

LIR TYPE	MAX. NO. OF TRANSMITTERS	DIMENSION 'X' (mm)
A	6	1650
B	6	1350
C	4	1010

**NOTE:-**  
 MATERIAL OF JBS FOR LIRS SHALL BE SAME AS THAT OF LIR.

FOR TENDER PURPOSE ONLY

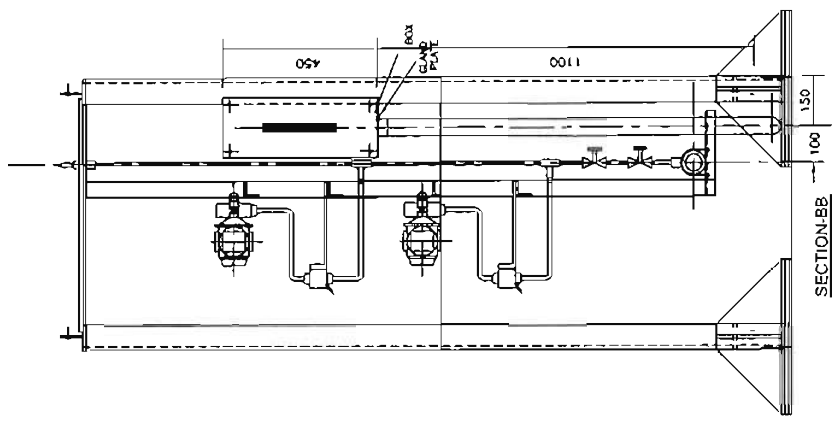
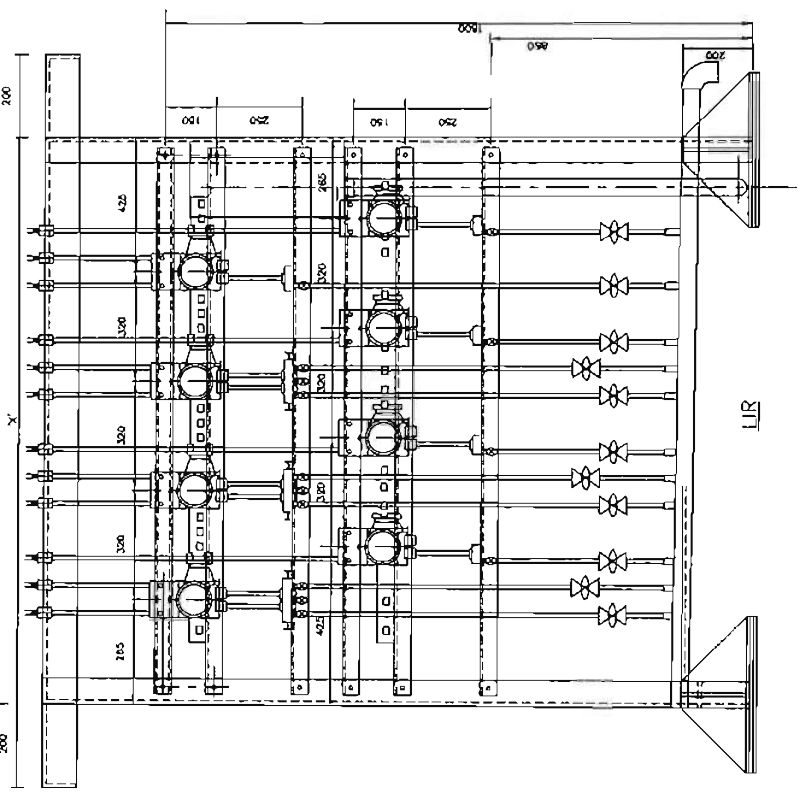
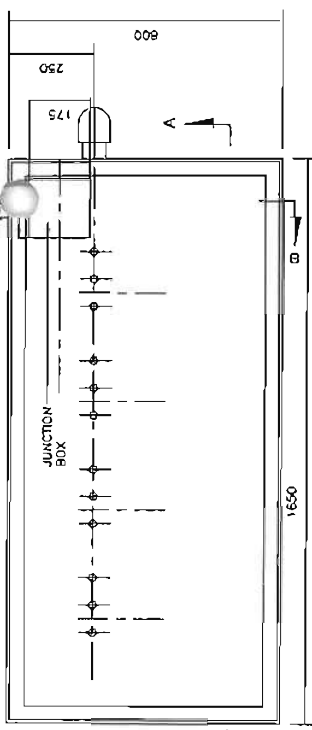
NTPC LIMITED  
 (A GOVERNMENT OF INDIA ENTERPRISE)  
 ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT  
 TITLE: TYPICAL GA OF LOCAL INSTRUMENT ENCLOSURE / RACK

PROJECT	TYPICAL THERMAL POWER PROJECT
TITLE	TYPICAL GA OF LOCAL INSTRUMENT ENCLOSURE / RACK
SIZE	A3
SCALE	M.T.S.
ENC. NO.	0000-999-POI-A-064
REV. NO.	A

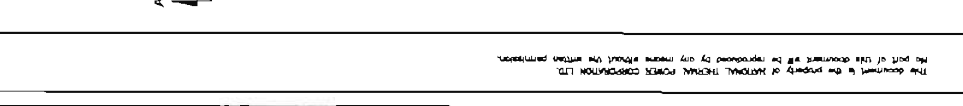
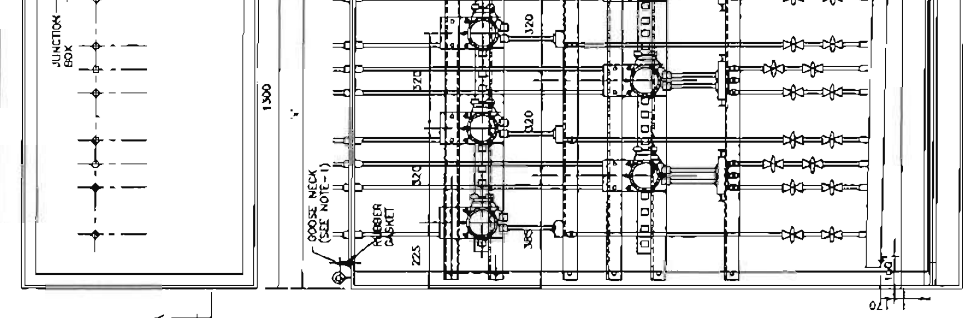
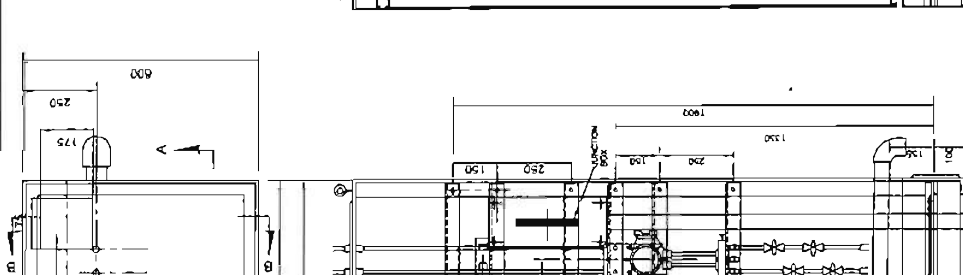
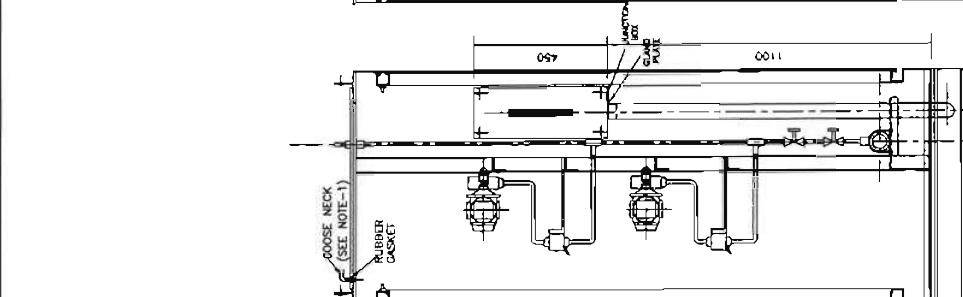
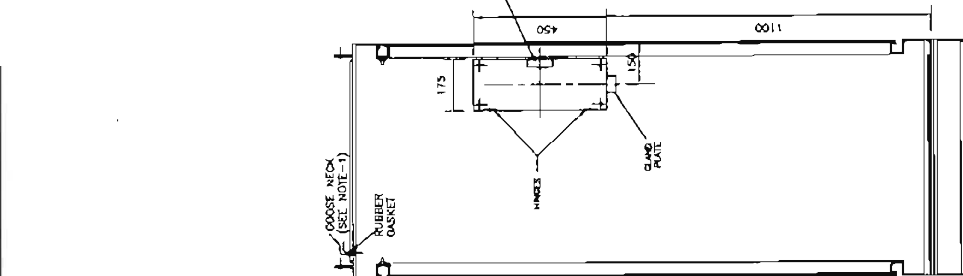
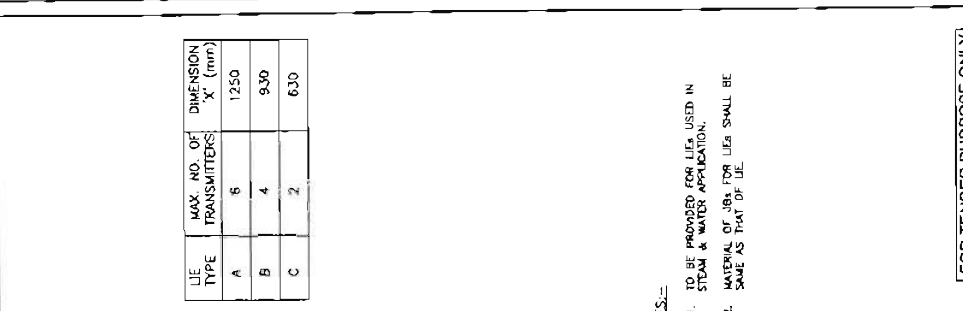
REV. NO.	A	ISSUE	
REV. NO.		DESIGN	
REV. NO.		CHKD	
REV. NO.		APPD	
REV. NO.		DATE	

DESCRIPTION	
SECTION-AA	LIR WITHOUT PURGING



SECTION-AA  
LIR WITHOUT PURGING

SECTION-BB-BB



LIE TYPE	MAX. NO. OF TRANSMITTERS	DIMENSION 'X' (mm)
A	6	1250
B	4	930
C	2	630

- NOTES:-
- TO BE PROVIDED FOR LIEA USED IN STEAM & WATER APPLICATION.
  - MATERIAL OF LIEA FOR LIEA SHALL BE SAME AS THAT OF LIE.

[FOR TENDER PURPOSE ONLY]

**NTPC LIMITED**  
(A CORPORATION OF INDIA ENTERPRISES)  
ELECTRICITY DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT  
TITLE: TYPICAL GA OF LOCAL INSTRUMENT ENCLOSURE / RACK



REV. NO	DATE	BY	CHK	APPD	SCALE	INC. NO.	SHEET NO.
1.0					A2	0000-999-POI-A-054	01 of 02

DESCRIPTION

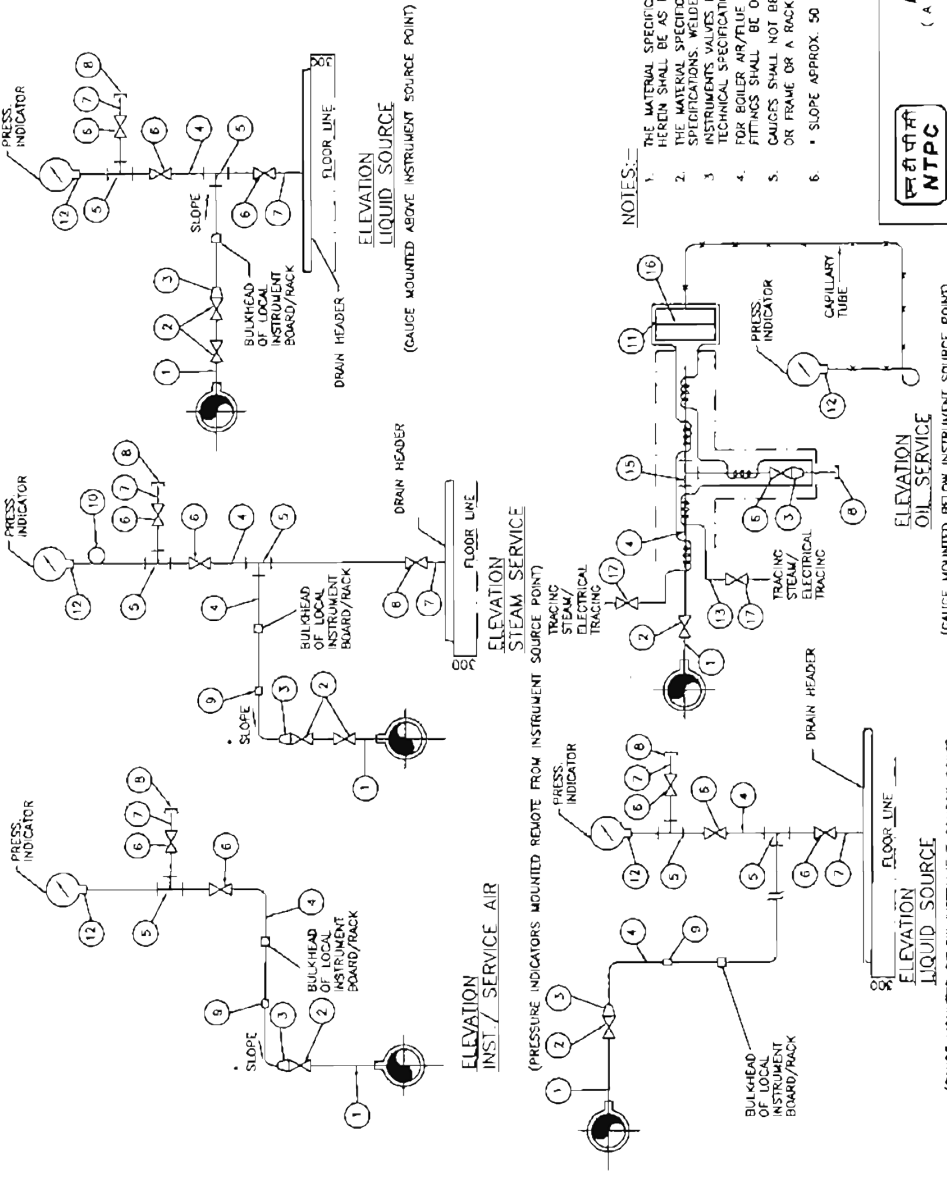
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**LIST OF MATERIALS**

