Specification Sheet

No.: 1 QTY: 1
Tag no. FV1028
Service

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	4	inch
Port size	4	inch
Rated Cv	175	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316	
Flow characteristic	EQ%	
Bonnet type	PLAIN	
Actuator	HA3	
Manual operator		
Valve action	DIRECT(Air fail open)	
Gland packing	V-PTFE	
Gasket	V543	
Grease		
Air supply	2.7bar	
Spring range	0.8-2.4bar	

< Accesories >

Positioner / Signal	AVP300-FSD2D-1CYT-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-2B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	
Action	
Power supply	
Others	

Product no.:

<Option>

SV0703-102	Indicating unit : "bar"
SV0601-001	Air piping Connection: 1/4 NPT

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name WATER [WATER]

	MAX	NOR	MIN	UNIT
Flow rate	30000			l/h
Inlet pressure	6			barA
Outlet pressure	5.7			barA
Diff. pressure				bar
Shut-off press.		5		bar
Temperature	14			degC
Sp.Gr. (liq.)	999.6			kg/m3
Sp.Gr.(gas,vapor)				kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	1.02			m/s
S.P.L.	55			dBA
Calculated Cv	63.3			
Travel	67			%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	5			barG
Design temp.	14			degC
Line size in/out	4	/	4	inch
Line Sch. / Thick.		/		mm

Specification Sheet

No.: 2 QTY: 1
Tag no. FV1511B
Service

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	6	inch
Port size	6	inch
Rated Cv	360	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316	
Flow characteristic	EQ%	
Bonnet type	PLAIN	
Actuator	HA3	
Manual operator		
Valve action	REVERSE(Air fail close)	
Gland packing	V-PTFE	
Gasket	V543	
Grease		
Air supply	2.7bar	
Spring range	0.8-2.4bar	

< Accesories >

Positioner / Signal	AVP300-FSD2D-1CYT-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-2B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	
Action	
Power supply	
Others	

Product no.:

<Option>

SV0703-102	Indicating unit : "bar"
SV0601-001	Air piping Connection: 1/4 NPT

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name OXYGEN [GAS]

	MAX	NOR	MIN	UNIT
Flow rate	9500		8000	m3/h[N]
Inlet pressure	5		5	barA
Outlet pressure	1.04		1.04	barA
Diff. pressure				bar
Shut-off press.		6.1		bar
Temperature	26		26	degC
Sp.Gr. (liq.)				kg/m3
Sp.Gr.(gas,vapor)	1.433		1.433	kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	0.47		0.39	Mach
S.P.L.				dBA
Calculated Cv	144.1		121.3	
Travel	70		66	%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	6.1			barG
Design temp.	26			degC
Line size in/out	6	/	6	inch
Line Sch. / Thick.		/		mm

Specification Sheet

No.: 3 QTY: 1
Tag no. HV1215
Service

Product no.:

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	6	inch
Port size	6	inch
Rated Cv	360	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316	
Flow characteristic	EQ%	
Bonnet type	PLAIN	
Actuator	PSA6	
Manual operator		
Valve action	REVERSE(Air fail close)	
Gland packing	V-PTFE	
Gasket	V543	
Grease		
Air supply	5.0bar	
Spring range	2.0-3.9bar	

< Accesories >

Positioner / Signal	AVP300-FSD5D-1CYL-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-3B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	
Action	
Power supply	
Others	

<Option>

SV0703-102	Indicating unit : "bar"
SV0601-001	Air piping Connection: 1/4 NPT

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name DRY AIR [GAS]

	MAX	NOR	MIN	UNIT
Flow rate	11033		4900	m3/h[N]
Inlet pressure	5.62		5.62	barA
Outlet pressure	1.1		1.1	barA
Diff. pressure				bar
Shut-off press.		6.1		bar
Temperature	24		24	degC
Sp.Gr. (liq.)				kg/m3
Sp.Gr.(gas,vapor)	1.292		1.292	kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	0.48		0.21	Mach
S.P.L.				dBA
Calculated Cv	140.9		62.57	
Travel	69		49	%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	6.1		barG
Design temp.	24		degC
Line size in/out		6	inch
Line Sch. / Thick.			mm

