

Annexure-7A-Rev01- Instrument datasheet (PG-DPT-LT-PSV-LG)

PROJECT: CPCL 1 x 20MW GTG + 1 x 100 TPH HRSG

 HYDERABAD			PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD			Doc No.- REV. 0 Data sheet No:PGD-DS-01				
Diaphragm Seal - Pressure Gauge (PGD) Technical Data Sheet										
GENERAL	1	Range & Qty.	Refer BOM (Annexure-I & II)			MATERIAL	27	Hazardous area class	NOT APPLICABLE	
	2	Type / Std	Diaphragm Sealed / IS3624				28	Case	SS304	
	3	Ambient Temp Limit	0 to 65°C				29	Element	SS316	
GAUGE SPECIFICATION	4	Sensing Element	Diaphragm			30	Window Glass	Shatter Proof.		
	5	Dial Size	150MM (6")			31	Pointer	Aluminium		
	6	Accuracy	±1% of full scale deflection			32	Blow out Disc	SS 304		
	7	Process Connection	1.5" RFLGD, Min 300#.			33	Bezel Ring	SS 304		
	8	Instrument connection	1/2" NPT(M)			34	Capillary fill fluid	Silicon Oil		
	9	Blow out Disc	Required.			35	Movement	SS 304		
	10	Over Range Protection	> 130% of full scale.			36	Socket	SS 304		
	11	Protection	IP 65			CERTIFICATE	37	Calibration	100% Review	
	12	Zero & Span adjustment	External Required.				38	Vibration test	100% Review	
	13	Anti-corrosive Dial	Non-Rusting Plastic, White with black figure				39	Material compliance	100% Review	
	14	Micro meter Adjustment	Required for pointers.				40	Ingress prot. Test	100% Review	
	ACCESSORIES	15	Scale type	Concentric, Graduated units			TEST	41	Calibration	5-POINT ,10% or min. 2 of each range
		16	Pointer-270° Deflection	Yes,Metal with Black Finish				42	Over Protection Test for 30 min.	10% or min. 2 of each range
		17	Pointer Stop	Required at both end				43	Accuracy Test	10% or min. 2 of each range
		18	Bezel ring	Bayonet Lock Type						
19		Movement	Geared / Cam-roller type			Project Sp. Requ.	44	Pressure range color band for dial	Required on each Pressure Gauge	
20		Tag Plate	Required, SS304							
21		Spacer Ring	Required, SS							
22		Vent+Drain plugs	Required, SS, In built to Spacer							
23		Armoured Capillary	Reqd. 3 Mts, SS316L with PVC Coat							
24		Stud Nuts+Bolts	Reqd. A194Gr2H+A193GrB7 (Min 120mm long)							
25	Flange	ASTM A105, Face finish = 125AARH								
26	Gasket	Reqd. Spiral Wound, SS								

NOTES:

- The elastic element material shall be as follows:
 - For range ≤ 60 Kg/cm² - AISI-316 seamless drawn stainless steel tube, argon arc welded at AISI-316 forged or wrought stain less steel tube anchorage and tube end piece.
 - For range > 60 Kg/cm² - AISI-316 bored stainless steel.
- Item to be sourced from as per approved vendor list as mentioned in specification.