ITEM NO.	DESCRIPTION
1.	1/2" x 3/4" x 1" NPS SCH 40/80/160/XXS/PS1 (AS PER PROCESS REQUIREMENT) NIPPLE OF MATERIAL SAME AS THAT OF MAIN PIPE.
2.	1/2" x 3/4" x 1" SW GLOBE VALVE/GATE VALVE
3.	3/4" x 1" x 1/2" SW REDUCING INSERT
4.	1/2" / 3/4" PIPE
5.	1/2" / 3/4" SW EQUAL TEE
6.	1/2" / 3/4" SW GLOBE VALVE.
7.	1/2" / 3/4" NPS SW x 1/2" / 3/4" NPT(M) CARBON/ALLOY STEEL NIPPLE.
8.	1/2" / 3/4" NPT(F) CAP.
9.	1/2" / 3/4" PIPE UNION.
10.	8" SS STYPHON
11.	1/2" BLIND 300lbs RT ANSI FLANGE DRILLED AND TAPED FOR 1" NPT PIPE
12.	SUITABLE ADAPTER
13.	1/4" CHROME MOLY STEEL TUBE..
14.	
15.	1 1/2" x 3/4" SW EQUAL TEE.
16.	DAMP-RAGUM(WATER ELEMENT)
17.	ISOLATION VALVE 316 SS, 1/4" SW



**NOTES:**

- THE MATERIAL SPECIFICATION AND SCHEDULE NO. OF IMPULSE PIPE & NIPPLE AS LISTED HEREIN SHALL BE AS PER TECHNICAL SPECIFICATIONS.
- THE MATERIAL SPECIFICATION AND RATING OF FITTINGS AS LISTED SHALL BE AS PER SPECIFICATIONS. WELDED/IN-READY FITTINGS SHALL COMPARE TO LISTED FITTINGS.
- TECHNICAL SPECIFICATIONS FOR STEEL MATERIAL AND PRESSURE CLASS SHALL BE AS PER TECHNICAL SPECIFICATIONS.
- FOR BOILER AIR/FUE GAS SERVICES SOURCE CONNECTIONS IMPULSE PIPING AND ALL FITTINGS SHALL BE OF 3/4" NB SIZE.
- GAUGES SHALL NOT BE MOUNTED ON THE PIPE. IT WILL BE MOUNTED ON A CHANNEL OR FRAME OR A RACK.
- \* SLOPE APPROX. 50 MM / METRE.

**FOR TENDER PURPOSE ONLY**

**NTPC LIMITED**  
( A GOVERNMENT OF INDIA ENTERPRISE )  
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT  
TITLE: INSTRUMENT INSTALLATION DIAGRAM (FOR PRESSURE GAUGE)

REV. NO.	A
DRG. NO.	0000-999-POI-A-022
SCALE	N.T.S.
SIZE	A3

DATE	21.08.12
APPD	
DATE	
ARCH.	
DAI	
CHKD.	
DESIGN	
DRAWN	
DESCRIPTION	
FIRST ISSUE	

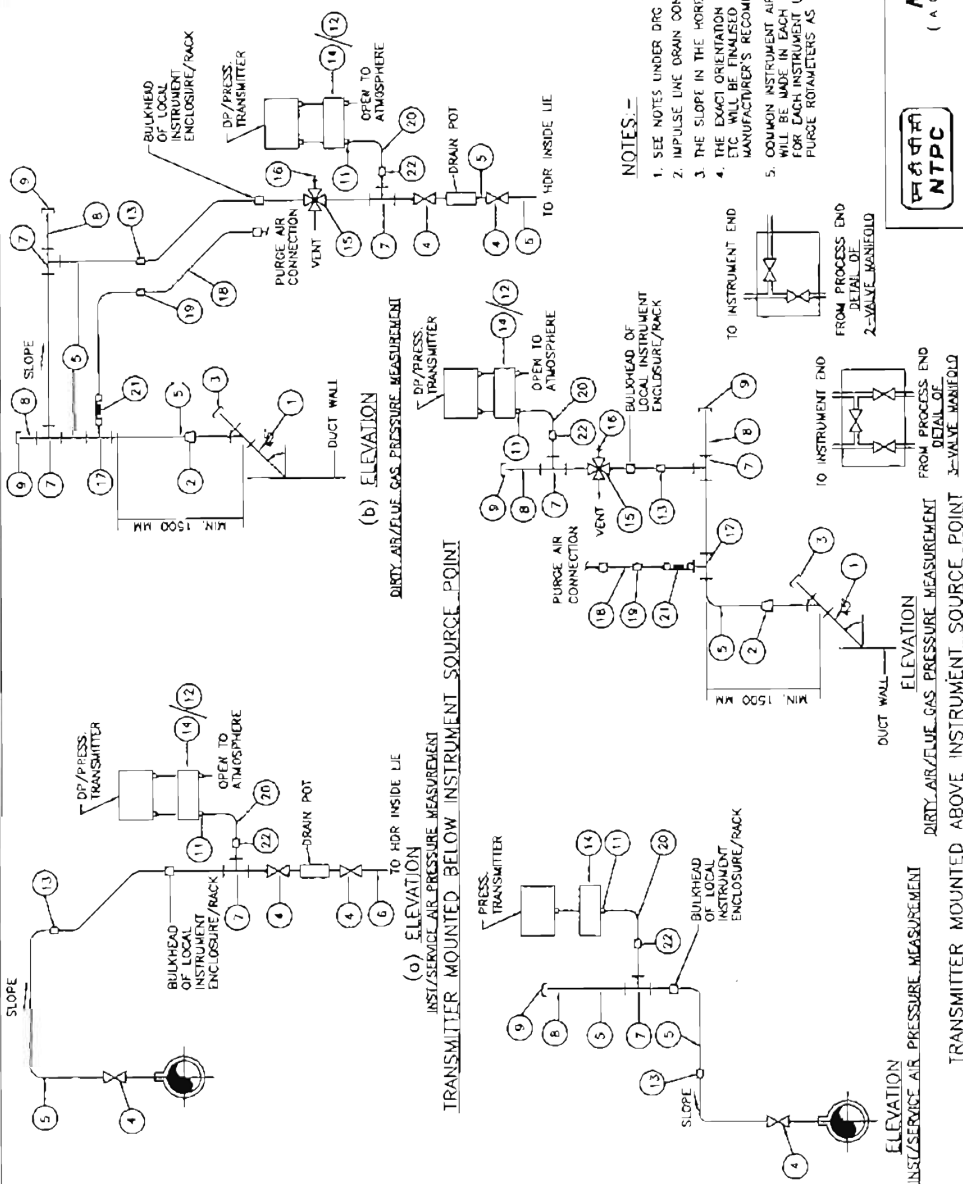
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**LIST OF MATERIALS**

ITEM NO.	DESCRIPTION
1.	42 X 405 MM M.S. BLACK PIPE
2.	M42X2 TO 3/4" REDUCING INSERT
3.	M42X2(F) M.S. CAP
4.	3/4" SW GLOBE VALVE/GATE VALVE
5.	3/4" NPS PIPE
6.	3/4" NPS SW 3/4" NPT(M) CS/AS NIPPLE
7.	3/4" SW EQUAL TEE
8.	3/4" NPS SCH 80 CARBON/ALLOY STEEL NIPPLE
9.	3/4" NPT(F) CS/AS CAP
10.	3/4" SW CS/AS EQUAL CROSS
11.	1/2" TUBE ADAPTER
12.	3 VALVE MANIFOLD
13.	3/4" PIPE UNION
14.	2 VALVE MANIFOLD
15.	3/4" SW 4 WAY VALVE
16.	QUICK DISCONNECT FITTING
17.	3/4" SW 1/2" SW BRANCH TEE
18.	1/2" NB SEAMLESS GI PIPE
19.	1/2" NPT (F) GI FITTING
20.	SS TUBE
21.	FLEXIBLE ROSE WITH ONE END SOCKET WELDED (PIPE SIDE) & OTHER END WITH SUITABLE FITTINGS.
22.	3/4" x 1/2" S.S. TUBE UNION

**NOTES:-**

- SEE NOTES UNDER DRG NO 0000-999-POI-A-022.
- IMPULSE LINE DRAIN CONNECTIONS SHALL BE DONE AS PER TECHNICAL SPECIFICATIONS
- THE SLOPE IN THE HORIZONTAL OF THE IMPULSE PIPE SHALL BE APPROX. 50 mm/mtr.
- THE EXACT ORIENTATION OF THE TRANSMITTERS WITH RESPECT TO VALVE MANIFOLDS SHALL BE AS PER THE DETAILED ENGINEERING KEEPING IN VIEW THE MANUFACTURER'S RECOMMENDATIONS.
- COMMON INSTRUMENT AIR HEADER (1" NB) USING REDUNDANT AIR FILTER REGULATORS WILL BE MADE IN EACH TRANSMITTER ENCLOSURE/LOCAL INSTRUMENT ENCLOSURE/RAK. PURGE AIR OR SERVICE AIR SHALL BE TAKEN FROM THIS HEADER USING INDIVIDUAL PURGE ROTAMETERS AS SHOWN IN DRG. NO. 0000-999-POI-A-024 TYPICALLY.



**FOR TENDER PURPOSE ONLY**



**NTPC LIMITED**  
( A GOVERNMENT OF INDIA ENTERPRISE )  
ENGINEERING DIVISION

**TYPICAL THERMAL POWER PROJECT**

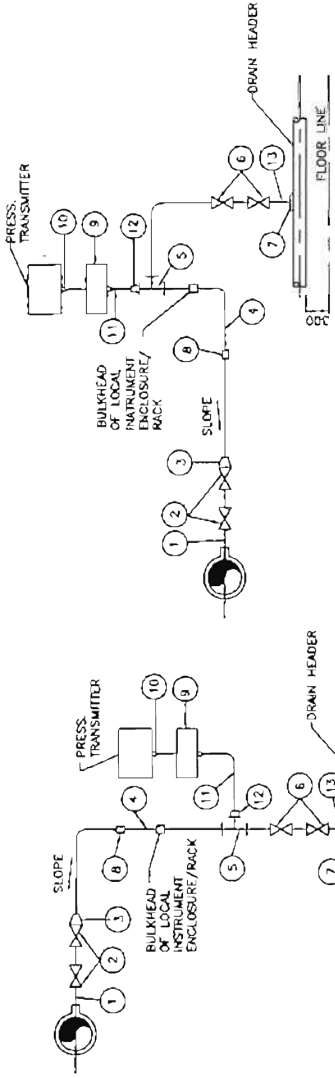
PROJECT	TYPICAL THERMAL POWER PROJECT		
TITLE	INSTRUMENT INSTALLATION DIAGRAM (PRESSURE MEASUREMENT USING PRESS / DP TRANSMITTERS (INST./SERVICE, DIRTY AIR/FLUE GAS))		
REV. NO.	REV. NO.	DWG. NO.	0000-999-POI-A-023
SCALE	SCALE	SIZE	A3
N.T.S.	N.T.S.	DATE	21.08.12
APPR.	T.G.	CHKD.	C&I
DESIGN	CHKD.	DATE	21.08.12
DESIGN	CHKD.	DATE	21.08.12

REV. NO.	DESCRIPTION	DATE	BY	CHKD.	DATE	BY	CHKD.
A	FIRST ISSUE						

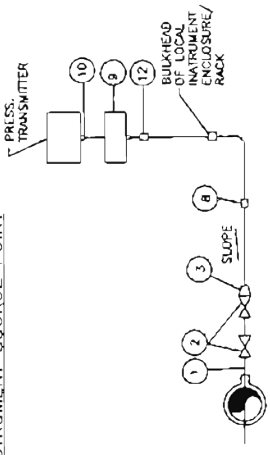
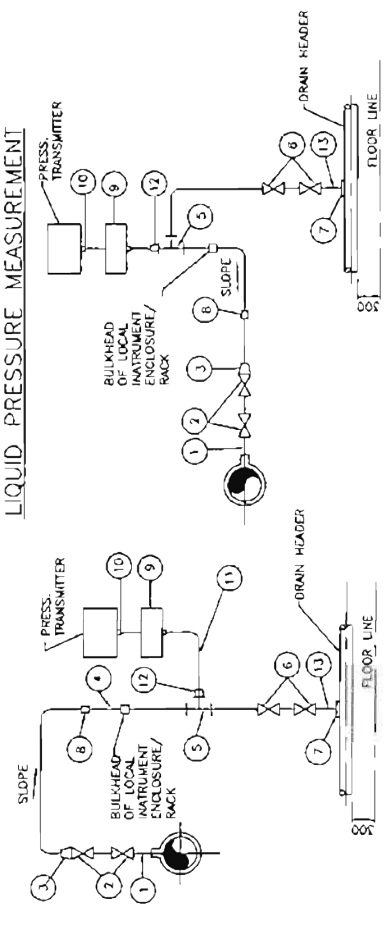
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**LIST OF MATERIALS**

ITEM NO.	DESCRIPTION
1.	1/2" x 3/4" NPS SCH. 80/160/200S/PST NIPPLE OF MATERIAL SAME AS THAT OF MAIN PIPE
2.	3/4" x 1" SW GLOBE VALVE
3.	3/4" x 1" TO 1/2" REDUCING INSERT
4.	1/2" NPS PIPE
5.	1/2" SW EQUAL TEE
6.	1/2" SW GLOBE VALVE
7.	1/2" NPS SCH. 80/160 SW 1/2" CS/AS COUPLER
8.	1/2" PIPE UNION
9.	2/3 VALVE MANIFOLD (FOR DETAIL SEE DRAWING NO.0000-102-PQ-A-023)
10.	SUITABLE ADAPTER
11.	SS TUBE
12.	1/2" PIPE x 1/2" TUBE UNION
13.	1/2" NPS SCH. 80/160 SW 1/2" NPT(M) CS/AS RIPPLE



**ELEVATION TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT**



**ELEVATION VACUUM PRESSURE MEASUREMENT**

NOTES:-

1. SAME NOTES UNDER DRG. NO. 0000-999-POI-A-023
2. FOR VACUUM APPLICATION OTHER PART OF TRANSMITTER SHALL BE KEPT OPEN TO ATMOSPHERE.