YAMATAKE

Specification Sheet

No.: 4 QTY: 1
Tag no. HV1296B
Service

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	8	inch
Port size	8	inch
Rated Cv	640	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316	
Flow characteristic	EQ%	
Bonnet type	PLAIN	
Actuator	PSA6	
Manual operator		
Valve action	REVERSE(Air fail close)	
Gland packing	V-PTFE	
Gasket	V543	
Grease		
Air supply	4.0bar	
Spring range	2.0-3.4bar	

< Accesories >

Positioner / Signal	AVP300-FSD3D-1CYL-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-2B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	
Action	
Power supply	
Others	

Product no.:

<Option>

SV0703-102	Indicating unit : "bar"
SV0601-001	Air piping Connection: 1/4 NPT

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name DRY AIR [GAS]

	MAX	NOR	MIN	UNIT
Flow rate	20053		9398	m3/h[N]
Inlet pressure	5.63		5.26	barA
Outlet pressure	3.2		1.013	barA
Diff. pressure				bar
Shut-off press.		6.1		bar
Temperature	28.9		28.9	degC
Sp.Gr. (liq.)				kg/m3
Sp.Gr.(gas,vapor)	1.293		1.293	kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	0.17		0.25	Mach
S.P.L.				dBA
Calculated Cv	271.4		129.3	
Travel	72		52	%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	6.1		barG
Design temp.	28.9		degC
Line size in/out		6	inch
Line Sch. / Thick.			mm

YAMATAKE

Specification Sheet

No.: 5 QTY: 1
Tag no. KV1209
Service

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	6	inch
Port size	4	inch
Rated Cv	175	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316 STELLITE	
Flow characteristic	EQ%	
Bonnet type	EXT-1 HIGH	
Actuator	HA4	
Manual operator		
Valve action	REVERSE(Air fail close)	
Gland packing	V7132Y+SM636	
Gasket	V543	
Grease		
Air supply	2.7bar	
Spring range	0.8-2.4bar	

< Accesories >

Positioner / Signal	AVP300-FSD2D-1CYN-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-2B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	
Action	
Power supply	
Others	

Product no.:

<Option>

SV0703-102	Indicating unit : "bar"
SV0601-001	Air piping Connection: 1/4 NPT

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name WET AIR [GAS]

	MAX	NOR	MIN	UNIT
Flow rate	5715			m3/h[N]
Inlet pressure	5.65			barA
Outlet pressure	1.04			barA
Diff. pressure				bar
Shut-off press.		6.1		bar
Temperature	17.5			degC
Sp.Gr. (liq.)				kg/m3
Sp.Gr.(gas,vapor)	1.292			kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	0.26			Mach
S.P.L.				dBA
Calculated Cv	71.79			
Travel	71			%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	6.1	barG
Design temp.	17.5~300	degC
Line size in/out	6	inch
Line Sch. / Thick.		mm

YAMATAKE

Specification Sheet

No.: 6 QTY: 1
Tag no. KV1210
Service

Product no.:

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	6	inch
Port size	4	inch
Rated Cv	175	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316 STELLITE	
Flow characteristic	EQ%	
Bonnet type	EXT-1 HIGH	
Actuator	HA4	
Manual operator		
Valve action	REVERSE(Air fail close)	
Gland packing	V7132Y+SM636	
Gasket	V543	
Grease		
Air supply	2.7bar	
Spring range	0.8-2.4bar	

< Accesories >

Positioner / Signal	AVP300-FSD2D-1CYN-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-2B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	
Action	
Power supply	
Others	

<Option>

SV0703-102	Indicating unit : "bar"
SV0601-001	Air piping Connection: 1/4 NPT

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name WET AIR [GAS]

	MAX	NOR	MIN	UNIT
Flow rate	5715			m3/h[N]
Inlet pressure	5.65			barA
Outlet pressure	1.04			barA
Diff. pressure				bar
Shut-off press.		6.1		bar
Temperature	17.5			degC
Sp.Gr. (liq.)				kg/m3
Sp.Gr.(gas,vapor)	1.292			kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	0.26			Mach
S.P.L.				dBA
Calculated Cv	71.79			
Travel	71			%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	6.1		barG
Design temp.	17.5~300		degC
Line size in/out		6	inch
Line Sch. / Thick.			mm

