

	PURCHASE SPECIFICATION		Rev. 1
	Erection & Supply of Valves. Piping & Testing		Dt. 20/03/10
	For the Pump Test Rig		Specification No. COE_CP 100

PRE – QUALIFICATION:

The Vendor should possess ESI, PF Codes. Documentary requirements of minimum turnover, experience, labour licence, PAN No., VAT, APGST Service Tax No. are to be provided for the offer to be considered. Vendor may visit the site and seek clarifications before quoting.

SCOPE:

All materials including Pipes & Pipe fittings, Flanges, Valves, Gaskets, Fasteners, plates, Brackets, are in the scope of the vendor and are to be ISI,ASTM compliance products and are to be supported by relevant test certificates. In case the vendor is not able to support any of these above items, the same is to be clearly stated in the technical part of the offer being submitted. It would be at the discretion of the evaluator to either accept or reject the arguments put forth. Structural materials used should not be Rerolled quality but should be original manufactured material.

The scope of erection would cover the bringing in line two pumps, two Flowmeters, one suction strainer and other such miscellaneous items that would be provided by BHEL & coming as per the scheme and forming part of the piping layout along with the items/ materials being supplied by the vendor. The piping also has to be connected to a sump tank & a cooling tower that are in the piping scheme but the erection of which would not be in the scope of this enquiry.

MATERIAL SPECIFICATION:

Only standard and reputed makes or brands are acceptable. The vendor has to indicate the makes for the above material that is going to be used by him for various items. The choice of make is at the discretion of BHEL.Traceability is to be ensured for all the materials being used, except that of structural quality.

PIPES:

The Pipes shall be from forged/Seamless Carbon Steel as per ASME SA 106 Gr B. and the carbon content shall be restricted to 0.25% max. Pipes are to be supplied with Guarantee & relevant NDT Test Certificates.

PIPE FITTINGS:

All the Pipe fittings are of Carbon steel Seamless forged fittings conforming to SA 234 GR WPB and ANSI B 16.9 & match the pipe sizes. All mother pipes used for these fittings shall be subjected to hydraulic test as per SA 530 or UTas per ASME 213 at the mill. In case the raw material is forgings, then the raw material shall be ultrasonically tested as per SA 388 & the acceptance norm shall be as per 3.3.4 of ASME sec VII div 2.All fittings shall have smooth surfaces, workman like finish & be free from loose scales & defects like laps, seams,folds,cracks etc.

The carbon content is to be restricted to 0.25%.

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FLANGES:

All Flanges are SORF as per the B.O.M & conforming to ANSI B 16.5 .

FASTENERS:

High Tensile Fasteners, capable to withstand the Pressures that the piping would be subjected to i.e 25Kg/Sq.Cm and should be from Unbrako/GKW/TVS.

VALVES:

All valves are to be either of BHEL/AUDCO/BDK/NSS make. In case any vendor would like to make an offer with some other make, then the vendor has to take prior acceptance from BHEL before making his offer. In the absence of the above, the offer would not be considered to be technically acceptable. These valves should be adhering to ISI, ASTM standards.

WELDING PROCEDURE:

Welding should employ TIG welding for at least all root runs of the Pipe joints (Pipe to Pipe and Pipe to Pipe fitting), the fabrication shall be in accordance with BS3351/ASA B 313. All weldings done by SMAW Arc process shall be as per IS: 823. All the welds shall be performed in accordance with best modern practice for this type of work and shall be of high quality of workmanship.

WELDING SPECIFICATION:

All welding shall have full thickness penetration and shall be achieved by TIG process. Tack welds lacking penetration shall be chipped out completely and re-welded properly.

In multiple pass welding, each layer shall be cleaned of all slag, scale and other foreign material and any defects shall be chipped out before subsequent welding.

Next run of the weld shall be carried out only after, rectification and cleaning of slag of the previous run.

The complete weld shall be cleaned of slag and spatter metal on all surfaces and reinforcement of welds that project out is to be less than 3.0mm.

No under cutting of the Pipe adjacent to the weld will be permitted.

The Pipe shall be brushed with Stainless Steel wire brush and then cleaned for a distance of at least 50mm from the weld area by any acceptable halogen free solvent in order to minimize defects in the welds.

Root pass should be made with TIG welding and Final weld will be with TIG welding or Manual Arc welding.

All butt joints should achieve full penetration with complete fusion of the root edges.

Welding shall be continuous and uninterrupted during a pass and no two beads shall start at same point in different layers.

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RADIOGRAPHY EXAMINATION:

The procedure and quality of Radiographic shall confirm to the latest edition of ASME SEC V or any other equivalent applicable code. The acceptable nature and limits of detects shall be as spelt out in the latest edition of ANSI 31.3. The Radiographic test shall meet the requirement as per IS: 4853.

The contractor shall be responsible for carrying out radiography, rectification of defects and radiography of the repaired welds.

X-rays source or Gamma ray sources are only to be used for radiography.

Minimum of 20% joint of 12", 10" and 10% joints of 4" size. Total welded joints rounded off to the next higher no. shall be subjected for radiographic evaluation. The joints for Radiography shall be selected by the M/s. BHEL R&D and Radiographic test shall be performed by the vendor & evaluated as per standard. The detailed report shall be submitted to M/s. BHEL R&D for acceptance. Special Care has to be taken while completing the closing joints as they are also likely to be selected for radiography. Only welders with relevant qualifications are to be engaged. A penalty of one joint shall be radio graphed for every joint failing in the first evaluation.

➤ Approximate Number of Joints

(subjected to change as per change in erection during execution):

	Joints for Radiography Type			Joints for NonRadiography Type	
Sizes	12"	10"	4"	2"	1"
No. Joints	13	29	63	20	3

HYDRAULIC TESTING:

All completed pipe lines to be hydro tested at 28 kg/sqm.

PREPARATION OF SURFACE:

All structural supports & The pipeline shall be cleaned of all rust, grease, dirt, Mill & weld scales, weld burs etc, & the pipe surfaces shall be cleaned thoroughly to get a smooth, uniform & fine finish after painting. In case this is not obtained, the vendor may have to redo the job in order to achieve the desired results.

PRIMER:

All pipes and structural supports are to be painted with red oxide zinc chromate primer (Two coats) followed by synthetic enamel.

PAINTING:

All the exposed surfaces of piping system and support steel structures brackets etc. shall be painted with two coats of superior quality of Synthetic Enamel paint over the primer. The final colour of the paint shall be light Green colour.

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A. MATERIAL CHARGES:

Sl.No.	MATL. DESCRIPTION(Tentative B.O.M)	QTY.	Make	Rate	Total
1.	C.S PIPE Ø26.7x5.56	20m			
2.	C.S PIPE Ø60.3x8.74	20m			
3.	C.S PIPE Ø114.3x8.56	125m			
4.	C.S PIPE Ø273.1x9.27	30m			
5.	C.S PIPE Ø323.9x9.53	20m			
6.	BW CS ELBOW 2" SCH40	6			
7.	BW CS ELBOW 4" SCH40	17			
8.	BW CS ELBOW 10" SCH40	7			
9.	BW CS ELBOW 12" SCH40	2			
10.	CS FLANGE 1" # 150 SORF	2			
11.	CS FLANGE 2" # 300 SORF	8			
12.	CS FLANGE 4" # 300 SORF	28			
13.	CS FLANGE 10" # 300 SORF	16			
14.	CS FLANGE 12" # 300 SORF	10			
15.	CS Nozzle 12" X 8" # 300	1			
16.	CS Diffuser 10" X 8" # 300	3			
17.	GASKET 1" #150	2			
18.	GASKET 2" #300	6			
19.	GASKET 4" #300	20			
20.	GASKET 10" #300	14			
21.	GASKET 12" #300	8			
22.	RED TEE 10"x4" # 300	1			
23.	EQUAL TEE 4" # 300	1			
24.	RED TEE 2"x1" # 300	1			
25.	High tensile fasteners for above piping and for the items supplied by BHEL also.				
26.	Instrument Isolation Valve, Drain & Vent valves (1/2"NPT# 300) along with nipples	60			
27.	Half couplings with M24 x 1.5	20			
28.	Half couplings with NPT ½"	15			
Total For Material					

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B. VALVES:

The make and Model no.s of the valves being proposed to be supplied is to be indicated in the offer. The valves should be accompanied with the manufacturers guarantee certificates.

B(i). All Valves are of class 300.

