照



氣密試驗



氣密試驗壓力表

檢測編號：F1221169-C

版 次：0

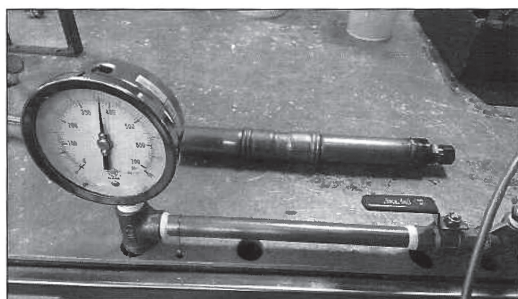
Page 3 of 4



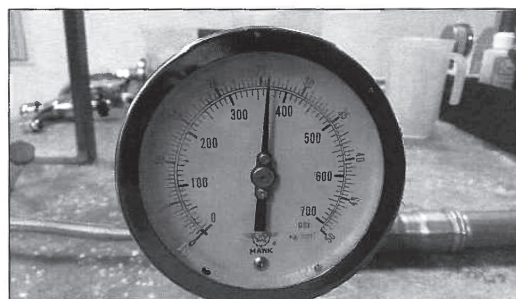
金屬工業研究發展中心  
METAL INDUSTRIES RESEARCH & DEVELOPMENT CENTRE

407 台中市工業區 37 路 25 號 TEL:886-4-235-2169 FAX:886-4-23501174

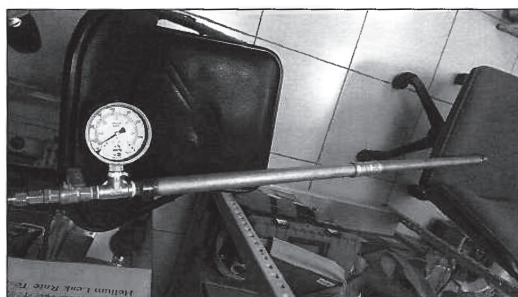
測試過程與壓力表照



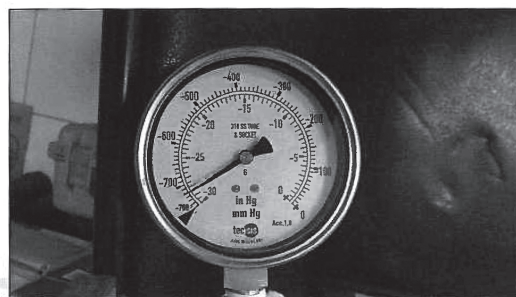
耐壓試驗



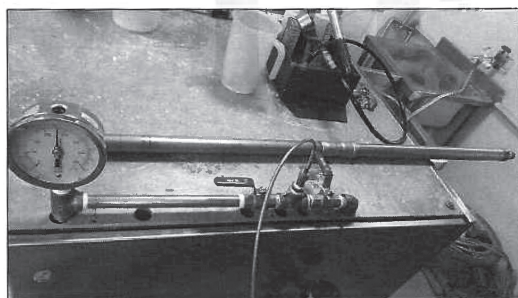
耐壓試驗壓力表



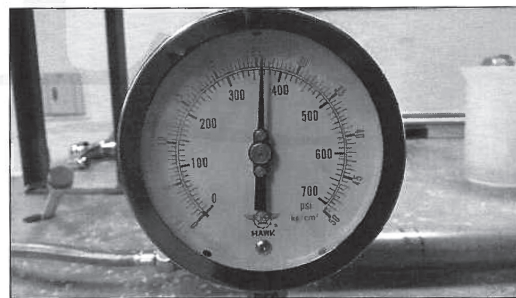
負壓試驗



負壓測試壓力表



水壓試驗



水壓試驗壓力表







材料及工程實驗室-台北

## 試驗報告



報告編號：HV-16-07495X

頁數：1 OF 2

報告日期：2017 年 01 月 26 日

### RUBBER RING 20EA

京畿道 利川市 麻長面 梨峙里 255-1

我們依照顧客的要求，根據顧客提供的產品敘述如下：

產品名稱：Rubber Ring  
產品型號：EPDM(Ethylene Propylene Diene Monomer)  
產品顏色：黑  
製造或供應廠商：多星 TECH 株式會社 of Korea  
備註：除非另有說明，此報告結果僅對測試之樣品負責  
未經本公司事先書面同意，此報告不可部分複製