**FOR TENDER PURPOSE ONLY**

**NTPC LIMITED**  
 ( A GOVERNMENT OF INDIA ENTERPRISE )  
 ENGINEERING DIVISION



PROJECT: **TYPICAL THERMAL POWER PROJECT**

TITLE: **INSTRUMENT INSTALLATION DIAGRAM (PRESSURE MEASUREMENT USING PRESS /DP TRANSMITTERS STEAM/LIQUID VACUUM)**

SIZE	A3	SCALE	N.T.S.	DRG. NO.	0000-999-POI-A-025	REV. NO.	A
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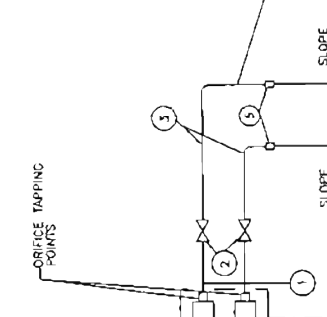
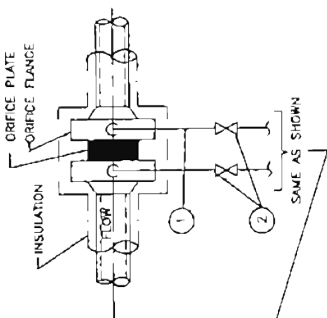
**ELEVATION TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT**

**ELEVATION TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT**

REV. NO.	DESCRIPTION	DESIGNED BY	CHECKED BY	APPD. DATE	DATE
A	FIRST ISSUE				21.06.17

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**LIST OF MATERIALS**

ITEM NO.	DESCRIPTION
1.	1/2" NPS SCH. 80 NIPPLE OF MATERIAL SAME AS THAT OF MAIN PIPE WITH NECESSARY ATTACHMENT TO FLANGE OF ORIFICE
2.	1/2" SW GLOBE VALVE
3.	1/2" NPS PIPE
4.	1/2" SW EQUAL TEE
5.	1/2" PIPE UNION
6.	-
7.	1/2" NPS SCH. 80 SW 1/2" NPT (M) S.S. NIPPLE
8.	5 VALVE MANIFOLD FOR DETAIL REFER DRAWING NO. 00000-102-POI-A-026.
9.	1/2" T SW HALF COUPLER
10.	1/2" PIPE x 1/2" TUBE UNION
11.	SUITABLE ADAPTER
12.	SS TUBE

**NOTES:-**  
1. SAME NOTES AS UNDER DRG. NO. 0000-999-POI-A-023.

**FOR TENDER PURPOSE ONLY**

**NTPC LIMITED**  
( A GOVERNMENT OF INDIA ENTERPRISE )  
ENGINEERING DIVISION

**TYPICAL THERMAL POWER PROJECT**

**INSTRUMENT INSTALLATION DIAGRAM**  
**FLOW MEASUREMENT (USING ORIFICE PLATES)**  
**CONDENSATE & SERVICE WATER**

REV. NO.	SCALE	SIZE	DRG. NO.	REV. NO.
A	A3	N.T.S	0000-999-POI-A-027	A

PROJECT	APPROVED BY	DATE	APPD. DATE
		21/08/12	
TITLE	DESIGNED BY	CHECKED BY	ARCH.
DESCRIPTION	DESIGNED BY	CHECKED BY	ARCH.

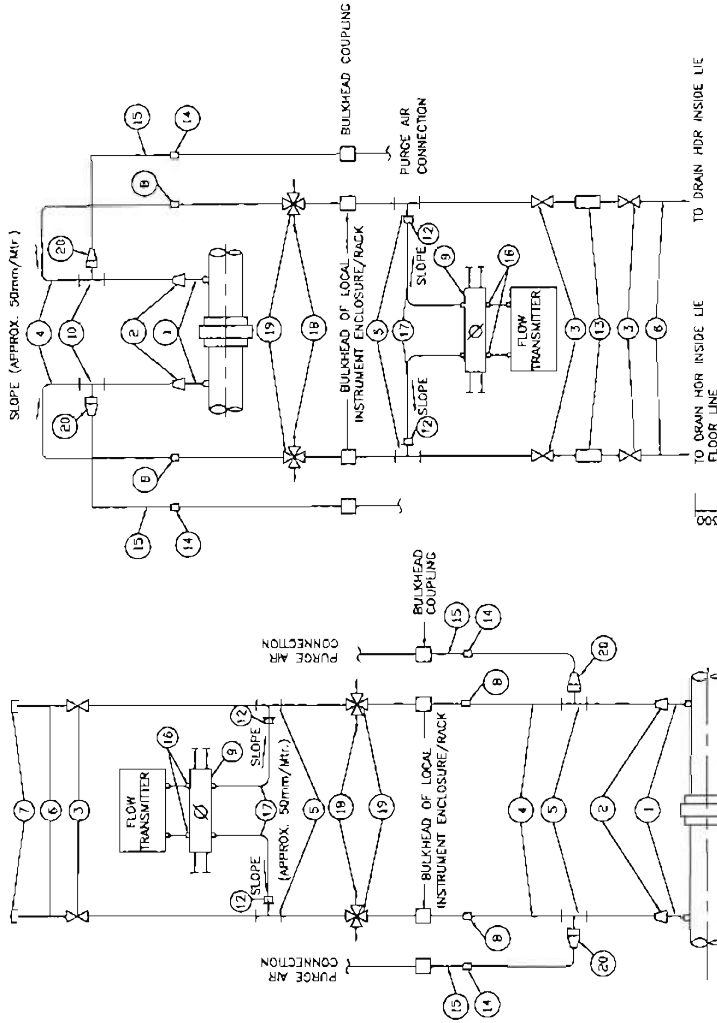
LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	42x4.05mm M.S. BLACK PIPE.
2.	M 4x2 TO 3/4" SW REDUCING INSERT.
3.	3/4" SW GLOBE VALVE.
4.	3/4" PIPE.
5.	3/4" SW EQUAL TEE.
6.	3/4" SCH. 80 SW 3/4" NPT (M) CS/AS NIPPLE
7.	3/4" NPT (F) CAP.
8.	3/4" PIPE UNION.
9.	5 WAY MANIFOLD FOR DETAIL REFER DRAWING NO. 0000-102-POI-A-028.
10.	3/4" SW EQUAL TEE.
11.	3/4" SW GATE VALVE.
12.	3/4" PIPE x 1/2" TUBE UNION
13.	DRAIN POT.
14.	1/2" G FITTING
15.	1/2" NB GI PIPE
16.	SUITABLE ADAPTER
17.	SS TUBE
18.	QUICK DISCONNECT FITTINGS.
19.	3/4" SW 4 WAY VALVE.
20.	3/4" x 1/2" REDUCER.

NOTES:-

- SAME NOTES AS UNDER DRG. NO. 0000-999-POI-A-023

FOR TENDER PURPOSE ONLY



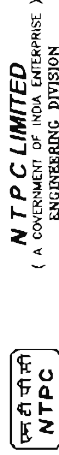
ELEVATION

TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT

ELEVATION

TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT

AIR/GAS FLOW MEASUREMENT USING HEAD TYPE PRIMARY ELEMENT



PROJECT TYPICAL THERMAL POWER PROJECT

TITLE INSTRUMENT INSTALLATION DIAGRAM (FLOW MEASUREMENT AIR/GAS)

REV. NO.	DRG. NO.	REV. NO.
A	0000-999-POI-A-028	B

SCALE	SIZE	DATE
N.T.S.	A3	21.08.17

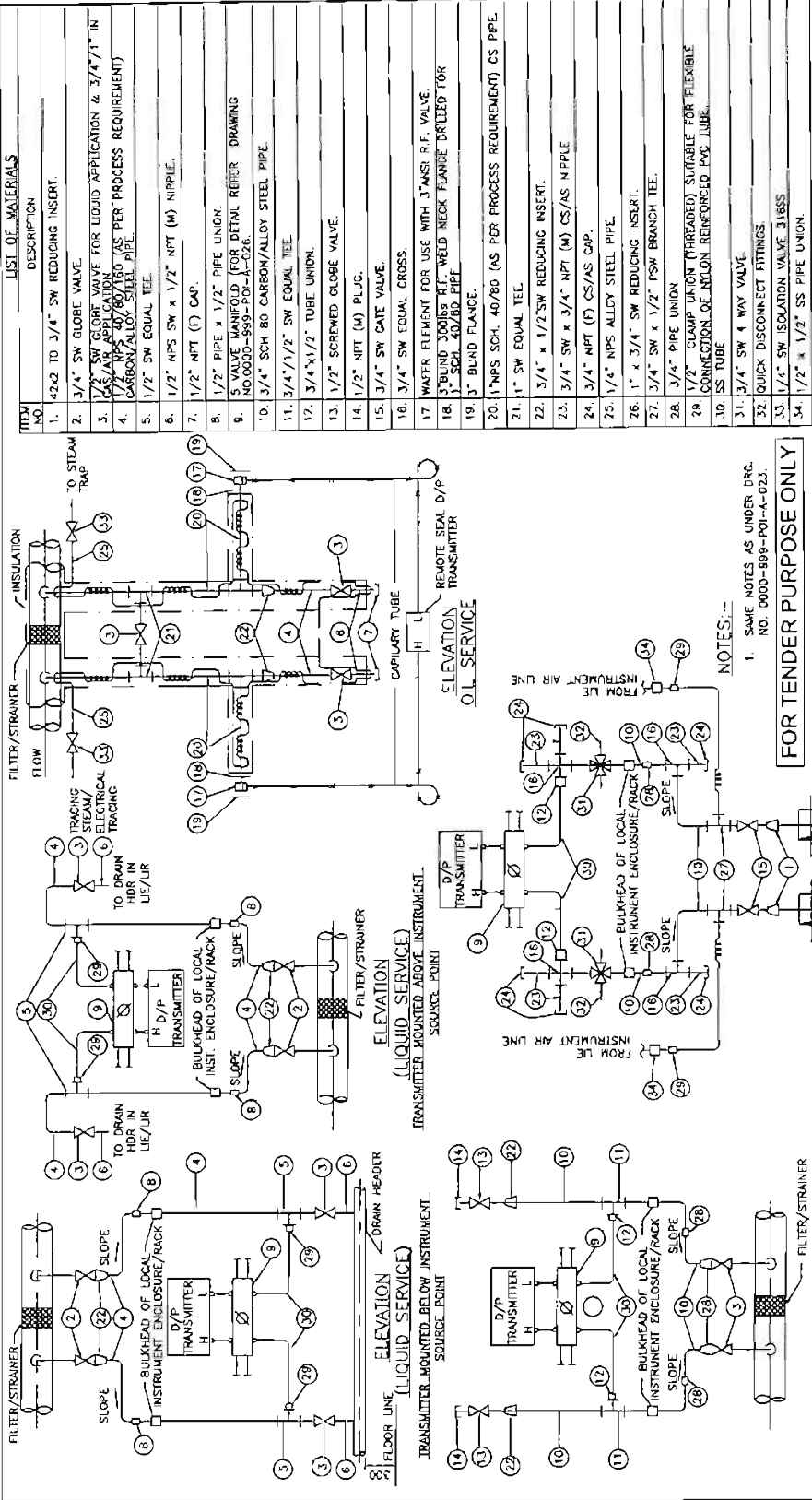
APPD	CHKD	ARCH.
T.G.	C	

DESIGN	CHKD.	APPD.
M	E	C

REV. NO.	DESCRIPTION
A	FIRST ISSUE

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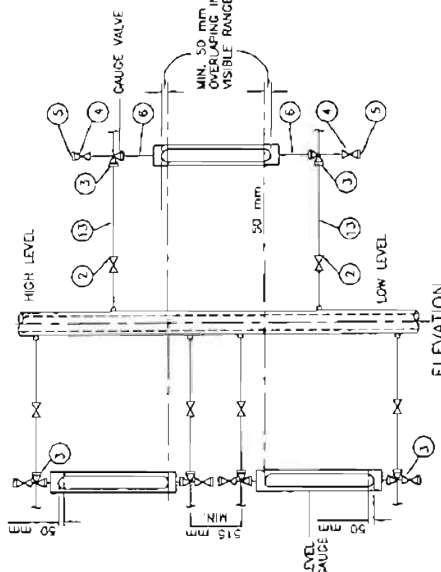
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<b>NTPC LIMITED</b> ( A GOVERNMENT OF INDIA ENTERPRISE ) ENGINEERING DIVISION	
<b>PROJECT</b> TYPICAL THERMAL POWER PROJECT	
<b>TITLE</b> INSTRUMENT INSTALLATION DIAGRAM	
<b>DIFF. PRESS. MEASUREMENT (LIQUID, OIL, AIR/GAS SERVICE)</b>	
REV. NO.	REV. NO.
A	A
SCALE	SCALE
A3	A3
DATE	DATE
21.08.12	21.08.12
APPD	APPD
CHKD	CHKD
DESIGN	DESIGN
CHKO	CHKO
M	M
E	E
C	C
CM	CM
ARCH.	ARCH.
CLEARED BY	
DESCRIPTION	
DIFFERENTIAL PRESSURE MEASUREMENT	
ELEVATION	
CLEAN GAS/AIR SERVICE	
TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT	
ELEVATION	
FUEL GAS SERVICE/DIRTY AIR SERVICE	
TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT	
ELEVATION	
OIL SERVICE	
TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT	

