



# General technical data



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Our radiators are made as per the drawings and specifications of our customers. Each individual enquiry is studied. Generally, our radiators have the following characteristics:

## Dimensional characteristics

- Centre distance: from 800 mm to 3 500 mm
  - For larger centre distances, a branch connection can be made
- Number of panels: from 1 to 39
- Sheet thickness: 1 mm or 1.2 mm
- Manifold: Ø 88.9 or 108 mm, thickness 3.2 mm
- Drain valve: M12 according to standard DIN 42558 (see drawing page 6)
- Degassing: M6 according to standard DIN 42558 (see drawing page 6)
- Flange:
  - 150x150 for manifold Ø 88.9 (see drawing page 6)
  - 170x170 for manifold Ø 108 (see drawing page 6)
  - Without
  - Other models on request
- Lifting eye:
  - Eurocooler standard (see drawing page 6)
  - Other models on request
- Stiffener: Ø 8 as standard
- Possibility of adding accessories:
  - Bosses (all types)
  - Fan bracket
  - Drain valve
  - Degassing valve
  - Extra lifting eye
  - Probe pocket

## Materials

Special steel sheet

Flange: S235

Stiffener: S235

Manifold: S235

## Operating temperature

Our standard radiators can be used up to - 40° C, for temperatures up to - 60° C a special material must be used (available on request).

## Surface treatment

### Internal coating

On request:

- Specific internal paint
- Oil flushing
- Flushing and maintaining of pressure with hot oil
- Nitrogen inerting of radiator

### External coating

#### > Before painting

- Shotblasting
- Hot galvanisation, 55 microns according to standard NF EN ISO 1461
- Pickling with phosphoric acid
- Degreasing and phosphatisation

#### > Painting

##### Primer coat:

- Dual component epoxy
- Water dilutable paint with micaceous iron oxide
- Zinc rich epoxy
- Epoxy with micaceous iron oxide

##### Intermediate coat:

- Dual component epoxy
- Water dilutable paint with micaceous iron oxide
- Dual component epoxy with micaceous iron oxide
- Epoxy with micaceous iron oxide

##### Final coat:

- Dual component epoxy
- Dual component epoxy with micaceous iron oxide
- Dual component polyurethane
- Dual component polyurethane with micaceous iron oxide
- Water dilutable paint
- Water dilutable paint with micaceous iron oxide

## Quality control

Eurocooler is certified ISO 9001:2000. Throughout the production cycle, the radiators are inspected after every operation.

- Dimensional inspection
- Tightness control and pressure to 2 bars
- Internal cleanliness
- Checking of coating thicknesses
- Final unit inspection

## Standards used

Description	Standards
Transformer radiator, and accessories	EN 50216-6
Drain and degassing valves	DIN 42558
Galvanisation checks	NF EN ISO 1461
Paint system Anti-corrosion protection	ISO 12944-1 ISO 12944-2 ISO 12944-3 ISO 12944-4 ISO 12944-5 ISO 12944-6 ISO 12944-7 ISO 12944-8
Quality system	ISO 9001:2000



## Dilatable

All our radiators can be dilatable.

### Advantage of dilatable radiators

Dilatable radiators accept variations in the volume of oil caused by differences in temperature. In this case there is no need for a preservative.

### Example

Radiator from 1600 mm x 29 panels filled with mineral oil

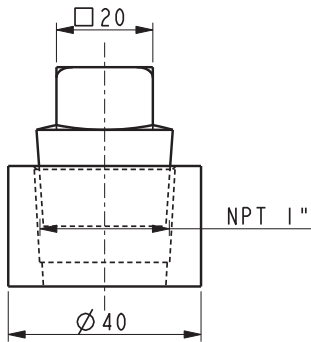
**Volume at 20° C:** 164 litres

**Variation in volume of oil:** 7.5% V/100° C

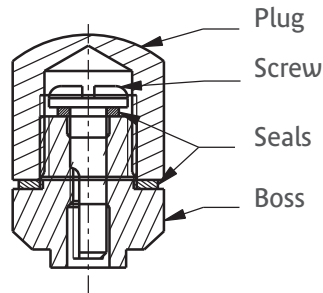
**Oil volume at -20° C:**  $7.5/100 \times 40/100 \times 164 = - 4.92$  litres

**Oil volume at + 90° C:**  $7.5/100 \times 70/100 \times 164 = +8.61$  litres

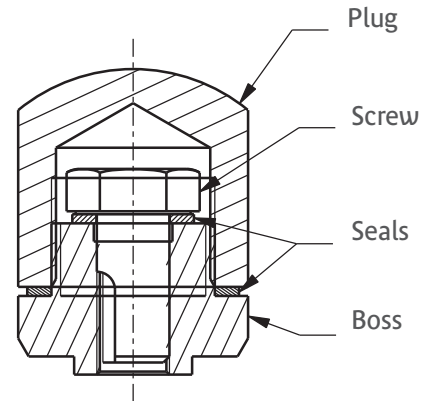
# Accessories



**DRAIN 1 NPT**

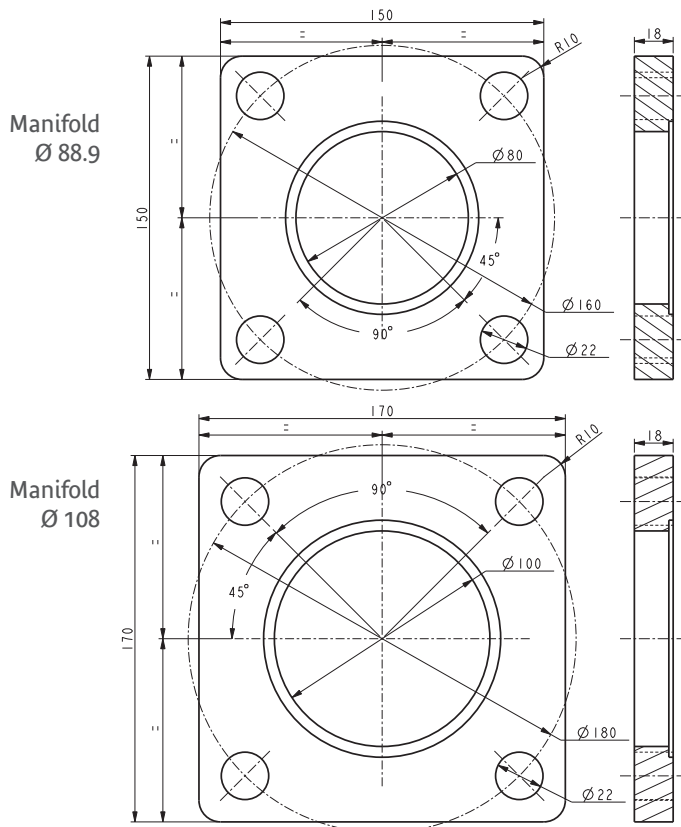


**DEGASSING VALVE  
ACCORDING TO DIN42558**

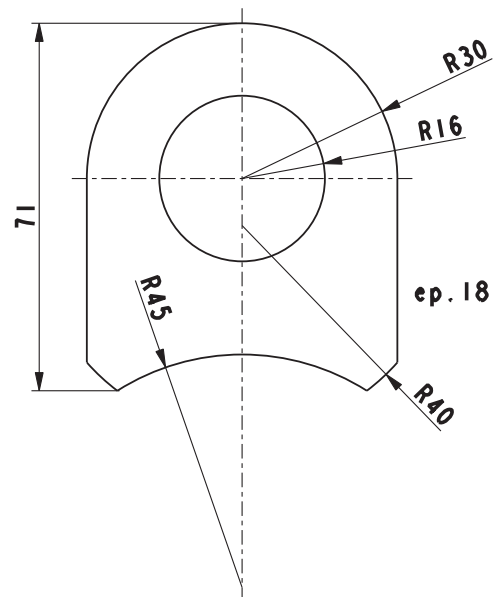


**DRAIN VALVE  
ACCORDING TO DIN42558**

## STANDARD FLANGES



## LIFTING EYE



# Table of weight/volume per section

Centre distance (mm)	Surface (sq.m)	Volume (L)	Weight of 1 mm sheet	Weight of 1.2 mm sheet
800	0.89	2.94	7.78	8.94
900	1.00	3.28	8.66	9.97
1000	1.12	3.62	9.54	11.00
1100	1.23	3.96	10.43	12.03
1200	1.34	4.30	11.31	13.06
1300	1.46	4.64	12.23	14.12
1400	1.57	4.98	13.11	15.15
1500	1.69	5.33	13.99	16.18
1600	1.80	5.67	14.88	17.21
1700	1.91	6.01	15.08	18.31
1800	2.03	6.35	16.72	19.34
1900	2.14	6.69	17.60	20.37
2000	2.26	7.03	18.48	21.40
2100	2.37	7.37	19.37	22.43
2200	2.48	7.71	20.25	23.46
2300	2.60	8.05	21.13	24.48
2400	2.71	8.39	22.02	25.51
2500	2.83	8.74	22.90	26.54
2600	2.94	9.08	23.78	27.57
2700	3.05	9.42	24.81	28.75
2800	3.17	9.76	25.70	29.78
2900	3.28	10.10	26.58	30.81
3000	3.40	10.44	27.46	31.83
3100	3.51	10.78	28.35	32.86
3200	3.62	11.12	29.23	33.89
3300	3.74	11.46	30.11	34.92
3400	3.85	11.80	30.99	35.95
3500	3.97	12.15	31.88	36.98

These weights are gross weights without paint or flanges.

