



# BALL VALVE FOR LOW TEMPERATURE SERVICE

■ HF5 (LT)   ■ FM5 (LT)

HISAKA WORKS, LTD.

## It can be used for $-104^{\circ}\text{C}$

### ☆Temperature Range

HF5(LT)model :  $-30^{\circ}\text{C}\sim-50^{\circ}\text{C}$

FM5(LT)model :  $-50^{\circ}\text{C}\sim-104^{\circ}\text{C}$

\*There are 2 models depend on operation temperature range.

### ☆Permission leakage

•In case of  $-30^{\circ}\text{C}\sim-50^{\circ}\text{C}$

“O” ZERO LEAKAGE

•In case of  $-50^{\circ}\text{C}\sim-104^{\circ}\text{C}$

Fluid Liquid (Refrigerant) at the time of 1MPa pressurized

“O” ZERO LEAKAGE

Fluid Nitrogen gas at the time of 1MPa pressurized

Leakage 25cc/min/inch. ( 1/2", 3/4" : 25CC/min)

### ☆Long bonnet is standard specification. ( HF5(LT) : option)

Standard length of bonnet is 160mm.

The influence of fluid temperature in gland part was decreased.

Easywork for thermal insulation construction.

Thermal insulator will not be interfered.

### ☆Other standard specifications

•Oil free & Water free

•Perforation on upstream side of Ball (Right figure)

The abnormal upward pressure of pocket (body cavity part) can be protected.

•Full bore

Pressure loss is very little, so possible to be size down by piping design.

Seal material is White Fluoric Resin.(HF5(LT): Expansion Graphite)

### ☆High Pressure Gas authorized products can be produced.

### ☆Short delivery & Reasonable price.

### ☆Suitable fluid

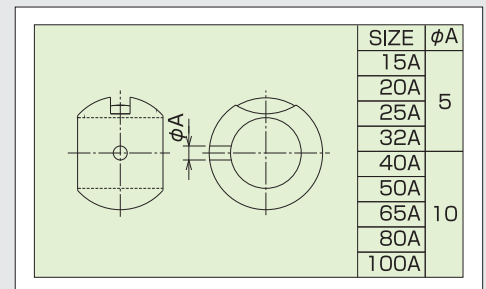
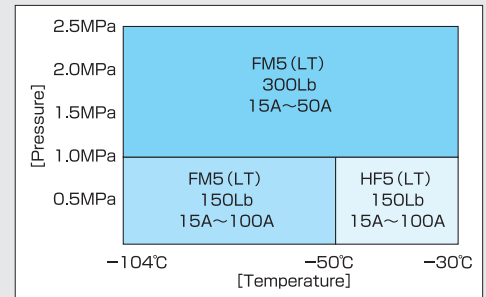
Ethylene-glycol, Propylene-glycol, Ethylene, Propylene, Butadiene, Ammonia, Chlorine, Carbon dioxide, Acetylene, Ethane, Freon (R22, R23)

### ☆Attention at the time of piping work

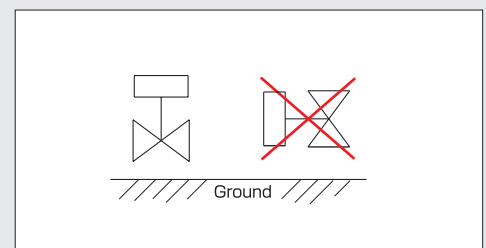
Please put the stem faced upper side for piping.

\*The vertical piping is possible by installed a thermal absorbing plate (Option)