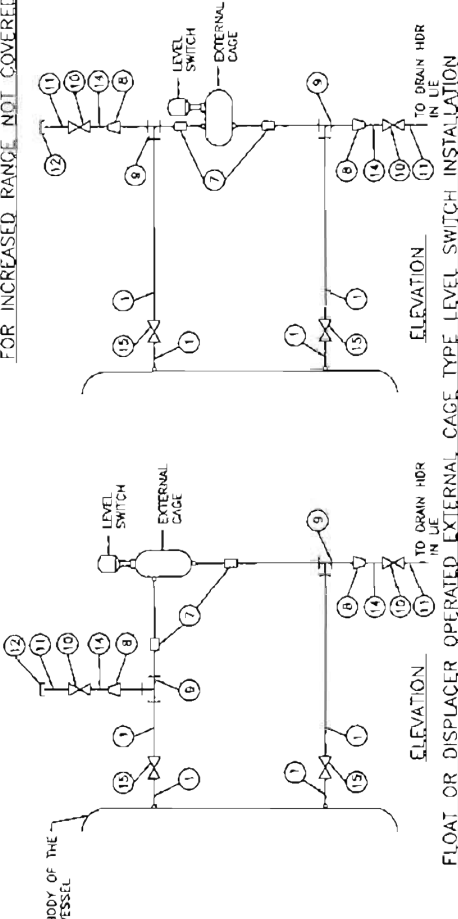
**LIST OF MATERIALS**

ITEM NO.	DESCRIPTION
1.	3/4" NPS SCH 40/80/160/SWT (AS PER PROCESS REQUIREMENT) CARBON / ALLOY STEEL PIPE.
2.	3/4" SW GLOBE VALVE.
3.	3/4" SW UNION.
4.	3/4" NPT GLOBE VALVE.
5.	3/4" NPT (M) CAP.
6.	3/4" NPT (F) UNION CONNECTION.
7.	1" SW EQUAL UNION.
8.	1" x 1/2" SW REDUCING INSERT.
9.	1" SW EQUAL TEI.
10.	1/2" SW GLOBE VALVE.
11.	1/2" NPS SW 1/2" NPT(M) CS/AS NIPPLE.
12.	1/2" NPT (F) CAP.
13.	3/4" x 1/2" NPS SCH 40/80 CS/AS PIPE.
14.	1/2" NPS SCH 80/160 CS/AS NIPPLE.
15.	1" SW GLOBE VALVE.



**LOCAL LEVEL INDICATION USING GAUGE GLASS**

**LOCAL LEVEL INDICATION USING MULTIPLE GAUGES**  
FOR INCREASED RANGE NOT COVERED IN A SINGLE UNIT



**FLOAT OR DISPLACER OPERATED EXTERNAL CAGE TYPE LEVEL SWITCH INSTALLATION**

**NOTES:-**

- FOR LEVEL GAUGE 3/4" AND FOR LEVEL SWITCH 1" PROCESS CONNECTION SHALL BE PROVIDED.
- NOTES UNDER DRG. NO. 0000-999-POI-A-023 (WHICHEVER ARE RELEVANT).

**FOR TENDER PURPOSE ONLY**



**NTPC LIMITED**  
(A GOVERNMENT OF INDIA ENTERPRISE)  
ENGINEERING DIVISION

PROJECT: **TYPICAL THERMAL POWER PROJECT**

TITLE: **INSTRUMENT INSTALLATION DIAGRAM (LEVEL GAUGE & SWITCHES)**

REV. NO.	DESCRIPTION	DESIGN	CHKD.	APPD.	DATE	SCALE	DRG. NO.	REV. NO.
A	FIRST ISSUE				21.06.12	A3	0000-999-POI-A-031	A

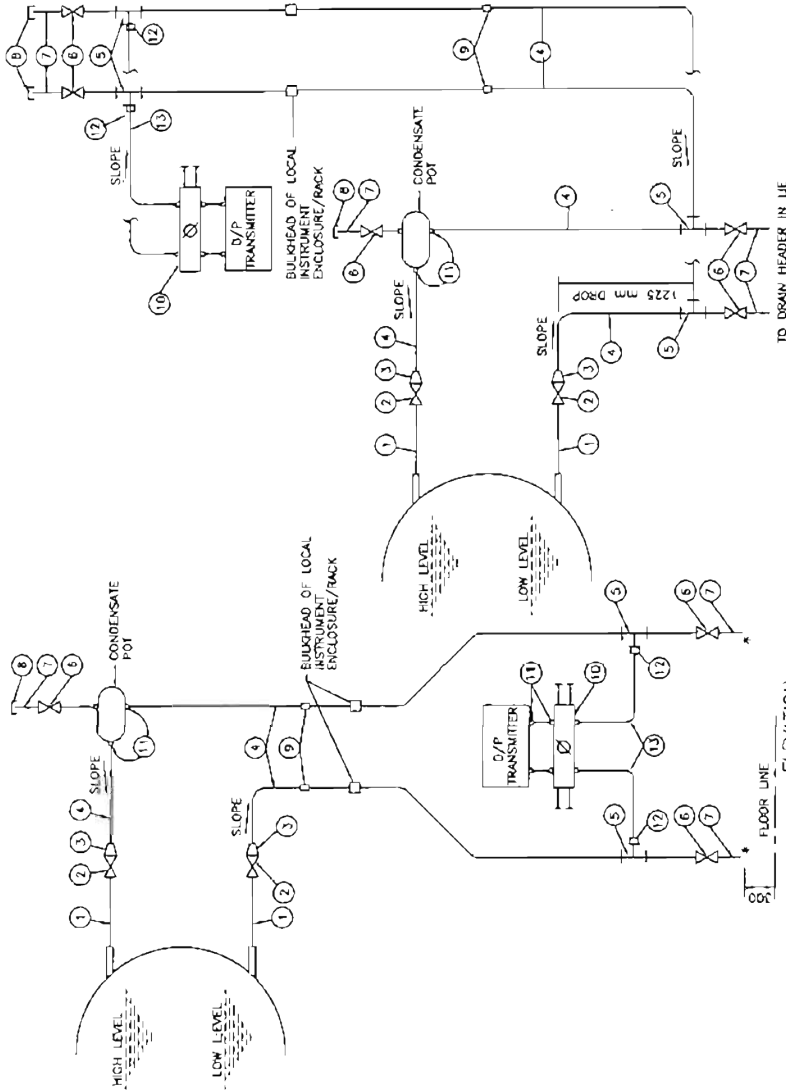
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**LIST OF MATERIALS**

ITEM NO.	DESCRIPTION
1.	1" NPS SCH.40/80/160/XXS/PPS (AS PER PROCESS REQUIREMENT) CARBON /ALLOY STEEL PIPE
2.	1" SW GLOBE VALVE
3.	3/4" x 1" TO 1/2" REDUCING INSERT
4.	1/2" NPS SCH.80/160/XXS/AS PER PROCESS REQ./XXS/AS PIPE
5.	1/2" SW EQUAL TEE
6.	1/2" SW GLOBE VALVE
7.	1/2" NPS SWK 1/2" NPT(M) CS/AS RIFFLE
8.	1/2" NPT (F) CAP
9.	1/2" PIPE UNION
10.	S-VALVE MANIFOLD (FOR DETAILS REF. DRG. NO.0000-999-POI-A-026)
11.	SUITABLE ADAPTER
12.	1/2" PIPE x 1/2" TUBE UNION
13.	S.S. TUBE

**NOTES:-**

1. SAME NOTES AS UNDER DRG. NO.0000-999-POI-A-023 (WHICHEVER ARE RELEVANT).
- \* TO DRAIN HEADER IN I/E/A/R.



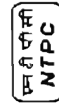
TRANSMITTER MOUNTED BELOW INSTRUMENT SOURCE POINT

ELEVATION

TRANSMITTER MOUNTED ABOVE INSTRUMENT SOURCE POINT

FOR TENDER PURPOSE ONLY

LEVEL MEASUREMENT OF CLEAR NON-VISCIOUS OR NON-CORROSIVE LIQUID IN CLOSED VESSEL WITH CONDENSABLE ATMOSPHERE USING D/P TRANSMITTER



**NTPC LIMITED**  
( A GOVERNMENT OF INDIA ENTERPRISE )  
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INSTRUMENT INSTALLATION DIAGRAM  
(LEVEL MEASUREMENT USING D/P TRANSMITTERS)

REV. NO.	SCALE	DRG. NO.	REV. NO.
A	A3	0000-999-POI-A-032	A
	N.I.S.		SH 1 OF 2

REV. NO.	DATE	APPR. DATE	APPR. DATE
A	11/08/12		

REV. NO.	CHKD.	CHKD.	CHKD.
A	M	E	C

REV. NO.	DATE	APPR. DATE	APPR. DATE
A	11/08/12		

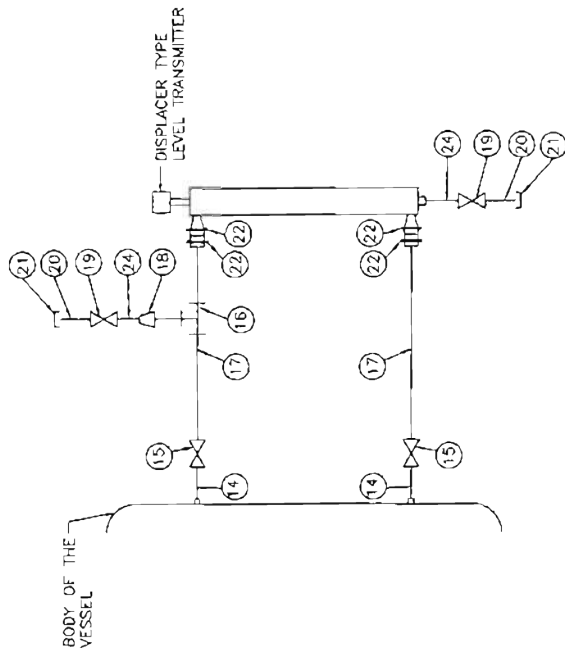
REV. NO.	DATE	APPR. DATE	APPR. DATE
A	11/08/12		

DESCRIPTION

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LIST OF MATERIALS

ITEM NO.	DESCRIPTION
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	
11.	
12.	
13.	
14.	2" NPS SCH. 40/80 (AS PER PROCESS REQUIREMENT) VESSEL NOZZLE.
15.	2" SW GLOBE VALVE.
16.	2" SW EQUAL TEI.
17.	2" NPS SCH. 40/80 CS/AS PIPE
18.	2" x 3/4" SW REDUCING INSERT.
19.	3/4" SW GLOBE VALVE
20.	3/4" NPS SW x 3/4" NPT (M) CS/AS NIPPLE.
21.	3/4" NPT (F) CAP.
22.	2" ANSI 300 LBS RAISED PHASE WELD NECK FLANGE.
23.	2" ANSI FLANGE OF LEVEL TRANSMITTER.
24.	3/4" NPS SCH. 40/80 PIPE.



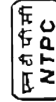
ELEVATION

DISPLACER TYPE LEVEL TRANSMITTER WITH SIDE CONNECTION

NOTES:-

- SAME NOTES AS UNDER DRG. NO.0000-999-POI-A-023 (WHICHEVER ARE RELEVANT).

