

TECI:AFGCS:R832:AFCV

CI.NO.	Characteristics		Requirement	Vendor's Compliance
1.0	Site conditions			
1.1	Altitude above mean sea level		550 m	
1.2	Ambient temperature condition		50 Deg.C	
1.3	Relative humidity		100%	
1.4	Atmosphere		Tropical, Dusty, Salty, Corrosive and highly polluted	
2.0	General			
2.1	Reference Standard		BS 5235/EN 837-1,2,3	
2.2	Type		Direct-rigid stem type, Remote capillary type	
2.3	Type of body		Standard globe.	
2.4	Body size size	Port	Vendor shall specify	
2.5	Guiding ports	No of	Vendor shall specify	
2.6	Body Material		Stainless steel	
2.7	Packing Material		PTFE	
2.8	Trim form		Equal %age	
2.9	Trim material - Plug and seat		SS316	
2.10	Tight shut - off		Class IV	
2.11	Actuator type		Pneumatic	
2.12	Failure position		Close	
2.13	Hand wheel and Location		Required and side mounted	
2.14	Air supply pressure		5 Kg/cm2	
2.15	Input Kg/cm2		Vendor shall specify	

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	Output Kg/cm2		
2.16	I/P Convertor	Required	
2.17	Electrical class/ Enclosure	IP 65	
2.18	Solenoid valve	Required. Class F	
2.19	Filter Regulator With Gauge	Required	
2.20	Limit switch Quantity	Required & 2	
2.21	Adjustable up travel stop	Required.	
2.22	Line bolting	Yes	
2.23	Quantity Min/ Nor /Max	80 / 100 /120 Kg/hr	
2.24	Inlet Pressure Min / Nor/ Max Kg/cm2	2/ 2.5 / 3 Kg/cm2	
2.25	Outlet Pressure Min / Nor / Max Kg/cm2	1.2/ 1.5/ 2 Kg/cm2	
2.26	Δ P sizing	Vendor shall specify	
2.27	Δ P Shut off	4 Kg/cm2	
2.28	Flow	80-120 kg/cm2	
2.29	Temp deg C OPer / Max	Ambient / 55	
2.30	Density	12.03	
2.31	Scale	Industrial concentric 270 Deg. Linear.	
2.32	Sensing Element	Mercury/Liquid/Gas filled	
2.6	Nominal Dial size	150 mm	
2.7	Accuracy	+/- 1% of FSD	
2.8	Over range protection	125% of max range	
2.9	Dial Graduation	Graduated in Deg.C	

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2.11	Zero adjustment	Micrometer adjustable from the front, after opening the bezel	
2.12	Painting	Not applicable for SS 304 casing	
2.13	Identification	Separate SS tag.plate with tag no. and service legend	
3.0	PROCESS CONDITION		
3.1	Tag number	AFGAFCV001	
3.2	Medium	Ammonia Gas	
3.3	Application	Ammonia Injection system	
3.4	Operating parameter	50 deg.C	
3.5	Range	0-75 Deg.C	
3.6	Mounting & Entry	Please refer the drawing	
3.7	Process connection	Please refer the drawing	
3.8	Thermowell immersion length	0.75 inch in the 1.5 inch CS pipe	
3.9	Special Requirement	No reactive material to Ammonia gas shall be used in the instrument. The safety precautions relating to the ammonia pressure gauge shall be as per BS 5235/EN 837-1,2,3 of latest version.	
4.0	Material		
4.1	Case	SS 304	
4.2	Bourdon	AISI 316 SS	
4.3	Bezel	SS 304 with Snap Action Bayonet type	