PRODUCT STANDARD
PROJECT ENGINEERING & SYSTEMS DIVISION
HYDERABAD

Data Sheet For Differential Pressure Transmitter (DPT) - Remote Seal

TRANSMITTER	2	Type	Electronic Smart (Two Wire), HART	ACCESSORIES	1	Mounting Bracket	SS304, Suitable for 2" pipe mounting
	3	Principle of Sensor	Capacitance/Silicone resonant/Piezo – electric		2	Cable Glands	SS double compression type and flameproof
	4	Turn Down Ratio	100:1		3	Cable entry Plug	Required, SS304
	5	Accuracy	For a rangeability of 1:10 a) Equal or Above 500 mmWC: $\pm 0.25\%$ b) Less than 500 mmWC: $\pm 0.5\%$		4	Vent/Drain Plug	SS
	6	Power Supply	24V DC $\pm 10\%$, Loop Powered		5	Tag Plate	SS
	6	Response Time	3 sec or better.		6	All Bolt & Nuts	SS
	7	Load Resistance	Minimum 600 ohm at 24 VDC		7	Integral Manifold	3 way with SS material
	8	Output	4 - 20 mA DC SMART with superimposed HART protocol		8	Spacer ring	SS316L
	9	Zero & Span adjustment	Hardware adjustment / Remote adjustment through HART communicator		9	Spacer ring plugs	SS316
	10	Display	integral LCD digital indicator		10	Nuts & Bolts	A194 Gr 2H / A193 Gr B7, Min 120mm long (M20 X 2.5)
	11	Instrument Connection	1/2" NPT (F)		11	Gasket	SS 316, Spiral wound type.
	12	Electrical Connection	2 Nos of 1/2" NPT (F)	SPECIAL REQUIREMENT			
	13	Over Range Protection	Minimum 130% of range.		1	SIL-2 Certification	Required
	14	Protection	Dustproof and weatherproof to IP-65		2	Dual Compartment	Required
	15	Stability	$\pm 0.15\%$ of calibrated span for 5 years		3	All DPT shall be with Integral 3 valve Manifold.	
	16	Impulse Line Entry	Side Only		4	Intrinsically safe & certified to IEC Zone 1, Gas Group IIA/IIB/IIC, and Temperature Class T3 as minimum.	
	17	Ambient Temp Limit	- 40 to 80°C		5	Transmitter's electronics boards / cards shall have conformal coating suitable for corrosion protection.	
	18	Process Temp. Limit	- 40 to 120°C		6	5 point calibration	Required for 0%, 25%, 50%, 75% 100% and vice versa.
	19	Body Material	SS316				
	20	Element Material	SS316				
	21	Humidity	0 - 100% RH				
	22	Sensor O-Ring	Glass-filled PTFE/Teflon				
	23	Electronic Housing	SS304 min.				
	24	Sensor fill fluid	Silicon Oil				
		Remote Seal Assembly	Diaphragm on HP side & capillary on LP side				
	25	Remote Diaphragm Assembly	SS316L, Flush flange type seal assembly with flushing connections (Refer fig.1)				
	26	Process flange type and size	Raise face flange, 3", class 300				
	27	Capillary tube	SS316				
	28	Capillary type and length	Armoured type with PVC coating, 3 meter				
	29	Capillary connection	Welded to diaphragm flange and transmitter flange.				
	30	Electromagnetic compatibility	As per IEC - 801				

NOTES:

- 1 DPT body shall be provided with plugged vent & drain connection. External manifold for vent & drain shall not be provided.
- 2 All integral parts of the transmitter shall be suitable for the differential over-range in either direction equal to the full rated pressure of the body with the opposite side vented to atmosphere without permanent distortion or calibration error. For vacuum service, the element shall have under-range protection to full vacuum.
- 3 The square root extraction for the differential pressure based flow measurement shall be carried out in DCS. Transmitter shall indicate both DP & flow values.
- 4 All DPT shall have integral terminal block for cable termination. Fly leads shall not be provided.
- 5 Coplanar type manifold connection/bottom entry shall not be provided.
- 6 Retrofit type of transmitters shall not be provided.
- 7 Inductive sensor based transmitter shall not be provided.