**FOR TENDER PURPOSE ONLY**



**NTPC LIMITED**  
( A GOVERNMENT OF INDIA ENTERPRISE )  
ENGINEERING DIVISION

PROJECT TYPICAL THERMAL POWER PROJECT

TITLE INSTRUMENT INSTALLATION DIAGRAM  
(LEVEL MEASUREMENT USING DISPLACER TYPE TRANSMITTERS)

SCALE	DRG. NO.	REV. NO.
N.T.S.	0000-999-POI-A-032	A

SH 7 OF 2

REV. NO.	DESCRIPTION	DATE	BY	CHKD.	APPD.	DATE
A	FIRST ISSUE	21.08.12				

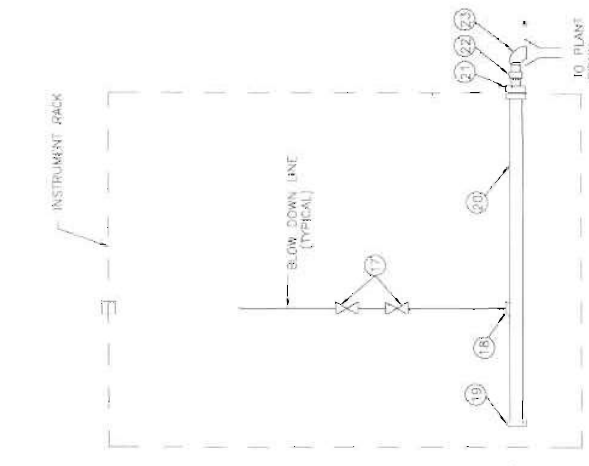
DESIGNED BY	CHKD.	APPD.	DATE

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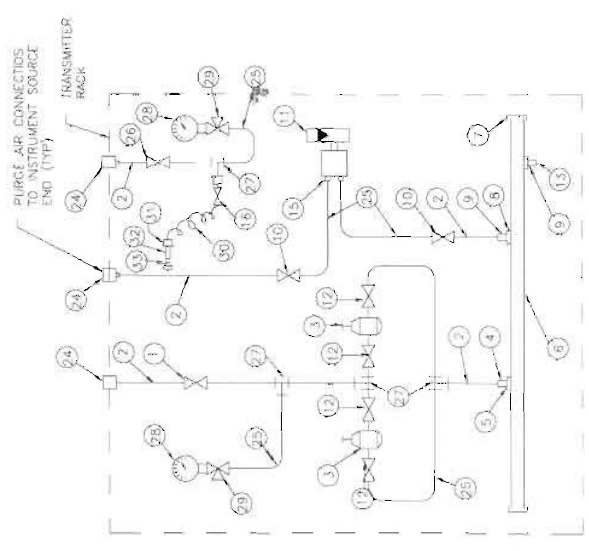
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**LIST OF MATERIALS**

ITEM NO.	DESCRIPTION
1	ISOLATION VALVE(gate/globe). SS.
2	1/2" O.D. SEAMLESS SS PIPE
3	1/2" NPT (F) AIR FILTER REGULATOR
4	1/2" NPT x 1/2" O.D. (M) CONNECTOR SS.
5	1/2" NPT (F) COUPLER SS.
6	1" NB INST. AIR HEADER SS.
7	1" PSB END CAP SS.
8	1/2" NPT (F) COUPLER SS.
9	1/2" NPT x 1/2" O.D. (M) CONNECTOR SS.
10	1/2" COMP. NEEDLE VALVE SS.
11	1/2" NPT (F) AIR PURGE SET.
12	1/2" NPT (M) x 1/2" COMP VALVE SS.
13	1/2" NPT PLUG SS.
14	
15	1/2" TUBE SS CONNECTION
16	1/2" TUBE COMP. EQUAL TEE UNION.
17	BRAN. VALVE 1/2" SW FOR WIR/SIM/COND & 3/4" FOR AIR/FLEU GAS.
18	1/2" SW HALF COUPLER
19	2" SW CAP SS.
20	2" NB ASTMA 105 GR. B SCH.90 BLOWDOWN HEADER
21	2" PSW x 1" NPT (F) COUPLING.
22	1" NPT x 1" BSP HEX SUPPLE.
23	1" BSP FLOW
24	BULKHEAD-SS 1/2" SW-1/2"NB THREADED, SUITABLE FOR SH PIPE CONNECTION
25	1/2" G.D. SEAMLESS TUBE SS.
26	1/2" SW PRESS GAUGE ISOLATION VALVE SS.
27	1/2" TUBE x 1/2" NPT (F) BRANCH TEE SS.
28	4" DIAL x 1/2" NPT PR. GAUGE.
29	1/2" SW x 1/2" NPT (F) PR. GAUGE VALVE SS.
30	1/2" I.D. NYLON FLEX HOSE BRAIDED WITH SS WIRE.
31	1/2" NPT (M) x 1/2" HOSE BARBER CONN. SS.
32	1/2" NPT (F) QUICK DISCONNECT SS.
33	1/2" NPT (M) QUICKDISCONNECT SS.



**TYPICAL BLOW DOWN HEADER CONNECTION INSIDE THE INSTRUMENT RACK/ENCLOSURE**

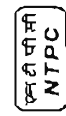


**TYPICAL PURGE AIR CONNECTION INSIDE THE INST. ENCLOSURE**  
(APPLICABLE FOR AIR & FLEU GAS SERVICE INSTRUMENTS REQUIRING PURGE AIR)

**NOTE:**

- \* 1. DRAIN SHALL BE CONNECTED BY THE BIDDER TO THE NEAREST PLANT DRAIN THROUGH OPEN FUNNEL USING 2" CS PIPE FROM FUNNEL TO PLANT DRAIN.
- \*\* 2. FOR AIR/FLEU GAS LIES FOR DRAINING THE IMPULSE LINE BETWEEN ITEM 17 DRAIN POT TO BE PROVIDED ALONGWITH DRAIN HEADER, 3/4" SW HALF COUPLER, ITEM 19,20,22,23 & FUNNEL ALONGWITH 1/2" PIPING TO PLANT DRAIN HEADER SHALL BE PROVIDED FOR SIM/WATER. ALL ITEMS EXCEPT DRAIN POT TO BE PROVIDED.
- 5. GI-PIPES SHALL BE PROVIDED FOR PURGE AIR CONNECTION OUTSIDE I.E./AIR.

**FOR TENDER PURPOSE ONLY**



**NTPC LIMITED**  
( A GOVERNMENT OF INDIA ENTERPRISE )  
ENGINEERING DIVISION

**PROJECT: TYPICAL THERMAL POWER PROJECT**

**TITLE: INSTRUMENT INSTALLATION DIAGRAM  
TYPICAL PURGE AIR CONNECTION & BLOWDOWN HEADER  
CONNECTION INSIDE INSTRUMENT RACK**

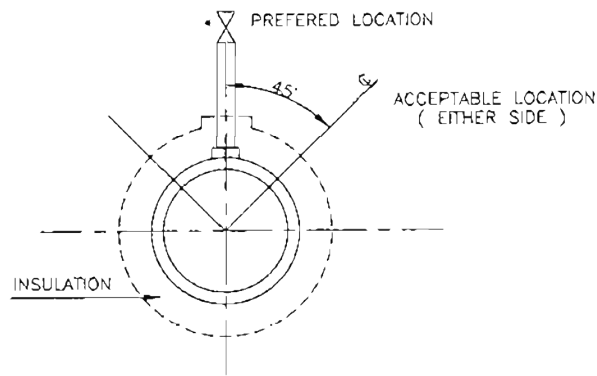
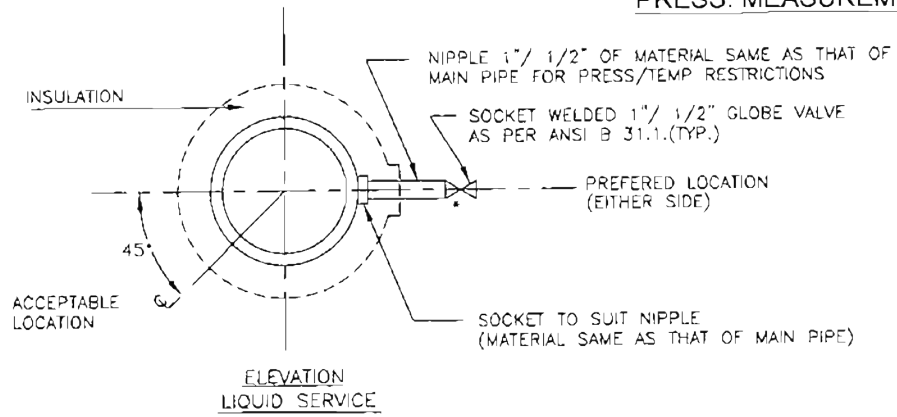
SCALE	DRG. NO.	REV. NO.
A3	0000-999-POI-A-034	3

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	Q&B	ARCH	APPD	DATE	CLEARED BY		
												P.S.C	(22.05.14)	
A	FIRST ISSUE													

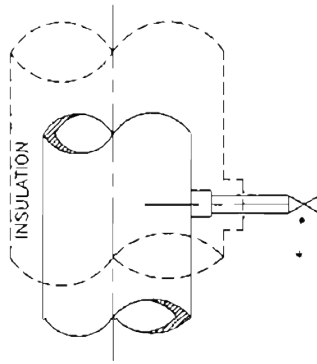
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**PRESS. MEASUREMENT**



**ELEVATION  
STEAM SERVICE  
PRESSURE CONNECTION ON HORIZONTAL PIPE**



\* USE DOUBLE ISOLATION VALVES FOR PRESSURE EQUAL TO OR EXCEEDING 40 Kg/Cm<sup>2</sup>.

**ELEVATION  
LIQUID OR STEAM SERVICE  
PRESSURE CONNECTIONS ON VERTICAL PIPES**

**FOR TENDER PURPOSE ONLY**



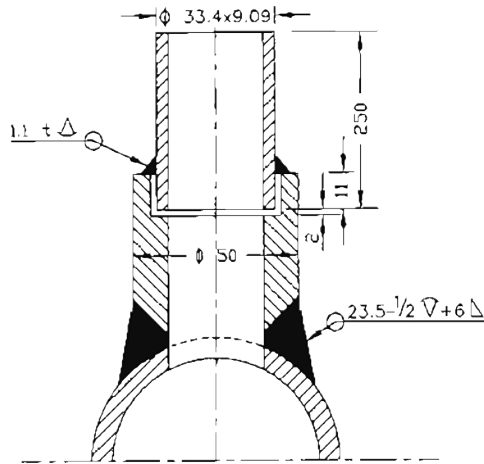
**NTPC LIMITED**  
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ENGINEERING DIVISION

PROJECT										TYPICAL THERMAL POWER PROJECT							
TITLE										INSTRUMENT SOURCE CONNECTION DETAILS							
A	FIRST ISSUE	DESIGN	DESIGN	CHG	M	E	C	CHK	APPR.	APPR.	DATE	SIZE	SCALE	DRG. NO.	0000-999-POI-A-035	REV. NO.	A
REV. NO.	DESCRIPTION	DESIGN	DESIGN	CHG	M	E	C	CHK	APPR.	APPR.	DATE	A4	N.T.S.	0000-999-POI-A-035	SP-1 OF 14		

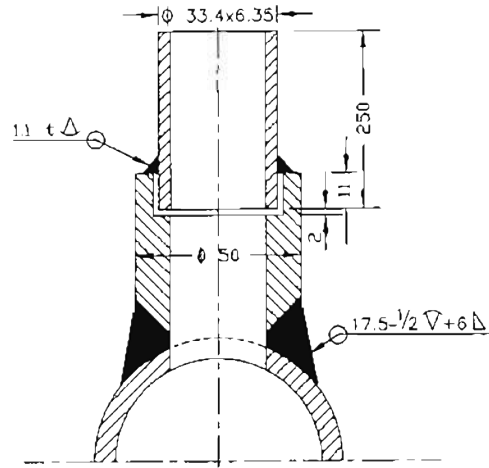
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**PRESSURE MEASUREMENT**

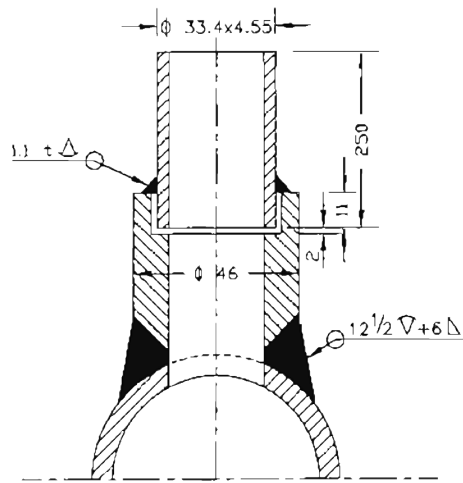
(SYSTEM PR. >40Kg/Sq Cm CL 9000)



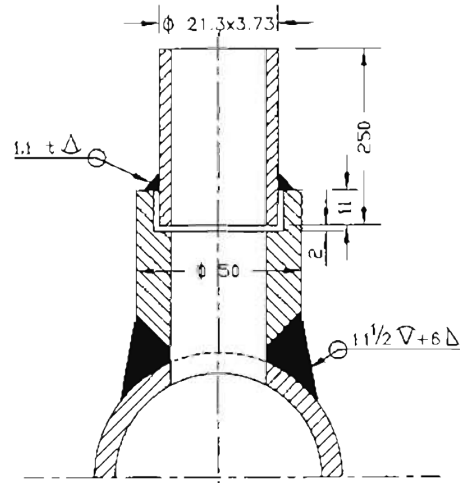
(SYSTEM PR. >40Kg/Sq Cm CL 6000)



(SYSTEM PR. <40Kg/Sq cm Nb 25 CL 3000)



(SYSTEM PR. <40Kg/Sq cm Nb 15 CL 3000)



**NOTES:-**

1. MATERIAL OF THE BOSS AND NIPPLE SHALL BE THE SAME AS THE PIPE INTO WHICH IT IS WELDED AND CONFIRM TO ANSI B 16.11.
2. THE LENGTH OF THE NIPPLE SHOULD BE 250mm.
3. THE OTHER END OF THE NIPPLE SHALL BE SOCKET WELDED WITH 1" GLOBE VALVE OF MATERIAL AS PER ANSI B 16.1.
4. TWO ISOLATED VALVES ARE TO BE USED FOR PRESSURE = >40 Kg/Cm2.
5. EDGE HOLE MUST BE CLEAN AND SQUARE OR ROUNDED SLIGHTLY (1/64" RADIUS) FREE FROM BURRS, WIRE EDGES OR OTHER IRREGULARITIES.
6. ORIENTATION OF TAP WILL BE VARY WITH TYPE OF PROCESS FLUID AND NATURE OF RUN OF THE PIPE.
7. ACTIVITIES TO BE COMPLETED AT THE SHOP, WELD THE COUPLING (OR BOSS) ON THE PIPE AND DRILL PRESSURE CONNECTION HOLE (SAME AS I D OF NIPPLE) IN THE PIPE IN ALIGNMENT WITH HOLE IN THE COUPLING.
8. ALL DIMENSIONS ARE IN mm UNLESS OTHERWISE STATED.

