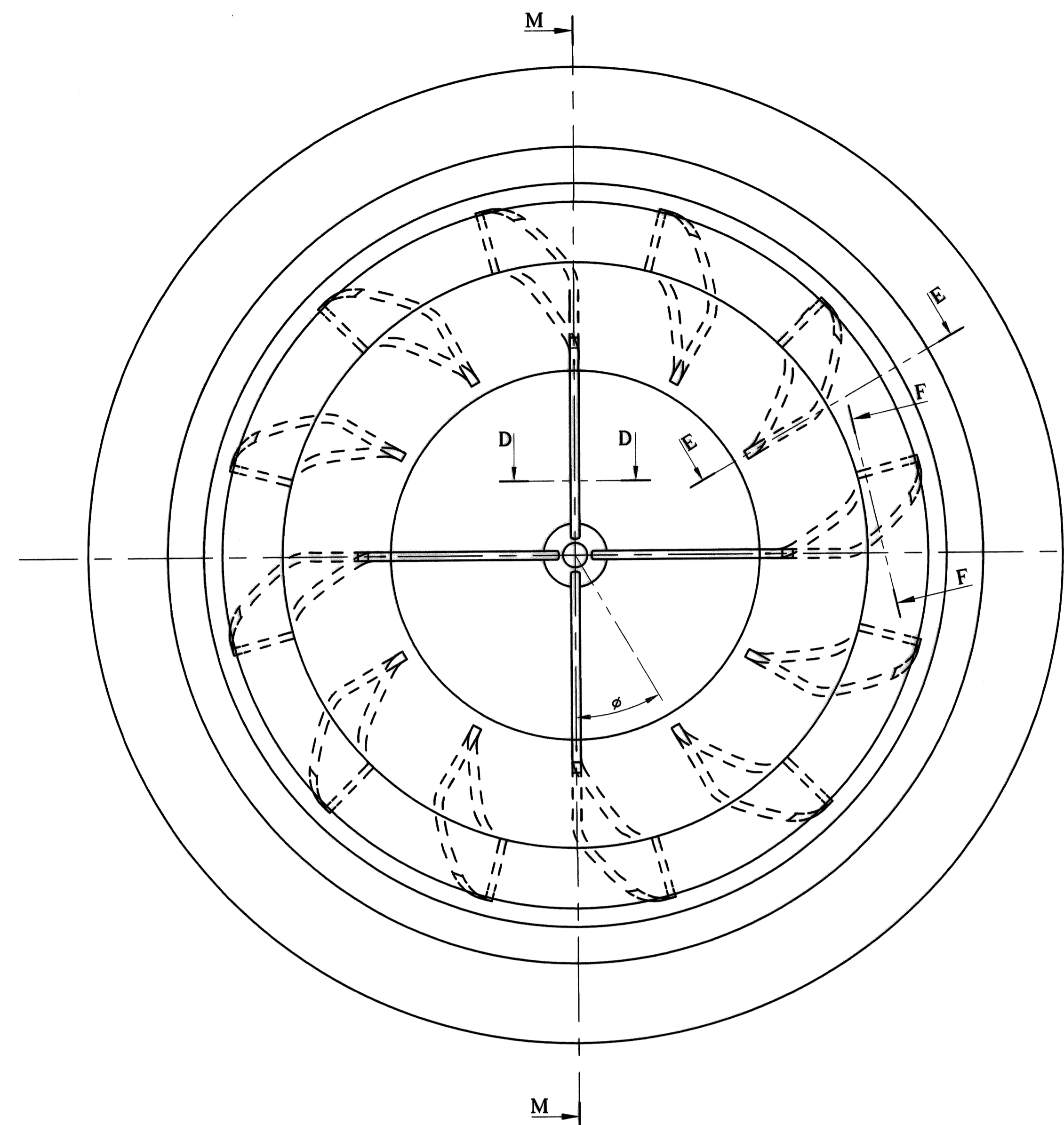