Specification Sheet

No.: 7 QTY: 1
Tag no. KV1211
Service

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	8	inch
Port size	4	inch
Rated Cv	175	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316 STELLITE	
Flow characteristic	EQ%	
Bonnet type	EXT-1 HIGH	
Actuator	HA4	
Manual operator		
Valve action	REVERSE(Air fail close)	
Gland packing	V7132Y+SM636	
Gasket	V543	
Grease		
Air supply	2.7bar	
Spring range	0.8-2.4bar	

< Accesories >

Positioner / Signal	AVP300-FSD2D-1CYN-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-2B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	
Action	
Power supply	
Others	

Product no.:

<Option>

SV0703-102	Indicating unit : "bar"
SV0601-001	Air piping Connection: 1/4 NPT

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name DRY AIR [GAS]

	MAX	NOR	MIN	UNIT
Flow rate	2437		2437	m3/h[N]
Inlet pressure	5.65		5.65	barA
Outlet pressure				barA
Diff. pressure	1.04		5.55	bar
Shut-off press.		6.1		bar
Temperature	26		26	degC
Sp.Gr. (liq.)				kg/m3
Sp.Gr.(gas,vapor)	1.292		1.292	kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	0.01		0.67	Mach
S.P.L.				dBA
Calculated Cv	46.53		31.06	
Travel	59		50	%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	8	barG
Design temp.	26~300	degC
Line size in/out	6	inch
Line Sch. / Thick.		mm

YAMATAKE

Specification Sheet

No.: 8 QTY: 1
Tag no. LV1007
Service

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	4	inch
Port size	4	inch
Rated Cv	175	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316 STELLITE	
Flow characteristic	EQ%	
Bonnet type	PLAIN	
Actuator	HA3	
Manual operator		
Valve action	REVERSE(Air fail close)	
Gland packing	V-PTFE	
Gasket	V543	
Grease		
Air supply	2.7bar	
Spring range	0.8-2.4bar	

< Accesories >

Positioner / Signal	AVP300-FSD2D-1CYT-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-2B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	
Action	
Power supply	
Others	

Product no.:

<Option>

SV0703-102	Indicating unit : "bar"
SV0601-001	Air piping Connection: 1/4 NPT

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name	WATER		[WATER]
	MAX	NOR	MIN	UNIT
Flow rate	80783		30019	l/h
Inlet pressure	5.2		5.2	barA
Outlet pressure	4		4	barA
Diff. pressure				bar
Shut-off press.		4.2		bar
Temperature	32		32	degC
Sp.Gr. (liq.)	995.3		995.3	kg/m3
Sp.Gr.(gas,vapor)				kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	2.76		1.02	m/s
S.P.L.	66		61	dBA
Calculated Cv	85.05		31.6	
Travel	75		50	%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	4.2	barG
Design temp.	32	degC
Line size in/out		inch
Line Sch. / Thick.		mm

Specification Sheet

No.: 9 QTY: 1
Tag no. LV1022
Service

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	4	inch
Port size	2	inch
Rated Cv	44	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316 STELLITE FACE	
Flow characteristic	EQ%	
Bonnet type	EXTENTION-2W	
Actuator	HA3	
Manual operator		
Valve action	REVERSE(Air fail close)	
Gland packing	V-PTFE	
Gasket	V543(PTFE), V563(PTFE)	
Grease		
Air supply	2.7bar	
Spring range	0.8-2.4bar	

< Accesories >

Positioner / Signal	AVP300-FSD2D-1CYT-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-2B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	with
Action	
Power supply	
Others	

Product no.:

<Option>

SV0703-102 Indicating unit : "bar"

SV0601-001 Air piping Connection: 1/4 NPT

SV0018-005 Oil-free Gr.B (For stainless steel body) and Water-free treatment

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name WATER [WATER]

	MAX	NOR	MIN	UNIT
Flow rate	30000			l/h
Inlet pressure	3.5			barA
Outlet pressure	1.8			barA
Diff. pressure				bar
Shut-off press.		2.5		bar
Temperature	32			degC
Sp.Gr. (liq.)	995.2			kg/m3
Sp.Gr.(gas,vapor)				kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	1.02			m/s
S.P.L.	75			dBA
Calculated Cv	26.53			
Travel	82			%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	8	barG
Design temp.	-196~50	degC
Line size in/out	/	inch
Line Sch. / Thick.	/	mm