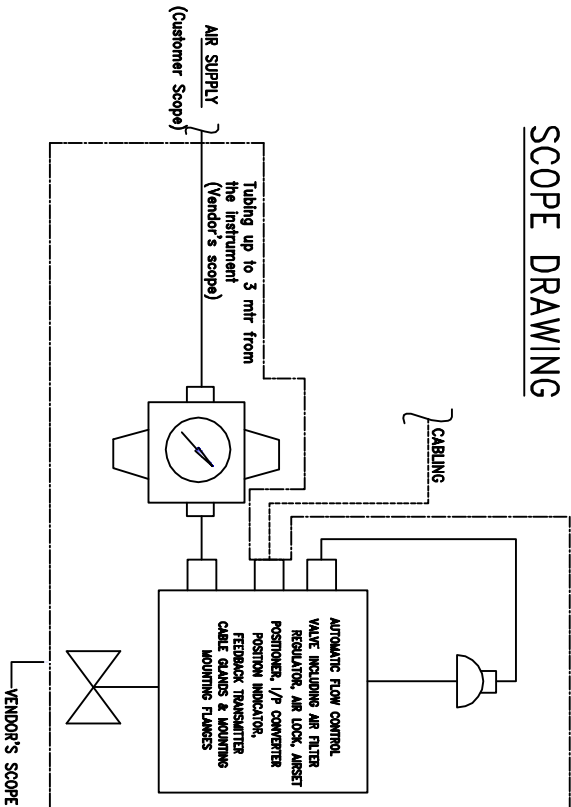
TECI:AFGCS:R832:AFCV

4.4	Movement assembly	AISI 304 SS	
4.5	Bulb and stem	AISI 316 SS	
4.6	Capillary	AISI 316 SS	
4.7	Flexible Armouring	AISI 304 SS	
4.8	Thermowell	AISI 316 SS	
4.9	Window	Shatter proof glass	
5.0	DIMENSIONS		
5.1.0	Bulb		
5.1.1	OD	12mm	
5.1.2	Bulb to thermowell	Manufacturer's Standard	
5.1.3	Capillary length	Please refer the drawing.	
5.2.0	Thermowell		
5.2.1	Specification	As per ASME performance test code (PTC -19.3)	
5.2.2	Thermowell bore dia.	Suitable to accommodate sensing bulb	
5.2.3	Type	Bar stock/tapered	
5.2.4	Test pressure	150 kg/sq.cm	
6.0	Response time (without thermowell)	2-4 seconds	
7.0	INSPECTION & TESTING	150 % pressure test is to be conducted.	
8.0	DOCUMENTS		
8.1	6 sets of the following:	1. T.C for routing test for each gauge 2. T.C for type test 3. Material certificate for	

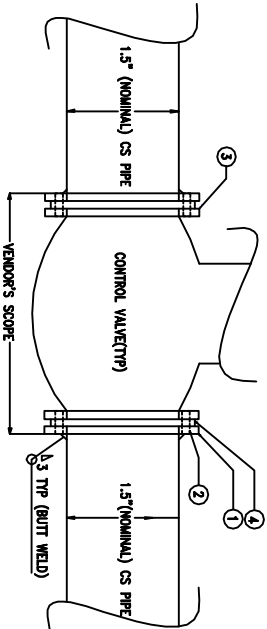
TECI:AFGCS:R832:AFCV

		burdon, bulb and capillary 4. Guarantee certificate 5. Calibration certificate 6. IBR from III C or Equivalent for thermowell	
8.2	CD & 2 sets of original	1. Catalogues 2. O & M manuals	
8.3	PACKING	As per vendor's standard packing procedure for safe and reliable transport & use.	