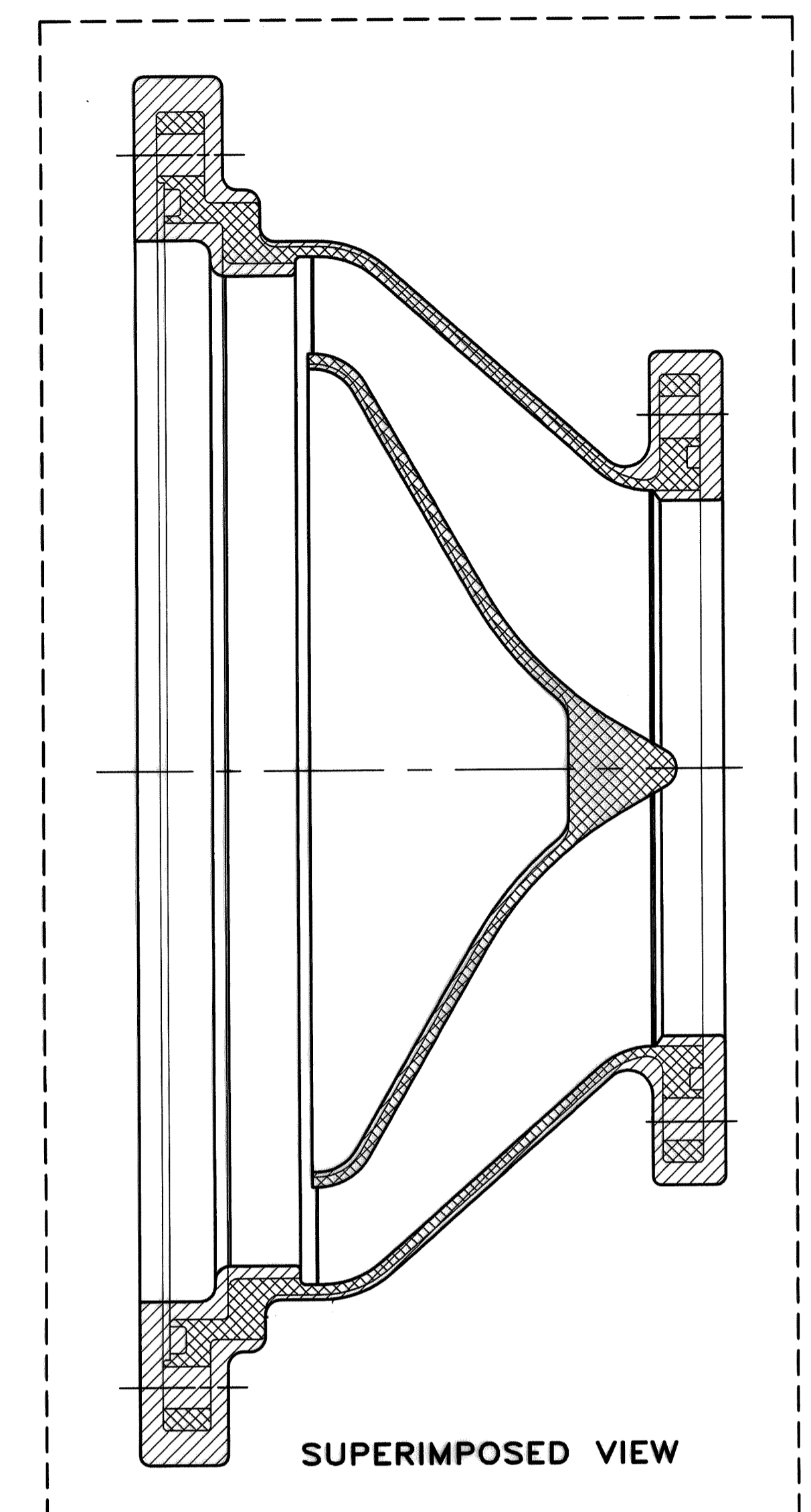