我們依照顧客的要求，根據顧客送交之樣品進行試驗結果如下：

委託試驗要求：(依照顧客提供之測試規格進行試驗，詳細內容請參照附頁。)

溶出性試驗

試驗結果：

— 如附頁所示 —

收件日期：2016 年 12 月 16 日

試驗日期：2016 年 12 月 16 日～2017 年 01 月 09 日

報告簽署人

The content of this PDF file is accordance with the original issued reports for reference only. This Test Report cannot be reproduced, except in full, without prior written permission of the Company. 此 PDF 電子檔內容與紙張原裝一致，僅供參考。本報告未經本公司書面同意，不可部份複製。

SGS Taiwan Ltd.  
台灣檢驗科技股份有限公司

No.35, Wu Chyuan Road, New Taipei Industrial Park, Wu Ku District, New Taipei City, Taiwan / 新北市五股區(新北產業園區)五權路 35 號  
t (886-2) 2298-3355 f (886-2) 2299-7857 www.tw.sgs.com  
Member of SGS Group

# SGS

材料及工程實驗室-台北

## 試驗報告



報告編號：HV-16-07495X

頁數：2 OF 2

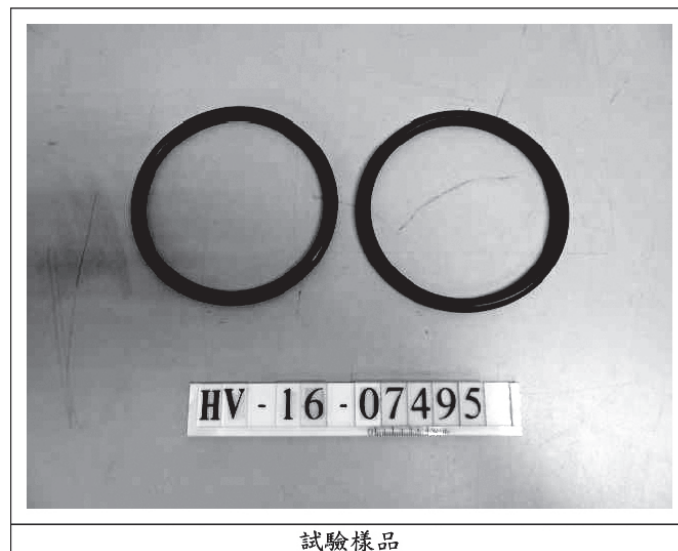
報告日期：2017 年 01 月 26 日

### 溶出性試驗

#### 試驗結果：

試驗項目	試驗方法	試驗結果	CNS 10774(2010) 要求值
濁度(度)	CNS 10774(2010)	0.0	0.5 以下
色度(度)		0.0	1 以下
餘氯減量(mg/L)		0.33	0.7 以下
臭味		無	無
異味		無	無
總有機碳含量(TOC) (mg/L)		0.4	5 以下
鋅(mg/L)		0.004	1.0 以下

#### 試驗照片：



試驗樣品

---- o O o ----

The content of this PDF file is accordance with the original issued reports for reference only. This Test Report cannot be reproduced, except in full, without prior written permission of the Company. 此 PDF 電子檔內容係根據原發給之紙本報告製作，僅供參考用。本報告未經本公司書面同意，不可部份複製。

SGS Taiwan Ltd.  
台灣檢驗科技股份有限公司

No.35, Wu Chyuan Road, New Taipei Industrial Park, Wu Ku District, New Taipei City, Taiwan/新北市五股區(新北產業園區)五權路 35 號  
t (886-2) 2298-3355 f (886-2) 2299-7857

www.tw.sgs.com  
Member of SGS Group

## KWWA certification test method

### 1. Body leakage test KWWA D 100-2 10.3

The body leakage test is conducted by blocking both ends of the joint body in an appropriate manner, applying air pressure of 0.6MPa, and holding it for 5 seconds.

### 2. Pressure-resistant test KWWA D 100-2 10.4

For the pressure-resistant test, put a 500mm or longer pipe to the joint, seal both ends in an appropriate manner, apply water pressure slowly to raise the pressure by 2.5MPa, and keep it for 2 minutes to check leaks, destruction, and other abnormalities.