### ■Pressure/Temperature rating



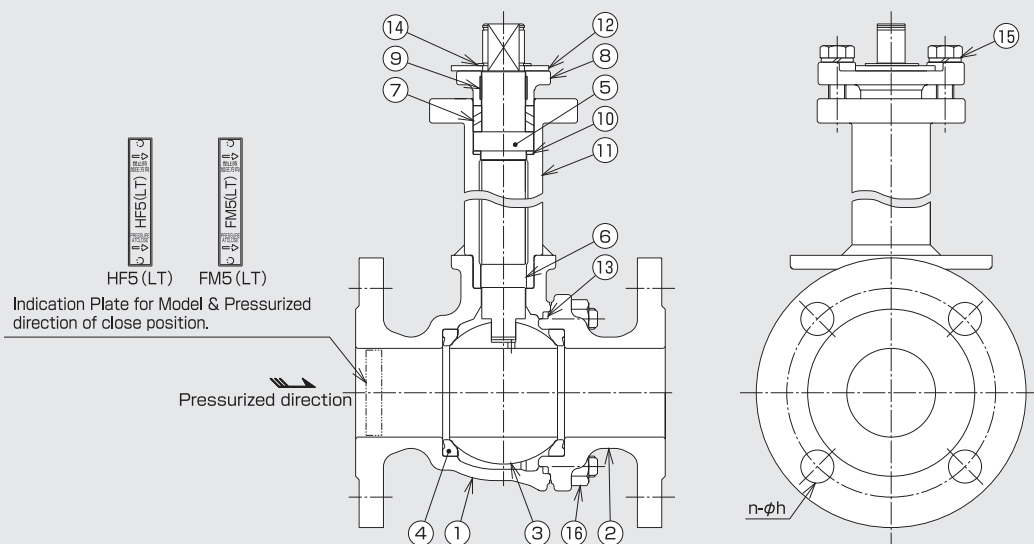
The detail of perforation



Attention for the piping

# Refrigerant & Liquefied Gas application

## Construction Drawing



### Parts list

#### HF5 (LT)

No	Parts name	Qty	Material			Remarks
1	Body	1	SCS13A	SCS14A	SCS16A	
2	Body Cap	1	SCS13A	SCS14A	SCS16A	
3	Ball	1	SUS304	SUS316	SUS316L	
4	Ball seat	2	MAXTITE PTFE			
5	Stem	1	SUS304	SUS316	SUS316L	
6	Bearing	1	PTFE			
7	Gland Packing	1Set	EXPANSION GRAPHITE			
8	Gland Cap	1	SCS13A	SCS16A	SCS16A	
9	Gland Bearing	1	PTFE			
10	Thrust Bearing	1	R.PTFE			
11	Long Bonnet	1	SUS304 SCS13A	SUS316 SCS14A	SUS316L SCS16A	OPTION
12	Stopper	1	SUS304			
13	Gasket	1	EXPANSION GRAPHITE			
14	Snap Ring	1	SUS304			
15	Bolt	2	SUS304			
16	Stud Bolt/Nut	1Set	SUS304			

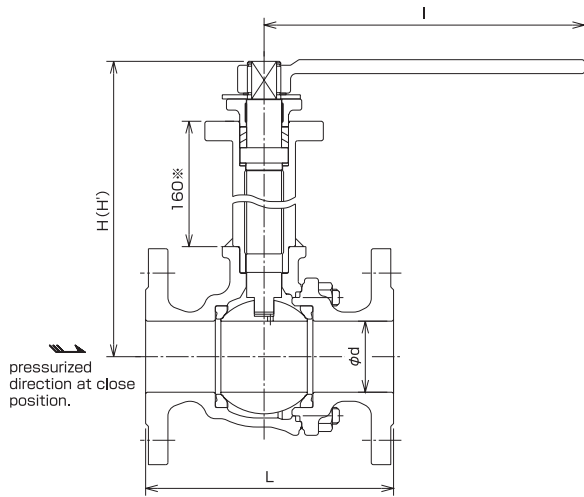
#### FM5 (LT)

No	Parts name	Qty	Material			Remarks
1	Body	1	SCS13A	SCS14A	SCS16A	
2	Body Cap	1	SCS13A	SCS14A	SCS16A	
3	Ball	1	SUS304	SUS316	SUS316L	
4	Ball seat	2	MAXTITE PTFE			
5	Stem	1	SUS304	SUS316	SUS316L	
6	Bearing	1	PTFE			
7	Gland Packing	1Set	MAXTITE PTFE			
8	Gland Cap	1	SCS13A	SCS16A	SCS16A	
9	Gland Bearing	1	PTFE			
10	Thrust Bearing	1	R.PTFE			
11	Long Bonnet	1	SUS304 SCS13A	SUS316 SCS14A	SUS316L SCS16A	
12	Stopper	1	SUS304			
13	Gasket	1	MAXTITE PTFE			
14	Snap Ring	1	SUS304			
15	Bolt	2	SUS304			
16	Stud Bolt/Nut	1Set	SUS304			

### Production Range

Model	Class	Design Pressure	15A	20A	25A	40A	50A	65A	80A	100A
HF5 (LT)	150LB	below 1.0MPa	○	○	○	○	○	○	○	○
FM5 (LT)	150LB	below 1.0MPa	○	○	○	○	○	○	○	○
	300LB	below 2.5MPa	○	○	○	○	○	×	×	×

