

INSPECTION ITEM LIST

©DATE : 2020. 08. 20

©CUSTOMER : IMFLUID

©MANUFACTURE : HS VALVE

No.	Valve Type	Size	Conn	CLASS	MATERIAL	Remark	Q'ty (EA)
					BODY / CAP		
1	BALL V/V	2"	RF	300	A216 WCB		12
2	BALL V/V	3"	RF	300	A216 WCB		36
3	BALL V/V	2"	RF	150	A216 WCB		6
4	BALL V/V	3"	RF	150	A216 WCB		6
합 계							60

QUALITY CERTIFICATE

Customer : IMFLUID

Nomenclature : BALL VALVE

- A216 WCB Class300 - 2" (FLG'D) 12 EA
- A216 WCB Class300 - 3" (FLG'D) 36 EA
- A216 WCB Class150 - 2" (FLG'D) 6 EA
- A216 WCB Class150 - 3" (FLG'D) 6 EA

Warranty period : 1 year

For the successful implementation of a quality management system, we reserve the above product is not problem in quality.

August. 20. 2020



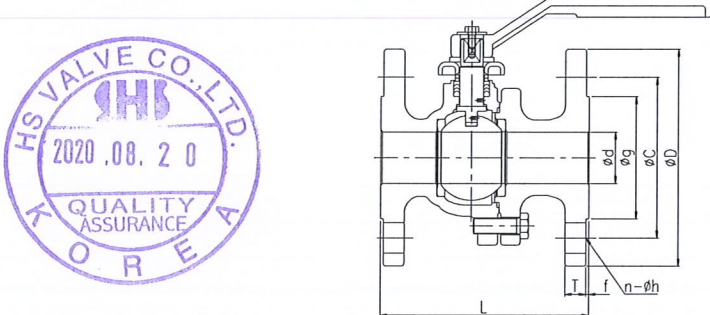
Quality Assurance Team

Jae Myung Kim

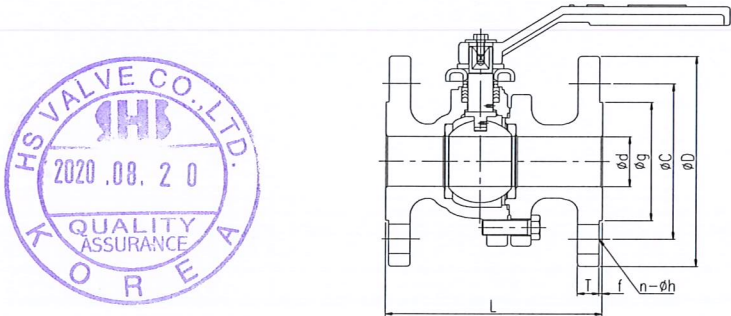
Chief Executive Officer

Won Gyu Chang

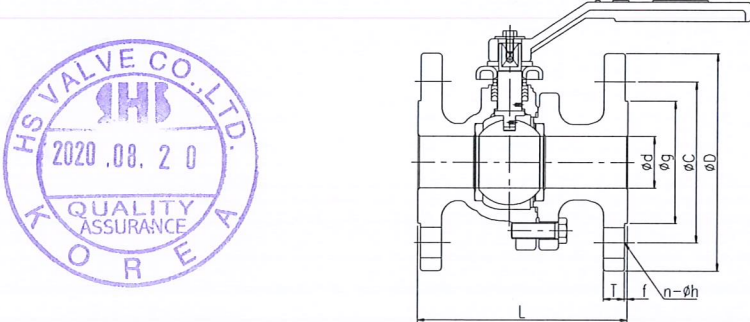
Inspection/Test Certificates of Valves

HS VALVE CO., LTD Factory II : 222, Gongdan 8-ro, Jillyang-eup, Gyeongsan-si, Gyeongsangbuk-do, Korea Tel : (053) 857-5789 Fax : (053) 857-5785				Report No		HS200820 - 001						
				Issued Date		2020. 08. 20						
				Quantity		12 EA						
Client		IMFLUID		Page		1 of 2						
Project		N/A		Material	Body		A216 WCB					
PO No.		N/A			Cap		A216 WCB					
TYPE / DESCRIPTION		BALL VALVE / A216 WCB Class300 - 2"			Ball		A351 CF8					
					Stem		A276 304					
◎ Visual Inspection in accordance with MSS SP-55						Good						
◎ Marking Inspection in accordance with MSS SP-25						Good						
◎ Pressure Test												
Description		Pressure(bar)		Duration(Sec)		Test Result						
		Std	Actual	Std	Actual							
Shell Test	Hydrostatic	77	77	120	120	Accept						
Seat Test	Hydrostatic	57	57	120	120	Accept						
	Pneumatic	6	6	120	120	Accept						
* Note : The above tests are conducted in accordance with API 6D												
◎ Non-Destruction Examination	R T	Standard	Result	M T	Standard	Result	P T	Standard	Result	U T	Standard	Result
		N/A	-		N/A	-		N/A	-		N/A	-
◎ Dimension												
												
Classification		Dimension(ASME B16.5 & ASME B16.10)								Assy. & Operating		
		L (F to F)	Φd (Bore Dia)	End Flange (UNIT:mm)								
				ΦD(OD)	ΦC(BCD)	Φg(RF)	T(thick)	f	n-Φh			
No	Tag No	216.0±1.5	50.0+1.0	165.0 +2.0/-1.0	127.0±0.8	92.1±1.0	20.7+3.0	2.0	8-19.1	API 6D		
1	-	216.2	50.1	165.3	127.2	92.2	21.3	2.0	8-19.1	Accept		
2	-	216.3	50.1	165.3	127.0	92.4	21.5	2.0	8-19.1	Accept		
3	-	216.4	50.0	165.5	127.1	92.4	21.6	2.0	8-19.1	Accept		
4	-	216.2	50.1	165.2	127.2	92.2	21.4	2.0	8-19.1	Accept		
5	-	216.1	50.1	165.3	127.3	92.1	21.7	2.0	8-19.1	Accept		
6	-	216.3	50.3	165.3	127.2	92.3	21.5	2.0	8-19.1	Accept		
7	-	216.3	50.1	165.3	127.0	92.4	21.3	2.0	8-19.1	Accept		
8	-	216.2	50.2	165.2	127.1	92.4	21.7	2.0	8-19.1	Accept		
9	-	216.5	50.2	165.2	127.3	92.4	21.6	2.0	8-19.1	Accept		
10	-	216.4	50.3	165.4	127.2	92.2	21.4	2.0	8-19.1	Accept		
We hereby certify that the above results have been inspected in accordance with a specification and/or standard of application.												
Remark												
QA Engineer KIM HYUNG JUN				QA Manager KIM JAE MYUNG				Witnessed by				

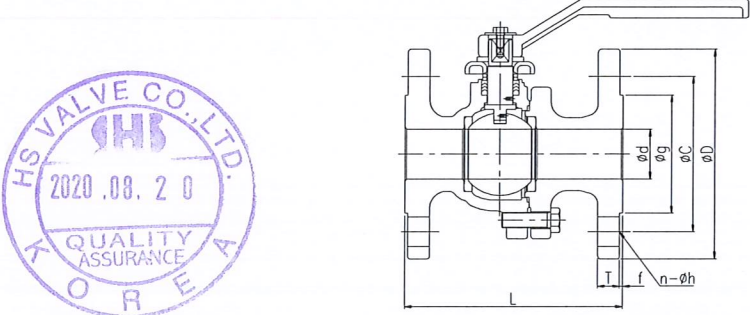
Inspection/Test Certificates of Valves

HS VALVE CO., LTD Factory II : 222, Gongdan 8-ro, Jillyang-eup, Gyeongsan-si, Gyeongsangbuk-do, Korea Tel : (053) 857-5789 Fax : (053) 857-5785				Report No		HS200820 - 001						
				Issued Date		2020. 08. 20						
				Quantity		12 EA						
Client		IMFLUID		Page		2 of 2						
Project		N/A		Material	Body		A216 WCB					
PO No.		N/A			Cap		A216 WCB					
TYPE / DESCRIPTION		BALL VALVE / A216 WCB Class300 - 2"			Ball		A351 CF8					
					Stem		A276 304					
◎ Visual Inspection in accordance with MSS SP-55							Good					
◎ Marking Inspection in accordance with MSS SP-25							Good					
◎ Pressure Test												
Description		Pressure(bar)		Duration(Sec)		Test Result						
		Std	Actual	Std	Actual							
Shell Test	Hydrostatic	77	77	120	120	Accept						
Seat Test	Hydrostatic	57	57	120	120	Accept						
	Pneumatic	6	6	120	120	Accept						
* Note : The above tests are conducted in accordance with API 6D												
◎ Non-Destruction Examination	R T	Standard	Result	M T	Standard	Result	P T	Standard	Result	U T	Standard	Result
		N/A	-		N/A	-		N/A	-		N/A	-
◎ Dimension												
												