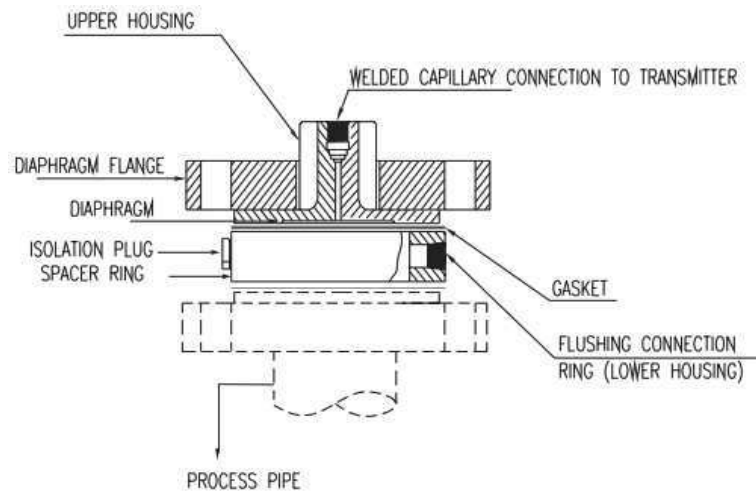


FIGURE - I



PRODUCT STANDARD
PROJECT ENGINEERING & SYSTEMS DIVISION
HYDERABAD

Data Sheet For Differential Pressure Gauge (DPG) - Remote Seal

1	Range & Qty.	
2	Gauge Type	Diaphragm Sealed
3	Mounting	Remote Sensing
4	Sensing Element	Diaphragm with SS316 material
5	Sealed Unit Construction	Diaphragm loosely placed between top & bottom chamber
6	Top & Bottom chamber material	SS 304
7	Instrument connection	1/2" NPT(M)
8	Process connection	1½" flanged 300#RF
9	Dial Size	150 MM
10	Dial	White, non-rusting plastic with black figures
11	Accuracy	±1%
12	Over range protection	130% of FSD
13	Case Material	SS304
14	Bezel ring	SS304, Bayonet Lock Type
15	Window material	Shatter Proof Glass
16	Capillary Material	SS 316
17	Capillary Protection	Spiral / Sheath with SS304
18	Capillary length	3 meter
19	Sealing liquid	Silicon Liquid
20	Socket Material	SS316L
21	Movement	SS304, Geared / Cam-roller type
22	Blow out	SS304, full area disc back side
23	Pointer	Al, black micrometer
24	Zero Adj	Micro Pointer (External)
25	Enclosure	weatherproof to IP-65
26	Pointer Stop	Required at both end
27	Tag Plate	SS
28	Humidity	0 - 100% RH
29	Ambient Temp Limit	0 to 65°C

PROJECT: CPCL -Fuel conversion

 HYDERABAD			PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD			Doc No.- REV. 0 Data sheet No:JB-DS-01			
Junction Box (JB) Technical Data Sheet									
GENERAL	1	Range & Qty.	Refer BOM (Annexure-I & II)			ACCESSORIES	19	Cable Glands	SS Double Compression+Flameproof
	2	Type	48 Way, Explosion proof				20	Cable entry Plugs	All cable entry with SS 304
	3	Ambient Temp Limit	- 40 to 80°C				21	Tag Plate	Reqd, SS 304
					22		Gasket	SS 316, Spiral wound type.	
JB SPECIFICATION	4	Ingress Protection	IP65			TEST	23	Screws/Hinges	SS
	5	Fixing type	External Wall mount				24	Earthing Screws	Internal and external 1 no each with washers
	6	Door type	Hinged						
	7	Telephone Socket	Required.						
	8	Protection	IP-65 (Min.)			CERTIFICATE	25	Dimensional Check	10% or min. 2 of each type
	9	Inlet Cable entries	1/2" NPT - 6 Nos at Right Side				26	Inlet & outlet entries size	10% or min. 2 of each type
			1/2" NPT - 6 Nos at Left Side				27	Tag Plate Marking	10% or min. 2 of each type
	10	Outlet Cable entries	1½" NPT x 2 nos at bottom side						
	11	Internal Dimensions	340 x 340 x 140 MM (±10%)			28	Material compliance	100% Review	
	12	Outer Dimensions	360 x 360 x 170 MM (±10%)			29	PESO certificate	100% Review	
	13	Terminal size	2.5 Sq.mm, Clip on screw less, 2 Rows						
	14	Terminal type	DIN Rail Mount,Stack Type,						
	15		Non Double decker.						
	16	Terminal make	Elmex/Phonix/Wago						
	17	Hazardous area class	Zone-1, IIA & IIB, T3.						
18	Body Material	Die Cast Alluminium, LM-6							
Item to be sourced from as per approved vendor list as mentioned in specification.									