Specification Sheet

No.: 10 QTY: 1
Tag no. TV1581A
Service

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	3	inch
Port size	3	inch
Rated Cv	99	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316 STELLITE	
Flow characteristic	EQ%	
Bonnet type	EXTENTION-2W	
Actuator	HA3	
Manual operator		
Valve action	DIRECT(Air fail open)	
Gland packing	V-PTFE	
Gasket	V543(PTFE), V563(PTFE)	
Grease		
Air supply	4.0bar	
Spring range	0.8-2.4bar	

< Accesories >

Positioner / Signal	AVP300-FSD3D-1CYT-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-2B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	
Action	
Power supply	
Others	

Product no.:

<Option>

SV0703-102 Indicating unit : "bar"

SV0601-001 Air piping Connection: 1/4 NPT

SV0018-005 Oil-free Gr.B (For stainless steel body) and Water-free treatment

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name DRY AIR [GAS]

	MAX	NOR	MIN	UNIT
Flow rate	550		380	m3/h[N]
Inlet pressure	5.5		5.2	barA
Outlet pressure	5.47		5.07	barA
Diff. pressure				bar
Shut-off press.		6.1		bar
Temperature	26		26	degC
Sp.Gr. (liq.)				kg/m3
Sp.Gr.(gas,vapor)	1.292		1.292	kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	0.01		0.01	Mach
S.P.L.				dBA
Calculated Cv	59.8		20.51	
Travel	82		53	%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	9	barG
Design temp.	-196~50	degC
Line size in/out		inch
Line Sch. / Thick.		mm

YAMATAKE

Specification Sheet

No.: 11 QTY: 1
Tag no. FV1511A
Service

< Specification >

Model	HTS	
Description	Top-Guided Single Seated Control Valves	
Valve size	8	inch
Port size	8	inch
Rated Cv	640	
Connection size		inch
Body rating		
End connection	DIN2526	
Body material	A351CF8	
Trim material	SUS316 STELLITE	
Flow characteristic	EQ%	
Bonnet type	EXT-1 HIGH	
Actuator	PSA6	
Manual operator		
Valve action	REVERSE(Air fail close)	
Gland packing	V7132Y+SM636	
Gasket	V543	
Grease		
Air supply	4.0bar	
Spring range	2.0-3.4bar	

< Accesories >

Positioner / Signal	AVP300-FSD3D-1CYL-X
Exprosion-proof	FM Explosionproof and Flameproof, 1/4 NPT, 1/2
Signal	4-20 mADC
Regurator	KZ03-2B-XX
Regulator 2	
Limit Switch	
Action	
Solenoid valve	
Action	
Power supply	
Others	

Product no.:

<Option>

SV0703-102	Indicating unit : "bar"
SV0601-001	Air piping Connection: 1/4 NPT

<Finish>

Body:	M10B5/10
Diaph. Case:	M10B5/10
Yoke:	M10B5/10
Paint:	Standard

<Operating condition>

Fluid name [GAS]

	MAX	NOR	MIN	UNIT
Flow rate	9500		8000	m3/h[N]
Inlet pressure	5		5	barA
Outlet pressure	4.8		3.5	barA
Diff. pressure				bar
Shut-off press.		6.1		bar
Temperature	26		26	degC
Sp.Gr. (liq.)				kg/m3
Sp.Gr.(gas,vapor)	1.433		1.433	kg/m3[N]
Viscosity				mPa-s
Flash				%
Velocity	0.05		0.06	Mach
S.P.L.				dBA
Calculated Cv	445.7		147.2	
Travel	87		55	%

<Seat Leakage>

CLASS IV (SV0201-003)

<Note> Tokumi -

<Line spec>

Design press.	6.1	barG	
Design temp.	17.5~300	degC	
Line size in/out		6	inch
Line Sch. / Thick.			mm

YAMATAKE

Cv Calculation Sheet

No: 1	TAG NO:	FV1028		CASE:	MAX	
Flow rate:	30000	l/h	Fluid state:	WATER		
Inlet Pressure:	6	barA	Model:	HTS		
Outlet pressure:	5.7	barA	Valve size:	4		inch
Diff. pressure		bar	Line size In/Out:	4	4	inch
Temperature:	14	degC	Pipe Sch/ Thick:			mm
Sp.Gr. (liq.):	999.6	kg/m3	Saturated temp.:		158.9	degC
Sp.Gr. (gas,vapor):		kg/m3[N]	KC:		0.05	
Viscosity:		mPa-s				
Vapor pressure:	0.01597	barA	Velocity:	1.02		m/s
Critical pressure:	221.2	barA	S.P.L.:	55		dBA
CP/CV , Z:			Calc. Cv:	63.3		
Flash:		%	Travel:	67		%

$$Cv(Liq) = \frac{11.56 \times 30m3/h \times Sqr(999.6) \times 1}{Sqr(30kPa)} = 63.3$$