Classification		Dimension(ASME B16.5 & ASME B16.10)								Assy. & Operating		
		L (F to F)	Φd (Bore Dia)	End Flange (UNIT:mm)								
				ΦD(OD)	ΦC(BCD)	Φg(RF)	T(thick)	f	n-Φh			
No	Tag No	216.0±1.5	50.0+1.0	165.0 +2.0/-1.0	127.0±0.8	92.1±1.0	20.7+3.0	2.0	8-19.1	API 6D		
11	-	216.4	50.0	165.3	127.1	92.2	21.2	2.0	8-19.1	Accept		
12	-	216.3	50.3	165.2	127.0	92.2	21.5	2.0	8-19.1	Accept		
												
We hereby certify that the above results have been inspected in accordance with a specification and/or standard of application.												
Remark												
QA Engineer <u>KIM HYUNG JUN</u>				QA Manager <u>KIM JAE MYUNG</u>				Witnessed by				

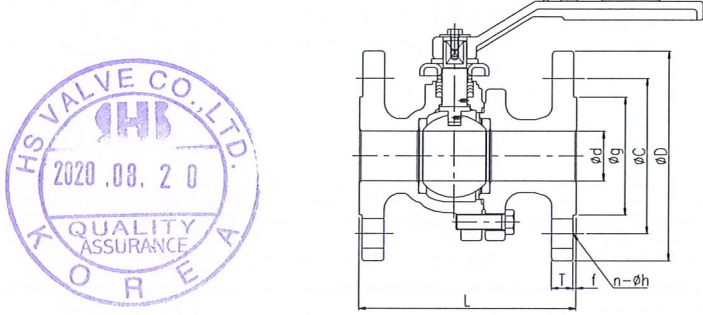
Inspection/Test Certificates of Valves

HS VALVE CO., LTD Factory II : 222, Gongdan 8-ro, Jillyang-eup, Gyeongsan-si, Gyeongsangbuk-do, Korea Tel : (053) 857-5789 Fax : (053) 857-5785				Report No		HS200820 - 002						
				Issued Date		2020. 08. 20						
				Quantity		36 EA						
Client		IMFLUID		Page		1 of 4						
Project		N/A		Material	Body		A216 WCB					
PO No.		N/A			Cap		A216 WCB					
TYPE / DESCRIPTION		BALL VALVE / A216 WCB Class300 - 3"			Ball		A351 CF8					
					Stem		A276 304					
◎ Visual Inspection in accordance with MSS SP-55						Good						
◎ Marking Inspection in accordance with MSS SP-25						Good						
◎ Pressure Test												
Description		Pressure(bar)		Duration(Sec)		Test Result						
		Std	Actual	Std	Actual							
Shell Test	Hydrostatic	77	77	120	120	Accept						
Seat Test	Hydrostatic	57	57	120	120	Accept						
	Pneumatic	6	6	120	120	Accept						
* Note : The above tests are conducted in accordance with API 6D												
◎ Non-Destruction Examination	R T	Standard	Result	M T	Standard	Result	P T	Standard	Result	U T	Standard	Result
		N/A	-		N/A	-		N/A	-		N/A	-
◎ Dimension												
												
Classification		Dimension(ASME B16.5 & ASME B16.10)								Assy. & Operating		
		L (F to F)	Φd (Bore Dia)	End Flange (UNIT:mm)								
				ΦD(OD)	ΦC(BCD)	Φg(RF)	T(thick)	f	n-Φh			
No	Tag No	282.0±1.5	76.0+1.0	210.0 +2.0/-1.0	168.3±0.8	127.0±1.0	27.0+3.0	2.0	8-22.2	API 6D		
1	-	282.5	76.3	210.4	168.4	127.1	27.7	2.0	8-22.2	Accept		
2	-	282.2	76.1	210.5	168.3	127.3	27.6	2.0	8-22.2	Accept		
3	-	282.3	76.2	210.4	168.4	127.1	27.7	2.0	8-22.2	Accept		
4	-	282.4	76.2	210.5	168.4	127.1	27.5	2.0	8-22.2	Accept		
5	-	282.2	76.1	210.5	168.5	127.2	27.7	2.0	8-22.2	Accept		
6	-	282.4	76.1	210.2	168.5	127.3	27.6	2.0	8-22.2	Accept		
7	-	282.2	76.2	210.2	168.4	127.2	27.9	2.0	8-22.2	Accept		
8	-	282.2	76.3	210.3	168.4	127.2	27.7	2.0	8-22.2	Accept		
9	-	282.4	76.1	210.4	168.4	127.1	27.9	2.0	8-22.2	Accept		
10	-	282.4	76.2	210.3	168.5	127.1	28.0	2.0	8-22.2	Accept		
We hereby certify that the above results have been inspected in accordance with a specification and/or standard of application.												
Remark												
QA Engineer KIM HYUNG JUN				QA Manager KIM JAE MYUNG				Witnessed by				

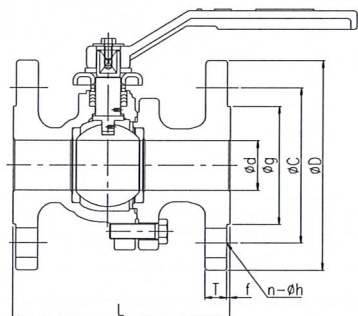
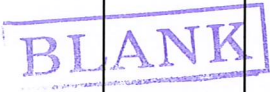
Inspection/Test Certificates of Valves

HS VALVE CO., LTD Factory II : 222, Gongdan 8-ro, Jillyang-eup, Gyeongsan-si, Gyeongsangbuk-do, Korea Tel : (053) 857-5789 Fax : (053) 857-5785				Report No		HS200820 - 002						
				Issued Date		2020. 08. 20						
				Quantity		36 EA						
Client		IMFLUID		Page		2 of 4						
Project		N/A		Material	Body		A216 WCB					
PO No.		N/A			Cap		A216 WCB					
TYPE / DESCRIPTION		BALL VALVE / A216 WCB Class300 - 3"			Ball		A351 CF8					
					Stem		A276 304					
◎ Visual Inspection in accordance with MSS SP-55						Good						
◎ Marking Inspection in accordance with MSS SP-25						Good						
◎ Pressure Test												
Description		Pressure(bar)		Duration(Sec)		Test Result						
		Std	Actual	Std	Actual							
Shell Test	Hydrostatic	77	77	120	120	Accept						
Seat Test	Hydrostatic	57	57	120	120	Accept						
	Pneumatic	6	6	120	120	Accept						
* Note : The above tests are conducted in accordance with API 6D												
◎ Non-Destruction Examination	R T	Standard	Result	M T	Standard	Result	P T	Standard	Result	U T	Standard	Result
		N/A	-		N/A	-		N/A	-		N/A	-
◎ Dimension												
												