Item to be sourced from as per approved vendor list as mentioned in specification.

 HYDERABAD			PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION HYDERABAD			Spec No.- REV. 00 Data sheet No:LT(GWR)-DS-01			
Radar Type Level Transmitter (LT)-Guided wave-Side Mounted-Technical Data Sheet									
GENERAL	1	Range & Qty.	As per enquiry.			ACCESSORIES	30	Mounting Kit	As required
	2	Transmitter Type	Guided Wave,Side mounted, Electronic Smart, HART, Ex-proof. Intrinsic safe				31	U Clamp+Fastner	Reqd, SS 304
	3	Principle of Sensor	Vendor Std.(Pulse/Freq)				32	Cable Glands	SS Double Compression+Flameproof
	4	Ambient Temp Limit	- 40 to 80°C				33	Cable entry Plugs	Reqd, SS 304
	5	Measuring Media	Condensate and gas				34	Tag Plate	Reqd, SS 304
CHAMBER & PROBE	6	Max Press / Temp				MATERIAL	35	Bolts + Nuts	Reqd. SS
	7	Chamber Material					36	Gasket	SS 316, Spiral wound type.
	8	Chamber Size & schedule					37	Hazardous area class	Zone-1, IIC, T3.
	9	Chamber centre-Centre distance(in mm)					38	Body	SS316
	10	Side Process Connection size of chamber/Flange Material					39	Humidity	0 - 100% RH
	11	Connection Location : Upper-Lower	Side-Side			TEST REPORT/CERTIFIC	40	Sensor O-Ring	Glass-filled PTFE/Teflon
	12	Case Orientation	Vertical				41	Electronic Housing	SS304 min.
	13	Drain & Vent Conn Size	1/2" NPT with plug				42	5-Point Calibration	100% Review
	14	Probe Type	Vendor to select.				43	Material compliance	100% Review
	15	Top Flange connection /Material					44	Functional Test	100% Review
	16	Probe Material / Probe length	SS316L /Suitable length to be provided				45	Performance Test	100% Review
	17	Measuring Range in mm	As per enquiry.				46	Ingress Prot. Test	100% Review
TRANSMITTER	18	Accuracy	± 3mm OR better				47	Intrinsic Safety Test	100% Review
	19	Process Connection	2" 300#RF				48	Conformity Test	100% Review
	20	Flange connection	2" 300#RF						
	21	Electrical Connection	2 Nos of 1/2" NPT (F)			49	Certification	SIL-2, PESO	
	22	Power Supply	24V DC, Loop Powered, 2 wire			50	Housing Compartments	Dual	
	23	Mounting	Side mounted			51	Statutory Approvals	For Transmitters+Glands+Plugs	
	24	Protection	IP 65			52	Corrosive Protection	Required	
	25	Lighting and surge Protection	Required						
	26	Display	Integral LCD Digital (in Engg Units & in %)						
	27	Load Resistance	600Ω @ 24 VDC						
	28	Output	4-20mA + HART						
	29	Diagnostic Features	Required						

Item to be sourced from as per approved vendor list as mentioned in specification.

