



K. BHASKAR

Head of the Department

Ref: No. ASE/SRCH/Spray Rig 3A Test Facility /2013/

DATE: 22.08. 2013

**DUE DATE: 05 .9 .2013**

Dear Sir,

1. Quotations are invited in duplicate for the various items shown below/overleaf/**enclosed list**.
2. The quotations are to be in two parts as  
**Technical Offer and as Commercial offer:**  
The two parts of the offer are to be clearly marked on the envelopes. The two parts of the offer in separate envelopes must be enclosed in the one bigger envelope duly sealed and super scribed with reference number and due date and must be addressed to the undersigned so as to reach him on or before the due date stipulated above.
3. The quotations duly sealed and super scribed on the envelope with reference no. and due date, should be addressed to the undersigned so as to reach him or before the due date stipulated above. Fax and Email quotation are not acceptable.
4. Quotations should be valid for 60 days from the due date and period of delivery required , warranty terms etc. should also be clearly indicated. A minimum of one year warranty is required from the date of commissioning.
5. Imported supplies should be quoted **for CIF Madras**.
6. Local firms to quote for free delivery to this Institute. If quoted for Ex-Godown delivery charges be indicated separately.
7. Relevant literature pertaining to the items quoted with full specifications (and drawing, if any) should be sent along with the Quotations, wherever applicable. Samples / machine/ equipment if called for should be submitted / demonstrated at free of charges, and collected back at the supplier's expenses. Compliancy certificate is to be provided indicating conformity to the technical specifications
8. Sales Tax/General Taxes/ED if applicable and such other taxes legally leviable and intended to be claimed should be distinctly shown along with the price quoted. If this is not indicated no such claim will be admitted at any stage. The taxes leviable should take into consideration that we are entitled to have concessional Sales Tax applicable to Non-Government Educational Institutions run with no profit motive for which a concession is given. Sales Tax Certificate will be issued at the time of final settlement of the bill.
9. Goods should be supplied carriage paid and insured.
10. Goods shall not be supplied without an official supply order.
11. If the item is under DGS&D Rate contract No. and the price must be mentioned. It may also please be indicated whether the supply can be made direct to us at the Rate contract price (Please note that we are not Direct Demanding Officers). If so please send copy of the RC.
12. In case of LC. Payment,90% of the payment will be made after completion of the supply. The balance 10% of the payment will be made after satisfactory installation of the equipment.
13. IIT Madras is exempt from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand. IIT Madras will make necessary arrangements for the clearance of imported goods at the Airport/Seaport. Hence the price should not include the above charges.
14. **Acceptance and Rejection:-** I.I.T. Madras has the right to accept the whole or any part of the Tender or portion of the quantity offered or reject it in full without assigning any reason.

Yours faithfully

**HEAD OF THE DEPARTMENT**

Items required: Spray Rig 3A Test Facility as per specifications drawing enclosed.

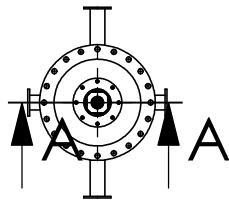
Quantity Required \_ 2 No.



**Department of Aerospace Engineering**  
Indian Institute of Technology Madras  
Chennai – 600 036, India

Scope of work for Spray Rig 3A TEST FACILITY:

1. The fabricator should fabricate the entire facility and check for alignment of assembly.
2. 100% GTAW process shall be adopted with high quality Argon shielding.
3. The parts are to be hydrostatically tested at 12 bar wherever applicable.
4. The nozzles are to be supplied with blind flanges.
5. High tension bolts are to be provided for all flanges.
6. Quartz glass window panes are exempted from the scope of supply.
7. Part No:-13(settling chamber) alone to be made out of mild steel.
8. Toughened glass panes are to be provided for the windows of the test section.
9. The toughened glass panes should be bonded inside the test section with suitable heat resistant adhesive, in consultation with IITM.
10. Gaskets(heat resistant) are to be provided on all flanges
11. The supplier in consultation with IITM should also design and fabricate a rigid stand/frame out of mild steel on which the test facility can be mounted upright.
12. The supplier shall assemble and erect the facility at a chosen site at IITM
13. For any technical clarification please contact P. John George. phone : 044 22575026
14. Email : [nccrdengr@pallava.iitm.ac.in](mailto:nccrdengr@pallava.iitm.ac.in)

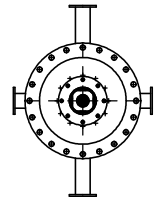


MAGNIFIED SECTION VIEW A-A

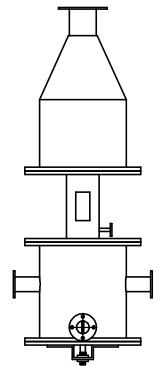
part1

**BACK PRESSURE REGULATING CHAMBER**

TOP VIEW



FRONT VIEW



2511.387

part3

part 11 A

**TEST SECTION**

part4

part2

part5

part 11 B

part6

**SETTLING CHAMBER**

part 13

part8

part7

part9

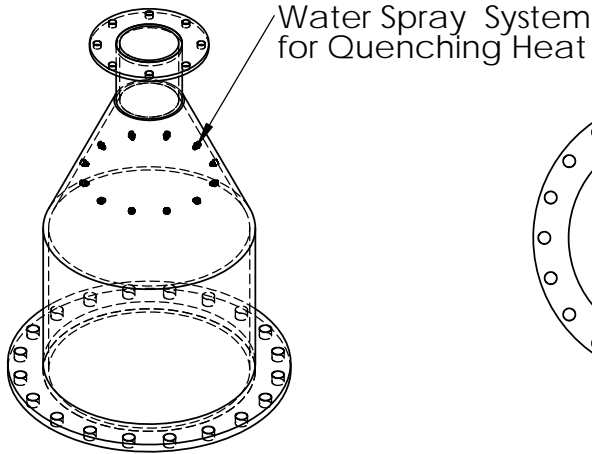
part10

part12

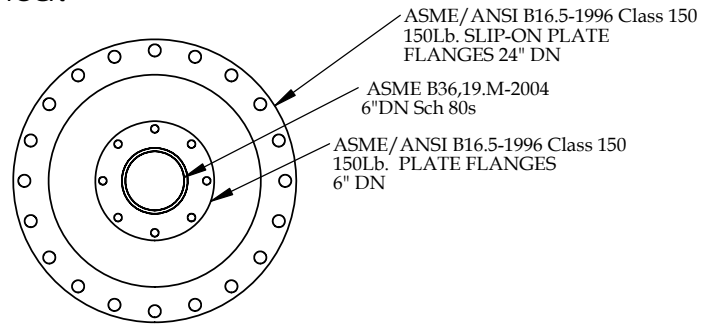
1342.700

TITLE:RIG3A	
WEIGHT :880kg	
MATERIAL:SS	
GRADE: 304	
DATE:8-8-13	
PROJECTION: THIRD	
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER	