Classification		Dimension(ASME B16.5 & ASME B16.10)								Assy. & Operating		
		L (F to F)	Φd (Bore Dia)	End Flange (UNIT:mm)								
				ΦD(OD)	ΦC(BCD)	Φg(RF)	T(thick)	f	n-Φh			
No	Tag No	282.0±1.5	76.0+1.0	210.0 +2.0/-1.0	168.3±0.8	127.0±1.0	27.0+3.0	2.0	8-22.2	API 6D		
11	-	282.1	76.0	210.5	168.4	127.1	28.0	2.0	8-22.2	Accept		
12	-	282.3	76.1	210.4	168.5	127.1	27.6	2.0	8-22.2	Accept		
13	-	282.1	76.3	210.3	168.4	127.2	27.5	2.0	8-22.2	Accept		
14	-	282.5	76.2	210.3	168.6	127.3	27.9	2.0	8-22.2	Accept		
15	-	282.1	76.0	210.2	168.5	127.2	27.9	2.0	8-22.2	Accept		
16	-	282.1	76.1	210.2	168.4	127.1	27.5	2.0	8-22.2	Accept		
17	-	282.3	76.3	210.3	168.6	127.2	27.9	2.0	8-22.2	Accept		
18	-	282.1	76.1	210.3	168.5	127.0	27.6	2.0	8-22.2	Accept		
19	-	282.4	76.2	210.4	168.6	127.1	28.0	2.0	8-22.2	Accept		
20	-	282.2	76.2	210.2	168.5	127.2	28.0	2.0	8-22.2	Accept		
We hereby certify that the above results have been inspected in accordance with a specification and/or standard of application.												
Remark												
QA Engineer KIM HYUNG JUN				QA Manager KIM JAE MYUNG				Witnessed by				

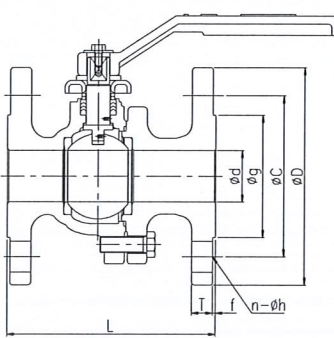
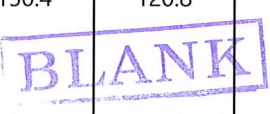
Inspection/Test Certificates of Valves

HS VALVE CO., LTD Factory II : 222, Gongdan 8-ro, Jillyang-eup, Gyeongsan-si, Gyeongsangbuk-do, Korea Tel : (053) 857-5789 Fax : (053) 857-5785				Report No		HS200820 - 002						
				Issued Date		2020. 08. 20						
				Quantity		36 EA						
Client		IMFLUID		Page		3 of 4						
Project		N/A		Material	Body		A216 WCB					
PO No.		N/A			Cap		A216 WCB					
TYPE / DESCRIPTION		BALL VALVE / A216 WCB Class300 - 3"			Ball		A351 CF8					
					Stem		A276 304					
◎ Visual Inspection in accordance with MSS SP-55							Good					
◎ Marking Inspection in accordance with MSS SP-25							Good					
◎ Pressure Test												
Description		Pressure(bar)		Duration(Sec)		Test Result						
		Std	Actual	Std	Actual							
Shell Test	Hydrostatic	77	77	120	120	Accept						
Seat Test	Hydrostatic	57	57	120	120	Accept						
	Pneumatic	6	6	120	120	Accept						
* Note : The above tests are conducted in accordance with API 6D												
◎ Non-Destruction Examination	R T	Standard	Result	M T	Standard	Result	P T	Standard	Result	U T	Standard	Result
		N/A	-		N/A	-		N/A	-		N/A	-
◎ Dimension												
												
Classification		Dimension(ASME B16.5 & ASME B16.10)								Assy. & Operating		
		L (F to F)	Φd (Bore Dia)	End Flange (UNIT:mm)								
				ΦD(OD)	ΦC(BCD)	Φg(RF)	T(thick)	f	n-Φh			
No	Tag No	282.0±1.5	76.0+1.0	210.0 +2.0/-1.0	168.3±0.8	127.0±1.0	27.0+3.0	2.0	8-22.2	API 6D		
21	-	282.2	76.1	210.3	168.4	127.2	27.7	2.0	8-22.2	Accept		
22	-	282.2	76.0	210.2	168.6	127.3	27.9	2.0	8-22.2	Accept		
23	-	282.1	76.1	210.3	168.5	127.0	28.0	2.0	8-22.2	Accept		
24	-	282.3	76.2	210.3	168.3	127.2	27.5	2.0	8-22.2	Accept		
25	-	282.3	76.2	210.1	168.6	127.0	27.9	2.0	8-22.2	Accept		
26	-	282.4	76.0	210.3	168.5	127.2	27.7	2.0	8-22.2	Accept		
27	-	282.5	76.2	210.1	168.6	127.1	27.6	2.0	8-22.2	Accept		
28	-	282.4	76.2	210.1	168.4	127.2	27.8	2.0	8-22.2	Accept		
29	-	282.1	76.2	210.1	168.4	127.1	27.5	2.0	8-22.2	Accept		
30	-	282.1	76.0	210.4	168.4	127.1	27.9	2.0	8-22.2	Accept		
We hereby certify that the above results have been inspected in accordance with a specification and/or standard of application.												
Remark												
QA Engineer KIM HYUNG JUN				QA Manager KIM JAE MYUNG				Witnessed by				

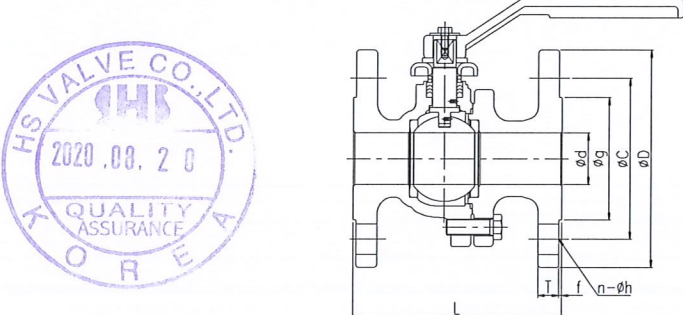
Inspection/Test Certificates of Valves

HS VALVE CO., LTD Factory II : 222, Gongdan 8-ro, Jillyang-eup, Gyeongsan-si, Gyeongsangbuk-do, Korea Tel : (053) 857-5789 Fax : (053) 857-5785				Report No		HS200820 - 002						
				Issued Date		2020. 08. 20						
				Quantity		36 EA						
Client		IMFLUID		Page		4 of 4						
Project		N/A		Material	Body		A216 WCB					
PO No.		N/A			Cap		A216 WCB					
TYPE / DESCRIPTION		BALL VALVE / A216 WCB Class300 - 3"			Ball		A351 CF8					
					Stem		A276 304					
◎ Visual Inspection in accordance with MSS SP-55							Good					
◎ Marking Inspection in accordance with MSS SP-25							Good					
◎ Pressure Test												
Description		Pressure(bar)		Duration(Sec)		Test Result						
		Std	Actual	Std	Actual							
Shell Test	Hydrostatic	77	77	120	120	Accept						
Seat Test	Hydrostatic	57	57	120	120	Accept						
	Pneumatic	6	6	120	120	Accept						
* Note : The above tests are conducted in accordance with API 6D												
◎ Non-Destruction Examination	R T	Standard	Result	M T	Standard	Result	P T	Standard	Result	U T	Standard	Result
		N/A	-		N/A	-		N/A	-		N/A	-
◎ Dimension												
 												