**FOR TENDER PURPOSE ONLY**

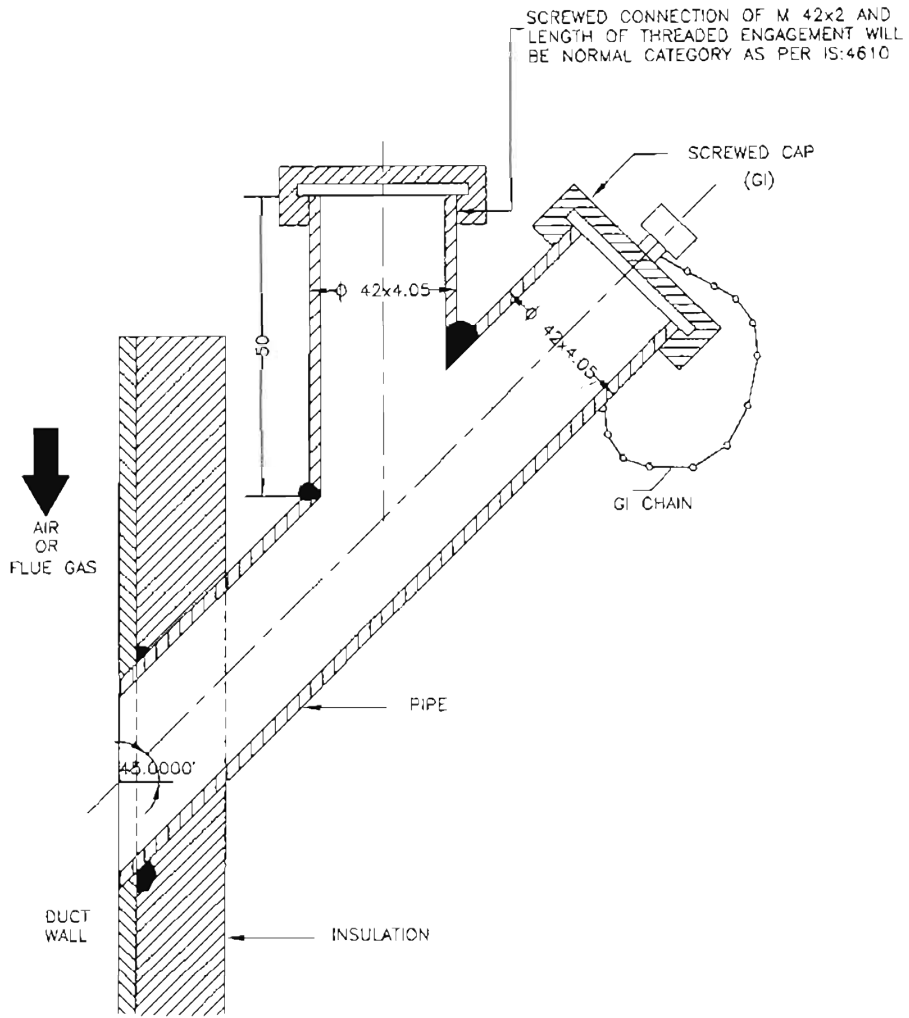


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ENGINEERING DIVISION

PROJECT										TYPICAL THERMAL POWER PROJECT							
TITLE										INSTRUMENT SOURCE CONNECTION DETAILS							
REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	W	E	C	DLT	ARCH.	APPRO.	DATE	SIZE	SCALE	DRG. NO.	0000-999-POI-A-035	REV. NO.	A
Cleared by										SP-2 OF 14							

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## PRESS. MEASUREMENT



**NOTES:-**

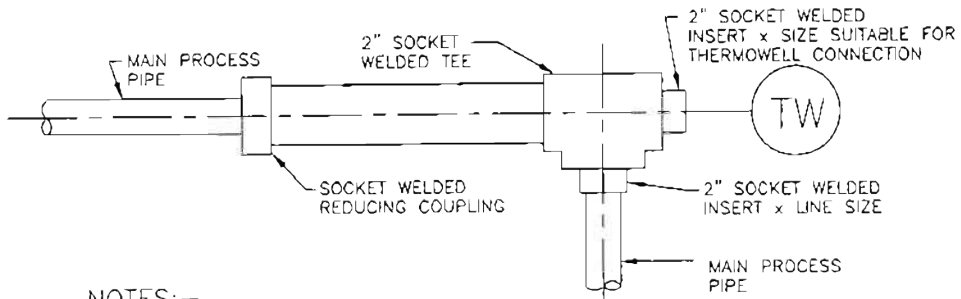
1. THIS TYPE OF PRESSURE CONNECTION SHALL BE PROVIDED FOR PRESSURE MEASUREMENTS IN AIR AND FLUE GAS DUCT/FURNACE.
2. DIMENSIONS ARE INDICATIVE ONLY.

FOR TENDER PURPOSE ONLY

<span style="margin-left: 20px;"><b>NTPC LIMITED</b> (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION</span>															
PROJECT: TYPICAL THERMAL POWER PROJECT															
TITLE: INSTRUMENT SOURCE CONNECTION DETAILS															
REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	CAL.	ARCH.	APPD.	DATE	SIZE	SCALE	DRG. NO.	REV. NO.
A	FIRST ISSUE											A4	N.T.S.	0000-999-POI-A-035	A
CLEARED BY												50-3 OF 14			

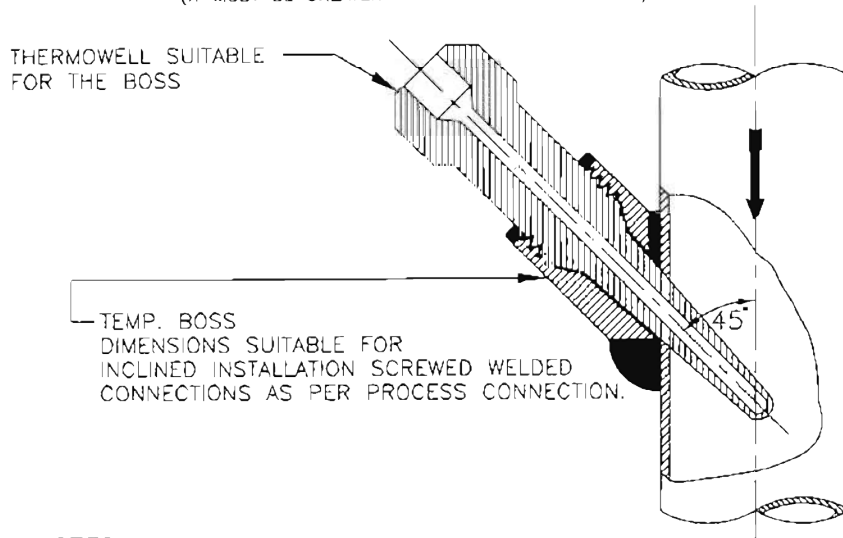
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**TEMP. MEASUREMENT**



**NOTES:-**

1. THIS TYPE OF THERMOWELL INSTALLATION IS SUITABLE FOR THE PROCESS PIPE OF 2" NPS AND SMALLER.
2. FOR STEAM SERVICE THIS TYPE OF THERMOWELL INSTALLATION 90° BEND MAY BE USED ONLY IN VERTICAL PLANE.
3. THE LENGTH OF THE LARGER PIPE SECTION SHALL BE MINIMUM 150mm (IT MUST BE GREATER THAN THERMOWELL LENGTH).



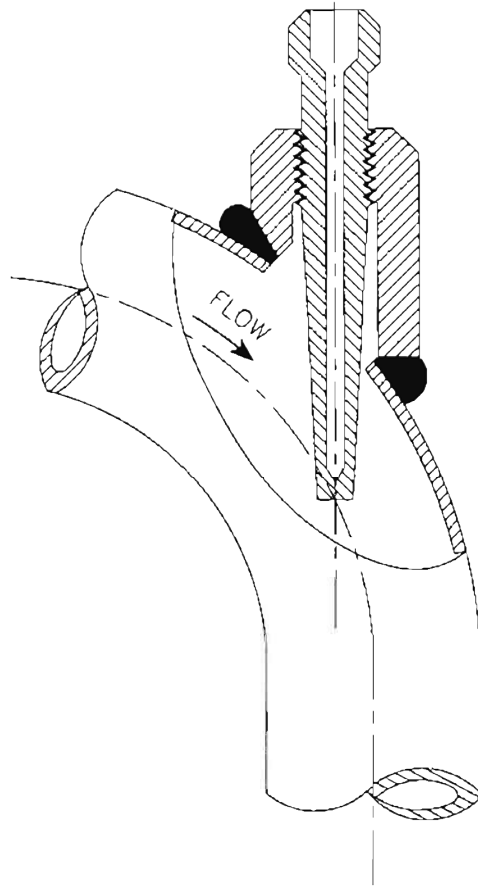
**NOTES:-**

1. INCLINED INSTALLATION OF THERMOWELL SHALL BE APPLICABLE FOR 4" AND SMALLER LINE SIZE BUT LIMITED TO MIN. 3" LINE SIZE.
2. FOR 2" AND SMALLER LINE SIZE NECESSARY EXPANDER OF MIN. 3" SIZE OF MAIN PIPING SPECIFICATION SHALL BE USED.
3. THIS TYPE OF INSTALLATION IS APPLICABLE FOR HORIZONTAL AND VERTICAL PIPE SECTION.
4. FOR STEAM SERVICES EXPANDER SECTION MAY BE USED ONLY IN VERTICAL RUN.
5. THE EXPANDER SECTION SHALL BE OF ADEQUATE LENGTH (ATLEAST 3-4 TIMES DIA OF THE MAIN PROCESS PIPE AT BOTH SIDE OF THE INSTALLED THERMOWELL).

**FOR TENDER PURPOSE ONLY**

<b>NTPC LIMITED</b> <small>(A GOVERNMENT OF INDIA ENTERPRISE)</small> ENGINEERING DIVISION													
<b>PROJECT</b> TYPICAL THERMAL POWER PROJECT (SG PACKAGE)													
<b>TITLE</b> INSTRUMENT SOURCE CONNECTION DETAILS													
A	FIRST ISSUE	DRAWN	DESIGN	CHECKED	M	E	C	DATE	APPROVED	DATE			
REV. NO.	DESCRIPTION	CLEARED BY								SIZE	SCALE	DRG. NO.	REV. NO.
										A4	N.T.S.	0000-999/102-POI-A-035	A
										<small>SH-4 OF 14</small>			

**TEMP. MEASUREMENT**



**NOTES:-**

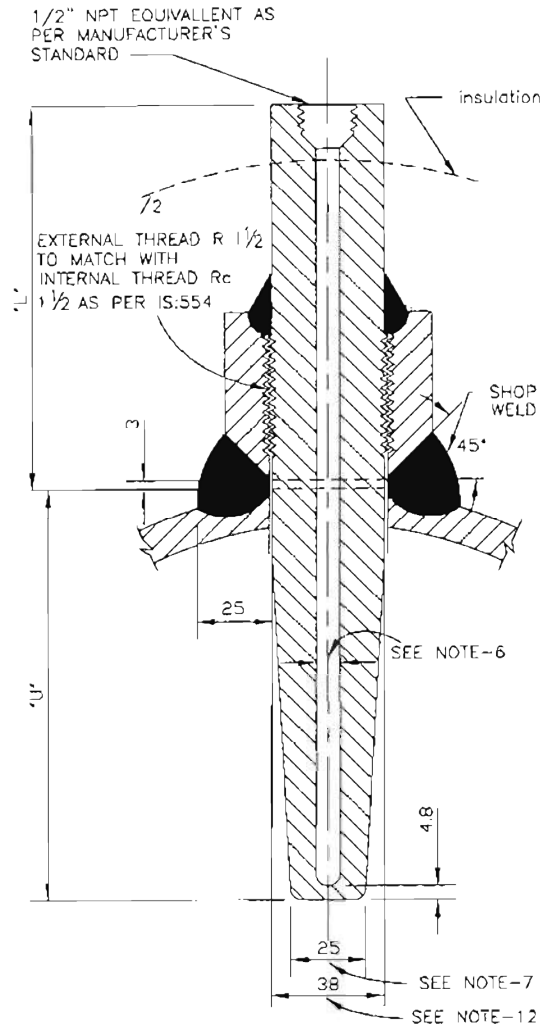
1. FLOW INSTALLATION OF THERMOWELL SHALL BE APPLICABLE FOR 4" AND SMALLER LINE SIZE BUT LIMITED TO MINIMUM 3" LINE SIZE.
2. FOR 2" AND SMALLER LINE SIZE NECESSARY EXPANDER OF ELBOW FORM (AS SHOWN) OF MINIMUM 3" SIZE SHALL BE USED.
3. ELBOW EXPANDER SECTION IN HORIZONTAL PLANE MAY BE USED FOR LIQUID SERVICES. ONLY STEAM SERVICES EXPANDER SECTION MAY BE USED IN VERTICAL PLAN.

