

ELLIPSOIDAL HEAD
AXIS RATIO 1.84:1

M22X1.25

SPECIFICATION

CYLINDER
DESIGN CODE
TEST PRESSURE
WATER CAPACITY
CYLINDER MATERIAL
SPUD/BUNG
COLLAR/FOOTRING
WELDING PROCESS
-CIRCUMFERENTIAL
-SPUD
-COLLAR/FOOTRING
HEAT TREATMENT
SURFACE TREATMENT
ZINC METALLIZING
PAINTING
COLOUR
JOINTING COMPOUND

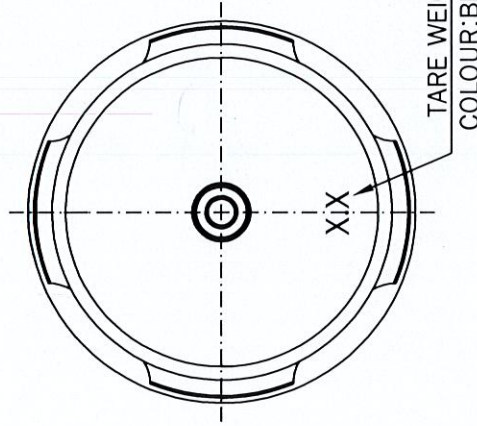
: 3 KG. LPG CYLINDER
: EN1442:2017
: 30 BAR.
: 7.5 L.
: STEEL GRADE SG295 OR EQUIV.
: JIS G 4051 WITH 0.25 %C max OR EQUIV.
: MILD STEEL WITH 0.25 %C max. OR EQUIV.
: AUTOMATIC SUBMERGED ARC WELDING AWS A 5.17 EM 12 K
: AUTOMATIC SUBMERGED ARC WELDING AWS A 5.18 ER 70 S-6
: SEMI AUTOMATIC MAG WELDING AWS A5.18 ER 70 S-6
SHIELDING CO₂+Ar
: NORMALIZATION PROCESS
: ABRASIVE BLASTING WITH CLEANLINESS SA2.5 ISO8501-1
: ONE COAT OF ZINC METALLIZED 40 MICRONS
: 2 COATS STOVING ALKYD PAINT 50 MICRONS (MIN.)
: PURE ORANGE RAL 2004
: SEALANT

DETAIL B

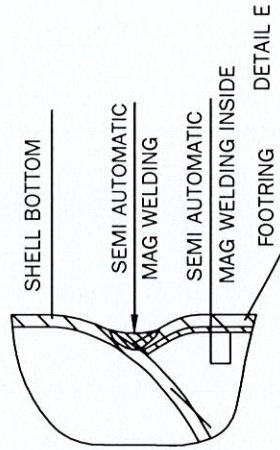
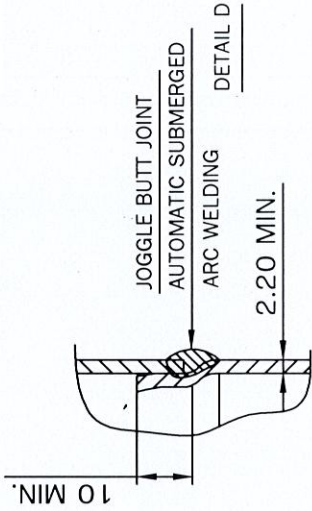
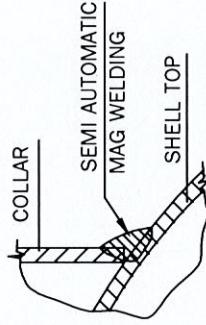
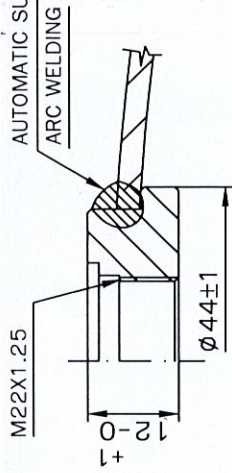
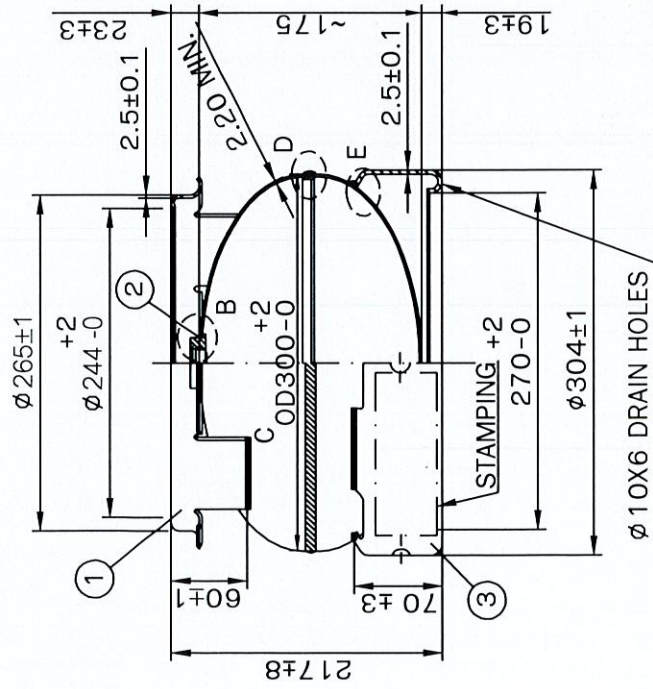
DETAIL C