Classification		Dimension(ASME B16.5 & ASME B16.10)								Assy. & Operating		
		L (F to F)	φd (Bore Dia)	End Flange (UNIT:mm)								
				φD(OD)	φC(BCD)	φg(RF)	T(thick)	f	n-φh			
No	Tag No	282.0±1.5	76.0+1.0	210.0 +2.0/-1.0	168.3±0.8	127.0±1.0	27.0+3.0	2.0	8-22.2	API 6D		
31	-	282.3	76.2	210.5	168.4	127.3	27.9	2.0	8-22.2	Accept		
32	-	282.5	76.0	210.2	168.3	127.1	28.0	2.0	8-22.2	Accept		
33	-	282.3	76.2	210.1	168.6	127.1	27.8	2.0	8-22.2	Accept		
34	-	282.4	76.2	210.3	168.5	127.0	27.5	2.0	8-22.2	Accept		
35	-	282.5	76.2	210.4	168.4	127.2	27.8	2.0	8-22.2	Accept		
36	-	282.2	76.1	210.1	168.6	127.3	27.5	2.0	8-22.2	Accept		
												
We hereby certify that the above results have been inspected in accordance with a specification and/or standard of application.												
Remark												
QA Engineer <u>KIM HYUNG JUN</u>				QA Manager <u>KIM JAE MYUNG</u>				Witnessed by				

Inspection/Test Certificates of Valves

HS VALVE CO., LTD Factory II : 222, Gongdan 8-ro, Jillyang-eup, Gyeongsan-si, Gyeongsangbuk-do, Korea Tel : (053) 857-5789 Fax : (053) 857-5785				Report No		HS200820 - 003						
				Issued Date		2020. 08. 20						
				Quantity		6 EA						
Client		IMFLUID		Page		1 of 1						
Project		N/A		Material	Body		A216 WCB					
PO No.		N/A			Cap		A216 WCB					
TYPE / DESCRIPTION		BALL VALVE / A216 WCB Class150 - 2"			Ball		A351 CF8					
					Stem		A276 304					
◎ Visual Inspection in accordance with MSS SP-55							Good					
◎ Marking Inspection in accordance with MSS SP-25							Good					
◎ Pressure Test												
Description		Pressure(bar)		Duration(Sec)		Test Result						
		Std	Actual	Std	Actual							
Shell Test	Hydrostatic	30	30	120	120	Accept						
	Hydrostatic	22	22	120	120	Accept						
Seat Test	Pneumatic	6	6	120	120	Accept						
* Note : The above tests are conducted in accordance with API 6D												
◎ Non-Destruction Examination	R T	Standard	Result	M T	Standard	Result	P T	Standard	Result	U T	Standard	Result
		N/A	-		N/A	-		N/A	-		N/A	-
◎ Dimension												
 												
Classification		Dimension(ASME B16.5 & ASME B16.10)								Assy. & Operating		
		L (F to F)	φd (Bore Dia)	End Flange (UNIT:mm)								
				φD(OD)	φC(BCD)	φg(RF)	T(thick)	f	n-φh			
No	Tag No	178.0±1.5	50.0+1.0	150.0 +2.0/-1.0	120.7±0.8	92.1±1.0	14.3+3.0	2.0	4-19.1	API 6D		
1	-	178.5	50.2	150.1	120.8	92.2	14.9	2.0	4-19.1	Accept		
2	-	178.5	50.1	150.4	120.7	92.4	15.0	2.0	4-19.1	Accept		
3	-	178.5	50.1	150.3	120.9	92.1	14.8	2.0	4-19.1	Accept		
4	-	178.3	50.2	150.1	120.9	92.4	15.2	2.0	4-19.1	Accept		
5	-	178.1	50.3	150.3	120.9	92.2	15.1	2.0	4-19.1	Accept		
6	-	178.5	50.0	150.4	120.8	92.1	15.0	2.0	4-19.1	Accept		
												
We hereby certify that the above results have been inspected in accordance with a specification and/or standard of application.												
Remark												
QA Engineer KIM HYUNG JUN				QA Manager KIM JAE MYUNG				Witnessed by				

Inspection/Test Certificates of Valves

HS VALVE CO., LTD Factory II : 222, Gongdan 8-ro, Jillyang-eup, Gyeongsan-si, Gyeongsangbuk-do, Korea Tel : (053) 857-5789 Fax : (053) 857-5785				Report No		HS200820 - 004						
				Issued Date		2020. 08. 20						
				Quantity		6 EA						
Client		IMFLUID		Page		1 of 1						
Project		N/A		Material	Body		A216 WCB					
PO No.		N/A			Cap		A216 WCB					
TYPE / DESCRIPTION		BALL VALVE / A216 WCB Class150 - 3"			Ball		A351 CF8					
					Stem		A276 304					
◎ Visual Inspection in accordance with MSS SP-55							Good					
◎ Marking Inspection in accordance with MSS SP-25							Good					
◎ Pressure Test												
Description		Pressure(bar)		Duration(Sec)		Test Result						
		Std	Actual	Std	Actual							
Shell Test	Hydrostatic	30	30	120	120	Accept						
Seat Test	Hydrostatic	22	22	120	120	Accept						
	Pneumatic	6	6	120	120	Accept						
* Note : The above tests are conducted in accordance with API 6D												
◎ Non-Destruction Examination	R T	Standard	Result	M T	Standard	Result	P T	Standard	Result	U T	Standard	Result
		N/A	-		N/A	-		N/A	-		N/A	-
◎ Dimension												
												
Classification		Dimension(ASME B16.5 & ASME B16.10)								Assy. & Operating		
		L (F to F)	Φd (Bore Dia)	End Flange (UNIT:mm)								
No	Tag No					ΦD(OD)	ΦC(BCD)	Φg(RF)	T(thick)	f	n-Φh	
		203.0±1.5	76.0+1.0	190.0 +2.0/-1.0	152.4±0.8	127.0±1.0	17.5+3.0	2.0	4-19.1	API 6D		
1	-	203.3	76.2	190.3	152.6	127.3	18.1	2.0	4-19.1	Accept		
2	-	203.3	76.0	190.3	152.6	127.3	18.1	2.0	4-19.1	Accept		
3	-	203.2	76.2	190.2	152.6	127.1	18.4	2.0	4-19.1	Accept		
4	-	203.4	76.2	190.4	152.7	127.2	18.2	2.0	4-19.1	Accept		
5	-	203.2	76.1	190.4	152.6	127.1	18.1	2.0	4-19.1	Accept		
6	-	203.4	76.0	190.1	152.6	127.0	18.1	2.0	4-19.1	Accept		
												
We hereby certify that the above results have been inspected in accordance with a specification and/or standard of application.												
Remark												
QA Engineer KIM HYUNG JUN				QA Manager KIM JAE MYUNG				Witnessed by				

MILL CERTIFICATE OF TEST

HS테크주 HS TECH CO.,LTD

Address: 222, Gongan 8-ro, Jillyang-eup,
Gyeongsan-si, Gyeongsangbuk-do, Korea
Tel. 82-53-856-5780 Fax. 82-53-856-5785

(According to EN 10204/3.1)

A 06 Customer : HS VALVE

A 01 Manufacturer's work's : HS TECH CO.,LTD

A 07 P.O Number : -

A 03 Cert No. : HS-181011-1

B 02 Material	ASTM A216 - WCB									
B 07 Heat No.	HBJBE	HBJBF								
B 01 Product	300# 2" BODY	300# 2" CAP								
B 08 Q'ty(EA)	49	50								

C 71 to C 92 Chemical Composition

Element	Standard									
C	0.30 Max	0.181	0.201							
Si	0.60 Max	0.331	0.411							
Mn	1.00 Max	0.541	0.791							
P	0.035 Max	0.012	0.016							
S	0.035 Max	0.003	0.005							
Ni	0.50 Max	0.021	0.021							
Cr	0.50 Max	0.041	0.041							
Mo	0.20 Max	0.001	0.001							
Cu	0.30 Max	0.031	0.021							
V	0.03 Max	0.001	0.001							
C.Equiv	0.43 Max	0.283	0.344							

C11, C12, C13, C30 Mechanical Properties

YS(Mpa)	Min. 250	356	354							
TS(Mpa)	485 ~ 655	518	514							
EL(%)	Min. 22	37	35							
RA(%)	Min. 35	66	66							
Hardness	-									

Impact Test	Avg	-								
	#1									
	#2	-								
	#3									

Original Copy
원본대조필
HS VALVE CO.,LTD.

