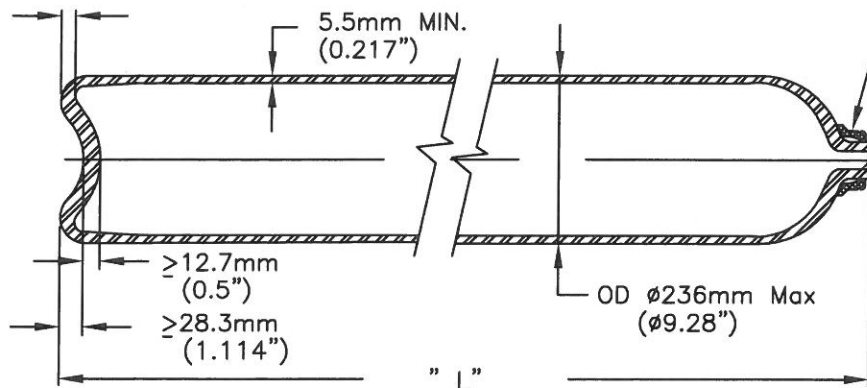


≥12.7mm
(0.5")



ØW80 x 11 T.P.I.,
Ø3 1/8" x 11 T.P.I.,
OR COMPARABLE

25E, 1" - 11 - 1/2 NGT,
3/4 - 14 NGT,
OR COMPARABLE

OD Ø236mm Max
(Ø9.28")

REV.	ECN - DESCRIPT.	DATE	DRWN.	CHKD.	APP.
01	2754 - Add 8BC85P	4/24/08	SAM		
02	2813 - thread opt.	1/20/09	JJM		

DRAWING FOR REFERENCE ONLY

6(b). DOT 3AA CALCULATIONS:

The DOT formula can be written as:

$$t = 0.5 \times OD \times \left(1 - \frac{\sqrt{(S-1.3 Ph)}}{\sqrt{(S+0.4 Ph)}} \right)$$

Where:

S = design stress; the lower of 0.67xRg or 70ksi (483 MPa)

$$0.67 \times Rg = 0.67 \times 112.4 = 75.3 \text{ ksi}$$

(use S = 70 ksi)

$$t = 0.5 \times 9.28 \times \left(1 - \frac{\sqrt{70000 - 1.3 \times 3834}}{\sqrt{70000 + 0.4 \times 3834}} \right)$$

= 0.2164" (5.5mm) - DOT calculated Min.

*For Dual ISO/DOT design t min = 5.5mm (0.217")

SPECIFICATION: ISO 9809/1: 1999
DOT 3AA 2300

1. Service Conditions:

- DOT rated service pressure: 158 bar (2300 psi)
- ISO rated working pressure: 176 bar (2553 psi)
- Hydraulic test pressure: 264 bar (3834 psi.)

2. Material:

Cr-Mo-Steel, Fully killed and made to fine grain practice by basic oxygen or electric furnace process

Chemical Composition (%)

	C	Si	Mn	P	S	Cr	Mo
Min.	0.28	0.15	0.40	--	--	0.80	0.15
Max.	0.33	0.30	0.60	0.020	0.020	1.10	0.25

Note: S+P < 0.030

3. Manufacture:

Hot billet extrusion followed by hot drawing

4. Heat Treatment: Quenched and Tempered

- Austenitize: ~899°C (1650°F)
- Quenchant: Water based polymer.
(temperature ≤ 60°C(140°F))
- Temper: ~649°C(1200°F) (Min. 30 minutes at temp.)

5. Mechanical Properties: (at room temperature)

- Tensile (Rg): 775 - 930 MPa (112.4 - 134.8 ksi)
- Yield (Re): ≥ 658 MPa (95.4 ksi)
- Elong (A): ≥ 14% (ON 5.65 √S₀)
≥ 20% on 2" G.L. for DOT
- Hardness: 225-270 BHN
- Flattening test: Flatten to Ø6 x t without cracks
- Charpy test (-50°C, Trans): ≥ 35 J/cm² (avg.)
- UT flaw detection: Each cyld. per ISO 9809-1
- Batch burst test: Pb ≥ 423 bar (6135psi)

6(a). Thickness Calculations: (ISO 9809/1: 1999)

$$a = 0.5 \times D \left(1 - \frac{\sqrt{(10FRe - \sqrt{3} Ph)}}{(10FRe)} \right)$$

Where:

Ph = Test Pressure (bar) = 264 bar (3834psi)

D = External diameter of container = Ø236 mm Max

F = Lesser of 0.65/(Re/Rg) or 0.85; Re/Rg ≤ 0.9

= Lesser of 0.65/0.85 or 0.85 = 0.765 (for Re/Rg = 0.85)

$$a = 0.5 \times 236 \left(1 - \frac{\sqrt{(10 \times 0.765 \times 658 - \sqrt{3} \times 264)}}{(10 \times 0.765 \times 658)} \right) = 5.49 \text{ mm} (0.2162")$$

NOTE: a', the guaranteed min thickness = 5.5mm (0.217") exceeds calculated min thickness, a.

MODEL	LENGTH 'L'		Min WATER CAPACITY		APPROX. WGT. W/O FITTINGS	
	MM	IN	LITERS	IN ³	KG	LBS
8BC75P	1422	56	50.0	3058	61	135
8BC85P	1490	58.7	52.1	3179	63.5	140
*Vmin	708	27.9	21.7	1325	33	73
*Vmax	2133	83.9	76.5	4670	88	194

*Note: Model 8BC75P is the design qualification test cylinder. Vmin and Vmax represent the range covered by the same design family.



NORRIS CYLINDER COMPANY

P.O. BOX 7486 LONGVIEW, TEXAS 75607

REFILLABLE SEAMLESS STEEL
CYLINDER FOR CARBON DIOXIDE AND
RELATED MIXTURES

SCALE	NOT TO SCALE	DRAWING NO.	REV.
DWN. BY	R.S.	6/14/04	901A-A-9646 02
CHK'D BY			
APP'D BY		SHEET NO. 1	OF 1 SHEETS