No: 2	TAG NO:	FV1511B		CASE:	MAX	
Flow rate:	9500	m3/h[N]	Fluid state:	GAS		
Inlet Pressure:	5	barA	Model:	HTS		
Outlet pressure:	1.04	barA	Valve size:	6		inch
Diff. pressure		bar	Line size In/Out:	6	6	inch
Temperature:	26	degC	Pipe Sch/ Thick:			mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:			degC
Sp.Gr. (gas,vapor):	1.433	kg/m3[N]	KC:		0.79	
Viscosity:		mPa-s				
Vapor pressure:		barA	Velocity:	0.47		Mach
Critical pressure:		barA	S.P.L.:			dBA
CP/CV , Z:			Calc. Cv:	144.1		
Flash:		%	Travel:	70		%

$$Cv(Gas) = \frac{10042m3/h[S] \times Sqr(1.108 \times 299.2degK) \times 1}{2.538 \times 500kPaA} = 144.1$$

No: 2	TAG NO:	FV1511B		CASE:	MIN	
Flow rate:	8000	m3/h[N]	Fluid state:	GAS		
Inlet Pressure:	5	barA	Model:	HTS		
Outlet pressure:	1.04	barA	Valve size:	6		inch
Diff. pressure		bar	Line size In/Out:	6	6	inch
Temperature:	26	degC	Pipe Sch/ Thick:			mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:			degC
Sp.Gr. (gas,vapor):	1.433	kg/m3[N]	KC:		0.79	
Viscosity:		mPa-s				
Vapor pressure:		barA	Velocity:	0.39		Mach
Critical pressure:		barA	S.P.L.:			dBA
CP/CV , Z:			Calc. Cv:	121.3		
Flash:		%	Travel:	66		%

$$Cv(Gas) = \frac{8456m3/h[S] \times Sqr(1.108 \times 299.2degK) \times 1}{2.538 \times 500kPaA} = 121.3$$

Cv Calculation Sheet

No: 3 TAG NO: HV1215 CASE: MAX

Flow rate:	11033	m3/h[N]	Fluid state:	GAS	
Inlet Pressure:	5.62	barA	Model:	HTS	
Outlet pressure:	1.1	barA	Valve size:	6	inch
Diff. pressure		bar	Line size In/Out:	6	inch
Temperature:	24	degC	Pipe Sch/ Thick:		mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:		degC
Sp.Gr. (gas,vapor):	1.292	kg/m3[N]	KC:	0.8	
Viscosity:		mPa-s			
Vapor pressure:		barA	Velocity:	0.48	Mach
Critical pressure:		barA	S.P.L.:		dBA
CP/CV , Z:			Calc. Cv:	140.9	
Flash:		%	Travel:	69	%

$$Cv(Gas) = \frac{11662m3/h[S] \times Sqr(0.9992 \times 297.2degK) \times 1}{2.538 \times 562kPaA} = 140.9$$

No: 3 TAG NO: HV1215 CASE: MIN

Flow rate:	4900	m3/h[N]	Fluid state:	GAS	
Inlet Pressure:	5.62	barA	Model:	HTS	
Outlet pressure:	1.1	barA	Valve size:	6	inch
Diff. pressure		bar	Line size In/Out:	6	inch
Temperature:	24	degC	Pipe Sch/ Thick:		mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:		degC
Sp.Gr. (gas,vapor):	1.292	kg/m3[N]	KC:	0.8	
Viscosity:		mPa-s			
Vapor pressure:		barA	Velocity:	0.21	Mach
Critical pressure:		barA	S.P.L.:		dBA
CP/CV , Z:			Calc. Cv:	62.57	
Flash:		%	Travel:	49	%

$$Cv(Gas) = \frac{5179m3/h[S] \times Sqr(0.9992 \times 297.2degK) \times 1}{2.538 \times 562kPaA} = 62.57$$