Heat Treatment NORMALIZING 910°C / 1.2hr

d 02 to d 50 Non-Destructive Examination

RT		MT		PT		UT	
Standard	Result	Standard	Result	Standard	Result	Standard	Result
N/A	-	N/A	-	N/A	-	N/A	-

z 01 We hereby certify that the material described above has been tested and complies with the terms of the order contract.

Approved acc. to PED (2014/68/EU) by Certification Body for pressure Equipment of TUV NORD System GmbH & Co., KG (notified body, re. no.:0045)

z 02 11. October . 2018

Date

z 03

Manager of Quality Assurance Team

MILL CERTIFICATE OF TEST

HS 테크 주식회사 HS TECH CO.,LTD

Address: 222, Gongang 8-ro, Jillyang-eup,
Gyeongsan-si, Gyeongsangbuk-do, Korea
Tel. 82-53-856-5780 Fax. 82-53-856-5785

(According to EN 10204/3.1)

A 06 Customer : HS VALVE

A 01 Manufacturer's work's : HS TECH CO.,LTD

A 07 P.O Number : -

A 03 Cert No. : HS-180209-1

B 02 Material	ASTM A216 - WCB									
B 07 Heat No.	HBBAI	HBBAJ								
B 01 Product	300# 2" BODY	300# 2" CAP								
B 08 Q'ty(EA)	70	50								

C 71 to C 92 Chemical Composition

Element	Standard									
C	0.30 Max	0.190	0.133							
Si	0.60 Max	0.409	0.164							
Mn	1.00 Max	0.542	0.489							
P	0.035 Max	0.012	0.009							
S	0.035 Max	0.003	0.003							
Ni	0.50 Max	0.026	0.025							
Cr	0.50 Max	0.077	0.069							
Mo	0.20 Max	0.014	0.013							
Cu	0.30 Max	0.037	0.022							
V	0.03 Max	0.010	0.011							
C.Equiv		0.305	0.236							

C11, C12, C13, C30 Mechanical Properties

YS(Mpa)	Min. 250	354	356							
TS(Mpa)	485 ~ 655	515	518							
EL(%)	Min. 22	34	35							
RA(%)	Min. 35	59	66							
Hardness	-									

Impact Test	Avg	-								
	#1									
	#2	-								
	#3									

Original Copy

원본대조필

HS VALVE CO.,LTD.



Heat Treatment NORMALIZING 910°C / 1.2hr

d 02 to d 50 Non-Destructive Examination

RT		MT		PT		UT	
Standard	Result	Standard	Result	Standard	Result	Standard	Result
N/A	-	N/A	-	N/A	-	N/A	-

z 01 We hereby certify that the material described above has been tested and complies with the terms of the order contract.

Approved acc. to PED (2014/68/EU) by Certification Body for pressure Equipment of TUV NORD System GmbH & Co., KG (notified body, re. no.:0045)

z 02 09. February . 2018

Date

z 03

Manager of Quality Assurance Team

HS TECH CO.,LTD Address: 222, Gonggan 8-ro, Jillyang-eup, Gyeongsan-si, Gyeongsangbuk-do, Korea (Seoul 712-838 Korea) Tel: 82-53-856-5780		Inspection/Test Certificates for Materials (EN 10204-3.1)				Cert. No. HS-140213-1	Date 2014. 02. 13	
Customer		HS VALVE				Page		1 of 1
P/O No.		-						
Material		ASTM A216 - WCB						
Heat No.		HXBDF	HXBDF	HXBDF	HXBDF			
Item		300# 2" BODY	300# 2" BODY	300# 2" CAP	300# 2" CAP			
Q'ty(EA)		60	60	60	60			
Chemical Composition								
Element	Standard							
C	0.30 Max.	0.151	0.161	0.176	0.178			
Si	0.60 Max.	0.338	0.343	0.399	0.392			
Mn	1.00 Max.	0.612	0.616	0.750	0.760			
P	0.035 Max.	0.015	0.013	0.016	0.013			
S	0.035 Max.	0.008	0.006	0.009	0.009			
Ni	0.50 Max.	0.052	0.055	0.042	0.048			
Cr	0.50 Max.	0.080	0.093	0.055	0.062			
Mo	0.20 Max.	0.023	0.028	0.026	0.029			
Cu	0.30 Max.	0.065	0.064	0.079	0.111			
V	0.03 Max.	0.013	0.012	0.014	0.011			
C. Equiv		0.284	0.298	0.328	0.336			
Mechanical Properties								
YS (Mpa)	Min. 250	287	288	287	286			
TS (Mpa)	485 ~ 655	525	524	524	522			
EL (%)	Min. 22	45	42	44	42			
RA (%)	Min. 35	43	42	41	41			
Hardness	-							
Impact Test	AVG #1 #2 #3							
Heat Treatment		NORMALIZING 900°C / 1hr						
Non-Destructive Examination								
RT		MT		PT		UT		
Standard	Result	Standard	Result	Standard	Result	Standard	Result	
ASME B16.34 APPENDIX I	N/A	ASME B16.34 APPENDIX II	N/A	ASME B16.34 APPENDIX III	N/A	ASME B16.34 APPENDIX IV	N/A	
Electroless Nickel Plating(ENP)		Weld Overlay		AED test on O-rings		Tungsten Carbide Coating		
Standard	Result	Standard	Result	Standard	Result	Standard	Result	
ASTM B656	N/A	GS EP PVV 142	N/A	GS EP PVV 142	N/A	GS EP PVV 142	N/A	
We hereby certify that the material described herein has been satisfied as above in accordance with the specification. The certification has been satisfied in accordance with EN10204 TYPE3.1					Examined by Lee Chang In			
The latest edition of the applicable standard applies					Approved by Hwang Jae Hong			
Note:								

MILL CERTIFICATE OF TEST

HS테크주 HS TECH CO.,LTD

Address: 222, Gongdan 8-ro, Jillyang-eup,

Gyeongsan-si, Gyeongsangbuk-do, Korea

Tel. 82-53-856-5780 Fax. 82-53-856-5785

(According to EN 10204/3.1)

A 06 Customer : HS VALVE

A 01 Manufacturer's work's : HS TECH CO.,LTD

A 07 P.O Number : -

A 03 Cert No. : HS-200603-1

B 02 Material	ASTM A216 - WCB									
B 07 Heat No.	HDFCA	HDFCB								
B 01 Product	300# 3" BODY	300# 3" CAP								
B 08 Q'ty(EA)	30	30								

C 71 to C 92 Chemical Composition

Element	Standard									
C	0.30 Max	0.147	0.144							
Si	0.60 Max	0.421	0.452							
Mn	1.00 Max	0.632	0.719							
P	0.035 Max	0.013	0.012							
S	0.035 Max	0.005	0.004							
Ni	0.50 Max	0.045	0.032							
Cr	0.50 Max	0.137	0.044							
Mo	0.20 Max	0.003	0.003							
Cu	0.30 Max	0.018	0.027							
V	0.03 Max	0.010	0.012							
C.Equiv	0.43 Max	0.287	0.280							

C 11, C 12, C 13, C 30 Mechanical Properties

YS(Mpa)	Min. 250	353	349							
TS(Mpa)	485 ~ 655	513	507							
EL(%)	Min. 22	34	35							
RA(%)	Min. 35	67	60							
Hardness	-									

Impact Test	Avg	-								
	#1									
	#2	-								
	#3									

Original Copy
원본 대조필
HS VALVE CO.,LTD.

Heat Treatment	NORMALIZING 910°C / 1.2hr
----------------	---------------------------

d 02 to d 50 Non-Destructive Examination

RT		MT		PT		UT	
Standard	Result	Standard	Result	Standard	Result	Standard	Result
N/A	-	N/A	-	N/A	-	N/A	-

z 01 We here by certify that the material described above has been

tested and complies with the terms of the order contract.