SCOPE DRAWING

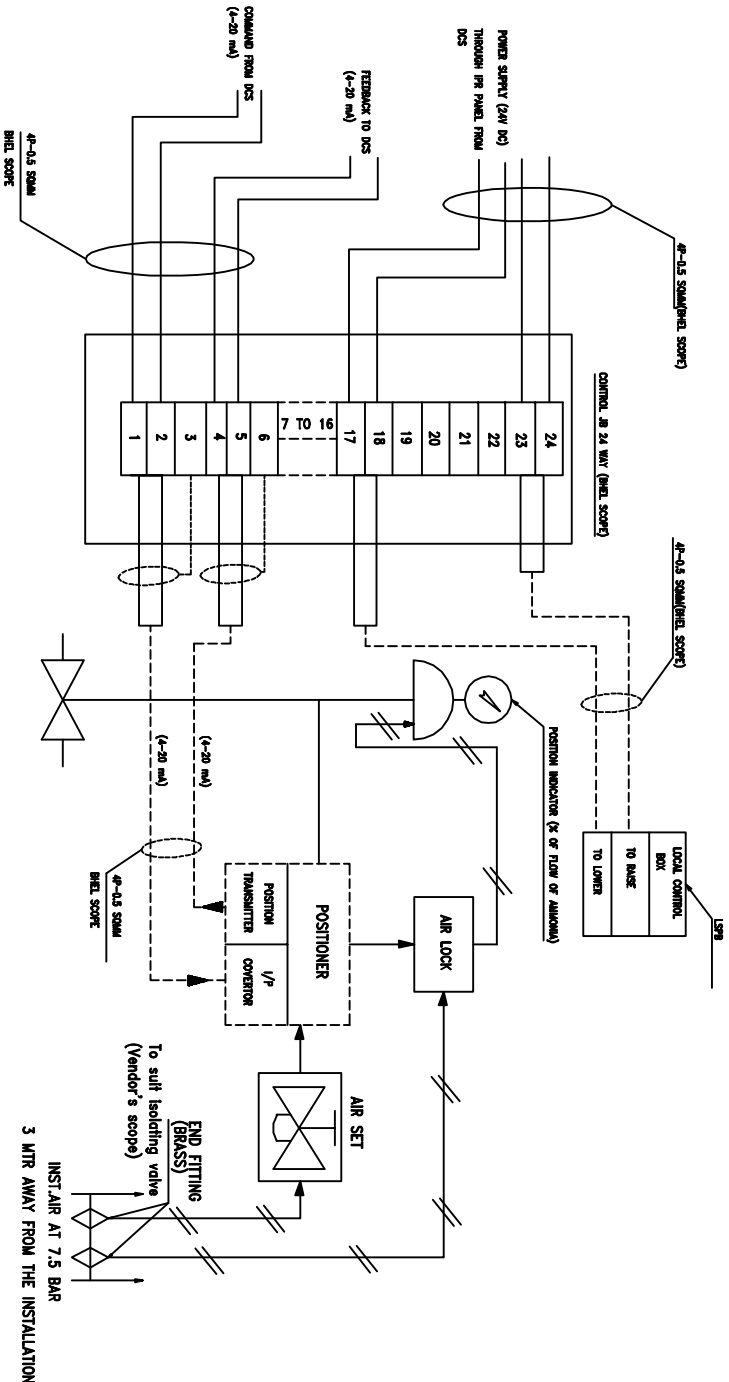


END CONNECTION WITH MOUNTING



BILL OF MATERIAL FOR END CONNECTION	
1.	COUNTER FLANGE SS 316- 2 NOS.
2.	MOUNTING FASTENERS SS 316- 1 SET
3.	FLANGE FOR END CONNECTION - 2NOS. (SUITABLE FOR 1.5\"/>
4.	GASKET-CR- 2 NOS.

HOOK UP DRAWING FOR FLOW CONTROL VALVE



- NOTE:
1. I/P CONVERTER, AIR SET, ETC. MAY BE INSTALLED & CONNECTED TO VALVE TOP WORKS BY VENDOR.
 2. INSTRUMENT AIR AT 7.5 BAR WILL BE PROVIDED BY CUSTOMER AT 3MTR AWAY FROM THE INSTALLATION
 3. TUBING AND ASSOCIATED ACCESSORIES FROM THE INSTRUMENT AIR SYSTEM TO THE VALVE AND NECESSARY TUBING WHEREVER NECESSARY SHALL BE IN VENDOR'S SCOPE.
 4. CABLING IS IN CUSTOMER'S SCOPE. CABLE GLANDS ARE IN VENDOR'S SCOPE.
 5. VENDOR SHALL PROVIDE THE DETAILED BILL OF MATERIAL ALONG WITH THE OFFER.
 6. FOR ALL OTHER DETAILS,ie. OPERATION/ PARAMETERS/CONTROL PLEASE REFER THE ENQUIRY SPECIFICATION.