# HF5 (LT) FM5 (LT) CLASS150



※expresses the length of long bonnet (HF5LT OPTION/FM5LT Standard)

## HF5 (LT)

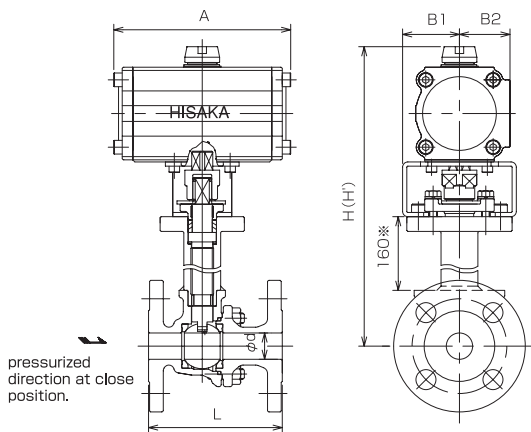
	d	L	H	H'	I	weight (kg)
15A	13	108	59	219	120	2.9
20A	19	117	65	225	120	3.5
25A	25	127	77	237	150	5.2
32A	32	140	82	242	150	6.5
40A	38	165	100	260	200	8.5
50A	51	178	112	272	250	11.3
65A	64	190	135	295	300	17.0
80A	76	203	154	314	350	21.9
100A	102	229	175	335	400	31.5

☆H' for long bonnet.

## FM5 (LT)

	d	L	H	I	weight (kg)
15A	13	108	229	150	3.5
20A	19	117	231	150	4.1
25A	25	127	250	200	6.2
40A	38	165	264	250	9.8
50A	51	178	282	300	12.8
65A	64	190	308	350	19.7
80A	76	203	319	400	24.8
100A	102	229	426	700	39.6

## HF5 (LT)-AD



※expresses the length of long bonnet (HF5LT OPTION/FM5LT Standard)

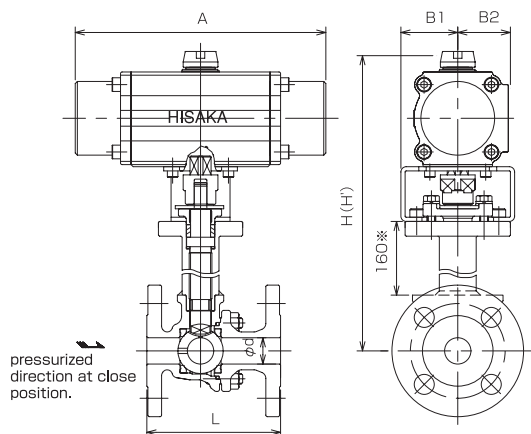
	d	L	A	B1	B2	H	H'	Actuator	weight (kg)
15A	13	108	124	45	38	163	323	AD05N	4.4
20A	19	117	168	44	48	195	355	AD07N	6.6
25A	25	127	168	44	48	204	364	AD07N	8.3
32A	32	140	168	44	48	209	369	AD07N	9.6
40A	38	165	270	70	60	271	431	AD08	15.9
50A	51	178	270	70	60	282	442	AD08	18.4
65A	64	190	334	78	73	340	500	AD10	28.6
80A	76	203	440	90	89	463	623	AD13	47.9
100A	102	229	440	90	89	482	642	AD13	57.8

☆H' for long bonnet.

## FM5 (LT)-AD

	d	L	A	B1	B2	H	Actuator	weight (kg)
15A	13	108	124	45	38	326	AD05N	4.9
20A	19	117	168	44	48	358	AD07N	7.2
25A	25	127	168	44	48	375	AD07N	9.1
40A	38	165	270	70	60	434	AD08	16.8
50A	51	178	334	78	73	486	AD10	24.2
65A	64	190	334	81	73	511	AD10	31.1
80A	76	203	440	90	89	626	AD13	51.3

# HF5 (LT) FM5 (LT) CLASS150



※expresses the length of long bonnet  
(HF5LT OPTION/FM5LT Standard)

