

Heads

DIN- ASME- STANDARD

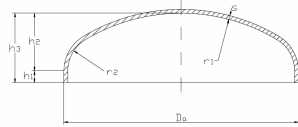
Standard	Classification	Material
Dimension:	Carbon steel	P265-GH, 16Mo3, 15NiCuMoNb5
Diameter (OD): 60,3 - 13.500 mm	CrMo(V) Alloy steel	10CrMo9-10 , 13CrMo4-5 ASME SA 387 Gr.11, Gr.12, Gr.91
Wall thickness (s): 3 – 250 mm		P355-GH, -NH, -NL1, -NL2 ASME SA 516 Gr.60 , Gr.70
Typical forms:	Stainless steel	1.4301 / ASME SA240- 304 1.4307 / ASME SA240- 304L 1.4404 / ASME SA240- 316, 316L 1.4541 / ASME SA240- 321, 321H 1.4571 / ASME SA240- 316Ti 1.4539 / ASME SA240- 904 L
- Torispherical head DIN 28011		
- Semi ellipsoidal head DIN28013		
- Ellipsoidal heads 2:1		
- Hemispherical heads		
- Standard/Flat dished heads		
- Flat heads	Duplex and Super Duplex	1.4462 / ASTM Duplex 2205 1.4501 / ASTM SuperDuplexCr25
- Convex discs		
- Plate type heads		
- Diffuser heads	Nickel alloys	Alloy -20, -59, -200 MONEL -400 INCONEL -600, -601, -625 INCOLOY -800, -825
- Bulk & Tank vehicle heads		
- Cone		
- Weld construction		
- Special pressed parts		
Test method:	and other	Copper, Titanium, Aluminium cadded material combinations
Impact -Test at room temperature or low temperature acc. to DIN EN 10045-2		
Tensile test acc to DIN EN 10002-1 , ISO 6892-1 , ASTM A 370		
Hot tensile test acc to DIN EN 10002-5 until 900°C		
Hardness Test acc. to Brinell and DIN EN ISO 6506-1		
Testing of intercrystalline corrosion acc to ISO 3651-2 (A) , ASTM A 262 Pract. E		
X – Ray -Examination acc. to EN 1435 , ISO 5817 , ASME V Art.2 , VIII Div.1 § UW -51		
UT - Ultrasonic testing acc. to EN 10160 , EN 10307 , ASME SA-578 , ASME SA-435		
PT - Penetrant testing acc. to EN 571 , ASME V Art.6 , ASME VIII Div.1 App.8		
MT- Magnetic particle testing acc. to EN 1291 , ASME V Art.7 , ASMEVIII Div.1 App.6		
Design Code:		
AD-2000 , BS PD 5500 , CODAP, EN 13445 + PED 97/23/EC		
ASME VIII, Div. 1 und Div. 2 , U-Stamp, U2-Stamp Authorization		
Certificate:		
Certificate acc. to EN 10204 - 3.1 and 3.2 from independent organization		
	- Lloyd's Reg. of Shipping (LRS)	
EN_29/v04	- TÜV , - DNV , - GL	

BOCAR GMBH

Heads

Shapes

Semi ellipsoidal head DIN 28013

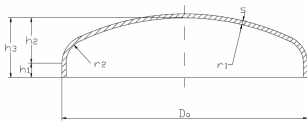


$$r_1 = 0,8 \times D_a \quad h_1 \geq 3 \times s$$

$$r_2 = 0,154 \times D_a \quad h_2 = 0,255 \times D_a - 0,635 \times s$$

$$h_3 = h_1 + h_2$$

Torispherical head DIN 28011

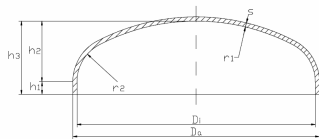


$$r_1 = D_a \quad h_1 = 3,5 \times s$$

$$r_2 = 0,1 \times D_a \quad h_2 = 0,1935 \times D_a - 0,455 \times s$$

$$h_3 = h_1 + h_2$$

Ellipsoidal head



Form 2:1

$$D_i = D_a - 2 \times s$$

$$r_1 = 0,9 \times D_i$$

$$r_2 = 0,17 \times D_i$$

$$h_1 = \text{gem. Angabe}$$

$$h_2 = 0,25 \times D_i$$

$$h_3 = h_1 + h_2$$

Form 1,9:1

$$D_i = D_a - 2 \times s$$

$$r_1 = D_i / 1,16$$

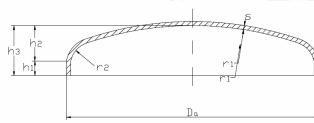
$$r_2 = D_i / 5,39$$

$$h_1 = \text{gem. NF E81-103}$$

$$h_2 = D_i / 3,8$$

$$h_3 = h_1 + h_2$$

Standard-type / flat dished head



$$r_1 = D_a \text{ (standard-type head)}$$

$$r_1 = 1,3 \times D_a \text{ (flat dished head)}$$

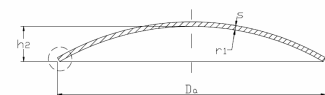
$$r_2 = \text{depending on size (15 - 50 mm)}$$

$$h_1 \geq 3,5 \times s$$

$$h_2 = \text{dished height}$$

$$h_3 = h_1 + h_2$$

Convex disc



Shape $r_1 = D_a$

$$h_2 = 0,134 \times D_a$$

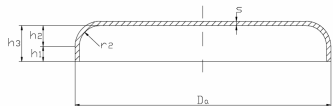
Shape $r_1 = 0,8 \times D_a$

$$h_2 = 0,176 \times D_a$$

Shape r_1 acc. to cust. requirements

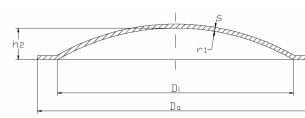
$$h_2 = r_1 - \sqrt{r_1^2 - (D_a/2)^2}$$