CUSTOMER:		ANDHRA PRADESH POWER GENERATION CORPORATION LTD (APGENCO)	
OWNER'S CONSULTANT:		1X800 MW D.T.NTTPS STAGE-V, UNIT-8, VIJAYAWADA	
BTG PKG			
BHARAT HEAVY ELECTRICALS LTD		DRAWING	NAME
UNIT- BOILER AUXILIARY PLANT		PRRD. BY	M.VJI
RANIPET-632 406.		CHKD. BY	D.QUILY
		APPD. BY	M.J.M
TITLE :		HOOK UP DRAWING FOR AUTOMATIC FLOW CONTROL VALVE (SINGLE PORT)	REV NO
			2-00-114-30208
			00

TECI:AFGCS:R833:AFCV

Cl.NO.	Characteristics	Requirement	Vendor's Compliance
1.0	Site conditions		
1.1	Altitude above mean sea level	550 m	
1.2	Ambient temperature condition	50 Deg.C	
1.3	Relative humidity	100%	
1.4	Atmosphere	Tropical, Dusty, Salty, Corrosive and highly polluted	
2.0	General		
2.1	Reference Standard	BS 5235/EN 837-1,2,3	
2.2	Type	Direct-rigid stem type, Remote capillary type	
2.3	Type of body	Standard globe.	
2.4	Body size	Port	Vendor shall specify
2.5	Guiding ports	No of	Vendor shall specify
2.6	Body Material	Stainless steel	
2.7	Packing Material	PTFE	
2.8	Trim form	Equal %age	
2.9	Trim material - Plug and seat	SS316	
2.10	Tight shut - off	Class IV	
2.11	Actuator type	Pneumatic	
2.12	Failure position	Close	
2.13	Hand wheel and Location	Required and side mounted	
2.14	Air supply pressure	5 Kg/cm ²	
2.15	Input Kg/cm ²	Vendor shall specify	

TECI:AFGCS:R833:AFCV

	Output Kg/cm2		
2.16	I/P Convertor	Required	
2.17	Electrical class/ Enclosure	IP 65	
2.18	Solenoid valve	Required. Class F	
2.19	Filter Regulator With Gauge	Required	
2.20	Limit switch Quantity	Required & 2	
2.21	Adjustable up travel stop	Required.	
2.22	Line bolting	Yes	
2.23	Quantity Min/ Nor /Max	80 / 100 /120 Kg/hr	
2.24	Inlet Pressure Min / Nor/ Max Kg/cm2	2/ 2.5 / 3 Kg/cm2	
2.25	Outlet Pressure Min / Nor / Max Kg/cm2	1.2/ 1.5/ 2 Kg/cm2	
2.26	Δ P sizing	Vendor shall specify	
2.27	Δ P Shut off	4 Kg/cm2	
2.28	Flow	80-120 kg/cm2	
2.29	Temp deg C OPer / Max	Ambient / 55	
2.30	Density	12.03	
2.31	Scale	Industrial concentric 270 Deg. Linear.	
2.32	Sensing Element	Mercury/Liquid/Gas filled	
2.6	Nominal Dial size	150 mm	
2.7	Accuracy	+/- 1% of FSD	
2.8	Over range protection	125% of max range	
2.9	Dial Graduation	Graduated in Deg.C	