Level Gauge Datasheet

GENERAL	1	Item Number					
	2	Tag Number					
	3	Service					
	4	Equipment Name	P & ID No.				
	5	NACE Requirement					
	6	IBR Certification					
	7						
PROCESS CONDITIONS	8	Upper Fluid	Phase				
	9	Lower Fluid	Phase				
	10	Pressure	Unit	Design	Oper.		
	11	Temperature	Unit	Design	Oper.		
	12	Upper Fluid	Unit	Density	Viscosity		
	13	Lower Fluid	Unit	Density	Viscosity		
	14						
GAUGE	15	Type				Reflex Type	
	16	Connection Type				2", 300RF	
	17	Body Material	Float Material	CS A 105	SS316		
	18	Flange Material					
	19	Connection	Size & Rating	SW	#300 RF Minimum		
	20		Facing & Finish				
	21	Center To Center Distance				Should cover the full range	
	22	Dimension Visible					
	23	Gauge Cock					
	24	Vent Connection				1/2" NPT	
	25	Drain Connection				1/2" NPT	
	26	Indicator Scale	Material				
	27	Float Failure Indication					
	28	Enclosure Class				IP-65	
29							
OTHERS	30	Manufacturer					
	31	Model					
Notes:						1. Minimum requirement has been furnished in datasheet. Vendor has to complete the datasheet i.e. furnish the data in all blank cells and adhere with the minimum requirement. 2. All Instruments should be SIL 2 and intrinsic safe compiled. 3. Vent and drain valve shall be provided with nipple and end caps . 4. Gauge shall be provided with ball check valves & pipe union. 5. Gauge shall be mounted on stand pipe.	
						Design Data Sheet LEVEL GAUGE	
				Unit			
				Location	MANALI, CHENNAI, TAMILNADU		
				Client	CPCL		
Rev	Date	By	Chk	Appv			

		PRESSURE SAFETY/RELIEF VALVES INPUT DATA SHEET					
		PROJECT:					
		CUSTOMER:					
		CONSULTANT :					
		Serial Nos.				1	
	1	Quantity					
	2	Tag Numbers					
	3	Service					
	5	Type of nozzle (Full/Semi)				FULL NOZZLE	
	6	Purpose of Valve (Safety/Relief)					
	7	Conventional/Bellow/Pilot operated				Conventional	
	8	Bonnet Type (Open/Close)				*	
	9	Installation (On pipe/Vessel)					
	Fluid Data	10	Code	Accum	Section VIII/API 520/521/526		10%/21%/16%
11		Sizing basis		Fire/Blocked Discharge/any other			
12		Fluid name	State				
13		Kb	Flow factor	*		*	
14		API effective K		*			
13		MW	Z	*		*	
14		k (Cp/Cv)	c	*		*	
Pressure	12	Design Pressure	Design Temp.				
	13	Oper. Pressure	Set Pressure				
	14	Oper. Temp.	Relief Temp.	*		*	
	15	Constant Superimposed Back Pressure			AS per spec		
	19	Variable Back Pr.	From	To			
	20	Tot Back Pressure			*		
Capacity (kg/hr)	16	Required flow	calculated Flow		*		*
	17	calculated	API Effective		*		*
Flow Area (m2)	18	Reaction Force			38°C		
		Noise level					
Misc	23	Model No					
		Manufacturer					
Connect	24	Type (Flanged/Screwed/Welded)			Flanged		
	25	Size & Rating	Inlet	Outlet	As per PID		As per PID
	26	Flange Facing	Inlet	Outlet	..		..
Material	27	Body & Bonnet			A216WCB		
	28	Seat & Disc			SS 316		
	29	* Resilient Seat Seal			*		
	30	Nozzle			SS316		
	31	Guide & Spindle Rings			SS Machined		
	32	Spring			*		
	33	Bellows					
Accessories	34						
	35						
	36						

		PRESSURE SAFETY/RELIEF VALVES	
		INPUT DATA SHEET	
		PROJECT:	
		CUSTOMER:	
		CONSULTANT :	
Test & Certificates	40	IBR Certificate Form IIC	NA
	41	Material Certification	Yes, Review
	42	Radiography Test for Castings (Note-2)	Yes, Review, ASME B16.34
	43	Hydrostatic Test of body	Yes, Witness
	44	Seat leakage, Set & Reset Pressure Test (As per API 527) For test Fluid please refer note 3.	Yes, Witness
	45	Calibration	Yes, Review
	46	Visual & Dimensional Check	Yes, Witness
	47	Type Test Certificate for IBR.	NA
	48	Molecular Weight	--
	49	Hardness Test If applicable	Yes, Review

Fire Vessel Calculation

Liquid Height	
Latent Heat of Vapourisation	
Environment Factor	
Tank	
Orientation	
Ground Clearance	
Length	
Dia	
Vessel Heads	
wetted Vessel Area	

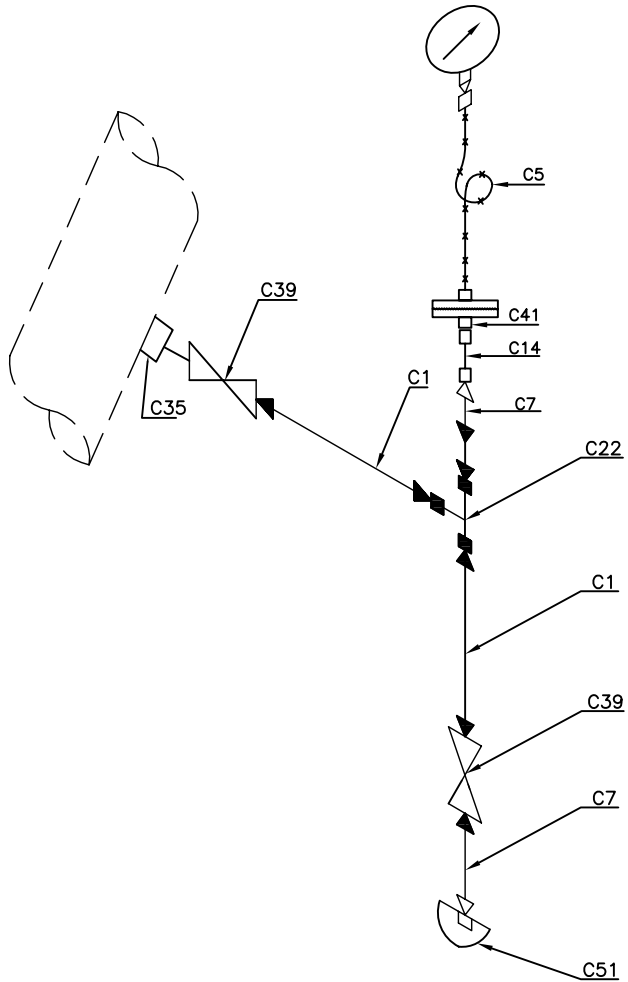
Note

- 1 "*" Information to be supplied by vendor unless otherwise specified.
- 2 Radiography test- 100% shall cover inlet flange, outlet flange, cast nozzle, cast body, all weld joints with min. 2 shots.
- 3 Pressure relief valve test Fluid

	Service Fluid	Test Fluid
1	Air, Gas & vapor	Air or Gas
2	Steam	Steam *
3	Liquid	Water

* Air may be used for ASME Code Section VIII valves.