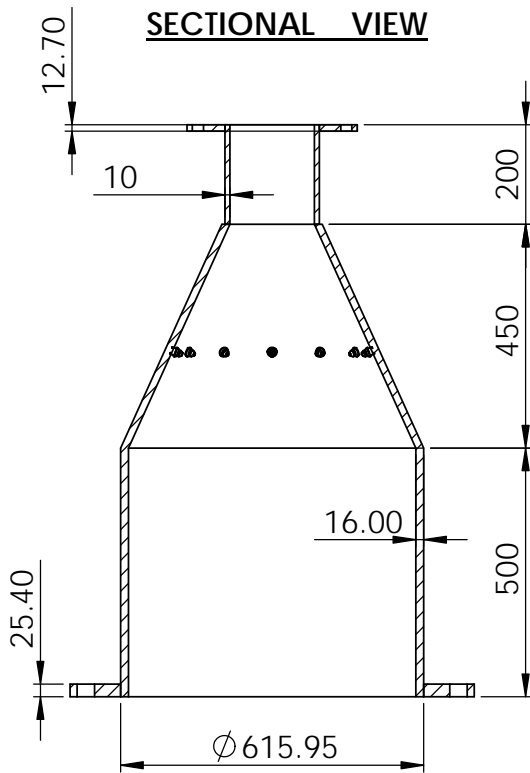
**ISOMETRIC VIEW**



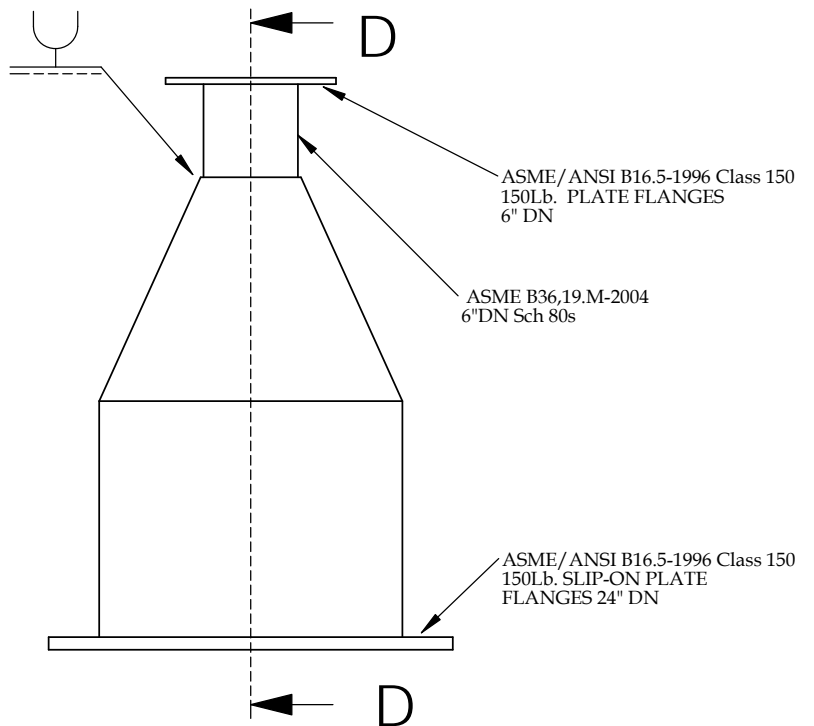
**TOP VIEW**



**SECTIONAL VIEW**




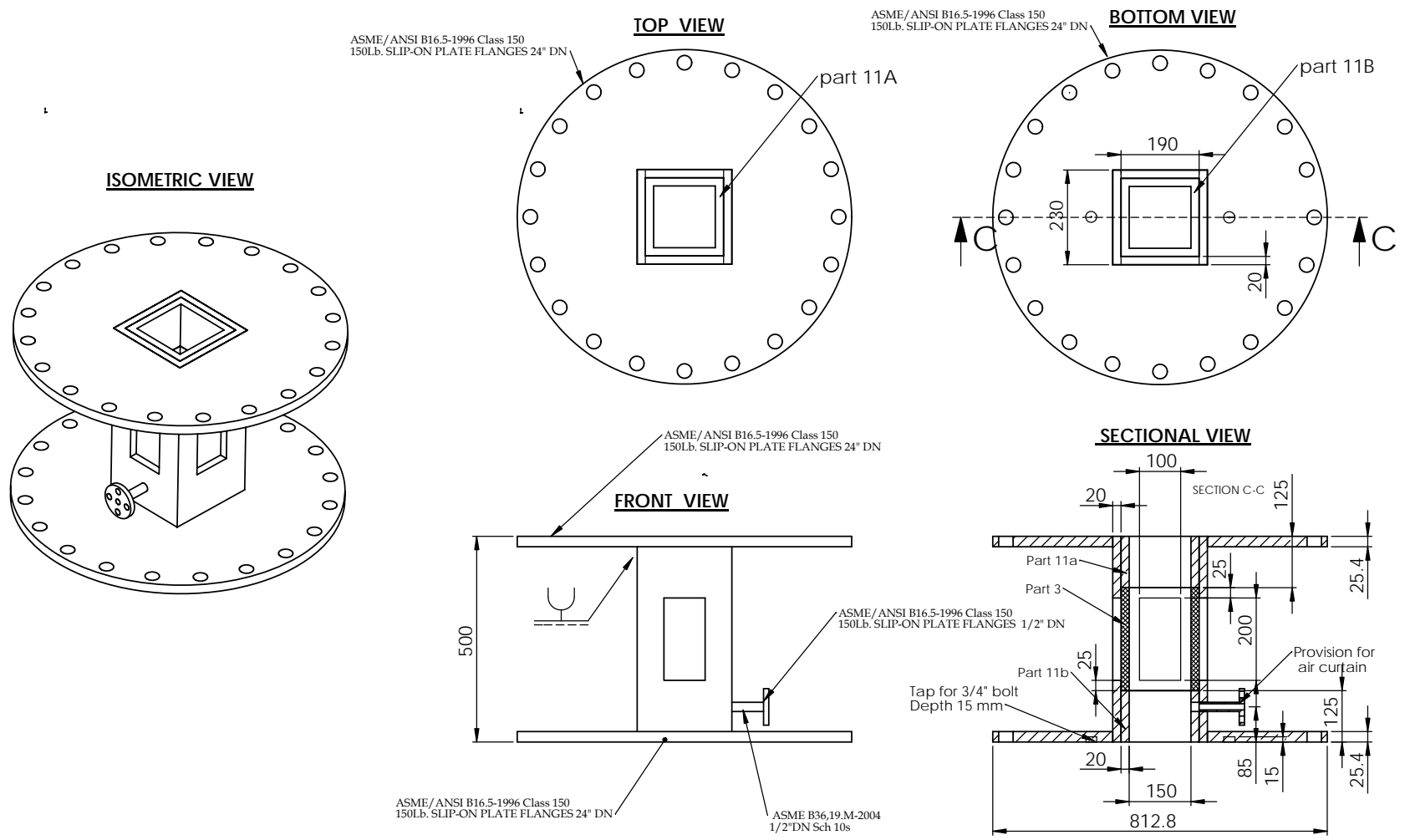
**FRONT VIEW**



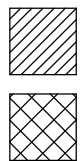
**SECTION D-D**



	<b>NATIONAL CENTRE FOR COMBUSTION</b>
	<b>RESEARCH AND DEVELOPMENT</b>
<b>IITM &amp; IISc</b>	
TITLE: RIG 3A	
PART NO: 1	
PART NAME: BACK PRESSURE REGULATING CHAMBER	
MATERIAL: SS	
GRADE: 304	
DATE: 8-8-13	
PROJECTION: THIRD ANGLE	
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER	



LEGEND:




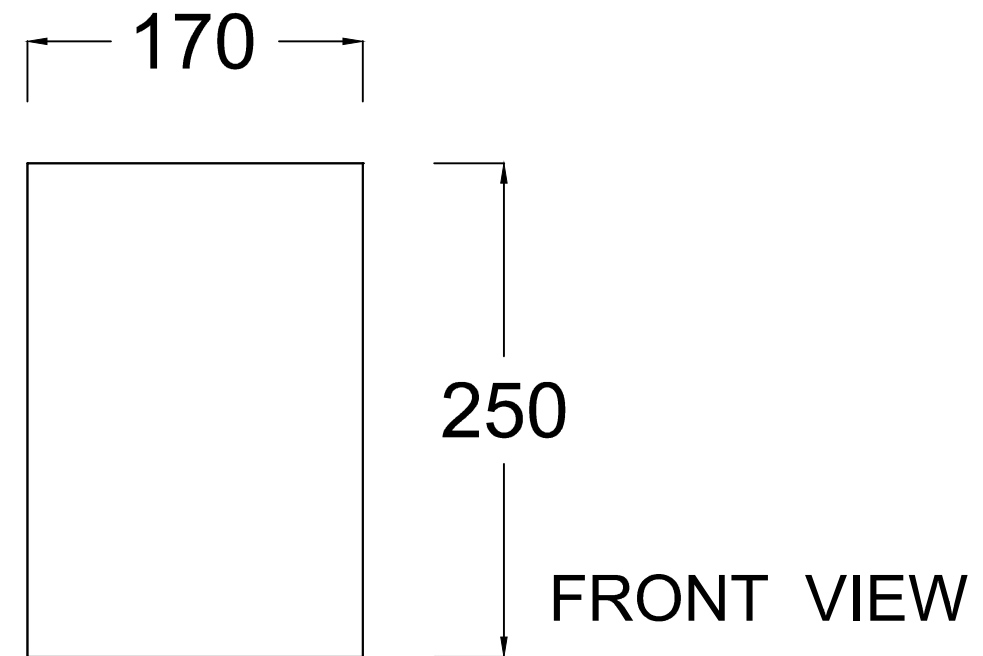
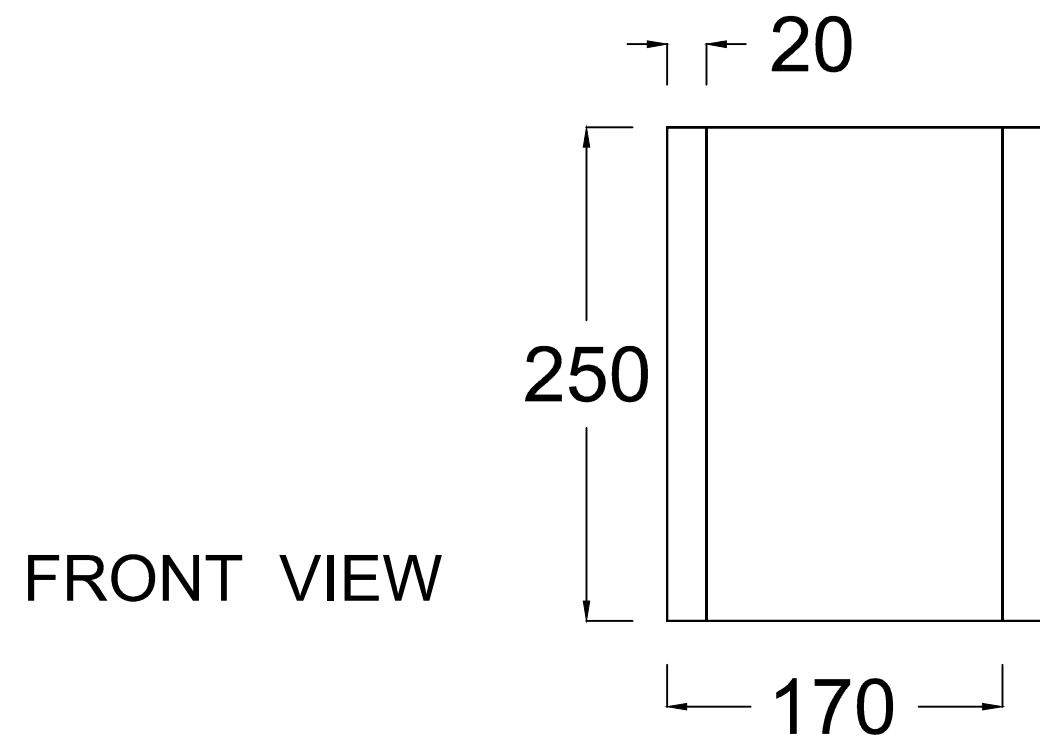
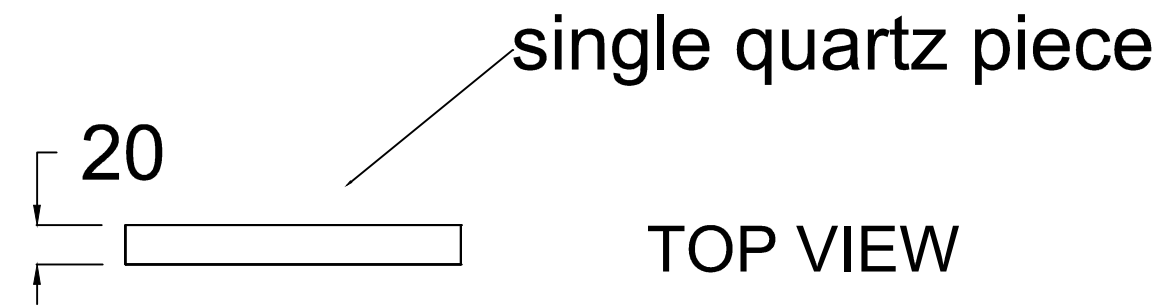
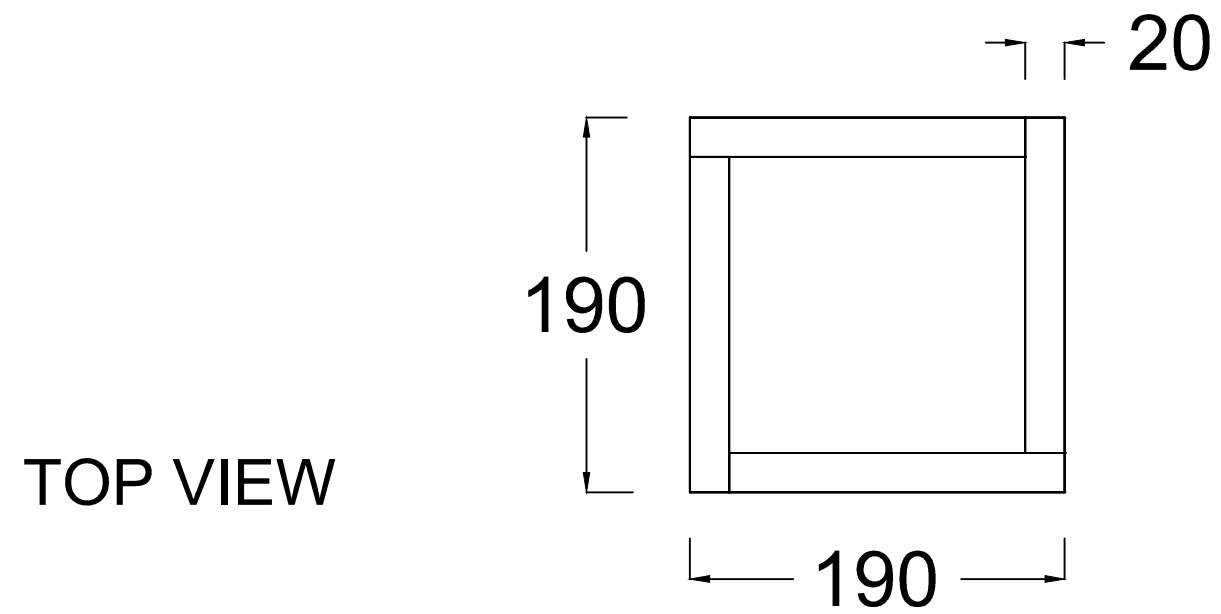
METAL HATCHING

GLASS HATCHING

NOTE1:  
 NUTS, BOLTS AND WASHER SET TO BE PROVIDED AT REQUIRED PLACES.  
 THEY ARE NOT SHOWN IN THE DIAGRAM BUT TO BE PROVIDED


NOTE 2:  
 SECTIONAL VIEW IS THE ASSEMBLY OF PART2,PART3,PART11A AND PART11B

	<b>NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT IITM &amp; IISC</b>
TITLE: RIG 3A	
PART NO: 2	
PART NAME: TEST SECTION CASING	
MATERIAL: SS-304	
DATE: 31-7-13	
PROJECTION: THIRD ANGLE	
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER	

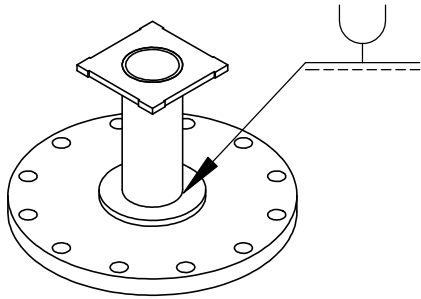


## GLASS ASSEMBLY IN THE TEST SECTION

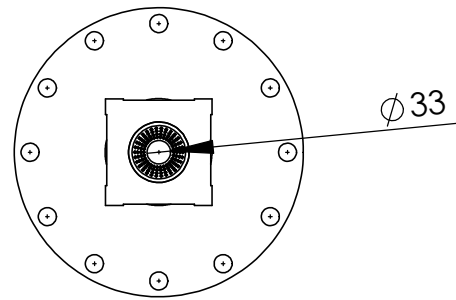
NOTE: CUTTING AND STICKING ALLOWANCE SHOULD BE TAKEN CARE BY THE FABRICATOR

	NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT INDIAN INSTITUTE OF TECHNOLOGY MADRAS INDIAN INSTITUTE OF SCIENCE
TITLE: RIG3A	
PART NO: 3	
PART NAME: OPTICAL ACCESS	
MATERIAL: SS	
GRADE: 304	
DATE: 31-7-13	
PROJECTION: THIRD	
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER	

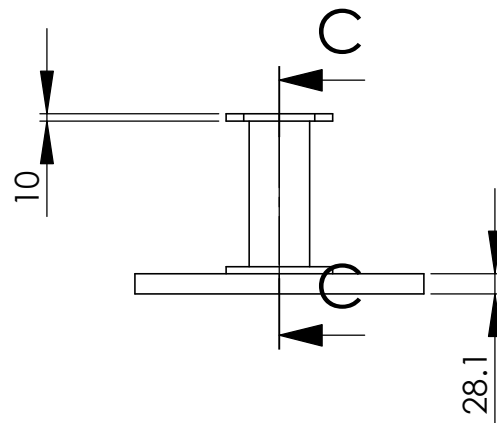
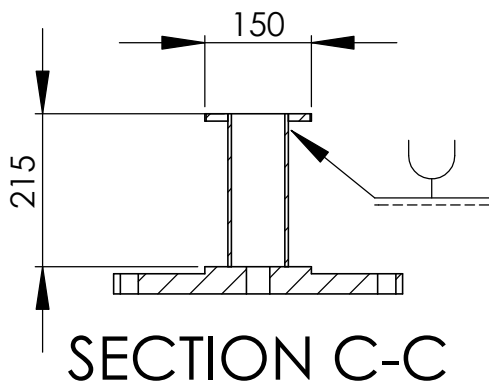
### ISOMETRIC VIEW



### TOP VIEW



### FRONT VIEW



### SECTION C-C



NATIONAL CENTRE FOR COMBUSTION  
RESEARCH AND DEVELOPMENT  
INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
INDIAN INSTITUTE OF SCIENCE

TITLE: RIG3A

PART NO: 4

MATERIAL: SS-304

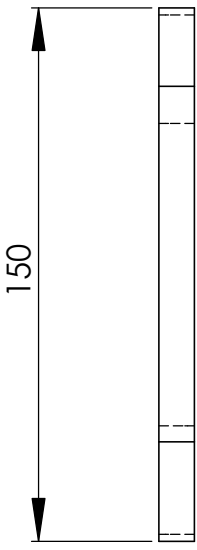
PART NAME: Air tube and porous flange Assemblage