Approved acc. to PED (2014/68/EU) by Certification Body for pressure Equipment of TUV NORD

System GmbH & Co., KG (notified body, re. no.:0045)

z 02 03. June . 2020

Date

z 03

Manager of Quality Assurance Team

MILL CERTIFICATE OF TEST

HS테크주 HS TECH CO.,LTD

Address: 222, Gongan 8-ro, Jillyang-eup,

Gyeongsan-si, Gyeongsangbuk-do, Korea

Tel. 82-53-856-5780 Fax. 82-53-856-5785

(According to EN 10204/3.1)

A 06 Customer : HS VALVE

A 01 Manufacturer's work's : HS TECH CO.,LTD

A 07 P.O Number : -

A 03 Cert No. : HS-191007-1

B 02 Material	ASTM A216 - WCB									
B 07 Heat No.	HCJJA	HCJJB								
B 01 Product	300# 3" BODY	300# 3" CAP								
B 08 Q'ty(EA)	30	30								

C 71 to C 92 Chemical Composition

Element	Standard									
C	0.30 Max	0.211	0.190							
Si	0.60 Max	0.493	0.480							
Mn	1.00 Max	0.770	0.655							
P	0.035 Max	0.016	0.016							
S	0.035 Max	0.007	0.007							
Ni	0.50 Max	0.042	0.070							
Cr	0.50 Max	0.094	0.157							
Mo	0.20 Max	0.006	0.007							
Cu	0.30 Max	0.041	0.040							
V	0.03 Max	0.001	0.001							
C.Equiv	0.43 Max	0.365	0.340							

C11, C12, C13, C30 Mechanical Properties

YS(Mpa)	Min. 250	349	354							
TS(Mpa)	485 ~ 655	507	514							
EL(%)	Min. 22	34	34							
RA(%)	Min. 35	61	60							
Hardness	-									

Impact Test	Avg	-								
	#1									
	#2	-								
	#3									

Original Copy
원본대조필
HS VALVE CO.,LTD.

Heat Treatment	NORMALIZING 910°C / 1.2hr
----------------	---------------------------

d 02 to d 50 Non-Destructive Examination

RT		MT		PT		UT	
Standard	Result	Standard	Result	Standard	Result	Standard	Result
N/A	-	N/A	-	N/A	-	N/A	-

z 01 We here by certify that the material described above has been tested and complies with the terms of the order contract.

Approved acc. to PED (2014/68/EU) by Certification Body for pressure Equipment of TUV NORD System GmbH & Co., KG (notified body, re. no.:0045)

z 02 07. October . 2019

Date

z 03

Manager of Quality Assurance Team

MILL CERTIFICATE OF TEST

HS테크주 HS TECH CO.,LTD

Address: 222, Gongan 8-ro, Jillyang-eup,
Gyeongsan-si, Gyeongsangbuk-do, Korea
Tel. 82-53-856-5780 Fax. 82-53-856-5785

(According to EN 10204/3.1)

A 06 Customer : HS VALVE

A 01 Manufacturer's work's : HS TECH CO.,LTD

A 07 P.O Number : -

A 03 Cert No. : HS-190318-1

B 02 Material	ASTM A216 - WCB									
B 07 Heat No.	HCCRA	HCCRB	HCCRC	HCCRD						
B 01 Product	150# 2" BODY	150# 2" BODY	150# 2" CAP	150# 2" CAP						
B 08 Q'ty(EA)	50	50	50	50						

C 71 to C 92 Chemical Composition

Element	Standard									
C	0.30 Max	0.241	0.208	0.202	0.185					
Si	0.60 Max	0.552	0.523	0.452	0.507					
Mn	1.00 Max	0.687	0.697	0.674	0.606					
P	0.035 Max	0.015	0.014	0.016	0.013					
S	0.035 Max	0.005	0.006	0.005	0.006					
Ni	0.50 Max	0.055	0.037	0.045	0.027					
Cr	0.50 Max	0.106	0.075	0.091	0.064					
Mo	0.20 Max	0.005	0.004	0.004	0.008					
Cu	0.30 Max	0.027	0.026	0.026	0.023					
V	0.03 Max	0.001	0.001	0.001	0.001					
C.Equiv	0.43 Max	0.383	0.344	0.338	0.304					

C11, C12, C13, C30 Mechanical Properties

YS(Mpa)	Min. 250	350	352	348	350					
TS(Mpa)	485 ~ 655	508	511	505	508					
EL(%)	Min. 22	35	35	33	34					
RA(%)	Min. 35	66	68	60	58					
Hardness	-									

Impact Test	Avg	-								
	#1									
	#2	-								
	#3									

Original Copy
원본대조필
HS VALVE CO.,LTD.

Heat Treatment	NORMALIZING 910°C / 1.2hr
----------------	---------------------------

d 02 to d 50 Non-Destructive Examination

RT		MT		PT		UT	
Standard	Result	Standard	Result	Standard	Result	Standard	Result
N/A	-	N/A	-	N/A	-	N/A	-

z 01 We here by certify that the material described above has been tested and complies with the terms of the order contract.

Approved acc. to PED (2014/68/EU) by Certification Body for pressure Equipment of TUV NORD System GmbH & Co., KG (notified body, re. no.:0045)

z 02 18. March . 2019

Date

z 03

Manager of Quality Assurance Team

MILL CERTIFICATE OF TEST

HS테크주 HS TECH CO.,LTD

Address: 222, Gongan 8-ro, Jillyang-eup,
Gyeongsan-si, Gyeongsangbuk-do, Korea
Tel. 82-53-856-5780 Fax. 82-53-856-5785

(According to EN 10204/3.1)

A 06 Customer : HS VALVE

A 01 Manufacturer's work's : HS TECH CO.,LTD

A 07 P.O Number : -

A 03 Cert No. : HS-191202-2

B 02 Material	ASTM A216 - WCB									
B 07 Heat No.	HCKAA	HCKAB								
B 01 Product	150# 2" BODY	150# 2" CAP								
B 08 Q'ty(EA)	102	102								

C 71 to C 92 Chemical Composition

Element	Standard									
C	0.30 Max	0.176	0.165							
Si	0.60 Max	0.463	0.532							
Mn	1.00 Max	0.711	0.751							
P	0.035 Max	0.015	0.014							
S	0.035 Max	0.006	0.006							
Ni	0.50 Max	0.025	0.025							
Cr	0.50 Max	0.052	0.053							
Mo	0.20 Max	0.005	0.005							
Cu	0.30 Max	0.023	0.023							
V	0.03 Max	0.001	0.001							
C.Equiv	0.43 Max	0.309	0.305							

C11, C12, C13, C30 Mechanical Properties

YS(Mpa)	Min. 250	358	354							
TS(Mpa)	485 ~ 655	520	514							
EL(%)	Min. 22	36	35							
RA(%)	Min. 35	66	66							
Hardness	-									

Impact Test	Avg	-								
	#1									
	#2	-								
	#3									

Original Copy
원본대조필
HS VALVE CO.,LTD.

Heat Treatment NORMALIZING 910°C / 1.2hr

d 02 to d 50 Non-Destructive Examination

RT		MT		PT		UT	
Standard	Result	Standard	Result	Standard	Result	Standard	Result
N/A	-	N/A	-	N/A	-	N/A	-

z 01 We here by certify that the material described above has been tested and complies with the terms of the order contract.