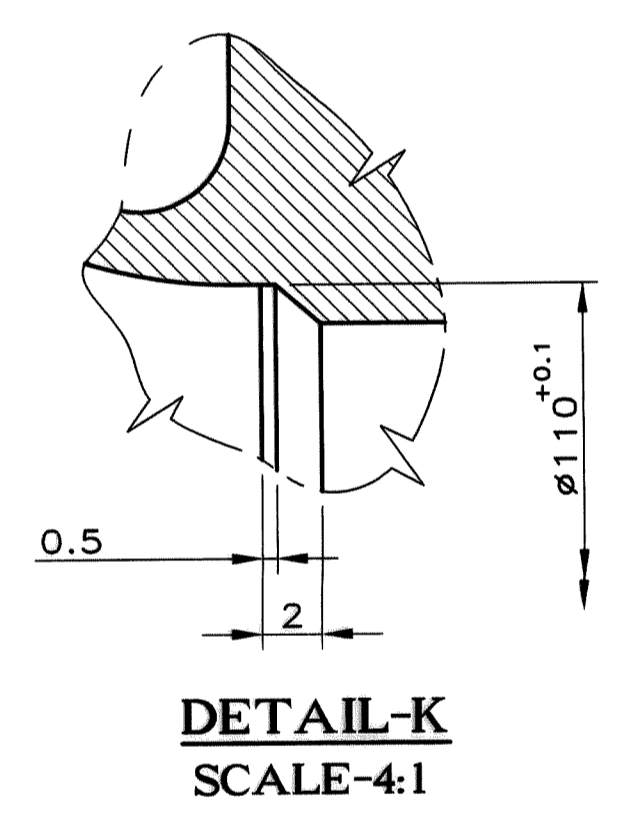
SECTION-MM



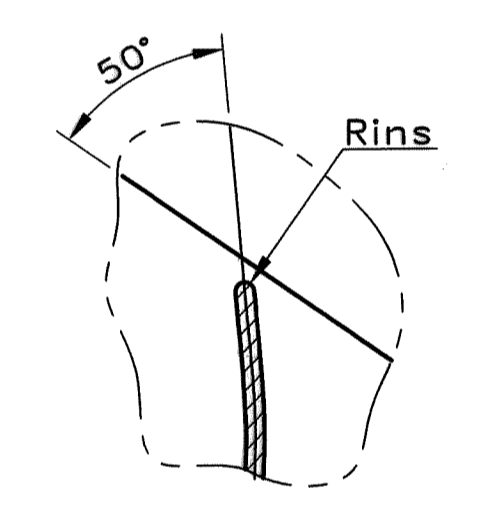
SECTION-DD  
SCALE-2:1



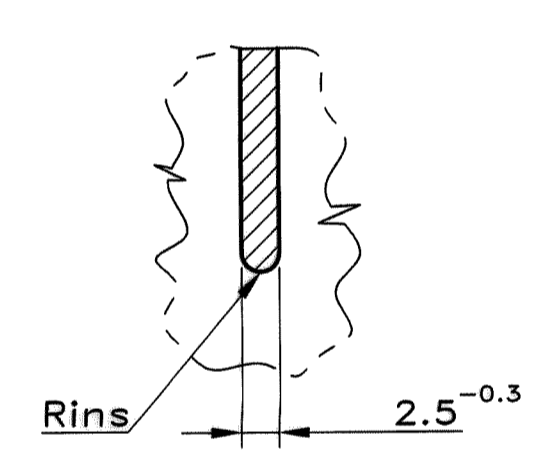
SUPERIMPOSED VIEW



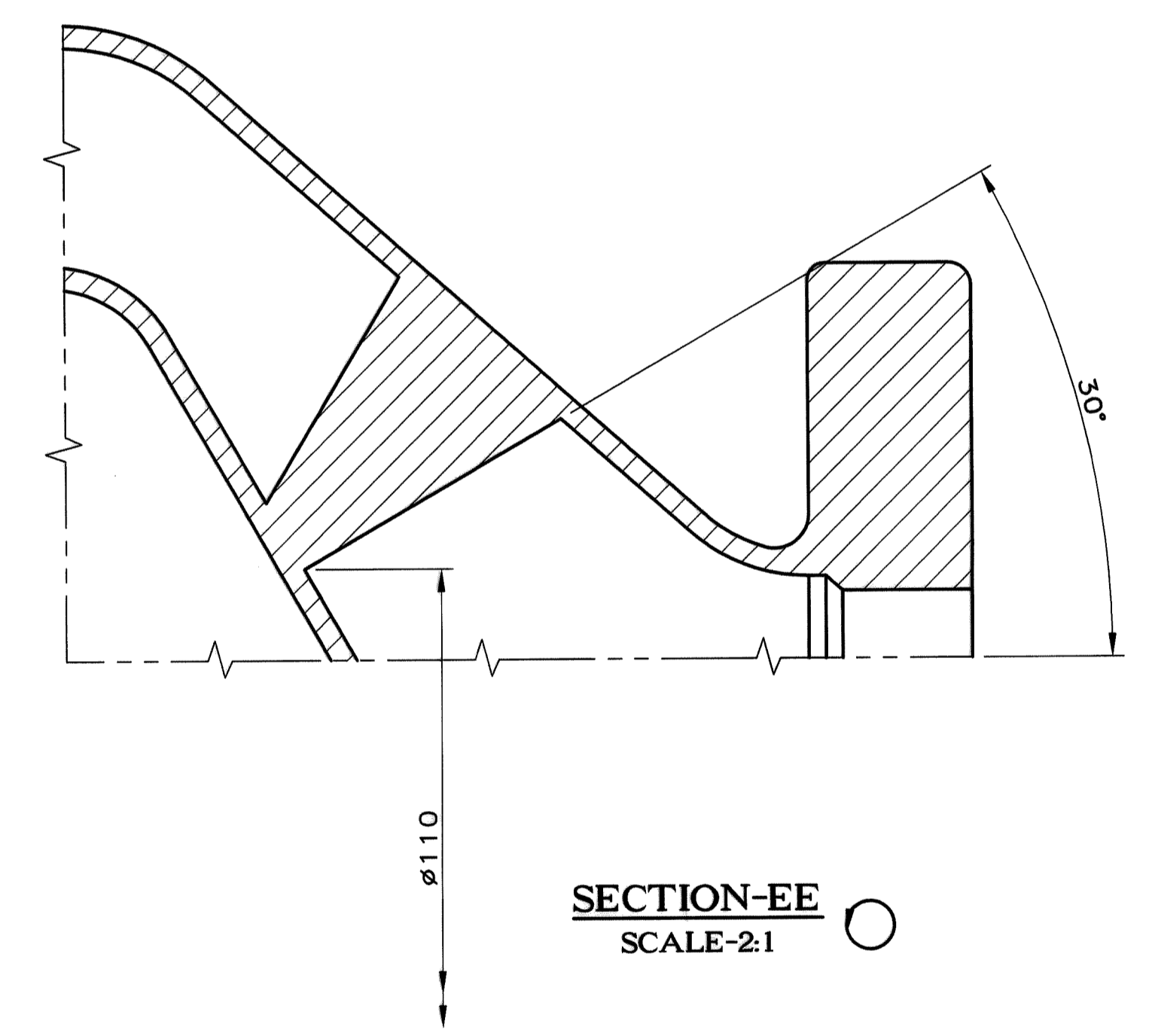
DETAIL-K  