### 3. Negative pressure test KWWA D 100-2 10.5

The negative pressure test is a method that a pipe of 500 mm or longer is joined to the joint, shown in Fig. (1), and the inside of the joint is depressurized to 54 KPa (540 HPa) and held for 2 minutes.

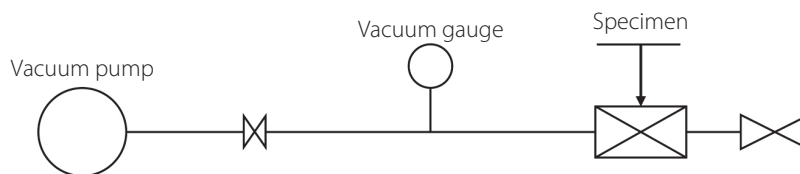


Fig.(1) Example of negative pressure test device

### 4. Pulling test KWWA D 100-2 10.6

For the pulling test, a pipe with a length of 300mm or longer is joined to the joint, and 0.6 MPa of air pressure is applied inside, shown in Fig.(2), and it measures the maximum load until tension or leakage occurs at a speed of 2 mm/min.

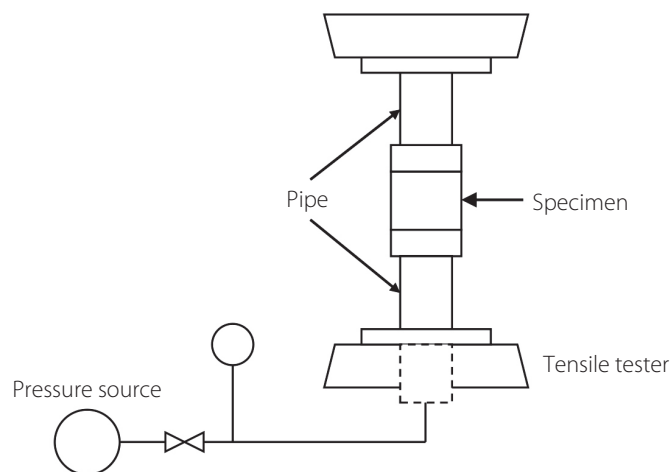


Fig. (2) Example of a pulling test device



### 5. Pressure-resistant repeat test KWWA D 100-2 10.9

For the pressure-resistant repeat test, a pipe with a length of 500 mm or longer is joined to the joint, the inside is filled with water, the pressure is raised by 0MPa~4MPa, and depressurized by 0MPa for 4 to 10 seconds. The operation of increasing the pressure from 0 MPa to 4 MPa and then reducing the pressure to 0 MPa is performed for 4 to 10 seconds. This is set to 1 cycle, and the pressure-resistant test is repeated for 1,500 cycles. The stretched movable type measures the deviation.

### 6. Vibration test KWWA D 100-2 10.10

For the vibration test, a pipe with a length of 500 mm or longer is joined to the joint, and 1.75 MPa of water pressure or 0.6 MPa of air pressure is applied inside, then let it vibrated with the method shown in Fig.(3) and with the conditions shown in the table(4).

Type	Amplitude	Vibration Cycle	Number of Vibrations
Stretched movable type	$a = \pm 2.2^\circ$	10~150/min	20,000
Press type	$W = \pm 2.5\text{mm}$ , $L = 500\text{mm}$	600/min more than	1,000,000