TECI:AFGCS:R833:AFCV

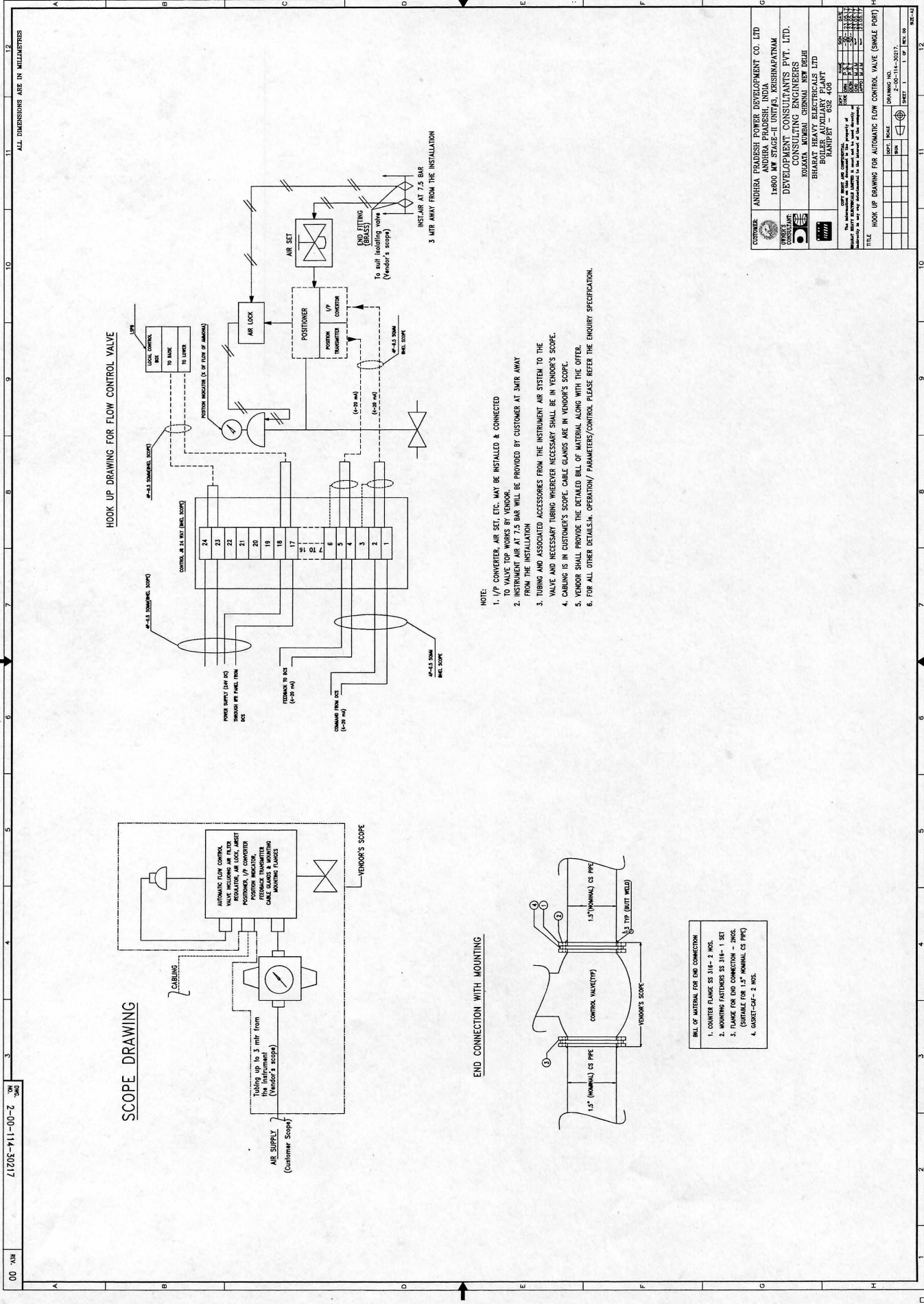
2.11	Zero adjustment	Micrometer adjustable from the front, after opening the bezel	
2.12	Painting	Not applicable for SS 304 casing	
2.13	Identification	Separate SS tag.plate with tag no. and service legend	
3.0	PROCESS CONDITION		
3.1	Tag number	AFGAFCV001	
3.2	Medium	Ammonia Gas	
3.3	Application	Ammonia Injection system	
3.4	Operating parameter	50 deg.C	
3.5	Range	0-75 Deg.C	
3.6	Mounting & Entry	Please refer the drawing	
3.7	Process connection	Please refer the drawing	
3.8	Thermowell immersion length	0.75 inch in the 1.5 inch CS pipe	
3.9	Special Requirement	No reactive material to Ammonia gas shall be used in the instrument. The safety precautions relating to the ammonia pressure gauge shall be as per BS 5235/EN 837-1,2,3 of latest version.	
4.0	Material		
4.1	Case	SS 304	
4.2	Bourdon	AISI 316 SS	
4.3	Bezel	SS 304 with Snap Action Bayonet type	