Approved acc. to PED (2014/68/EU) by Certification Body for pressure Equipment of TUV NORD System GmbH & Co., KG (notified body, re. no.:0045)

z 02 02. December . 2019
Date

z 03
Manager of Quality Assurance Team

MILL CERTIFICATE OF TEST

HS테크주 HS TECH CO.,LTD

Address: 222, Gongan 8-ro, Jillyang-eup,
Gyeongsan-si, Gyeongsangbuk-do, Korea
Tel. 82-53-856-5780 Fax. 82-53-856-5785

(According to EN 10204/3.1)

A 06 Customer : HS VALVE

A 01 Manufacturer's work's : HS TECH CO.,LTD

A 07 P.O Number : -

A 03 Cert No. : HS-180613-1

B 02 Material		ASTM A216 - WCB									
B 07 Heat No.		HBFKG	HBFKH								
B 01 Product		150# 3" BODY	150# 3" CAP								
B 08 Q'ty(EA)		50	50								
C 71 to C 92 Chemical Composition											
Element	Standard										
C	0.30 Max	0.187	0.174								
Si	0.60 Max	0.514	0.406								
Mn	1.00 Max	0.796	0.691								
P	0.035 Max	0.011	0.010								
S	0.035 Max	0.003	0.005								
Ni	0.50 Max	0.032	0.023								
Cr	0.50 Max	0.083	0.071								
Mo	0.20 Max	0.021	0.009								
Cu	0.30 Max	0.043	0.020								
V	0.03 Max	0.011	0.009								
C.Equiv	0.43 Max	0.348	0.310								
C11, C12, C13, C30 Mechanical Properties											
YS(Mpa)	Min. 250	358	353								
TS(Mpa)	485 ~ 655	520	513								
EL(%)	Min. 22	36	36								
RA(%)	Min. 35	67	60								
Hardness	-										
Impact Test	Avg	-									
	#1	-									
	#2										
	#3										
Heat Treatment		NORMALIZING 910°C / 1.2hr									
d 02 to d 50 Non-Destructive Examination											
RT		MT		PT		UT					
Standard	Result	Standard	Result	Standard	Result	Standard	Result				
N/A	-	N/A	-	N/A	-	N/A	-				
z 01 We here by certify that the material described above has been tested and complies with the terms of the order contract.											
Approved acc. to PED (2014/68/EU) by Certification Body for pressure Equipment of TUV NORD System GmbH & Co., KG (notified body, re. no.:0045)											
				z 02 13. June . 2018		z 03					
				Date		Manager of Quality Assurance Team					

MILL CERTIFICATE OF TEST

HS테크주 HS TECH CO.,LTD

Address: 222, Gongan 8-ro, Jillyang-eup,
Gyeongsan-si, Gyeongsangbuk-do, Korea
Tel. 82-53-856-5780 Fax. 82-53-856-5785

(According to EN 10204/3.1)

A 06 Customer : HS VALVE

A 01 Manufacturer's work's : HS TECH CO.,LTD

A 07 P.O Number : -

A 03 Cert No. : HS-190718-1

B 02 Material	ASTM A216 - WCB									
B 07 Heat No.	HCGBA	HCGBB	HCGBC	HCGBD	HCGBE	HCGBF				
B 01 Product	150# 3" BODY	150# 3" BODY	150# 3" BODY	150# 3" CAP	150# 3" CAP	150# 3" CAP				
B 08 Q'ty(EA)	50	50	50	50	50	50				

C 71 to C 92 Chemical Composition

Element	Standard									
C	0.30 Max	0.153	0.179	0.144	0.146	0.260	0.161			
Si	0.60 Max	0.391	0.456	0.445	0.392	0.430	0.458			
Mn	1.00 Max	0.569	0.653	0.731	0.690	0.726	0.529			
P	0.035 Max	0.012	0.015	0.020	0.018	0.015	0.017			
S	0.035 Max	0.006	0.006	0.006	0.005	0.006	0.007			
Ni	0.50 Max	0.039	0.017	0.019	0.043	0.326	0.025			
Cr	0.50 Max	0.089	0.046	0.079	0.105	0.048	0.046			
Mo	0.20 Max	0.006	0.004	0.009	0.009	0.012	0.004			
Cu	0.30 Max	0.017	0.016	0.019	0.045	0.050	0.021			
V	0.03 Max	0.005	0.005	0.006	0.006	0.006	0.005			
C.Equiv	0.43 Max	0.272	0.301	0.287	0.291	0.419	0.263			

C 11, C 12, C 13, C 30 Mechanical Properties

YS(Mpa)	Min. 250	356	355	349	352	353	349			
TS(Mpa)	485 ~ 655	518	516	507	511	512	507			
EL(%)	Min. 22	35	34	34	34	34	35			
RA(%)	Min. 35	62	63	61	60	63	60			
Hardness	-									

Impact Test	Avg	-								
	#1									
	#2	-								
	#3									

Heat Treatment	NORMALIZING 910°C / 1.2hr
----------------	---------------------------

d 02 to d 50 Non-Destructive Examination

RT		MT		PT		UT	
Standard	Result	Standard	Result	Standard	Result	Standard	Result
N/A	-	N/A	-	N/A	-	N/A	-

z 01 We here by certify that the material described above has been tested and complies with the terms of the order contract.

Approved acc. to PED (2014/68/EU) by Certification Body for pressure Equipment of TUV NORD System GmbH & Co., KG (notified body, re. no.:0045)

z 02 18. July . 2019

Date

z 03

Manager of Quality Assurance Team

Original Copy
원본대조필
HS VALVE CO.,LTD.

MILL CERTIFICATE OF TEST

HS테크주 HS TECH CO.,LTD

Address: 222, Gongan 8-ro, Jillyang-eup,
Gyeongsan-si, Gyeongsangbuk-do, Korea
Tel. 82-53-856-5780 Fax. 82-53-856-5785

(According to EN 10204/3.1)

A 06 Customer : HS VALVE

A 01 Manufacturer's work's : HS TECH CO.,LTD

A 07 P.O Number : -

A 03 Cert No. : HS-191203-1

B 02 Material	ASTM A216 - WCB									
B 07 Heat No.	HCKAC	HCKAD								
B 01 Product	150# 3" BODY	150# 3" CAP								
B 08 Q'ty(EA)	50	50								

C 71 to C 92 Chemical Composition

Element	Standard									
C	0.30 Max	0.142	0.147							
Si	0.60 Max	0.365	0.479							
Mn	1.00 Max	0.615	0.739							
P	0.035 Max	0.013	0.017							
S	0.035 Max	0.006	0.007							
Ni	0.50 Max	0.020	0.022							
Cr	0.50 Max	0.049	0.054							
Mo	0.20 Max	0.002	0.006							
Cu	0.30 Max	0.020	0.032							
V	0.03 Max	0.002	0.001							
C.Equiv	0.43 Max	0.258	0.286							

C11, C12, C13, C30 Mechanical Properties

YS(Mpa)	Min. 250	353	355							
TS(Mpa)	485 ~ 655	513	515							
EL(%)	Min. 22	36	35							
RA(%)	Min. 35	61	58							
Hardness	-									

Impact Test	Avg	-								
	#1									
	#2	-								
	#3									

Original Copy
원본대조필
HS VALVE CO.,LTD.

Heat Treatment NORMALIZING 910°C / 1.2hr

d 02 to d 50 Non-Destructive Examination

RT		MT		PT		UT	
Standard	Result	Standard	Result	Standard	Result	Standard	Result
N/A	-	N/A	-	N/A	-	N/A	-

z 01 We here by certify that the material described above has been tested and complies with the terms of the order contract.