Table (4) Vibration test conditions

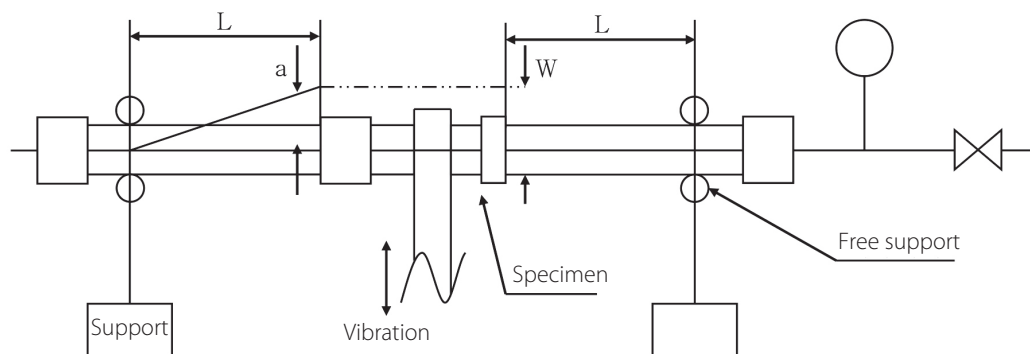


Figure (3) Example of vibration test device

### 7. Limit hydraulic test of the joint (own test standard)

After joining a pipe of 300mm or longer to the joint, block one end of the sample and connect the other end to a pressure source capable of applying water pressure. Check the limit water pressure by gradually applying pressure until the joint of the sample breaks away or leaks.

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026130

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Joint Limit Water Pressure Test	MPa	13SU	37	SPS-KWWA D100-2-0719 : 2018
Joint Limit Water Pressure Test	MPa	20SU	31	SPS-KWWA D100-2-0719 : 2018
Joint Limit Water Pressure Test	MPa	25SU	20	SPS-KWWA D100-2-0719 : 2018
Joint Limit Water Pressure Test	MPa	30SU	25	SPS-KWWA D100-2-0719 : 2018
Joint Limit Water Pressure Test	MPa	40SU	20	SPS-KWWA D100-2-0719 : 2018
Joint Limit Water Pressure Test	MPa	50SU	15	SPS-KWWA D100-2-0719 : 2018
Joint Limit Water Pressure Test	MPa	60SU	12	SPS-KWWA D100-2-0719 : 2018
Joint Limit Water Pressure Test	MPa	75SU	9	SPS-KWWA D100-2-0719 : 2018
Joint Limit Water Pressure Test	MPa	80SU	10	SPS-KWWA D100-2-0719 : 2018
Joint Limit Water Pressure Test	MPa	100SU	6	SPS-KWWA D100-2-0719 : 2018

- Usage of Report : QUALITY CONTROL

- Next Page -

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Taehoon*

Reviewed by Kim Taehoon

Tel : 1577-0091(ARS ①-④)

2020.02.24

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 1 of 2

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Goyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026130

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
-----------	------	--------	--------	-------------

- Note : 1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website ([www.ktr.or.kr](http://www.ktr.or.kr)) or QR code to verify the authenticity of the certificate.
2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Taehoon*

Reviewed by Kim Taehoon

Tel : 1577-0091(ARS ①-④)

2020.02.24

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 2 of 2

**KTR**

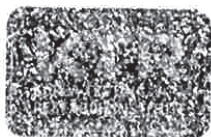
KOREA TESTING &  
RESEARCH INSTITUTE

KTR-QP-P09-F01-05(00)

A4(210 X 297)



BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026129

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Vibration Test	-	100SU	Pass	SPS-KWWA D100-2-0719 : 2018

### - Usage of Report : QUALITY CONTROL

- Note :
1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website ([www.ktr.or.kr](http://www.ktr.or.kr)) or QR code to verify the authenticity of the certificate.
  2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
  3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Taehoon*

Reviewed by Kim Taehoon

Tel : 1577-0091(ARS ①→④)

2020.02.24

## Korea Testing & Research Institute

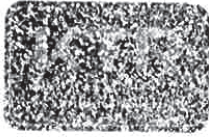
President *Kwon Oh-jung*



QR Code for forgery

Page : 1 of 1

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026128

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Pressure Repeatability Test(1 500 Cycle)	-	13SU	Pass	SPS-KWWA D100-2-0719 : 2018
Pressure Repeatability Test(1 500 Cycle)	-	20SU	Pass	SPS-KWWA D100-2-0719 : 2018
Pressure Repeatability Test(1 500 Cycle)	-	25SU	Pass	SPS-KWWA D100-2-0719 : 2018
Pressure Repeatability Test(1 500 Cycle)	-	30SU	Pass	SPS-KWWA D100-2-0719 : 2018
Pressure Repeatability Test(1 500 Cycle)	-	40SU	Pass	SPS-KWWA D100-2-0719 : 2018
Pressure Repeatability Test(1 500 Cycle)	-	50SU	Pass	SPS-KWWA D100-2-0719 : 2018
Pressure Repeatability Test(1 500 Cycle)	-	60SU	Pass	SPS-KWWA D100-2-0719 : 2018
Pressure Repeatability Test(1 500 Cycle)	-	75SU	Pass	SPS-KWWA D100-2-0719 : 2018
Pressure Repeatability Test(1 500 Cycle)	-	80SU	Pass	SPS-KWWA D100-2-0719 : 2018
Pressure Repeatability Test(1 500 Cycle)	-	100SU	Pass	SPS-KWWA D100-2-0719 : 2018

- Usage of Report : QUALITY CONTROL

- Next Page -

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Tae-hoon*

Reviewed by Kim Tae-hoon

Tel : 1577-0091(ARS ①→④)

2020.02.24

## Korea Testing & Research Institute

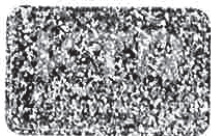
President *Kwon Oh-jung*



QR Code for forgery

Page : 1 of 2

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026128

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
-----------	------	--------	--------	-------------

- Note :
1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website ([www.ktr.or.kr](http://www.ktr.or.kr)) or QR code to verify the authenticity of the certificate.
  2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
  3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Taehoon*

Reviewed by Kim Taehoon

Tel : 1577-0091(ARS ①-④)

2020.02.24

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 2 of 2



BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026127

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Pull Test	kN	13SU	14.2	SPS-KWWA D100-2-0719 : 2018
Pull Test	kN	20SU	17.1	SPS-KWWA D100-2-0719 : 2018
Pull Test	kN	25SU	16.1	SPS-KWWA D100-2-0719 : 2018
Pull Test	kN	30SU	25.1	SPS-KWWA D100-2-0719 : 2018
Pull Test	kN	40SU	30.5	SPS-KWWA D100-2-0719 : 2018
Pull Test	kN	50SU	30.8	SPS-KWWA D100-2-0719 : 2018
Pull Test	kN	60SU	42.2	SPS-KWWA D100-2-0719 : 2018
Pull Test	kN	75SU	61.6	SPS-KWWA D100-2-0719 : 2018
Pull Test	kN	80SU	60.7	SPS-KWWA D100-2-0719 : 2018
Pull Test	kN	100SU	70.6	SPS-KWWA D100-2-0719 : 2018

- Usage of Report : QUALITY CONTROL

- Next Page -

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Tae-hoon*

Reviewed by Kim Tae-hoon

Tel : 1577-0091(ARS ①→④)

2020.02.24

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 1 of 2

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026127

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
-----------	------	--------	--------	-------------

- Note :
1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website ([www.ktr.or.kr](http://www.ktr.or.kr)) or QR code to verify the authenticity of the certificate.
  2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
  3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Taehoon*

Reviewed by Kim Taehoon

Tel : 1577-0091(ARS ①→④)

2020.02.24

## Korea Testing & Research Institute

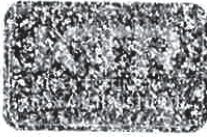
President *Kwon Oh-jung*



QR Code for forgery

Page : 2 of 2

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026126

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Vacuum Test(54 kPa×2 min)	-	13SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Vacuum Test(54 kPa×2 min)	-	20SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Vacuum Test(54 kPa×2 min)	-	25SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Vacuum Test(54 kPa×2 min)	-	30SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Vacuum Test(54 kPa×2 min)	-	40SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Vacuum Test(54 kPa×2 min)	-	50SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Vacuum Test(54 kPa×2 min)	-	60SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Vacuum Test(54 kPa×2 min)	-	75SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Vacuum Test(54 kPa×2 min)	-	80SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Vacuum Test(54 kPa×2 min)	-	100SU	No Leakage	SPS-KWWA D100-2-0719 : 2018

- Usage of Report : QUALITY CONTROL

- Next Page -

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Tae-hoon*

Reviewed by Kim Tae-hoon

Tel : 1577-0091(ARS ①→④)

2020.02.24

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 1 of 2



BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026126

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
-----------	------	--------	--------	-------------

- Note :
1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website ([www.ktr.or.kr](http://www.ktr.or.kr)) or QR code to verify the authenticity of the certificate.
  2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
  3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Taehoon*

Reviewed by Kim Taehoon

Tel : 1577-0091(ARS ①-④)

