Torospherical Head Under Internal Pressure

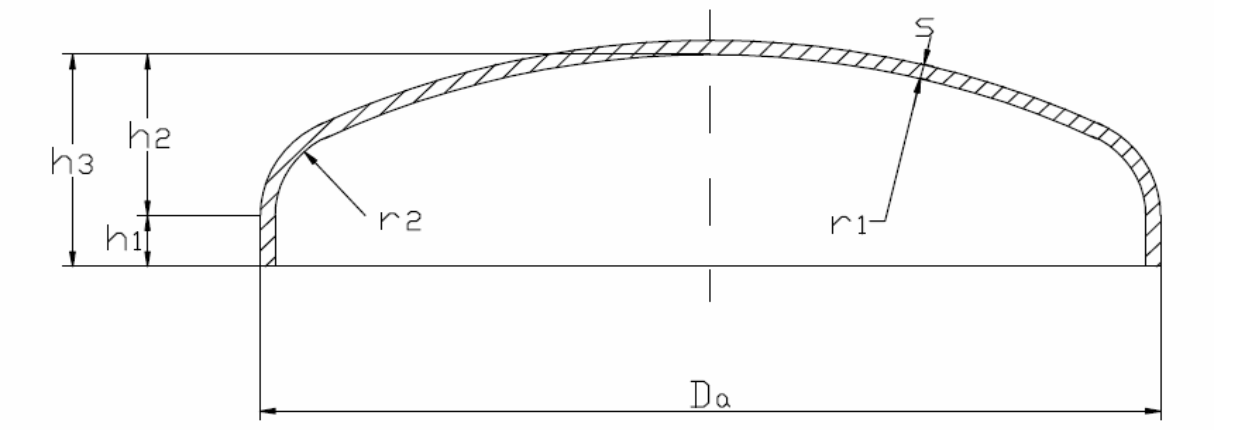
PREPARED: P.G.A.Engineering
CHECKED:
APPROVED:
DATE: 29/04/2014

This calculation is according to ASME VIII Div.1 App.1-4

Head Diamension	6" s=6 DIN 28011
Head Material	A182 F316L (Forgings)

CALCULATION

DESCRIPTION	DEF.	Imperial		Metric	
		Values	Unit of Measure	Values	Unit of Measure
INPUT					
Outside Diameter of Pipe	DN	6,626	in	168,30	mm
Corrosion Allowance	c	0,000	in	0,00	mm
Design Pressure	P	51	psi	0,35	MPa
Design Pressure at Test Temperature	P_{TEST}	73	psi	0,50	MPa
Maximum Temperature	T_{MAX}	122	°F	50	°C
Minimum Temperature	T_{MIN}	39,2	°F	4	°C
Test Temperature	T_{TEST}	68	°F	20	°C
Allowable Head Stress at Operating Condition	$S_{H,OP}$	16700	psi	111	MPa
Allowable Head Stress at Test Temperature	$S_{H,TEST}$	25000	psi	172	MPa
HEAD DIAMENSION					
Outside Diameter of Head	D_a	6,626	in	168,3	mm
Head Thickness	s	0,236	in	6	mm
Inside Crow Radius	r_1	6,626	in	168,3	mm
Inside Knuckle Radius	r_2	0,663	in	16,83	mm
Straight Flange Height	h_1	0,984	in	25	mm
Dished Height	h_2	1,175	in	29,84	mm
Inside Total Height	h_3	2,159	in	54,84	mm
Head Weight	W			2,1	kg



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DESCRIPTION	DEF.	Imperial		Metric	
		Values	Unit of Measure	Values	Unit of Measure
OUTPUT					
Inside Crow Radius	L	6,626	in	168,3	mm
Inside Knuckle Radius	r	0,663	in	16,83	mm
Factor for Torosferical Hed	M	1,54	-	1,54	-
Minimun Thickness Required in Operating Condi	t_{OP}	0,02217302	in	0,56319474	mm
Minimun Thickness Required in Test Condition	t_{TEST}	0,02115898	in	0,53743802	mm
Minimun Thickness Required	t	0,02217302	in	0,56319474	mm
Minimum Thickness Garanteed	t_G	0,201	in	5,10	mm

VERIFICATION

Description	Formula	CHECK
Minimum Thickness Verification	$t_G \geq t$	VERO
Outside Diameter Verification	Da = DN	VERO

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