SCALE-4:1



SECTION-FF  
SCALE-1:1



SECTION-DD  
SCALE-2:1

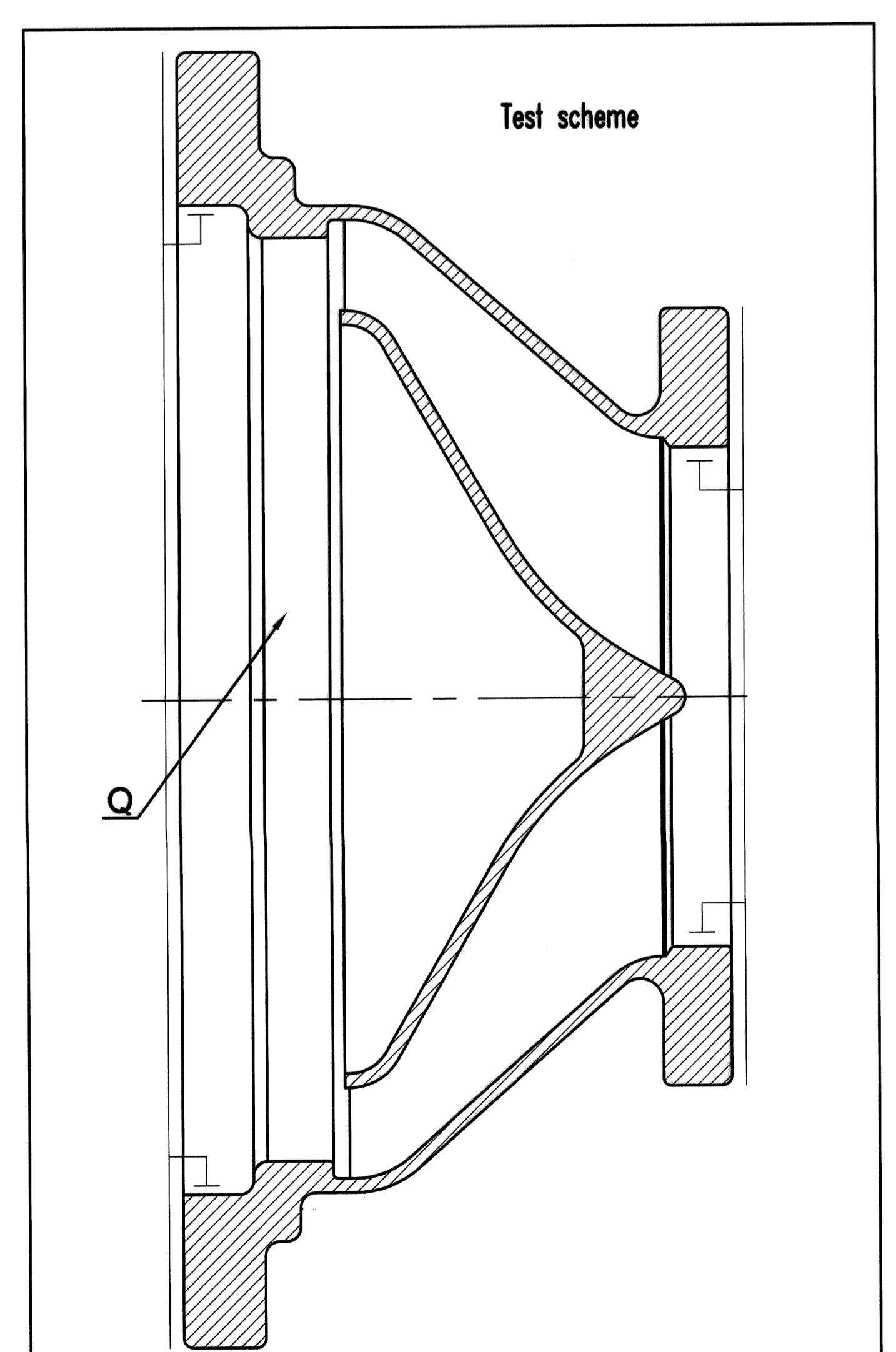


SECTION-EE  
SCALE-2:1

'BAY	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
∅	15°22'	13°12'	11°12'	8°48'	7°6'	4°3'	2°30'	0°45'	0°	0°	0°	0°	0°	0°	0°	0°	0°
∠	90°	87°8'	84°32'	81°20'	78°46'	73°18'	70°0'	65°42'	61°26'	56°31'	47°58'	42°49'	37°5'	31°38'	25°55'	20°44'	15°15'
L, mm	0	1.4	2.5	3.2	4.9	8	11	14.8	19.4	24.6	37.9	46.8	58.2	72.8	93.4	121.2	170.1