## HF5 (LT)-AS

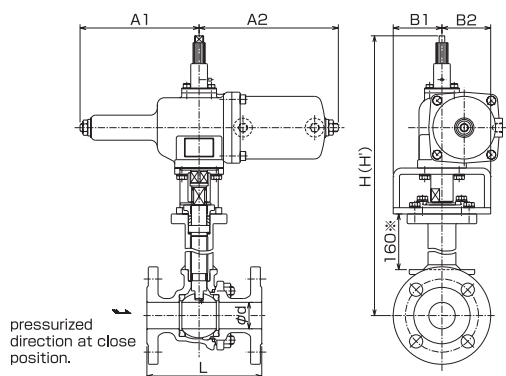
	d	L	A	B1	B2	H	H'	Actuator	weight (kg)
15A	13	108	242	44	48	192	352	AS07N	6.5
20A	19	117	242	44	48	195	355	AS07N	7.1
25A	25	127	410	63	60	254	414	AS08	11.5
32A	32	140	410	63	60	259	419	AS08	12.8

☆H' for long bonnet.

## FM5 (LT)-AS

	d	L	A	B1	B2	H	Actuator	weight (kg)
15A	13	108	238	44	48	355	AS07N	7.0
20A	19	117	238	44	48	358	AS07N	7.7
25A	25	127	410	70	60	421	AS08	12.6

## HF5 (LT)-TD



※expresses the length of long bonnet  
(HF5LT OPTION/FM5LT Standard)

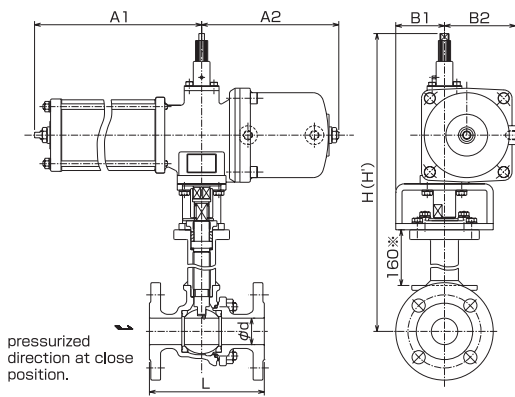
	d	L	A1	A2	B1	B2	H	H'	Actuator	weight (kg)
15A	13	108	99	120	52	60	249	409	TD1	6.1
20A	19	117	134	151	52	70	260	420	TD2	8.2
25A	25	127	134	151	52	70	269	429	TD2	9.9
32A	32	140	171	200	63	87	307	467	TD3	16.0
40A	38	165	171	200	70	87	319	479	TD3	18.1
50A	51	178	224	257	75	112	368	528	TD4	29.9
65A	64	190	224	257	78	112	393	553	TD4	35.8
80A	76	203	272	315	90	149	481	641	TD5	64.4
100A	102	229	272	315	90	149	500	660	TD5	74.3

☆H' for long bonnet.

## FM5 (LT)-TD

	d	L	A1	A2	B1	B2	H	Actuator	weight (kg)
15A	13	108	99	120	52	55	412	TD1	6.6
20A	19	117	134	151	52	70	423	TD2	8.8
25A	25	127	134	151	63	70	444	TD2	11.0
40A	38	165	171	200	70	87	482	TD3	19.1
50A	51	178	224	257	78	112	540	TD4	31.6
65A	64	190	272	315	90	152	635	TD5	62.3
80A	76	203	272	315	90	152	644	TD5	67.6
100A	102	229	338	372	130	188	760	TD6	126.9

# HF5 (LT) FM5 (LT) CLASS150



※expresses the length of long bonnet (HF5LT OPTION/FM5LT Standard)

## HF5 (LT)-TS

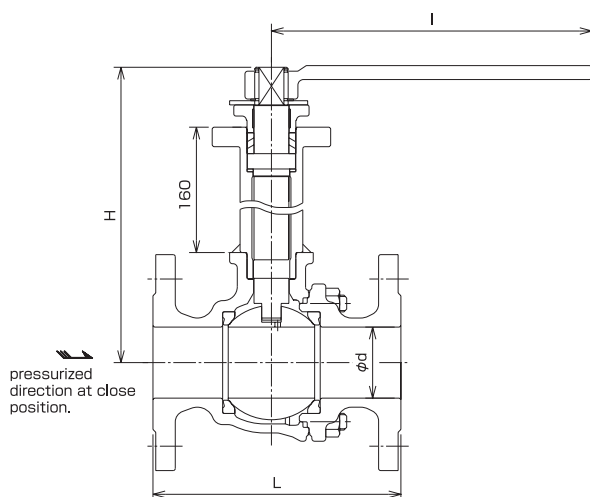
	d	L	A1	A2	B1	B2	H	H'	Actuator	weight (kg)
15A	13	108	204	122	52	71	262	422	TS1	8.1
20A	19	117	231	154	52	82	277	437	TS2	12.2
25A	25	127	231	154	52	82	286	446	TS2	13.9
32A	32	140	320	197	63	102	333	493	TS3	23.5
40A	38	165	320	197	70	102	345	505	TS3	25.6
50A	51	178	436	265	75	135	411	571	TS4	49.9
65A	64	190	436	265	78	135	436	596	TS4	55.8
80A	76	203	567	329	90	184	535	695	TS5	112.4
100A	102	229	567	329	90	184	554	714	TS5	122.3