DATE: 8-8-13

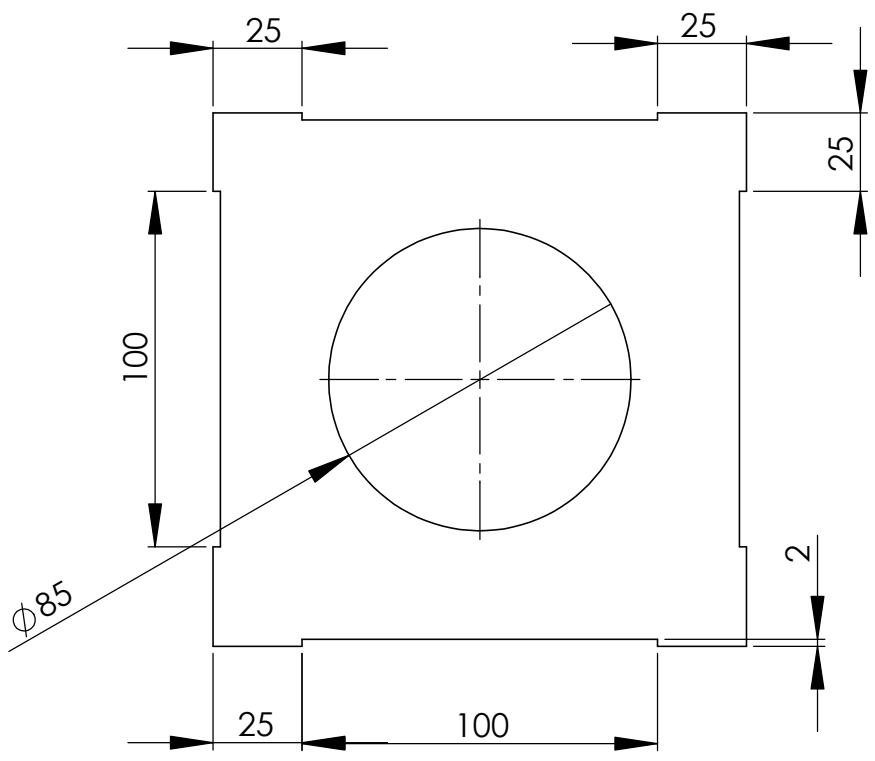
PROJECTION: THIRD

UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER

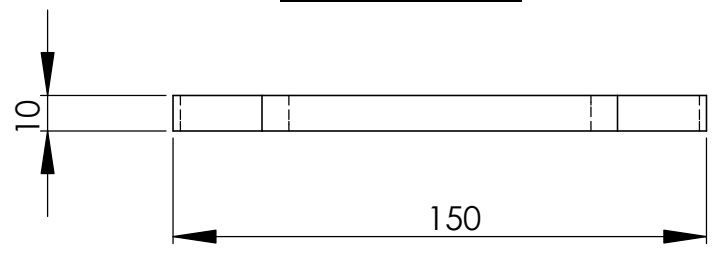
**SIDE VIEW**




**TOP VIEW**



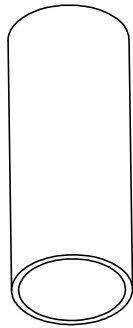
**FRONT VIEW**



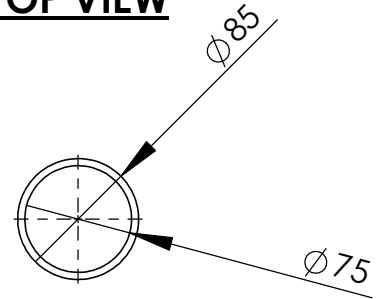
	<b>NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT INDIAN INSTITUTE OF TECHNOLOGY MADRAS INDIAN INSTITUTE OF SCIENCE</b>
TITLE: RIG3A	
PART NO: 4A	
MATERIAL: SS-304	
PART NAME: SQUARE FIT PLATE WITH RECTANGULAR SLOTS	
DATE: 8-8-13	
PROJECTION: THIRD	
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER	



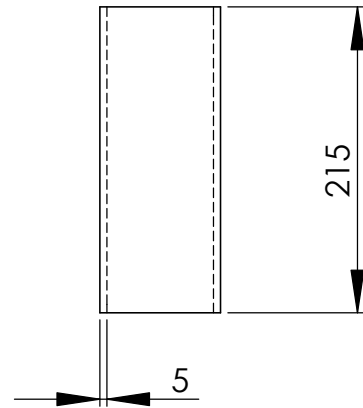
**ISOMETRIC VIEW**



**TOP VIEW**



**FRONT VIEW**



NATIONAL CENTRE FOR COMBUSTION  
RESEARCH AND DEVELOPMENT  
INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
INDIAN INSTITUTE OF SCIENCE

TITLE: RIG3A

PART NO: 4B

MATERIAL: SS-304

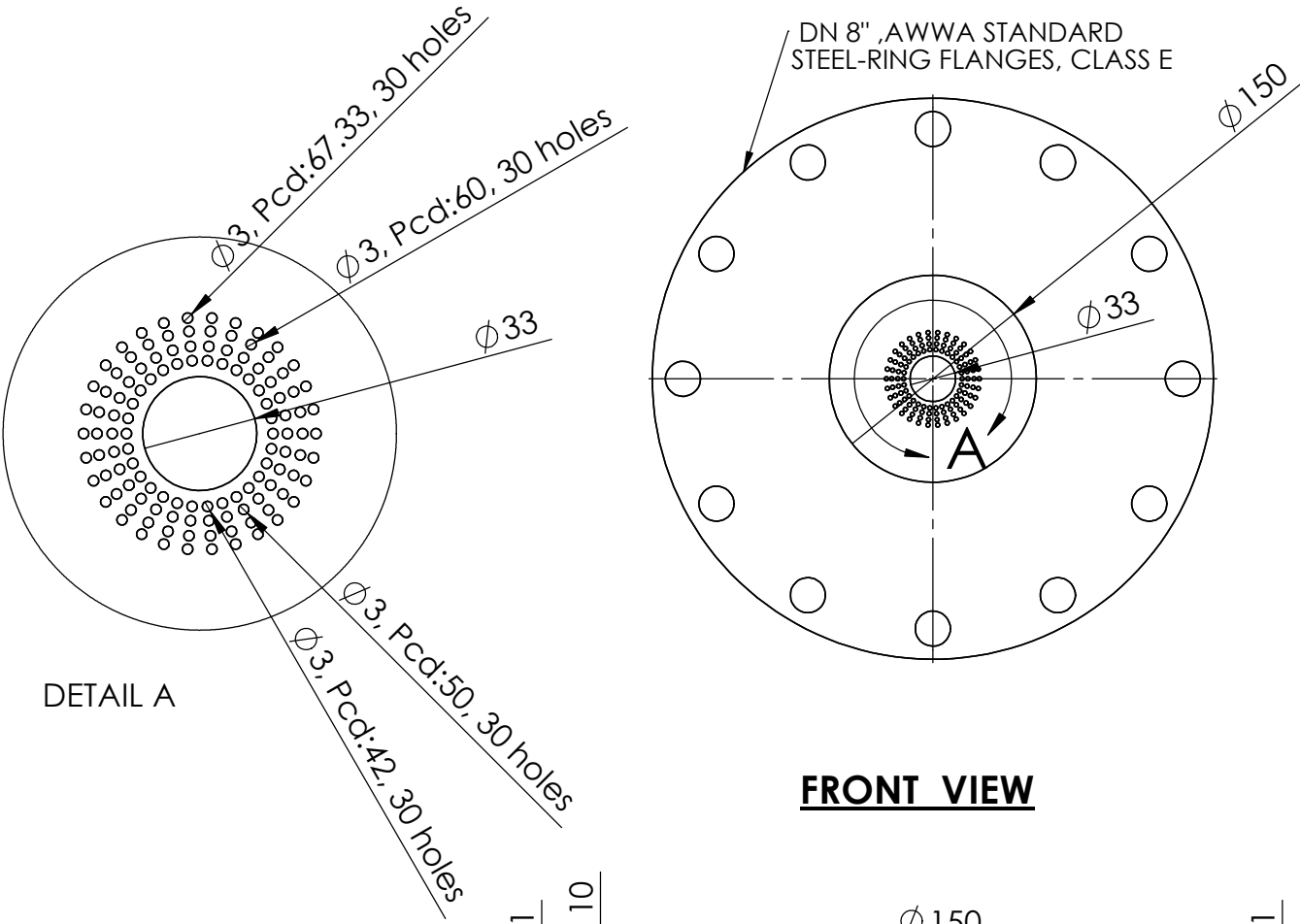
PART NAME: AIR TUBE

DATE: 8-8-13

PROJECTION: THIRD

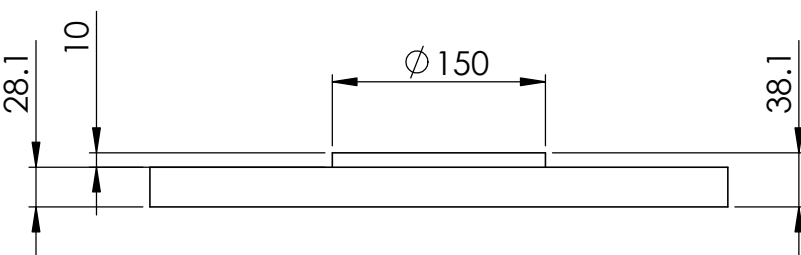
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER

**TOP VIEW**



DETAIL A

**FRONT VIEW**

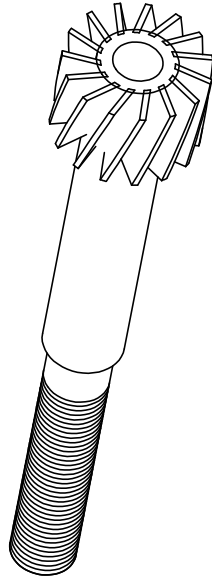


Note:Hidden lines not shown

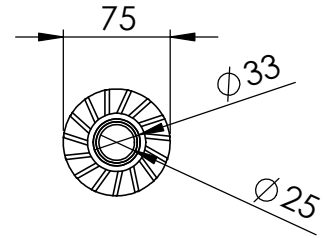
	<p>NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT INDIAN INSTITUTE OF TECHNOLOGY MADRAS INDIAN INSTITUTE OF SCIENCE</p>
	<p>TITLE:RIG3A</p>
<p>PART NO: 4C</p>	
<p>MATERIAL: SS-304</p>	
<p>PART NAME: POROUS FLANGE</p>	
<p>DATE:8-8-13</p>	
<p>PROJECTION: THIRD</p>	
<p>UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER</p>	

# SWIRLER 15

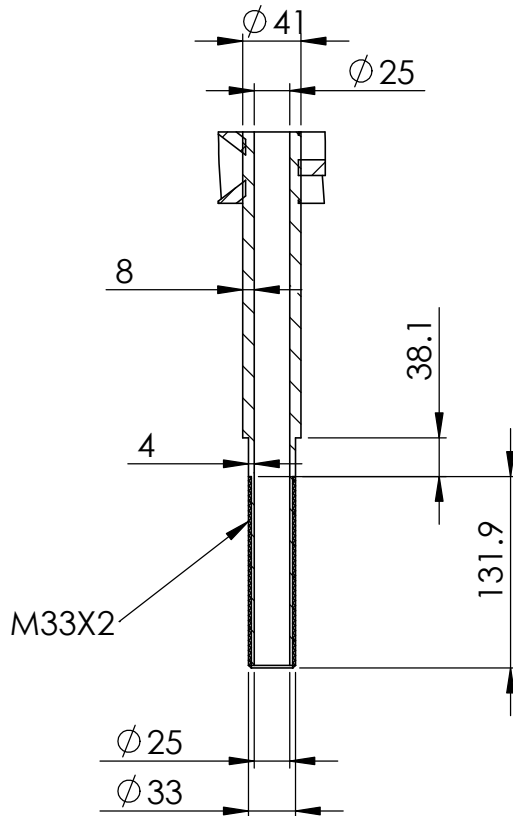
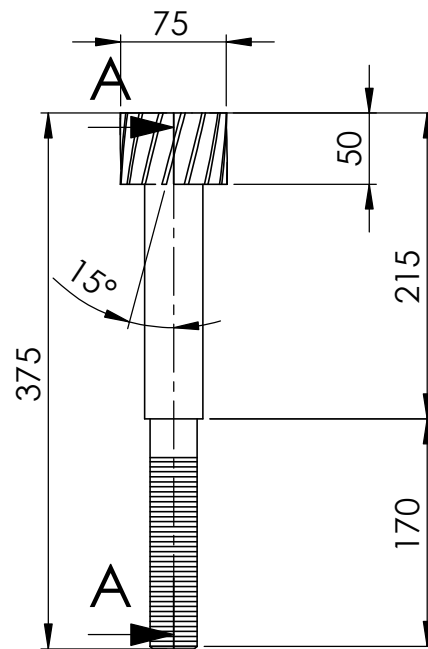
## ISOMETRIC VIEW



## TOP VIEW



## FRONT VIEW



## SECTION A-A

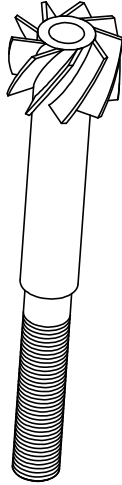
NO OF VANES: 15

VANE THICKNESS: 3

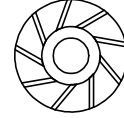
	NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT INDIAN INSTITUTE OF TECHNOLOGY MADRAS INDIAN INSTITUTE OF SCIENCE
	TITLE: RIG3A
PART NO: 5-A	
PART NAME: swirler assemblage	
DATE: 8-8-13	
PROJECTION: THIRD	
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER	

# SWIRLER 30

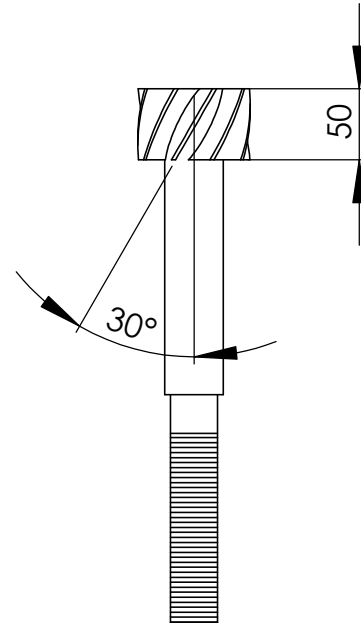
## ISOMETRIC VIEW



## TOP VIEW




## FRONT VIEW



NOTE:  
EXCEPT THE NO. OF VANES, BLADE ANGLE AND HEIGHT OF THE SWIRLER .  
THE OTHER DIMENSIONS CAN BE CONSIDERED FROM PART 5 A

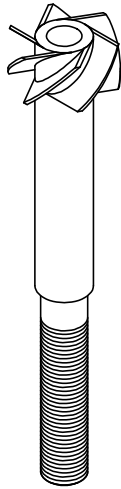
NO OF VANES: 9

VANE THICKNESS: 3

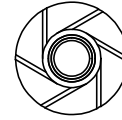
	<b>NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT INDIAN INSTITUTE OF TECHNOLOGY MADRAS INDIAN INSTITUTE OF SCIENCE</b>
TITLE: RIG3A	
PART NO: 5-30	
PART NAME: swirler assemblage	
DATE: 8-8-13	
PROJECTION: THIRD	
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER	

# SWIRLER 45

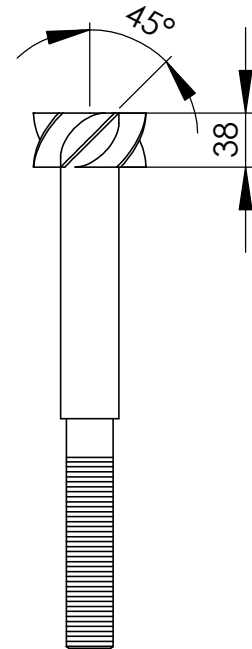
## ISOMETRIC VIEW



## TOP VIEW



## FRONT VIEW



NOTE:  
EXCEPT THE NO. OF VANES, BLADE ANGLE AND HEIGHT OF THE SWIRLER .  
THE OTHER DIMENSIONS CAN BE CONSIDERED FROM PART 5 A

NO OF VANES: 6

VANE THICKNESS: 3



NATIONAL CENTRE FOR COMBUSTION  
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INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
INDIAN INSTITUTE OF SCIENCE

TITLE: RIG3A

PART NO: 5-C

PART NAME: swirler assemblage

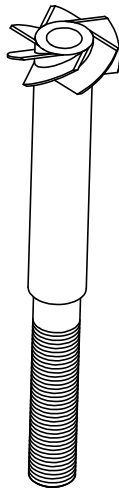
DATE: 8-8-13

PROJECTION: THIRD

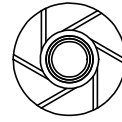
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER

# SWIRLER 60

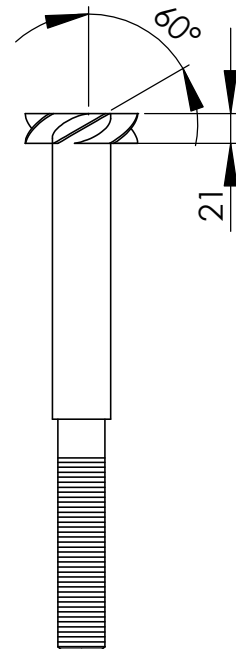
## ISOMETRIC VIEW



## TOP VIEW



## FRONT VIEW



NOTE:  
EXCEPT THE NO. OF VANES, BLADE ANGLE AND HEIGHT OF THE SWIRLER .  
THE OTHER DIMENSIONS CAN BE CONSIDERED FROM PART 5 A