Approved acc. to PED (2014/68/EU) by Certification Body for pressure Equipment of TUV NORD System GmbH & Co., KG (notified body, re. no.:0045)

z 02 03. December . 2019

Date

z 03

Manager of Quality Assurance Team

MILL CERTIFICATE OF TEST

HS테크주 HS TECH CO.,LTD

Address: 222, Gongan 8-ro, Jillyang-eup,
Gyeongsan-si, Gyeongsangbuk-do, Korea
Tel. 82-53-856-5780 Fax. 82-53-856-5785

(According to EN 10204/3.1)

A 06 Customer : HS VALVE

A 01 Manufacturer's work's : HS TECH CO.,LTD

A 07 P.O Number : -

A 03 Cert No. : HS-181220-1

B 02 Material	ASTM A351 - CF8									
B 07 Heat No.	HBLIA	HBLIB	HBLIC	HBLID	HBLIE	HBLIF	HBLIG	HBLIH	HBLII	
B 01 Product	1" S/BALL	1 1/4" S/BALL	1 1/2" S/BALL	2" S/BALL	2 1/2" S/BALL	3" S/BALL	4" S/BALL	5" S/BALL	6" S/BALL	
B 08 Q'ty(EA)	200	200	200	150	150	100	100	30	20	

C 71 to C 92 Chemical Composition

Element	Standard									
C	0.08 Max	0.051	0.051	0.041	0.041	0.031	0.031	0.021	0.021	0.041
Si	2.00 Max	0.871	0.751	0.871	0.831	0.871	0.891	0.881	0.807	0.790
Mn	1.50 Max	0.950	1.180	0.940	0.953	0.845	1.062	1.036	1.013	1.030
P	0.04 Max	0.030	0.034	0.035	0.036	0.034	0.032	0.036	0.031	0.031
S	0.04 Max	0.002	0.001	0.001	0.003	0.001	0.001	0.001	0.001	0.001
Ni	8.00~11.00	8.090	8.040	8.130	8.030	8.003	8.010	8.020	8.040	8.100
Cr	18.00~21.00	18.080	18.430	18.100	18.640	18.800	18.320	18.320	18.390	18.650
Mo	0.5 Max	0.120	0.130	0.140	0.150	0.110	0.130	0.130	0.130	0.130

C11, C12, C13, C30 Mechanical Properties

YS(Mpa)	Min. 205	310	315	311	317	349	318	353	352	316
TS(Mpa)	Min. 485	556	558	530	529	542	528	562	557	533
EL(%)	Min. 35	55	54	52	54	55	54	54	53	53
RA(%)	-									
Hardness	-									

Impact Test	Original Copy 원 #1 본 대 조 필 HS VALVE CO.,LTD #3									
-------------	---	--	--	--	--	--	--	--	--	--

Heat Treatment SOLUTION 1060°C / 1.7hr

d 02 to d 50 Non-Destructive Examination

RT		MT		PT		UT	
Standard	Result	Standard	Result	Standard	Result	Standard	Result
N/A	-	N/A	-	N/A	-	N/A	-

z 01 We here by certify that the material described above has been tested and complies with the terms of the order contract.

Approved acc. to PED (2014/68/EU) by Certification Body for pressure Equipment of TUV NORD System GmbH & Co., KG (notified body, re. no.:0045)

z 02 20. December . 2018

Date

z 03

Manager of Quality Assurance Team

INSPECTION CERTIFICATE



Steel Grade : 304
Size : DIAMETER 25.4 MM
Article : ROUND BARS
Heat No. : S33992
Specification : ASTM A276
Edition/Addenda : 08A
Delivery Condition : SOLUTION TREATMENT
SMOOTH TURNED
Melting Process : E.A.F. - A.O.D. - STRAND CASTING
Customer : MYUNG-JIN METAL
Supplier : SeAH Changwon Integrated Special Steel
Purchase order No :
Date : 2019-02-27
Cert. No. : 190227-2134
Page (1/1)

Inspection Items		Chemical Composition (wt. %)										Nonmetallic Inclusion (ASTM E45)									
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo		(Method A)									
Spec.	Min.	0.080	1.000	2.000	0.0450	0.0300		8.000	18.000			A(T)	A(H)	B(T)	B(H)	C(T)	C(H)	D(T)	D(H)		
	Max.	0.050	0.465	1.485	0.0315	0.0190	0.375	11.000	20.000	0.160		1.5	0	1.5	0	1.0	0	1.0	0		
Ladle																					

Inspection Items		Tensile Test (N/mm ²)				Hardness (HB)		Impact Test		Decarburized Layer		Grain Size		Micro Structure		Ultrasonic Test	
		YS0.2%	TS	EL(%)	RA(%)			Type		DM-T	DM-F						
Spec.	Min.	205	515	40	50												
	Max.	345.0	645.0	54.0	74.0		168.0					6.5					GOOD
3300-1																	

Lot No.	Bundle No.	Length(mm)	Number of Qt	Total Length	Weight (kg)	Weight (lb)	Case No.	<<Remark>> EN 10204 Type 3.1 / NO REPAIR WELDING. FREE FROM MERCURY CONTAMINATION.									
								본대조필									
A860713300	A8607133001	6000 - 6000	56		1,349	2,974		500-81-4092 (주)명진금속 박명주									
								대구광역시 팔서구 효동로 1길 15(효동) (주)명진금속 053)581-5252									
								* B/V WCB 300#-2" STEM									
								* B/V WCB 150#-2" STEM									
								Original Copy 원본대조필 HS VALVE CO., LTD.									
								TOTAL 56 1,349 2,974									

We hereby certify that the material described herein has been made in accordance with the rules of the contract.
Our quality system is certified in accordance with ISO 9001:2015 by DNV GL.
※ 본 품질보증서에 명기된 규격용도의 사용시 안전상 문제가 발생할 수 있으며, 품질보증서 위,변조시 사문서 위조(형법231조)로 불이익을 당하실 수 있습니다.
※ 세아첨원특수강 홈페이지(www.seahss.co.kr)에서 품질보증서 원본을 확인할 수 있습니다.

Certified by Young Seung Lee.
Manager of Quality Assurance Team.

INSPECTION CERTIFICATE

Date : 2019-03-22
Cert. No. : 190322-2120

Page (1/1)

Steel Grade : 304

Size : DIAMETER 40 MM

Article : ROUND BARS

Specification : ASTM A276

Edition/Addenda : 08A

Delivery Condition : SOLUTION TREATMENT

SMOOTH TURNED

Customer : MYUNGJIN METAL

Supplier : SeAH Changwon Integrated Special Steel

Purchase order No :

Heat No. : S35076

Melting Process : E.A.F. - A.O.D. - STRAND CASTING

Chemical Composition (wt. %)

Inspection Items		Nonmetallic Inclusion(ASTM E45)																				
		(Method A)																				
		C	Si	Mn	P	S	Cu	Ni	Cr	Mo					A(T)	A(H)	B(T)	B(H)	C(T)	C(H)	D(T)	D(H)
Spec.	Min.	0.080	1.000	2.000	0.0450	0.0300					8.000	18.000										
	Max.	0.053	0.446	1.487	0.0285	0.0158	0.327	8.035	18.370	0.140					1.5	.0	1.5	.0	2.0	.0	1.0	.0
Ladle																						

Tensile Test (N/mm²)

Inspection Items	Tensile Test (N/mm ²)				Hardness (HB)		Type	Impact Test		Decarburized Layer		Grain Size	Micro Structure	Ultrasonic Test
	YS0.2%	TS	EL(%)	RA(%)						DM-T	DM-F			
Spec.	Min.	205	515	40	50									
	Max.	290.0	645.0	57.0	75.0	179.0						6.0		
9600-1														GOOD

<<Remark>> EN 10204 Type 3.1 / NO REPAIR WELDING. FREE FROM MERCURY CONTAMINATION.

CERTIFIED TO ASTM A182 F304 & A479 304

NACE MR 0175 / ISO 15156-3, NACE MR 0103

SOLUTION : 1,050°C, 30min/inch, WATER COOLING

원본대조필

* B/V WCB 300#-3" STEM
* B/V WCB 300#-3" STEM

Original Copy

원본대조필

HS VALVE CO., LTD.

(주)영진금속

대구광역시 합서구 호산동로 1길 15(3호점)

담당: 양준기 010-5252-5252

503-81-40987

/ (주)영진금속

TOTAL 44 2,602 5,736

We hereby certify that the material described herein has been made in accordance with the rules of the contract.

Our quality system is certified in accordance with ISO 9001:2015 by DNV GL.

※ 본 품질보증서에 명시된 규격용도의 사용시 안전상 문제가 발생할 수 있으며, 품질보증서 원본을 확인하십시오.

※ 세아창원특수강 홈페이지 (www.seahss.co.kr)에서 품질보증서 원본을 확인할 수 있습니다.

중량:

1 kg

Certified by

Young Seung Lee.

일자: 2019-03-22

일차: 2019-03-22

Manager of Quality Assurance Team.