DETAIL D

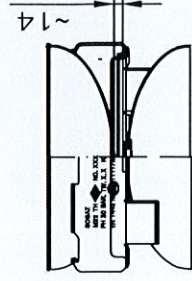
DETAIL E



TARE WEIGHT
COLOUR:BLACK



REVISE ITEM
1. REVISED ADJUST FOOTRING HEIGHT 70±3 MM.
2. REVISED STAMPING.

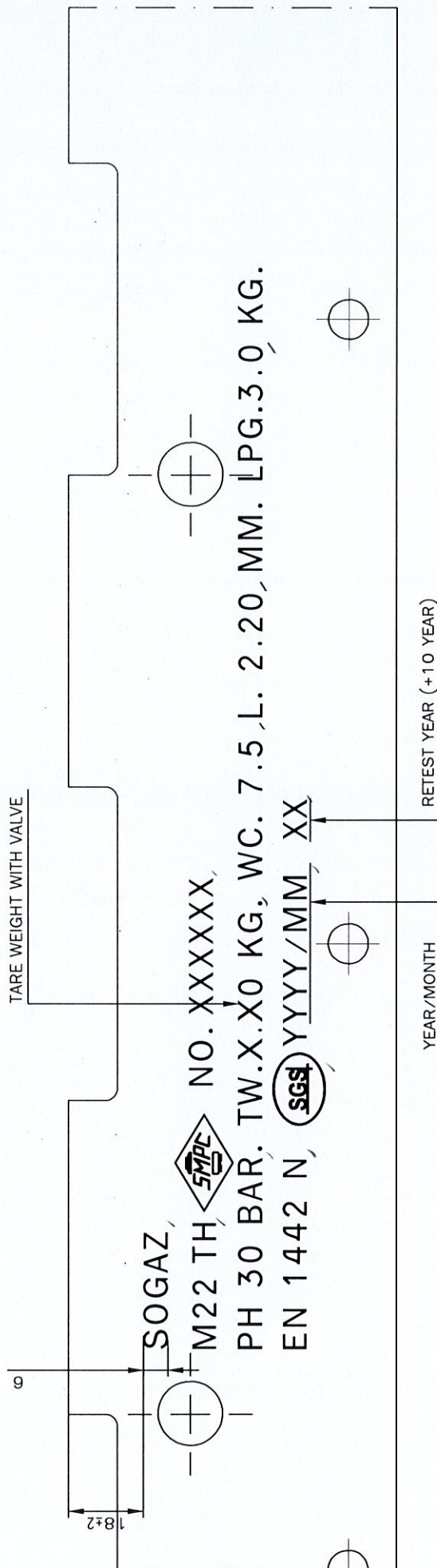


ALL DIMENSIONS ARE IN MILLIMETRES

ITEM	DESCRIPTION	DRAWING NO.	ITEM	DESCRIPTION	DRAWING NO.
1	COLLAR/SHROUD	A4-CL-0152	3	FOOTRING	A4-FT-0315
2	SPUD/BUNG	A4-SP-0172	4	STAMPING	A4-ST-6107/1
7	CALCULATION SHEET	A4-CS-6107			
7.5 L (3 KG.) LPG CYLINDER FOR SOGAZ CONGO					
Dwg.no. A4-SM-6107/1					
Date 15/05/2017					
Scale 1:6					
MGR.Q.A.					
Date / /					

SMPC PLC. Bangkok, Thailand	7.5 L (3 KG.) LPG CYLINDER FOR SOGAZ CONGO
Drawn By: [Signature]	Checked By: [Signature]
Draftsman	Eng.Q.A.
INTERNAL DISTRIBUTION	Approved By: [Signature]
	Date / /

TARE WEIGHT WITH VALVE



RETEST YEAR (+10 YEAR)

YEAR/MONTH

ALL DIMENSIONS ARE IN MILLIMETRES

SMPC Plc. Bangkok, Thailand	STAMPING DETAILS FOR SOGAZ CONGO		Dwg.no. A4-ST-6107/1
	Drawn By <i>[Signature]</i> Draftsman	Checked By <i>[Signature]</i> Eng.Q.A.	Date 15/5/20 <i>[Signature]</i> Scale 1:1.5
		Approved By <i>[Signature]</i>	Mgr.Q.A.