**NOTE:-**

- Alloy ICNI-4314-706C.  
Mechanical properties at RT:  $\sigma_u \geq 784\text{MPa}$ ,  $\sigma_{0.2} \geq 588\text{MPa}$ , %El  $\geq 5\%$  (GL=4D), %RA  $\geq 5\%$ . Stress rupture  $\geq 540\text{MPa}$  at 650°C for 30 minutes.
- A & B are reference surfaces.
- \*\*Reference dimensions.
- Unspecified casting radii up to 3mm.
- Perform X-ray inspection as per shooting sketch document No. VSSC/MME/MMG/FTD/SS/C-25/14/01. Method and acceptance as per technical document (Note. No.9).
- Dye penetrant test shall be carried out. Method and acceptance as per technical document (Note. No.9).
- Perform Hydro-test at a pressure of 11.5 bar (g) for 5 minutes (min.) in cavity Q. Leakage is not allowed.
- Perform pneumatic test by aquarium method at a pressure of 8.5 bar (g) for 5 minutes (min.) in cavity Q. Leakage is not allowed.
- Detailed specification, production and quality requirements as per technical document No.VSSC/MME/MMG/FTD/ICNI-4314-706C/01-14/R1.
- Open geometric tolerances to meet standard VDG P690, accuracy grade D1. Un-specified shape and angular tolerances to meet the limits of size. Pattern draft (if any) shall be within drawing tolerance.
- Mark drawing and serial numbers at location P.
- Put a stamp of final acceptance on a tag.



Sl. No.	Test	Medium for applying pressure	Zone	Gauge Pressure (bar)	Duration (minutes)
1.	Proof test	Hydraulic	Cavity Q	11.5	5 (minimum)
2.	Leak test	Pneumatic(GN <sub>2</sub> )	Cavity Q	8.5	5 (minimum)

OPEN TOLERANCE TABLE-1  
FOR LINEAR DIMENSIONS EXCEPT POSITION AND THICKNESS(VDG P690/D1)

Nominal Dimension, mm	Total Tolerance
Upto 6	0.3
6-10	0.36
10-18	0.44
18-30	0.52
30-50	0.8
50-80	0.9
80-120	1.1
120-180	1.6
180-250	2.4
250-315	2.6
315-400	3.6
400-500	4.0

OPEN TOLERANCE TABLE-2 (255.TY-8114)

Largest overall casting Dimensions, mm	For position & Linear Dimensions between un-machinable surfaces. (except widths)	Un-machinable widths/Thickness
0-50	±0.4	±0.3
50-180	±0.5	±0.4
180 and.	±0.6	±0.5

OPEN TOLERANCE TABLE-3  
FOR RADIUS (VDG P690/D1)

Nominal Radius in mm.	Total Tolerance.
Upto 6	0.2
6-10	0.25
10-18	0.40
18-30	0.50
30-50	0.60
50-80	0.80
80-120	1.0
120-180	1.30
180-250	1.80
250-315	2.30
315-400	2.90
400-500	3.40

SUPPLY CONDITION		HEAT TREATMENT	
Heat treated & Surface treated		Homogenization, Solution treatment, Aging	
PART No.	TITLE	DRG. No.	REV.
1	LH2 TURBINE EXHAUST CASING CASTING	CE20-1200-121C	R1
MATERIAL	ICNI-4314-706C	GOVERNMENT OF INDIA	INDIAN SPACE RESEARCH ORGANISATION
SURFACE FINISH	8/	LIQUID PROPELLION SYSTEMS CENTRE	VALIAMMALA TRIVANDRUM-695547
SURFACE TREATMENT	Sand blasting	FTD/MMG/VSSC	
APPROVED	DATE	SCALE	1:1 and noted.
2021	27-08-21	DRG. No.	CE20-1200-121C
REV	DESCRIPTION	SIGN	SHEET 1 OF 1