☆H' for long bonnet.

## FM5 (LT)-TS

	d	L	A1	A2	B1	B2	H	Actuator	weight (kg)
15A	13	108	204	122	52	71	425	TS1	8.6
20A	19	117	231	154	52	82	440	TS2	12.8
25A	25	127	231	154	63	82	461	TS2	15.0
40A	38	165	320	197	70	102	508	TS3	26.6
50A	51	178	436	265	78	135	583	TS4	51.6
65A	64	190	567	329	90	184	689	TS5	110.3
80A	76	203	567	329	90	184	698	TS5	115.6
100A	102	229	657	393	130	233	848	TS6	236.9

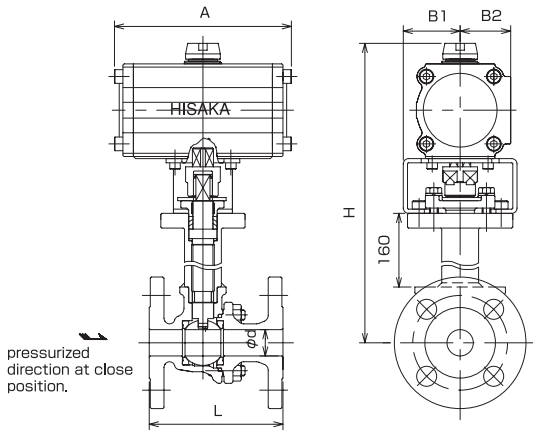
# FM5 (LT) CLASS300



## FM5 (LT)

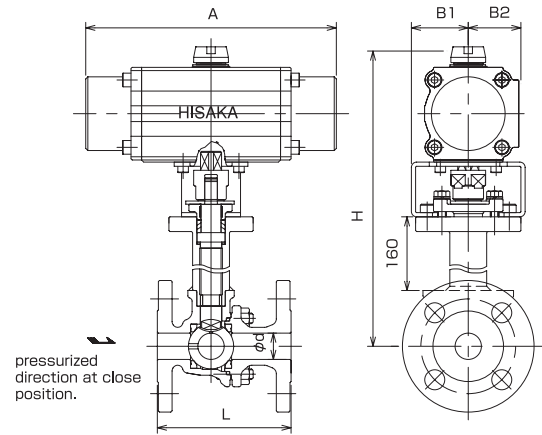
	d	L	H	I	weight (kg)
15A	13	140	229	150	4.0
20A	19	152	231	150	4.8
25A	25	165	250	200	7.1
40A	38	190	264	250	11.2
50A	51	216	282	300	15.1

# FM5 (LT) CLASS300



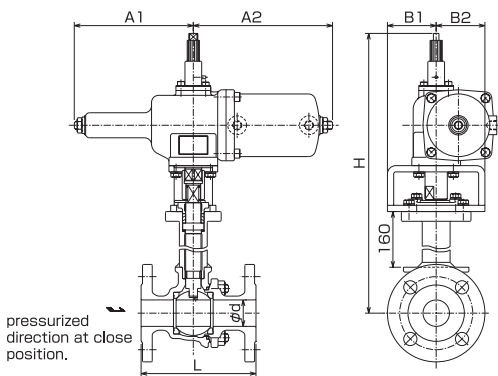
## FM5 (LT)-AD

	d	L	A	B1	B2	H	Actuator	weight (kg)
15A	13	108	124	45	38	326	AD05N	5.4
20A	19	117	168	44	48	358	AD07N	7.9
25A	25	127	168	44	48	375	AD07N	10.0
40A	38	190	270	70	60	434	AD08	18.3
50A	51	216	334	78	73	486	AD10	26.5