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					PROJECT					TYPICAL THERMAL POWER PROJECT					
					TITLE					INSTRUMENT SOURCE CONNECTION DETAILS					
REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHECKED	DATE	W	E	C	T.G.	APPROVED	DATE	SIZE	SCALE	DRG. NO.	REV. NO.
A	FIRST ISSUE											A4	N.T.S.	0000-999-POI-A-035	A
CLEARED BY															

TEMP. MEASUREMENT



NOTES:-

1. THIS TYPE OF TEMPERATURE BOSS SHALL BE USED FOR THE PROCESS PRESS EQUAL/ABOVE 40 Kg/Cm2(g).
2. THE MATERIAL OF THE BOSS SHOULD BE SIMILAR TO THAT OF PIPING MATERIAL OF SPECIFICATION.
3. ALL WELD TO BE TESTED IN ACCORDANCE WITH APPLICABLE CODES BY MANUFACTURER.
4. MATERIAL OF THE THERMOWELL SHALL BE OF 316SS.
5. THERMOWELL SHALL BE DRILLED BARSTOCK TYPE.
6. INTERNAL BORE OF THE THERMOWELL SHOULD BE SELECTED BASED ON THE NORMAL SIZE OF THE SENSING ELEMENT AS PER ASME,PTC-19.3.
7. THE BOTTOM DIAMETER OF THE THERMOWELL TYPICALLY SHOWN HERE SHALL BE SUBJECT TO VARIATION BASED ON THE INTERNAL BORE OF THERMOWELL AND THICKNESS OF THERMOWELL MATERIAL TO WITHSTAND THE PROCESS PRESS AND TEMP.,AS PER ASME,PTC-19.3.
8. THE TYPE OF TAPERED THERMOWELL SHALL BE USED FOR LIQUID VELOCITIES UP TO 92M.P.S.(300F.T.P.S.).
9. THERMOWELL WITH THE INSULATION LAG EXTENSIONS SHALL BE USED WHEREVER APPLICABLE.
10. ACTIVITIES TO BE COMPLETED AT THE SHOP. WELD THE BOSS ON THE PIPE AND DRILL THE HOLE IN THE PIPE IN ALIGNMENT WITH HOLE IN THE BOSS. PROVIDE INTERNAL THREAD AS PER IS:554 TO MATCH WITH THE THERMOWELL EXTERNAL THREAD.
11. ALL DIMENSIONS ARE IN MM UNLESS OTHERWISE STATED.
12. WILL BE SUITABLE TO MATCH THE STUB DIMENSIONS AS PER RC 1 1/2
13. THE "U" & "L" DIMENSIONS SHALL BE SELECTED BASED ON PARTICULAR APPLICATION AND THE SAME SHALL BE SUBJECT TO OWNER'S APPROVAL DURING DETAILED ENGINEERING.
14. ALL DIMENSIONS ARE INDICATIVE ONLY.

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ENGINEERING DIVISION

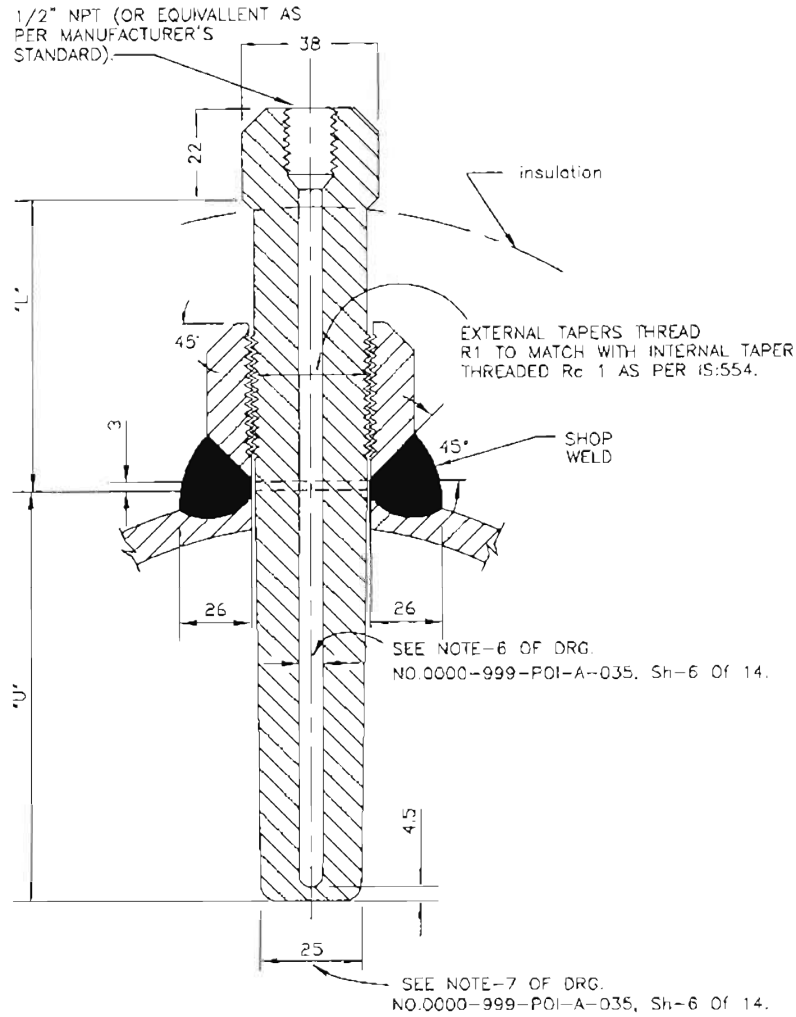
PROJECT TYPICAL THERMAL POWER PROJECT

TITLE INSTRUMENT SOURCE CONNECTION DETAILS

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	W	E	C	CHK	APPR.	DATE	SIZE	SCALE	DRG. NO.	REV. NO.
A	FIRST ISSUE										A-4	N.T.S.	0000-999-POI-A-035	A
CLEARED BY											SH-8 OF 14			

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**TEMP. MEASUREMENT**



**NOTES:—**

1. THIS TYPE OF TEMPERATURE BOSS IS APPLICABLE FOR THE PROCESS PRESSURE/TEMPERATURE BELOW 40 Kg/Cm<sup>2</sup>(g)/400°C
2. FOR PRESSURE TIGHT JOINTS THE BOSS SHOULD HAVE INTERNAL TAPERED PIPE THREAD Rc 1 AS PER IS:554. THE LENGTH OF THREAD ENGAGEMENT SHOULD BE AS PER ABOVE STANDARD.
3. PIPES HAVING PROBABILITY OF PROLONGED VIBRATION SEAL WELDING MAY BE DONE ALL AROUND AFTER TIGHTENING THERMOWELL WITHIN THE BOSS.
4. SEE NOTES-2 TO 14 OF DRG. NO. 0000-999-POI-A-035, Sh-6 Of 14.

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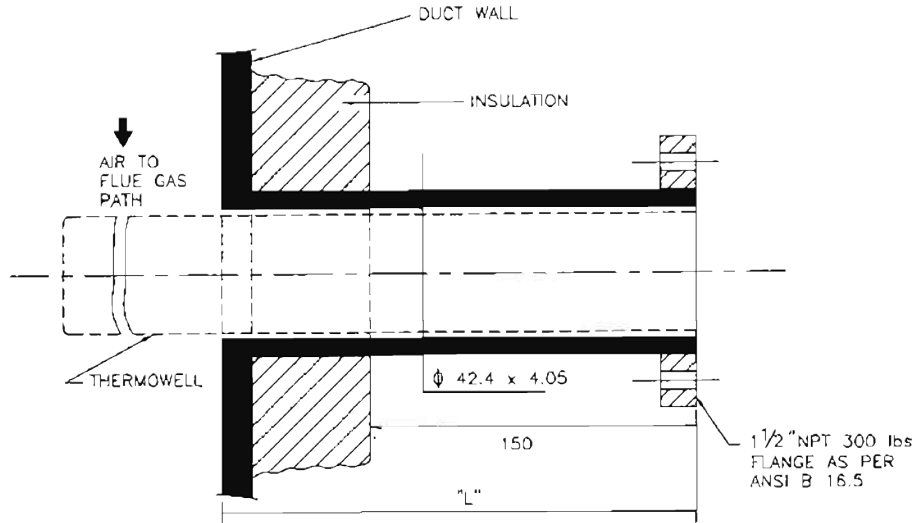
PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD	W	E	C	DATE	SIZE	SCALE	DRG. NO.	REV. NO.
A	FIRST ISSUE								A4	N.T.S.	0000-999-POI-A-035	A

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**TEMP. MEASUREMENT**



**NOTES:-**

1. THIS TYPE OF TEMPERATURE CONNECTIONS SHALL BE PROVIDED FOR TEMPERATURE MEASUREMENT IN AIR AND FLUE GAS DUCT.
2. MATERIAL OF THERMOWELL SHALL BE OF 316SS.
3. EXTERNAL CONNECTION SHALL BE OF SLIP ON FLANGED TYPE AND THERMOWELL DESIGN SHALL BE AS PER ASME.PTC-19.3 (REFER NOTES 9&10 OF DRG.NO. 0000-999-POI-A-035, Sh-6 Of 14).
4. BIDDER TO SUPPLY AND INSTALL THE COUNTER FLANGED AND THERMOWELL (ALONG WITH TEMP. ELEMENT).
5. ALL DIMENSIONS ARE INDICATIVE ONLY.

**FOR TENDER PURPOSE ONLY**

**NTPC LIMITED**

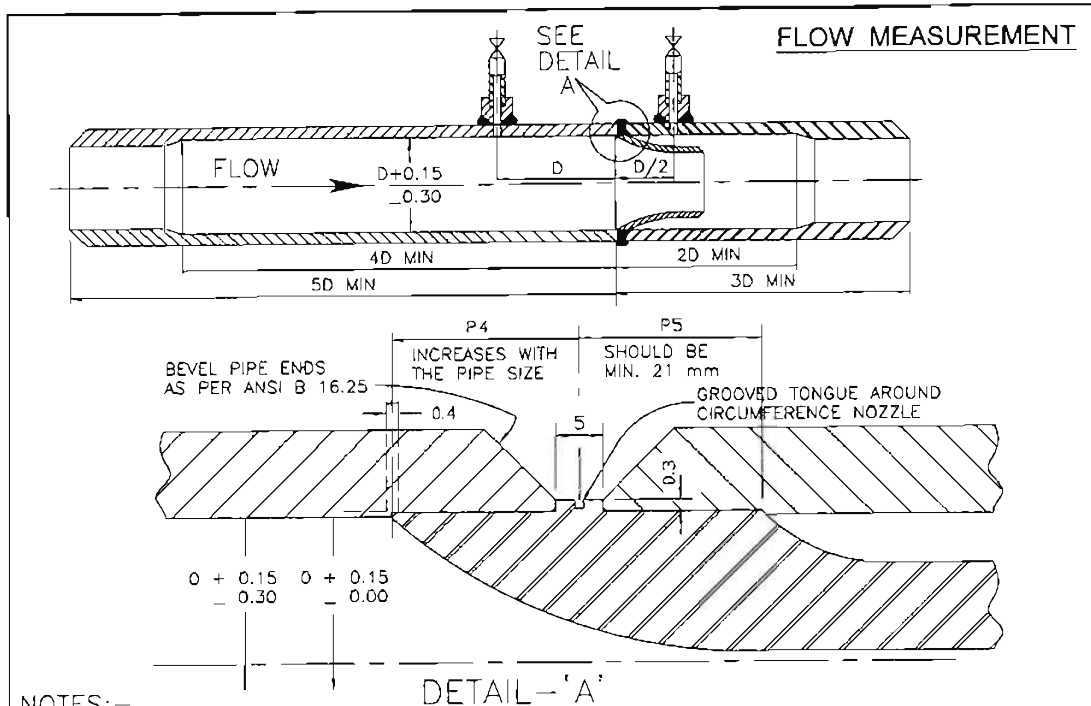
(A GOVERNMENT OF INDIA ENTERPRISE)  
ENGINEERING DIVISION

PROJECT: TYPICAL THERMAL POWER PROJECT

TITLE: INSTRUMENT SOURCE CONNECTION DETAILS

REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	M	E	C	CHKD.	ARCH.	APPL.	DATE	SIZE	SCALE	DRG. NO.	REV. NO.
A	FIRST ISSUE											A4	N.T.S.	0000-999-POI-A-035	A