NO OF VANES: 6

VANE THICKNESS: 3



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TITLE: RIG3A

PART NO: 5-D

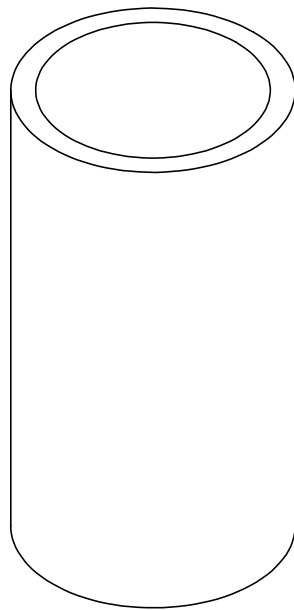
PART NAME: swirler assemblage

DATE: 8-8-13

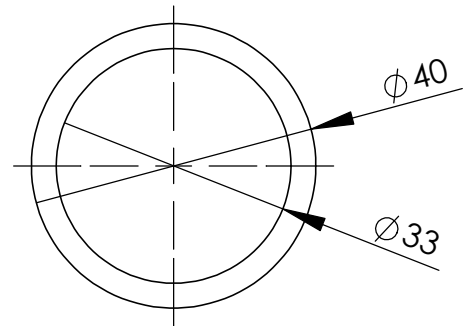
PROJECTION: THIRD

UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER

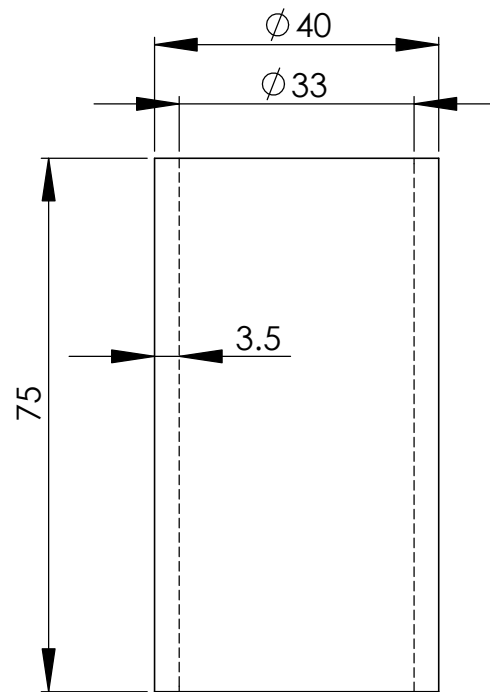
**TOP VIEW**




**ISOMETRIC VIEW**

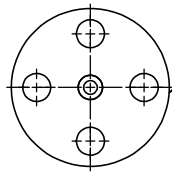


**FRONT VIEW**



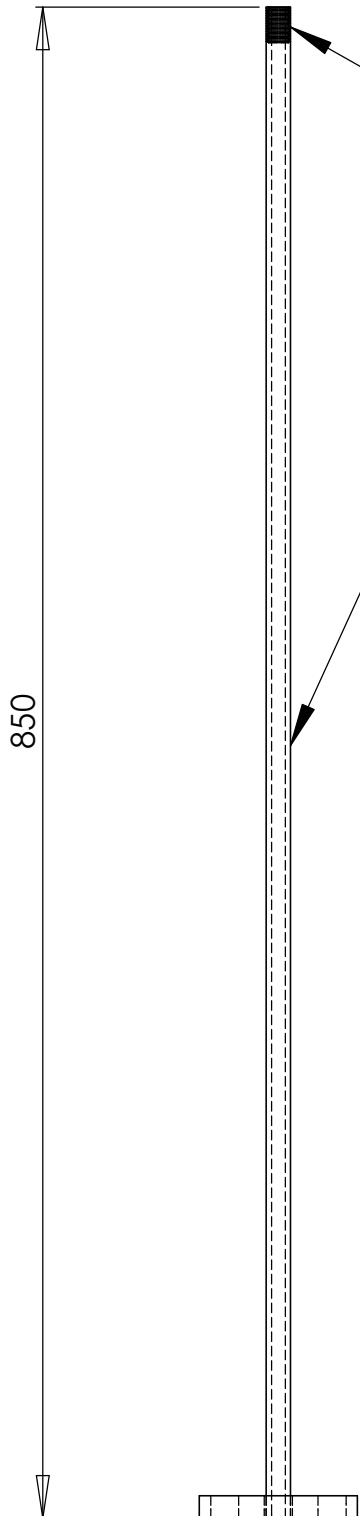
 <b>NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT INDIAN INSTITUTE OF TECHNOLOGY MADRAS INDIAN INSTITUTE OF SCIENCE</b>
TITLE:RIG3A
PART NO: 6
PART NAME: SLEEVE AND NUT ASSEMBLY
MATERIAL:SS
GRADE: 304
DATE:8-8-13
PROJECTION: THIRD
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER

TOP VIEW



DN -1/2"  
150 lb. slip on PLATE FLANGES - FOR PIPE  
ASME / ANSI B16.5-1996 Class 150

FRONT VIEW



1/2 " BSP External threading.  
Pitch :1.814mm

ASME B36,19.M-2004 1/2"DN Sch 80s

850



NATIONAL CENTRE FOR COMBUSTION  
RESEARCH AND DEVELOPMENT  
INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
INDIAN INSTITUTE OF SCIENCE

TITLE:RIG3A

PART NO: 7

MATERIAL: SS-304

PART NAME: fuel pipe with its flange

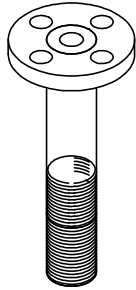
DATE:8-8-13

PROJECTION: THIRD

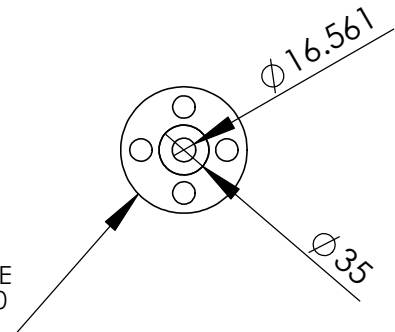
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER



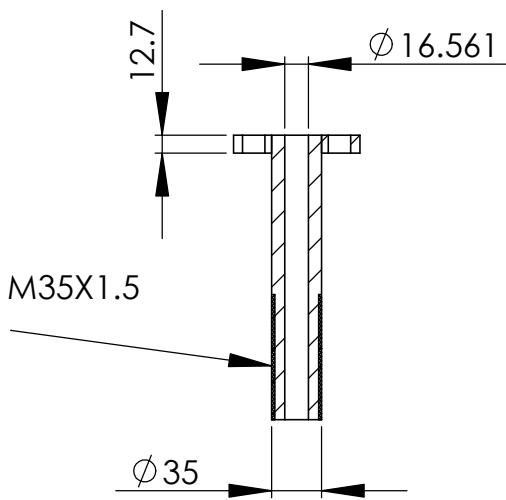
### ISOMETRIC VIEW



### TOP VIEW

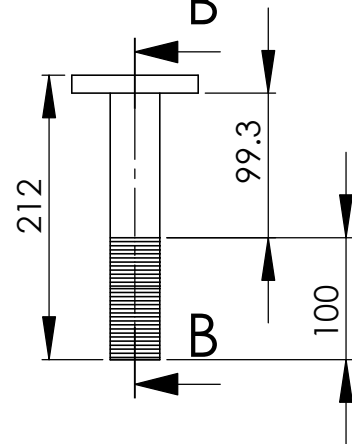


DN -1/2"  
150 lb. PLATE FLANGES - FOR PIPE  
ASME / ANSI B16.5-1996 Class 150



### SECTION B-B

### FRONT VIEW



NOTE: ROD IS CYLINDRICALLY  
GROUND



NATIONAL CENTRE FOR COMBUSTION  
RESEARCH AND DEVELOPMENT  
INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
INDIAN INSTITUTE OF SCIENCE

TITLE: RIG3A

PART NO: 8

MATERIAL: SS-304

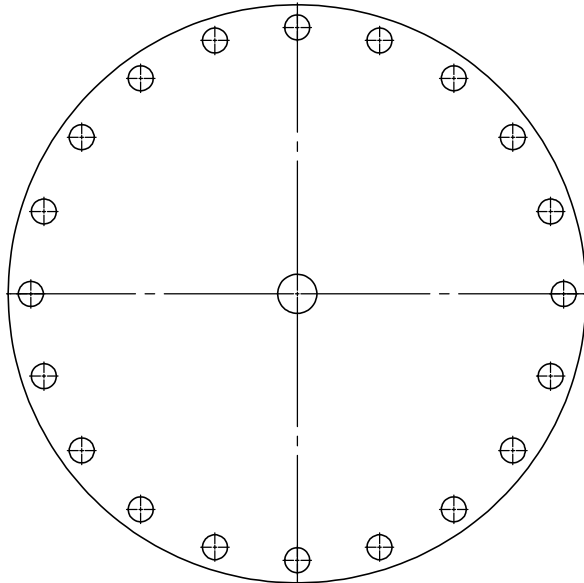
PART NAME: fuel extended tube with its flange