# Coating system

## Test operating procedures for paint systems

Corrosiveness category as defined in ISO 12944-2	Durability class	ISO 2812-1 (chemical resistance) hr	ISO 6270 (water condensation) hr	ISO 7253 (neutral salt spray) hr
C2	Limited	-	48	-
	Average	-	48	-
	High	-	120	-
C3	Limited	-	48	120
	Average	-	120	240
	High	-	240	480
C4	Limited	-	120	240
	Average	-	240	480
	High	-	480	720
C5-I	Limited	168	240	480
	Average	168	480	720
	High	168	720	1440
C5-M	Limited	-	240	480
	Average	-	480	720
	High	-	720	1440



## Atmospheric corrosiveness categories

Corrosive- ness category	Mass loss per unit surface area / loss of thickness (first year of exposure)				Examples of typical environments in a temperate climate	
	Low alloy steel		Zinc		Exterior	Interior
	Mass loss g/sq.m Mass loss g/sq.m	Loss of thickness microns	Mass loss g/sq.m	Loss of thickness microns		
<b>C1</b> very low	≤ 10	≤ 1,3	≤ 0,7	≤ 0,1		Heated buildings with a clean atmosphere (offices, shops...)
<b>C2</b> low	> 10 to 200	> 1,3 to 25	> 0,7 to 0,5	> 0,1 to 0,7	Atmosphere with a low level of pollution (rural areas)	Unheated buildings where condensation can occur (warehouses, sports halls)
<b>C3</b> average	> 200 to 400	> 25 to 50	> 5 to 15	> 0,7 to 2,1	Urban and industrial atmospheres Pollution moderated by sulphur dioxide (coastal areas with low salinity)	Production enclosures with high humidity and a certain level of air pollution (food industries, laundries, breweries, dairies)
<b>C4</b> high	> 400 to 650	> 50 to 80	> 15 to 30	> 2,1 to 4,2	Industrial areas and coastal areas with moderate salinity	Chemical factories, swimming pools, coastal shipyards
<b>C5-I</b> very high (industry)	> 650 to 1500	> 80 to 200	> 30 to 60	> 4,2 to 8,4	Industrial areas with high humidity high and an aggressive atmosphere	Buildings or areas with permanent condensation and with high pollution
<b>C5-M</b> very high (maritime)	> 650 to 1500	> 80 to 200	> 30 to 60	> 4,2 to 8,4	Coastal and maritime areas with high salinity	

## Recommended paint systems

Substrate: Black steel

AY: acrylic - PU: polyurethane - EP : epoxy

No.	Primer Coat(s)				Finish coat(s)				Complete system	
	Binder	Product	Coats Number	NDFT $\mu\text{m}$	Binder	Product	Coats Number	NDFT $\mu\text{m}$	Coats Number	NDFT $\mu\text{m}$
1	AY	Water dilutable with micaceous iron oxide	1	60	PU/AY	PU finish or Water dilutable finish	1	40	2	100
2	AY	Water dilutable with micaceous iron oxide	2	60	PU/AY	PU finish or Water dilutable finish	1	60	3	180
3	AY	Water dilutable with micaceous iron oxide	3	60	PU/AY	PU finish or Water dilutable finish	1	60	4	240
4	EP	Zinc rich primer	1	60	PU/AY	PU finish or Water dilutable finish	1	60	3	180
	AY	Water dilutable with micaceous iron oxide	1	60						
5	EP	Zinc rich primer	1	60	PU	PU finish	1	60	4	240
	AY	Water dilutable with micaceous iron oxide	2	60						
6	EP	Zinc rich primer	1	60	PU	PU finish	2	60	5	300
	AY	Water dilutable with micaceous iron oxide	2	60						

Substrate: Galvanised steel

No.	Primer Coat(s)				Finish coat(s)				Complete system	
	Binder	Product	Coats Number	NDFT $\mu\text{m}$	Binder	Product	Coats Number	NDFT $\mu\text{m}$	Coats Number	NDFT $\mu\text{m}$
1	AY	Water dilutable with micaceous iron oxide	1	60	PU/AY	PU finish or Water dilutable finish	1	60	2	120
2	AY	Water dilutable with micaceous iron oxide	2	60	PU/AY	PU finish or Water dilutable finish	1	60	3	180
3	AY	Water dilutable with micaceous iron oxide	3	60	PU/AY	PU finish or Water dilutable finish	1	60	4	240





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