No: 4 TAG NO: HV1296B CASE: MAX

Flow rate:	20053	m3/h[N]	Fluid state:	GAS	
Inlet Pressure:	5.63	barA	Model:	HTS	
Outlet pressure:	3.2	barA	Valve size:	8	inch
Diff. pressure		bar	Line size In/Out:	6	inch
Temperature:	28.9	degC	Pipe Sch/ Thick:		mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:		degC
Sp.Gr. (gas,vapor):	1.293	kg/m3[N]	KC:	0.43	
Viscosity:		mPa-s			
Vapor pressure:		barA	Velocity:	0.17	Mach
Critical pressure:		barA	S.P.L.:		dBA
CP/CV , Z:			Calc. Cv:	271.4	
Flash:		%	Travel:	72	%

$$Cv(Gas) = \frac{21196m3/h[S] \times Sqr(1 \times 302degK) \times 1}{2.930 \times Sqr(243kPa \times (563kPaA + 320kPaA))} = 271.4$$

Cv Calculation Sheet

No: 4 TAG NO: HV1296B CASE: MIN

Flow rate:	9398	m3/h[N]	Fluid state:	GAS	
Inlet Pressure:	5.26	barA	Model:	HTS	
Outlet pressure:	1.013	barA	Valve size:	8	inch
Diff. pressure		bar	Line size In/Out:	6	inch
Temperature:	28.9	degC	Pipe Sch/ Thick:		mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:		degC
Sp.Gr. (gas,vapor):	1.293	kg/m3[N]	KC:	0.81	
Viscosity:		mPa-s			
Vapor pressure:		barA	Velocity:	0.25	Mach
Critical pressure:		barA	S.P.L.:		dBA
CP/CV , Z:			Calc. Cv:	129.3	
Flash:		%	Travel:	52	%

$$Cv(Gas) = \frac{9934m3/h[S] \times Sqr(1 \times 302degK) \times 1}{2.538 \times 526kPaA} = 129.3$$

No: 5 TAG NO: KV1209 CASE: MAX

Flow rate:	5715	m3/h[N]	Fluid state:	GAS	
Inlet Pressure:	5.65	barA	Model:	HTS	
Outlet pressure:	1.04	barA	Valve size:	6	inch
Diff. pressure		bar	Line size In/Out:	6	inch
Temperature:	17.5	degC	Pipe Sch/ Thick:		mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:		degC
Sp.Gr. (gas,vapor):	1.292	kg/m3[N]	KC:	0.82	
Viscosity:		mPa-s			
Vapor pressure:		barA	Velocity:	0.26	Mach
Critical pressure:		barA	S.P.L.:		dBA
CP/CV , Z:			Calc. Cv:	71.79	
Flash:		%	Travel:	71	%

$$Cv(Gas) = \frac{6041m3/h[S] \times Sqr(0.9992 \times 290.7degK) \times 1}{2.538 \times 565kPaA} = 71.79$$

No: 6 TAG NO: KV1210 CASE: MAX

Flow rate:	5715	m3/h[N]	Fluid state:	GAS	
Inlet Pressure:	5.65	barA	Model:	HTS	
Outlet pressure:	1.04	barA	Valve size:	6	inch
Diff. pressure		bar	Line size In/Out:	6	inch
Temperature:	17.5	degC	Pipe Sch/ Thick:		mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:		degC
Sp.Gr. (gas,vapor):	1.292	kg/m3[N]	KC:	0.82	
Viscosity:		mPa-s			
Vapor pressure:		barA	Velocity:	0.26	Mach
Critical pressure:		barA	S.P.L.:		dBA
CP/CV , Z:			Calc. Cv:	71.79	
Flash:		%	Travel:	71	%

$$Cv(Gas) = \frac{6041m3/h[S] \times Sqr(0.9992 \times 290.7degK) \times 1}{2.538 \times 565kPaA} = 71.79$$

Cv Calculation Sheet

No: 7	TAG NO:	KV1211		CASE:	MAX	
Flow rate:	2437	m3/h[N]	Fluid state:	GAS		
Inlet Pressure:	5.65	barA	Model:	HTS		
Outlet pressure:		barA	Valve size:	8		inch
Diff. pressure	1.04	bar	Line size In/Out:		6	inch
Temperature:	26	degC	Pipe Sch/ Thick:			mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:			degC
Sp.Gr. (gas,vapor):	1.292	kg/m3[N]	KC:		0.18	
Viscosity:		mPa-s				
Vapor pressure:		barA	Velocity:	0.01		Mach
Critical pressure:		barA	S.P.L.:			dBA
CP/CV , Z:			Calc. Cv:	46.53		
Flash:		%	Travel:	59		%

$$Cv(Gas) = \frac{2576m3/h[S] \times Sqr(0.9992 \times 299.2degK) \times 1}{2.930 \times Sqr(104kPa \times (565kPaA + 461kPaA))} = 46.53$$