Flat head



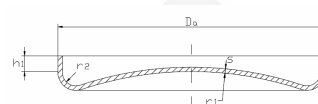
$$h_1 \geq 3,5 \times s \quad h_2 = r_2 \quad h_3 = h_1 + h_2$$

Plate-type head



$$r_1 = D_i \quad h_2 = 0,134 \times D_i$$

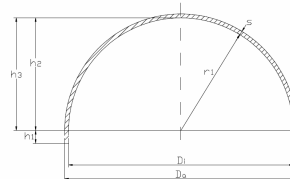
Diffuser head



$$r_1 \geq 1,3 \times D_a \quad h_1 \geq 3,5 \times s$$

$$r_2 = 15 - 50 \text{ mm depending on size}$$

Hemispherical head



$$D_i = D_a - 2 \times s$$

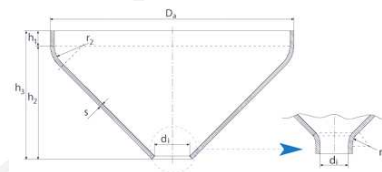
$$r_1 = 0,5 \times D_i$$

$$h_1 = \text{acc. to customers requirements}$$

$$h_2 = r_1$$

$$h_3 = h_1 + h_2$$

Cone



$$h_3 = h_1 + h_2$$

Neck at the narrow end is also possible

Special pressed parts



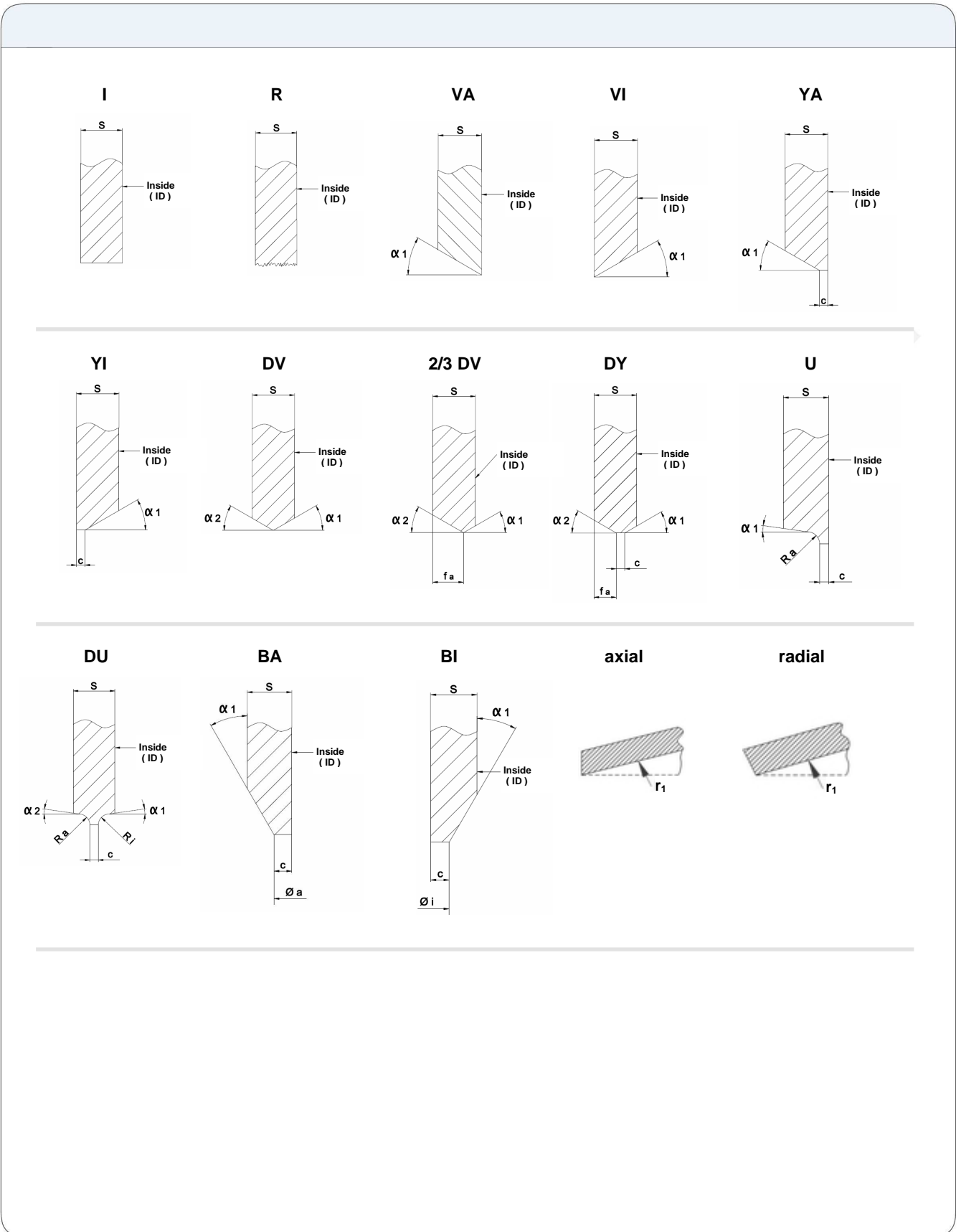
Dimensions and forms acc. to customers requirements

Legend:

D_a = outside diameter
 D_i = inside diameter
 s = wall thickness
 h_1 = straight flange height
 h_2 = dished height
 h_3 = total height inside
 r_1 = crown radius
 r_2 = knuckle radius

Heads

Edge preparation of heads



BOCAR GmbH