REVISION : 0

ISSUE : 1

DATE : 25 January 2020

PAGE 1 OF 1

DESIGN CODE : EN 1442:2017

- (A) Water capacity 7.50 Litre.
- (B) Material Specification STEEL GRADE SG295 or Equivalent table 1
- | | | | |
|--------------------------|-----|-------------------|------|
| Minimum tensile strength | 440 | N/mm ² | Min. |
| Minimum yield strength | 295 | N/mm ² | Min. |
| Minimum elongation | 26 | % | Min. |
- (C) Definition
- a* : calculated thickness of the cylindrical shell, in millimetres.
- b* : calculated thickness of the end of cylinder, in millimetres.
- C* : shape factor for the end (see table 2, figure 2 and figure 3)
- D* : outside diameter of the cylinder as given in the design drawing, in millimetres. (see figure 1)
- J* : stress reduction factor
- P_c* : calculation pressure (1 bar = 10⁵ Pa = 10⁵ N/m²), use to calculate the minimum required thickness of the cylindrical shell and ends, in bar.
- P_b* : maximum pressure attained during the burst test, in bar.
- R₀* : minimum value of yield strength, in newtons per square millimetre, guaranteed by the cylinder manufacturer for the finished cylinder. 275 N/mm² Min
- R_g* : minimum value of tensile strength, in newtons per square millimetre, guaranteed by the cylinder manufacturer for the finished cylinder. 410 N/mm² Min

- (D) Calculation of cylindrical shell thickness. From EN 1442 Page 12 Clause 5.2

The wall thickness *a* of the cylindrical shell shall be not less than:

$$a = \frac{P_c \times D}{(15 \times R_0 \times J) + P_c} \quad \text{For cylinders without a longitudinal weld : } J = 1.0$$

$$= \frac{30 \times 302}{(15 \times 275 \times 1) + 30}$$

$$= 2.19 \text{ mm.}$$

In no case shall the actual thickness be less than $(D/250) + 0.7 = 1.91 \text{ mm.}$

- (E) Design of torispherical and semi-ellipsoidal ends concave to pressure From EN 1442 Page 12 Clause 5.3

The shape of ends shall be such that the following conditions are fulfilled:

for semi-ellipsoidal ends : $H \geq 0.2D$; $h \geq 4b$

The thickness *b* of the domed part shall be not less than:

$$b = \frac{P_c \times D \times C}{(15 \times R_0) + P_c} \quad H/D = 82.36/302 = 0.272 ; C = 0.877$$

$$= \frac{30 \times 302 \times 0.877}{(15 \times 275) + 30}$$

$$= 1.92 \text{ mm.}$$

- (F) Minimum wall thickness

The minimum wall thickness of the cylindrical shell and ends shall not be less than greater of:

- the values of *a* and *b* determined in accordance with 5.2 and 5.3 or 5.4, as appropriate, or
- the following values, as appropriate.

for $D > 150 \text{ mm}$: $(D/250) + 0.7 \text{ mm}$, but not less than 1.5 mm.

Hence, the required minimum wall thickness is 1.91 mm.

- (H) Bursting pressure (From EN 1442 Clause 7.6.2.1 Page 28)

The measured bursting pressure *P_b* shall not be less than 2.25 times the calculation pressure *P_c* and at least 50 bar.

$$P_b = 2.25 P_c$$

$$= 67.5 \text{ bar}$$

- (I) Summary

Minimum thickness of the cylindrical shell	=	2.20	mm.
Minimum thickness of the end of the cylinder	=	1.92	mm.
Minimum bursting pressure	=	67.50	bar.
Minimum volumetric expansion	≥	17.0	% (see clause 7.6.2.2)
Minimum yield stress	=	275	N/mm ²
Minimum tensile strength	=	410	N/mm ²
Minimum elongation	=	20	%

Calculated by

QA ENGINEER

Approved by

QA MANAGER