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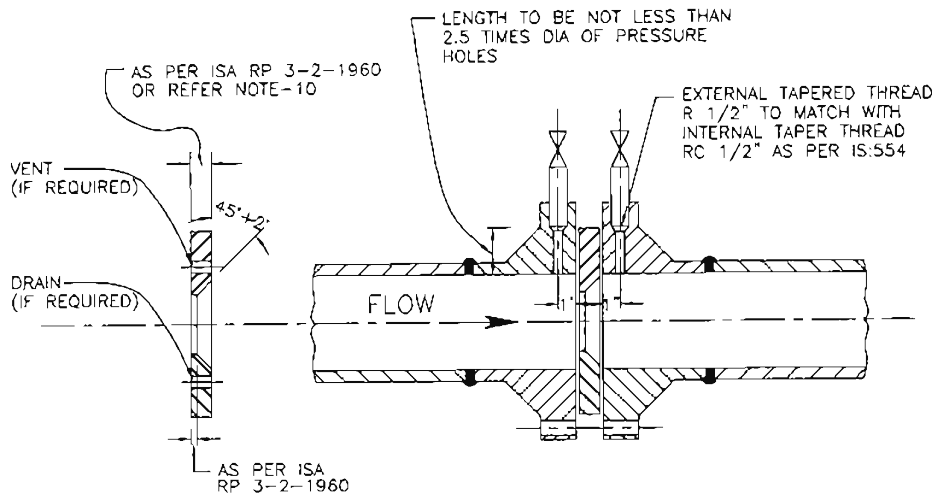
1. COMPLETE FLOW NOZZLE BRANCH ASSEMBLY ALONG WITH NIPPLES AND SOURCE ISOLATION VALVES SHALL BE SUPPLIED BY THE BIDDER. THE BIDDER ALSO TO INSTALL FLOW NOZZLE WITHIN THE MACHINED BRANCH. PRESSURE STUBS ON THE BRANCH PIPE (FOR ORIENTATION OF PRESSURE TAP REF. NOTE-3) ALONG WITH NIPPLE AND SOURCE ISOLATION VALVES.
2. THE MACHINING OF BRANCH PIPE SHOULD BE DONE AFTER PRESSURE CONNECTIONS HAVE BEEN WELDED TO PIPE AND ALSO EXTEND FOR ATLEAST 4D IN THE INLET SECTION, 2D IN THE OUTLET SECTION, MEASURED FROM THE INLET FACE OF FLOW NOZZLE. TOTAL BRANCH PIPE ASSEMBLY SHOULD BE ATLEAST A LENGTH OF 8D/5D IN THE INLET SECTION AND 3D IN THE OUTLET SECTION, MEASURED FROM THE INLET FACE OF THE FLOW NOZZLE AS SHOWN ABOVE.
3. ON HORIZONTAL PIPE RUN PRESSURE CONNECTIONS ARE TO BE LOCATED ON SIDES OF THE PIPE FOR LIQUID AND STEAM SERVICE AND ON THE TOP FOR DRY GAS SERVICE FOR PROCESS LIQUIDS. INSTALLATION OF PRESS. TAPS MAY BE ALLOWED WITHIN AN ANGLE OF 45° ELBOW HORIZONTAL FOR SPECIAL CASES BUT NO BOTTOM CONNECTIONS ARE ALLOWED.
4. THE LOCATION OF PRESSURE TAPS MUST BE WITHIN 1.5 mm (1/16") OF DISTANCE SPECIFIED AND NUMBER OF PAIRS OF PRESSURE TAPS TO BE PROVIDED WILL BE AS PER FLOW MEASUREMENT DATA SHEET.
5. PRESSURE TAPS SHOULD BE DRILLED RADIALLY WITH RESPECT TO PIPE AND THIS DRILLING SHOULD BE DONE AFTER ANY COUPLING FOR ATTACHING THE PRESSURE TUBING HAS BEEN WELDED TO THE PIPE. THE HOLE WHERE IT BREAKS THROUGH THE INNER SURFACE OF THE PIPE MUST BE FREE OF BURRS OR WIRE EDGE AND CORNER OF EDGE HOLE LEFT ROUNDED VERY SLIGHTLY (1/64" RADIOUS).
6. RECOMMENDED MAXIMUM DIAMETERS OF PRESSURE TAP HOLES IN THE BRANCH PIPES WILL BE AS PER EN ISO 5167:2003. THE DIAMETER FOR HOLE SHOULD REMAIN SAME FOR DISTANCE NOT LESS THAN 2.5 TIME OF DIA FROM THE INNER SURFACE OF THE PIPE.
7. FLOW NOZZLE SHALL BE CENTRED IN THE PIPE WITHIN 0.8 mm (1/32") OF THE PIPE AXIS. INSIDE DIAMETER MEASURED AT FOUR POINTS AT ANY CROSS SECTION SHALL NOT DIFFER BY MORE THAN 1%.
8. BRANCH PIPE SHALL BE AS PER MAIN PIPING MATERIAL SPECIFICATION. INTERNAL SURFACE OF BORED SECTIONS MUST BE SMOOTH AND STRAIGHT, FREE FROM SCALES, PITS, BURRS OR ANY IRREGULARITIES.
9. FLOW NOZZLE MATERIAL SHALL BE 316 SS AND THE DESIGN AS PER ASME.
10. MAXIMUM UPSTREAM AND DOWN STREAM STRAIGHT LENGTH REQUIRED FROM INLET FACE OF FLOW NOZZLE SHALL BE AS PER EN ISO 5167:2003.

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<b>NTPC LIMITED</b> (A GOVERNMENT OF INDIA ENTERPRISE) ENGINEERING DIVISION									
PROJECT: TYPICAL THERMAL POWER PROJECT									
TITLE: INSTRUMENT SOURCE CONNECTION DETAILS									
REV. NO.	DESCRIPTION	DRAWN	DESIGN	CHKD.	W	E	C	T.G.	DATE
A	FIRST ISSUE								
Cleared by: _____									
SIZE	SCALE	DRG. NO.			REV. NO.				
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### FLOW MEASUREMENT



**NOTES:-**

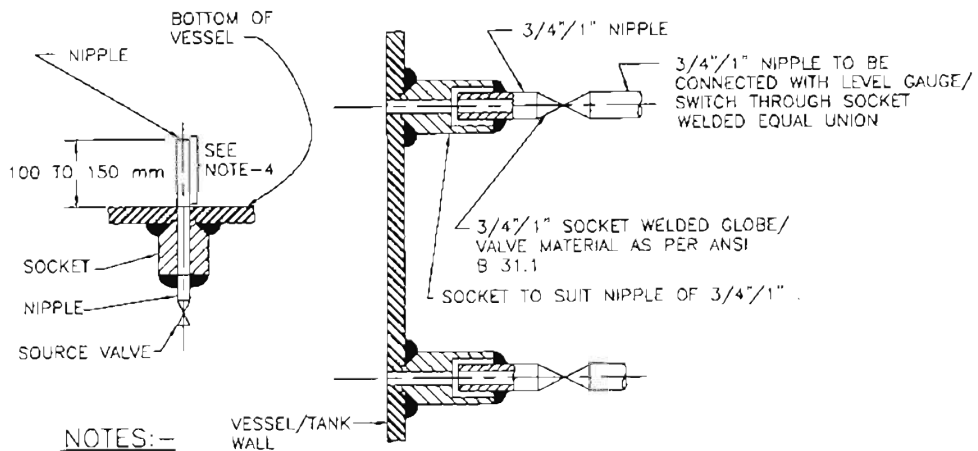
1. ORIFICE PLATE MOUNTED BETWEEN FLANGES WITH FLANGE TAPPING (AS SHOWN ABOVE) SHOULD BE LIMITED TO PIPE SIZES OF 2" OR LARGER.
2. ORIFICE PLATE SHALL BE MOUNTED BETWEEN PIPING FLANGES WITH THE SHARP EDGE FACING UPSTREAM SUCH THAT CENTRE OF THE CONCENTRIC ORIFICE SHOULD BE WITHIN 0.79 mm (1/32") OF THE AXIS OF THE PIPE.
3. TWO GASKETS SHALL BE INSERTED BETWEEN THE PLATE AND THE FLANGES AND INSIDE DIAMETER OF THE GASKETS SHOULD BE ATLEAST 1.5 mm (1/16") GREATER THAN THE INSIDE DIAMETER OF THE PIPE SO THAT THEY DO NOT PROTRUDE INTO THE PIPE.
4. PIPING FLANGES SHALL BE ANSI WELD NECK, RAISED FACE TYPE. THE FLANGE IS TO BE ALIGNED WITH THE FACE PERPENDICULAR TO THE FLOW AXIS.
5. BIDDER TO SUPPLY ORIFICE PLATE SPECIAL TYPE (HAVING PRESS. CONNECTIONS) OF FLANGES ALONG WITH GASKETS, NIPPLES AND SOURCE VALVES.
6. ON HORIZONTAL PIPE RUN PRESSURE CONNECTIONS ARE TO BE TAKEN FROM SIDES FOR LIQUID AND STEAM SERVICE AND FROM TOP FOR DRY GAS SERVICE. FOR PROCESS LIQUIDS INSTALLATION OF PRESSURE TAPS MAY BE ALLOWED WITHIN AN ANGLE OF 45° ELBOW THE HORIZONTAL IN SPECIAL CASES BUT NO BOTTOM CONNECTIONS ARE ALLOWED.
7. THE LOCATION OF PRESSURE TAPS MUST BE WITHIN 1.5 mm (1/16") OF THE DISTANCE SPECIFIED.
8. MAXIMUM DIAMETER OF PRESS. CONNECTION HOLES SHALL BE AS PER RECOMMENDATIONS OF ASME PTC 19.5. THE DIAMETER OF THE HOLE SHOULD REMAIN THE SAME FOR A DISTANCE NOT LESS THAN 2.5 TIMES OF THE DIAMETER BEFORE EXPANDING INTO THE PRESSURE PIPE.
9. THERE MUST BE NO BURRS WIRE EDGES OR OTHER IRREGULARITIES ALONG THE EDGE OF THE HOLE AND IT MUST BE SQUARE AND ROUNDED SLIGHTLY (1/64" RADIUS).
10. ORIFICE PLATE SHOULD BE FLAT WITHIN 0.02 mm (0.001") AND THE SURFACE ROUGHNESS SHOULD NOT EXCEED 20 MICRO INCH. THE THICKNESS OF THE ORIFICE PLATE SHOULD BE AS PER EN ISO 5167:2003.
11. FOR HORIZONTAL PIPE RUN DRAIN HOLES IN ORIFICE PLATES ARE AT THE BOTTOM (APPROX. TANGENT TO INSIDE DIA OF PIPE) FOR STEAM OR GAS SERVICE. VENT HOLES SHOULD BE LOCATED ON UPPER SIDE FOR INCOMPRESSIBLE FLUID.
12. ORIFICE PLATE SHOULD BE OF 316 SS (ASTM A167-54 GRADE-II).
13. RECOMMENDED MINIMUM LENGTHS OF STRAIGHT PIPE PRECEDING AND FOLLOWING ORIFICES SHALL BE AS PER EN ISO 5167:2003.
14. THREE PAIRS OF PRESSURE TAPS SHALL BE PROVIDED WITH NIPPLES OF REQUIRED LENGTH AND SOURCE VALVES AND THE UN-USED TAPS ARE PLUGGED.
15. THE INTERNAL TAPERED CONNECTION WITHIN THE FLANGE FOR PRESSURE TAPS SHOULD BE RC 1/2" AND THE NIPPLE SHOULD ALSO OF EXTERNAL THREADED R 1/2" AS PER IS:554. THE LENGTH OF THREADED ENGAGEMENT SHALL BE AS PER ABOVE STANDARD.

FOR TENDER PURPOSE ONLY

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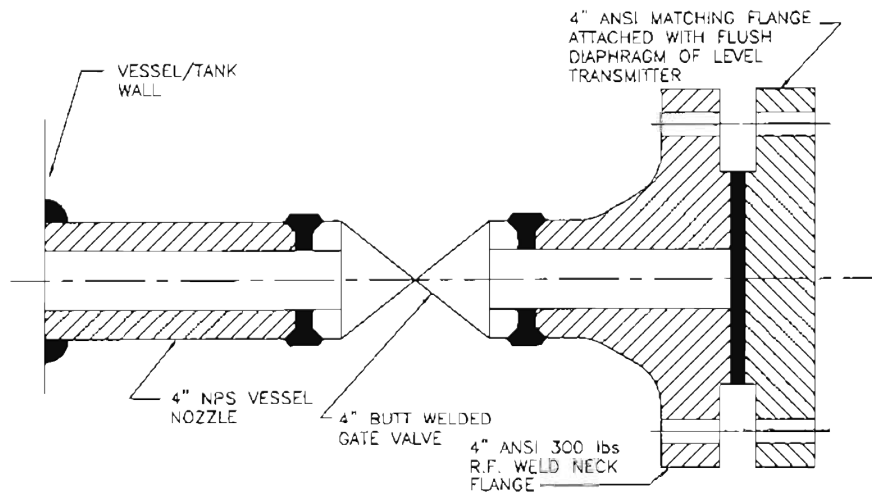
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### LEVEL MEASUREMENT



**NOTES: -**

1. THIS TYPE OF PROCESS CONNECTION SHALL BE USED FOR LEVEL GAUGE AND EXTERNAL CAGE TYPE FLOAT OR DISPLACER OPERATED LEVEL SWITCH.
2. FOR GAUGES 3/4" NIPPLE ALONG WITH 3/4" SW SOURCE VALVE AND FOR SWITCHES 1" NIPPLE ALONG WITH 1" SW SOURCE VALVE SHALL BE PROVIDED AS PROCESS CONNECTION.
3. SOURCE CONNECTION ON VESSEL SHOULD NOT BE LOCATED AT PLACES SUBJECTED TO INTERFACE AND TURBULENCE FROM INLETS AND OUTLETS.
4. IF LOWER CONNECTION IS TAKEN FROM BOTTOM OF THE VESSEL THEN THE NIPPLE MUST BE 100 mm TO 150 mm ABOVE THE BOTTOM OF THE VESSEL.



**NOTES: -**

1. THIS TYPE OF PROCESS CONNECTION SHALL BE PROVIDED FOR TANK LEVEL MEASUREMENT OF VISCOUS OR CORROSIVE LIQUID USING FLUSH DIAPHRAGM/WAFER TYPE LEVEL TRANSMITTER.
2. WELDING OF MATCHING FLANGE TO GATE VALVE SHALL BE DONE BY BIDDER.

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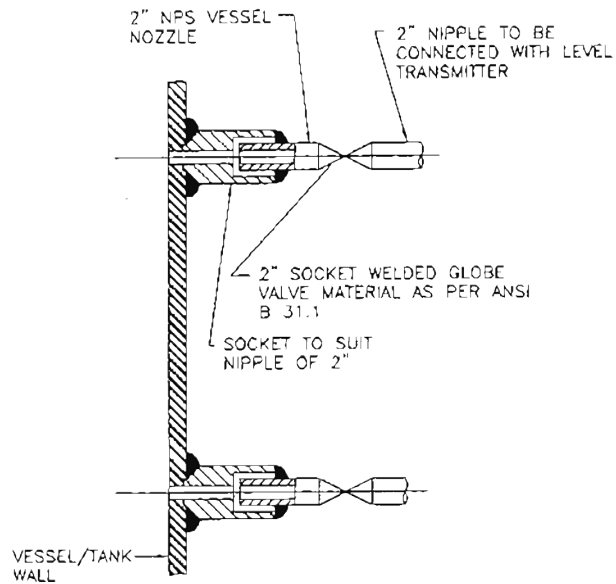


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## LEVEL MEASUREMENT



### NOTES:-

1. THIS TYPE OF PROCESS CONNECTION SHALL BE USED FOR DISPLACER TYPE LEVEL TRANSMITTER.
2. SOURCE CONNECTION ON VESSEL SHOULD NOT BE LOCATED AT PLACES SUBJECTED TO INTERFACE AND TURBULENCE FROM INLETS AND OUTLETS.
3. IF LOWER CONNECTION IS TAKEN FROM BOTTOM OF THE VESSEL THEN THE NIPPLE MUST BE 100 mm TO 150 mm ABOVE THE BOTTOM OF THE VESSEL.

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