National Petrochemical Company
Petrochemical Research & Technology Company

SAZ CATALYST PLANT

DOCUMENT NUMBER

PROCESS DATA SHEET

SHEET N.12 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.				PV-60104		
	2	P&ID No.	Piping Size	Piping Class		601	1"	
	3	Fluid		State		NITROGEN	VAPOROUS	
	4	Pressure rating		Piping material		150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max		(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area		ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit		200	Kg/h	
	8	Min.Continuous		Unit		100	Kg/h	
	9	Max.In Transients		Unit		320	Kg/h	
	10	Allow. with closed va		Unit		0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit		5	barg	
	12	Dp. At max. flowrate		Unit			barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit		7	barg	
Temperature	14	Norm . upstr. Temp		Unit		AMB	◦C	
	15	Max . upstr. Temp		Unit		28	◦C	
Sp. Gr.	16	Gases vapours		Unit		6.8	kg/m3	
	17	Liquids		Unit			kg/m3	
	18	Mol.weight		Unit		28	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)				0.0148		
	20	Solid in suspension				No		
Cv	21	Min/Norm/Max		Required		3.5/6/11	16	
	22	Selected Cv				VTA		
Body	23	Body type		Body material		Globe	CS	
	24	Size Body		Port		½"	MFR. STD.	
	25	Guiding / No. of Port						
	26	Max. Allowable Sound Level (dBA)				85db		
	27	Design Pressure		Min. Barg	Max. Barg			Barg
	28	Design Temperature		Min. °C	Max. °C			◦C
	29	Valve end con. & rating				Flange 150#		
	30	Packing mat.		Lubricator		PTFE	VTA	
	31	Flow direction				FTO		
	32	Bonnet type				Standard		
	33	SEAT Leakage Class ANSI				IV		
Trim	34	TRIM FORM				Linear		
	35	TRIM MATERIAL: SEAT / PLUG				316 SS		
	36	TRIM MATERIAL: SHAFT				316 SS		
Actuator	37	Type		Direction of action		Diaphragm	Reverse	
	38	SERVICE		SIZE		Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT				
	40	Fail Position				CLOSE		
	41	Spring range				VTA		
	42	On-Off/Modulating		Single/Double Acting		Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.		VTA	VTA	
	44	Type				I/P Positioner		
	45	Input signal		Out put signal		4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.		3.5 barg	Direct	
	47	Positioner Protection		Certificate		IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type				NA		
	49	Tag No.				NA		
	50	Supply Voltage		Consumption		NA	NA	
	51	Protection		Certificate		NA	NA	
Accessories	52	Pressure gauge and filter				YES		
	53	Manual Control Wheel				NA		
	54	Cable Gland		Size/Qty		NA	NA	
	55	Electrical Conection				M20 * 1.5mm ISO		
	56	Tubing & Conection				SS Tube 1/4"		
	57	Switch	Protection	Certificate		NA	NA	YES

Notes: 1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

No.	Rev	Date	Issued For	Prepared	Checked	Approved

National Petrochemical Company
Petrochemical Research & Technology Company

SAZ CATALYST PLANT

DOCUMENT NUMBER

PROCESS DATA SHEET

SHEET N.19 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.				TV-60105		
	2	P&ID No.	Piping Size	Piping Class		601	2"	
	3	Fluid		State		STEAM		VAPOROUS
	4	Pressure rating		Piping material		150#		CS
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max		(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area		ZONE 1		000
Flow Rate	7	Max.Continuous		Unit		500		Kg/h
	8	Min.Continuous		Unit		400		Kg/h
	9	Max.In Transients		Unit		-		Kg/h
	10	Allow. with closed va		Unit		0		Kg/h
Press	11	Norm . Op. upstr. Press		Unit		7.5		barg
	12	Dp. At max. flowrate		Unit				barg
	13	MAX SHUT OFF DIFF. PRESS		Unit		10		barg
Temperature	14	Norm . upstr. Temp		Unit		175		◦C
	15	Max . upstr. Temp		Unit		200		◦C
Sp. Gr.	16	Gases vapours		Unit		4.3		kg/m
	17	Liquids		Unit				kg/m
	18	Mol.weight		Unit		18		Kg/Kmol
Visc.	19	Op. visc. (when>5mpa's)				0.0148		
	20	Solid in suspension				No		
Cv	21	Min/Norm/Max		Required		14/16/19		24
	22	Selected Cv				VTA		
Body	23	Body type		Body material		Globe		CS
	24	Size Body		Port		1"		MFR. STD.
	25	Guiding / No. of Port						
	26	Max. Allowable Sound Level (dBA)				85db		
	27	Design Pressure		Min. Barg	Max. Barg			Barg
	28	Design Temperature		Min. °C	Max. °C			◦C
	29	Valve end con. & rating				Flange 150#		
	30	Packing mat.		Lubricator		PTFE		VTA
	31	Flow direction				FTO		
	32	Bonnet type				Standard		
	33	SEAT Leakage Class ANSI				IV		
Trim	34	TRIM FORM				Linear		
	35	TRIM MATERIAL: SEAT / PLUG				316 SS		
	36	TRIM MATERIAL: SHAFT				316 SS		
Actuator	37	Type		Direction of action		Diaphragm		Reverse
	38	SERVICE		SIZE		Modulating		MFR. STD.
	39	CLOSE AT		OPEN AT				
	40	Fail Position				OPEN		
	41	Spring range				VTA		
	42	On-Off/Modulating		Single/Double Acting		Modulating		Single
I/P CONVERTER	43	MFR.		MODEL NO.		VTA		VTA
	44	Type				I/P Positioner		
	45	Input signal		Out put signal		4-20mA + Hart		0.2 - 1barg
	46	Air supply		Action dir.		3.5 barg		Direct
	47	Positioner Protection		Certificate		IP 65		Eexia - IIB T6
Solenoid Valve	48	Type				NA		
	49	Tag No.				NA		
	50	Supply Voltage		Consumption		NA		NA
	51	Protection		Certificate		NA		NA
Accessories	52	Pressure gauge and filter				YES		
	53	Manual Control Wheel				NA		
	54	Cable Gland		Size/Qty		NA		NA
	55	Electrical Conection				M20 * 1.5mm ISO		
	56	Tubing & Conection				SS Tube 1/4"		
	57	Switch	Protection	Certificate		NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