2020.02.24

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 2 of 2

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Goyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026125

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Pressure Test [Water Pressure 2.5 MPa x 2 min]	-	13SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Pressure Test [Water Pressure 2.5 MPa x 2 min]	-	20SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Pressure Test [Water Pressure 2.5 MPa x 2 min]	-	25SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Pressure Test [Water Pressure 2.5 MPa x 2 min]	-	30SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Pressure Test [Water Pressure 2.5 MPa x 2 min]	-	40SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Pressure Test [Water Pressure 2.5 MPa x 2 min]	-	50SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Pressure Test [Water Pressure 2.5 MPa x 2 min]	-	60SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Pressure Test [Water Pressure 2.5 MPa x 2 min]	-	75SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Pressure Test [Water Pressure 2.5 MPa x 2 min]	-	80SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Pressure Test [Water Pressure 2.5 MPa x 2 min]	-	100SU	No Leakage	SPS-KWWA D100-2-0719 : 2018

\* Pressure Gauge(S/N:CSJ00416)

- Usage of Report : QUALITY CONTROL

- Next Page -

Prepared by Mun Jung Sik

Tel : 02-2092-3654

Reviewed by Kim Taehoon

Tel : 1577-0091(ARS ①-④)

2020.02.24

## Korea Testing & Research Institute

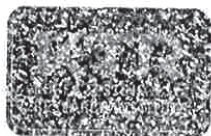
President



QR Code for forgery

Page : 1 of 2

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026125

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
-----------	------	--------	--------	-------------

- Note :
1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website ([www.ktr.or.kr](http://www.ktr.or.kr)) or QR code to verify the authenticity of the certificate.
  2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
  3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Taehoon*

Reviewed by Kim Taehoon

Tel : 1577-0091(ARS ①→④)

2020.02.24

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 2 of 2



BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Goyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026124

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Leakage of the Body(Air Pressure 0.6 MPa x 5 s)	-	13SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Leakage of the Body(Air Pressure 0.6 MPa x 5 s)	-	20SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Leakage of the Body(Air Pressure 0.6 MPa x 5 s)	-	25SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Leakage of the Body(Air Pressure 0.6 MPa x 5 s)	-	30SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Leakage of the Body(Air Pressure 0.6 MPa x 5 s)	-	40SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Leakage of the Body(Air Pressure 0.6 MPa x 5 s)	-	50SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Leakage of the Body(Air Pressure 0.6 MPa x 5 s)	-	60SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Leakage of the Body(Air Pressure 0.6 MPa x 5 s)	-	75SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Leakage of the Body(Air Pressure 0.6 MPa x 5 s)	-	80SU	No Leakage	SPS-KWWA D100-2-0719 : 2018
Leakage of the Body(Air Pressure 0.6 MPa x 5 s)	-	100SU	No Leakage	SPS-KWWA D100-2-0719 : 2018

\* Pressure Gauge(S/N:CSJ00416)

- Usage of Report : QUALITY CONTROL

- Next Page -

Prepared by Mun Jung Sik

Tel : 02-2092-3654

Reviewed by Kim Taehoon

Tel : 1577-0091(ARS ①-④)

2020.02.24

## Korea Testing & Research Institute

President



QR Code for forgery

Page : 1 of 2

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-026124

Receipt Date : 2020.02.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.24.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : Stainless steel fitting for water works

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
-----------	------	--------	--------	-------------

- Note :
1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website ([www.ktr.or.kr](http://www.ktr.or.kr)) or QR code to verify the authenticity of the certificate.
  2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
  3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

*Mun Jung Sik*

Prepared by Mun Jung Sik

Tel : 02-2092-3654

*Kim Taehoon*

Reviewed by Kim Taehoon

Tel : 1577-0091(ARS ①→④)

2020.02.24

## Korea Testing & Research Institute

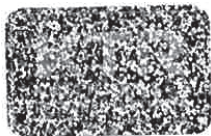
President *Kwon Oh-jung*



QR Code for forgery

Page : 2 of 2

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-007184

Receipt Date : 2020.01.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.25.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : SP-JOINT