TECI:AFGCS:R833:AFCV

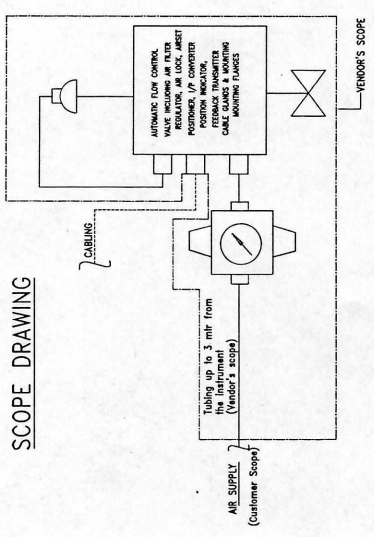
4.4	Movement assembly	AISI 304 SS	
4.5	Bulb and stem	AISI 316 SS	
4.6	Capillary	AISI 316 SS	
4.7	Flexible Armouring	AISI 304 SS	
4.8	Thermowell	AISI 316 SS	
4.9	Window	Shatter proof glass	
5.0	DIMENSIONS		
5.1.0	Bulb		
5.1.1	OD	12mm	
5.1.2	Bulb to thermowell	Manufacturer's Standard	
5.1.3	Capillary length	Please refer the drawing.	
5.2.0	Thermowell		
5.2.1	Specification	As per ASME performance test code (PTC -19.3)	
5.2.2	Thermowell bore dia.	Suitable to accommodate sensing bulb	
5.2.3	Type	Bar stock/tapered	
5.2.4	Test pressure	150 kg/sq.cm	
6.0	Response time (without thermowell)	2-4 seconds	
7.0	INSPECTION & TESTING	150 % pressure test is to be conducted.	
8.0	DOCUMENTS		
8.1	6 sets of the following:	1. T.C for routing test for each gauge 2. T.C for type test 3. Material certificate for	

TECI:AFGCS:R833:AFCV

		burdon, bulb and capillary 4. Guarantee certificate 5. Calibration certificate 6. IBR from III C or Equivalent for thermowell	
8.2	CD & 2 sets of original	1. Catalogues 2. O & M manuals	
8.3	PACKING	As per vendor's standard packing procedure for safe and reliable transport & use.	

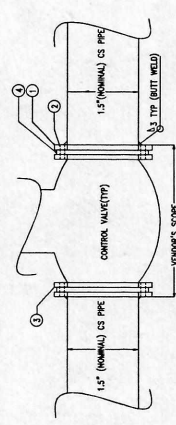


HOOK UP DRAWING FOR FLOW CONTROL VALVE



SCOPE DRAWING

END CONNECTION WITH MOUNTING



BILL OF MATERIAL FOR END CONNECTION

1.	COUNTER FLANGE SS 316 - 2 NOS.
2.	MOUNTING FASTENERS SS 316 - 1 SET
3.	FLANGE FOR END CONNECTION - 2 NOS. (SUITABLE FOR 1.5" NOMINAL CS PPG)
4.	GASKET-CAT - 2 NOS.

- NOTE:
1. I/P CONVERTER, AIR SET, ETC. MAY BE INSTALLED & CONNECTED TO VALVE TOP WORKS BY VENDOR.
 2. INSTRUMENT AIR AT 7.5 BAR WILL BE PROVIDED BY CUSTOMER AT 5MTR AWAY FROM THE INSTALLATION
 3. TUBING AND ASSOCIATED ACCESSORIES FROM THE INSTRUMENT AIR SYSTEM TO THE VALVE AND NECESSARY TUBING WHEREVER NECESSARY SHALL BE IN VENDOR'S SCOPE.
 4. CABLEING IS IN CUSTOMER'S SCOPE. CABLE GLANDS ARE IN VENDOR'S SCOPE.
 5. VENDOR SHALL PROVIDE THE DETAILED BILL OF MATERIAL ALONG WITH THE OFFER.
 6. FOR ALL OTHER DETAILS IN OPERATION/ CONTROL PLEASE REFER THE ENQUIRY SPECIFICATION.