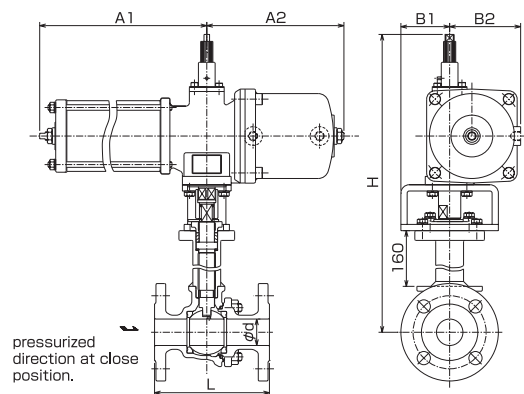
## FM5 (LT)-AS

	d	L	A	B1	B2	H	Actuator	weight (kg)
15A	13	108	238	44	48	355	AS07N	7.5
20A	19	117	238	44	48	358	AS07N	8.4
25A	25	165	410	70	60	421	AS08	13.5



## FM5 (LT)-TD

	d	L	A1	A2	B1	B2	H	Actuator	weight (kg)
15A	13	140	99	120	52	55	412	TD1	7.1
20A	19	152	134	151	52	70	423	TD2	9.5
25A	25	165	134	151	63	70	444	TD2	11.9
40A	38	190	171	200	70	87	482	TD3	20.5
50A	51	216	224	257	78	112	540	TD4	33.8



## FM5 (LT)-TS

	d	L	A1	A2	B1	B2	H	Actuator	weight (kg)
15A	13	140	204	122	52	71	425	TS1	9.1
20A	19	152	231	154	52	82	440	TS2	13.5
25A	25	165	231	154	63	82	461	TS2	15.9
40A	38	190	320	197	70	102	508	TS3	28.0
50A	51	216	436	265	78	135	583	TS4	53.8

## FOR PROPER USE OF HISAKA BALL VALVE

Following points must be considered in order to use HISAKA ball valves in a proper way.

1. Do not allow the slurry (dirts in the pipe, welding slag, rust, etc.) to enter into the standard valve. If the slurry thrust into the ball seat or causes damage on it, the leakage or defective function may result.  
Install the valve only after the through cleaning is made inside the pipe.  
If the liquid containing the slurry is to be supplied, exchange the standard valve with the valve for slurry use.
2. Do not use the standard valve to the liquid which shows a large temperature fluctuation. If the high temperature liquid is supplied to the low temperature condition, the liquid inside the valve body shows the heat expansion, forming the high pressure. In such a case, the leakage or defective function may be caused.  
Either reduce the temperature fluctuation or exchange with the valve having the relief port in the above case.
3. Do not apply undue force (as caused by one-side tightening of bolts, the tightening against a large gap, etc.) or vibration to the valve. Otherwise, the leakage or faulty function may happen. Observe the piping dimensions as instructed and arrange the support for a heavy valve.
4. Bolts and nuts are loosened in some cases due to the vibration during the transport. Therefore, check the tightening condition before use. If found Loose, retighten the bolts.
5. Special treatment is necessary, if the valve is used for oxygen or hydrogen service. Please clarify the detail of operation condition and fluid.
6. The flow direction of fluid is designated in certain valves. The reverse flow may cause the leakage. Install the valves as instruction, if the flow direction is designated.
7. At the time of disassembling the automatic valve, do not disassemble the pneumatic cylinder if the pressure still remains inside. Otherwise, the parts pop out. disassemble it only after the air is purged.
8. Do not disassemble the pneumatic cylinder of spring back type.  
If it is to be disassembled under unavoidable circumstances, exchange the end cap set bolt with the long bolt before disassembling. Otherwise, the spring may jump out what is dangerous.
9. Make the working test once a month or so, automatic valve is kept out of operation over a long period.
10. In case of using the teflon seat valve only for ON-OFF operation, the interim opening position deforms the seat and the leakage is caused.
11. If you have any question or requirement about our product, please contact us or our local sales agent.



- ISO 14001 CERTIFIED FACTORY
- ISO 9001 CERTIFIED FACTORY
- HIGH PRESSURE GAS AUTHORISED FACTORY
- API CERTIFIED FACTORY

 **HISAKA WORKS, LTD.**  
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