Doc.No. PEMC			
Rev	Date	Prepared	Approved
00	9.11.1	Iftekhhar	Siva Sir

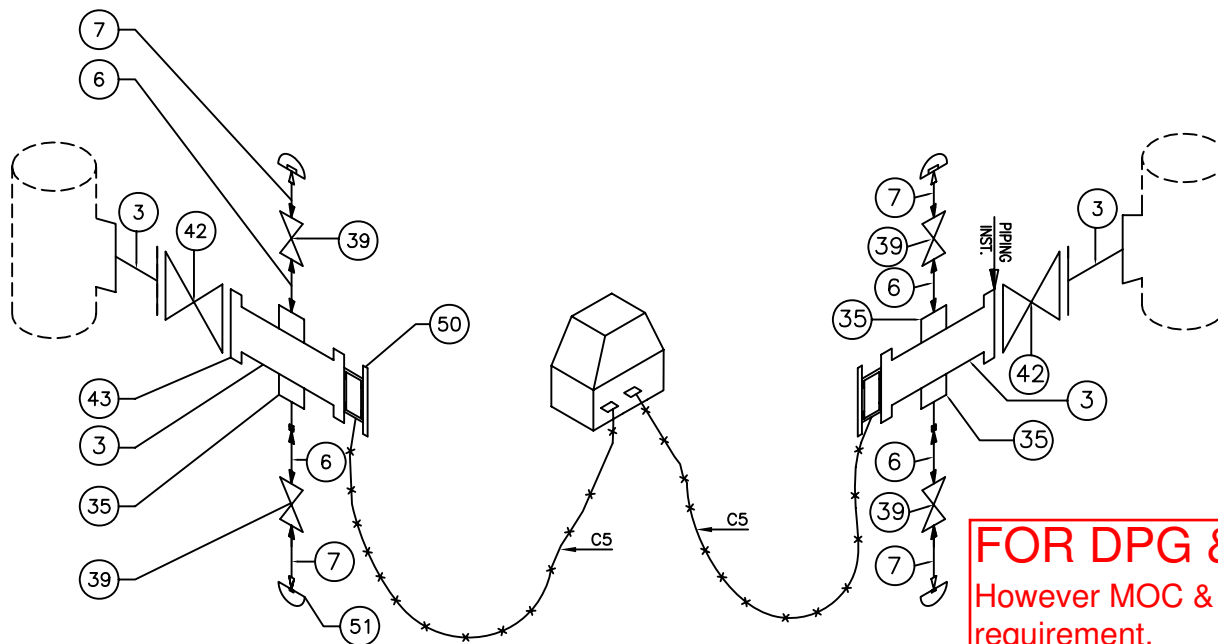


FOR PRESSURE
GAUGE - ON PIPE LINE

BILL OF MATERIAL

SYMBOL	ITEM NO.	ITEM DESCRIPTION	SIZE	ENDS	TOTAL QTY.	UNIT
P	C1	PIPE/PIPE NIPPLE, CS	1/2"	PL	24	MTR.
⌀	C5	CAPILLARY, SS	-	-	05	MTR.
↔	C7	NIPPLE, A106 Gr.B IS:1239 (100MM LONG)	1/2"	TH x PL	24	NOS.
□-□	C14	STRAIGHT COUPLING, A105, 3000#	1/2"	TH x TH	12	NOS.
⊥	C22	EQUAL TEE A105, 6000#	1/2"	SW x SW x SW	12	NOS.
┌	C35	HALF COUPLING, A105, 6000#	1/2"	SW	12	NOS.
⋈	C39	GATE VALVE, CS A105, 800#	1/2"	SW	24	NOS.
⌈	C41	1/2" NPT (M)	1/2"	-	12	NOS.
⌒	C51	CAP, A105, 3000#	1/2"	TH	12	NOS.

FOR PG: Typical Scheme is attached. However MOC & rating shall be process/specification requirement.