CUSTOMER	ANDHRA PRADESH POWER DEVELOPMENT CO. LTD ANDHRA PRADESH, INDIA 14800 MW STAGE-II UNIT/3, KRISHNAPATNAM DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA, MUMBAI, CHENNAI, NEW DELHI
ENGINEER	BHARAT HEAVY ELECTRICALS LTD BANGALORE, KARNATAKA INDIA 632 400
DESIGN	ANDHRA PRADESH POWER DEVELOPMENT CO. LTD ANDHRA PRADESH, INDIA 14800 MW STAGE-II UNIT/3, KRISHNAPATNAM DEVELOPMENT CONSULTANTS PVT. LTD. CONSULTING ENGINEERS KOLKATA, MUMBAI, CHENNAI, NEW DELHI
DATE	14-11-2017
BY	1
CHECKED	2
APPROVED	3
SCALE	1:1
TITLE	HOOK UP DRAWING FOR AUTOMATIC FLOW CONTROL VALVE (SINGLE POINT)
DRWING NO.	14-11-2017
SHEET	1 OF 1

Annexure to Enquiry No. : 3270570E

Essential Commercial Terms & Conditions (to be filled in full, signed & stamped and to be submitted along with offer)

SL. NO.	DESCRIPTION	BHEL'S REQUIREMENT	SUPPLIER'S COMMENTS
01.	Price	Firm till completion of order.[offer with Price Variation Clause is not acceptable]	
02.	Delivery terms	F.O.R. Destination, Respective Sites Including PACKING & FORWARDING and FREIGHT & INSURANCE	
03.	Delivery Place	Respective Sites (As indicated in Description)	
04	Excise Duty & Cess in %	To be indicated by vendor. [CENVATCopy to be provided along with supply]	
05.	Sales tax in %	To be indicated by vendor. [concessional form 'C' will be given]	
06.	OCTROI: If any, to supplier's account only.[since enquiry Destination has been given, vendor has to ascertain the applicability of OCTROI].		
07.	Payment	100% within 45 days for MSE (micro & small) and within 90 days for non-MSE after receipt OF Site Acknowledged LR, If any supplier is asking for payment terms other than the above specified, then suitable loading on cost will be considered. Loading of any deviation in the payment terms w.r.t tendr terms will be "Base rate of State Bank of India (SBI)" (as applicable on the date of bid opening: Techno-commercial bid opening in case of two partbids) + 6%, will be considered for loading for the period of relaxation sought by bidders.	
08.	Delivery period	Delivery period should be indicated clearly. ie as per our enquiry / shortest possible delivery period.	
09.	L.D. Clause:	Std L.D Clause will be @ 0.5% per week or part there off to Max of 10% for the undelivered portion. Loading will be carried out by BHEL to the extent which is not agreed by you on the offer to arrive the ranking.	
10	Offer validity	Minimum 60 days from the date of tender opening. If less than 60 days offer validity given, the ofer will be liable for rejection.	
11.	Inspection before despatch	Will be done at Vendor's Works before Dispatch by BHEL / BHEL's customer / BHEL's authorized Inspection agency	
12.	Test / Compliance Certificate	Required	
13.	BHEL Standard Guarantee Clause: Vendor's confirmation to our standard Guarantee clause that the materials are to be guaranteed for satisfactory performance for a period of twelve months from the date of commissioning / putting into use (or) eighteen months from the dispatch which ever is earlier and if any defect is noticed during the above period, the same shall be rectified/replaced free of cost on Ranipet/ Destination basis within a reasonable time. To this effect a Guarantee certificate should be sent along with the dispatch documents in the event an order.		
14.	Performance Bank Guarantee [PBG]	Required. The offer would be loaded in case of non acceptance for 10% [(10% x PO value x Base rate of State Bank of India (SBI) (as applicable on the date of bid opening: Techno commercial bid opening in case of two part bids) + 6%] for the period of 21 months ie., 18+3 months).	
15	Risk Purchase Clause: The purchaser at his option will be entitled to terminate the contract and to purchase elsewhere at the risk and cost of the seller either the whole of the goods or any part which the seller has failed to deliver or dispatch within the time stipulated as aforesaid or if the same were not available, the best and the nearest available substitute thereof. The seller shall be liable for all losses and extra expenditure which the purchaser may sustain by reason of such risk purchases in addition to penalty at the rates of LD clause agreed.		
16	O&M MANUAL	5 copies required	
17.	Place of Manufacture & Supply	To be indicated by vendor	
18.	Vendor status like Micro / Small / Medium	To be indicated by vendor [latest copy of supporting document shall be furnished along with offer applicable to Indian vendor]	