No: 7	TAG NO:	KV1211		CASE:	MIN	
Flow rate:	2437	m3/h[N]	Fluid state:	GAS		
Inlet Pressure:	5.65	barA	Model:	HTS		
Outlet pressure:		barA	Valve size:	8		inch
Diff. pressure	5.55	bar	Line size In/Out:		6	inch
Temperature:	26	degC	Pipe Sch/ Thick:			mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:			degC
Sp.Gr. (gas,vapor):	1.292	kg/m3[N]	KC:		0.98	
Viscosity:		mPa-s				
Vapor pressure:		barA	Velocity:	0.67		Mach
Critical pressure:		barA	S.P.L.:			dBA
CP/CV , Z:			Calc. Cv:	31.06		
Flash:		%	Travel:	50		%

$$Cv(Gas) = \frac{2576m3/h[S] \times Sqr(0.9992 \times 299.2degK) \times 1}{2.538 \times 565kPaA} = 31.06$$

No: 8	TAG NO:	LV1007		CASE:	MAX	
Flow rate:	80783	l/h	Fluid state:	WATER		
Inlet Pressure:	5.2	barA	Model:	HTS		
Outlet pressure:	4	barA	Valve size:	4		inch
Diff. pressure		bar	Line size In/Out:			inch
Temperature:	32	degC	Pipe Sch/ Thick:			mm
Sp.Gr. (liq.):	995.3	kg/m3	Saturated temp.:		153.3	degC
Sp.Gr. (gas,vapor):		kg/m3[N]	KC:		0.23	
Viscosity:		mPa-s				
Vapor pressure:	0.04753	barA	Velocity:	2.76		m/s
Critical pressure:	221.2	barA	S.P.L.:	66		dBA
CP/CV , Z:			Calc. Cv:	85.05		
Flash:		%	Travel:	75		%

$$Cv(Liq) = \frac{11.56 \times 80.78m3/h \times Sqr(995.3) \times 1}{Sqr(120kPa)} = 85.05$$

Cv Calculation Sheet

No: 8	TAG NO:	LV1007	CASE:	MIN

Flow rate:	30019	l/h	Fluid state:	WATER	
Inlet Pressure:	5.2	barA	Model:	HTS	
Outlet pressure:	4	barA	Valve size:	4	inch
Diff. pressure		bar	Line size In/Out:		inch
Temperature:	32	degC	Pipe Sch/ Thick:		mm
Sp.Gr. (liq.):	995.3	kg/m3	Saturated temp.:	153.3	degC
Sp.Gr. (gas,vapor):		kg/m3[N]	KC:	0.23	
Viscosity:		mPa-s			
Vapor pressure:	0.04753	barA	Velocity:	1.02	m/s
Critical pressure:	221.2	barA	S.P.L.:	61	dBA
CP/CV , Z:			Calc. Cv:	31.6	
Flash:		%	Travel:	50	%

$$Cv(Liq) = \frac{11.56 \times 30.02m3/h \times Sqr(995.3) \times 1}{Sqr(120kPa)} = 31.6$$

No: 9	TAG NO:	LV1022	CASE:	MAX

Flow rate:	30000	l/h	Fluid state:	WATER	
Inlet Pressure:	3.5	barA	Model:	HTS	
Outlet pressure:	1.8	barA	Valve size:	4	inch
Diff. pressure		bar	Line size In/Out:		inch
Temperature:	32	degC	Pipe Sch/ Thick:		mm
Sp.Gr. (liq.):	995.2	kg/m3	Saturated temp.:	138.8	degC
Sp.Gr. (gas,vapor):		kg/m3[N]	KC:	0.49	
Viscosity:		mPa-s			
Vapor pressure:	0.04753	barA	Velocity:	1.02	m/s
Critical pressure:	221.2	barA	S.P.L.:	75	dBA
CP/CV , Z:			Calc. Cv:	26.53	
Flash:		%	Travel:	82	%

$$Cv(Liq) = \frac{11.56 \times 30m3/h \times Sqr(995.2) \times 1}{Sqr(170kPa)} = 26.53$$