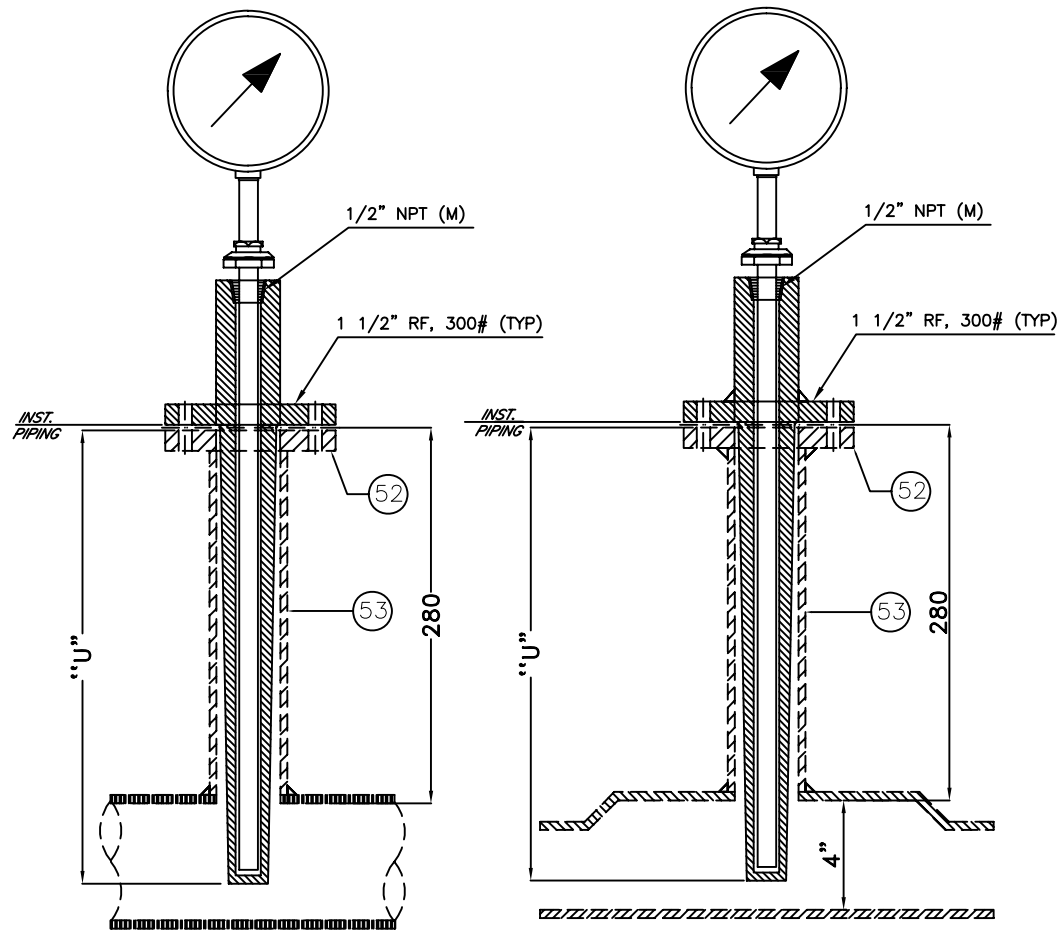


FOR DPG & DPT: Typical Scheme is attached.
However MOC & rating shall be process/specification requirement.

FOR DIFFRENTIAL PRESSURE TRANSMITTER (Across Strainer)

LIST OF ITEMS						
SYMBOL	ITEM NO.	DESCRIPTION	SIZE	ENDS	QTY.	UNIT
—	3	PIPE, CS, 300#/600#	3"	PL	A/R	MTR.
↔	6	NIPPLE, A106 Gr.B IS:1239 (100MM LONG)	1/2"	PL X PL	08	NOS.
↔	7	NIPPLE, A106 Gr.B IS:1239 (100MM LONG)	1/2"	TH X PL	08	NOS.
└┐	35	HALF COUPLING, A105, 6000#	1/2"	SW	08	NOS.
⋈	39	GATE VALVE, CS A105, 800#	1/2"	SW	12	NOS.
⋈	42	GATE VALVE, CS A105, 150# FLANGED	3"	—	04	NOS.
	43	FLANGE ANSI B16.5	3"	—	04	NOS.
	50	FLANGE ANSI B16.5, 300#/600#	3"	—	04	NOS.
⊖	51	CAP, A105, 3000#	1/2"	TH	08	NOS.
φ	C5	CAPILLARY, SS	—	—	5	MTR.

TEMPERATURE GAUGE



FOR LINE SIZE 4"

FOR LINE SIZE 3"