SUPPLIER'S SIGN & SEAL

REQUIREMENT OF TECHNICAL DETAILS /CONFIRMATION

S.NO	DESCRIPTION	BHEL'S REQUIREMENT	SUPPLIER'S COMMENTS
01	Specification	Clause wise / Point wise confirmation to be given in TOTO for all specifications & to be submitted along with offer.	
02	Data sheet / drgs	Design Calculations and Drgs are to be submitted along with offer.(if applicable).	
03	Quality plan	To confirm applicable QP (SQP:APH:102, Rev 04) will be followed. (OR) Your Quality Plan to be submitted for our review and approval, along with offer.	
04	Specification deviation disposition report (sddr)	Attached SDDR to be filled & submit along with offer.[In case of NO deviation is taken, NIL report to be submitted]	
05	Net Weight per No	Shall be Indicated	

SPECIFICATION DEVIATION DISPOSITION REPORT

Specn			Item		
Enq.No & Date					
Vendor Name					
SPECN					
Page	Clause	Details Of Deviation With Reason			Disposition By Bhel
Signature Of Vendor					Reviewed By
		" AGREED DEVIATION "			APPROVED BY
		if any to be incorporated in the PO in the event of order.			

BHEL reserves the right to reject the offer which is having deviations to BHEL standard terms & conditions and specn / drg / catalogue.

Date :

VENDOR's SIGNATURE WITH SEAL



BHARAT HEAVY ELECTRICALS LIMITED
RANIPET - 632 406
COMMERCIAL DEPARTMENT
DESPATCH INSTRUCTIONS

Date of Issue : 08/09/2016 14:32

Revision :

Page 1

Customer Numbers : R832

Project Name : DR NARAL TATA TPS STAGE V VIJAYWAD/

Project abbrvn : VIJ-A

P.O. Reference : TM 3000000014/CPP/121/DR.NTTTPS-V/BTG/D.NO.176

P.O. Date : 31/12/2015

Freight Code : PAID

Insurance Code : BHEL(OTHERS) Excise Code :

Contract Order Type : DIRECT ORDER Export Box Code :

Mode of despatch : BOTH Permit Form PERMIT FORM REQUIRED
Applicable :

CONSIGNEE ADDRESS : The Divisional Engineer(Store& Services)
Dr. NTTPS Stage-IV
APGENCO, Ibrahimpatanam, Krishna Distt.
ANDHRA PRADESH

Pin Code : 521456

Sales Tax (State) :

Central Sales Tax (CST) : 37280126964C

PAN :

TAN :

TIN : 37280126964

VAT :

Specific/BHEL Approved CARR : BHEL APPROVED CARRIER

Contract Special Instructions :

Contract Co-Ordinator/Commercial



BHARAT HEAVY ELECTRICALS LIMITED
RANIPET - 632 406
COMMERCIAL DEPARTMENT
DESPATCH INSTRUCTIONS

Date of Issue : 10/11/2011 10:17

Revision :

Page 1

Customer Numbers : R800 R801

Project Name : KRISHNAPATNAM-2X800MW-APGENCO

Project abbrvn : NELLO

P.O. Reference : APPDCL/EDE/SG/281/2008

P.O. Date : 25/07/2008

Freight Code : PAID

Insurance Code : BHEL(OTHERS) Excise Code : 28811330199

Contract Order Type : DIRECT ORDER Export Box Code :

Mode of despatch : ROAD Permit Form PERMIT FORM NOT
Applicable : REQUIRED

CONSIGNEE ADDRESS : EXECUTIVE ENGINEER (CIVIL),
SRI DAMODARAM SANJEEVAIAH TPS 2X800MW,
APPDCL KRISHNAPATNAM MEGA TPP,
VIL: NELLATUR, MUTHKUR MANDAL,
NELLORE DIST, AP

Pin Code : 524344

Sales Tax (State) : TIN No 28811330199

Central Sales Tax (CST) :

PAN :

TAN :

TIN : 28811330199

VAT :

Specific/BHEL Approved CARR :

Contract Special Instructions :

CST Remark :

Contract Co-Ordinator/Commercial