No: 10	TAG NO:	TV1581A	CASE:	MAX

Flow rate:	550	m3/h[N]	Fluid state:	GAS	
Inlet Pressure:	5.5	barA	Model:	HTS	
Outlet pressure:	5.47	barA	Valve size:	3	inch
Diff. pressure		bar	Line size In/Out:		inch
Temperature:	26	degC	Pipe Sch/ Thick:		mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:		degC
Sp.Gr. (gas,vapor):	1.292	kg/m3[N]	KC:	0.01	
Viscosity:		mPa-s			
Vapor pressure:		barA	Velocity:	0.01	Mach
Critical pressure:		barA	S.P.L.:		dBA
CP/CV , Z:			Calc. Cv:	59.8	
Flash:		%	Travel:	82	%

$$Cv(Gas) = \frac{581.3m3/h[S] \times Sqr(0.9992 \times 299.2degK) \times 1}{2.930 \times Sqr(3kPa \times (550kPaA + 547kPaA))} = 59.8$$

Cv Calculation Sheet

No: 10	TAG NO:	TV1581A		CASE:	MIN	
Flow rate:	380	m3/h[N]	Fluid state:	GAS		
Inlet Pressure:	5.2	barA	Model:	HTS		
Outlet pressure:	5.07	barA	Valve size:	3		inch
Diff. pressure		bar	Line size In/Out:			inch
Temperature:	26	degC	Pipe Sch/ Thick:			mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:			degC
Sp.Gr. (gas,vapor):	1.292	kg/m3[N]	KC:		0.02	
Viscosity:		mPa-s				
Vapor pressure:		barA	Velocity:	0.01		Mach
Critical pressure:		barA	S.P.L.:			dBA
CP/CV , Z:			Calc. Cv:	20.51		
Flash:		%	Travel:	53		%

$$Cv(Gas) = \frac{401.7m3/h[S] \times Sqr(0.9992 \times 299.2degK) \times 1}{2.930 \times Sqr(13kPa \times (520kPaA + 507kPaA))} = 20.51$$

No: 11	TAG NO:	FV1511A		CASE:	MAX	
Flow rate:	9500	m3/h[N]	Fluid state:	GAS		
Inlet Pressure:	5	barA	Model:	HTS		
Outlet pressure:	4.8	barA	Valve size:	8		inch
Diff. pressure		bar	Line size In/Out:		6	inch
Temperature:	26	degC	Pipe Sch/ Thick:			mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:			degC
Sp.Gr. (gas,vapor):	1.433	kg/m3[N]	KC:		0.04	
Viscosity:		mPa-s				
Vapor pressure:		barA	Velocity:	0.05		Mach
Critical pressure:		barA	S.P.L.:			dBA
CP/CV , Z:			Calc. Cv:	445.7		
Flash:		%	Travel:	87		%

$$Cv(Gas) = \frac{10042m3/h[S] \times Sqr(1.108 \times 299.2degK) \times 1}{2.930 \times Sqr(20kPa \times (500kPaA + 480kPaA))} = 445.7$$

No: 11	TAG NO:	FV1511A		CASE:	MIN	
Flow rate:	8000	m3/h[N]	Fluid state:	GAS		
Inlet Pressure:	5	barA	Model:	HTS		
Outlet pressure:	3.5	barA	Valve size:	8		inch
Diff. pressure		bar	Line size In/Out:		6	inch
Temperature:	26	degC	Pipe Sch/ Thick:			mm
Sp.Gr. (liq.):		kg/m3	Saturated temp.:			degC
Sp.Gr. (gas,vapor):	1.433	kg/m3[N]	KC:		0.3	
Viscosity:		mPa-s				
Vapor pressure:		barA	Velocity:	0.06		Mach
Critical pressure:		barA	S.P.L.:			dBA
CP/CV , Z:			Calc. Cv:	147.2		
Flash:		%	Travel:	55		%

$$Cv(Gas) = \frac{8456m3/h[S] \times Sqr(1.108 \times 299.2degK) \times 1}{2.930 \times Sqr(150kPa \times (500kPaA + 350kPaA))} = 147.2$$