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Taste	-	-	No Defects	The Ministry of Environment a Notice No.2018-172
Odor	-	-	No Defects	The Ministry of Environment a Notice No.2018-172
Color	CU	-	0.1 below	The Ministry of Environment a Notice No.2018-172
Turbidity	NTU	-	0.02 below	The Ministry of Environment a Notice No.2018-172
As	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Cd	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Cr	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Cu	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Pb	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Se	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Fe	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Zn	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Hg	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
1,2-Dichloroethane	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172

- Next Page -

*Lee Jeongwon*

Prepared by Lee Jeongwon

Tel : 02-2092-3817

*Kim Hongseok*

Reviewed by Kim Hongseok

Tel : 1577-0091(ARS ①→④)

2020.02.25

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 1 of 3



BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-007184

Receipt Date : 2020.01.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.25.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : SP-JOINT

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
1,1-Dichloroethylene	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
1,1,2-Trichloroethane	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Trichloroethylene	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Benzene	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
1,1,1-Trichloroethane	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Dichloromethane	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Cis-1,2-Dichloroethylene	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Tetrachloroethylene	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Epichlorohydrin	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Vinyl Acetate	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Styrene	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
1,2-Butadiene	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
1,3-Butadiene	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
N,N-Dimethylaniline	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172

- Next Page -

*Lee Jeongwon*

Prepared by Lee Jeongwon

Tel : 02-2092-3817

*Kim Hongseok*

Reviewed by Kim Hongseok

Tel : 1577-0091(ARS ①-④)

2020.02.25

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 2 of 3

**KTR** KOREA TESTING &  
RESEARCH INSTITUTE

KTR-QP-P09-F01-05(00)

A4(210 X 297)

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-007184

Receipt Date : 2020.01.13.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.25.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : SP-JOINT

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Carbon Tetrachloride	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Phenols	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172
Consumption of KMnO <sub>4</sub>	mg/L	-	0.3 below	The Ministry of Environment a Notice No.2018-172
Ni	mg/L	-	Not Detected	The Ministry of Environment a Notice No.2018-172

\*Extraction Temperature: (95 ± 2) °C

\*Normalization factor(NF) : Fittings(1/25VF)

- Usage of Report : QUALITY CONTROL

- Note :
1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website ([www.ktr.or.kr](http://www.ktr.or.kr)) or QR code to verify the authenticity of the certificate.
  2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
  3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

*Lee Jeongwon*

Prepared by Lee Jeongwon

Tel : 02-2092-3817

*Kim Hongseok*

Reviewed by Kim Hongseok

Tel : 1577-0091(ARS ①→④)

2020.02.25

## Korea Testing & Research Institute

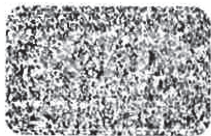
President *Kwon Oh-jung*



QR Code for forgery

Page : 3 of 3

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-019874

Receipt Date : 2020.02.04.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.26.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : SP-JOINT EPDM RUBBER

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
Spring Hardness (Hs)	-	-	75	SPS KWWA D 100-2 : 0719-2014
Tensile Strength	MPa	-	16.8	SPS KWWA D 100-2 : 0719-2014
Elongation at Break	%	-	241	SPS KWWA D 100-2 : 0719-2014
Tear Strength	N/mm	-	51	SPS KWWA D 100-2 : 0719-2014
Aging Test((100 ± 1) °C, 96 h)	-	-	-	SPS KWWA D 100-2 : 0719-2014
-Percentage Change in Tensile Strength	%	-	-5	SPS KWWA D 100-2 : 0719-2014
-Percentage Change in Elongation at Break	%	-	-10	SPS KWWA D 100-2 : 0719-2014
-Change in Hardness(Hs)	-	-	2	SPS KWWA D 100-2 : 0719-2014
Ozone Test((50 ± 5) pphm, (40 ± 2) °C, 20 % Elongation, 24 h)	-	-	No Cracking	SPS KWWA D 100-2 : 0719-2014
Compression Set((100 ± 1) °C, 72 h)	%	-	9	SPS KWWA D 100-2 : 0719-2014
Immersion Test((B.P. 168 h, Distilled Water)	-	-	-	SPS KWWA D 100-2 : 0719-2014
-Change in Mass	%	-	1.0	SPS KWWA D 100-2 : 0719-2014
Cold Resistance Test((-30 ± 2) °C, 96 h)	-	-	-	KS M 6522 : 2016[*1]
-Appearance(Crack)	-	-	No Defects	Client Provided Test Method[*2]