	Type I	Type II	Type III	Type IV
SIZES	12"	10"	4"	2"
TYPE	Ball Full Bore	Ball full bore	Butterfly	Butterfly
BODY	C.S.	C.S.	C.S.	C.S.
STEM	SS410	SS410	SS410	SS410
DISC	---	SS410	SS410	SS410
SEALS & SEATING	Graphile & PTFE	PTFE	PTFE	PTFE
END CONNECTION	Flanged	Flanged	Flanged	Flanged
ACTUATOR	Electrical	Electrical	N.A.	N.A.
Quantity	1 no.s	2 no.s	6 no.s	6 no.s
Rate/unit(Rs)				
Total				

B(ii) Alternatively the following option may also be quoted for :-

	Type I	Type II	Type III	Type IV
SIZES	12"	10"	4"	2"
TYPE	Ball Full Bore	Ball	Ball	Ball
BODY	C.S.	C.S.	C.S.	C.S.
STEM	SS410	SS410	SS410	SS410
DISC	---	SS410	SS410	SS410
SEALS & SEATING	Graphile & PTFE	PTFE	PTFE	PTFE
END CONNECTION	Flanged	Flanged	Flanged	Flanged
ACTUATOR	Manual	Manual	N.A.	N.A.
Quantity	1 no.s	2 no.s	6 no.s	6 no.s
Rate/unit(Rs)				
Total				

Note: Bhel would be reserving the right to select any combination from the above (Refer Note No. 5)

B(iii) OTHER VALVES:

Sl. No.	Type	Qty.	Rate
1.	NRV 10" # 300	1	
2.	NRV 4" # 300	1	
Total for valves as per qty selected			

C.	ERECTION & TESTING CHARGES Total Rs	
Total	A+B+C	

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General Conditions:-

1. This is an urgent work to be commenced immediately after issuing the Letter of intent, without any delay or loss of time. Hence, the vendor should have required technical competence, manpower and resources for completing the job. The vendor is to advised to quote for the shortest cycle time for execution of the job.
2. All the items required to carry out the work successfully are to be arranged by the vendor himself. The responsibility of safety of people and material would lie with the vendor during the period of execution of work.

Note: The vendors should supply and arrange for himself TIG welding set, welding generator and other welding equipment such as gas hoses, regulators, backfire arrestor, cables, lifting tools and tackles, Oxy acetylene cylinders, torches etc. other hand tools and all such items required to carry out the job.. The electrodes used by the contractor to conform to specifications so as good quality job.