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SAZ CATALYST PLANT

DOCUMENT NUMBER

PROCESS DATA SHEET

SHEET N.20 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.				TV-60107		
	2	P&ID No.	Piping Size	Piping Class		601	2"	
	3	Fluid		State		HEXANE CHILLD		LIQUID
	4	Pressure rating		Piping material		150#		SS
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max		(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area		ZONE 1		000
Flow Rate	7	Max.Continuous		Unit		9500		Kg/h
	8	Min.Continuous		Unit		6000		Kg/h
	9	Max.In Transients		Unit				Kg/h
	10	Allow. with closed va		Unit		0		Kg/h
Press	11	Norm . Op. upstr. Press		Unit		4.2		barg
	12	Dp. At max. flowrate		Unit		0.5		barg
	13	MAX SHUT OFF DIFF. PRESS		Unit				barg
Temperature	14	Norm . upstr. Temp		Unit		-30		◦C
	15	Max . upstr. Temp		Unit				◦C
Sp. Gr.	16	Gases vapours		Unit				kg/m3
	17	Liquids		Unit		750		kg/m3
	18	Mol.weight		Unit		86		Kg/Kmol
Visc.	19	Op. visc. (when>5mpa's)				0.0148		
	20	Solid in suspension				No		
Cv	21	Min/Norm/Max		Required				25
	22	Selected Cv				VTA		
Body	23	Body type		Body material		Globe		SS
	24	Size Body		Port		1"		MFR. STD.
	25	Guiding / No. of Port						
	26	Max. Allowable Sound Level (dBA)				85db		
	27	Design Pressure		Min. Barg	Max. Barg			Barg
	28	Design Temperature		Min. °C	Max. °C			◦C
	29	Valve end con. & rating				Flange 150#		
	30	Packing mat.		Lubricator		PTFE		VTA
	31	Flow direction				FTO		
	32	Bonnet type				Standard		
	33	SEAT Leakage Class ANSI				IV		
Trim	34	TRIM FORM				Linear		
	35	TRIM MATERIAL: SEAT / PLUG				316 SS		
	36	TRIM MATERIAL: SHAFT				316 SS		
Actuator	37	Type		Direction of action		Diaphragm		Reverse
	38	SERVICE		SIZE		Modulating		MFR. STD.
	39	CLOSE AT		OPEN AT				
	40	Fail Position				CLOSE		
	41	Spring range				VTA		
	42	On-Off/Modulating		Single/Double Acting		Modulating		Single
I/P CONVERTER	43	MFR.		MODEL NO.		VTA		VTA
	44	Type				I/P Positioner		
	45	Input signal		Out put signal		4-20mA + Hart		0.2 - 1barg
	46	Air supply		Action dir.		3.5 barg		Direct
	47	Positioner Protection		Certificate		IP 65		Eexia - IIB T6
Solenoid Valve	48	Type				NA		
	49	Tag No.				NA		
	50	Supply Voltage		Consumption		NA		NA
	51	Protection		Certificate		NA		NA
Accessories	52	Pressure gauge and filter				YES		
	53	Manual Control Wheel				NA		
	54	Cable Gland		Size/Qty		NA		NA
	55	Electrical Conection				M20 * 1.5mm ISO		
	56	Tubing & Conection				SS Tube 1/4"		
	57	Switch	Protection	Certificate		NA	NA	YES

Notes: 1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

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PROCESS DATA SHEET

SHEET N.1 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.			TV-60108		
	2	P&ID No.	Piping Size	Piping Class	603	2"	
	3	Fluid		State	STEAM	VAPOROUS	
	4	Pressure rating		Piping material	150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	500	Kg/h	
	8	Min.Continuous		Unit	400	Kg/h	
	9	Max.In Transients		Unit	-	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	7.5	barg	
	12	Dp. At max. flowrate		Unit		barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	10	barg	
Temperature	14	Norm . upstr. Temp		Unit	175	◦C	
	15	Max . upstr. Temp		Unit	200	◦C	
Sp. Gr.	16	Gases vapours		Unit	4.3	kg/m	
	17	Liquids		Unit		kg/m	
	18	Mol.weight		Unit	18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			0.0148		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required	14/16/19	24	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	CS	
	24	Size Body		Port	1"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure	Min. Barg	Max. Barg			Barg
	28	Design Temperature	Min. °C	Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			CLOSE		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

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Petrochemical Research & Technology Company

SAZ CATALYST PLANT

DOCUMENT NUMBER

PROCESS DATA SHEET

SHEET N.2 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.			TV-70101		
	2	P&ID No.	Piping Size	Piping Class	701	2"	
	3	Fluid		State	STEAM	VAPOROUS	
	4	Pressure rating		Piping material	150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	600	Kg/h	
	8	Min.Continuous		Unit	400	Kg/h	
	9	Max.In Transients		Unit	1000	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	7.5	barg	
	12	Dp. At max. flowrate		Unit		barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	10	barg	
Temperature	14	Norm . upstr. Temp		Unit	175	◦C	
	15	Max . upstr. Temp		Unit	200	◦C	
Sp. Gr.	16	Gases vapours		Unit	4.3	kg/m	
	17	Liquids		Unit		kg/m	
	18	Mol.weight		Unit	18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			0.0148		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required		25	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	CS	
	24	Size Body		Port	1½"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure	Min. Barg	Max. Barg			Barg
	28	Design Temperature	Min. °C	Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			CLOSE		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

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Petrochemical Research & Technology Company

SAZ CATALYST PLANT

DOCUMENT NUMBER

PROCESS DATA SHEET

SHEET N.17 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.				FV-70101		
	2	P&ID No.	Piping Size	Piping Class		701	½"	
	3	Fluid		State		NaOH/WATER	LIQUID	
	4	Pressure rating		Piping material		150#	SS - 304	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max		(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area		ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit		1100	Kg/h	
	8	Min.Continuous		Unit		600	Kg/h	
	9	Max.In Transients		Unit			Kg/h	
	10	Allow. with closed va		Unit		0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit		3.5	barg	
	12	Dp. At max. flowrate		Unit			barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit		5	barg	
Temperature	14	Norm . upstr. Temp		Unit		20	◦C	
	15	Max . upstr. Temp		Unit		25	◦C	
Sp. Gr.	16	Gases vapours		Unit			kg/m3	
	17	Liquids		Unit		1080	kg/m3	
	18	Mol.weight		Unit		24.6	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)				1		
	20	Solid in suspension				No		
Cv	21	Min/Norm/Max		Required		2.5/4.5/7	10	
	22	Selected Cv				VTA		
Body	23	Body type		Body material		Globe	SS - 304	
	24	Size Body		Port		½"	MFR. STD.	
	25	Guiding / No. of Port						
	26	Max. Allowable Sound Level (dBA)				85db		
	27	Design Pressure		Min. Barg	Max. Barg			Barg
	28	Design Temperature		Min. °C	Max. °C			◦C
	29	Valve end con. & rating				Flange 150#		
	30	Packing mat.		Lubricator		PTFE	VTA	
	31	Flow direction				FTO		
	32	Bonnet type				Standard		
	33	SEAT Leakage Class ANSI				IV		
Trim	34	TRIM FORM				Linear		
	35	TRIM MATERIAL: SEAT / PLUG				316 SS		
	36	TRIM MATERIAL: SHAFT				316 SS		
Actuator	37	Type		Direction of action		Diaphragm	Reverse	
	38	SERVICE		SIZE		Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT				
	40	Fail Position				OPEN		
	41	Spring range				VTA		
	42	On-Off/Modulating		Single/Double Acting		Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.		VTA	VTA	
	44	Type				I/P Positioner		
	45	Input signal		Out put signal		4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.		3.5 barg	Direct	
	47	Positioner Protection		Certificate		IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type				NA		
	49	Tag No.				NA		
	50	Supply Voltage		Consumption		NA	NA	
	51	Protection		Certificate		NA	NA	
Accessories	52	Pressure gauge and filter				YES		
	53	Manual Control Wheel				NA		
	54	Cable Gland		Size/Qty		NA	NA	
	55	Electrical Conection				M20 * 1.5mm ISO		
	56	Tubing & Conection				SS Tube 1/4"		
	57	Switch	Protection	Certificate		NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

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SAZ CATALYST PLANT

DOCUMENT NUMBER

PROCESS DATA SHEET

SHEET N.3 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.			TV-70102		
	2	P&ID No.	Piping Size	Piping Class	701	2"	
	3	Fluid		State	STEAM	VAPOROUS	
	4	Pressure rating		Piping material	150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	600	Kg/h	
	8	Min.Continuous		Unit	400	Kg/h	
	9	Max.In Transients		Unit	1000	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	7.5	barg	
	12	Dp. At max. flowrate		Unit		barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	10	barg	
Temperature	14	Norm . upstr. Temp		Unit	175	◦C	
	15	Max . upstr. Temp		Unit	200	◦C	
Sp. Gr.	16	Gases vapours		Unit	4.3	kg/m	
	17	Liquids		Unit		kg/m	
	18	Mol.weight		Unit	18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			0.0148		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required		25	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	CS	
	24	Size Body		Port	1½"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure	Min. Barg	Max. Barg			Barg
	28	Design Temperature	Min. °C	Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			CLOSE		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

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National Petrochemical Company
Petrochemical Research & Technology Company