- Next Page -

*Kang Woo Young*

Prepared by Kang Woo Young

Tel : 02-2092-3608

*Ham Jong-oh*

Reviewed by Ham Jong-oh

Tel : 1577-0091(ARS ①-④)

2020.02.26

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 1 of 3



BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-019874

Receipt Date : 2020.02.04.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.26.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : SP-JOINT EPDM RUBBER

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
-Tensile Strength	MPa	-	16.8	SPS KWWA D 100-2 : 0719-2014[*3]
-Elongation at Break	%	-	225	SPS KWWA D 100-2 : 0719-2014[*3]
-Spring Hardness(Hs)	-	-	84	SPS KWWA D 100-2 : 0719-2014
Free Sulfur(Sodium Sulfite Method)	wt %	-	-	KS M 6613 : 2017
Turbidity	NTU	-	0.5 below	KS M 6613 : 2017
Colority	CU	-	1 below	KS M 6613 : 2017
Consumption of KMnO <sub>4</sub>	mg/L	-	-	KS M 6613 : 2017
Decreased Quantity of Total Residual Chlorine	mg/L	-	-	KS M 6613 : 2017
Odor	-	-	No Defects	KS M 6613 : 2017
Taste	-	-	No Defects	KS M 6613 : 2017

[\*1]Test Condition : By the Client.

[\*2]After Condition Test, It is the result of observation of specimen surface with bare eyes.

[\*3]Conducting Test after placing in Room Temperature.

- Usage of Report : QUALITY CONTROL

- Next Page -

*Kang Woo Young*

Prepared by Kang Woo Young

Tel : 02-2092-3608

*Ham Jong-oh*

Reviewed by Ham Jong-oh

Tel : 1577-0091(ARS ①→④)

2020.02.26

## Korea Testing & Research Institute

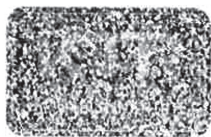
President *Kwon Oh-jung*



QR Code for forgery

Page : 2 of 3

BEYOND ASIAN HUB, TOWARD GLOBAL WORLD



# TEST REPORT

98, Gyoyukwon-ro, Gwacheon-si, Gyeonggi-do, 13810, Korea

TEL 82-2-2164-0011

FAX 82-2-2634-1008

Report No : TAK-2020-019874

Receipt Date : 2020.02.04.

Representative : Myeong-Yong LEE

Test Completion Date : 2020.02.26.

Company name : DASUNG TECH CO.,LTD.

Address : 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea

Sample name : SP-JOINT EPDM RUBBER

## Test Results

TEST ITEM	UNIT	SAMPLE	RESULT	TEST METHOD
-----------	------	--------	--------	-------------

- Note : 1. The test results of this test report are only limited in to the samples and sample names provided by the client and do not guarantee the quality of all products of the client. You Can check website ([www.ktr.or.kr](http://www.ktr.or.kr)) or QR code to verify the authenticity of the certificate.
2. This test report shall be used only within the purpose of its defined usage and shall not be used for public relation, advertisement and lawsuit.
3. This test report is only valid when printed on KTR original report paper with hologram and when re-issued by KTR. The copy and the electronic file of the test report are only for reference.

*Kang Woo Young*

Prepared by Kang Woo Young

Tel : 02-2092-3608

*Ham Jong-oh*

Reviewed by Ham Jong-oh

Tel : 1577-0091(ARS ①-④)

2020.02.26

## Korea Testing & Research Institute

President *Kwon Oh-jung*



QR Code for forgery

Page : 3 of 3

# SPJOINT

The Leader of Stainless Steel Double Ring Press Joint  
**Stainless Power Joint**

English

**DASUNGTECH CO., LTD.** [www.spjoint.com](http://www.spjoint.com)

- Sales Division No. 2801~2, Obiz tower, 126 Bulmal-ro, Dongan-gu, Anyang-si, Gyeonggi-do, Korea  
T. 82 31 341 0005 F. 82 31 341 0007
- Headquarters / Factory 195, Seoicheon-ro, Majang-myeon, Icheon-si, Gyeonggi-do, Korea  
T. 82 31 633 1117 F. 82 31 633 3160