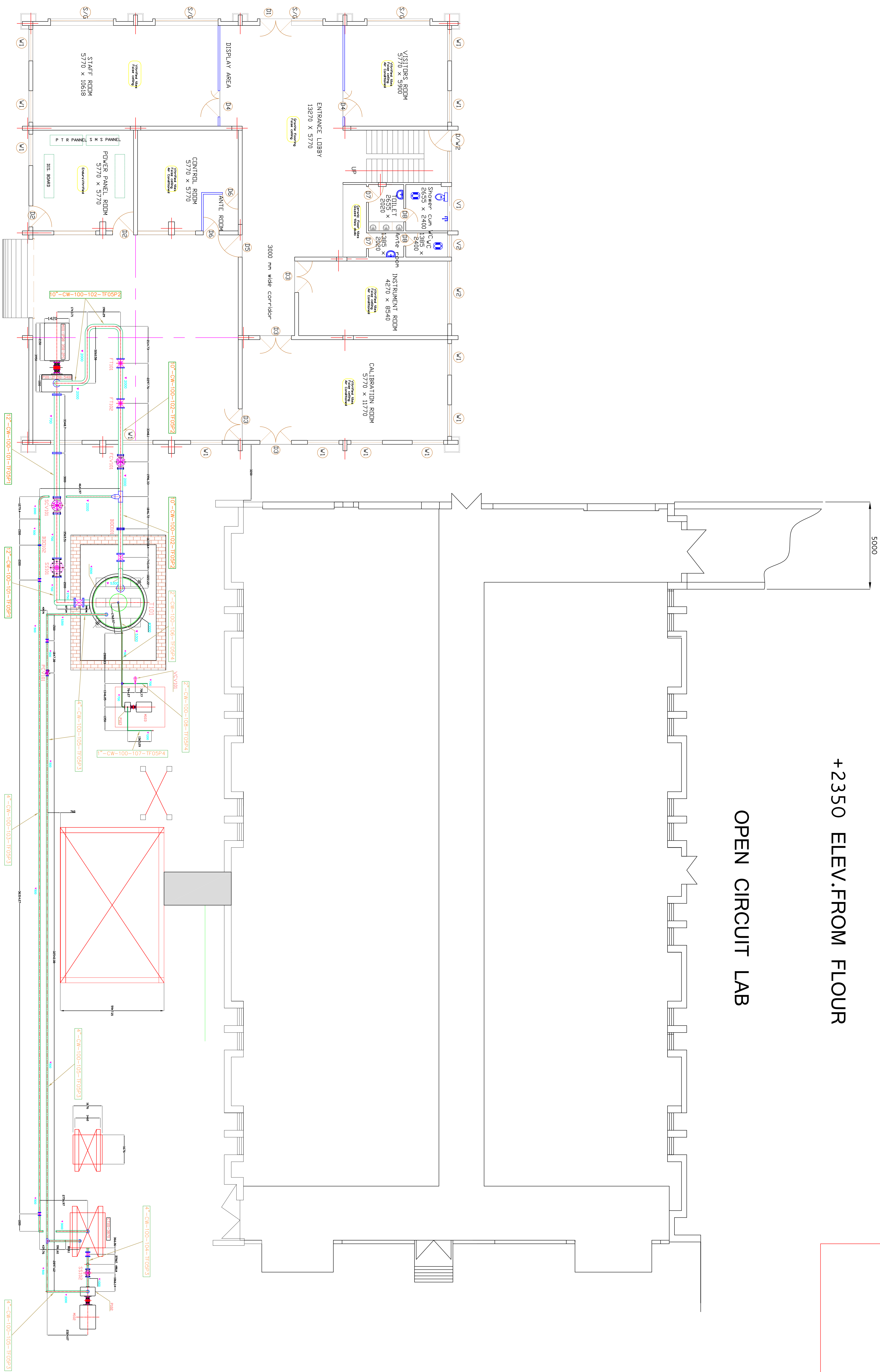
3. Supports are to be provided as follows:-
 - i) All valves and strainers are to be supported on either side such that, the load is not transferred to the pipeline.
 - ii) Suitable supports are to be provided near flange joints such that during any dismantling, the mating component is supported.
 - iii) Apart from above, supports are to be provided every 3 m of running pipe.
4. Valves are to be quoted each pc wise as per optionals in B (i & ii) separately. The Type & no. of valves may vary and would be intimated during placement of P.O
5. The quantities and the routing indicated along with the tender are indicative in nature and they may vary during the actual execution. The vendor should be able to take care of any changes, during execution.
6. Method of quote could be on a consolidated basis for the materials Table 'A' Sl. No. 17 to 28 with the valves; (Table 'B') and E & C's (Table 'C'). The financial evaluation of the bid would be carried out on the basis of quantities mentioned in Table 'A' for the Items Sl. No 1 to 16. However the Vendor is advised to give the break-up of items with individual quote for Items Sl. No 1 to 16 in order to help take care of any deviations during actual execution.
7. Prospective vendors are advised to visit the site and asses the quantum of work before quoting

For any Technical Clarification, please contact :


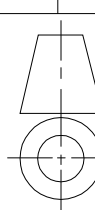
Shri BR Manohar, AGM(TML) email ID : manohar@bhelrnd.co.in

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IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY



REV	DATE		REV	DATE		REV	DATE		REV	DATE		REV	DATE	
	ALTERED	CHECKED		ALTERED	CHECKED		ALTERED	CHECKED		ALTERED	CHECKED		ALTERED	CHECKED
		APPD.			APPD.			APPD.			APPD.			APPD.
ZONE			ZONE			ZONE			ZONE			ZONE		

TYPE OF PRODUCT									
OR									
NAME OF CUSTOMER/PROJECT									
				BHARAT HEAVY ELECTRICALS LIMITED Corp. R&D Division, Vikasnagar HYDERABAD - 500 093					
DEPT.	050			SCALE	WEIGHT (KGS)		NAME	SIGN.	DATE
CODE	TML			NTS	(MM)	DWG.	CHD.	NO. OF VAR.	
TITLE				REF. TO ASSY DWG.		A Dasgupta			
DRAWING NO.				REV.					
RD DG 0 50 00100				REV.					
SHEET NO. 01		NO OF SHEETS		01					

NAME	SIGN.	DATE	NO. OF VAR.
T R Krishna			
AMBRISH			
A Dasguptha			
REF. TO ASSY. DRG.	ITEM NO.	NO. OF ITEMS	
DRAWING NO. RD DG 0 50 00100		REV.	
SHEET NO. 01	NO. OF SHEETS	01	