DATE: 8-8-13

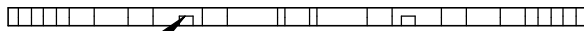
PROJECTION: THIRD

UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER

# TOP VIEW



# FRONT VIEW

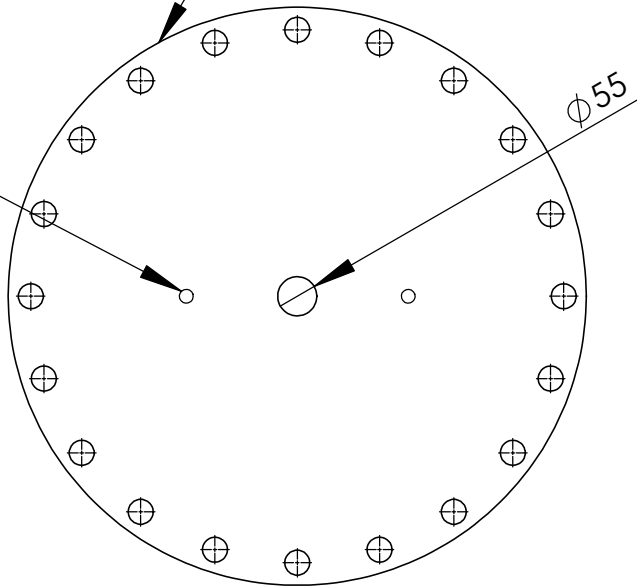



# BOTTOM VIEW

Tap for 3/4" bolt size ,  
depth 15mm

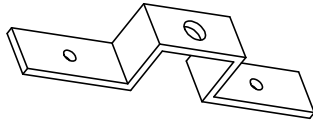
ASME/ANSI B16.5-1996 Class 150  
150lb. PLATE FLANGES 24" DN

Tap for 3/4" bolt size ,  
depth 15mm

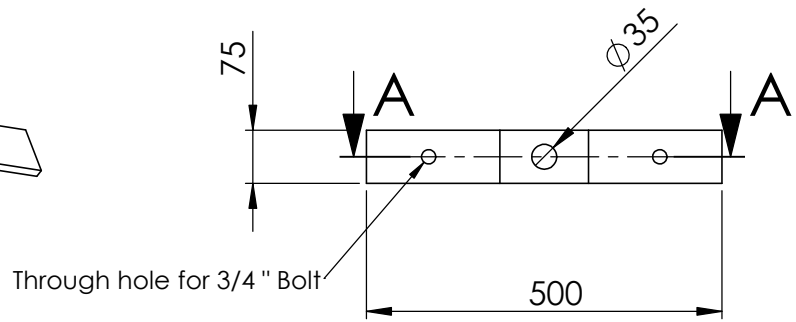


	<b>NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT INDIAN INSTITUTE OF TECHNOLOGY MADRAS INDIAN INSTITUTE OF SCIENCE</b>
TITLE: RIG3A	
PART NO: 9	
PART NAME: lip seal and its flange	
DATE: 8-8-13	
PROJECTION: THIRD	
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER	

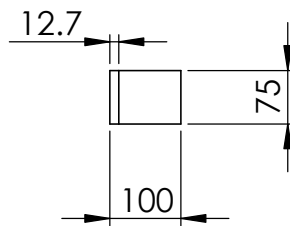
## ISOMETRIC VIEW



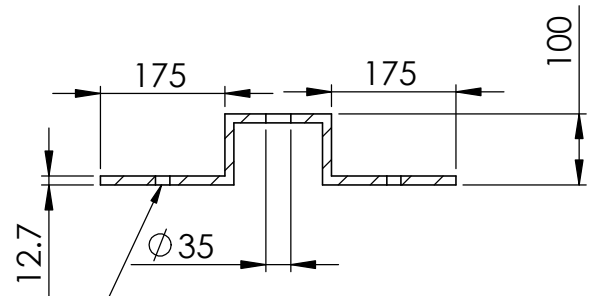
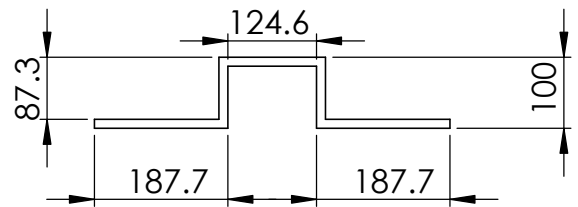
## TOP VIEW



## SIDE VIEW



## FRONT VIEW



Through hole for 3/4 " Bolt

## SECTION A-A



NATIONAL CENTRE FOR COMBUSTION  
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INDIAN INSTITUTE OF TECHNOLOGY MADRAS  
INDIAN INSTITUTE OF SCIENCE

TITLE:RIG3A

PART NO: 10

PART NAME:C BRACKET

MATERIAL:SS

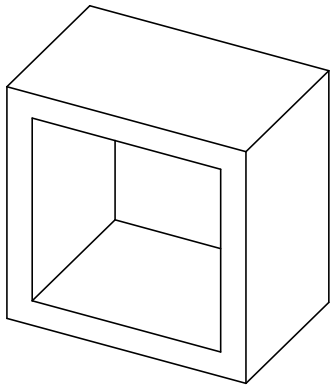
GRADE: 304

DATE:8-8-13

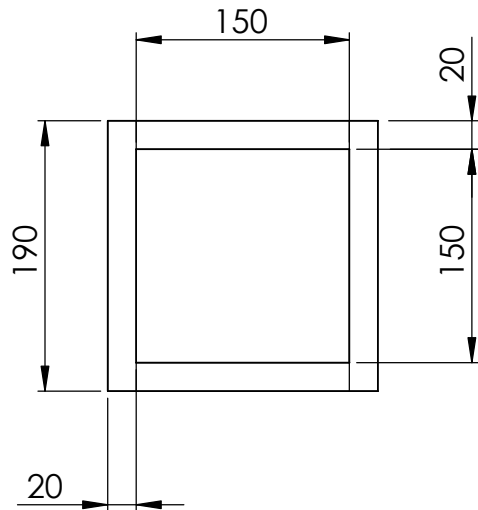
PROJECTION: THIRD

UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER

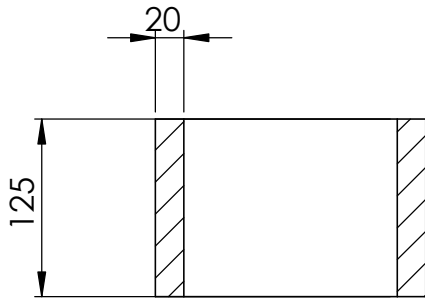
**ISOMETRIC VIEW**



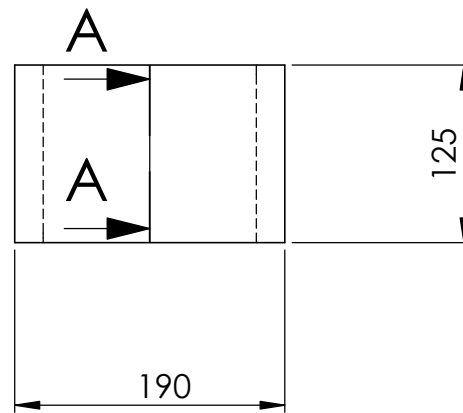
**TOP VIEW**




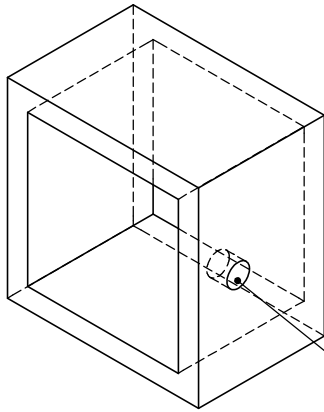
**FRONT VIEW**



**SECTION A-A**



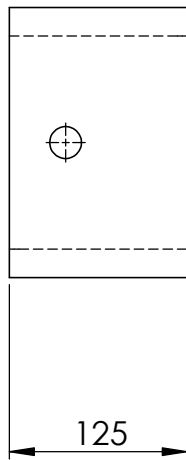
	<b>NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT INDIAN INSTITUTE OF TECHNOLOGY MADRAS INDIAN INSTITUTE OF SCIENCE</b>
TITLE:RIG3A	
PART NO: 11A	
PART NAME:SQUARE BLOCK FOR FLUSHING WITH OPTICAL ACCESS	
MATERIAL:SS	
GRADE: 304	
DATE:8-8-13	
PROJECTION: THIRD	
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER	