SAZ CATALYST PLANT

DOCUMENT NUMBER

PROCESS DATA SHEET

SHEET N.4 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.			TV-70103		
	2	P&ID No.	Piping Size	Piping Class	701	2"	
	3	Fluid		State	WATER	LIQUID	
	4	Pressure rating		Piping material	150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	15000	Kg/h	
	8	Min.Continuous		Unit	11000	Kg/h	
	9	Max.In Transients		Unit	33000	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	4.5	barg	
	12	Dp. At max. flowrate		Unit	0.8	barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	6.5	barg	
Temperature	14	Norm . upstr. Temp		Unit	20	◦C	
	15	Max . upstr. Temp		Unit	25	◦C	
Sp. Gr.	16	Gases vapours		Unit		kg/m	
	17	Liquids		Unit	1000	kg/m	
	18	Mol.weight		Unit	18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			1		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required		25	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	CS	
	24	Size Body		Port	1½"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure	Min. Barg	Max. Barg			Barg
	28	Design Temperature	Min. °C	Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			CLOSE		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

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SAZ CATALYST PLANT

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PROCESS DATA SHEET

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Control Valve Data Sheet

General Data	1	Tag No.			TV-70201		
	2	P&ID No.	Piping Size	Piping Class	702	2"	
	3	Fluid		State	STEAM	VAPOROUS	
	4	Pressure rating		Piping material	150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	600	Kg/h	
	8	Min.Continuous		Unit	400	Kg/h	
	9	Max.In Transients		Unit	1000	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	7.5	barg	
	12	Dp. At max. flowrate		Unit		barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	10	barg	
Temperature	14	Norm . upstr. Temp		Unit	175	◦C	
	15	Max . upstr. Temp		Unit	200	◦C	
Sp. Gr.	16	Gases vapours		Unit	4.3	kg/m	
	17	Liquids		Unit		kg/m	
	18	Mol.weight		Unit	18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			0.0148		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required		25	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	CS	
	24	Size Body		Port	1½"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure	Min. Barg	Max. Barg			Barg
	28	Design Temperature	Min. °C	Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			CLOSE		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

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DOCUMENT NUMBER

PROCESS DATA SHEET

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Control Valve Data Sheet

General Data	1	Tag No.			TV-70202		
	2	P&ID No.	Piping Size	Piping Class	702	2"	
	3	Fluid		State	STEAM	VAPOROUS	
	4	Pressure rating		Piping material	150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	600	Kg/h	
	8	Min.Continuous		Unit	400	Kg/h	
	9	Max.In Transients		Unit	1000	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	7.5	barg	
	12	Dp. At max. flowrate		Unit		barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	10	barg	
Temperature	14	Norm . upstr. Temp		Unit	175	◦C	
	15	Max . upstr. Temp		Unit	200	◦C	
Sp. Gr.	16	Gases vapours		Unit	4.3	kg/m	
	17	Liquids		Unit		kg/m	
	18	Mol.weight		Unit	18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			0.0148		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required		25	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	CS	
	24	Size Body		Port	1½"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure	Min. Barg	Max. Barg			Barg
	28	Design Temperature	Min. °C	Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			CLOSE		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

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Control Valve Data Sheet

General Data	1	Tag No.			TV-70203		
	2	P&ID No.	Piping Size	Piping Class	702	2"	
	3	Fluid		State	WATER	LIQUID	
	4	Pressure rating		Piping material	150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	15000	Kg/h	
	8	Min.Continuous		Unit	11000	Kg/h	
	9	Max.In Transients		Unit	33000	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	4.5	barg	
	12	Dp. At max. flowrate		Unit	0.8	barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	7	barg	
Temperature	14	Norm . upstr. Temp		Unit	20	◦C	
	15	Max . upstr. Temp		Unit	25	◦C	
Sp. Gr.	16	Gases vapours		Unit		kg/m3	
	17	Liquids		Unit	1000	kg/m3	
	18	Mol.weight		Unit	18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			1		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required		25	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	CS	
	24	Size Body		Port	1½"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure	Min. Barg	Max. Barg			Barg
	28	Design Temperature	Min. °C	Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			CLOSE		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

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PROCESS DATA SHEET

SHEET N.8 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.			TV-80101		
	2	P&ID No.	Piping Size	Piping Class	801	1½"	
	3	Fluid		State	WATER	LIQUID	
	4	Pressure rating		Piping material	150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	11000	Kg/h	
	8	Min.Continuous		Unit	8500	Kg/h	
	9	Max.In Transients		Unit	14500	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	4.5	barg	
	12	Dp. At max. flowrate		Unit	1	barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	6.5	barg	
Temperature	14	Norm . upstr. Temp		Unit	20	◦C	
	15	Max . upstr. Temp		Unit	25	◦C	
Sp. Gr.	16	Gases vapours		Unit		kg/m3	
	17	Liquids		Unit	1000	kg/m3	
	18	Mol.weight		Unit	18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			1		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required		26	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	CS	
	24	Size Body		Port	1½"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure	Min. Barg	Max. Barg			Barg
	28	Design Temperature	Min. °C	Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			CLOSE		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

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National Petrochemical Company
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DOCUMENT NUMBER

PROCESS DATA SHEET

SHEET N.14 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.				LV-80102		
	2	P&ID No.	Piping Size	Piping Class		801	½"	
	3	Fluid		State		HEXANE	LIQUID	
	4	Pressure rating		Piping material		150#	SS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max		(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area		ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit		780	Kg/h	
	8	Min.Continuous		Unit		400	Kg/h	
	9	Max.In Transients		Unit			Kg/h	
	10	Allow. with closed va		Unit		0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit		0.2	barg	
	12	Dp. At max. flowrate		Unit			barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit		4	barg	
Temperature	14	Norm . upstr. Temp		Unit		30	◦C	
	15	Max . upstr. Temp		Unit		70	◦C	
Sp. Gr.	16	Gases vapours		Unit		750	kg/m3	
	17	Liquids		Unit			kg/m3	
	18	Mol.weight		Unit		~86	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)				0.0148		
	20	Solid in suspension				No		
Cv	21	Min/Norm/Max		Required			7	
	22	Selected Cv				VTA		
Body	23	Body type		Body material		Globe	SS	
	24	Size Body		Port		½"	MFR. STD.	
	25	Guiding / No. of Port						
	26	Max. Allowable Sound Level (dBA)				85db		
	27	Design Pressure		Min. Barg	Max. Barg			Barg
	28	Design Temperature		Min. °C	Max. °C			◦C
	29	Valve end con. & rating				Flange 150#		
	30	Packing mat.		Lubricator		PTFE	VTA	
	31	Flow direction				FTO		
	32	Bonnet type				Standard		
	33	SEAT Leakage Class ANSI				IV		
Trim	34	TRIM FORM				Linear		
	35	TRIM MATERIAL: SEAT / PLUG				316 SS		
	36	TRIM MATERIAL: SHAFT				316 SS		
Actuator	37	Type		Direction of action		Diaphragm	Reverse	
	38	SERVICE		SIZE		Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT				
	40	Fail Position				OPEN		
	41	Spring range				VTA		
	42	On-Off/Modulating		Single/Double Acting		Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.		VTA	VTA	
	44	Type				I/P Positioner		
	45	Input signal		Out put signal		4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.		3.5 barg	Direct	
	47	Positioner Protection		Certificate		IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type				NA		
	49	Tag No.				NA		
	50	Supply Voltage		Consumption		NA	NA	
	51	Protection		Certificate		NA	NA	
Accessories	52	Pressure gauge and filter				YES		
	53	Manual Control Wheel				NA		
	54	Cable Gland		Size/Qty		NA	NA	
	55	Electrical Conection				M20 * 1.5mm ISO		
	56	Tubing & Conection				SS Tube 1/4"		
	57	Switch	Protection	Certificate		NA	NA	YES

Notes: 1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

No.	Rev	Date	Issued For	Prepared	Checked	Approved

National Petrochemical Company
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SAZ CATALYST PLANT

DOCUMENT NUMBER

PROCESS DATA SHEET

SHEET N.18 OF | ISSUE 0

Control Valve Data Sheet

General Data	1	Tag No.			FV-80201		
	2	P&ID No.	Piping Size	Piping Class	802	¾"	
	3	Fluid		State	HEXANE	LIQUID	
	4	Pressure rating		Piping material	150#	SS - 304	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	1300	Kg/h	
	8	Min.Continuous		Unit	700	Kg/h	
	9	Max.In Transients		Unit	2400	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	3.5	barg	
	12	Dp. At max. flowrate		Unit		barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	5	barg	
Temperature	14	Norm . upstr. Temp		Unit	25	◦C	
	15	Max . upstr. Temp		Unit	30	◦C	
Sp. Gr.	16	Gases vapours		Unit		kg/m3	
	17	Liquids		Unit	650	kg/m3	
	18	Mol.weight		Unit	86	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			1		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required	2.3/3.4/4.6	6	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	SS - 304	
	24	Size Body		Port	½"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure	Min. Barg	Max. Barg			Barg
	28	Design Temperature	Min. °C	Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			OPEN		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

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PROCESS DATA SHEET

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Control Valve Data Sheet

General Data	1	Tag No.				TV-80201		
	2	P&ID No.	Piping Size	Piping Class		802	1"	
	3	Fluid		State		STEAM	VAPOROUS	
	4	Pressure rating		Piping material		150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max		(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area		ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit		150	Kg/h	
	8	Min.Continuous		Unit		90	Kg/h	
	9	Max.In Transients		Unit		180	Kg/h	
	10	Allow. with closed va		Unit		0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit		7.5	barg	
	12	Dp. At max. flowrate		Unit			barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit		10	barg	
Temperature	14	Norm . upstr. Temp		Unit		175	◦C	
	15	Max . upstr. Temp		Unit		200	◦C	
Sp. Gr.	16	Gases vapours		Unit		4.3	kg/m3	
	17	Liquids		Unit			kg/m3	
	18	Mol.weight		Unit		18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)				0.0148		
	20	Solid in suspension				No		
Cv	21	Min/Norm/Max		Required		3/4.5/6	8	
	22	Selected Cv				VTA		
Body	23	Body type		Body material		Globe	CS	
	24	Size Body		Port		½"	MFR. STD.	
	25	Guiding / No. of Port						
	26	Max. Allowable Sound Level (dBA)				85db		
	27	Design Pressure		Min. Barg	Max. Barg			Barg
	28	Design Temperature		Min. °C	Max. °C			◦C
	29	Valve end con. & rating				Flange 150#		
	30	Packing mat.		Lubricator		PTFE	VTA	
	31	Flow direction				FTO		
	32	Bonnet type				Standard		
	33	SEAT Leakage Class ANSI				IV		
Trim	34	TRIM FORM				Linear		
	35	TRIM MATERIAL: SEAT / PLUG				316 SS		
	36	TRIM MATERIAL: SHAFT				316 SS		
Actuator	37	Type		Direction of action		Diaphragm	Reverse	
	38	SERVICE		SIZE		Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT				
	40	Fail Position				CLOSE		
	41	Spring range				VTA		
	42	On-Off/Modulating		Single/Double Acting		Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.		VTA	VTA	
	44	Type				I/P Positioner		
	45	Input signal		Out put signal		4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.		3.5 barg	Direct	
	47	Positioner Protection		Certificate		IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type				NA		
	49	Tag No.				NA		
	50	Supply Voltage		Consumption		NA	NA	
	51	Protection		Certificate		NA	NA	
Accessories	52	Pressure gauge and filter				YES		
	53	Manual Control Wheel				NA		
	54	Cable Gland		Size/Qty		NA	NA	
	55	Electrical Conection				M20 * 1.5mm ISO		
	56	Tubing & Conection				SS Tube 1/4"		
	57	Switch	Protection	Certificate		NA	NA	YES

Notes:

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Control Valve Data Sheet

General Data	1	Tag No.				TV-80203		
	2	P&ID No.	Piping Size	Piping Class		802	4"	
	3	Fluid		State		COOLINGWATER	LIQUID	
	4	Pressure rating		Piping material		150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max		(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area		ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit		44000	Kg/h	
	8	Min.Continuous		Unit		26000	Kg/h	
	9	Max.In Transients		Unit			Kg/h	
	10	Allow. with closed va		Unit		0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit		4.5	barg	
	12	Dp. At max. flowrate		Unit		1	barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit		6.5	barg	
Temperature	14	Norm . upstr. Temp		Unit		20	◦C	
	15	Max . upstr. Temp		Unit		25	◦C	
Sp. Gr.	16	Gases vapours		Unit			kg/m3	
	17	Liquids		Unit		1000	kg/m3	
	18	Mol.weight		Unit		18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)				1		
	20	Solid in suspension				No		
Cv	21	Min/Norm/Max		Required			60	
	22	Selected Cv				VTA		
Body	23	Body type		Body material		Globe	CS	
	24	Size Body		Port		2½"	MFR. STD.	
	25	Guiding / No. of Port						
	26	Max. Allowable Sound Level (dBA)				85db		
	27	Design Pressure		Min. Barg	Max. Barg			Barg
	28	Design Temperature		Min. °C	Max. °C			◦C
	29	Valve end con. & rating				Flange 150#		
	30	Packing mat.		Lubricator		PTFE	VTA	
	31	Flow direction				FTO		
	32	Bonnet type				Standard		
	33	SEAT Leakage Class ANSI				IV		
Trim	34	TRIM FORM				Linear		
	35	TRIM MATERIAL: SEAT / PLUG				316 SS		
	36	TRIM MATERIAL: SHAFT				316 SS		
Actuator	37	Type		Direction of action		Diaphragm	Reverse	
	38	SERVICE		SIZE		Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT				
	40	Fail Position				CLOSE		
	41	Spring range				VTA		
	42	On-Off/Modulating		Single/Double Acting		Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.		VTA	VTA	
	44	Type				I/P Positioner		
	45	Input signal		Out put signal		4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.		3.5 barg	Direct	
	47	Positioner Protection		Certificate		IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type				NA		
	49	Tag No.				NA		
	50	Supply Voltage		Consumption		NA	NA	
	51	Protection		Certificate		NA	NA	
Accessories	52	Pressure gauge and filter				YES		
	53	Manual Control Wheel				NA		
	54	Cable Gland		Size/Qty		NA	NA	
	55	Electrical Conection				M20 * 1.5mm ISO		
	56	Tubing & Conection				SS Tube 1/4"		
	57	Switch	Protection	Certificate		NA	NA	YES

Notes:

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Control Valve Data Sheet

General Data	1	Tag No.				TV-80204		
	2	P&ID No.	Piping Size	Piping Class		802	3"	
	3	Fluid		State		STEAM		VAPOROUS
	4	Pressure rating		Piping material		150#		CS
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max		(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area		ZONE 1		000
Flow Rate	7	Max.Continuous		Unit				Kg/h
	8	Min.Continuous		Unit				Kg/h
	9	Max.In Transients		Unit				Kg/h
	10	Allow. with closed va		Unit		0		Kg/h
Press	11	Norm . Op. upstr. Press		Unit		7.5		barg
	12	Dp. At max. flowrate		Unit		0.3		barg
	13	MAX SHUT OFF DIFF. PRESS		Unit		10		barg
Temperature	14	Norm . upstr. Temp		Unit		175		◦C
	15	Max . upstr. Temp		Unit		200		◦C
Sp. Gr.	16	Gases vapours		Unit		4.3		kg/m3
	17	Liquids		Unit				kg/m3
	18	Mol.weight		Unit		18		Kg/Kmol
Visc.	19	Op. visc. (when>5mpa's)				0.0148		
	20	Solid in suspension				No		
Cv	21	Min/Norm/Max		Required				100
	22	Selected Cv				VTA		
Body	23	Body type		Body material		Globe		CS
	24	Size Body		Port		2½"		MFR. STD.
	25	Guiding / No. of Port						
	26	Max. Allowable Sound Level (dBA)				85db		
	27	Design Pressure		Min. Barg	Max. Barg			Barg
	28	Design Temperature		Min. °C	Max. °C			◦C
	29	Valve end con. & rating				Flange 150#		
	30	Packing mat.		Lubricator		PTFE		VTA
	31	Flow direction				FTO		
	32	Bonnet type				Standard		
	33	SEAT Leakage Class ANSI				IV		
Trim	34	TRIM FORM				Linear		
	35	TRIM MATERIAL: SEAT / PLUG				316 SS		
	36	TRIM MATERIAL: SHAFT				316 SS		
Actuator	37	Type		Direction of action		Diaphragm		Reverse
	38	SERVICE		SIZE		Modulating		MFR. STD.
	39	CLOSE AT		OPEN AT				
	40	Fail Position				CLOSE		
	41	Spring range				VTA		
	42	On-Off/Modulating		Single/Double Acting		Modulating		Single
I/P CONVERTER	43	MFR.		MODEL NO.		VTA		VTA
	44	Type				I/P Positioner		
	45	Input signal		Out put signal		4-20mA + Hart		0.2 - 1barg
	46	Air supply		Action dir.		3.5 barg		Direct
	47	Positioner Protection		Certificate		IP 65		Eexia - IIB T6
Solenoid Valve	48	Type				NA		
	49	Tag No.				NA		
	50	Supply Voltage		Consumption		NA		NA
	51	Protection		Certificate		NA		NA
Accessories	52	Pressure gauge and filter				YES		
	53	Manual Control Wheel				NA		
	54	Cable Gland		Size/Qty		NA		NA
	55	Electrical Conection				M20 * 1.5mm ISO		
	56	Tubing & Conection				SS Tube 1/4"		
	57	Switch	Protection	Certificate		NA	NA	YES

Notes:

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Control Valve Data Sheet

General Data	1	Tag No.			TV-80206		
	2	P&ID No.	Piping Size	Piping Class	802	3"	
	3	Fluid		State	WATER	LIQUID	
	4	Pressure rating		Piping material	150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	25000	Kg/h	
	8	Min.Continuous		Unit	18000	Kg/h	
	9	Max.In Transients		Unit	-	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	4.5	barg	
	12	Dp. At max. flowrate		Unit	1	barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	6.5	barg	
Temperature	14	Norm . upstr. Temp		Unit	20	◦C	
	15	Max . upstr. Temp		Unit	25	◦C	
Sp. Gr.	16	Gases vapours		Unit		kg/m3	
	17	Liquids		Unit	1000	kg/m3	
	18	Mol.weight		Unit	18	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			1		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required		35	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	CS	
	24	Size Body		Port	2"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure	Min. Barg	Max. Barg			Barg
	28	Design Temperature	Min. °C	Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			CLOSE		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

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Control Valve Data Sheet

General Data	1	Tag No.			PV-90203		
	2	P&ID No.	Piping Size	Piping Class	902	1"	
	3	Fluid		State	NITROGEN	VAPOROUS	
	4	Pressure rating		Piping material	150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max	(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area	ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit	100	Kg/h	
	8	Min.Continuous		Unit	50	Kg/h	
	9	Max.In Transients		Unit	120	Kg/h	
	10	Allow. with closed va		Unit	0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit	5	barg	
	12	Dp. At max. flowrate		Unit		barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit	7	barg	
Temperature	14	Norm . upstr. Temp		Unit	AMB	◦C	
	15	Max . upstr. Temp		Unit	40	◦C	
Sp. Gr.	16	Gases vapours		Unit	6.8	kg/m3	
	17	Liquids		Unit		kg/m3	
	18	Mol.weight		Unit	28	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)			0.0148		
	20	Solid in suspension			No		
Cv	21	Min/Norm/Max		Required	2.5/4.5/7	10	
	22	Selected Cv			VTA		
Body	23	Body type		Body material	Globe	CS	
	24	Size Body		Port	½"	MFR. STD.	
	25	Guiding / No. of Port					
	26	Max. Allowable Sound Level (dBA)			85db		
	27	Design Pressure		Min. Barg / Max. Barg			Barg
	28	Design Temperature		Min. °C / Max. °C			◦C
	29	Valve end con. & rating			Flange 150#		
	30	Packing mat.		Lubricator	PTFE	VTA	
	31	Flow direction			FTO		
	32	Bonnet type			Standard		
	33	SEAT Leakage Class ANSI			IV		
Trim	34	TRIM FORM			Linear		
	35	TRIM MATERIAL: SEAT / PLUG			316 SS		
	36	TRIM MATERIAL: SHAFT			316 SS		
Actuator	37	Type		Direction of action	Diaphragm	Reverse	
	38	SERVICE		SIZE	Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT			
	40	Fail Position			OPEN		
	41	Spring range			VTA		
	42	On-Off/Modulating		Single/Double Acting	Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.	VTA	VTA	
	44	Type			I/P Positioner		
	45	Input signal		Out put signal	4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.	3.5 barg	Direct	
	47	Positioner Protection		Certificate	IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type			NA		
	49	Tag No.			NA		
	50	Supply Voltage		Consumption	NA	NA	
	51	Protection		Certificate	NA	NA	
Accessories	52	Pressure gauge and filter			YES		
	53	Manual Control Wheel			NA		
	54	Cable Gland		Size/Qty	NA	NA	
	55	Electrical Conection			M20 * 1.5mm ISO		
	56	Tubing & Conection			SS Tube 1/4"		
	57	Switch	Protection	Certificate	NA	NA	YES

Notes:

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No.	Rev	Date	Issued For	Prepared	Checked	Approved

National Petrochemical Company
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DOCUMENT NUMBER

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Control Valve Data Sheet

General Data	1	Tag No.				PV-90204		
	2	P&ID No.	Piping Size	Piping Class		902	1"	
	3	Fluid		State		WASTE GAS	VAPOROUS	
	4	Pressure rating		Piping material		150#	CS	
	5	Amb.Temp	Amb Press	Amb.Rel.Humidity Max		(-28)°C / 44°C	0.82 Bara	0.86
	6	Area Classification		Area		ZONE 1	000	
Flow Rate	7	Max.Continuous		Unit		100	Kg/h	
	8	Min.Continuous		Unit		50	Kg/h	
	9	Max.In Transients		Unit			Kg/h	
	10	Allow. with closed va		Unit		0	Kg/h	
Press	11	Norm . Op. upstr. Press		Unit			barg	
	12	Dp. At max. flowrate		Unit		0.5	barg	
	13	MAX SHUT OFF DIFF. PRESS		Unit			barg	
Temperature	14	Norm . upstr. Temp		Unit		AMB	◦C	
	15	Max . upstr. Temp		Unit			◦C	
Sp. Gr.	16	Gases vapours		Unit		~4-6	kg/m3	
	17	Liquids		Unit			kg/m3	
	18	Mol.weight		Unit		~86	Kg/Kmol	
Visc.	19	Op. visc. (when>5mpa's)				0.0148		
	20	Solid in suspension				No		
Cv	21	Min/Norm/Max		Required			11	
	22	Selected Cv				VTA		
Body	23	Body type		Body material		Globe	CS	
	24	Size Body		Port		½"	MFR. STD.	
	25	Guiding / No. of Port						
	26	Max. Allowable Sound Level (dBA)				85db		
	27	Design Pressure		Min. Barg	Max. Barg			Barg
	28	Design Temperature		Min. °C	Max. °C			◦C
	29	Valve end con. & rating				Flange 150#		
	30	Packing mat.		Lubricator		PTFE	VTA	
	31	Flow direction				FTO		
	32	Bonnet type				Standard		
	33	SEAT Leakage Class ANSI				IV		
Trim	34	TRIM FORM				Linear		
	35	TRIM MATERIAL: SEAT / PLUG				316 SS		
	36	TRIM MATERIAL: SHAFT				316 SS		
Actuator	37	Type		Direction of action		Diaphragm	Reverse	
	38	SERVICE		SIZE		Modulating	MFR. STD.	
	39	CLOSE AT		OPEN AT				
	40	Fail Position				CLOSE		
	41	Spring range				VTA		
	42	On-Off/Modulating		Single/Double Acting		Modulating	Single	
I/P CONVERTER	43	MFR.		MODEL NO.		VTA	VTA	
	44	Type				I/P Positioner		
	45	Input signal		Out put signal		4-20mA + Hart	0.2 - 1barg	
	46	Air supply		Action dir.		3.5 barg	Direct	
	47	Positioner Protection		Certificate		IP 65	Eexia - IIB T6	
Solenoid Valve	48	Type				NA		
	49	Tag No.				NA		
	50	Supply Voltage		Consumption		NA	NA	
	51	Protection		Certificate		NA	NA	
Accessories	52	Pressure gauge and filter				YES		
	53	Manual Control Wheel				NA		
	54	Cable Gland		Size/Qty		NA	NA	
	55	Electrical Conection				M20 * 1.5mm ISO		
	56	Tubing & Conection				SS Tube 1/4"		
	57	Switch	Protection	Certificate		NA	NA	YES

Notes:

1 - The valve shall be sized by the vendor. Valve sizing procedure (software) shall be submitted by vendor.

2 - All positioners shall be EExibIIAT6 certified.

No.	Rev	Date	Issued For	Prepared	Checked	Approved

National Petrochemical Company
Petrochemical Research & Technology Company

Basic Engineering
CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	FV-201	1 pieces

GENERAL	1	Tag Number			FV-201		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/4" TUBE		
	4	Pipe Size outlet inch	schedule		1/4" TUBE		
	5	Piping Class Rating	Material		300	STAINLESS STEEL TUBE	
	6	Line No.					
	7	Service			HYDROGEN TO R-201		
PROCESS CONDITIONS	8	Fluid	State		HYDROGEN	GAS	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	2.0	2.0	2.0
	11	Viscosity		cP			
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	20	35	50
	18	Temperature		°C	AMBIENT	AMBIENT	AMBIENT
	19	Inlet Pressure		Bar (g)	12	12	12
	20	Outlet pressure		Bar	8.5	8.5	8.5
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV			0.0075		
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			S.S 316L		
	31	Valve Size		inch	14" TUBE		
	32	Valve End Connection & Rating			1/4" - 300		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

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National Petrochemical Company
Petrochemical Research & Technology Company

Basic Engineering
CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	FV-202	1 pieces

GENERAL	1	Tag Number			FV-202		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2" TUBE		
	4	Pipe Size outlet inch	schedule		1/2" TUBE		
	5	Piping Class Rating	Material		300	SS TUBE 1/2"	
	6	Line No.					
	7	Service			ETHYLENE TO R-201		
PROCESS CONDITIONS	8	Fluid	State		ETHYLENE TO R-201	VAPOR	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	28.0	28.0	28.0
	11	Viscosity		cP			
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	2	8	12
	18	Temperature		°C	AMBIENT	AMBIENT	AMBIENT
	19	Inlet Pressure		Bar (g)	12	12.0	12
	20	Outlet pressure		Bar	8.5	8.5	8.5
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV			0.3		
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			S.S 316L		
	31	Valve Size		inch	1/2"		
	32	Valve End Connection & Rating			1/2" TUBE-300		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

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National Petrochemical Company
Petrochemical Research & Technology Company

Basic Engineering
CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	FV-203	1 pieces

GENERAL	1	Tag Number			FV-203		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2" TUBE		
	4	Pipe Size outlet inch	schedule		1/2" TUBE		
	5	Piping Class Rating	Material		300	SS TUBE 1/2"	
	6	Line No.					
	7	Service			PROPYLENE TO R-201		
PROCESS CONDITIONS	8	Fluid	State		PROPYLENE	VAPOR	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	42.10	42.10	42.10
	11	Viscosity		cP			
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	0.4	4	8
	18	Temperature		°C	AMBIENT	AMBIENT	AMBIENT
	19	Inlet Pressure		Bar (g)	12	12.0	12
	20	Outlet pressure		Bar	8.5	8.5	8.5
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			S.S 316L		
	31	Valve Size		inch	1/2"		
	32	Valve End Connection & Rating			1/2" TUBE-300		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

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National Petrochemical Company
Petrochemical Research & Technology Company

Basic Engineering
CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	FV-204	1 pieces

GENERAL	1	Tag Number			FV-204		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2" TUBE		
	4	Pipe Size outlet inch	schedule		1/2" TUBE		
	5	Piping Class Rating	Material		300	STAINLESS STEEL TUBE	
	6	Line No.					
	7	Service			BUTENE TO R-201		
PROCESS CONDITIONS	8	Fluid	State		BUTENE	VAPOR	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	56.10	56.10	56.10
	11	Viscosity		cP			
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	2	8	12
	18	Temperature		°C	AMBIENT	AMBIENT	AMBIENT
	19	Inlet Pressure		Bar (g)	12	12	12
	20	Outlet pressure		Bar	8.5	8.5	8.5
	21	Calculated CV		GPM(US)	0.002	0.002	0.002
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			SS 316L		
	31	Valve Size		inch	1/4" TUBE		
	32	Valve End Connection & Rating			1/4" TUBE-300		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

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Basic Engineering
CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	FV-205	1 pieces

GENERAL	1	Tag Number			FV-205			
	2	P & ID No.						
	3	Pipe Size inlet inch	schedule		1/2" TUBE			
	4	Pipe Size outlet inch	schedule		1/2" TUBE			
	5	Piping Class Rating	Material		300		STAINLESS STEEL TUBE	
	6	Line No.						
	7	Service			HEXANE TO R-201			
PROCESS CONDITIONS	8	Fluid	State		HEXANE		LIQUID	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**	
	10	Molecular Weight		g/mol	86.18	86.18	86.18	
	11	Viscosity		cP	0.3	0.3	0.3	
	12	CP/CV		1				
	13	Compressibility						
	14	SP.Gravity@standard condition						
	15	Vapour Pressure		Bar				
	16	Critical Pressure		Bar				
	17	Flow Rate		Kg/h	20	35	50	
	18	Temperature		°C	AMBIENT	AMBIENT	AMBIENT	
	19	Inlet Pressure		Bar (g)	13	12	11	
	20	Outlet pressure		Bar	8.5	8.5	8.5	
	21	Calculated CV		GPM(US)				
	22	Travel		%				
	23	Selected CV						
	24	Max. Shut Off DP		Bar				
	25	Design pressure		Bar (g)				
	26	Design temp.		°C				
	27	Allowable Noise Level		dBA				
	28	Air Fail Position						
Body	29	Body Type			GLOBE			
	30	Body Material			S.S 316L			
	31	Valve Size		inch	1/2" TUBE			
	32	Valve End Connection & Rating			1/2" - 300			
	33	Plug & Trim Material						
	34	Plug Dia.						
	35	Characteristic						
	36	Seat Leakage Class						
	37	Packing Mat.						
	38	Lubricator						
	39	Bonnet Type						
Actuator	40	Type						
	41	Direction Of action						
	42	Spring range						
Positioner	43	Type			Electro-Pneumatic			
	44	Area Classification	Explosion Protection		DIVISION 2		EExiaIICT3	
	45	Enclosure			IP65			
	46	Input Signal			4-20 mA (HART)			
	47	Air Supply Min.	Oper.	Design Unit	4	6	10	barg
Accessories	48	Pressure Reducing Valve			Yes			
	49	Pressure Gauge			Yes			
	50	Air Connection						
	51	Electrical Connection						
	52	Hand Wheel						
	53	Solenoid Valve	Tag No.	Voltage				
	54	Position Switch	Tag No.	Type				

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

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Basic Engineering
CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	FV-206	1 pieces

GENERAL	1	Tag Number			FV-206		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/4" TUBE		
	4	Pipe Size outlet inch	schedule		1/4" TUBE		
	5	Piping Class Rating	Material		300	STAINLESS STEEL TUBE	
	6	Line No.					
	7	Service			HYDROGEN TO R-202		
PROCESS CONDITIONS	8	Fluid	State		HYDROGEN	GAS	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	2.0	2.0	2.0
	11	Viscosity		cP			
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	20	35	50
	18	Temperature		°C	AMBIENT	AMBIENT	AMBIENT
	19	Inlet Pressure		Bar (g)	12	12	12
	20	Outlet pressure		Bar	8.5	8.5	8.5
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV			0.0075		
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			S.S 316L		
	31	Valve Size		inch	14" TUBE		
	32	Valve End Connection & Rating			1/4" - 300		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

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Basic Engineering
CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	FV-207	1 pieces

GENERAL	1	Tag Number			FV-207			
	2	P & ID No.						
	3	Pipe Size inlet inch	schedule		1/2" TUBE			
	4	Pipe Size outlet inch	schedule		1/2" TUBE			
	5	Piping Class Rating	Material		300		SS TUBE 1/2"	
	6	Line No.						
	7	Service			ETHYLENE TO R-202			
PROCESS CONDITIONS	8	Fluid	State		ETHYLENE TO R-202		VAPOR	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**	
	10	Molecular Weight		g/mol	28.0	28.0	28.0	
	11	Viscosity		cP				
	12	CP/CV		1				
	13	Compressibility						
	14	SP.Gravity@standard condition						
	15	Vapour Pressure		Bar				
	16	Critical Pressure		Bar				
	17	Flow Rate		Kg/h	2	8	12	
	18	Temperature		°C	AMBIENT	AMBIENT	AMBIENT	
	19	Inlet Pressure		Bar (g)	12	12.0	12	
	20	Outlet pressure		Bar	8.5	8.5	8.5	
	21	Calculated CV		GPM(US)				
	22	Travel		%				
	23	Selected CV			0.3			
	24	Max. Shut Off DP		Bar				
	25	Design pressure		Bar (g)				
	26	Design temp.		°C				
	27	Allowable Noise Level		dBA				
	28	Air Fail Position						
Body	29	Body Type			GLOBE			
	30	Body Material			S.S 316L			
	31	Valve Size		inch	1/2"			
	32	Valve End Connection & Rating			1/2" TUBE-300			
	33	Plug & Trim Material						
	34	Plug Dia.						
	35	Characteristic						
	36	Seat Leakage Class						
	37	Packing Mat.						
	38	Lubricator						
	39	Bonnet Type						
Actuator	40	Type						
	41	Direction Of action						
	42	Spring range						
Positioner	43	Type			Electro-Pneumatic			
	44	Area Classification	Explosion Protection		DIVISION 2		EExiaIICT3	
	45	Enclosure			IP65			
	46	Input Signal			4-20 mA (HART)			
	47	Air Supply Min.	Oper.	Design Unit	4	6	10	barg
Accessories	48	Pressure Reducing Valve			Yes			
	49	Pressure Gauge			Yes			
	50	Air Connection						
	51	Electrical Connection						
	52	Hand Wheel						
	53	Solenoid Valve	Tag No.	Voltage				
	54	Position Switch	Tag No.	Type				

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

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Basic Engineering
CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	FV-208	1 pieces

GENERAL	1	Tag Number			FV-208		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2" TUBE		
	4	Pipe Size outlet inch	schedule		1/2" TUBE		
	5	Piping Class Rating	Material		300	SS TUBE 1/2"	
	6	Line No.					
	7	Service			PROPYLENE TO R-202		
PROCESS CONDITIONS	8	Fluid	State		PROPYLENE	VAPOR	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	42.10	42.10	42.10
	11	Viscosity		cP			
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	0.4	4	8
	18	Temperature		°C	AMBIENT	AMBIENT	AMBIENT
	19	Inlet Pressure		Bar (g)	12	12.0	12
	20	Outlet pressure		Bar	8.5	8.5	8.5
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			S.S 316L		
	31	Valve Size		inch	1/2"		
	32	Valve End Connection & Rating			1/2" TUBE-300		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

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Basic Engineering
CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	FV-209	1 pieces

GENERAL	1	Tag Number			FV-209		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2" TUBE		
	4	Pipe Size outlet inch	schedule		1/2" TUBE		
	5	Piping Class Rating	Material		300	STAINLESS STEEL TUBE	
	6	Line No.					
	7	Service			BUTENE TO R-202		
PROCESS CONDITIONS	8	Fluid	State		BUTENE	VAPOR	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	56.10	56.10	56.10
	11	Viscosity		cP			
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	2	8	12
	18	Temperature		°C	AMBIENT	AMBIENT	AMBIENT
	19	Inlet Pressure		Bar (g)	12	12	12
	20	Outlet pressure		Bar	8.5	8.5	8.5
	21	Calculated CV		GPM(US)	0.002	0.002	0.002
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type					
	30	Body Material			SS 316L		
	31	Valve Size		inch	1/4" TUBE		
	32	Valve End Connection & Rating			1/4" TUBE-300		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

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CONTROL VALVES
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Designation	CONTROL VALVES	Item No.:	No. req.	FV-210	1 pieces

GENERAL	1	Tag Number			FV-210			
	2	P & ID No.						
	3	Pipe Size inlet inch	schedule		1/2" TUBE			
	4	Pipe Size outlet inch	schedule		1/2" TUBE			
	5	Piping Class Rating	Material		300		STAINLESS STEEL TUBE	
	6	Line No.						
	7	Service			HEXANE TO R-202			
PROCESS CONDITIONS	8	Fluid	State		HEXANE		LIQUID	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**	
	10	Molecular Weight		g/mol	86.18	86.18	86.18	
	11	Viscosity		cP	0.3	0.3	0.3	
	12	CP/CV		1				
	13	Compressibility						
	14	SP.Gravity@standard condition						
	15	Vapour Pressure		Bar				
	16	Critical Pressure		Bar				
	17	Flow Rate		Kg/h	20	35	50	
	18	Temperature		°C	AMBIENT	AMBIENT	AMBIENT	
	19	Inlet Pressure		Bar (g)	13	12	11	
	20	Outlet pressure		Bar	8.5	8.5	8.5	
	21	Calculated CV		GPM(US)				
	22	Travel		%				
	23	Selected CV						
	24	Max. Shut Off DP		Bar				
	25	Design pressure		Bar (g)				
	26	Design temp.		°C				
	27	Allowable Noise Level		dBA				
	28	Air Fail Position						
Body	29	Body Type						
	30	Body Material			S.S 316L			
	31	Valve Size		inch	1/2" TUBE			
	32	Valve End Connection & Rating			1/2" - 300			
	33	Plug & Trim Material						
	34	Plug Dia.						
	35	Characteristic						
	36	Seat Leakage Class						
	37	Packing Mat.						
	38	Lubricator						
	39	Bonnet Type						
Actuator	40	Type						
	41	Direction Of action						
	42	Spring range						
Positioner	43	Type			Electro-Pneumatic			
	44	Area Classification	Explosion Protection		DIVISION 2		EExiaIICT3	
	45	Enclosure			IP65			
	46	Input Signal			4-20 mA (HART)			
	47	Air Supply Min.	Oper.	Design Unit	4	6	10	barg
Accessories	48	Pressure Reducing Valve			Yes			
	49	Pressure Gauge			Yes			
	50	Air Connection						
	51	Electrical Connection						
	52	Hand Wheel						
	53	Solenoid Valve	Tag No.	Voltage				
	54	Position Switch	Tag No.	Type				

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

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CONTROL VALVES
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Designation	CONTROL VALVES	Item No.:	No. req.	TV-104	1 pieces

GENERAL	1	Tag Number			TV-104		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2		
	4	Pipe Size outlet inch	schedule		1/2		
	5	Piping Class Rating	Material		150		
	6	Line No.					
	7	Service			COOLING WATER TO D-104		
PROCESS CONDITIONS	8	Fluid	State		WATER	LIQUID	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	18.0	18.0	18.0
	11	Viscosity		cP	1	1	1
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	1000	1500	2000
	18	Temperature		°C	35-40	35-40	35-40
	19	Inlet Pressure		Bar (g)	7	5	3
	20	Outlet pressure		Bar	4.5	4	2
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			CARBON STEEL		
	31	Valve Size		inch	1/2"		
	32	Valve End Connection & Rating			1/2", FLANGE - 150		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

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CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	TV-105	1 pieces

GENERAL	1	Tag Number			TV-105		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2		
	4	Pipe Size outlet inch	schedule		1/2		
	5	Piping Class Rating	Material		150		
	6	Line No.					
	7	Service			COOLING WATER TO D-102		
PROCESS CONDITIONS	8	Fluid	State		WATER	LIQUID	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	18.0	18.0	18.0
	11	Viscosity		cP	1	1	1
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	1000	1500	2000
	18	Temperature		°C	35-40	35-40	35-40
	19	Inlet Pressure		Bar (g)	7	5	3
	20	Outlet pressure		Bar	4.5	4	2
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			CARBON STEEL		
	31	Valve Size		inch	1/2"		
	32	Valve End Connection & Rating			1/2", FLANGE - 150		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

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CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	TV-201	1 pieces

GENERAL	1	Tag Number			TV-201		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2		
	4	Pipe Size outlet inch	schedule		1/2		
	5	Piping Class Rating	Material		150		
	6	Line No.					
	7	Service			STEAM TO R-201		
PROCESS CONDITIONS	8	Fluid	State		STEAM	VAPOR	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	18.0	18.0	18.0
	11	Viscosity		cP			
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	2000	2500	3000
	18	Temperature		°C	35-40	35-40	35-40
	19	Inlet Pressure		Bar (g)	20	18	16
	20	Outlet pressure		Bar	5	4	4.5
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			CARBON STEEL		
	31	Valve Size		inch	1/2"		
	32	Valve End Connection & Rating			1/2", FLANGE - 150		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

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CONTROL VALVES
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Designation	CONTROL VALVES	Item No.:	No. req.	TV-202	1 pieces

GENERAL	1	Tag Number			TV-202		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2		
	4	Pipe Size outlet inch	schedule		1/2		
	5	Piping Class Rating	Material		150		
	6	Line No.					
	7	Service			COOLING WATER TO R-201		
PROCESS CONDITIONS	8	Fluid	State		WATER	LIQUID	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	18.0	18.0	18.0
	11	Viscosity		cP	1	1	1
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	3000	3600	4000
	18	Temperature		°C	35-40	35-40	35-40
	19	Inlet Pressure		Bar (g)	5.5	5	4.5
	20	Outlet pressure		Bar	5	4.5	4
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			CARBON STEEL		
	31	Valve Size		inch	1/2"		
	32	Valve End Connection & Rating			1/2", FLANGE - 150		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

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CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	TV-203	1 pieces

GENERAL	1	Tag Number			TV-203		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2		
	4	Pipe Size outlet inch	schedule		1/2		
	5	Piping Class Rating	Material		150		
	6	Line No.					
	7	Service			STEAM TO R-202		
PROCESS CONDITIONS	8	Fluid	State		STEAM	VAPOR	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	18.0	18.0	18.0
	11	Viscosity		cP			
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	2000	2500	3000
	18	Temperature		°C	35-40	35-40	35-40
	19	Inlet Pressure		Bar (g)	20	18	16
	20	Outlet pressure		Bar	4	4	4
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			CARBON STEEL		
	31	Valve Size		inch	1/2"		
	32	Valve End Connection & Rating			1/2", FLANGE - 150		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

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CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	TV-204	1 pieces

GENERAL	1	Tag Number			TV-204		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2"		
	4	Pipe Size outlet inch	schedule		1/2"		
	5	Piping Class Rating	Material		150		
	6	Line No.					
	7	Service			COOLING WATER TO R-202		
PROCESS CONDITIONS	8	Fluid	State		WATER	LIQUID	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	18.0	18.0	18.0
	11	Viscosity		cP	1	1	1
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	3000	3600	4000
	18	Temperature		°C	35-40	35-40	35-40
	19	Inlet Pressure		Bar (g)	5.5	5	4.5
	20	Outlet pressure		Bar	5	4.5	4
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			CARBON STEEL		
	31	Valve Size		inch	1/2"		
	32	Valve End Connection & Rating			1/2", FLANGE - 150		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

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Basic Engineering
CONTROL VALVES
Process Data Sheet

Designation	CONTROL VALVES	Item No.:	No. req.	TV-206	1 pieces

GENERAL	1	Tag Number			TV-206		
	2	P & ID No.					
	3	Pipe Size inlet inch	schedule		1/2"		
	4	Pipe Size outlet inch	schedule		1/2"		
	5	Piping Class Rating	Material		150		
	6	Line No.					
	7	Service			COOLING WATER TO D-203		
PROCESS CONDITIONS	8	Fluid	State		WATER	LIQUID	
	9			unit	**Min. Flow**	**Norm. Flow**	**Max. Flow**
	10	Molecular Weight		g/mol	18.0	18.0	18.0
	11	Viscosity		cP	1	1	1
	12	CP/CV		1			
	13	Compressibility					
	14	SP.Gravity@standard condition					
	15	Vapour Pressure		Bar			
	16	Critical Pressure		Bar			
	17	Flow Rate		Kg/h	3000	3600	4000
	18	Temperature		°C	35-40	35-40	35-40
	19	Inlet Pressure		Bar (g)	6	5	4.5
	20	Outlet pressure		Bar	4	4	3.5
	21	Calculated CV		GPM(US)			
	22	Travel		%			
	23	Selected CV					
	24	Max. Shut Off DP		Bar			
	25	Design pressure		Bar (g)			
	26	Design temp.		°C			
	27	Allowable Noise Level		dBA			
	28	Air Fail Position					
Body	29	Body Type			GLOBE		
	30	Body Material			CARBON STEEL		
	31	Valve Size		inch	1/2"		
	32	Valve End Connection & Rating			1/2", FLANGE - 150		
	33	Plug & Trim Material					
	34	Plug Dia.					
	35	Characteristic					
	36	Seat Leakage Class					
	37	Packing Mat.					
	38	Lubricator					
	39	Bonnet Type					
Actuator	40	Type					
	41	Direction Of action					
	42	Spring range					
Positioner	43	Type			Electro-Pneumatic		
	44	Area Classification	Explosion Protection		DIVISION 2	EExiaIICT3	
	45	Enclosure			IP65		
	46	Input Signal			4-20 mA (HART)		
	47	Air Supply Min.	Oper.	Design Unit	4	6	10 barg
Accessories	48	Pressure Reducing Valve			Yes		
	49	Pressure Gauge			Yes		
	50	Air Connection					
	51	Electrical Connection					
	52	Hand Wheel					
	53	Solenoid Valve	Tag No.	Voltage			
	54	Position Switch	Tag No.	Type			

Remarks:

Note: The sizing of control valve shall be done by manufacturer and the proper valve shall be suggested.

* Vendor to Advise

Completed	Process:	Job or Project No.	Job:	Line revised under Rev.No. ↑ Modified:

Checked	Document- No.:	Sheet:	Rev.	Date	Checked