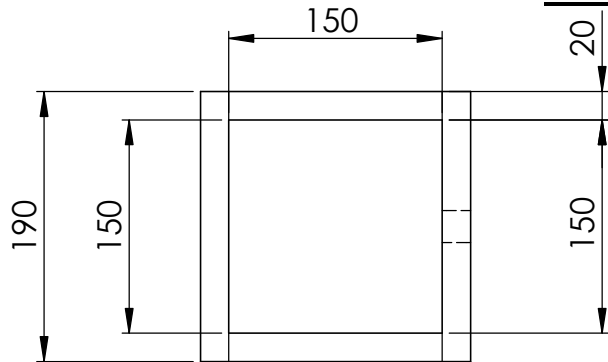
**ISOMETRIC VIEW**

*provision for nitrogen curtain*

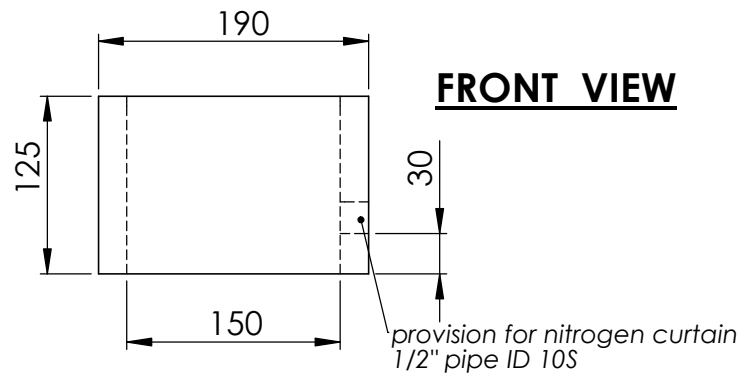
**SIDE VIEW**



**TOP VIEW**

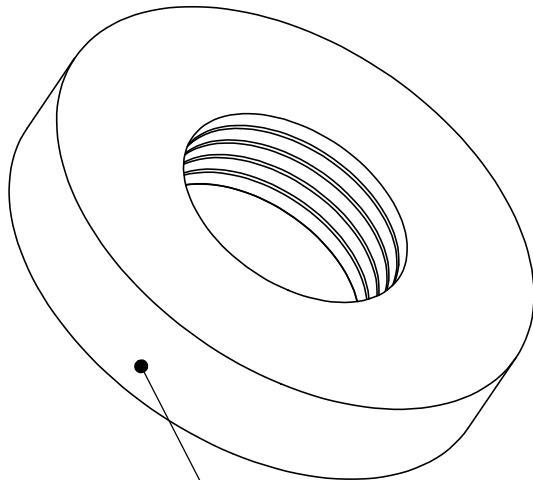


**FRONT VIEW**



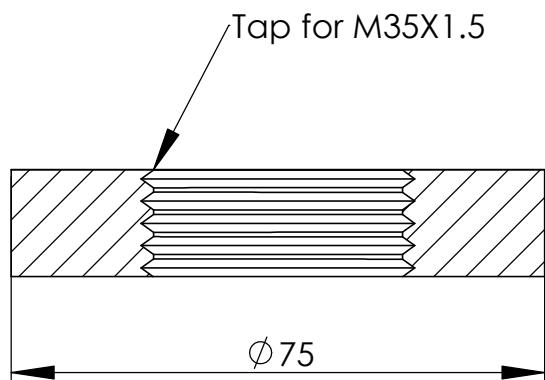
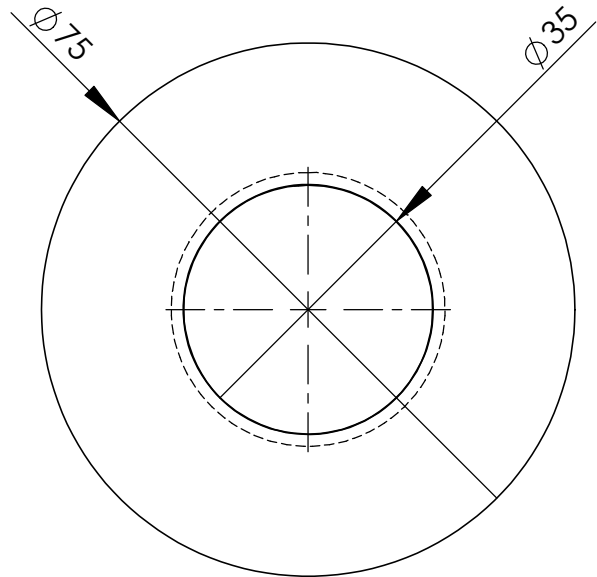
	<p>NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT INDIAN INSTITUTE OF TECHNOLOGY MADRAS INDIAN INSTITUTE OF SCIENCE</p>
	<p>TITLE: RIG3A</p>
<p>PART NO: 11B</p>	<p>PART NAME: SQUARE BLOCK FOR FLUSHING WITH OPTICAL ACCESS</p>
<p>MATERIAL: SS</p>	<p>GRADE: 304</p>
<p>DATE: 8-8-13</p>	<p>PROJECTION: THIRD</p>
<p>UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER</p>	

### ISOMETRIC VIEW



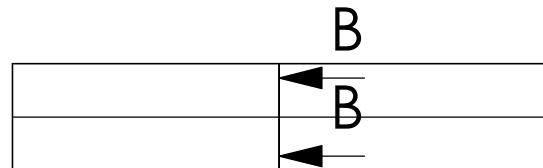
KNURLING

### TOP VIEW



### SECTION B-B

### FRONT VIEW



Note:

Knurling to be provided on the outer surface of the nut for better grip.



NATIONAL CENTRE FOR COMBUSTION  
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INDIAN INSTITUTE OF SCIENCE

TITLE: RIG3A

PART NO: 12

MATERIAL: SS-304

QUANTITY: 2

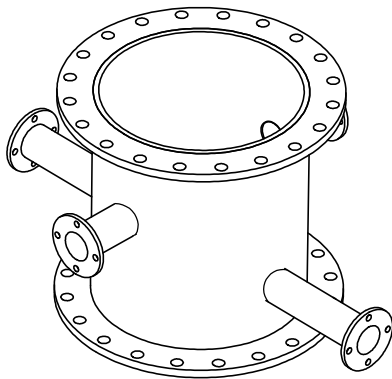
PART NAME: BRACKET NUT

DATE: 8-8-13

PROJECTION: THIRD

UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER

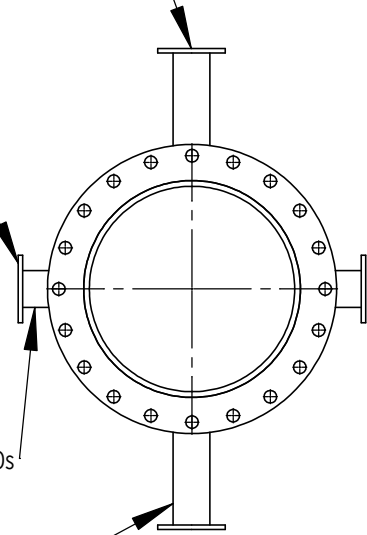
# ISOMETRIC VIEW



# TOP VIEW

ASME/ANSI B16.5-1996 Class 150  
150lb. PLATE FLANGES 3.5" DN

ASME/ANSI B16.5-1996 Class 150  
150lb. PLATE FLANGES 3.5" DN

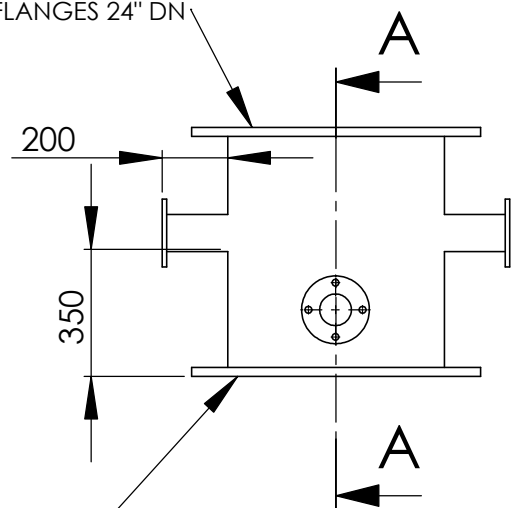


ASME B36.19.M-2004 3.5"DN Sch 80s

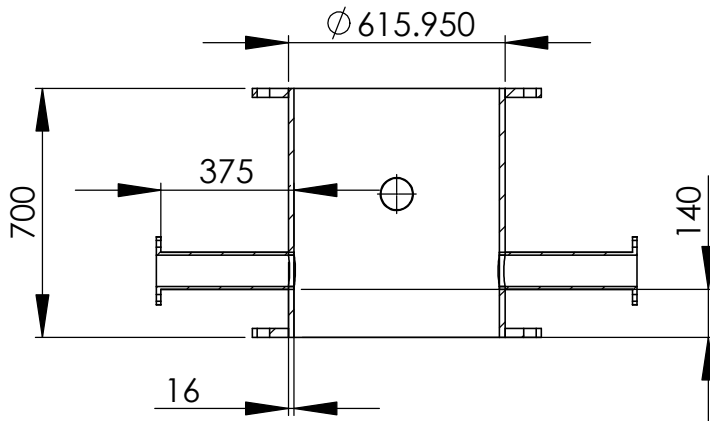
ASME B36.19.M-2004 3.5"DN Sch 80s

# FRONT VIEW


ASME/ANSI B16.5-1996 Class 150  
150lb. SLIP ON PLATE FLANGES 24" DN



ASME/ANSI B16.5-1996 Class 150  
150lb. SLIP ON PLATE FLANGES 24" DN



# SECTION A-A

 NATIONAL CENTRE FOR COMBUSTION RESEARCH AND DEVELOPMENT INDIAN INSTITUTE OF TECHNOLOGY MADRAS INDIAN INSTITUTE OF SCIENCE	
TITLE: RIG3A	
PART NO: 13	
MATERIAL: MILD STEEL	
PART NAME: SETTLING CHAMBER	
DATE: 8-8-13	
PROJECTION: THIRD	
UNLESS SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETER	